NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG J17150-1

Naval Air Station Oceana
Virginia Beach, Virginia

July 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
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West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-17150-1
TestAmerica SDG: CTO WE7G PFC Sampling
Client Project/Site: CTO WE7G PFC Sampling
Revision: 2

For:
CH2M Hill, Inc.
5701 Cleveland Street
Suite 200
Virginia Beach, Virginia 23462

Attn: Laurie George

Authorized for release by:
3/22/2016 12:49:15 PM

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Definitions/Glossary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
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.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-17150-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill, Inc.

Project: CTO WE7G PFC Sampling

Report Number: 320-17150-1

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 West 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 West 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.

Revision
This report was revised March 22, 2016 to include all method blank data for all analytes and to remove the B qualifiers from the LCS/LCSD in batch 100093. No other data has changed as a result of this revision.

RECEIPT
The samples were received on 02/04/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.0 C.

PFC
Samples OF-FB42B-0216 (320-17150-2), OF-FB42A-0216 (320-17150-4), OF-FB35-0216 (320-17150-6), OF-FB58-0216 (320-17150-8),

Job ID: 320-17150-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

OF-FB39-0216 (320-17150-9), OF-FB40-0216 (320-17150-11) and OF-FB43-0216 (320-17150-13) were analyzed for PFC in accordance with PFC. The samples were prepared on 02/09/2016 and analyzed on 02/20/2016.

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

Organic Prep
Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 320-100093

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

Subcontract Work
PFC: This method was subcontracted to Maxxam Analytics Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report. Any analytical or quality issues are noted in the subcontract portion of the report.

The DL/LOD/LOQ limits for Maxxam, along with information on the data qualifiers, are included in the narrative (Page 9 of 261 of the subcontract report; page 480 of 736 of the entire report).

The DL/LOD/LOQ for sample OF-RW42B-0216 (320-17150-1) were adjusted by a dilution factor of 10 for PFHxS and PFOA.

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Client Sample ID: OF-RW42B-0216 — **Lab Sample ID: 320-17150-1**

No Detections.

Client Sample ID: OF-FB42B-0216 — **Lab Sample ID: 320-17150-2**

No Detections.

Client Sample ID: OF-RW42A-0216 — **Lab Sample ID: 320-17150-3**

No Detections.

Client Sample ID: OF-FB42A-0216 — **Lab Sample ID: 320-17150-4**

No Detections.

Client Sample ID: OF-RW35-0216 — **Lab Sample ID: 320-17150-5**

No Detections.

Client Sample ID: OF-FB35-0216 — **Lab Sample ID: 320-17150-6**

No Detections.

Client Sample ID: OF-RW58-0216 — **Lab Sample ID: 320-17150-7**

No Detections.

Client Sample ID: OF-FB58-0216 — **Lab Sample ID: 320-17150-8**

No Detections.

Client Sample ID: OF-FB39-0216 — **Lab Sample ID: 320-17150-9**

No Detections.

Client Sample ID: OF-RW39-0216 — **Lab Sample ID: 320-17150-10**

No Detections.

Client Sample ID: OF-FB40-0216 — **Lab Sample ID: 320-17150-11**

No Detections.

Client Sample ID: OF-RW40-0216 — **Lab Sample ID: 320-17150-12**

No Detections.

Client Sample ID: OF-FB43-0216 — **Lab Sample ID: 320-17150-13**

No Detections.

Client Sample ID: OF-RW43-0216 — **Lab Sample ID: 320-17150-14**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample ID: OF-FB42B-0216

Lab Sample ID: 320-17150-2

Date Collected: 02/03/16 09:42

Matrix: Water

Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00075	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00070	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00086	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0023	0.00082	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0038	0.0012	ug/L		02/09/16 10:23	02/20/16 07:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*106*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
13C4 PFOA	*110*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
13C5 PFNA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
18O2 PFHxS	*95*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
13C4 PFOS	*89*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*

Client Sample ID: OF-FB42A-0216

Lab Sample ID: 320-17150-4

Date Collected: 02/03/16 09:54

Matrix: Water

Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00077	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00072	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00063	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00088	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0024	0.00083	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0038	0.0012	ug/L		02/09/16 10:23	02/20/16 07:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*110*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
13C4 PFOA	*109*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
13C5 PFNA	*114*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
18O2 PFHxS	*96*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
13C4 PFOS	*94*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*

Client Sample ID: OF-FB35-0216

Lab Sample ID: 320-17150-6

Date Collected: 02/03/16 10:40

Matrix: Water

Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00075	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00070	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00086	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0023	0.00081	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 08:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*115*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*
13C4 PFOA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*
13C5 PFNA	*117*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*
18O2 PFHxS	*104*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*

Client Sample ID: OF-FB35-0216

Lab Sample ID: 320-17150-6
Matrix: Water
Date Collected: 02/03/16 10:40
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*96*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*

Client Sample ID: OF-FB58-0216

Lab Sample ID: 320-17150-8
Matrix: Water
Date Collected: 02/03/16 11:12
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00085	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 08:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*113*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
13C4 PFOA	*113*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
13C5 PFNA	*115*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
18O2 PFHxS	*99*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
13C4 PFOS	*95*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*

Client Sample ID: OF-FB39-0216

Lab Sample ID: 320-17150-9
Matrix: Water
Date Collected: 02/03/16 11:50
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 08:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*108*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
13C4 PFOA	*112*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
13C5 PFNA	*113*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
18O2 PFHxS	*98*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
13C4 PFOS	*91*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*

Client Sample ID: OF-FB40-0216

Lab Sample ID: 320-17150-11
Matrix: Water
Date Collected: 02/03/16 12:15
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00072	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00067	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00059	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00083	ug/L		02/09/16 10:23	02/20/16 09:12	1

Client Sample ID: OF-FB40-0216

Lab Sample ID: 320-17150-11
Matrix: Water
Date Collected: 02/03/16 12:15
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00078	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0012	ug/L		02/09/16 10:23	02/20/16 09:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
13C4 PFOA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
13C5 PFNA	*119*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
18O2 PFHxS	*97*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
13C4 PFOS	*93*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*

Client Sample ID: OF-FB43-0216

Lab Sample ID: 320-17150-13
Matrix: Water
Date Collected: 02/03/16 16:05
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 09:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*117*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
13C4 PFOA	*124*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
13C5 PFNA	*123*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
18O2 PFHxS	*106*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
13C4 PFOS	*98*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*

Isotope Dilution Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C4-PFHp (25-150)	3C4 PFO/ (25-150)	3C5 PFN/ (25-150)	3O2 PFHx (25-150)	3C4 PFOS (25-150)			
320-17150-2	OF-FB42B-0216	106	110	111	95	89			
320-17150-4	OF-FB42A-0216	110	109	114	96	94			
320-17150-6	OF-FB35-0216	115	111	117	104	96			
320-17150-8	OF-FB58-0216	113	113	115	99	95			
320-17150-9	OF-FB39-0216	108	112	113	98	91			
320-17150-11	OF-FB40-0216	111	111	119	97	93			
320-17150-13	OF-FB43-0216	117	124	123	106	98			
LCS 320-100093/2-A	Lab Control Sample	95	95	98	90	82			
LCSD 320-100093/3-A	Lab Control Sample Dup	95	88	91	86	80			
MB 320-100093/1-A	Method Blank	103	101	103	98	92			

Surrogate Legend

13C4-PFHpA = 13C4-PFHpA
13C4 PFOA = 13C4 PFOA
13C5 PFNA = 13C5 PFNA
18O2 PFHxS = 18O2 PFHxS
13C4 PFOS = 13C4 PFOS

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-100093/1-A
Matrix: Water
Analysis Batch: 100906

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 100093

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorohexanesulfonic acid (PFHxS)	0.00344		0.0025	0.00087	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorooctanesulfonic acid (PFOS)	0.00143	J	0.0040	0.0013	ug/L		02/09/16 10:23	02/20/16 06:23	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*103*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
13C4 PFOA	*101*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
13C5 PFNA	*103*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
18O2 PFHxS	*98*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
13C4 PFOS	*92*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*

Lab Sample ID: LCS 320-100093/2-A
Matrix: Water
Analysis Batch: 100906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 100093

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0513		ug/L		128	60 - 140
Perfluorooctanoic acid (PFOA)	0.0400	0.0485		ug/L		121	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0537		ug/L		134	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0459		ug/L		130	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0480		ug/L		127	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0515		ug/L		135	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4-PFHpA	*95*		*25 - 150*
13C4 PFOA	*95*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
18O2 PFHxS	*90*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*

Lab Sample ID: LCSD 320-100093/3-A
Matrix: Water
Analysis Batch: 100906

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 100093

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0506		ug/L		126	60 - 140	1	30
Perfluorooctanoic acid (PFOA)	0.0400	0.0493		ug/L		123	60 - 140	2	30
Perfluorononanoic acid (PFNA)	0.0400	0.0517		ug/L		129	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0472		ug/L		133	50 - 150	3	30
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0486		ug/L		128	60 - 140	1	30
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0452		ug/L		118	60 - 140	13	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4-PFHpA	95		25 - 150
13C4 PFOA	88		25 - 150
13C5 PFNA	91		25 - 150
18O2 PFHxS	86		25 - 150
13C4 PFOS	80		25 - 150

LCMS

Prep Batch: 100093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17150-2	OF-FB42B-0216	Total/NA	Water	3535	
320-17150-4	OF-FB42A-0216	Total/NA	Water	3535	
320-17150-6	OF-FB35-0216	Total/NA	Water	3535	
320-17150-8	OF-FB58-0216	Total/NA	Water	3535	
320-17150-9	OF-FB39-0216	Total/NA	Water	3535	
320-17150-11	OF-FB40-0216	Total/NA	Water	3535	
320-17150-13	OF-FB43-0216	Total/NA	Water	3535	
LCS 320-100093/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-100093/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-100093/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 100906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17150-2	OF-FB42B-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-4	OF-FB42A-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-6	OF-FB35-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-8	OF-FB58-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-9	OF-FB39-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-11	OF-FB40-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-13	OF-FB43-0216	Total/NA	Water	WS-LC-0025	100093
LCS 320-100093/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	100093
LCSD 320-100093/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	100093
MB 320-100093/1-A	Method Blank	Total/NA	Water	WS-LC-0025	100093

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Client Sample ID: OF-FB42B-0216
Date Collected: 02/03/16 09:42
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			532.6 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	532.6 mL	1.00 mL	100906	02/20/16 07:26	JRB	TAL SAC

Client Sample ID: OF-FB42A-0216
Date Collected: 02/03/16 09:54
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			522 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	522 mL	1.00 mL	100906	02/20/16 07:47	JRB	TAL SAC

Client Sample ID: OF-FB35-0216
Date Collected: 02/03/16 10:40
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			534.9 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	534.9 mL	1.00 mL	100906	02/20/16 08:09	JRB	TAL SAC

Client Sample ID: OF-FB58-0216
Date Collected: 02/03/16 11:12
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			540.9 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	540.9 mL	1.00 mL	100906	02/20/16 08:30	JRB	TAL SAC

Client Sample ID: OF-FB39-0216
Date Collected: 02/03/16 11:50
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			544.7 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	544.7 mL	1.00 mL	100906	02/20/16 08:51	JRB	TAL SAC

Client Sample ID: OF-FB40-0216
Date Collected: 02/03/16 12:15
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			554.3 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	554.3 mL	1.00 mL	100906	02/20/16 09:12	JRB	TAL SAC

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Client Sample ID: OF-FB43-0216

Date Collected: 02/03/16 16:05
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			545.3 mL	1.00 mL	100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	545.3 mL	1.00 mL	100906	02/20/16 09:55	JRB	TAL SAC

Laboratory References:

Maxxam = Maxxam Analytics Inc., PO BOX 57437, Postal Station A, Toronto, Ontario M5W 5M5

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

Certification Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Oregon	NELAP	10	CA200005	01-29-17

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025	3535	Water	Perfluoroheptanoic acid (PFHpA)
WS-LC-0025	3535	Water	Perfluorononanoic acid (PFNA)
WS-LC-0025	3535	Water	Perfluorooctanoic acid (PFOA)

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025	3535	Water	Perfluorobutanesulfonic acid (PFBS)
WS-LC-0025	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
WS-LC-0025	3535	Water	Perfluorooctanesulfonic acid (PFOS)

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
Oregon	NELAP	10	4025	01-09-17

Method Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC
PFOA - PFOA	PFOA	NONE	Maxxam

Protocol References:

NONE = NONE

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

Maxxam = Maxxam Analytics Inc., PO BOX 57437, Postal Station A, Toronto, Ontario M5W 5M5

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

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-17150-1	OF-RW42B-0216	Water	02/03/16 09:38	02/04/16 09:45
320-17150-2	OF-FB42B-0216	Water	02/03/16 09:42	02/04/16 09:45
320-17150-3	OF-RW42A-0216	Water	02/03/16 09:50	02/04/16 09:45
320-17150-4	OF-FB42A-0216	Water	02/03/16 09:54	02/04/16 09:45
320-17150-5	OF-RW35-0216	Water	02/03/16 10:35	02/04/16 09:45
320-17150-6	OF-FB35-0216	Water	02/03/16 10:40	02/04/16 09:45
320-17150-7	OF-RW58-0216	Water	02/03/16 11:10	02/04/16 09:45
320-17150-8	OF-FB58-0216	Water	02/03/16 11:12	02/04/16 09:45
320-17150-9	OF-FB39-0216	Water	02/03/16 11:50	02/04/16 09:45
320-17150-10	OF-RW39-0216	Water	02/03/16 12:00	02/04/16 09:45
320-17150-11	OF-FB40-0216	Water	02/03/16 12:15	02/04/16 09:45
320-17150-12	OF-RW40-0216	Water	02/03/16 12:20	02/04/16 09:45
320-17150-13	OF-FB43-0216	Water	02/03/16 16:05	02/04/16 09:45
320-17150-14	OF-RW43-0216	Water	02/03/16 16:10	02/04/16 09:45

Maxxam
A Bureau Veritas Group Company

Your Project #: 320-17150
Your C.O.C. #: NA

Attention:PFC Reporting Group

TestAmerica
Sacramento
880 Riverside Parkway
West Sacramento, CA
USA 95605

Report Date: 2016/03/08
Report #: R3920718
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B630803
Received: 2016/02/13, 13:40

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Low level PFOS and PFOA in water	7	2016/02/17	2016/02/18	CAM SOP-00894	EPA 537 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B630803
Report Date: 2016/03/08

TestAmerica
Client Project #: 320-17150

RESULTS OF ANALYSES OF WATER

Maxxam ID		BVX947				BVX948	BVX949			
Sampling Date		2016/02/03 09:38				2016/02/03 09:50	2016/02/03 10:35			
COC Number		NA				NA	NA			
	UNITS	OF-RW42B-0216	RDL	MDL	QC Batch	OF-RW42A-0216	OF-RW35-0216	RDL	MDL	QC Batch
Miscellaneous Parameters										
Perfluorobutane Sulfonate (PFBS)	ng/L	62	2.0	0.27	4384677	1.8 J	0.27 U	2.0	0.27	4384677
Perfluoroheptanoic Acid (PFHpA)	ng/L	16	2.0	0.39	4384677	0.94 J	0.39 U	2.0	0.39	4384677
Perfluorohexane Sulfonate (PFHxS)	ng/L	700 (1)	20	4.0	4385924	9.7	0.40 U	2.0	0.40	4384677
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	240 (1)	20	3.9	4385924	5.0	0.39 U	2.0	0.39	4384677
Perfluorononanoic Acid (PFNA)	ng/L	0.88 J	2.0	0.33	4384677	0.33 U	0.33 U	2.0	0.33	4384677
Perfluorooctane Sulfonate (PFOS)	ng/L	16	2.0	0.30	4384677	0.30 U	0.30 U	2.0	0.30	4384677
Surrogate Recovery (%)										
13C4-Perfluoroheptanoic acid	%	62	N/A	N/A	4384677	54	54	N/A	N/A	4384677
13C4-Perfluorooctanesulfonate	%	64	N/A	N/A	4384677	59	56	N/A	N/A	4384677
13C4-Perfluorooctanoic acid	%	60	N/A	N/A	4385924	60	60	N/A	N/A	4384677
13C5-Perfluorononanoic acid	%	71	N/A	N/A	4384677	62	67	N/A	N/A	4384677
18O2-Perfluorohexanesulfonate	%	70	N/A	N/A	4385924	59	59	N/A	N/A	4384677

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

Maxxam ID		BVX950	BVX951	BVX952	BVX953			
Sampling Date		2016/02/03 11:10	2016/02/03 12:00	2016/02/03 12:20	2016/02/03 16:10			
COC Number		NA	NA	NA	NA			
	UNITS	OF-RW58-0216	OF-RW39-0216	OF-RW40-0216	OF-RW43-0216	RDL	MDL	QC Batch
Miscellaneous Parameters								
Perfluorobutane Sulfonate (PFBS)	ng/L	0.27 U	0.27 U	0.27 U	1.2 J	2.0	0.27	4384677
Perfluoroheptanoic Acid (PFHpA)	ng/L	0.39 U	0.39 U	0.39 U	0.81 J	2.0	0.39	4384677
Perfluorohexane Sulfonate (PFHxS)	ng/L	0.40 U	0.40 U	0.40 U	10	2.0	0.40	4384677
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	0.39 U	0.39 U	0.39 U	7.9	2.0	0.39	4384677
Perfluorononanoic Acid (PFNA)	ng/L	0.33 U	0.33 U	0.33 U	0.57 J	2.0	0.33	4384677
Perfluorooctane Sulfonate (PFOS)	ng/L	0.30 U	1.8 J	0.30 U	11	2.0	0.30	4384677
Surrogate Recovery (%)								
13C4-Perfluoroheptanoic acid	%	51	51	56	59	N/A	N/A	4384677
13C4-Perfluorooctanesulfonate	%	59	63	63	63	N/A	N/A	4384677
13C4-Perfluorooctanoic acid	%	57	60	60	59	N/A	N/A	4384677
13C5-Perfluorononanoic acid	%	66	61	68	66	N/A	N/A	4384677
18O2-Perfluorohexanesulfonate	%	57	58	59	56	N/A	N/A	4384677

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B630803
Report Date: 2016/03/08

TestAmerica
Client Project #: 320-17150

TEST SUMMARY

Maxxam ID: BVX947
Sample ID: OF-RW42B-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX948
Sample ID: OF-RW42A-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX949
Sample ID: OF-RW35-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX950
Sample ID: OF-RW58-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX951
Sample ID: OF-RW39-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX952
Sample ID: OF-RW40-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX953
Sample ID: OF-RW43-0216
Matrix: Water

Collected: 2016/02/03
Shipped:
Received: 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

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GENERAL COMMENTS

Report revised to include dilution factors and correct MDL values.

Perfluoroheptanoic acid (PFHpA) MDL = 0.39, LOD = 1.0, LOQ = 2.0
Perfluorooctanoic acid (PFOA) MDL = 0.39, LOD = 1.0, LOQ = 2.0
Perfluorononanoic acid (PFNA) MDL = 0.33, LOD = 1.0, LOQ = 2.0
Perfluorobutane sulfonate (PFBS) MDL = 0.27, LOD = 1.0, LOQ = 2.0
Perfluorohexane sulfonate (PFHxS) MDL = 0.40, LOD = 1.0, LOQ = 2.0
Perfluorooctane sulfonate (PFOS) MDL = 0.30, LOD = 1.0, LOQ = 2.0
All Units are in ng/L

Sample BVX947, Low level PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B630803
Report Date: 2016/03/08

TestAmerica
Client Project #: 320-17150

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4384677	CM5	Matrix Spike	13C4-Perfluoroheptanoic acid	2016/02/18		65	%	50 - 130
			13C4-Perfluorooctanesulfonate	2016/02/18		66	%	50 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		64	%	50 - 130
			13C5-Perfluorononanoic acid	2016/02/18		68	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/18		65	%	50 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18		133 (1)	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18		123	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18		132 (1)	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/18		119	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		128	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		131 (1)	%	70 - 130
4384677	CM5	RPD	Perfluorobutane Sulfonate (PFBS)	2016/02/18	7.1		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18	20		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18	7.7		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/18	14		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	11		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/18	15		%	30
4384677	CM5	Spiked Blank	13C4-Perfluoroheptanoic acid	2016/02/18		86	%	50 - 130
			13C4-Perfluorooctanesulfonate	2016/02/18		88	%	50 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		87	%	50 - 130
			13C5-Perfluorononanoic acid	2016/02/18		86	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/18		85	%	50 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18		111	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18		111	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/18		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		107	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		106	%	70 - 130
4384677	CM5	Method Blank	13C4-Perfluoroheptanoic acid	2016/02/18		88	%	50 - 130
			13C4-Perfluorooctanesulfonate	2016/02/18		91	%	50 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		84	%	50 - 130
			13C5-Perfluorononanoic acid	2016/02/18		91	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/18		89	%	50 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18	0.27 U, MDL=0.27		ng/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18	0.39 U, MDL=0.39		ng/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18	0.40 U, MDL=0.40		ng/L	
			Perfluorononanoic Acid (PFNA)	2016/02/18	0.33 U, MDL=0.33		ng/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	0.39 U, MDL=0.39		ng/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/18	0.30 U, MDL=0.30		ng/L	
4385924	CM5	Matrix Spike	13C4-Perfluorooctanoic acid	2016/02/19		118	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/19		113	%	50 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/19		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19		92	%	70 - 130
4385924	CM5	RPD	Perfluorohexane Sulfonate (PFHxS)	2016/02/19	13		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19	18		%	30
4385924	CM5	Spiked Blank	13C4-Perfluorooctanoic acid	2016/02/19		115	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/19		108	%	50 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/19		94	%	70 - 130

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19		93	%	70 - 130
4385924	CM5	Method Blank	13C4-Perfluorooctanoic acid	2016/02/19		108	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/19		99	%	50 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/19	0.40 U, MDL=0.40		ng/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19	0.39 U, MDL=0.39		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B630803
Report Date: 2016/03/08

TestAmerica
Client Project #: 320-17150

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Chain of Custody Record

Temperature on Receipt 1.0 °C

Drinking Water? Yes ☒ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
CH2M Hill	Bill Friedmann	02/03/16	283600
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
5701 Cleveland St, Suite 200	757-671-6223		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Virginia Beach / VA / 23462			
Project Name and Location (State)	**Carrier/Waybill Number**		
CTO WE7G PFC Sampling	FedEx		
Contract/Purchase Order/Quote No.			
PO#938652			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: Select PFCs	Special Instructions/ Conditions of Receipt
OF-RW42B-0216	02/03/16	0938		X			X						2	
OF-FB42B-0216		0942											1	
OF-RW42A-0216		0950											2	
OF-FB42A-0216		0954											1	
OF-RW35-0216		1035											2	
OF-FB35-0216		1040											1	
OF-RW58-0216		1110											2	
OF-FB58-0216		1112											1	
OF-FB39-0216		1150											1	
OF-RW39-0216		1200											2	
OF-FB40-0216		1215											1	
OF-FB~~40~~-RW40-0216	↓	1220		↓			↓						2	

320-17150 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1 Relinquished By: Kathryn Smith	02/03/16	19:30	1. Received By	2/4/16	945
2. Relinquished By			2. Received By		
3 Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report, CANARY - Stays with the Sample; PINK - Field Copy

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3/22/2016

Chain of Custody Record

Temperature on Receipt 1.0°C

Drinking Water? Yes [X] No [ ]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
CH2M Hill	Bill Friedmann		283601
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 2 of 2
5701 Cleveland St, Suite 200	757-671-6223		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Virginia Beach / VA / 23462			
Project Name and Location (State)	**Carrier/Waybill Number**		
CTO WE7G PFC Sampling	FedEx		
Contract/Purchase Order/Quote No.			
PO # 938652			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): Select PFCs
OF-FB43-0216	02/03/16	1605		X			X						1
OF-RW43-0216		1610		X			X						2

Special Instructions/ Conditions of Receipt

Possible Hazard Identification
[ ] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal
[ ] Return To Client [ ] Disposal By Lab [ ] Archive For ____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
[ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

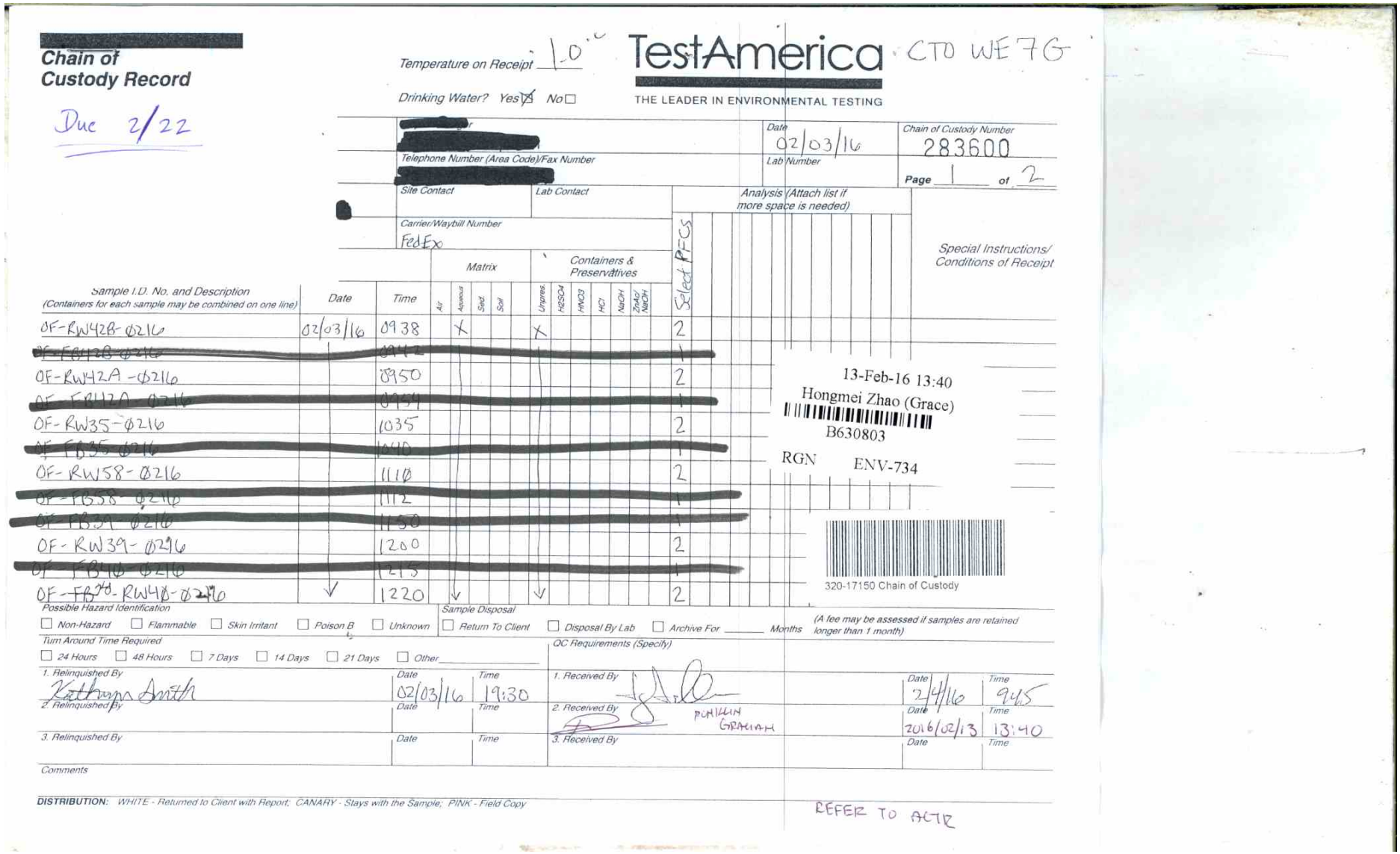
	Date	Time
1. Relinquished By: Kathryn Smith	02/03/16	19:30
2. Relinquished By		
3. Relinquished By		

	Date	Time
1. Received By: [signature]	2/4/16	945
2. Received By		
3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report, CANARY - Stays with the Sample; PINK - Field Copy

3/22/2016



Chain of Custody Record

Due 2/22

Temperature on Receipt 1.0 °C

Drinking Water? Yes ☒ No ☐

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CTO WE76

[redacted]

Telephone Number (Area Code)/Fax Number [redacted]

Site Contact | Lab Contact

Carrier/Waybill Number: FedEx

Date: 02/03/16 | Chain of Custody Number: 283600 | Page 1 of 2

Lab Number

Analysis (Attach list if more space is needed): Select PFCs

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Select PFCs
OF-RW42B-0216	02/03/16	0938		X			X						2
OF-FB42B-0216		0942											1
OF-RW42A-0216		0950											2
OF-FB42A-0216		0954											1
OF-RW35-0216		1035											2
OF-FB35-0216		1040											1
OF-RW58-0216		1110											2
OF-FB58-0216		1112											1
OF-FB39-0216		1150											1
OF-RW39-0216		1200											2
OF-FB40-0216		1215											1
OF-FB40-RW48-0216	↓	1220	↓				↓						2

13-Feb-16 13:40
Hongmei Zhao (Grace)
B630803
RGN ENV-734

320-17150 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

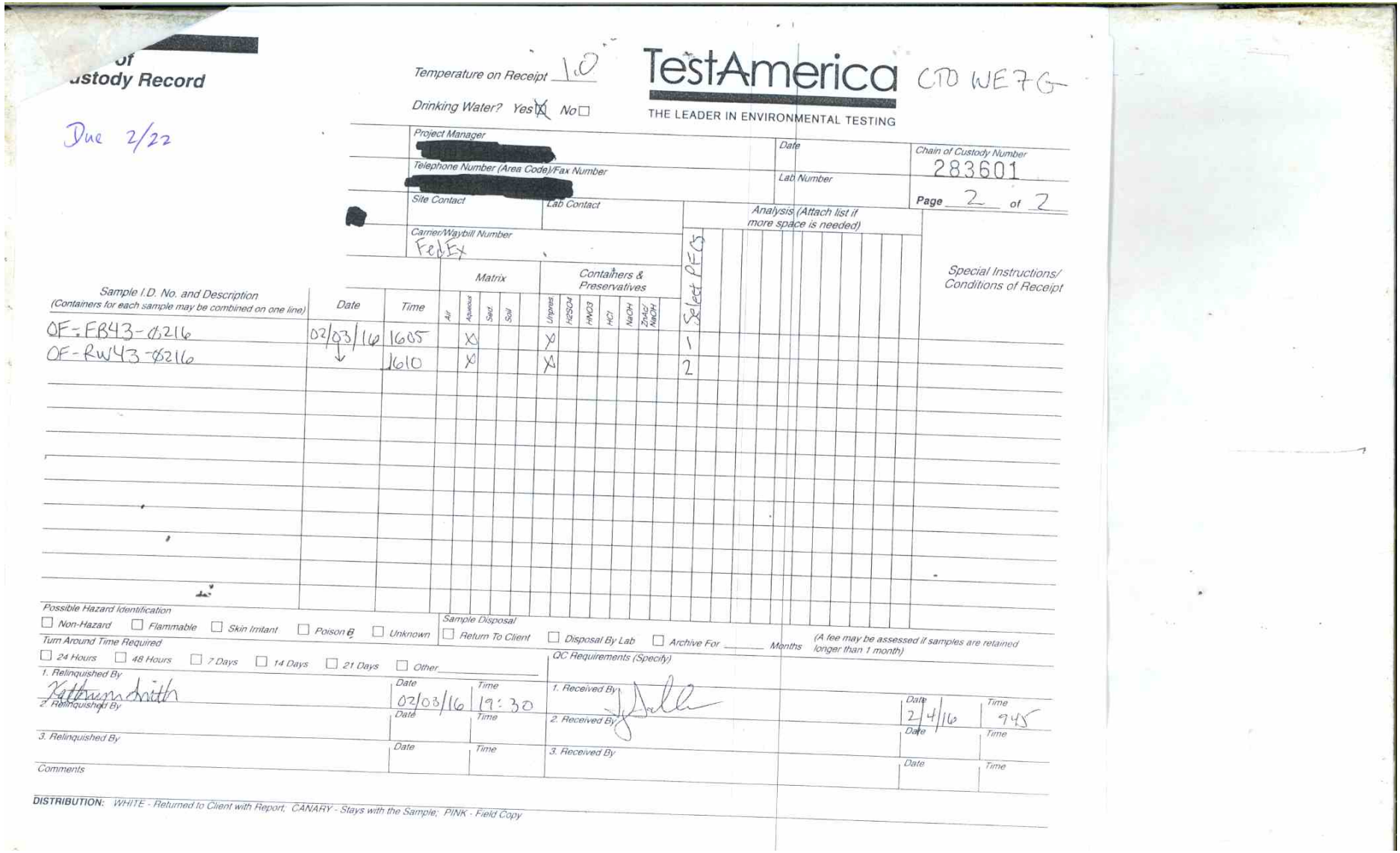
QC Requirements (Specify)

1. Relinquished By: Kathryn Smith	Date: 02/03/16	Time: 19:30	1. Received By: PHILLIN GRAHAM	Date: 2/4/16	Time: 945
2. Relinquished By	Date	Time	2. Received By	Date: 2016/02/13	Time: 13:40
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

REFER TO ACTR

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy



of
ustody Record

Due 2/22

Temperature on Receipt 1.0

Drinking Water? Yes X No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CTO WE76

Project Manager [redacted]

Date

Chain of Custody Number 283601

Telephone Number (Area Code)/Fax Number [redacted]

Lab Number

Page 2 of 2

Site Contact

Lab Contact

Analysis (Attach list if more space is needed)

Carrier/Waybill Number FedEx

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Select PFCs		Special Instructions/ Conditions of Receipt
OF-FB43-05216	02/03/16	1605		X			X						1		
OF-RW43-05216	↓	1610		X			X						2		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By Katherine Smith	02/03/16	19:30	1. Received By		
2. Relinquished By			2. Received By	2/4/16	945
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-17150-1
SDG Number: CTO WE7G PFC Sampling

Login Number: 17150
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

ANALYTICAL REPORT

Job Number: 320-17150-1

SDG Number: CTO WE7G PFC Sampling

Job Description: CTO WE7G PFC Sampling

For:
CH2M Hill, Inc.
5701 Cleveland Street
Suite 200
Virginia Beach, VA 23462

Attention: Laurie George

Approved for release.
Laura Turpen
Project Manager I
3/22/2016 12:50 PM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
03/22/2016
Revision: 1

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

Table of Contents

Table of Contents

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
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.
¤	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, Inc.

Project: CTO WE7G PFC Sampling

Report Number: 320-17150-1

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 West 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 West 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.

Revision
This report was revised March 22, 2016 to include all method blank data for all analytes and to remove the B qualifiers from the LCS/LCSD in batch 100093. No other data has changed as a result of this revision.

RECEIPT
The samples were received on 02/04/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.0 C.

PFC
Samples OF-FB42B-0216 (320-17150-2), OF-FB42A-0216 (320-17150-4), OF-FB35-0216 (320-17150-6), OF-FB58-0216 (320-17150-8), OF-FB39-0216 (320-17150-9), OF-FB40-0216 (320-17150-11) and OF-FB43-0216 (320-17150-13) were analyzed for PFC in accordance with PFC. The samples were prepared on 02/09/2016 and analyzed on 02/20/2016.

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

Organic Prep
Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 320-100093

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

Subcontract Work
PFC: This method was subcontracted to Maxxam Analytics Inc.. The subcontract laboratory certification is different from that of the

facility issuing the final report. Any analytical or quality issues are noted in the subcontract portion of the report.

The DL/LOD/LOQ limits for Maxxam, along with information on the data qualifiers, are included in the narrative (Page 9 of 261 of the subcontract report; page 480 of 736 of the entire report).

The DL/LOD/LOQ for sample OF-RW42B-0216 (320-17150-1) were adjusted by a dilution factor of 10 for PFHxS and PFOA.

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Client Sample ID: OF-RW42B-0216 **Lab Sample ID: 320-17150-1**

No Detections.

Client Sample ID: OF-FB42B-0216 **Lab Sample ID: 320-17150-2**

No Detections.

Client Sample ID: OF-RW42A-0216 **Lab Sample ID: 320-17150-3**

No Detections.

Client Sample ID: OF-FB42A-0216 **Lab Sample ID: 320-17150-4**

No Detections.

Client Sample ID: OF-RW35-0216 **Lab Sample ID: 320-17150-5**

No Detections.

Client Sample ID: OF-FB35-0216 **Lab Sample ID: 320-17150-6**

No Detections.

Client Sample ID: OF-RW58-0216 **Lab Sample ID: 320-17150-7**

No Detections.

Client Sample ID: OF-FB58-0216 **Lab Sample ID: 320-17150-8**

No Detections.

Client Sample ID: OF-FB39-0216 **Lab Sample ID: 320-17150-9**

No Detections.

Client Sample ID: OF-RW39-0216 **Lab Sample ID: 320-17150-10**

No Detections.

Client Sample ID: OF-FB40-0216 **Lab Sample ID: 320-17150-11**

No Detections.

Client Sample ID: OF-RW40-0216 **Lab Sample ID: 320-17150-12**

No Detections.

Client Sample ID: OF-FB43-0216 **Lab Sample ID: 320-17150-13**

No Detections.

Client Sample ID: OF-RW43-0216 **Lab Sample ID: 320-17150-14**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: OF-FB42B-0216

Lab Sample ID: 320-17150-2

Date Collected: 02/03/16 09:42
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00075	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00070	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00086	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0023	0.00082	ug/L		02/09/16 10:23	02/20/16 07:26	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0038	0.0012	ug/L		02/09/16 10:23	02/20/16 07:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*106*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
13C4 PFOA	*110*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
13C5 PFNA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
18O2 PFHxS	*95*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*
13C4 PFOS	*89*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:26*	*1*

Client Sample ID: OF-FB42A-0216

Lab Sample ID: 320-17150-4

Date Collected: 02/03/16 09:54
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00077	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00072	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00063	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00088	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0024	0.00083	ug/L		02/09/16 10:23	02/20/16 07:47	1
Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0038	0.0012	ug/L		02/09/16 10:23	02/20/16 07:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*110*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
13C4 PFOA	*109*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
13C5 PFNA	*114*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
18O2 PFHxS	*96*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*
13C4 PFOS	*94*		*25 - 150*	*02/09/16 10:23*	*02/20/16 07:47*	*1*

Client Sample ID: OF-FB35-0216

Lab Sample ID: 320-17150-6

Date Collected: 02/03/16 10:40
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00075	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00070	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00086	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0023	0.00081	ug/L		02/09/16 10:23	02/20/16 08:09	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 08:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*115*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*
13C4 PFOA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*
13C5 PFNA	*117*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*
18O2 PFHxS	*104*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*

Client Sample ID: OF-FB35-0216

Lab Sample ID: 320-17150-6

Date Collected: 02/03/16 10:40
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*96*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:09*	*1*

Client Sample ID: OF-FB58-0216

Lab Sample ID: 320-17150-8

Date Collected: 02/03/16 11:12
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00085	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		02/09/16 10:23	02/20/16 08:30	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 08:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*113*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
13C4 PFOA	*113*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
13C5 PFNA	*115*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
18O2 PFHxS	*99*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*
13C4 PFOS	*95*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:30*	*1*

Client Sample ID: OF-FB39-0216

Lab Sample ID: 320-17150-9

Date Collected: 02/03/16 11:50
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		02/09/16 10:23	02/20/16 08:51	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 08:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*108*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
13C4 PFOA	*112*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
13C5 PFNA	*113*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
18O2 PFHxS	*98*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*
13C4 PFOS	*91*		*25 - 150*	*02/09/16 10:23*	*02/20/16 08:51*	*1*

Client Sample ID: OF-FB40-0216

Lab Sample ID: 320-17150-11

Date Collected: 02/03/16 12:15
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00072	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00067	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00059	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00083	ug/L		02/09/16 10:23	02/20/16 09:12	1

Client Sample ID: OF-FB40-0216

Lab Sample ID: 320-17150-11

Date Collected: 02/03/16 12:15
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00078	ug/L		02/09/16 10:23	02/20/16 09:12	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0012	ug/L		02/09/16 10:23	02/20/16 09:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
13C4 PFOA	*111*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
13C5 PFNA	*119*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
18O2 PFHxS	*97*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*
13C4 PFOS	*93*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:12*	*1*

Client Sample ID: OF-FB43-0216

Lab Sample ID: 320-17150-13

Date Collected: 02/03/16 16:05
Matrix: Water
Date Received: 02/04/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00074	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00069	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		02/09/16 10:23	02/20/16 09:55	1
Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0012	ug/L		02/09/16 10:23	02/20/16 09:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*117*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
13C4 PFOA	*124*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
13C5 PFNA	*123*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
18O2 PFHxS	*106*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*
13C4 PFOS	*98*		*25 - 150*	*02/09/16 10:23*	*02/20/16 09:55*	*1*

Default Detection Limits

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.0025	0.00092	ug/L	WS-LC-0025
Perfluoroheptanoic acid (PFHpA)	0.0025	0.00080	ug/L	WS-LC-0025
Perfluorohexanesulfonic acid (PFHxS)	0.0025	0.00087	ug/L	WS-LC-0025
Perfluorononanoic acid (PFNA)	0.0025	0.00065	ug/L	WS-LC-0025
Perfluorooctanesulfonic acid (PFOS)	0.0040	0.0013	ug/L	WS-LC-0025
Perfluorooctanoic acid (PFOA)	0.0025	0.00075	ug/L	WS-LC-0025

Isotope Dilution Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C4-PFHp (25-150)	3C4 PFO/ (25-150)	3C5 PFN/ (25-150)	3O2 PFHx (25-150)	3C4 PFOS (25-150)			
320-17150-2	OF-FB42B-0216	106	110	111	95	89			
320-17150-4	OF-FB42A-0216	110	109	114	96	94			
320-17150-6	OF-FB35-0216	115	111	117	104	96			
320-17150-8	OF-FB58-0216	113	113	115	99	95			
320-17150-9	OF-FB39-0216	108	112	113	98	91			
320-17150-11	OF-FB40-0216	111	111	119	97	93			
320-17150-13	OF-FB43-0216	117	124	123	106	98			
LCS 320-100093/2-A	Lab Control Sample	95	95	98	90	82			
LCSD 320-100093/3-A	Lab Control Sample Dup	95	88	91	86	80			
MB 320-100093/1-A	Method Blank	103	101	103	98	92			

Surrogate Legend

13C4-PFHpA = 13C4-PFHpA
13C4 PFOA = 13C4 PFOA
13C5 PFNA = 13C5 PFNA
18O2 PFHxS = 18O2 PFHxS
13C4 PFOS = 13C4 PFOS

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-100093/1-A
Matrix: Water
Analysis Batch: 100906

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 100093

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorohexanesulfonic acid (PFHxS)	0.00344		0.0025	0.00087	ug/L		02/09/16 10:23	02/20/16 06:23	1
Perfluorooctanesulfonic acid (PFOS)	0.00143	J	0.0040	0.0013	ug/L		02/09/16 10:23	02/20/16 06:23	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4-PFHpA	*103*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
13C4 PFOA	*101*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
13C5 PFNA	*103*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
18O2 PFHxS	*98*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*
13C4 PFOS	*92*		*25 - 150*	*02/09/16 10:23*	*02/20/16 06:23*	*1*

Lab Sample ID: LCS 320-100093/2-A
Matrix: Water
Analysis Batch: 100906

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 100093

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0513		ug/L		128	60 - 140
Perfluorooctanoic acid (PFOA)	0.0400	0.0485		ug/L		121	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0537		ug/L		134	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0459		ug/L		130	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0480		ug/L		127	60 - 140
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0515		ug/L		135	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4-PFHpA	*95*		*25 - 150*
13C4 PFOA	*95*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
18O2 PFHxS	*90*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*

Lab Sample ID: LCSD 320-100093/3-A
Matrix: Water
Analysis Batch: 100906

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 100093

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0506		ug/L		126	60 - 140	1	30
Perfluorooctanoic acid (PFOA)	0.0400	0.0493		ug/L		123	60 - 140	2	30
Perfluorononanoic acid (PFNA)	0.0400	0.0517		ug/L		129	60 - 140	4	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0472		ug/L		133	50 - 150	3	30
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0486		ug/L		128	60 - 140	1	30
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0452		ug/L		118	60 - 140	13	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4-PFHpA	95		25 - 150
13C4 PFOA	88		25 - 150
13C5 PFNA	91		25 - 150
18O2 PFHxS	86		25 - 150
13C4 PFOS	80		25 - 150

LCMS

Prep Batch: 100093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17150-2	OF-FB42B-0216	Total/NA	Water	3535	
320-17150-4	OF-FB42A-0216	Total/NA	Water	3535	
320-17150-6	OF-FB35-0216	Total/NA	Water	3535	
320-17150-8	OF-FB58-0216	Total/NA	Water	3535	
320-17150-9	OF-FB39-0216	Total/NA	Water	3535	
320-17150-11	OF-FB40-0216	Total/NA	Water	3535	
320-17150-13	OF-FB43-0216	Total/NA	Water	3535	
LCS 320-100093/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-100093/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-100093/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 100906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17150-2	OF-FB42B-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-4	OF-FB42A-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-6	OF-FB35-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-8	OF-FB58-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-9	OF-FB39-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-11	OF-FB40-0216	Total/NA	Water	WS-LC-0025	100093
320-17150-13	OF-FB43-0216	Total/NA	Water	WS-LC-0025	100093
LCS 320-100093/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	100093
LCSD 320-100093/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	100093
MB 320-100093/1-A	Method Blank	Total/NA	Water	WS-LC-0025	100093

Client Sample ID: OF-FB42B-0216
Lab Sample ID: 320-17150-2
Date Collected: 02/03/16 09:42
Matrix: Water
Date Received: 02/04/16 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 07:26	JRB	TAL SAC

Client Sample ID: OF-FB42A-0216
Lab Sample ID: 320-17150-4
Date Collected: 02/03/16 09:54
Matrix: Water
Date Received: 02/04/16 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 07:47	JRB	TAL SAC

Client Sample ID: OF-FB35-0216
Lab Sample ID: 320-17150-6
Date Collected: 02/03/16 10:40
Matrix: Water
Date Received: 02/04/16 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 08:09	JRB	TAL SAC

Client Sample ID: OF-FB58-0216
Lab Sample ID: 320-17150-8
Date Collected: 02/03/16 11:12
Matrix: Water
Date Received: 02/04/16 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 08:30	JRB	TAL SAC

Client Sample ID: OF-FB39-0216
Lab Sample ID: 320-17150-9
Date Collected: 02/03/16 11:50
Matrix: Water
Date Received: 02/04/16 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 08:51	JRB	TAL SAC

Client Sample ID: OF-FB40-0216
Lab Sample ID: 320-17150-11
Date Collected: 02/03/16 12:15
Matrix: Water
Date Received: 02/04/16 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 09:12	JRB	TAL SAC

Client Sample ID: OF-FB43-0216

Date Collected: 02/03/16 16:05
Date Received: 02/04/16 09:45

Lab Sample ID: 320-17150-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			100093	02/09/16 10:23	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	100906	02/20/16 09:55	JRB	TAL SAC

Laboratory References:

Maxxam = Maxxam Analytics Inc., PO BOX 57437, Postal Station A, Toronto, Ontario M5W 5M5

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

Certification Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Oregon	NELAP	10	CA200005	01-29-17

The following analytes are included in this report, but are not certified under this certification:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025	3535	Water	Perfluoroheptanoic acid (PFHpA)
WS-LC-0025	3535	Water	Perfluorononanoic acid (PFNA)
WS-LC-0025	3535	Water	Perfluorooctanoic acid (PFOA)

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025	3535	Water	Perfluorobutanesulfonic acid (PFBS)
WS-LC-0025	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
WS-LC-0025	3535	Water	Perfluorooctanesulfonic acid (PFOS)

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
Oregon	NELAP	10	4025	01-09-17

Method Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC
PFOA - PFOA	PFOA	NONE	Maxxam

Protocol References:

NONE = NONE

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

Maxxam = Maxxam Analytics Inc., PO BOX 57437, Postal Station A, Toronto, Ontario M5W 5M5

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

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: CTO WE7G PFC Sampling

TestAmerica Job ID: 320-17150-1
SDG: CTO WE7G PFC Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-17150-1	OF-RW42B-0216	Water	02/03/16 09:38	02/04/16 09:45
320-17150-2	OF-FB42B-0216	Water	02/03/16 09:42	02/04/16 09:45
320-17150-3	OF-RW42A-0216	Water	02/03/16 09:50	02/04/16 09:45
320-17150-4	OF-FB42A-0216	Water	02/03/16 09:54	02/04/16 09:45
320-17150-5	OF-RW35-0216	Water	02/03/16 10:35	02/04/16 09:45
320-17150-6	OF-FB35-0216	Water	02/03/16 10:40	02/04/16 09:45
320-17150-7	OF-RW58-0216	Water	02/03/16 11:10	02/04/16 09:45
320-17150-8	OF-FB58-0216	Water	02/03/16 11:12	02/04/16 09:45
320-17150-9	OF-FB39-0216	Water	02/03/16 11:50	02/04/16 09:45
320-17150-10	OF-RW39-0216	Water	02/03/16 12:00	02/04/16 09:45
320-17150-11	OF-FB40-0216	Water	02/03/16 12:15	02/04/16 09:45
320-17150-12	OF-RW40-0216	Water	02/03/16 12:20	02/04/16 09:45
320-17150-13	OF-FB43-0216	Water	02/03/16 16:05	02/04/16 09:45
320-17150-14	OF-RW43-0216	Water	02/03/16 16:10	02/04/16 09:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Instrument ID: A4 Analysis Batch Number: 100305

Lab Sample ID: STD 320-100305/3 IC Client Sample ID:

Date Analyzed: 02/12/16 10:56 Lab File ID: 12FEB2016A4A_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	5.69	Baseline	westendorfc	02/15/16 08:14
Perfluorooctanesulfonic acid (PFOS)	11.58	Baseline	westendorfc	02/15/16 08:20
Perfluorononanoic acid (PFNA)	11.60	Baseline	westendorfc	02/15/16 08:20

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00025	07/29/16	01/29/16	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00003	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.1 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.1 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.1 mL	13C2 PFUnA	1 ug/mL
.LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00018	06/29/16	12/30/15	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.473 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctandecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.478 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00019	06/29/16	01/08/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.946 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctandecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.956 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.73 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctandecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.78 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00017	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.92 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctandecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.12 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.3 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctandecanoic acid	50 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	47.8 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L6_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	400 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	189.2 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctandecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	191.2 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	800 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL
							Perfluorododecanoic acid	400 ng/mL
							Perfluorodecane Sulfonic acid	385.6 ng/mL
							Perfluoroheptanoic acid (PFHpA)	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	378.4 ng/mL
							Perfluorononanoic acid (PFNA)	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctandecanoic acid	400 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	382.4 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFCIC_00016	06/16/16	12/22/15	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00023	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00008	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00023	06/21/16	12/21/15	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00002	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.1 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.1 mL	13C8 FOSA	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00005	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00003	0.1 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00006	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00004	0.1 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00002	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00005	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00006	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00004	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00008	06/20/19	Wellington Laboratories, Lot PFACMXB0614			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS_00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00005	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS_00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
.LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
.LCPFDS_00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
.LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00005	01/28/19	Wellington Laboratories, Lot LPFHpS0114			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
.LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS_00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
.LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
.LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
.LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
.LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFPeS_00002	07/04/17	Wellington Laboratories, Lot LPFPeS0712			(Purchased Reagent)		PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LCM2PFHxDA_00002

Rec: 8/14/14 SKV

Scanned: 8/18/14 STV

318141
ID: LCM2PFHxDA_00002
Exp: 11/29/17 Prpd: SKV
13C2-PFHxDA at 50ug/mL

WELLINGTON LABORATORIES

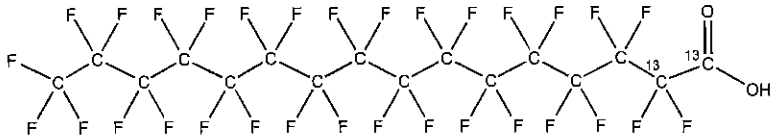
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFHxDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

LOT NUMBER: M2PFHxDA1112

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	11/29/2012		
EXPIRY DATE: (mm/dd/yyyy)	11/29/2017		
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.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/10/2013 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

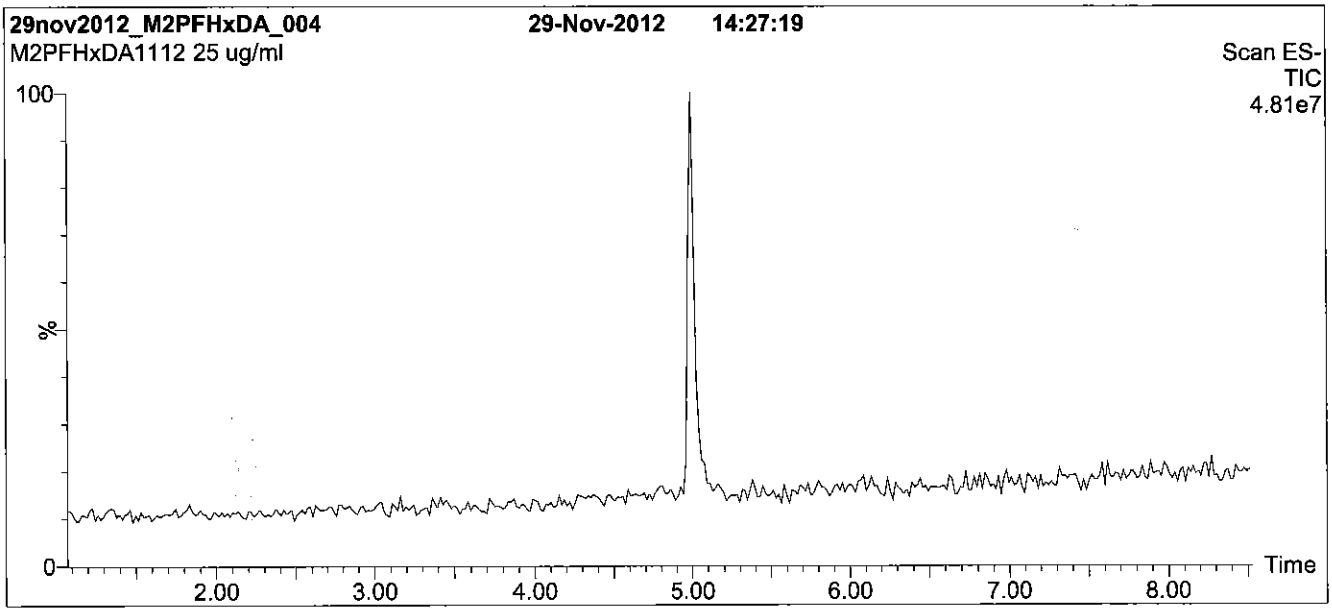
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

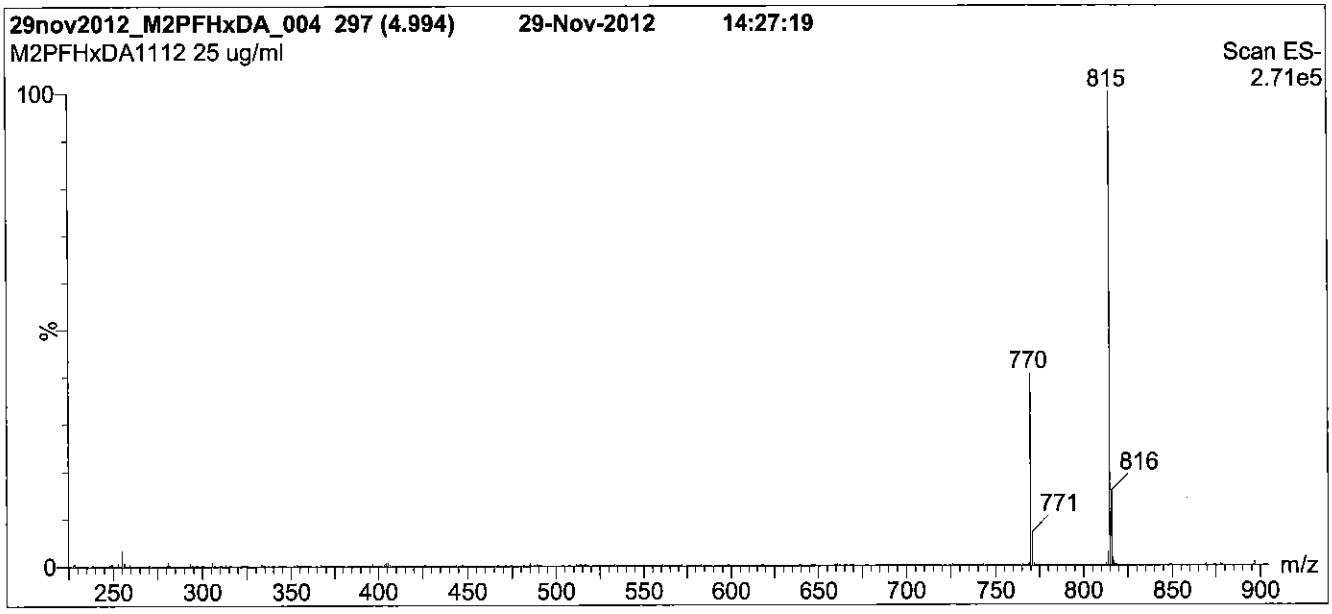
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

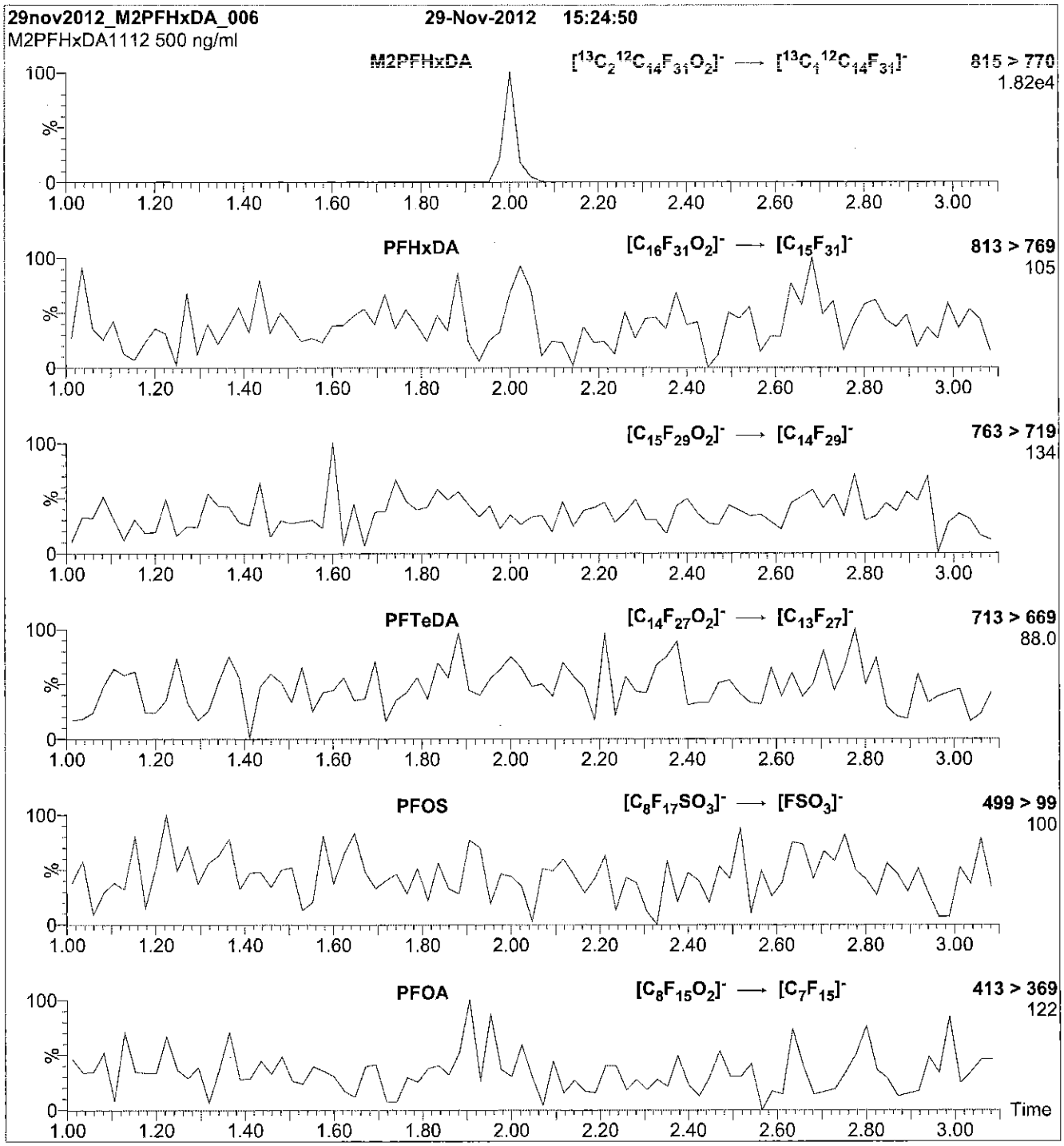
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFHxDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFHxDA_00003

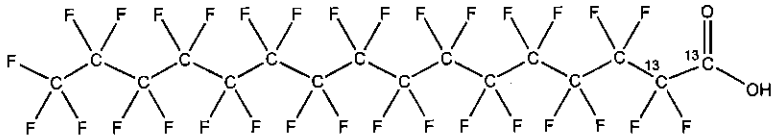
r: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA
LOT NUMBER: M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{14}HF_{31}O_2$
MOLECULAR WEIGHT: 816.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 11/29/2012
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017
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.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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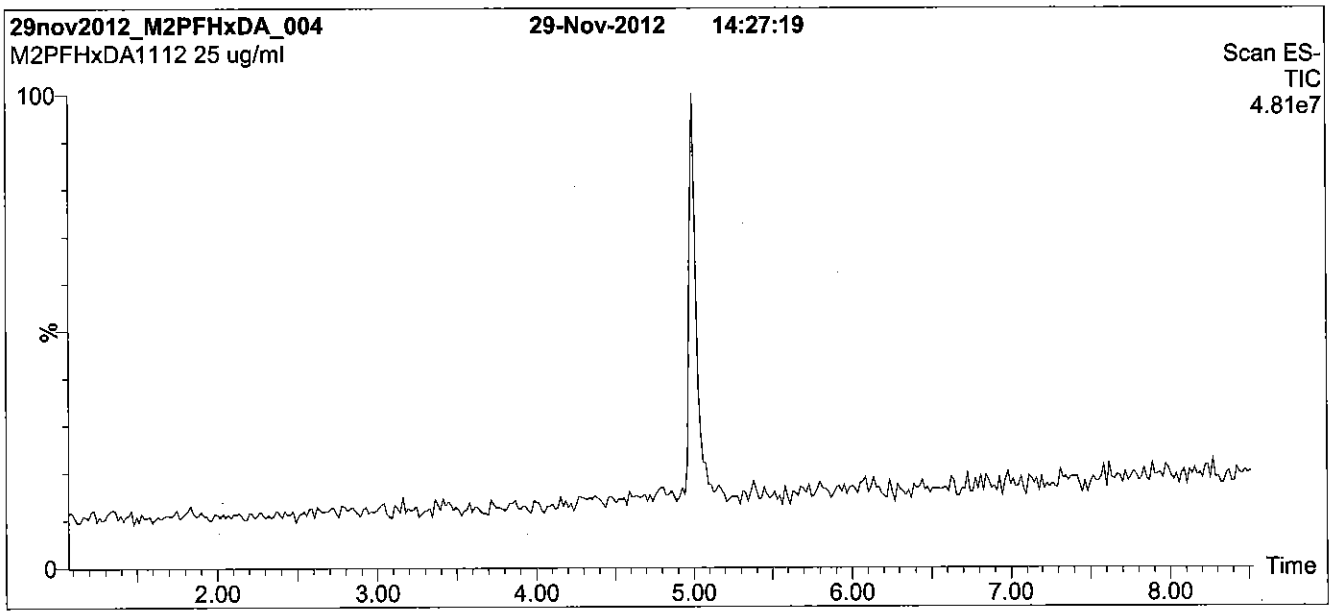

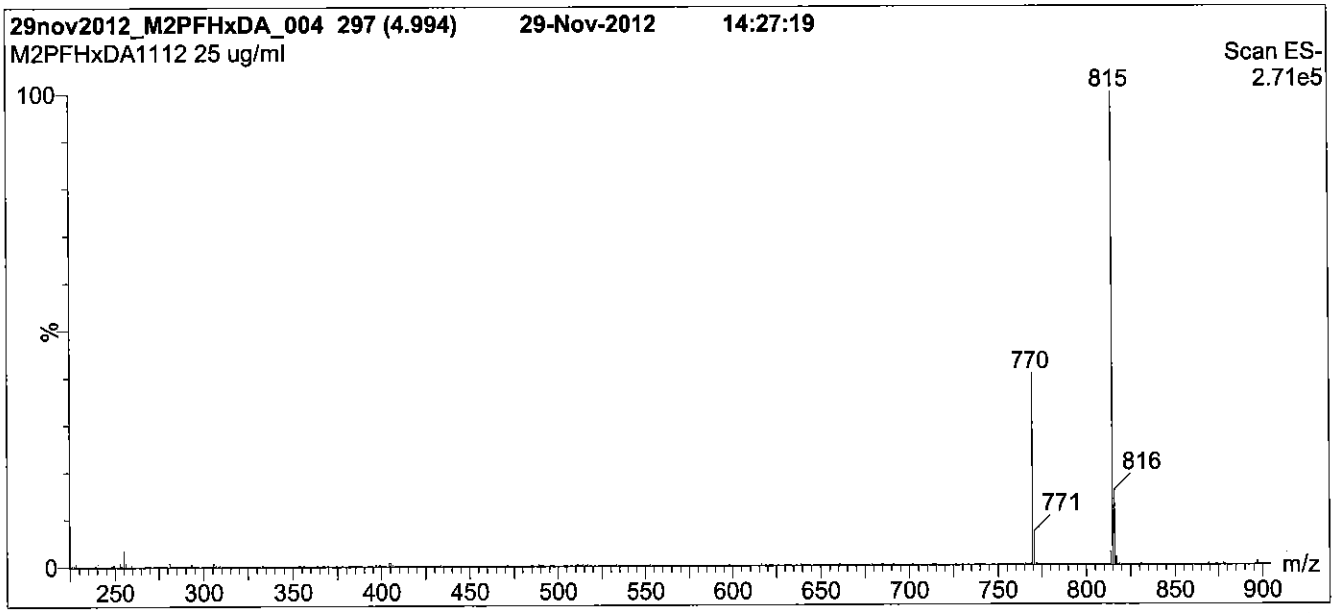

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LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

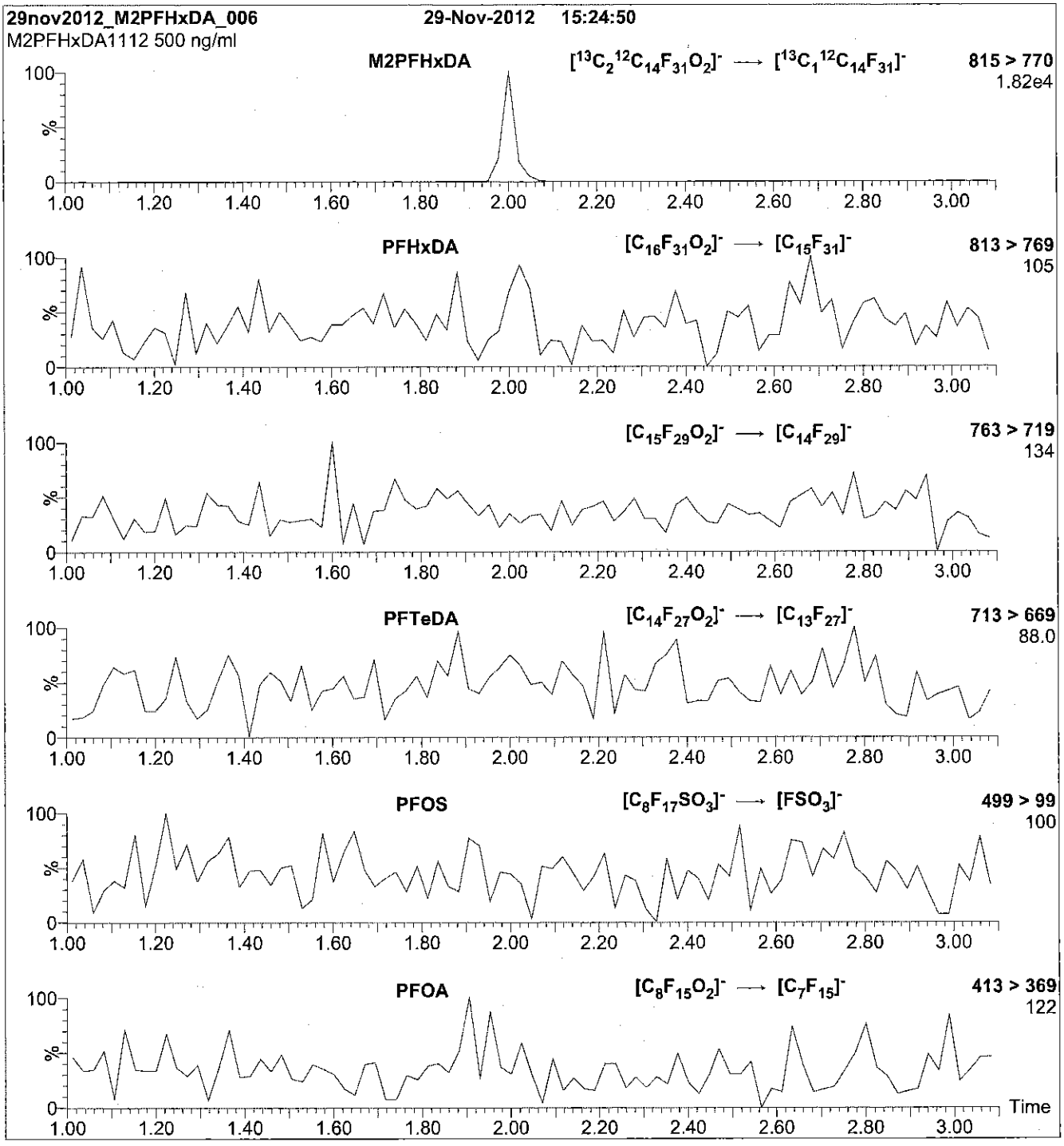
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFHxDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFTeDA_00003

WELLINGTON LABORATORIES

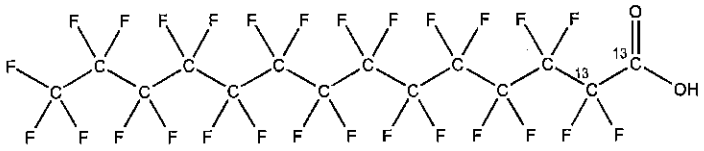
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid

LOT NUMBER: M2PFTeDA1112

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	11/29/2012		
EXPIRY DATE: (mm/dd/yyyy)	11/29/2017		
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:** 04/01/2015 (mm/dd/yyyy)

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

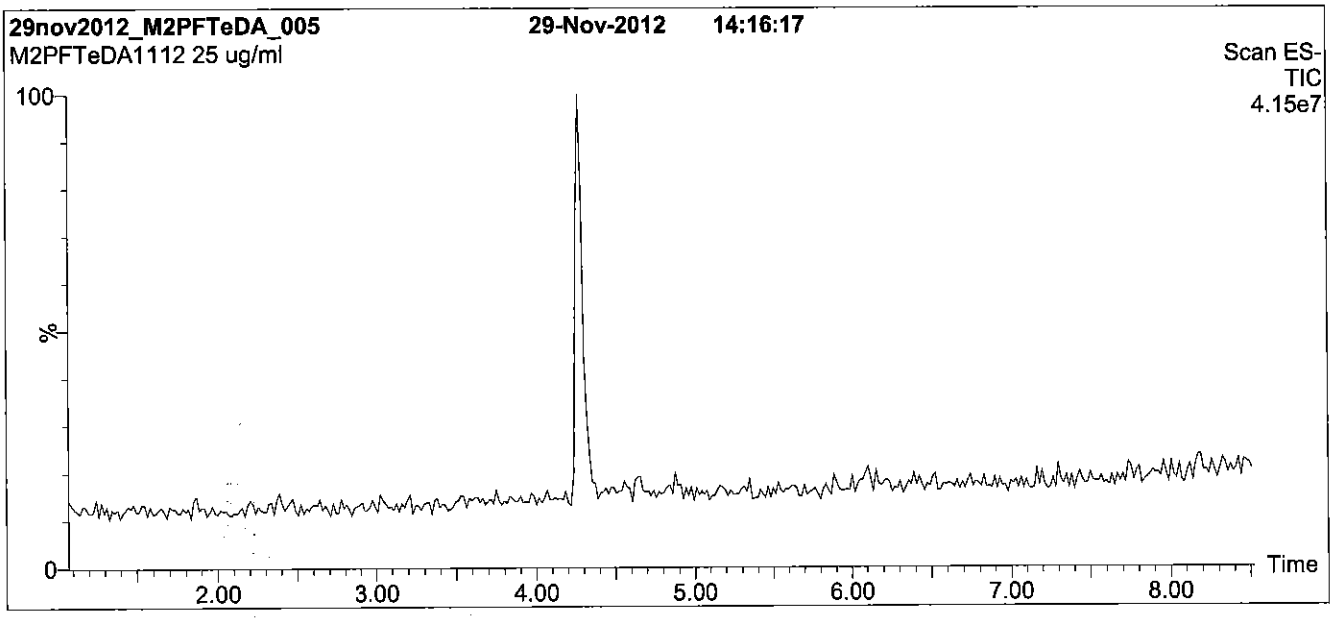
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

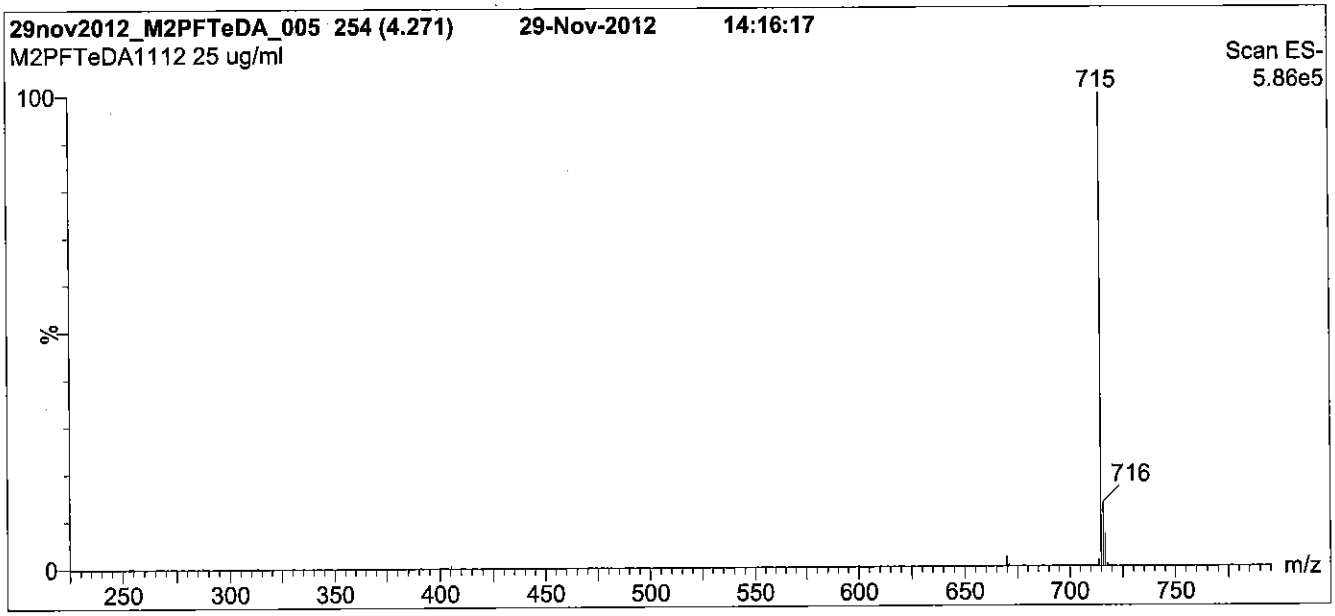
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

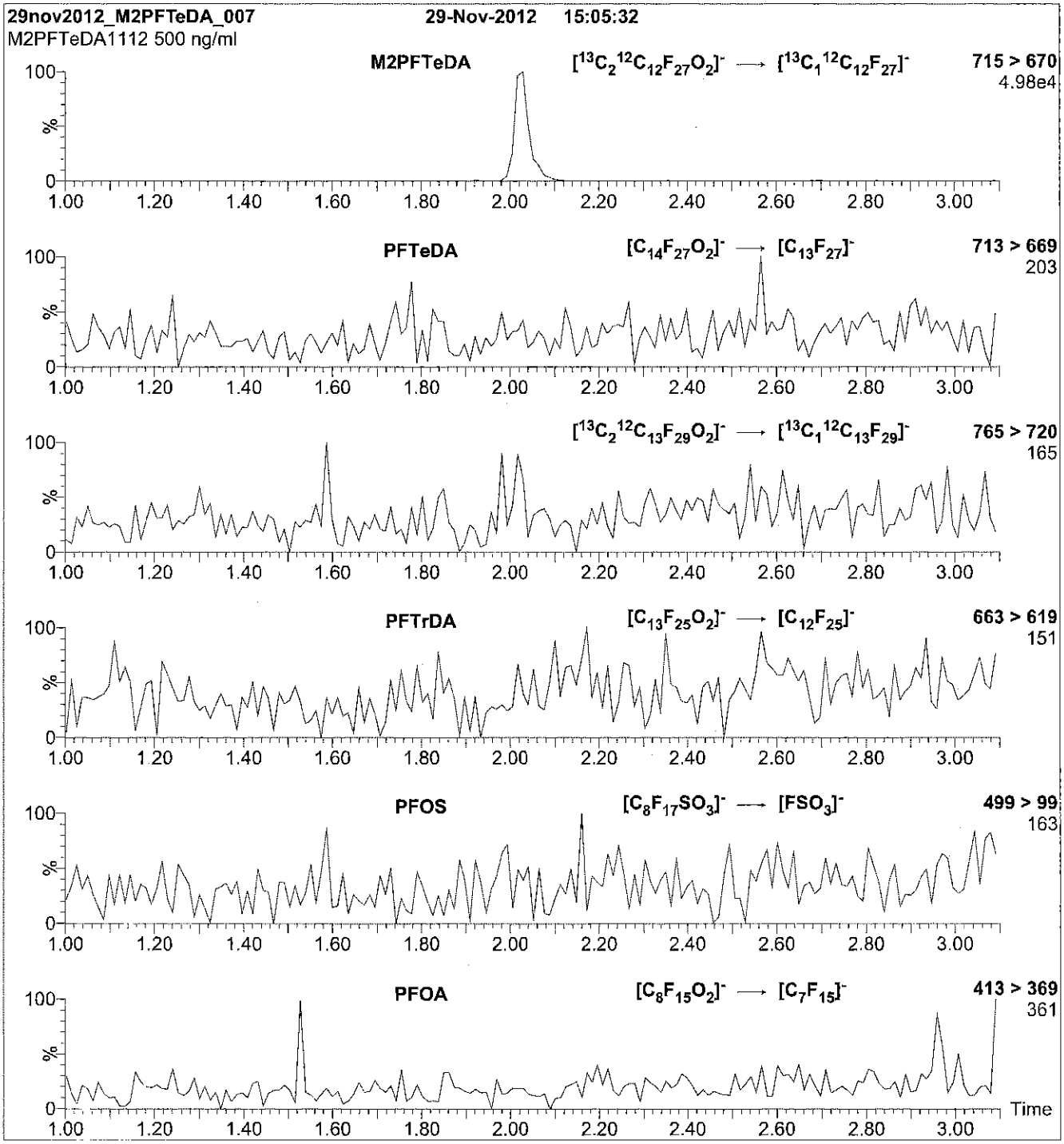
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFTeDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00003

r: 11/10/15 SEV

WELLINGTON LABORATORIES

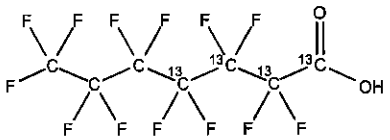
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

LOT NUMBER: M4PFHpA0515

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_3HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/22/2015
EXPIRY DATE: (mm/dd/yyyy) 05/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)

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:** 05/25/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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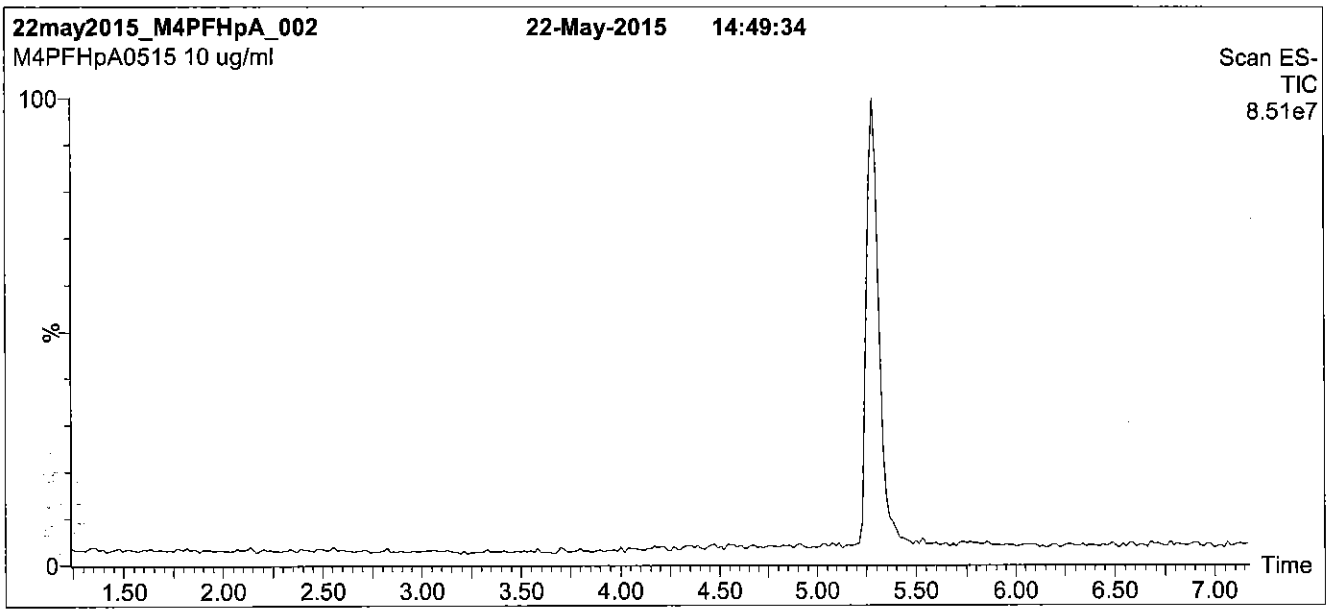
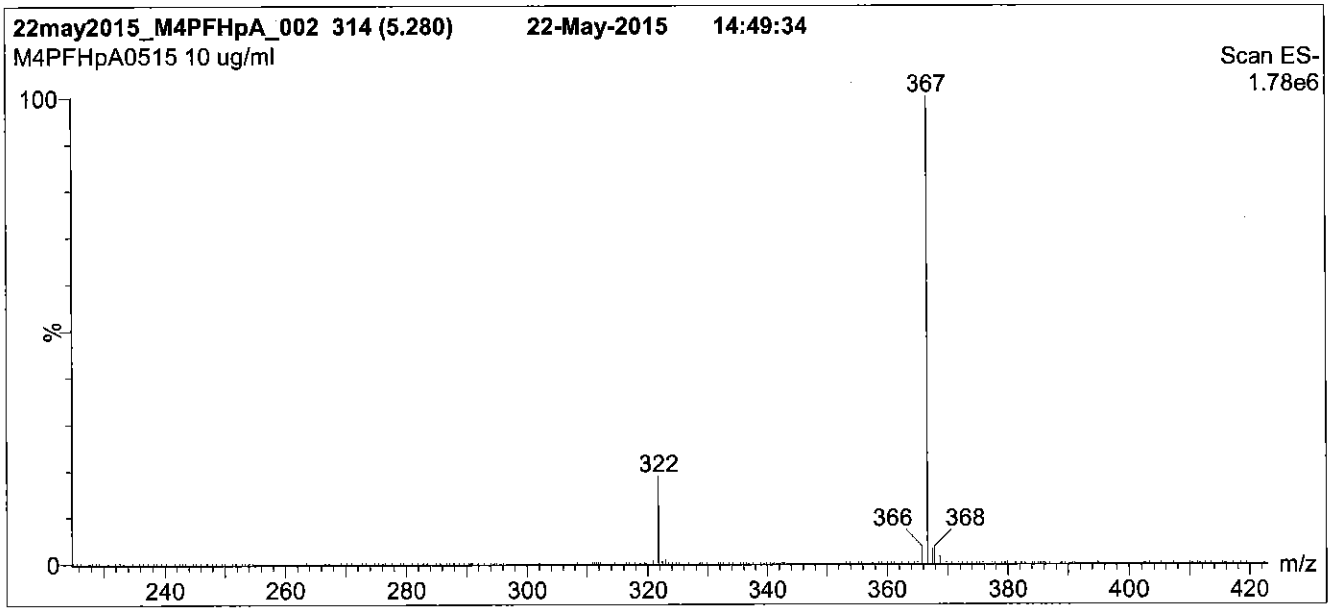
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

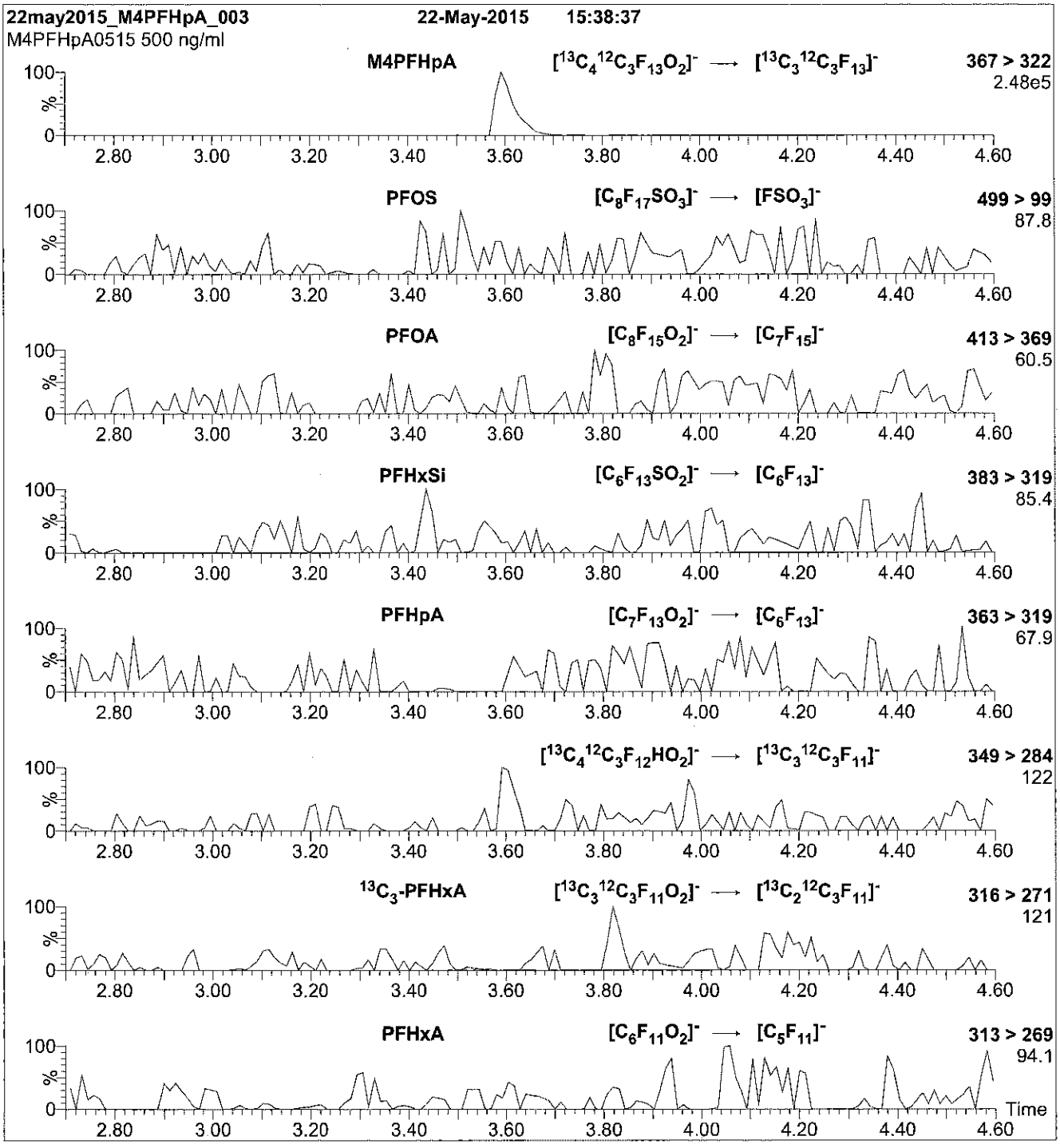
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M4PFHpA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCM5PFPEA_00004

V1 11/10/15 SRA

WELLINGTON LABORATORIES

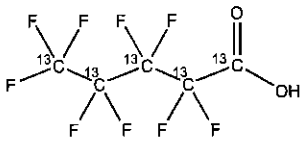
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0515

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_5HF_9O_2$	**MOLECULAR WEIGHT:**	269.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	05/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/22/2020		
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-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/25/2015 (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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CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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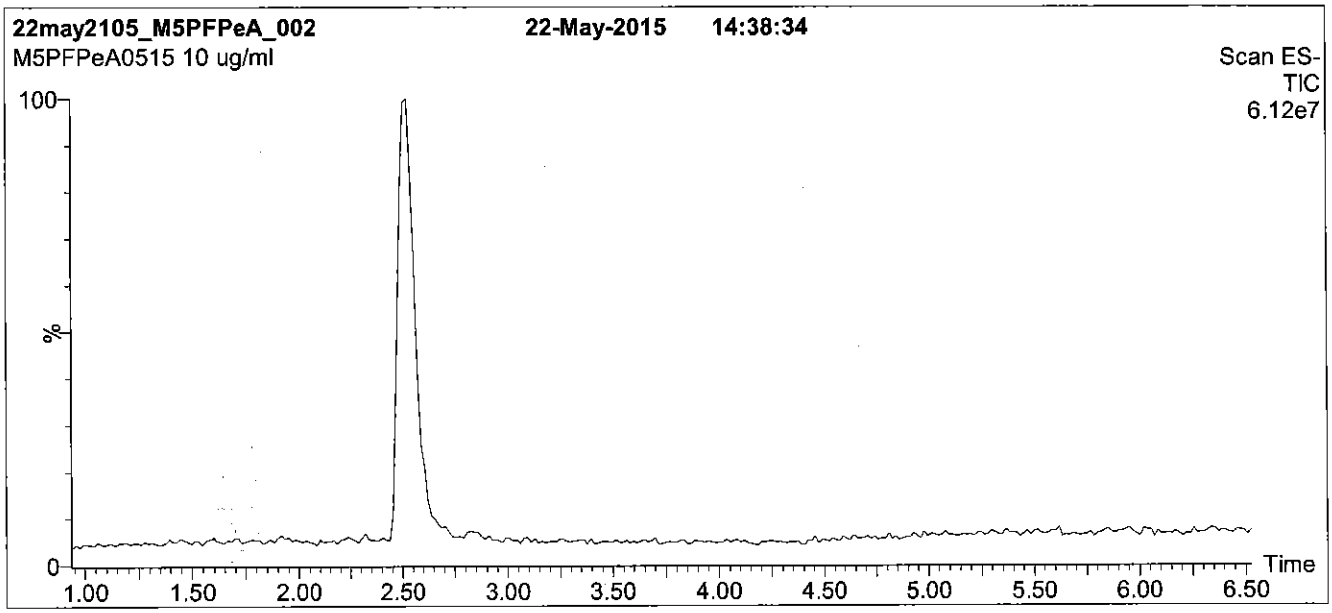
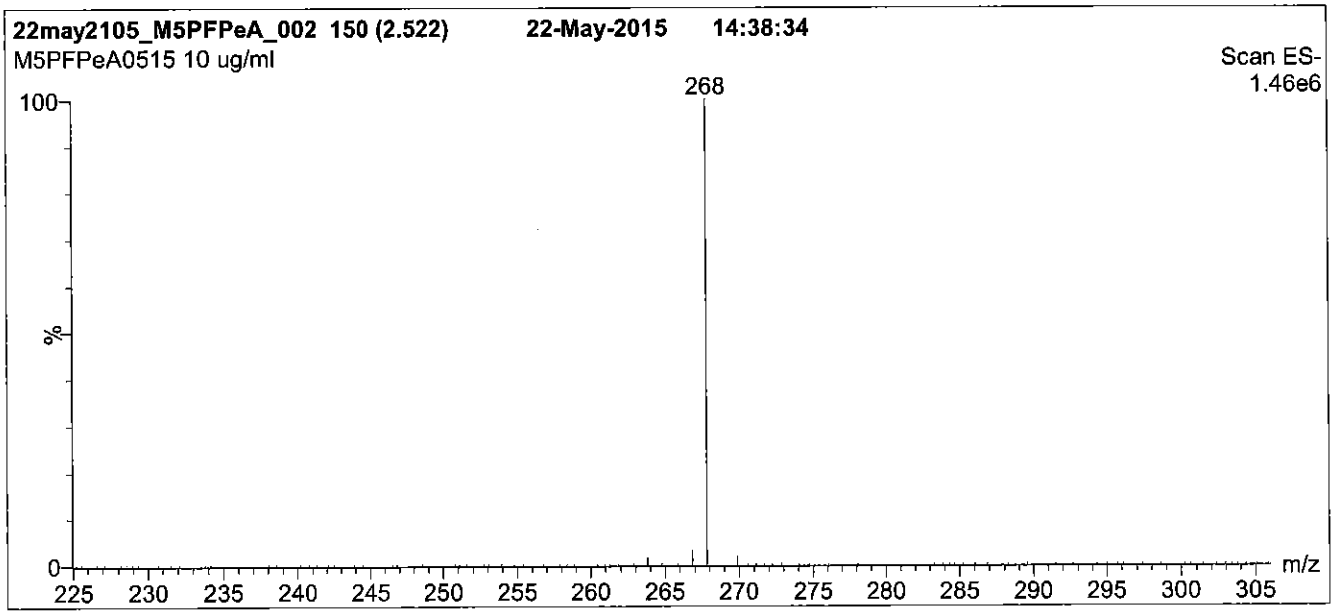
Figure 1: **M5PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

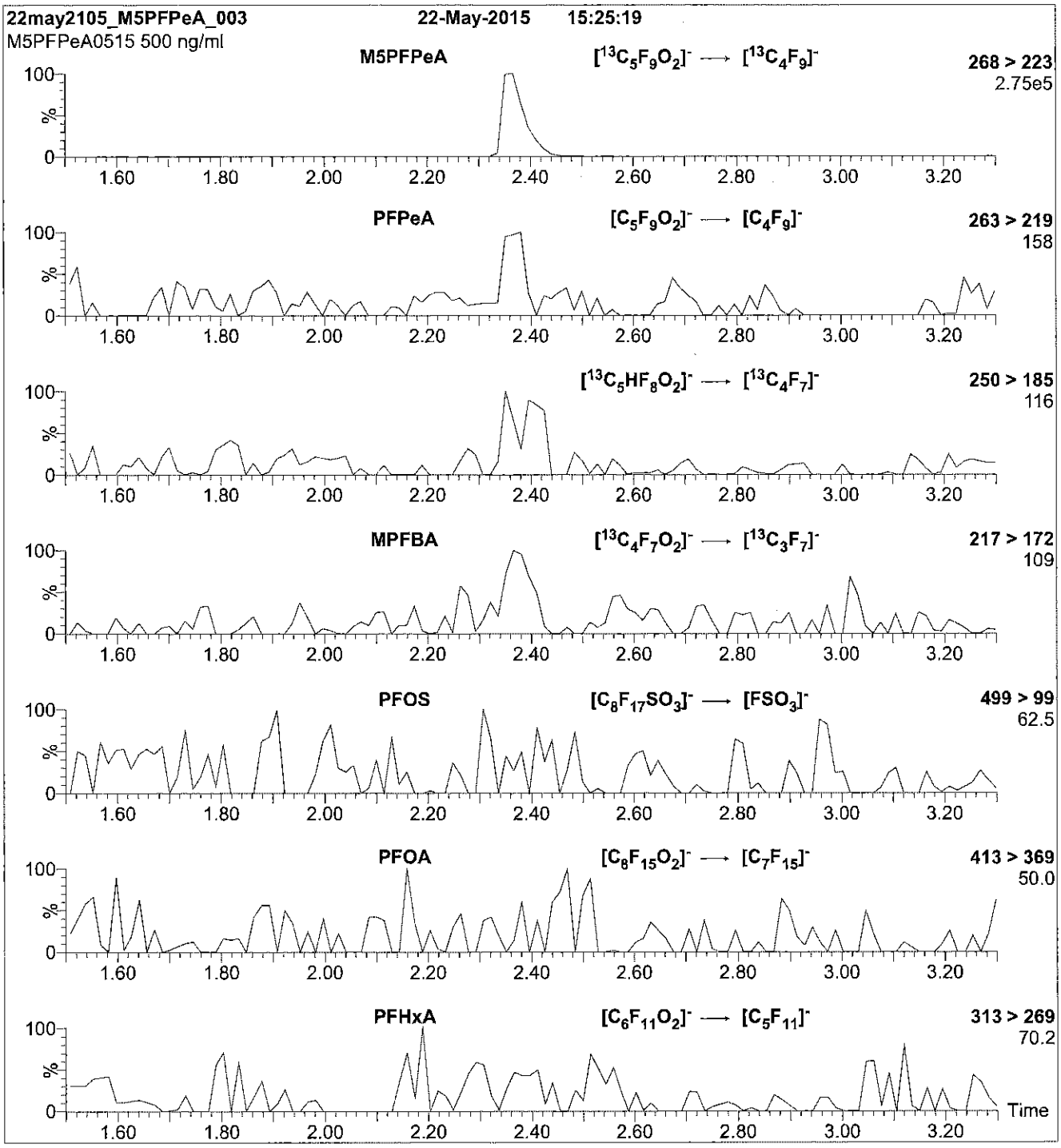
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M5PFPeA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00006

Rec: 9/15/15 SV

WELLINGTON LABORATORIES

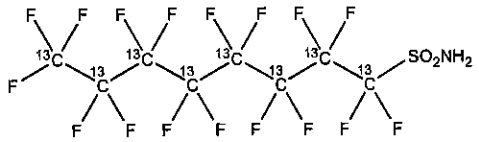
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

LOT NUMBER: M8FOSA1214I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	12/15/2014		
EXPIRY DATE: (mm/dd/yyyy)	12/15/2016		
RECOMMENDED STORAGE:	Refrigerate ampoule		

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.

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Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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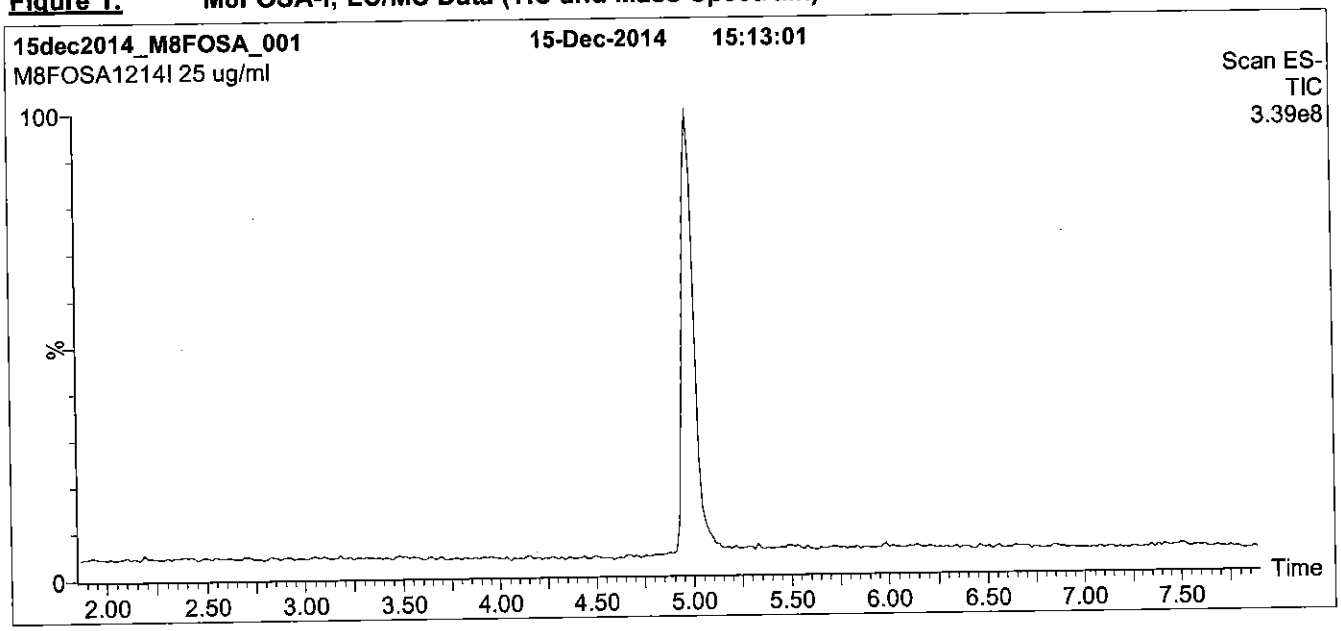
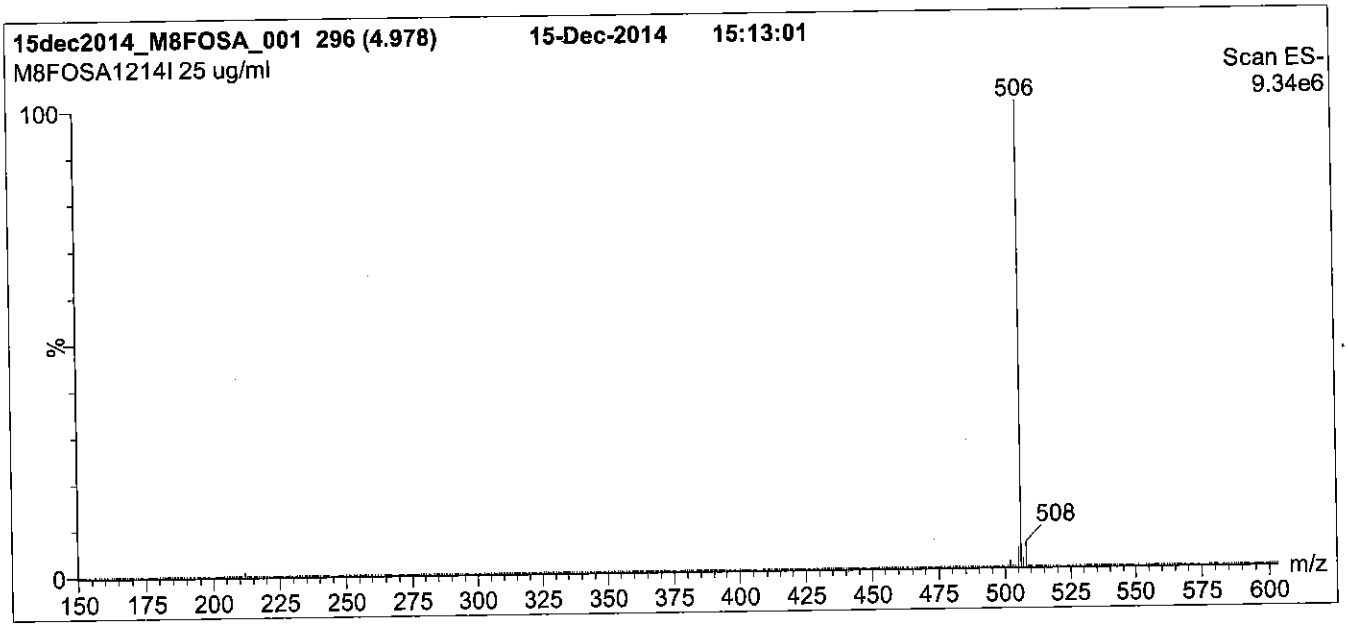
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Condltions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

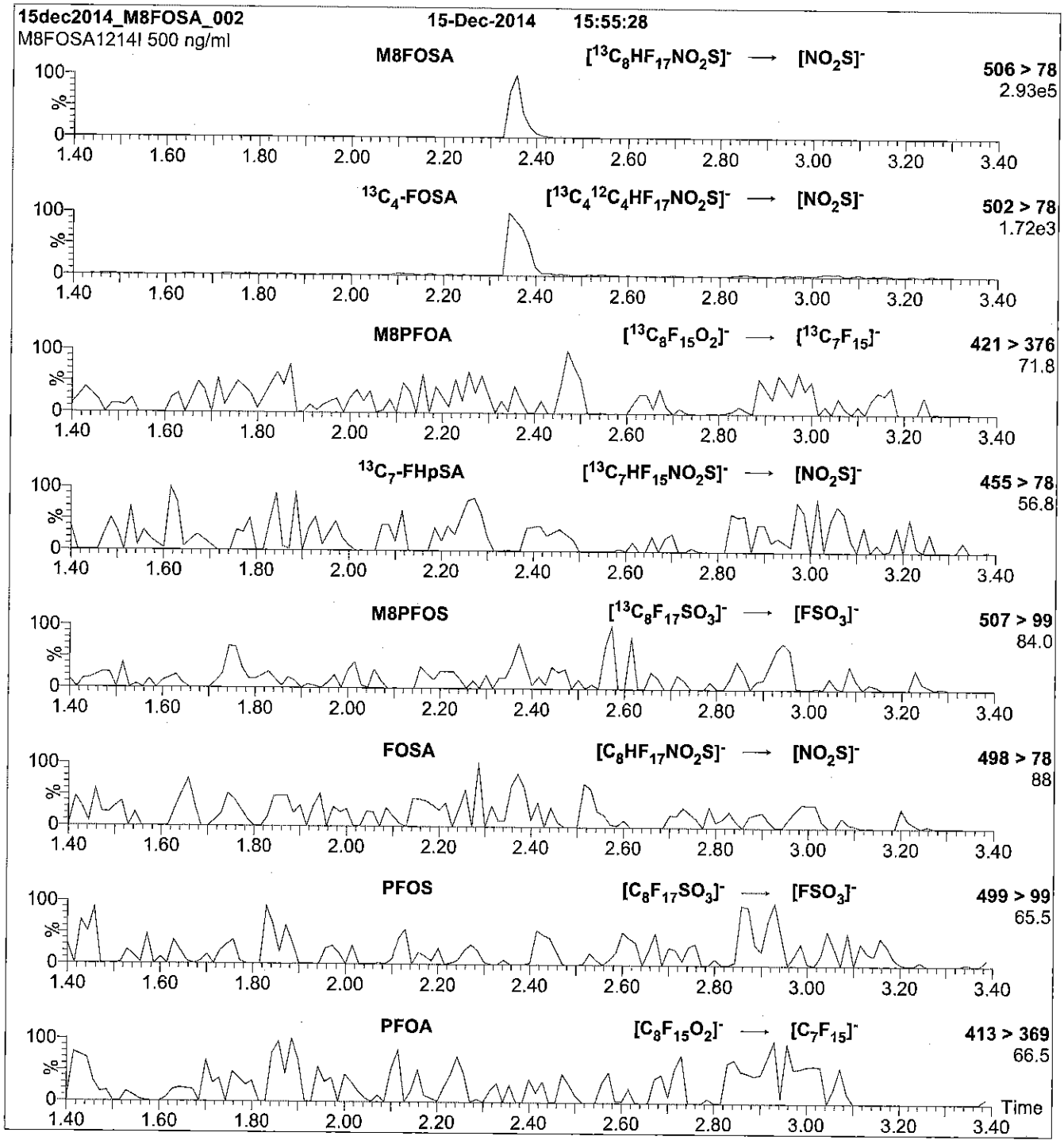
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Form#:27, Issued 2004-11-10
Revision#:3, Revised 2015-03-24

Figure 2: **M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00004

R: 12/9/15 SEJ

WELLINGTON LABORATORIES

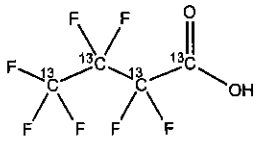
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid

LOT NUMBER: MPFBA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	10/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/31/2019		
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:** 03/31/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

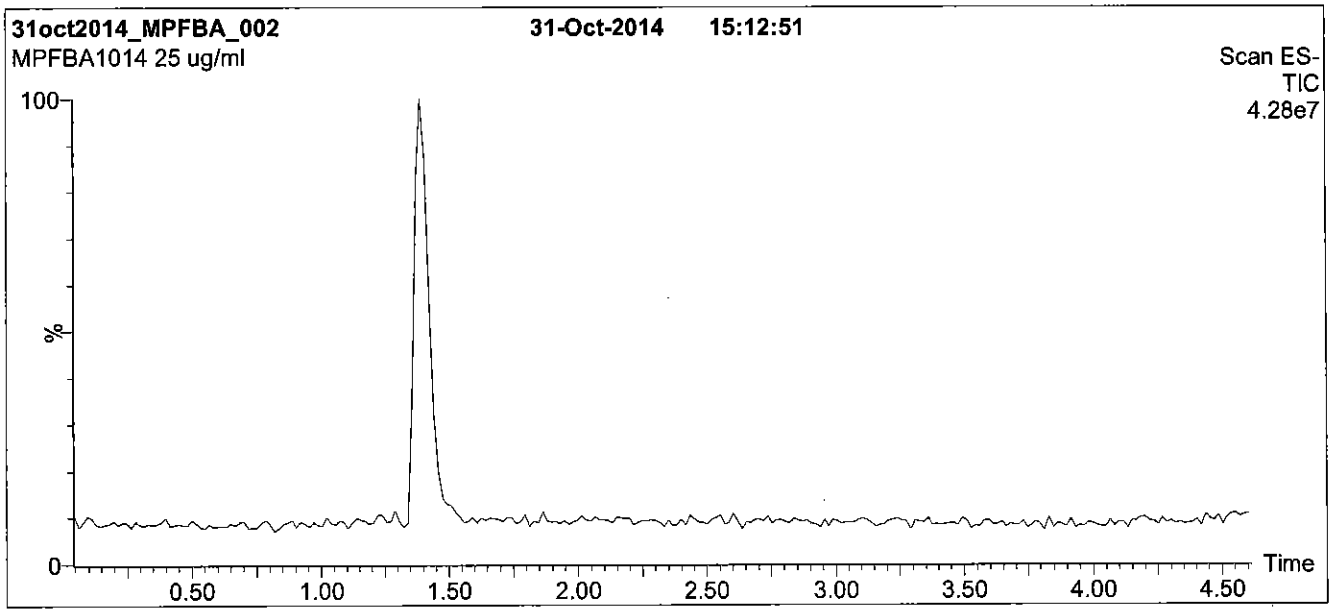
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

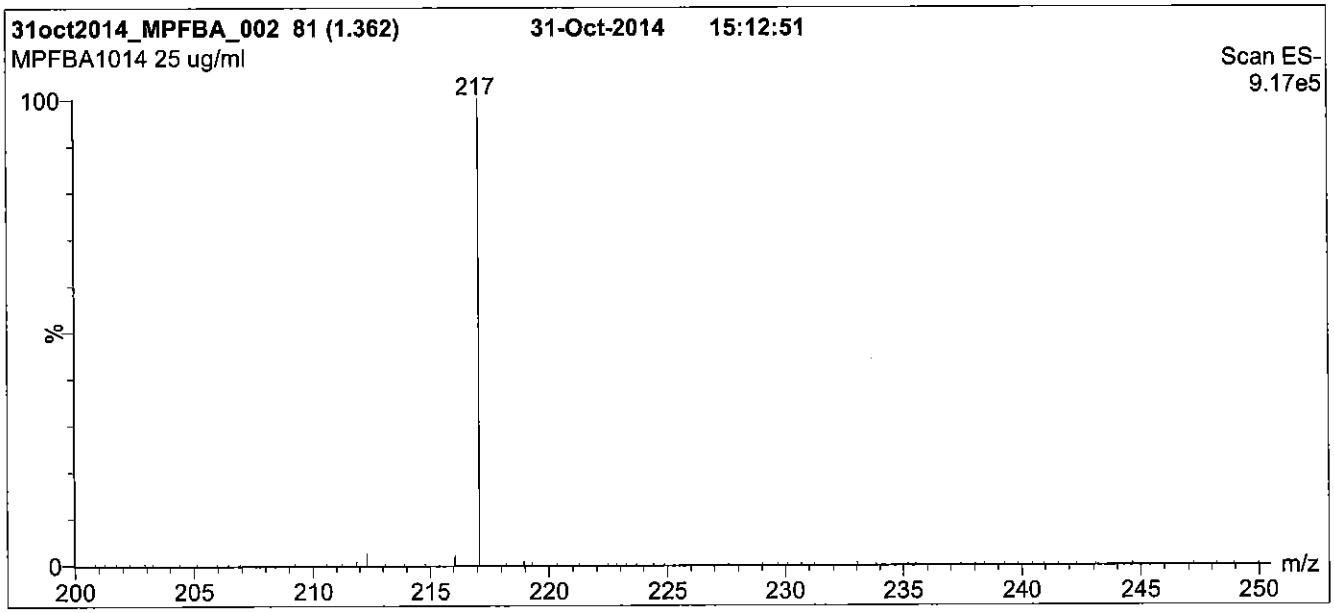
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

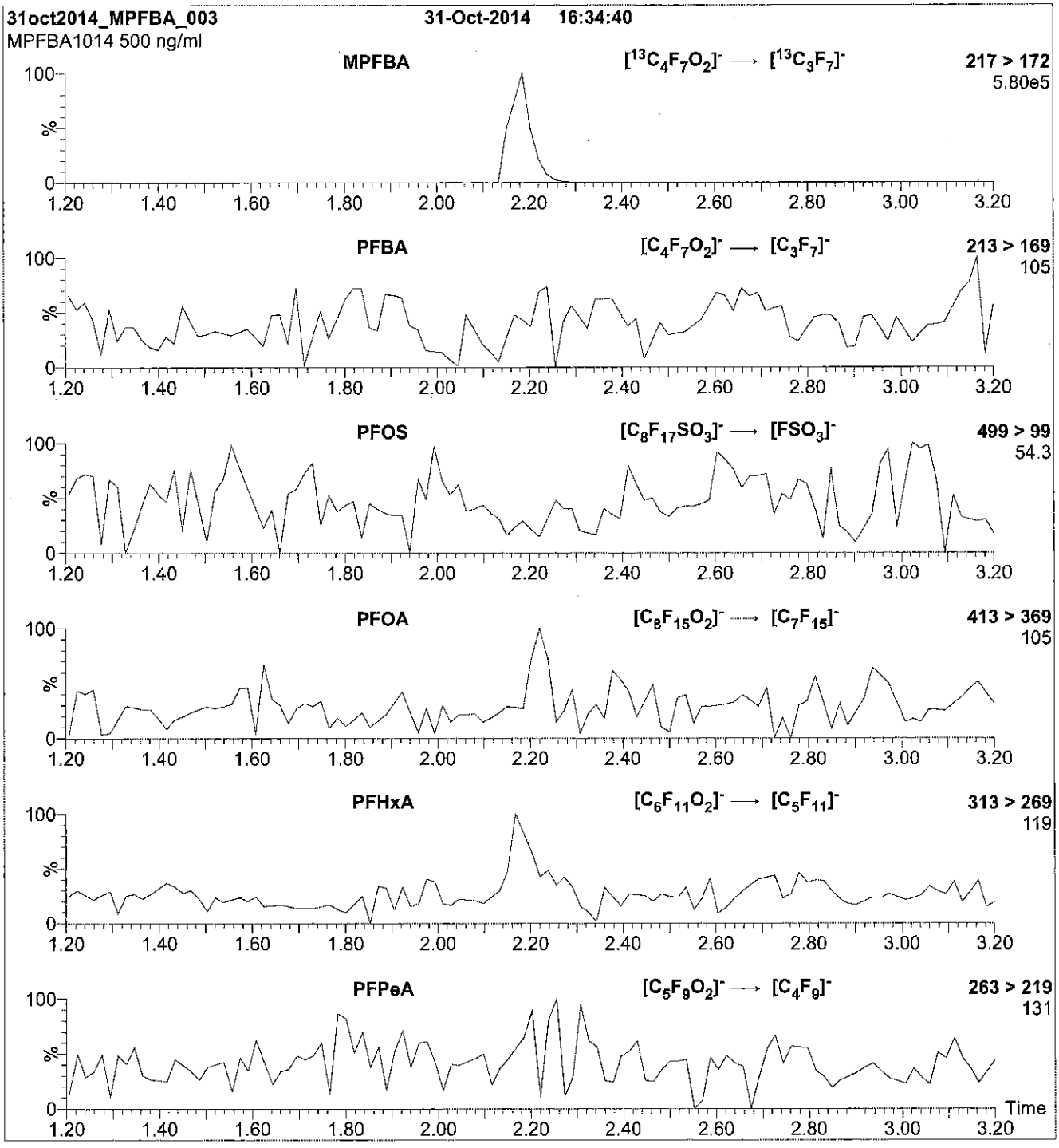
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00004

R: 10-20-2011 (was 2012)

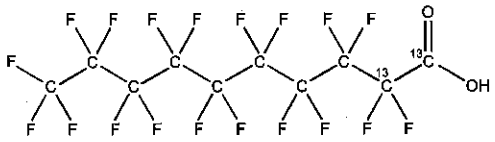
Rec. 10-20-2011

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

12LCMS0262
LCMPFDA_00001

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0411
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/07/2011		
EXPIRY DATE: (mm/dd/yyyy)	04/07/2014		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/19/2011 (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

Form#:27, Issued 2004-11-10
Revision#:1, Revised 2010-07-26

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:

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SYNTHESIS / CHARACTERIZATION:

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EXPIRY DATE / PERIOD OF VALIDITY:

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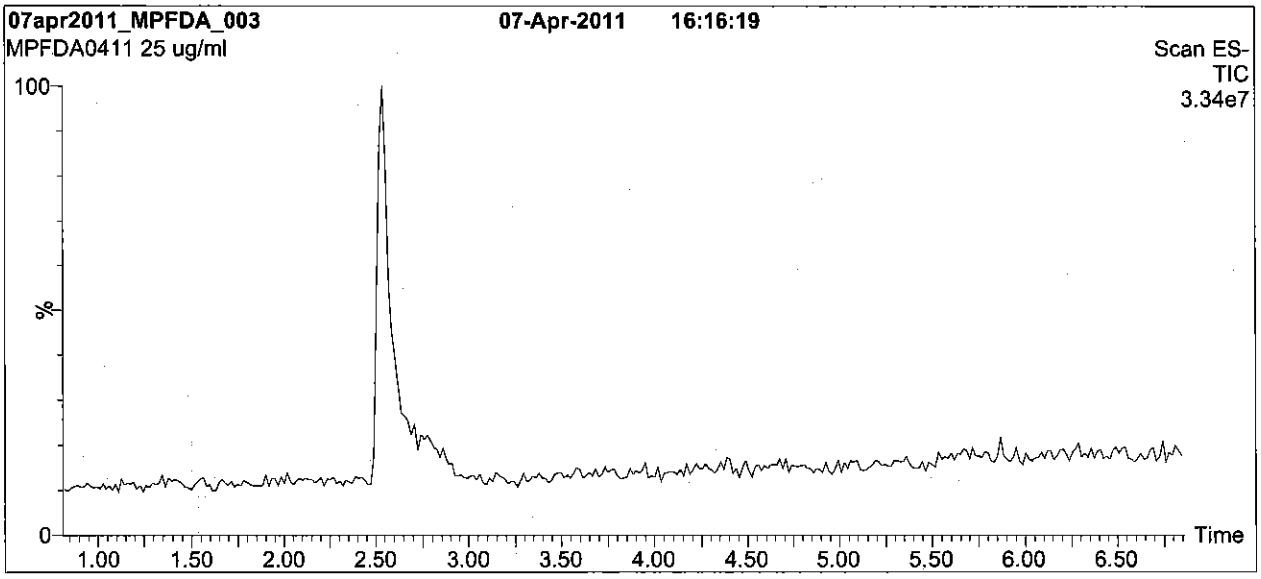
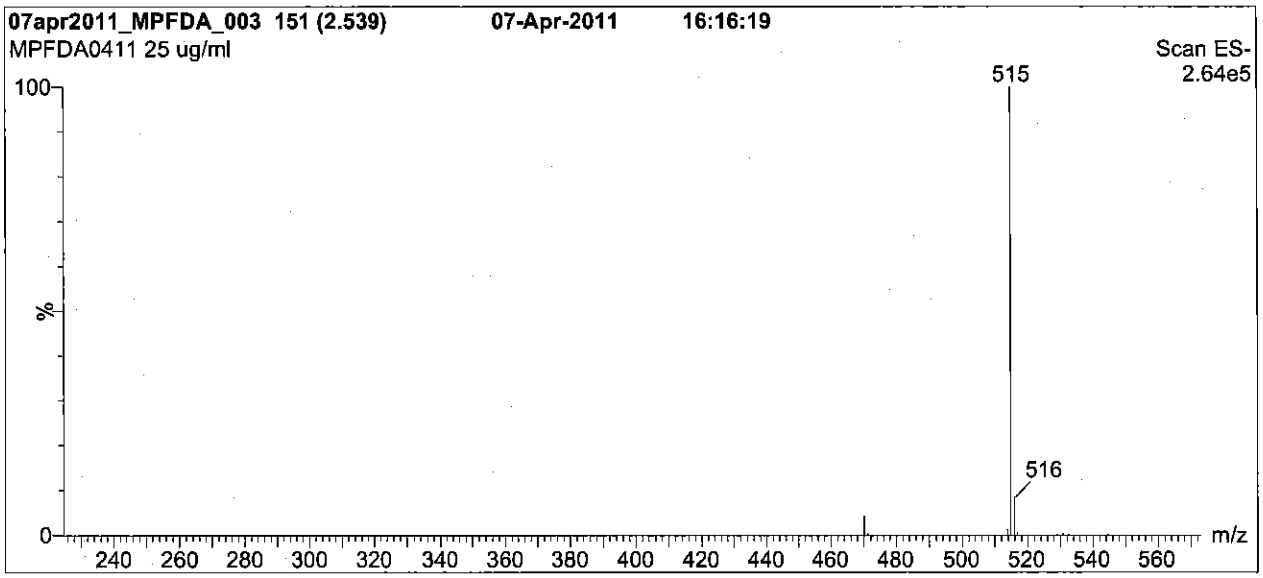




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

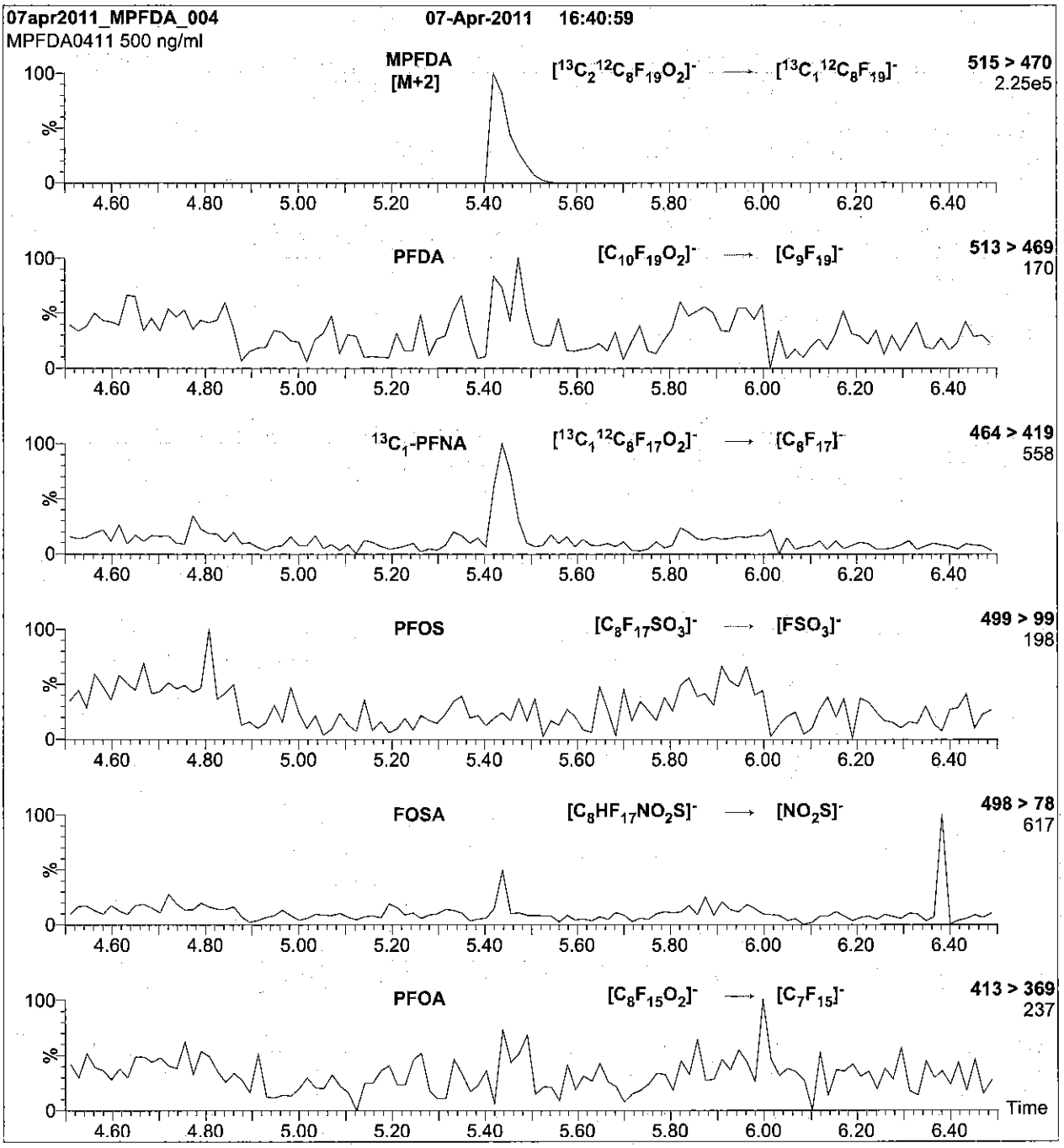
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFDA)
Mobile phase:	Isocratic 70% (80:20 MeOH:ACN) / 30% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00005

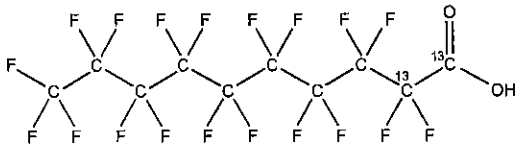
RL 4/15/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
LOT NUMBER: MPFDA0414
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{19}O_2$
MOLECULAR WEIGHT: 516.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/15/2014 (mm/dd/yyyy)
B.G. Chittim

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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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).

CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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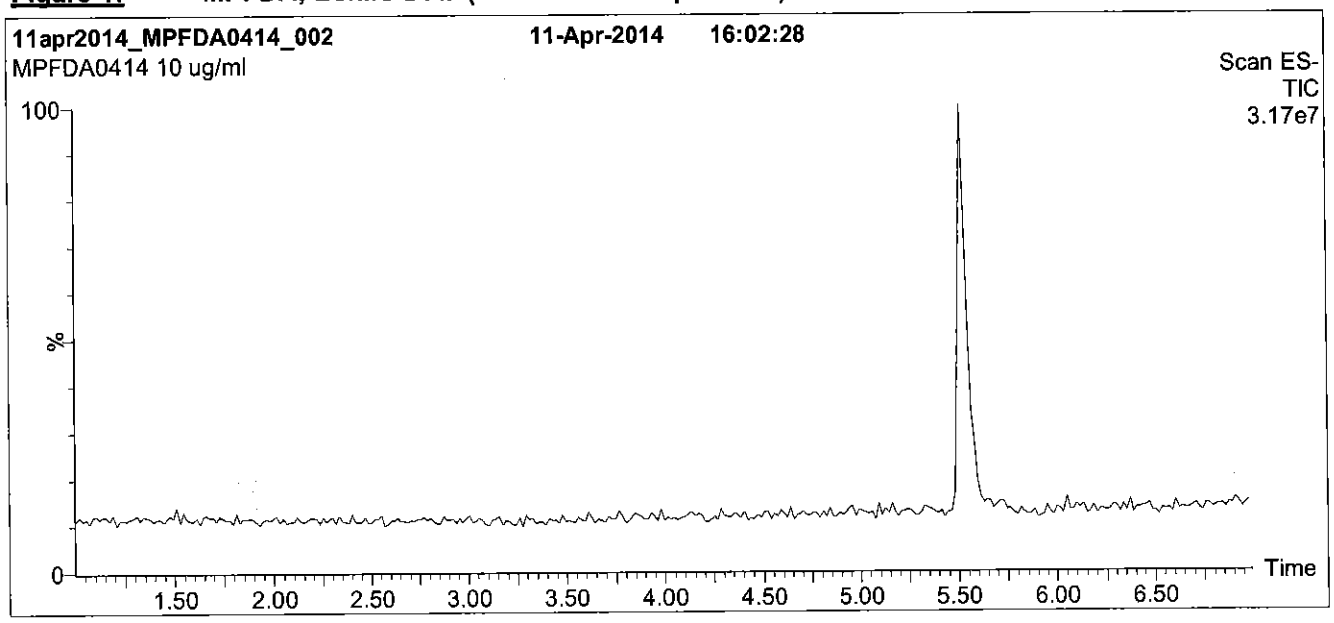
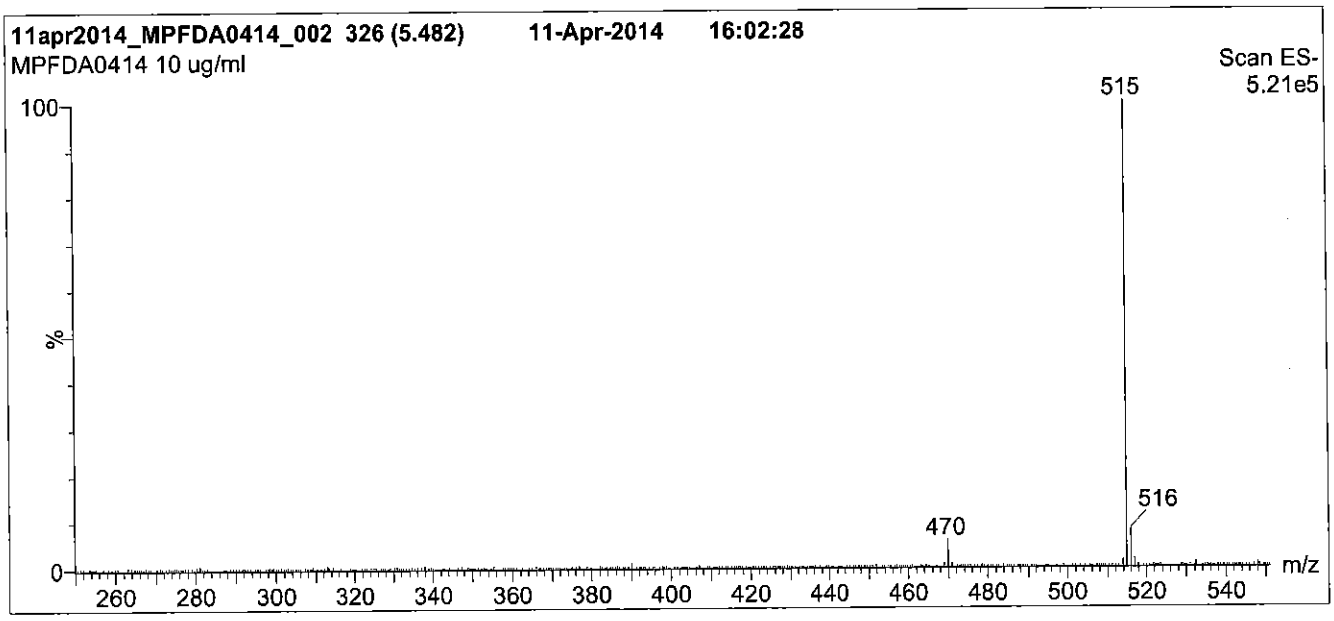




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

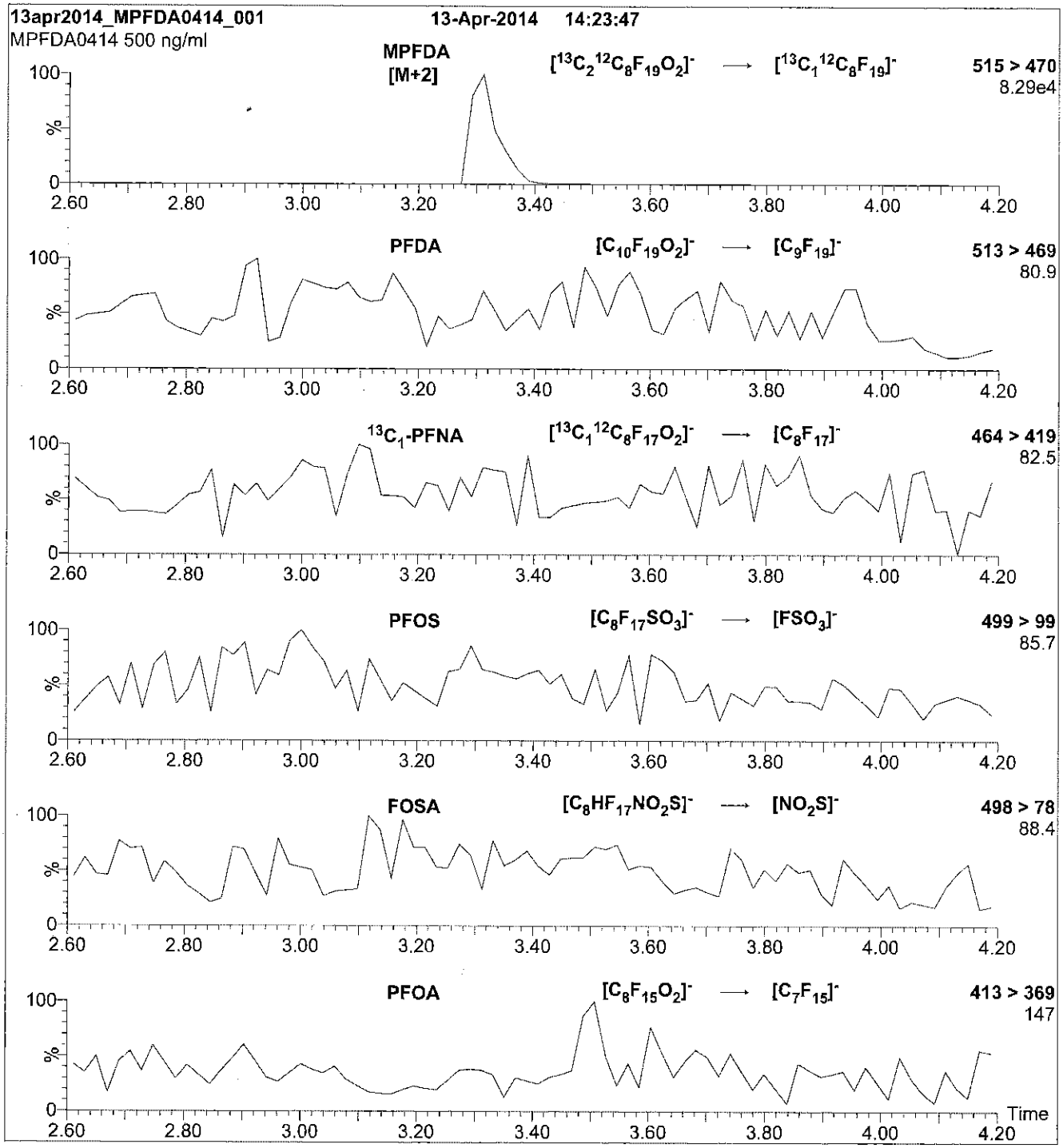
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00003

P. 2/11/15 SRV

WELLINGTON LABORATORIES

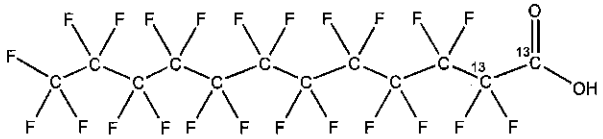
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/17/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/17/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/21/2014 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

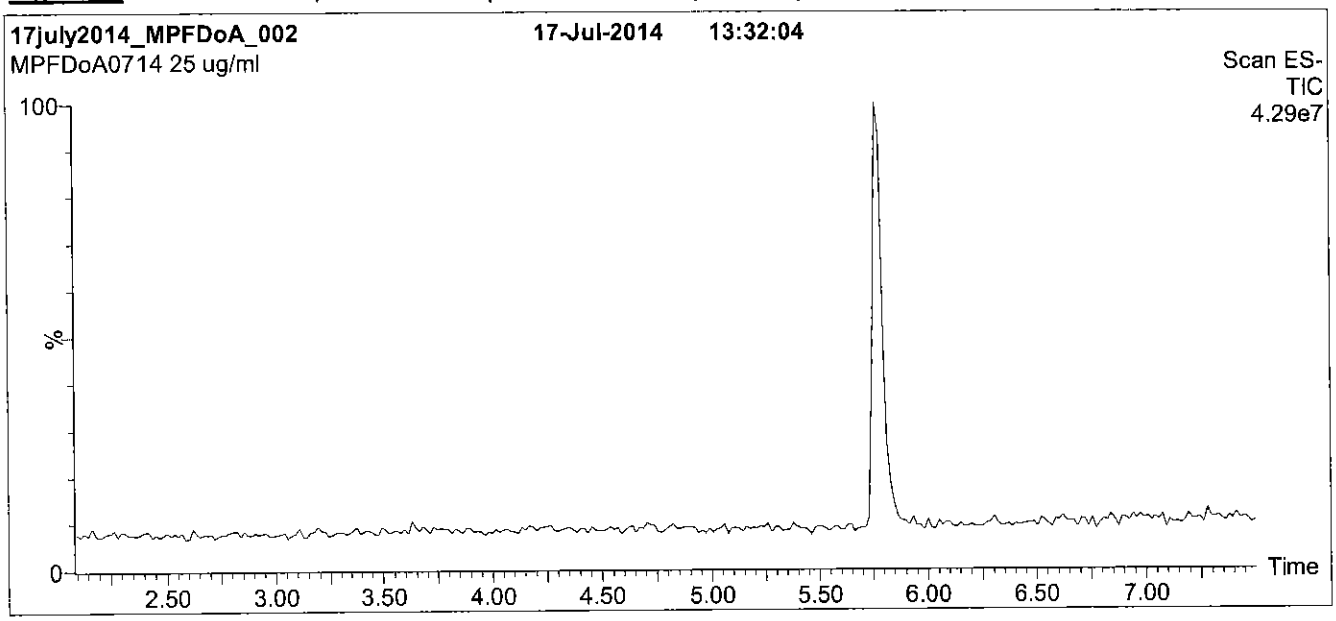
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

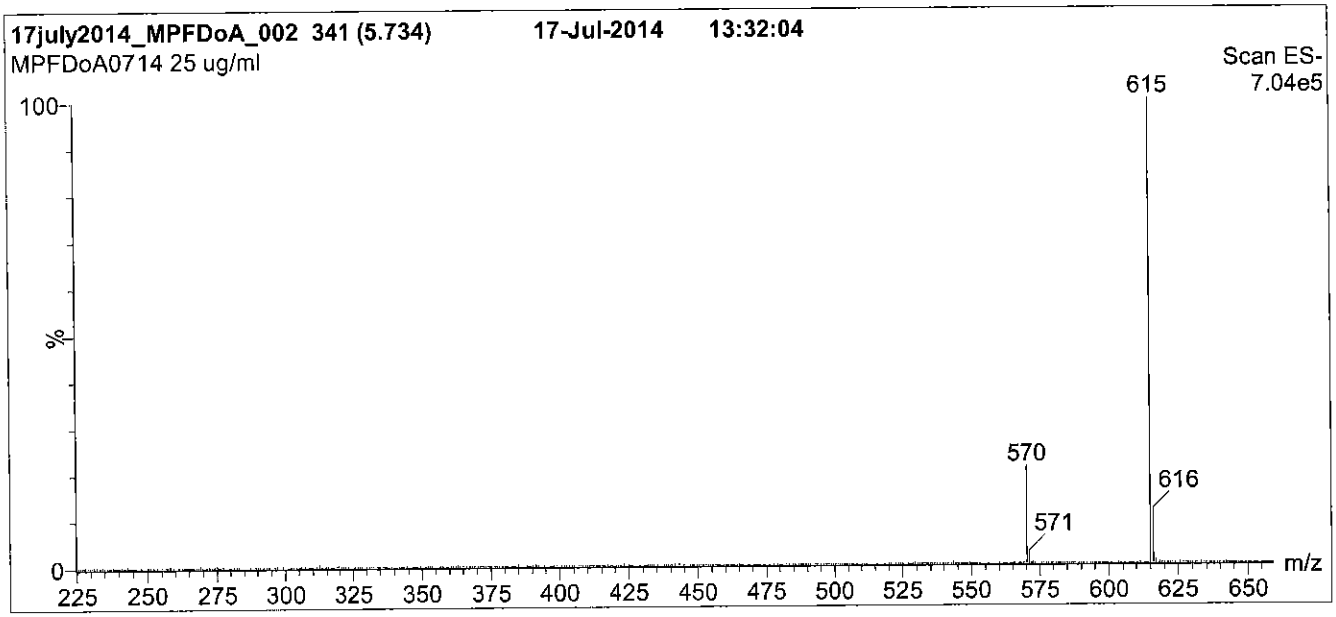
CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

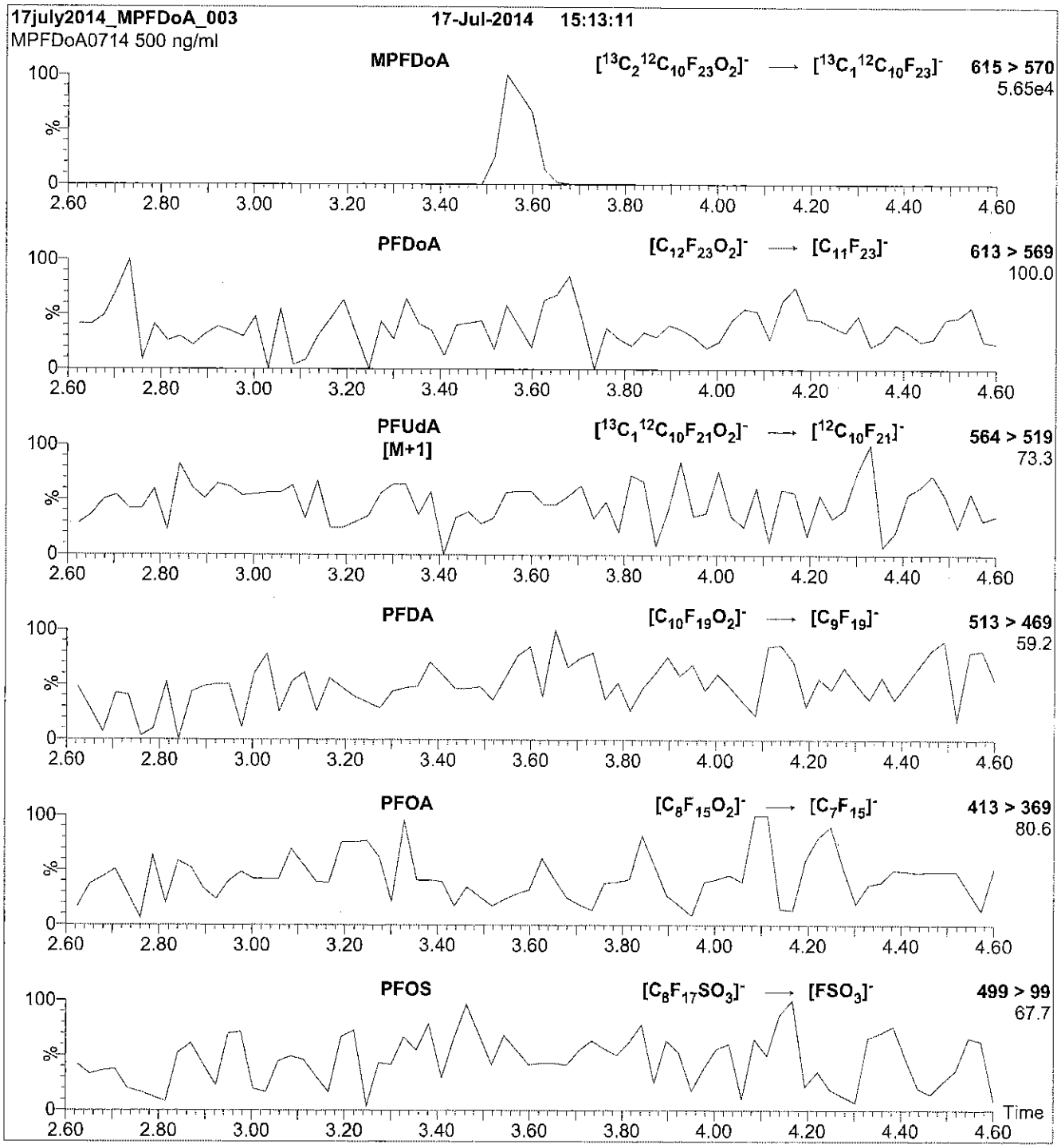
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFDoA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFDoA_00004

V : 14/10/15 JKV

WELLINGTON LABORATORIES

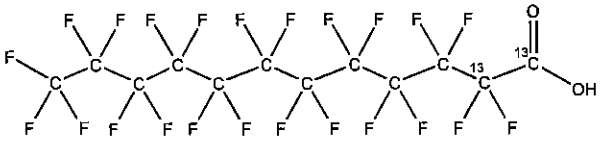
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/17/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/17/2019		
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:** 04/01/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

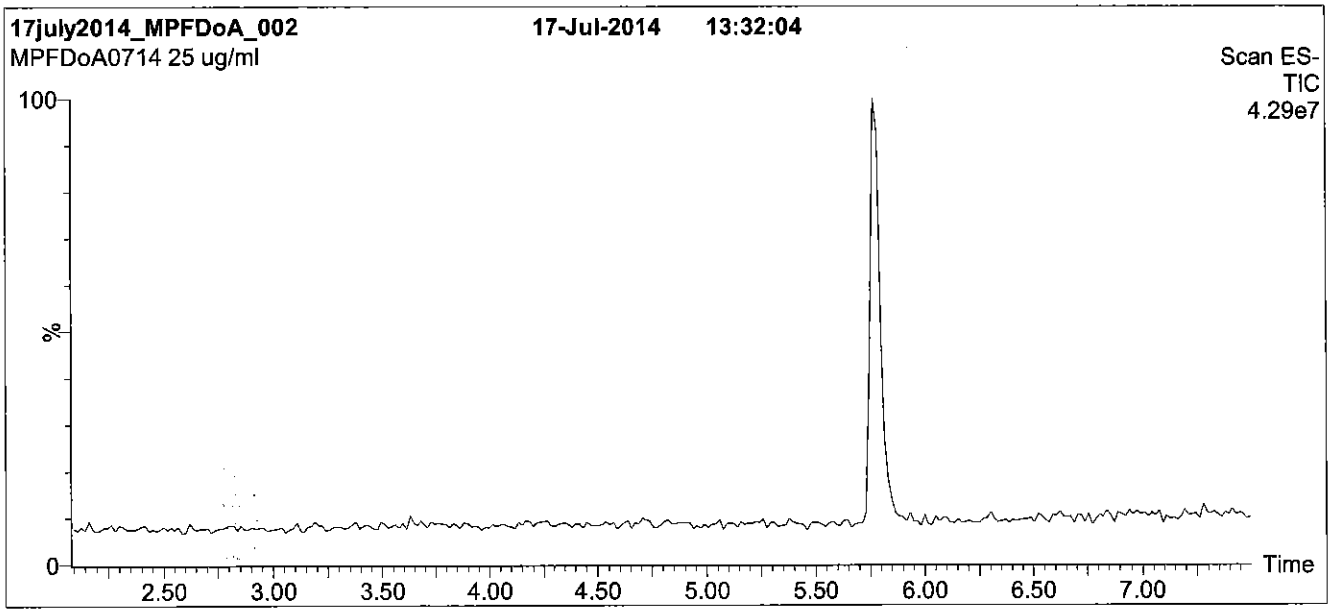
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

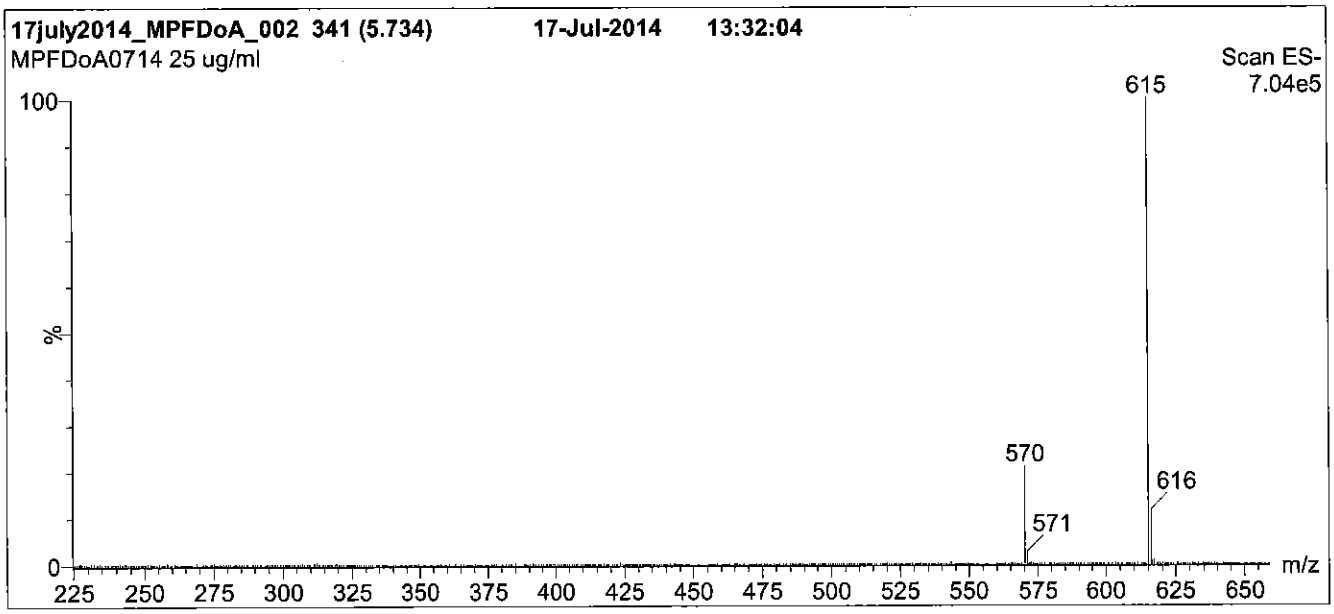
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

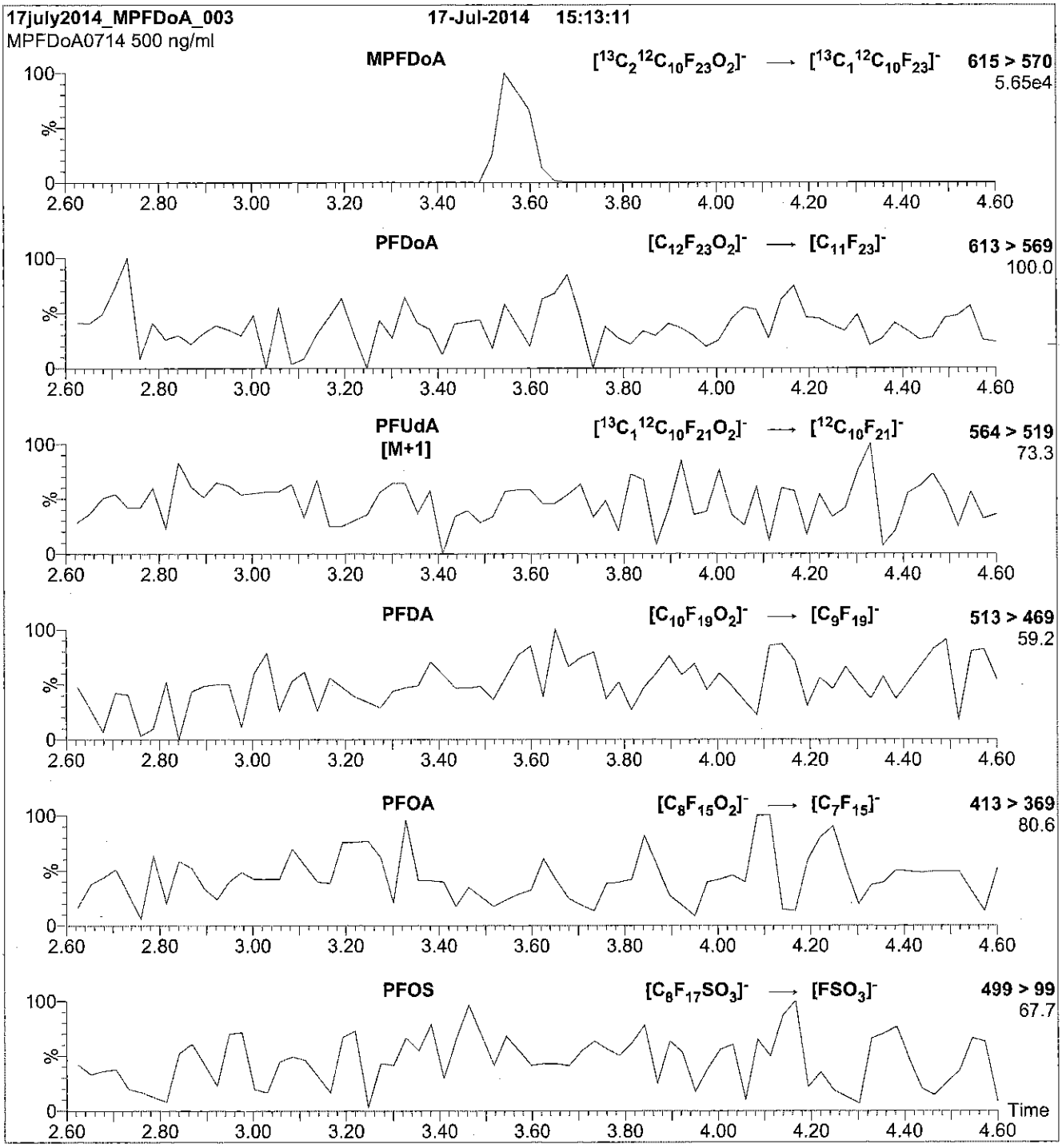
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00006

P: 4/15/15 SKV

WELLINGTON LABORATORIES

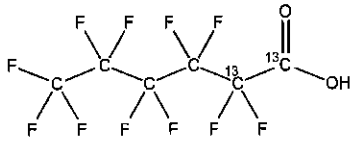
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFHxA0414

STRUCTURE:

CAS #: Not available



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

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- 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:** 04/15/2014 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A 0226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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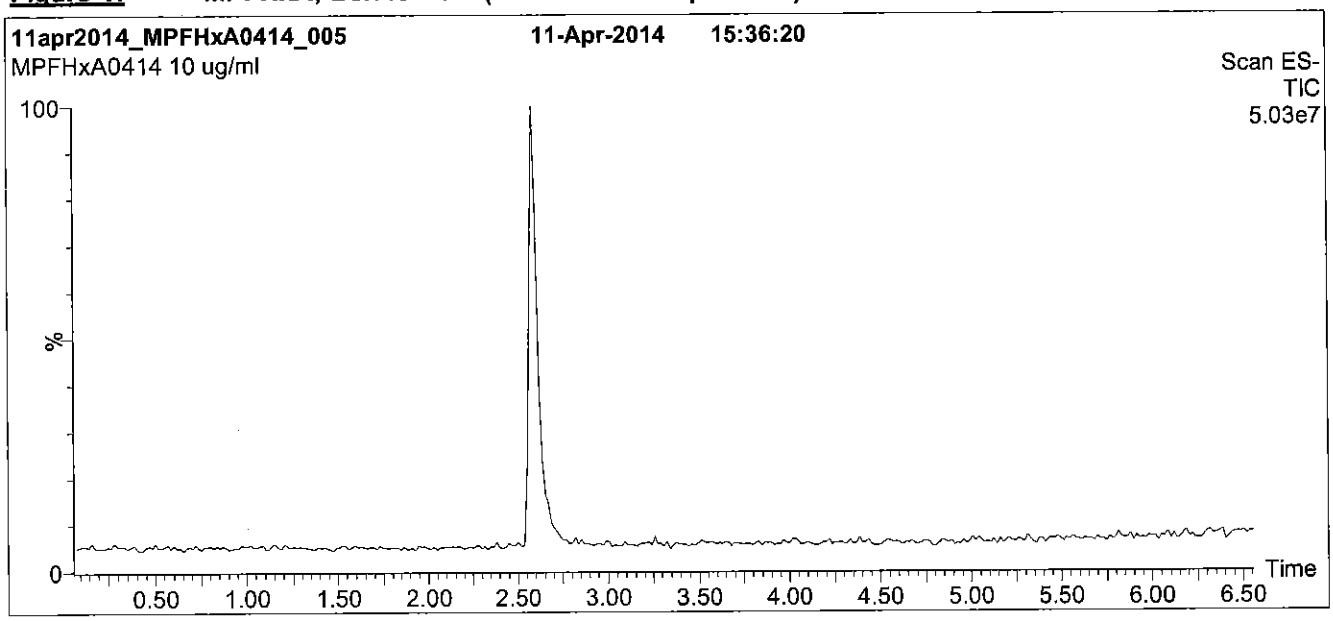
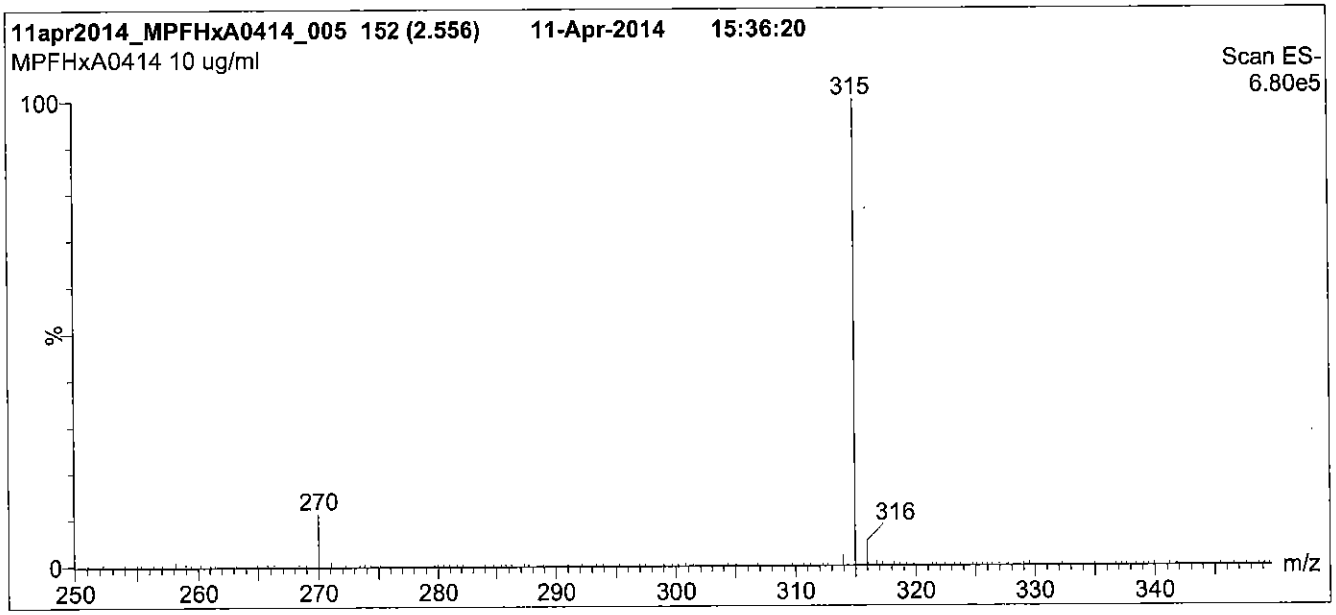
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

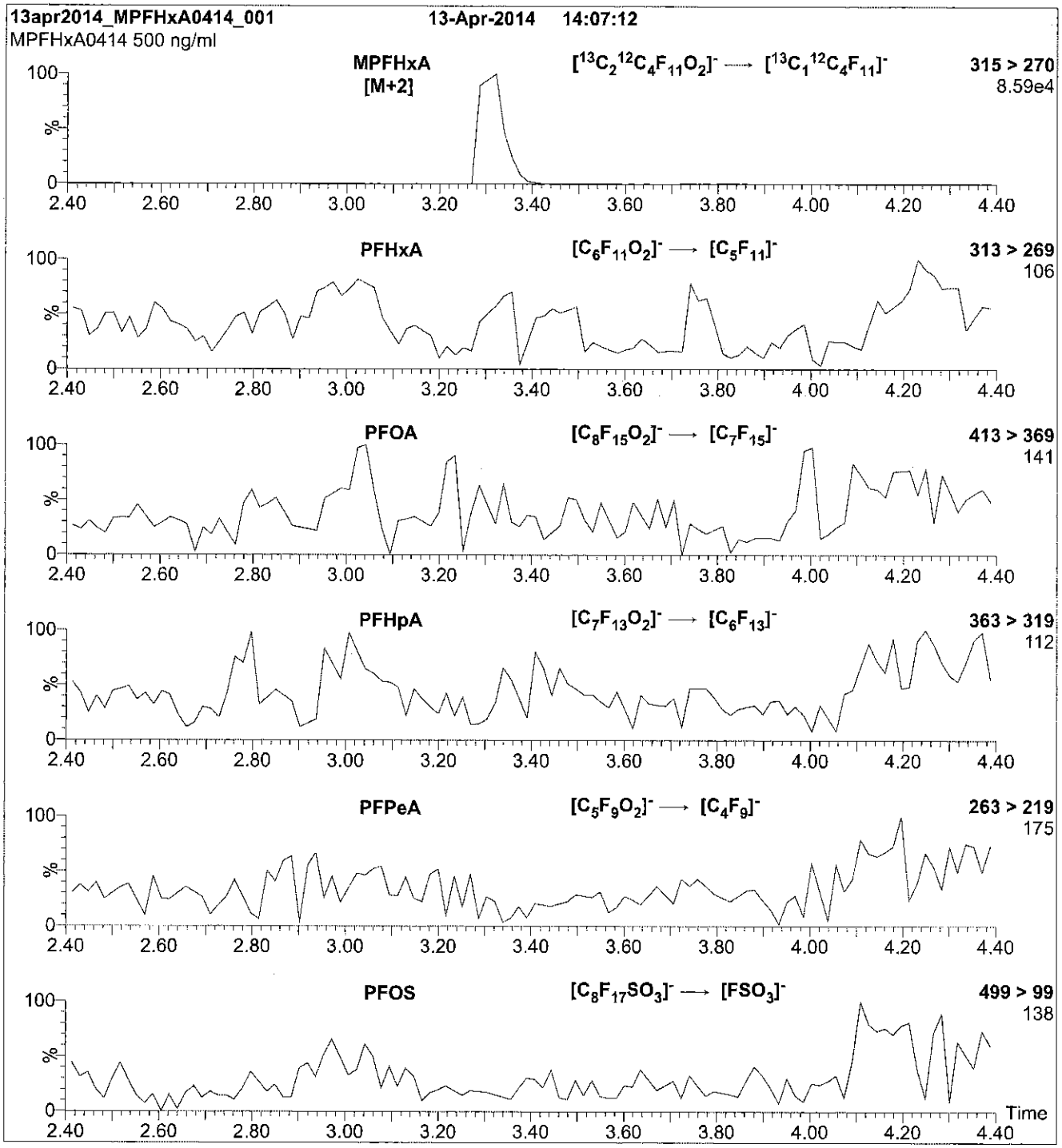
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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: **MPFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

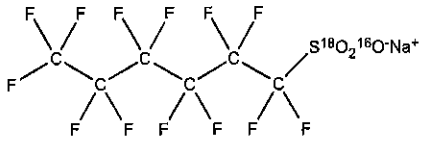
Reagent

LCMPFHxS_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFHxS	**LOT NUMBER:**	MPFHxS0713
COMPOUND:	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	07/25/2013		
EXPIRY DATE: (mm/dd/yyyy)	07/25/2018		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/30/2015 (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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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

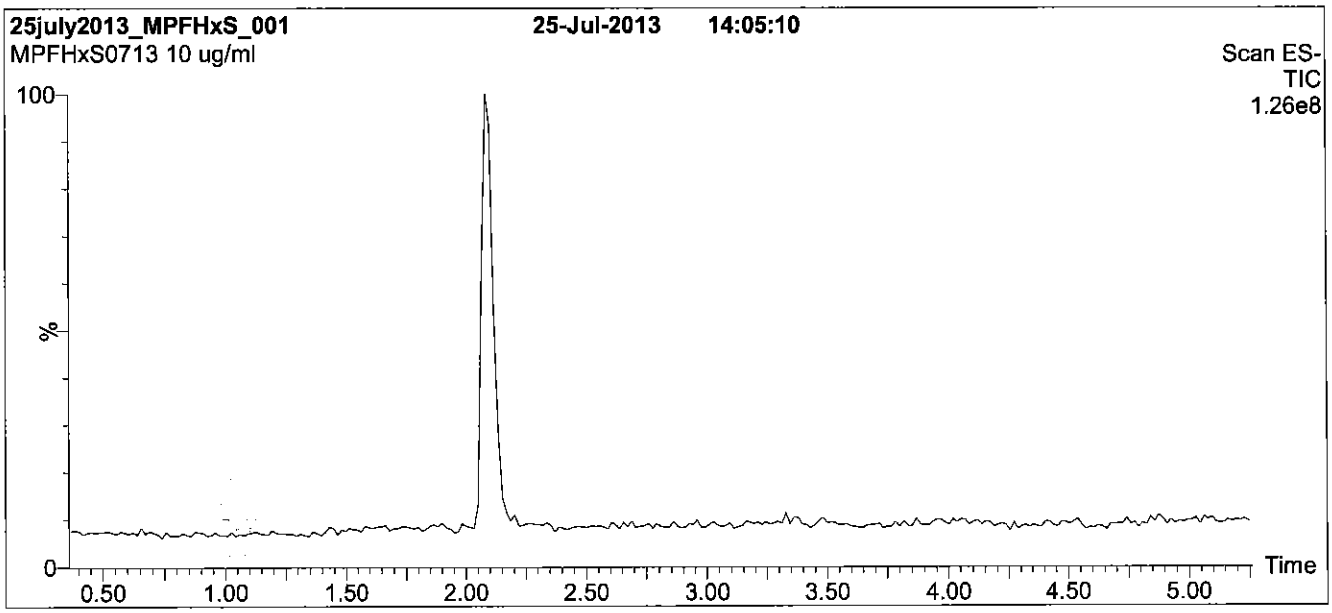
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

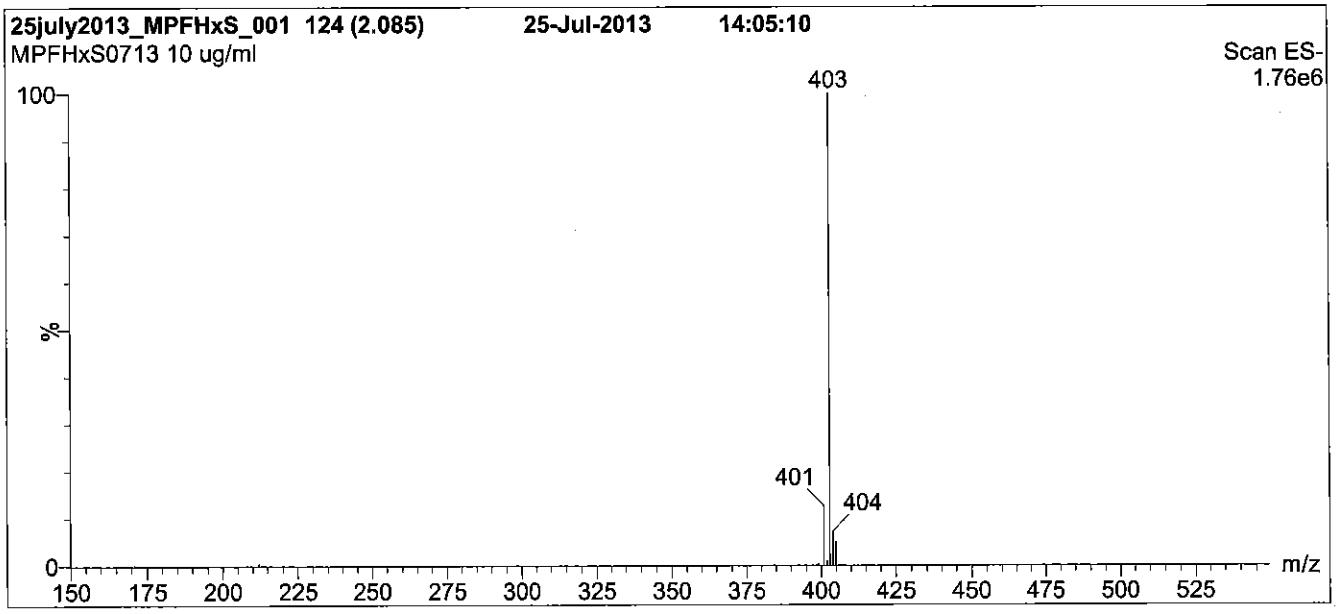
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

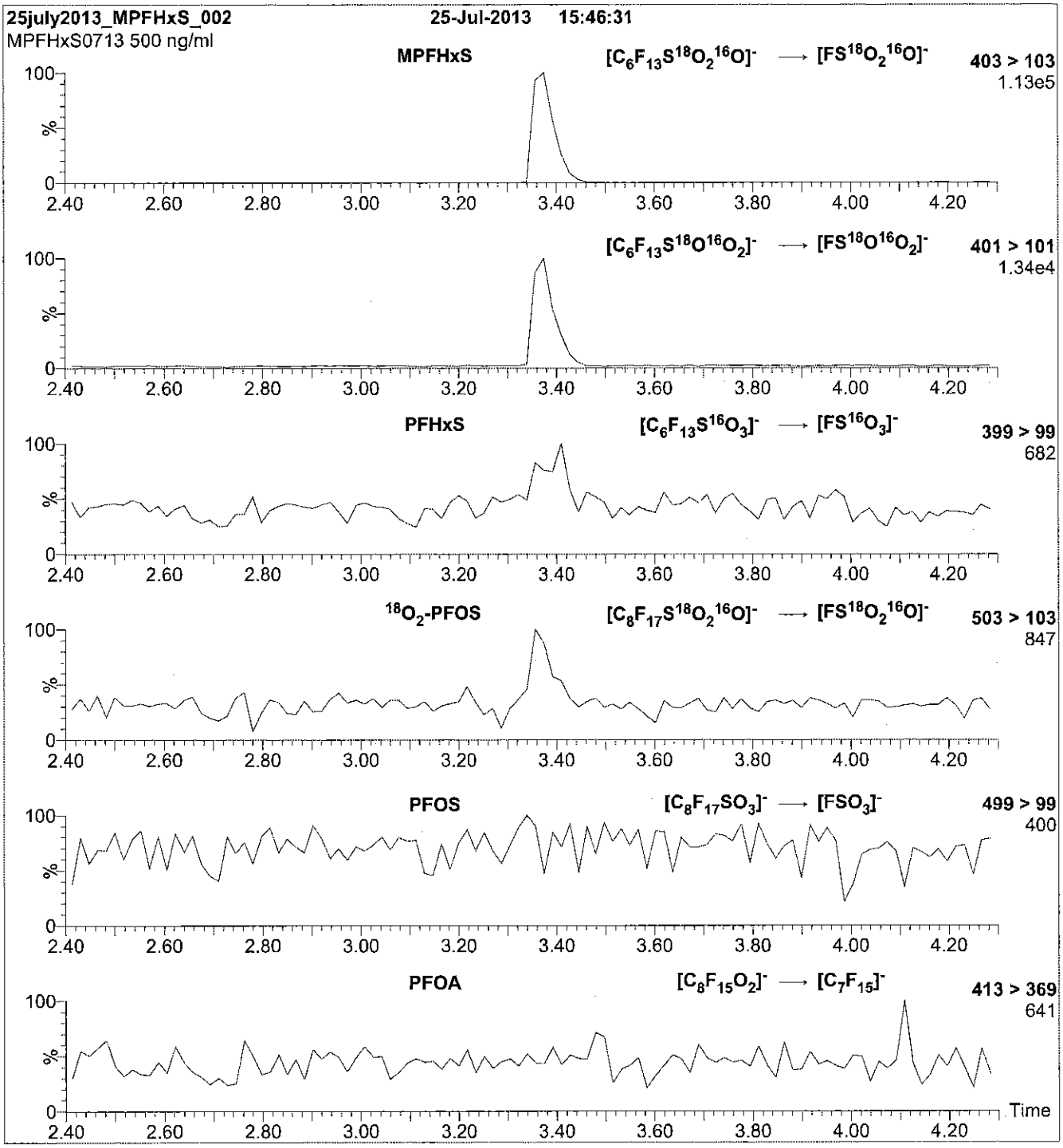
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00003

V 2/11/15 SV

WELLINGTON LABORATORIES

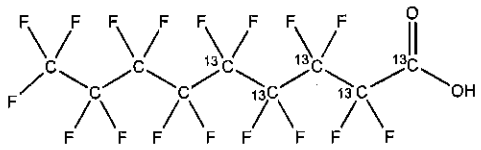
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid

LOT NUMBER: MPFNA0414

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
EXPIRY DATE: (mm/dd/yyyy)	04/13/2019		
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:** 04/13/2014 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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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).

CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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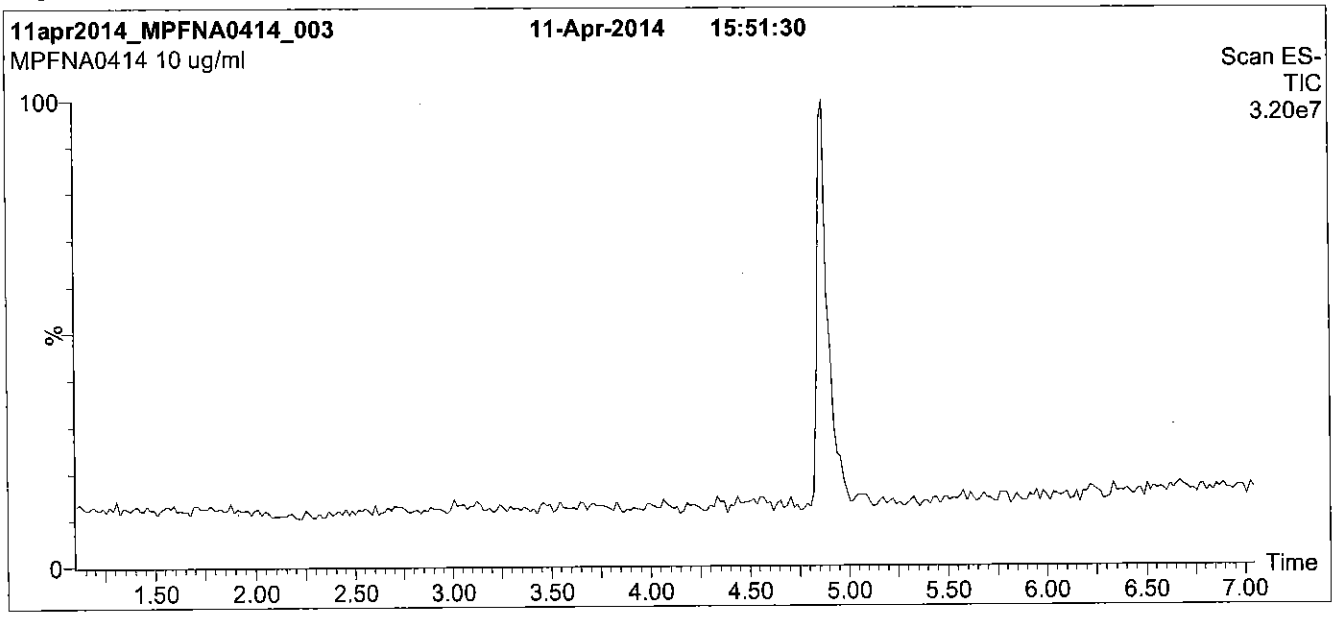
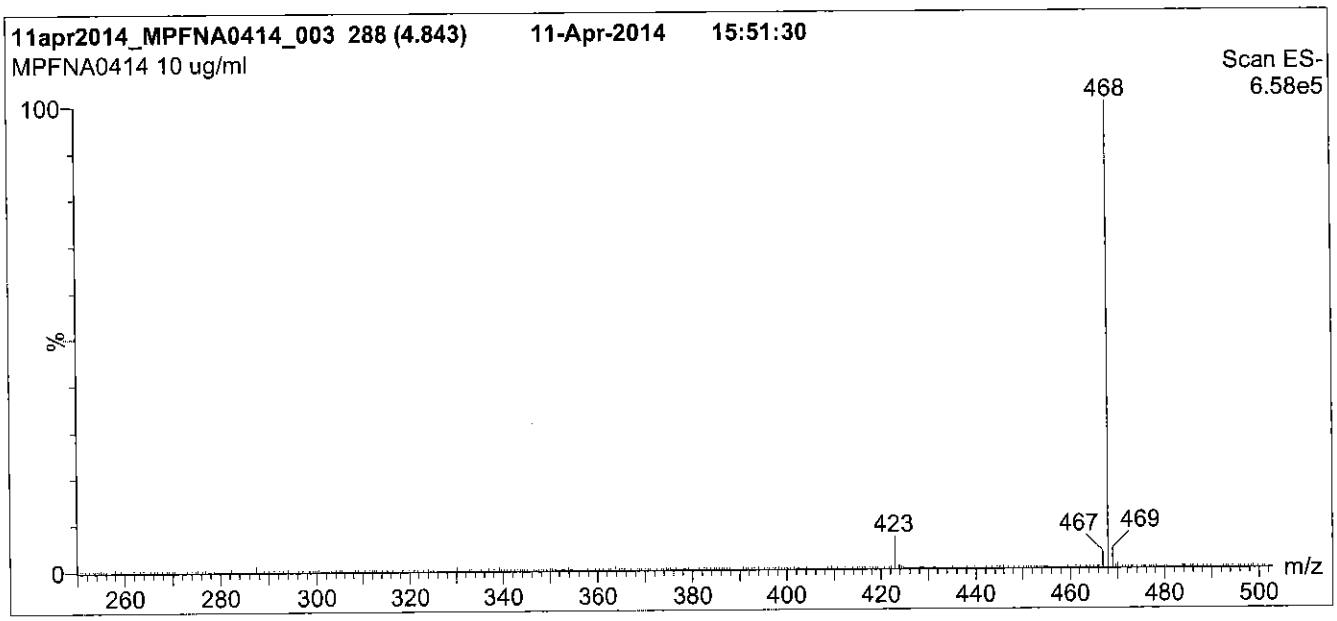
Figure 1: **MPFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

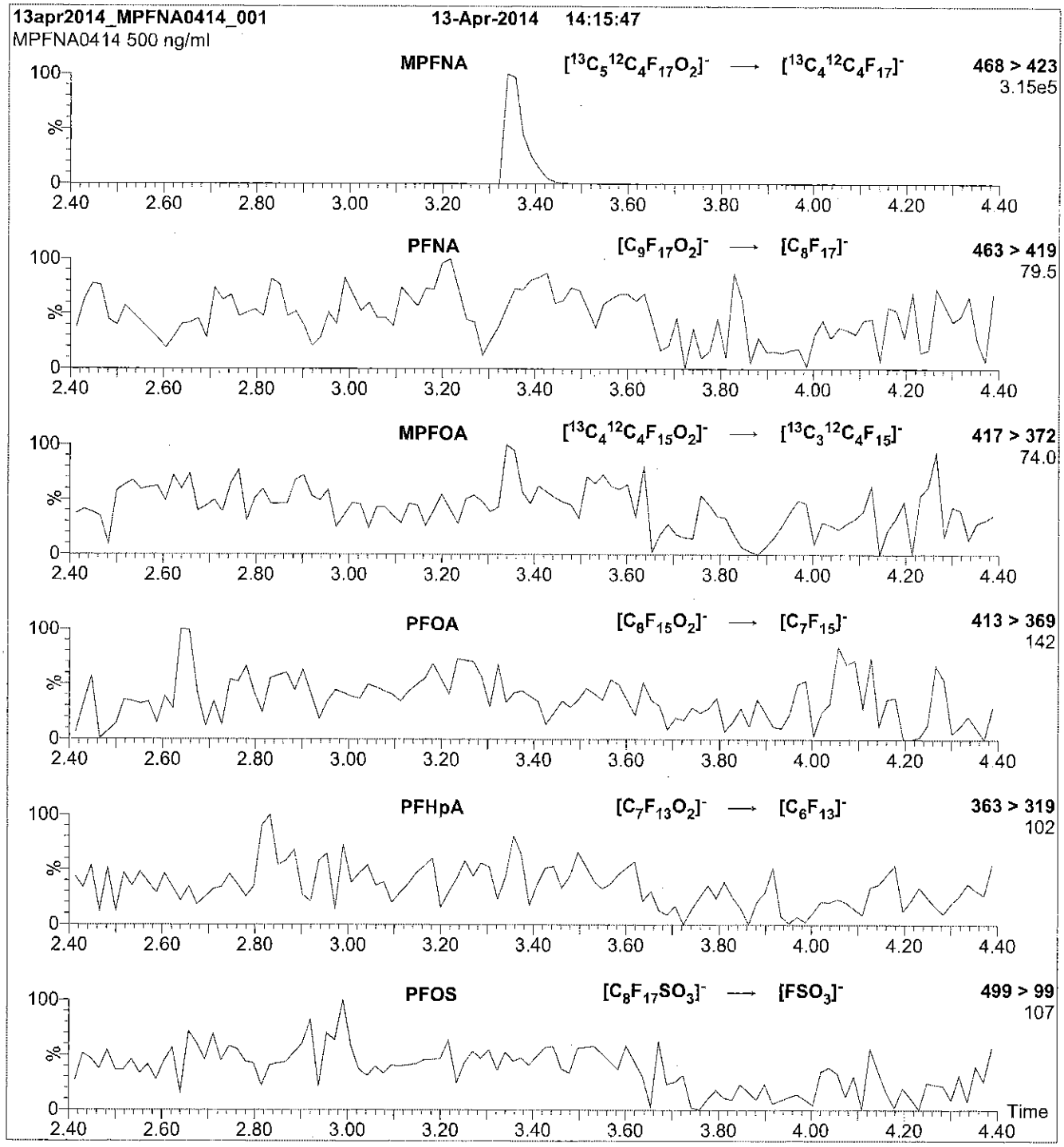
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 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: **MPFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00007

V: 9/15/15 ev

WELLINGTON LABORATORIES

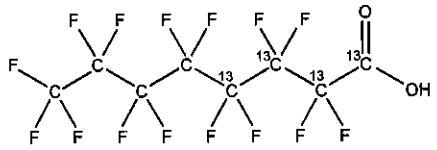
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid

LOT NUMBER: MPFOA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{15}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	04/10/2015		
EXPIRY DATE: (mm/dd/yyyy)	04/10/2020		
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 native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/10/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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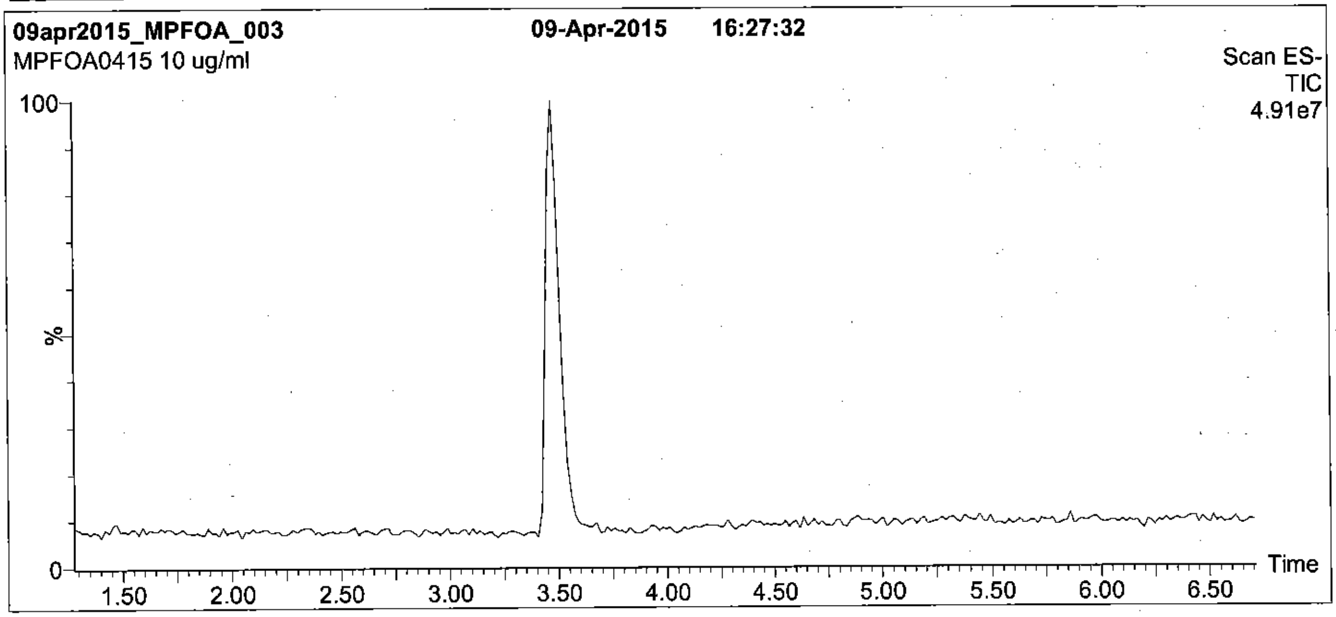
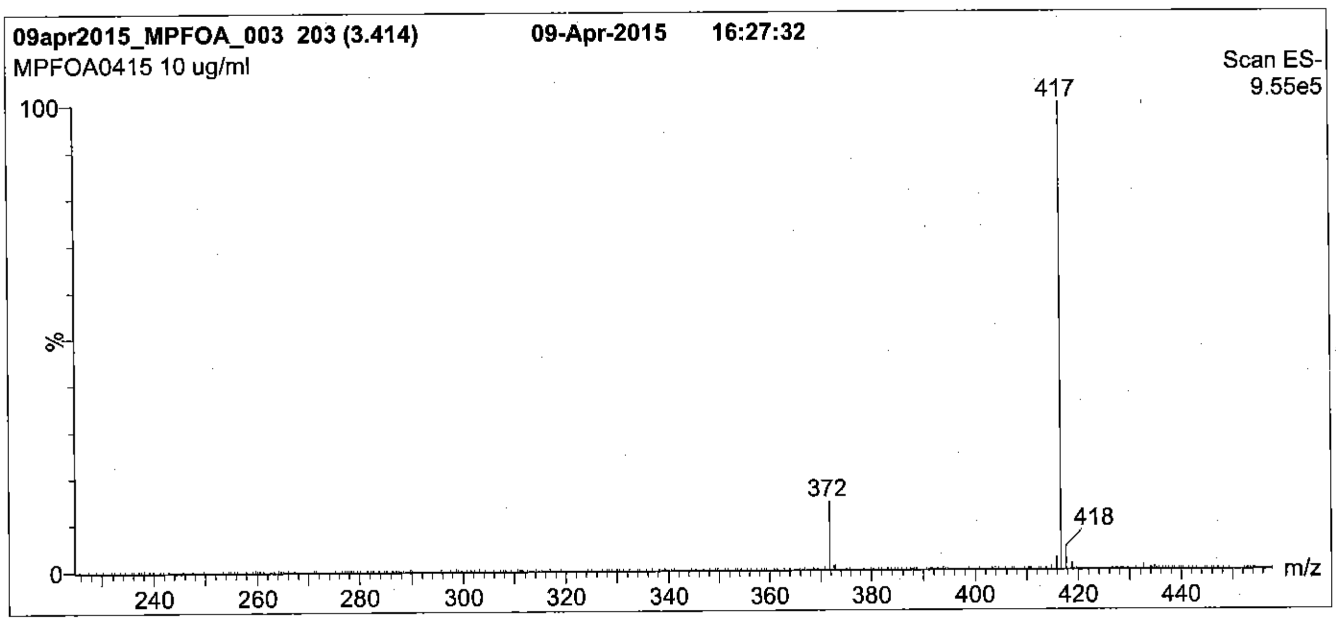
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

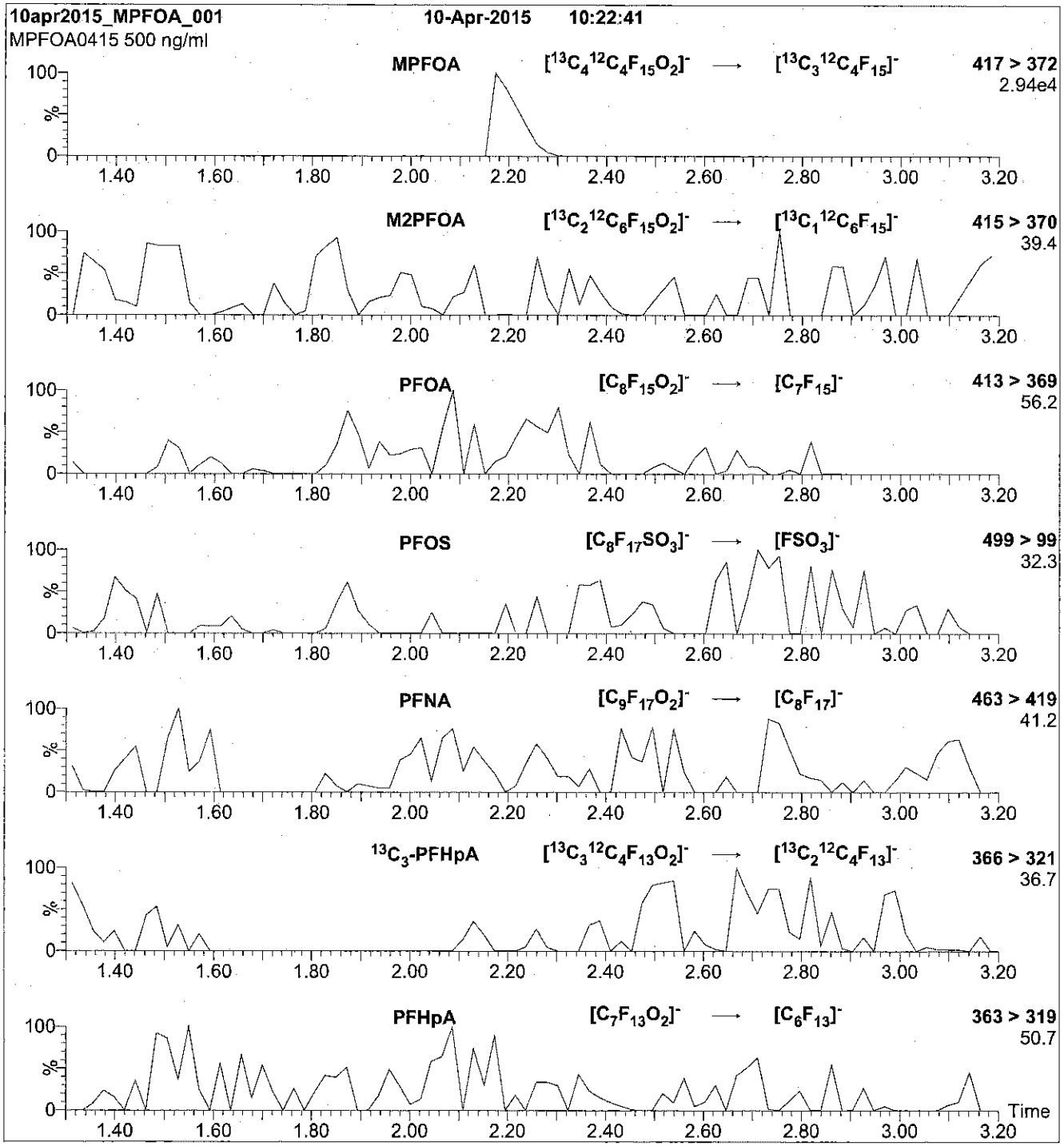
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCMPFOS_00009

V: 9/15/15 GV

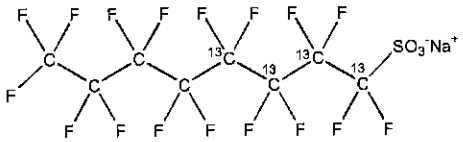
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0515

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/15/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/15/2020		
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 ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/28/2015 (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

Form#:27, Issued 2004-11-10
Revision#:3, Revised 2015-03-24

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CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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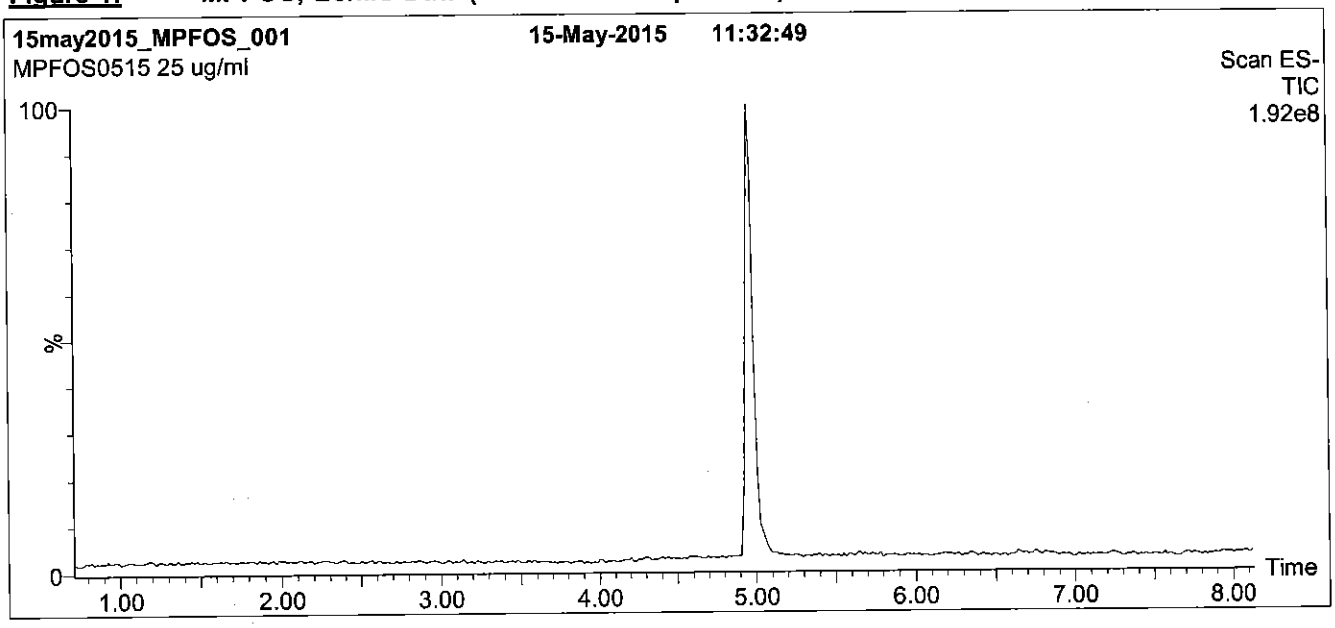
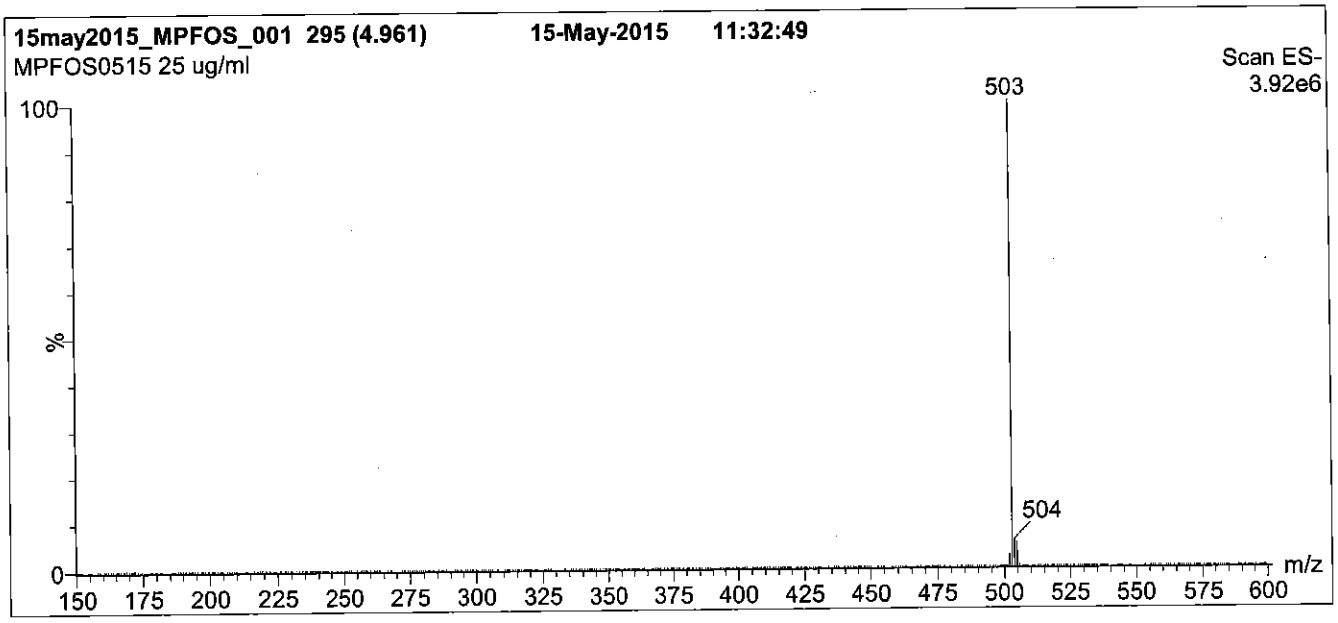
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

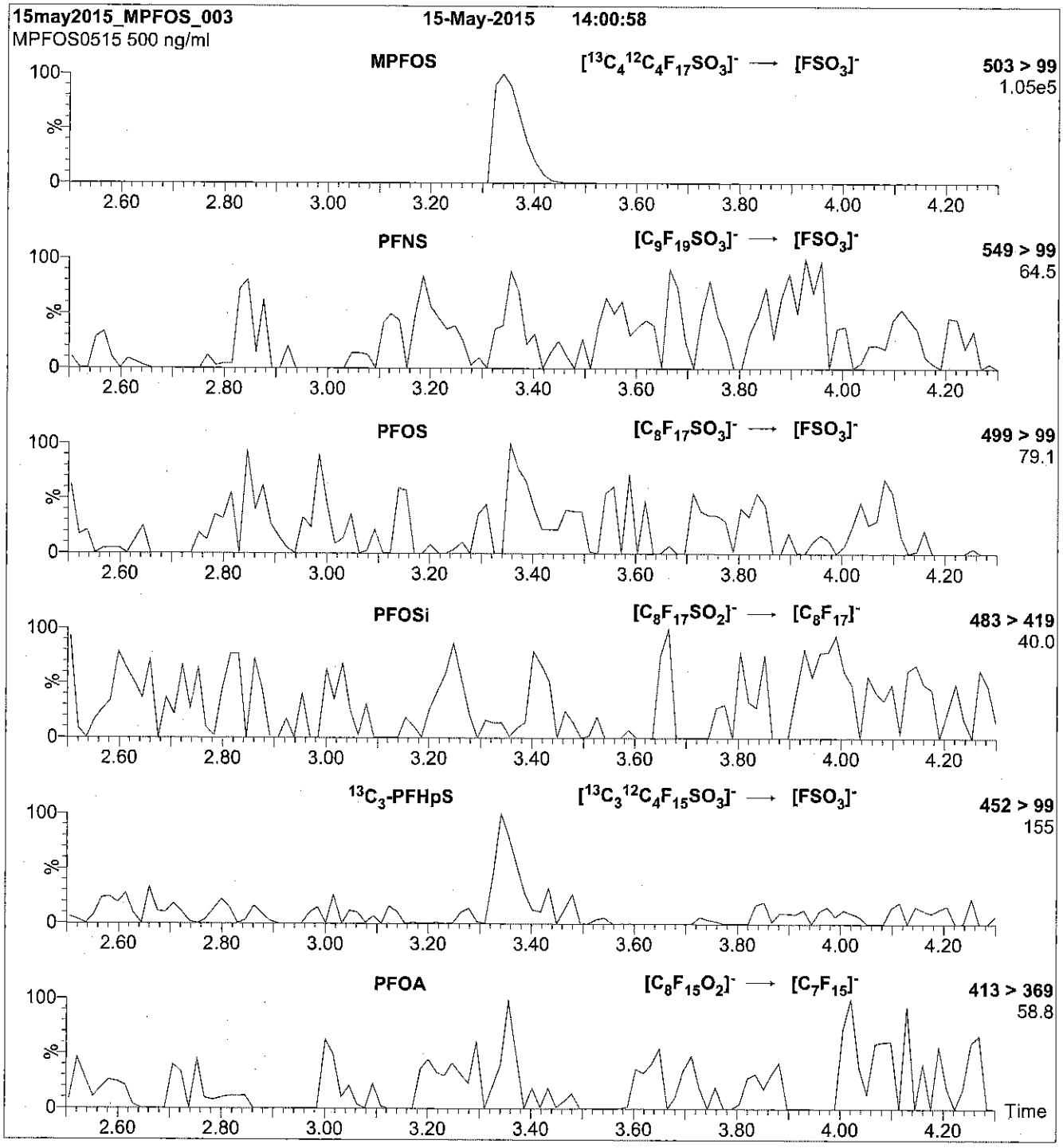
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 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 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00004

r:4/15/15 SKU

WELLINGTON LABORATORIES

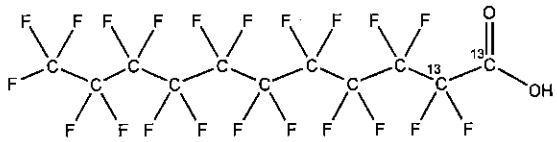
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFUdA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_9HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/31/2014
EXPIRY DATE: (mm/dd/yyyy) 10/31/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 566.08
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/03/2014 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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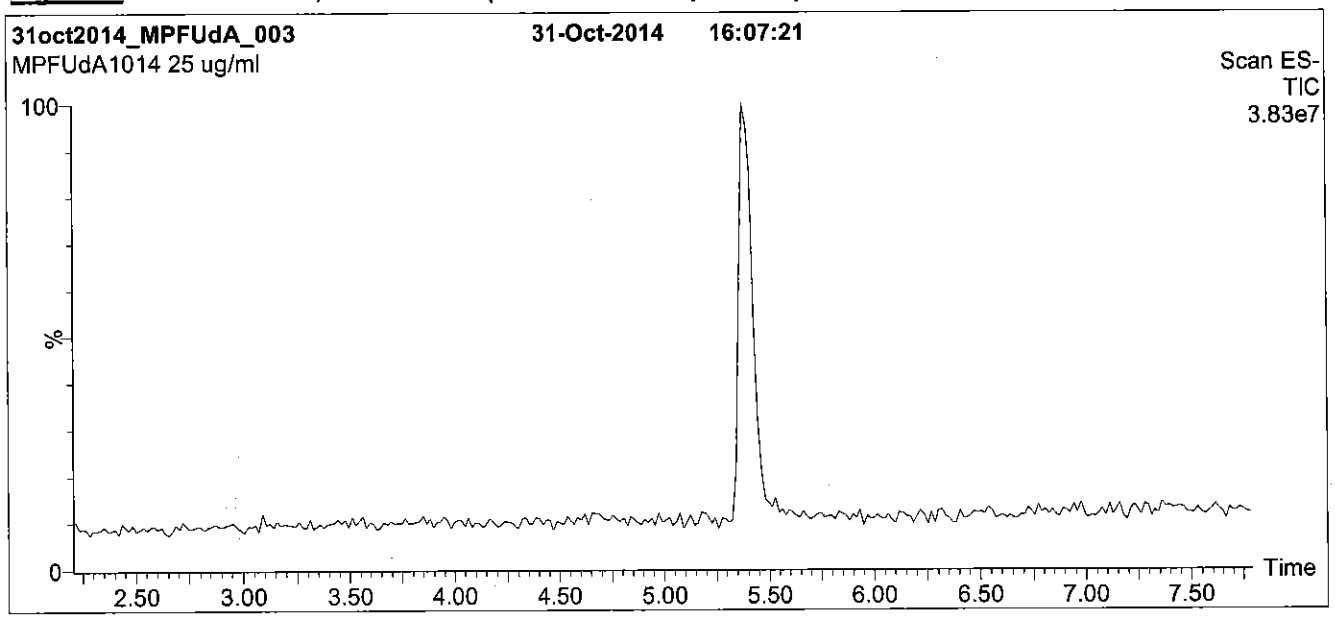
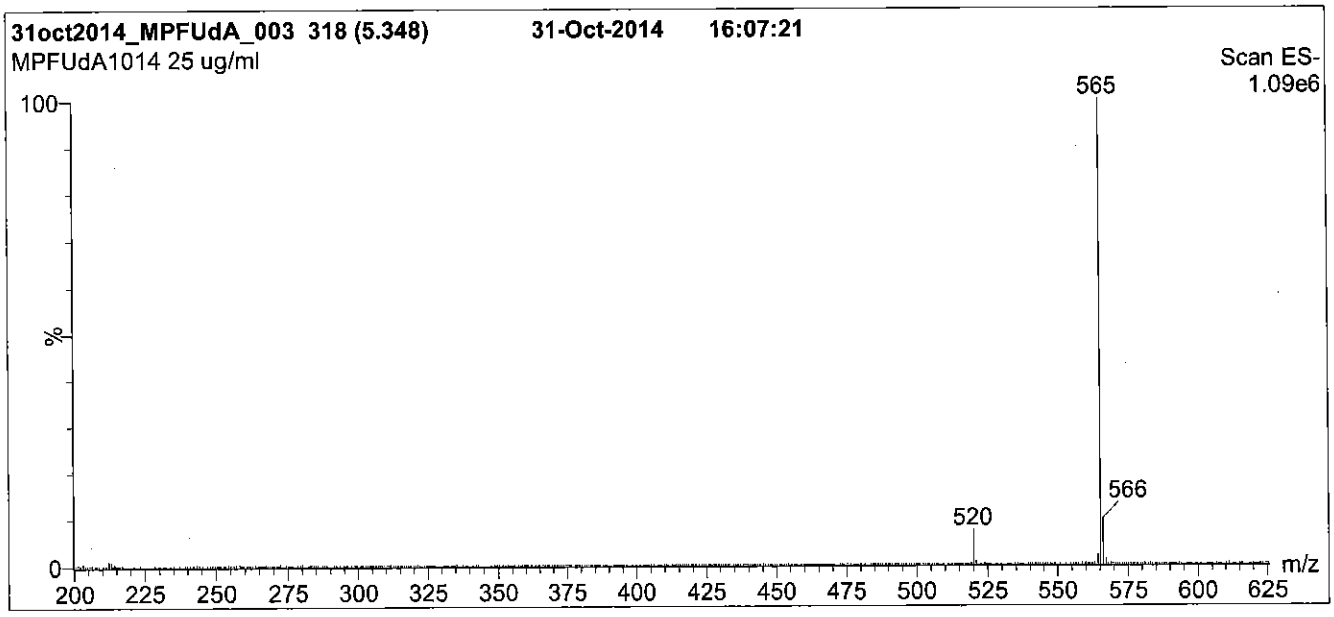
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

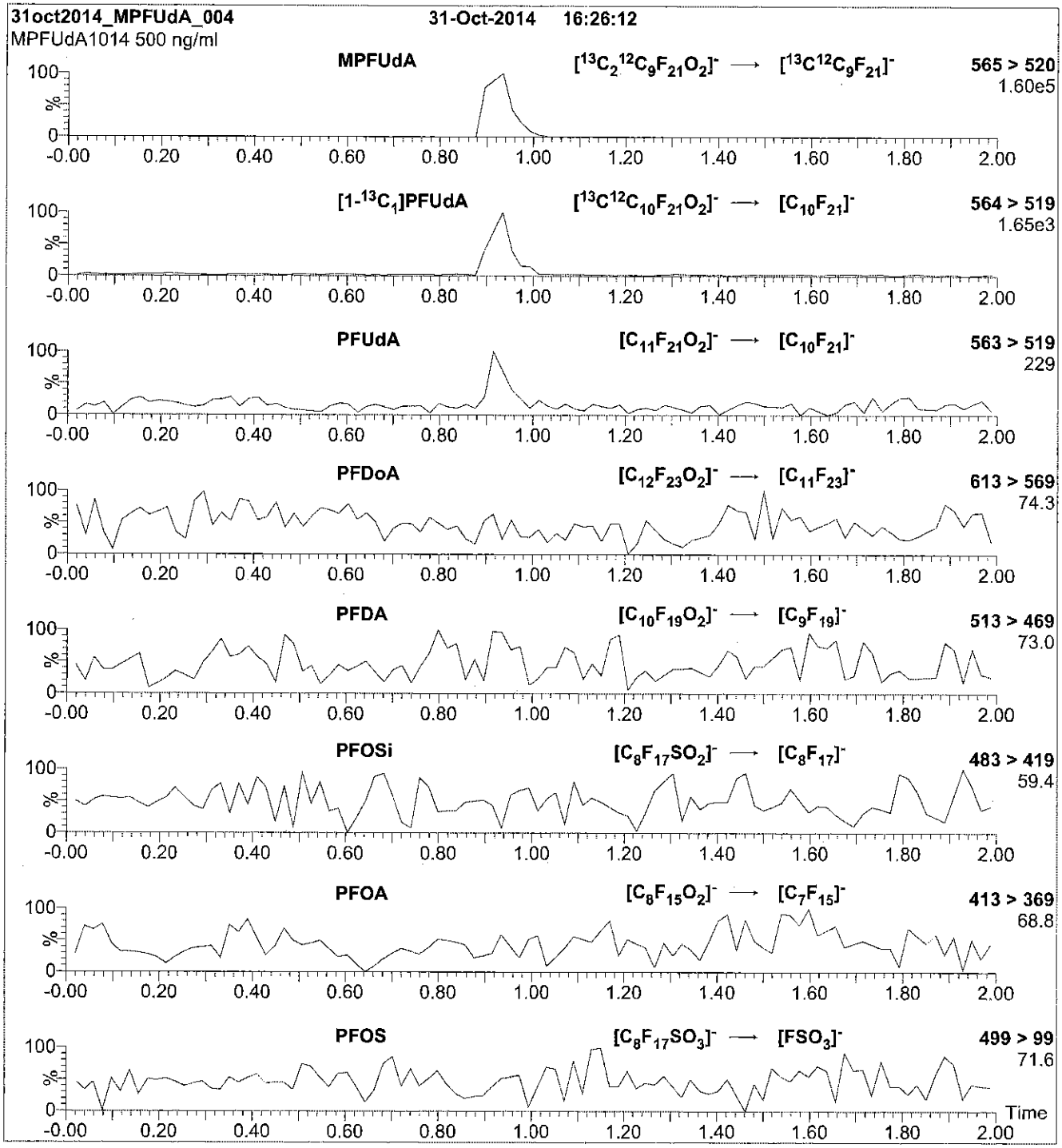
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCMPFUdA_00005

V: 12/9/15 SEV

WELLINGTON LABORATORIES

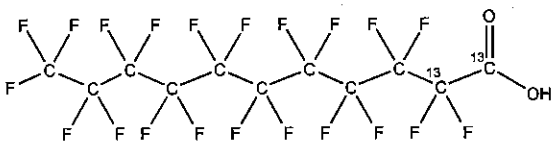
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFUdA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/31/2019		
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.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED Accredited REFERENCE MATERIAL PRODUCER

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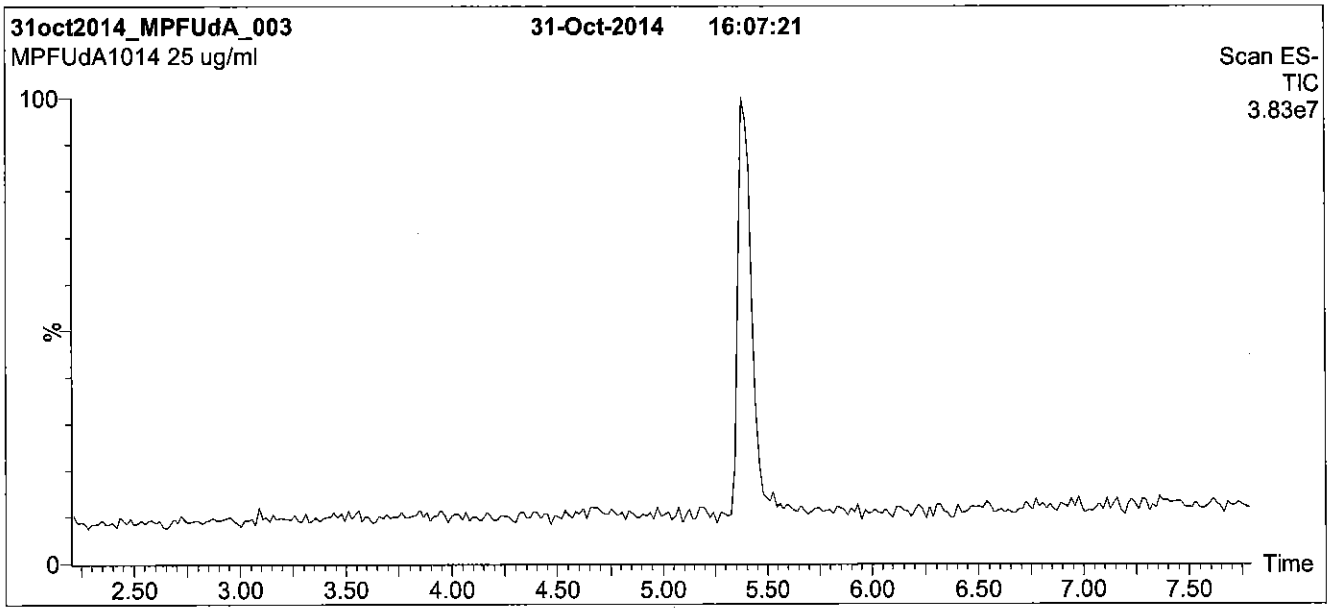
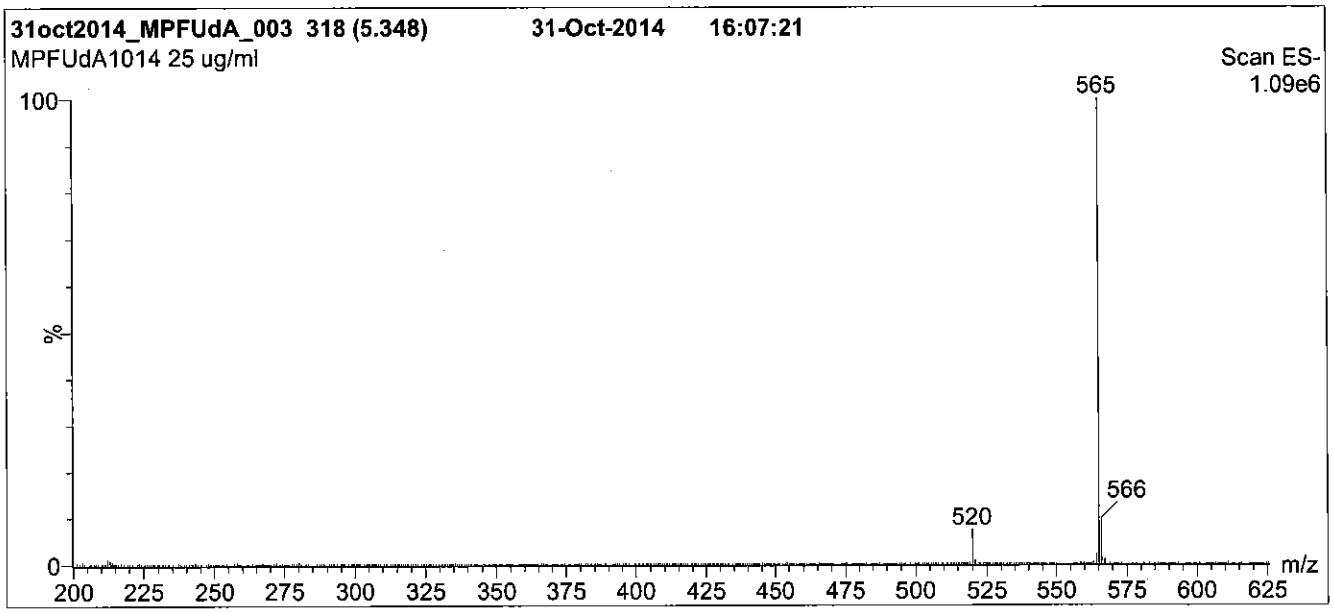
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

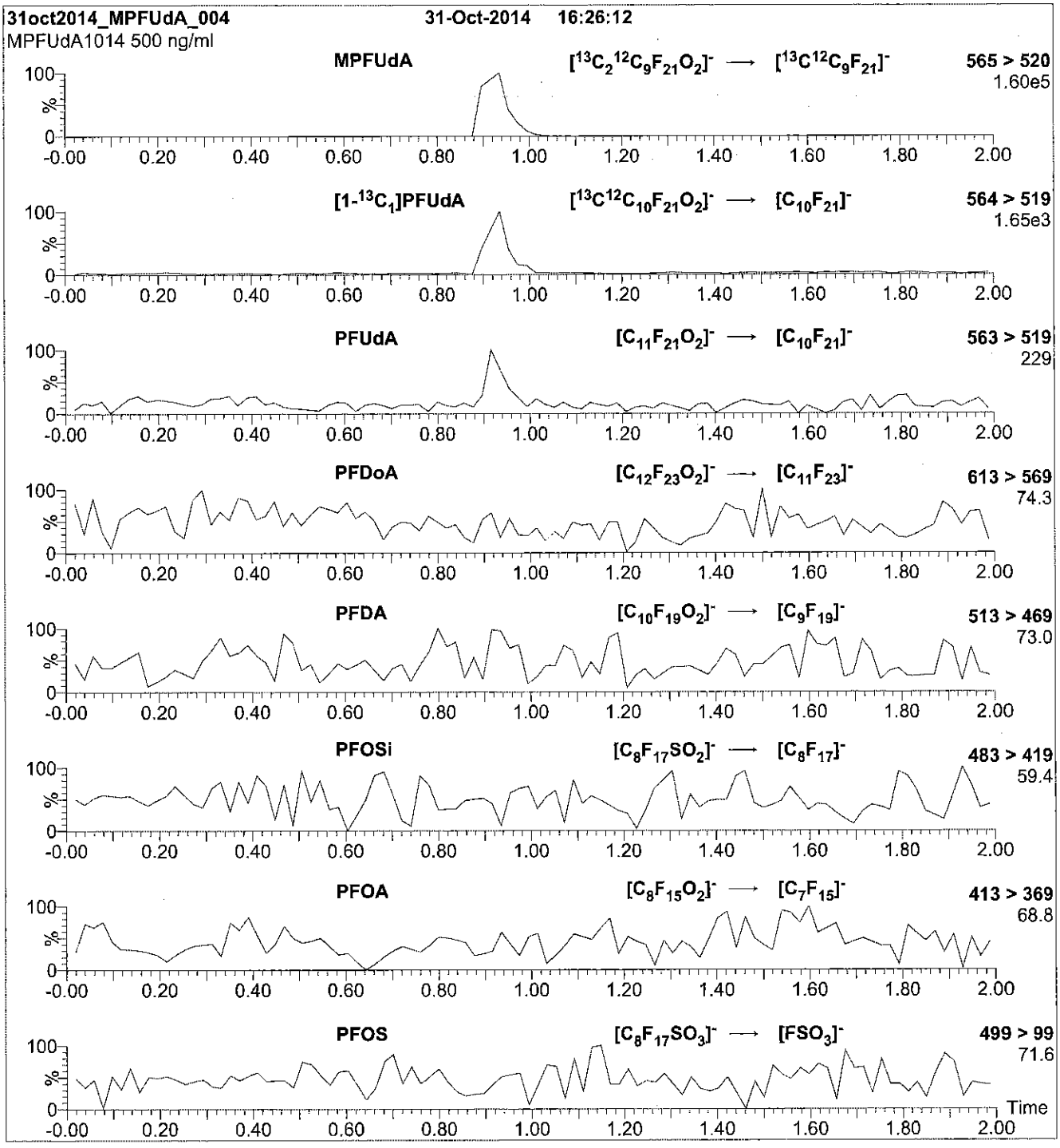
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCPFBA_00003

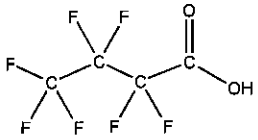
rec 7/15/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid
LOT NUMBER: PFBA0313

STRUCTURE:
CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
MOLECULAR WEIGHT: 214.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/05/2013
EXPIRY DATE: (mm/dd/yyyy) 03/05/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/06/2013 (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

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

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

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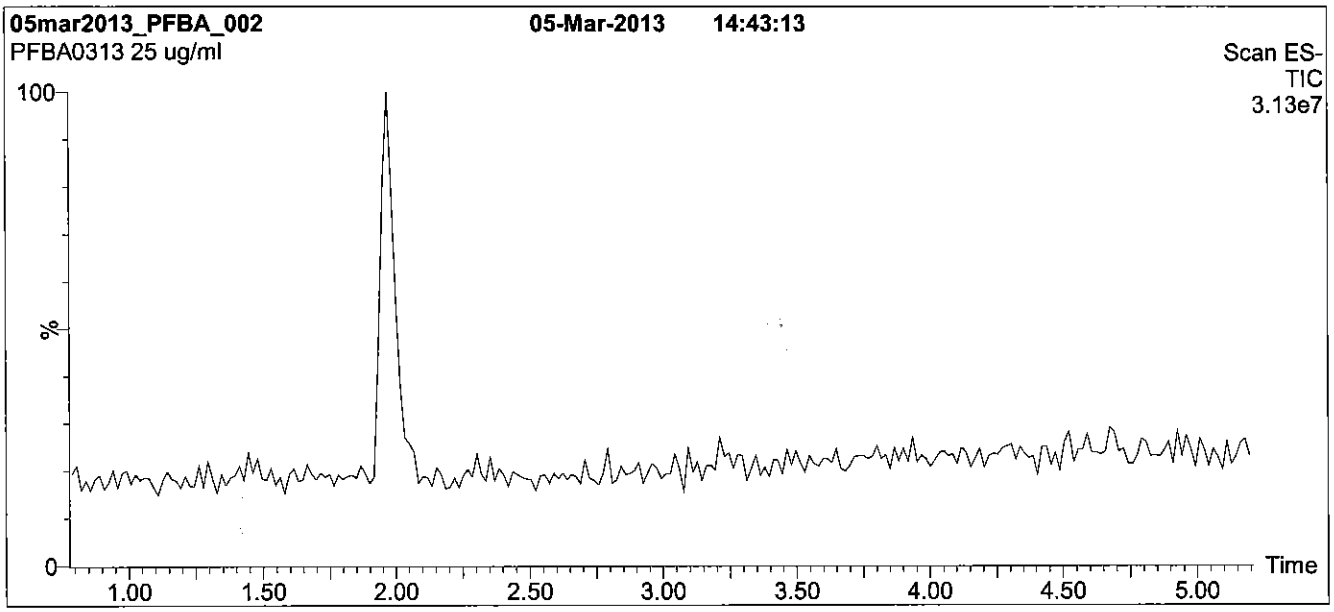
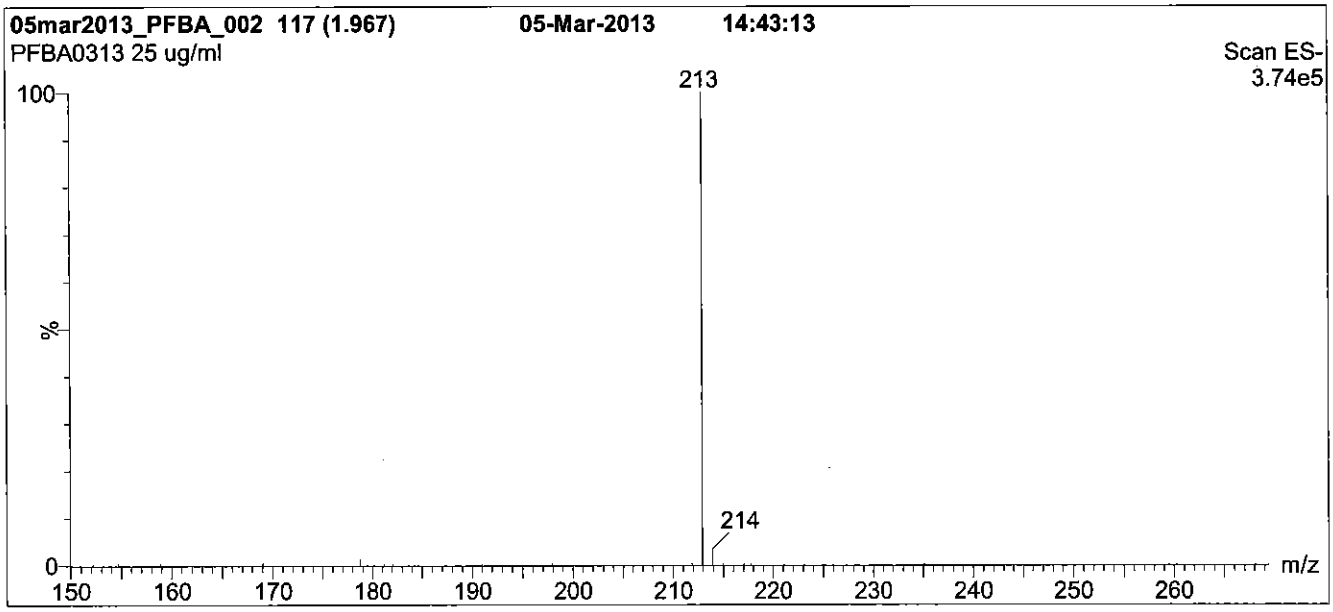
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 25% (80:20 MeOH:ACN) / 75% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

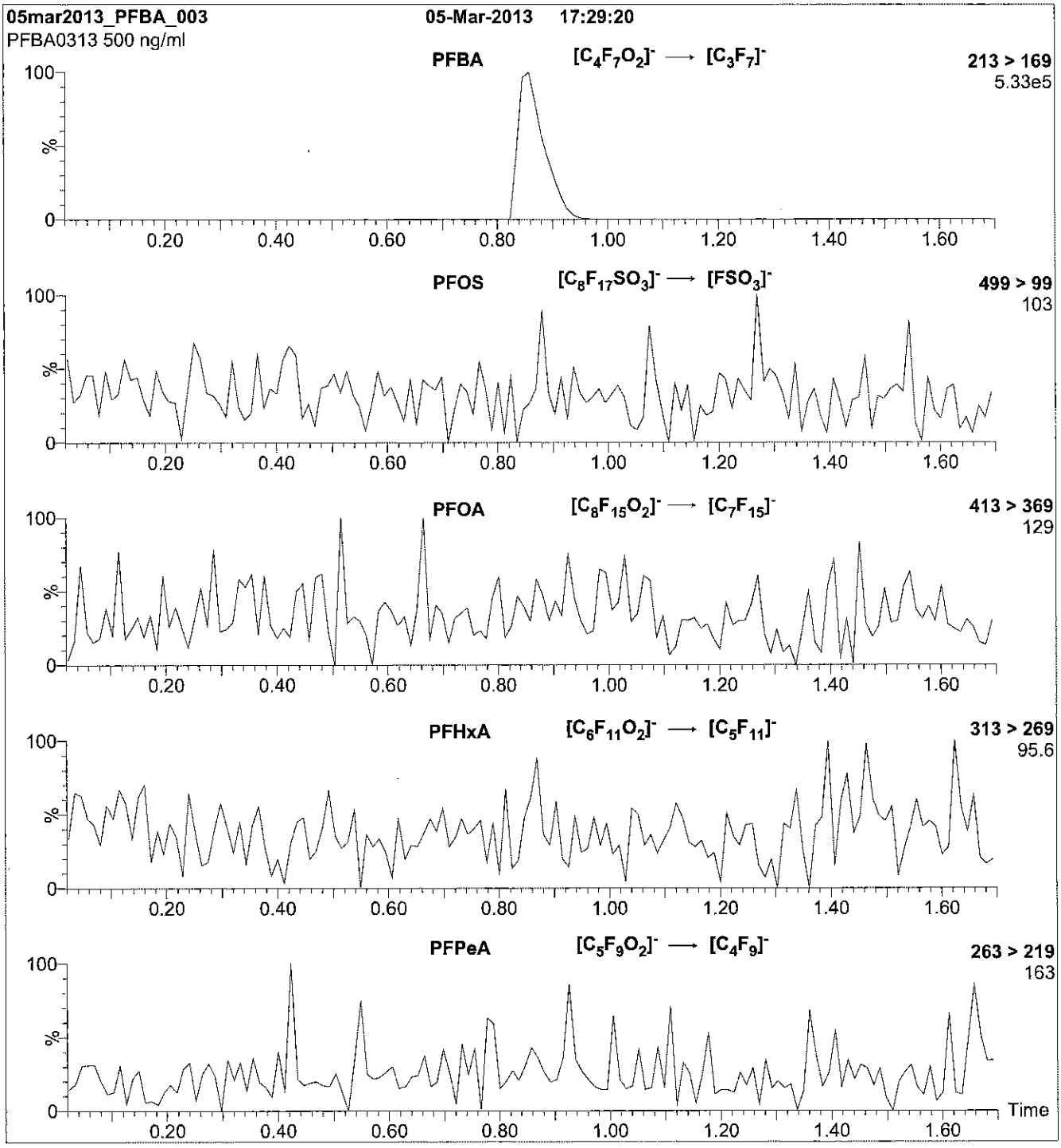
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00003

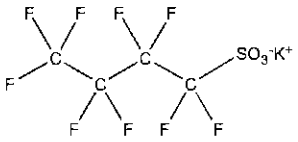
r. 2/11/15

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS1014
COMPOUND: Potassium perfluoro-1-butanesulfonate

STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/09/2014
EXPIRY DATE: (mm/dd/yyyy) 10/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/17/2014 (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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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS and/or LC/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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

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

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

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

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

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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).

CALA Testing Accreditation No: A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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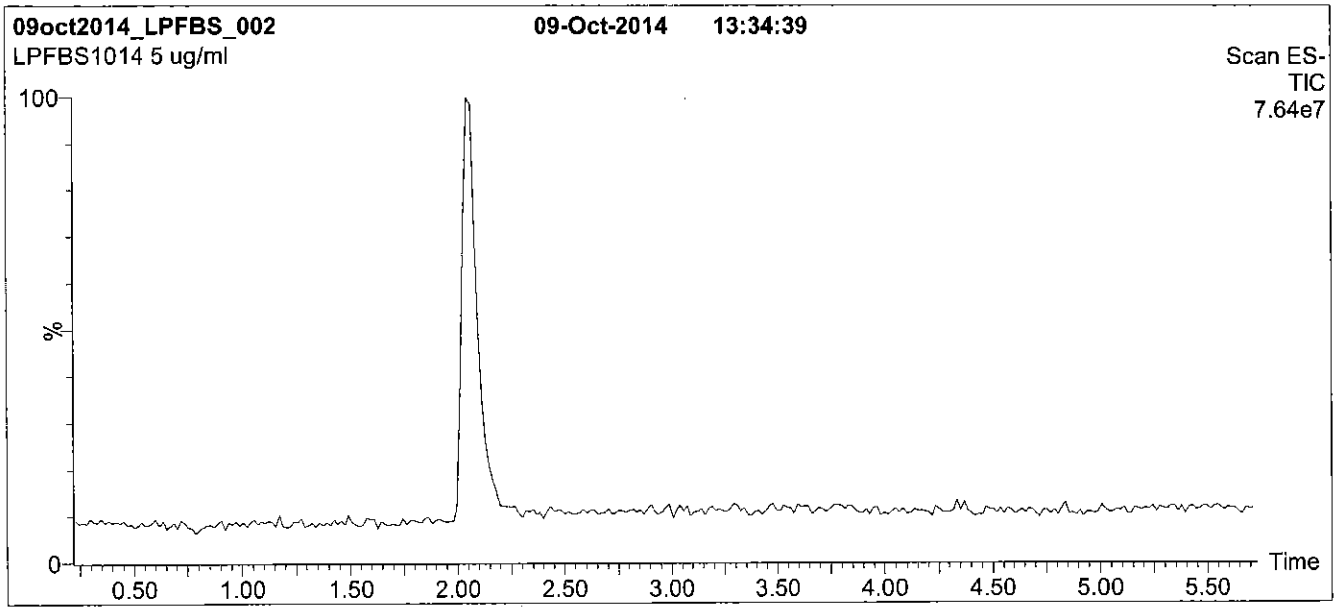
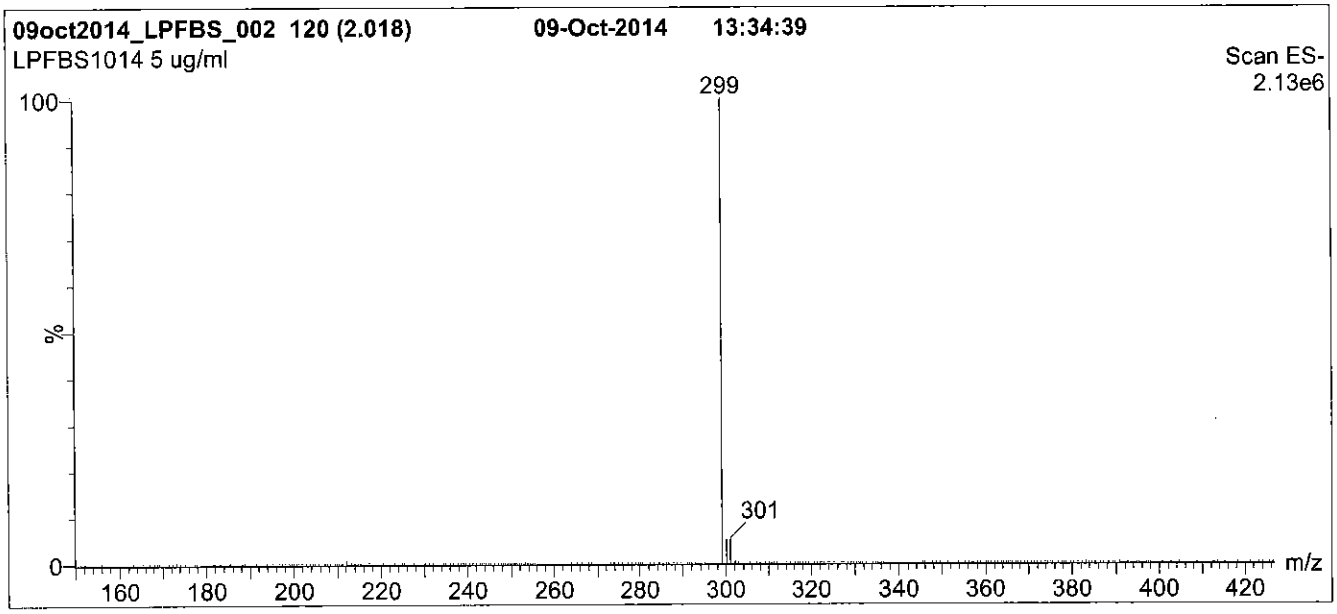
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

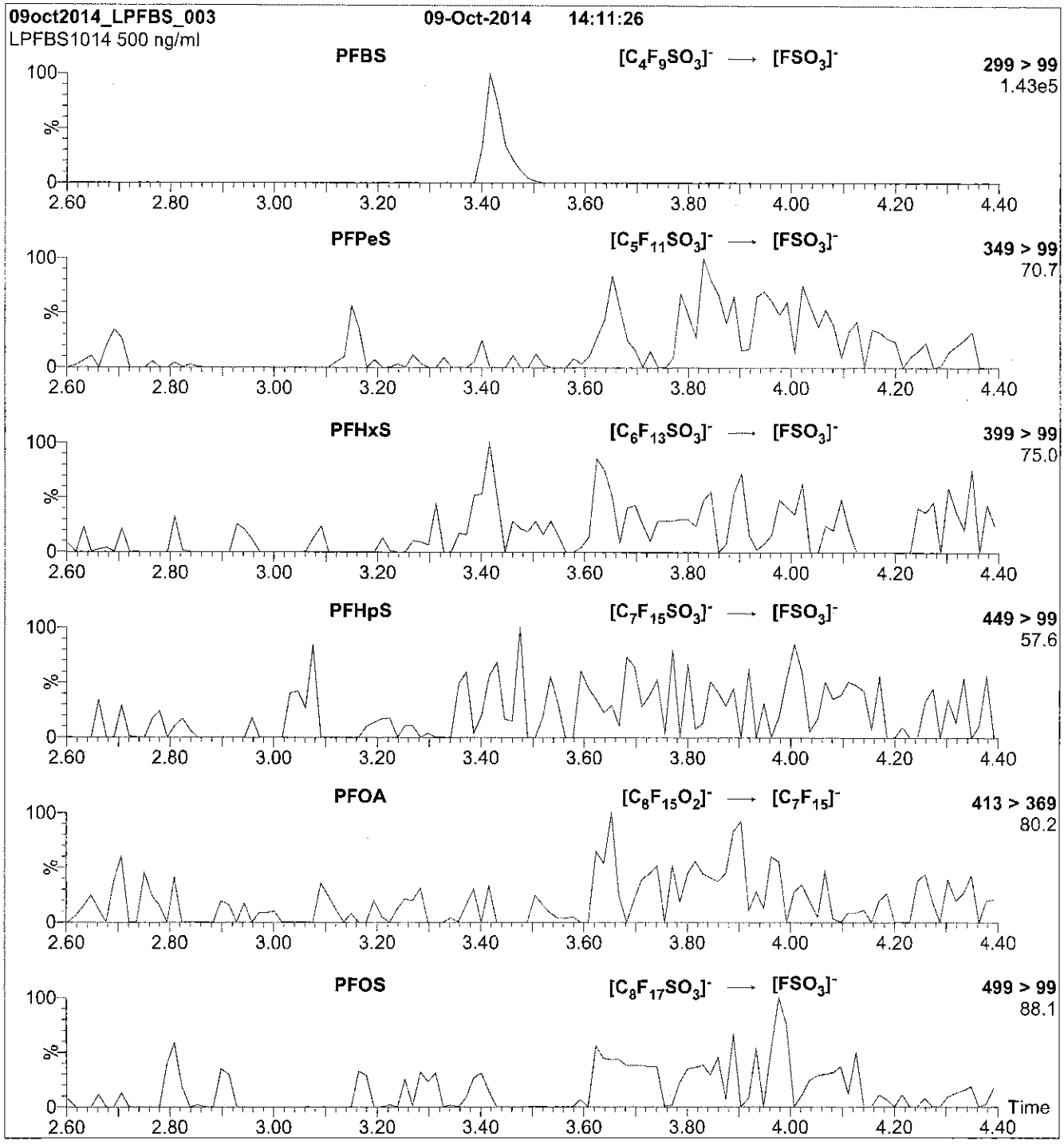
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml L-PFBS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00003

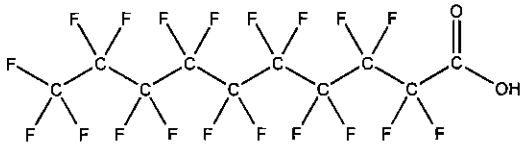
rec 7/16/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA
COMPOUND: Perfluoro-n-decanoic acid
LOT NUMBER: PFDA0613

STRUCTURE:
CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
MOLECULAR WEIGHT: 514.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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 ~ 0.4% PFNA and ~ 0.1% PFOA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/03/2013 (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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

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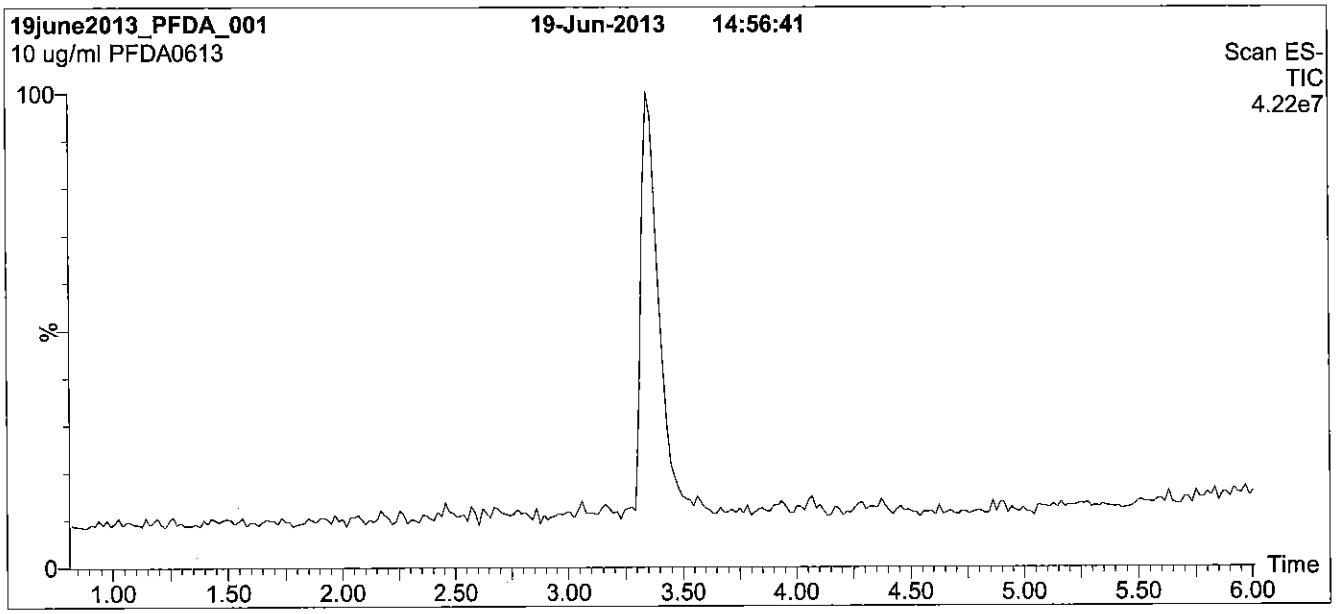
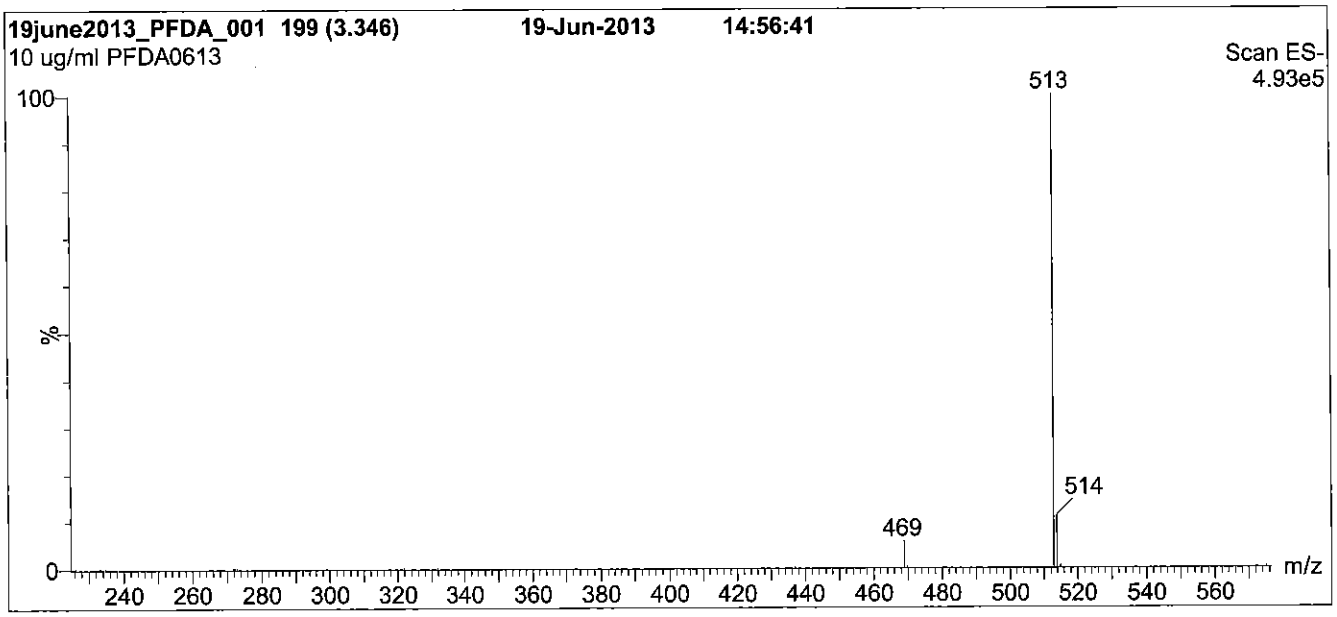
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

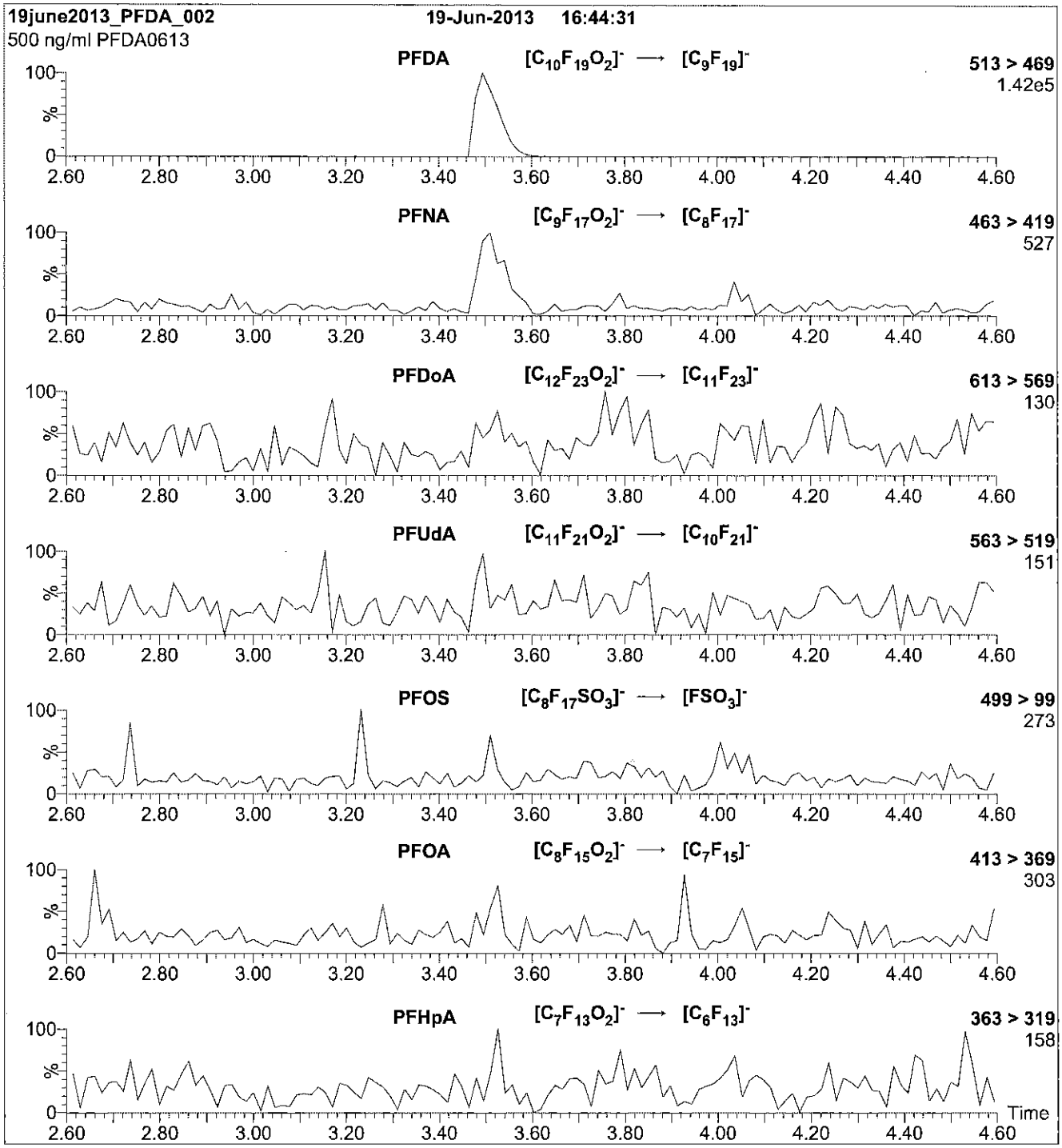
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 13

Reagent

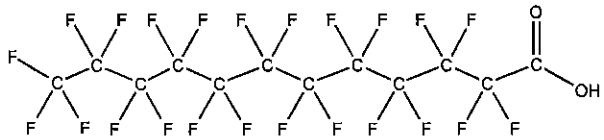
LCPFDoA_00003

Rec 7/14/15

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0113
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/03/2013		
EXPIRY DATE: (mm/dd/yyyy)	01/03/2018		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

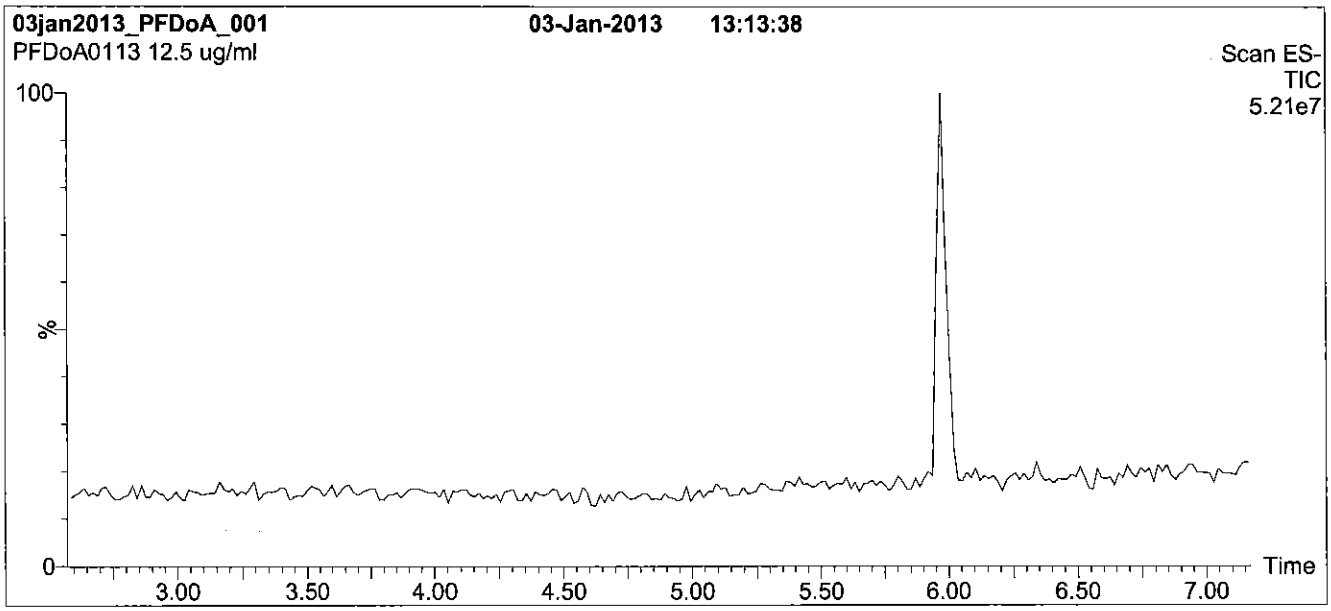
- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

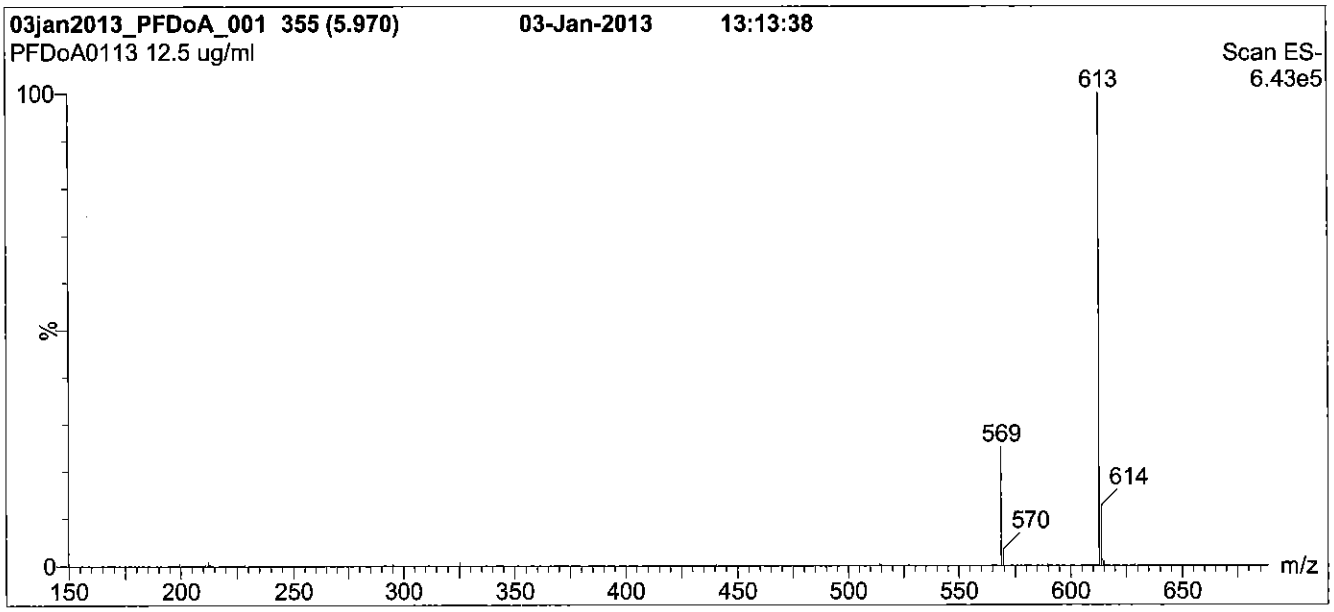
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/01/2013 (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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Reagent

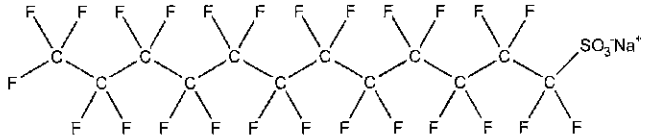
LCPFDoS_00003

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDoS
LOT NUMBER: LPFDoS1011
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_{12}F_{25}SO_3Na$	**MOLECULAR WEIGHT:**	722.14
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.4 ± 2.4 µg/ml (PFDoS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/06/2011		
EXPIRY DATE: (mm/dd/yyyy)	10/06/2016		
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 ~ 0.3% of sodium perfluoro-1-tetradecanesulfonate and ~ 0.8% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/15/2013 (mm/dd/yyyy)

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CALA Testing Accreditation No. A 1226

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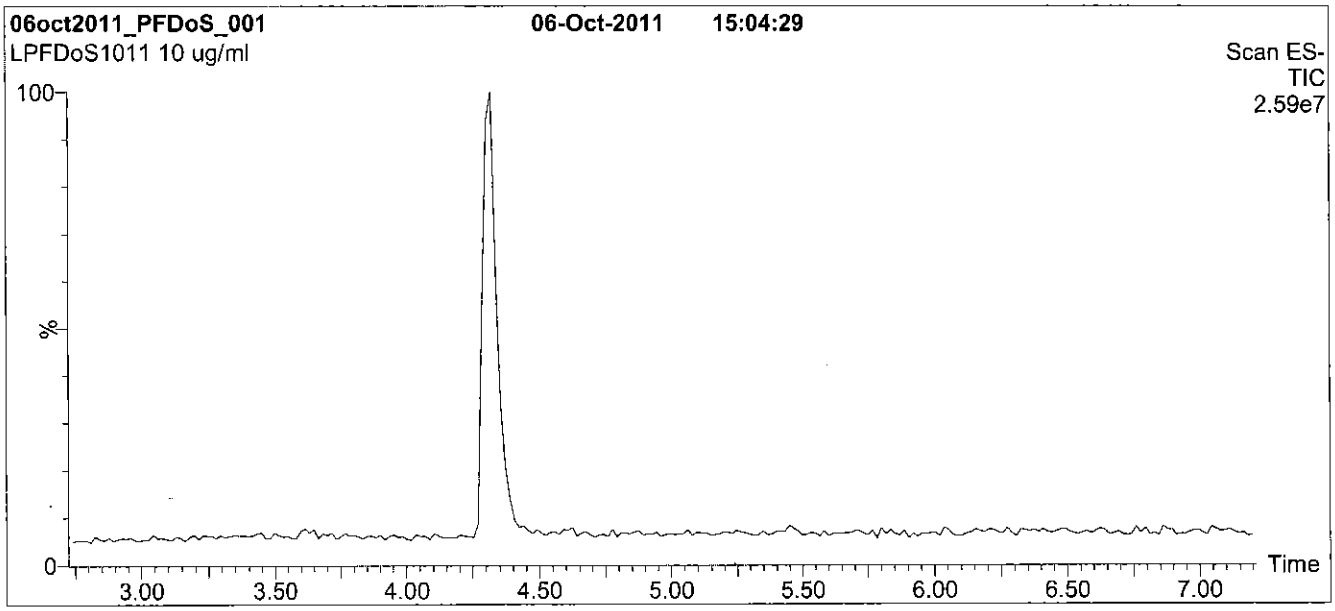
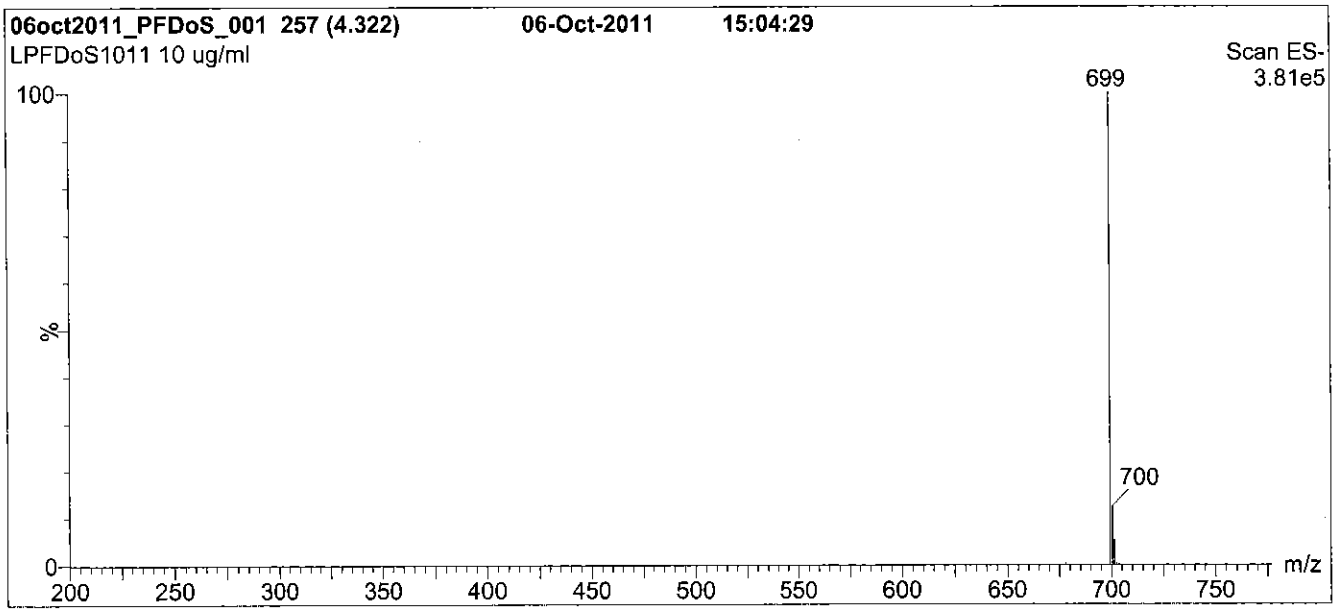
Figure 1: **L-PFDoS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

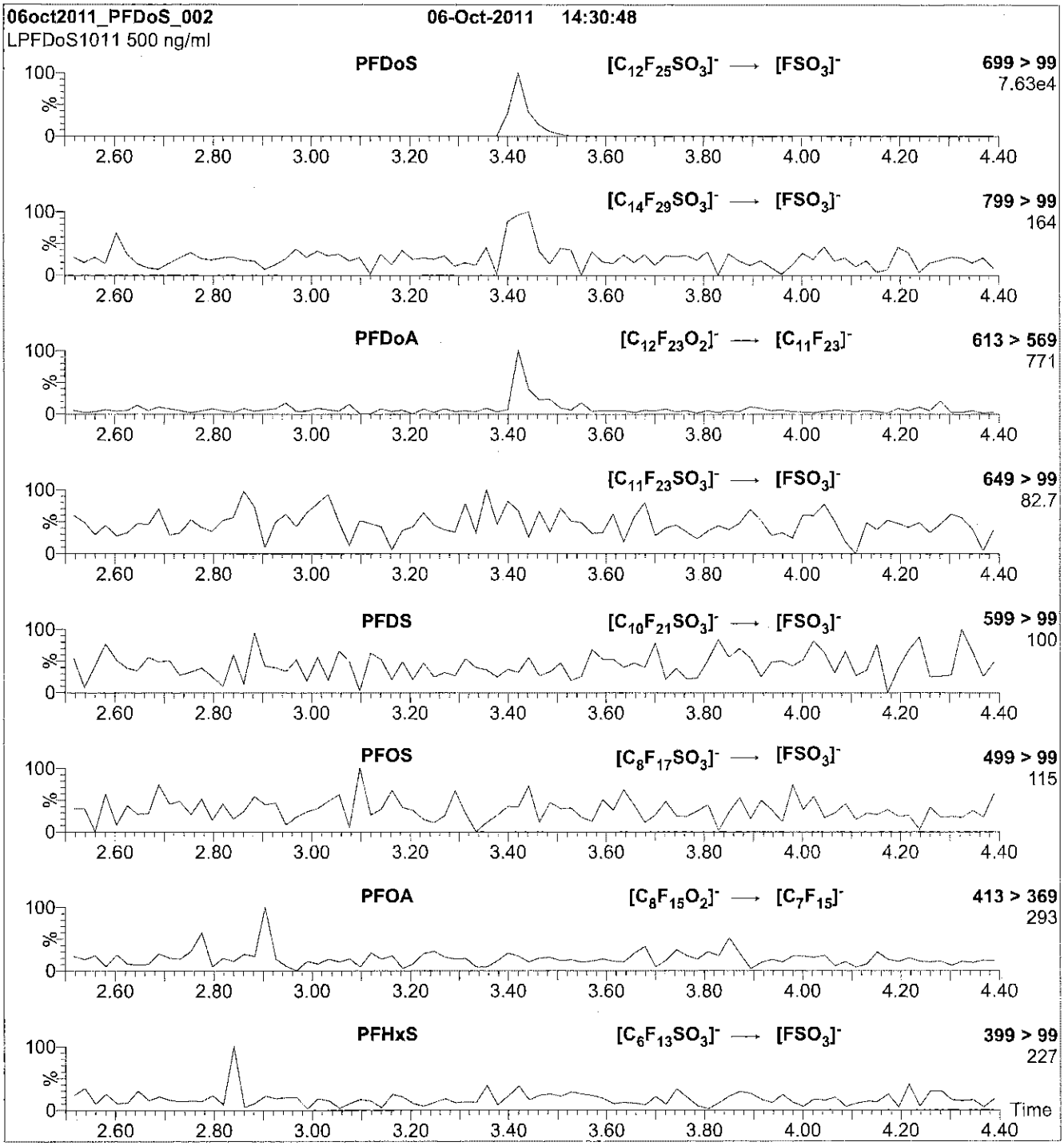
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 80.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 50

Reagent

LCPFDS_00003

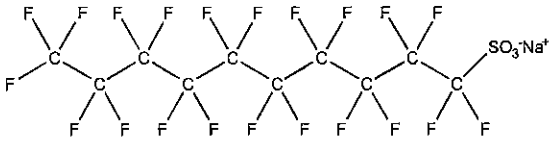
Γ: 2/11/15 SV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0913
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/13/2013		
EXPIRY DATE: (mm/dd/yyyy)	09/13/2018		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 09/23/2013 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

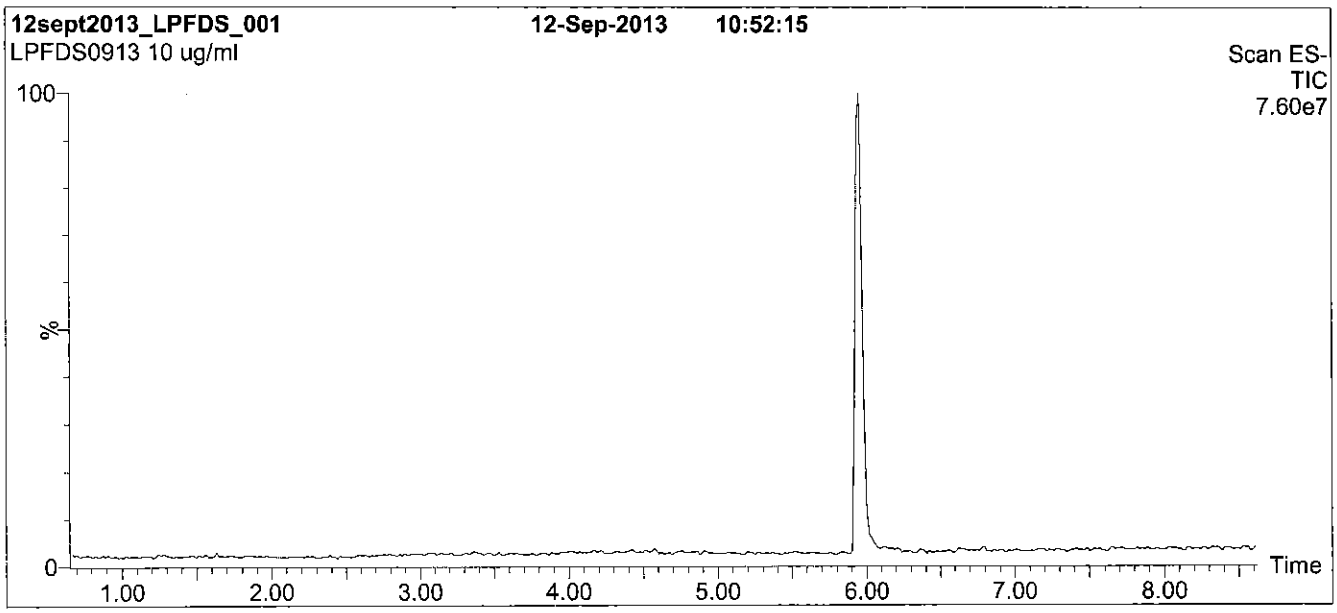
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

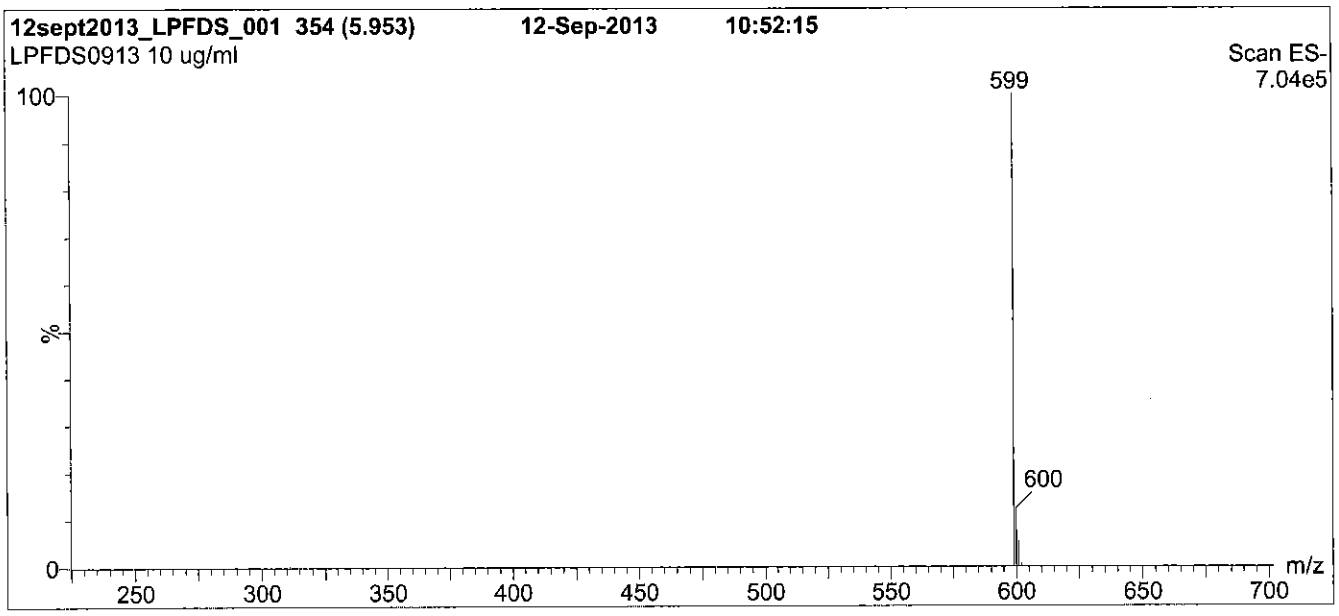
CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 11 min

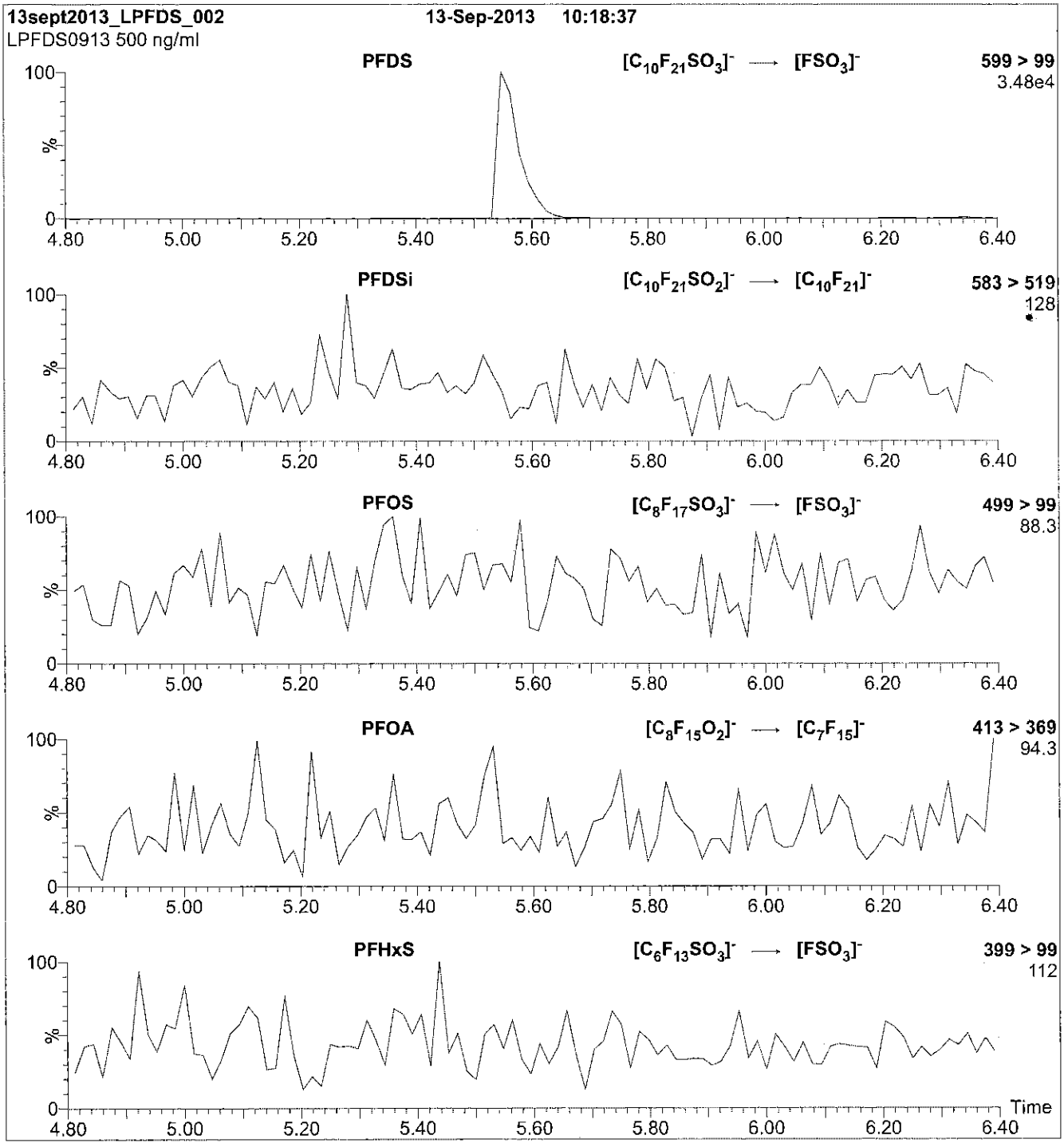
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.78e-3
Collision Energy (eV) = 50

Reagent

LCPFHpA_00004

WELLINGTON LABORATORIES

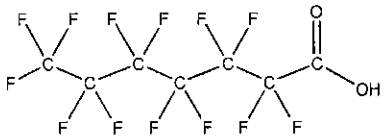
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0514

STRUCTURE:

CAS #: 375-85-9



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

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
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:** 05/22/2014 (mm/dd/yyyy)

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

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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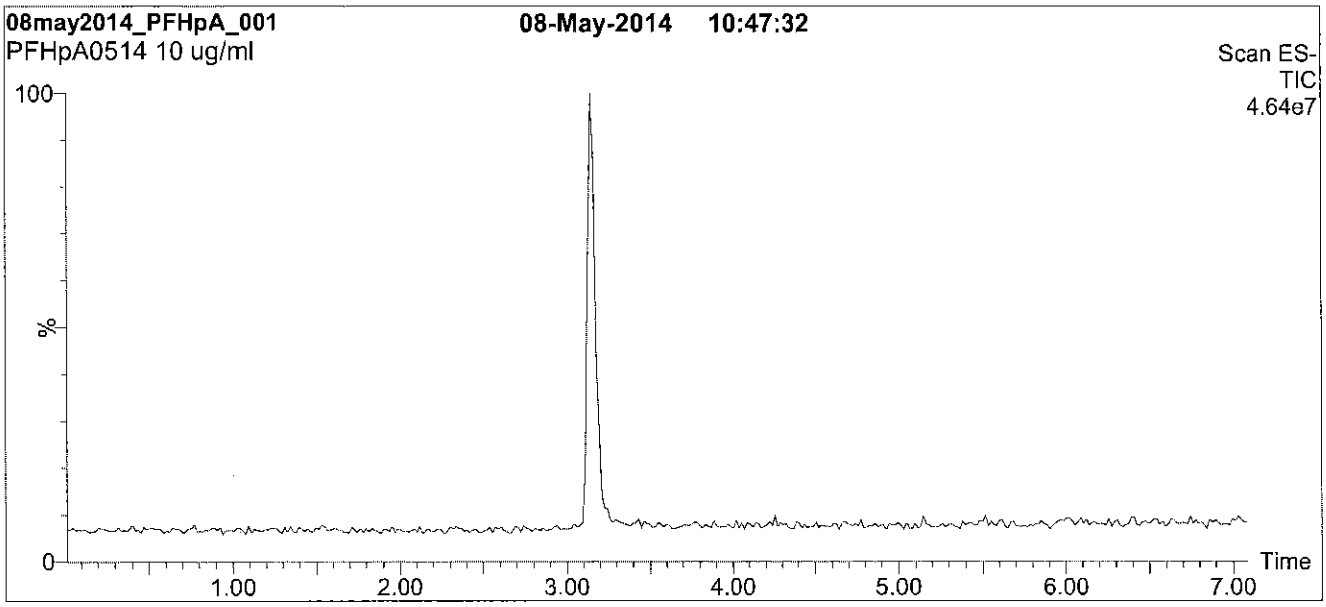
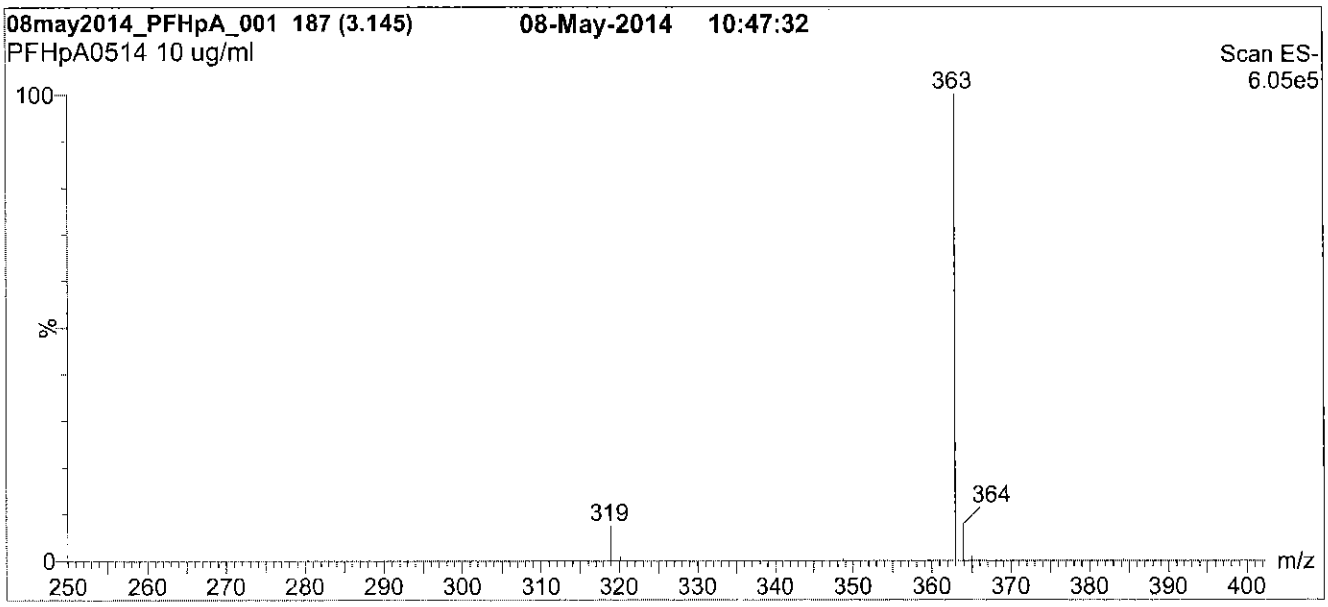
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

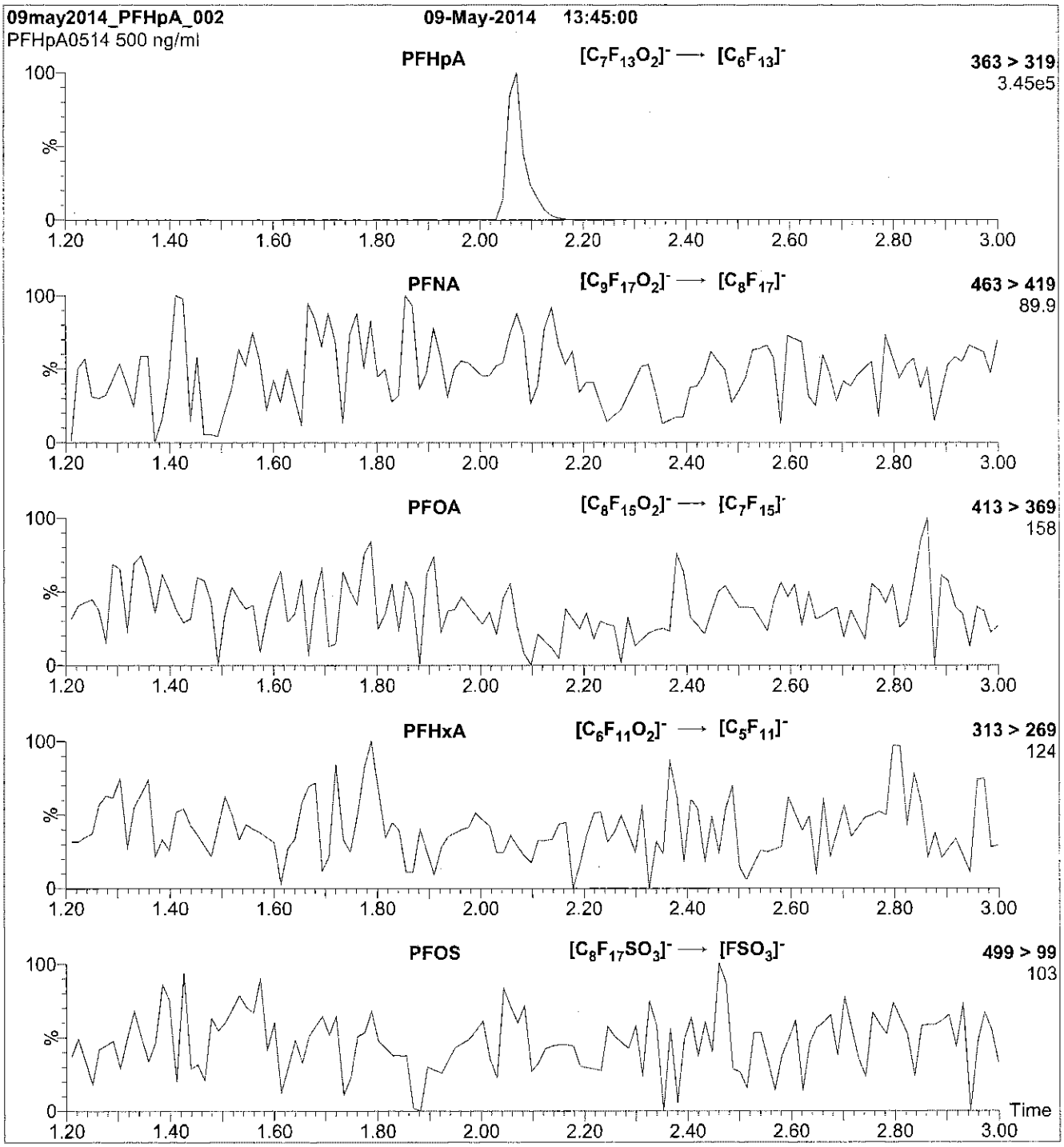
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCPFHpS_00005

R: 4/15/15 SK

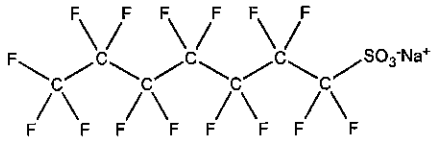
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS0114

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/28/2014		
EXPIRY DATE: (mm/dd/yyyy)	01/28/2019		
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 ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/27/2015 (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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CALA Testing Accreditation No: A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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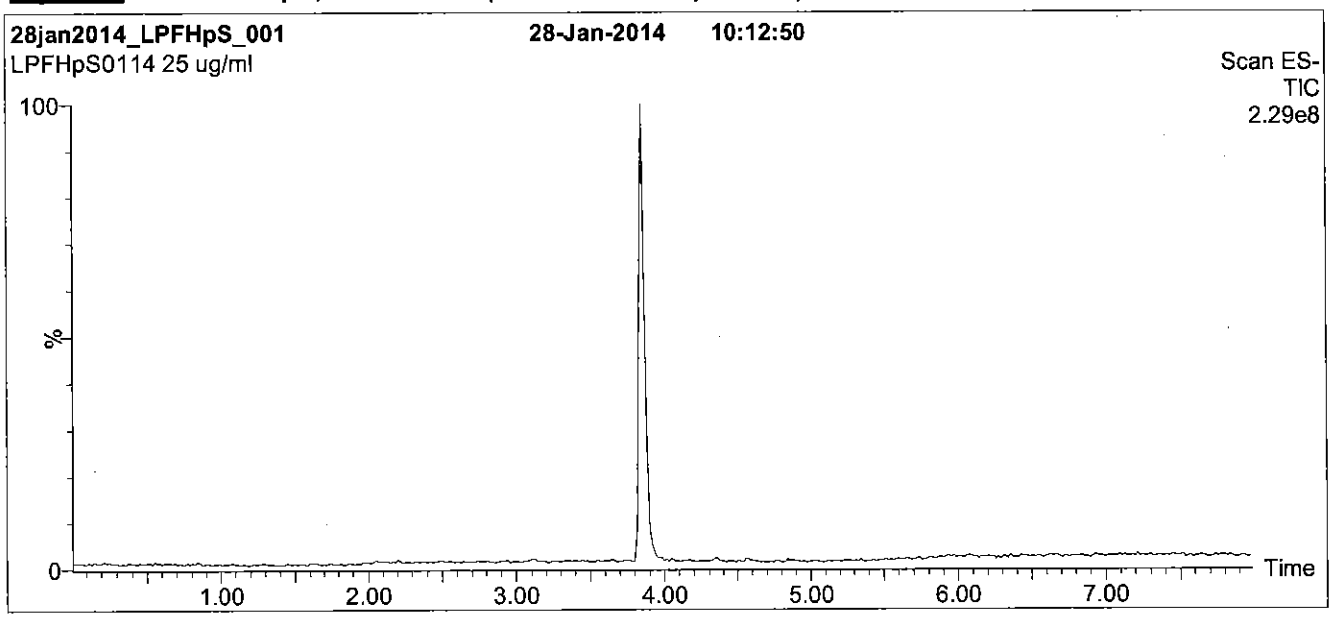
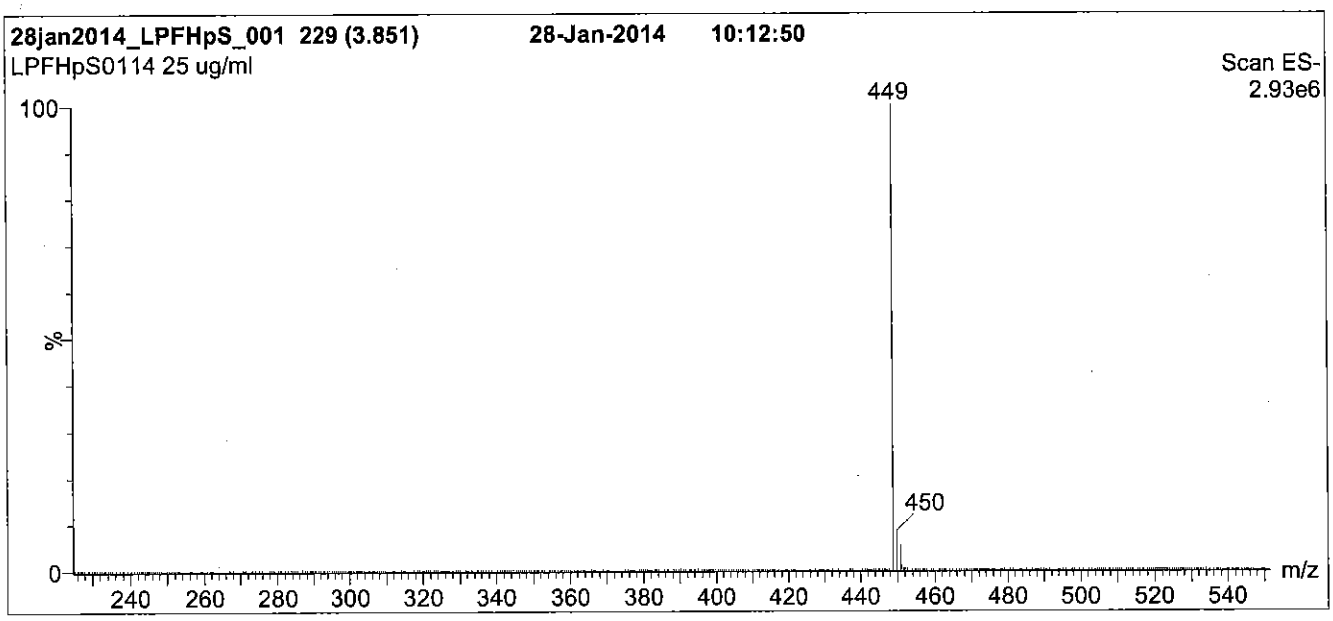
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

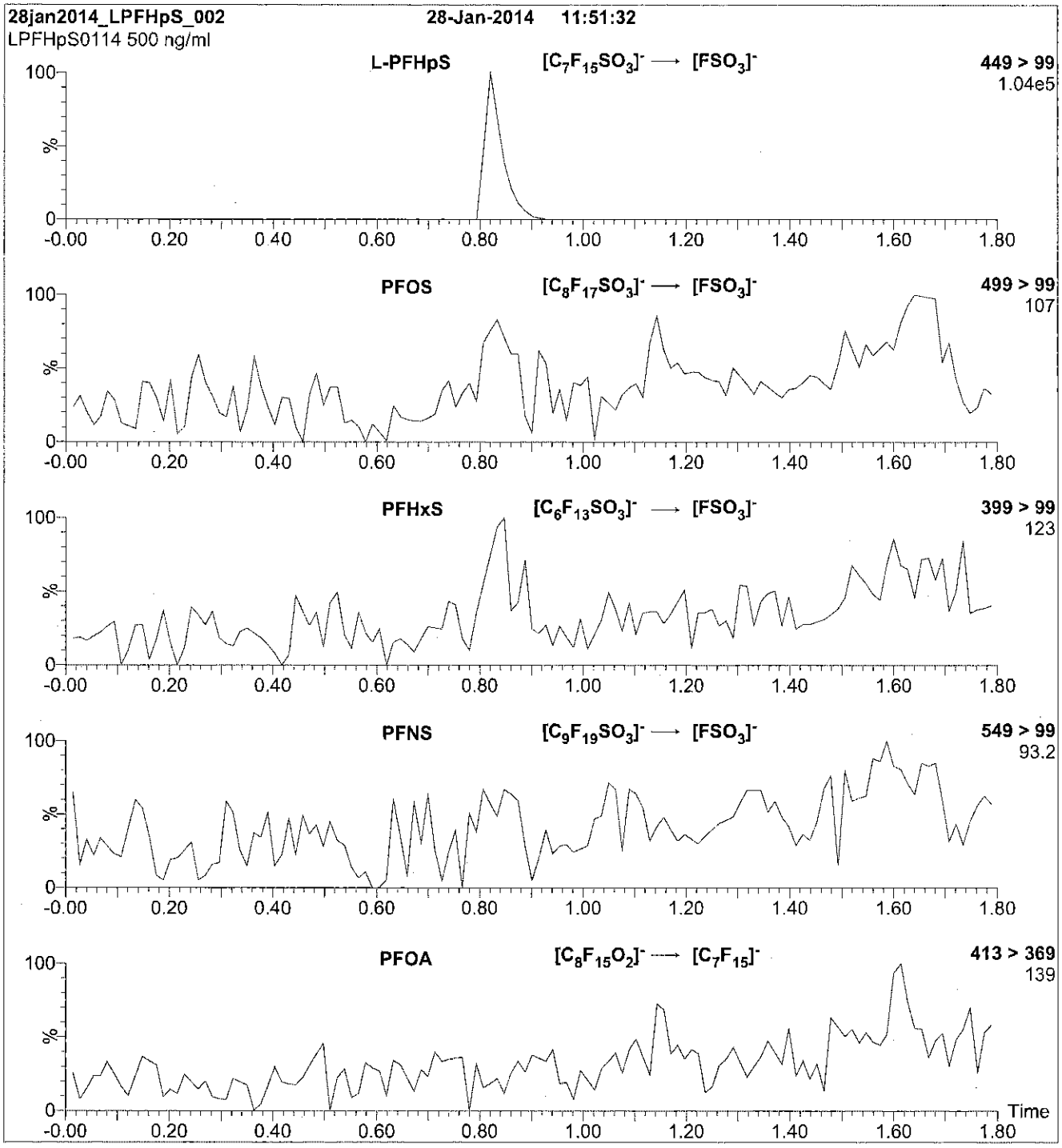
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00003

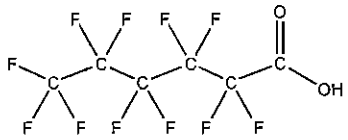
V: 2/11/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid
LOT NUMBER: PFHxA0514

STRUCTURE:
CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
MOLECULAR WEIGHT: 314.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
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:** 05/22/2014 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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where x is expressed as a relative standard uncertainty of the individual parameter.

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CALA Testing Accreditation No. A1226

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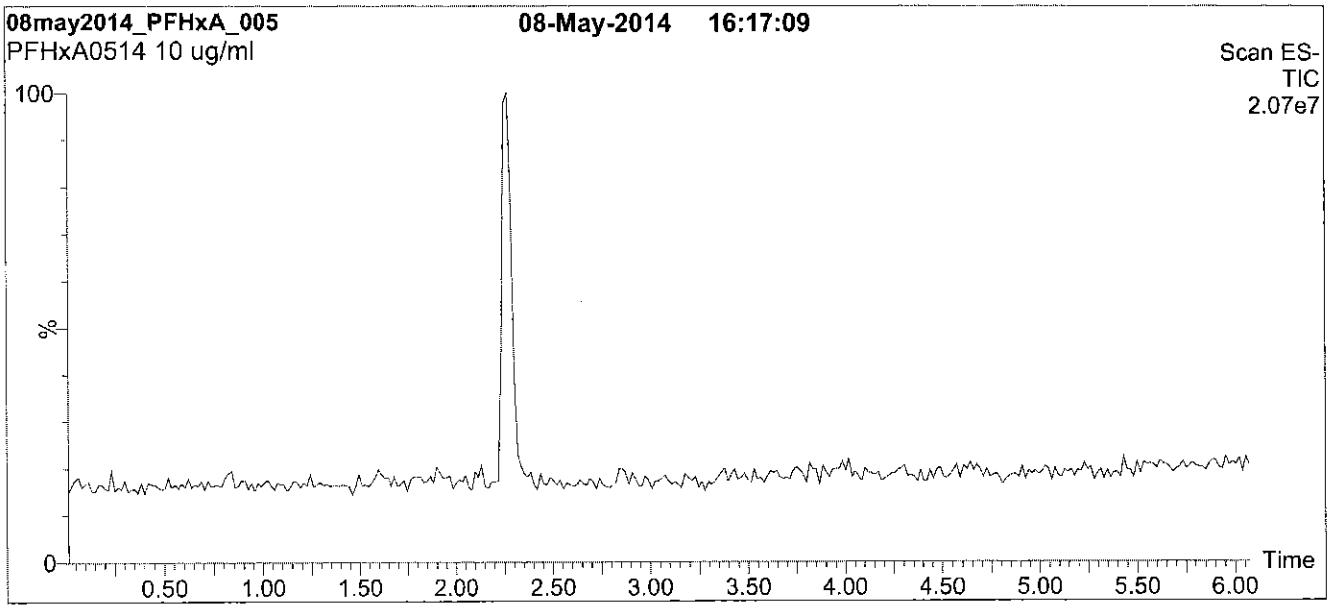
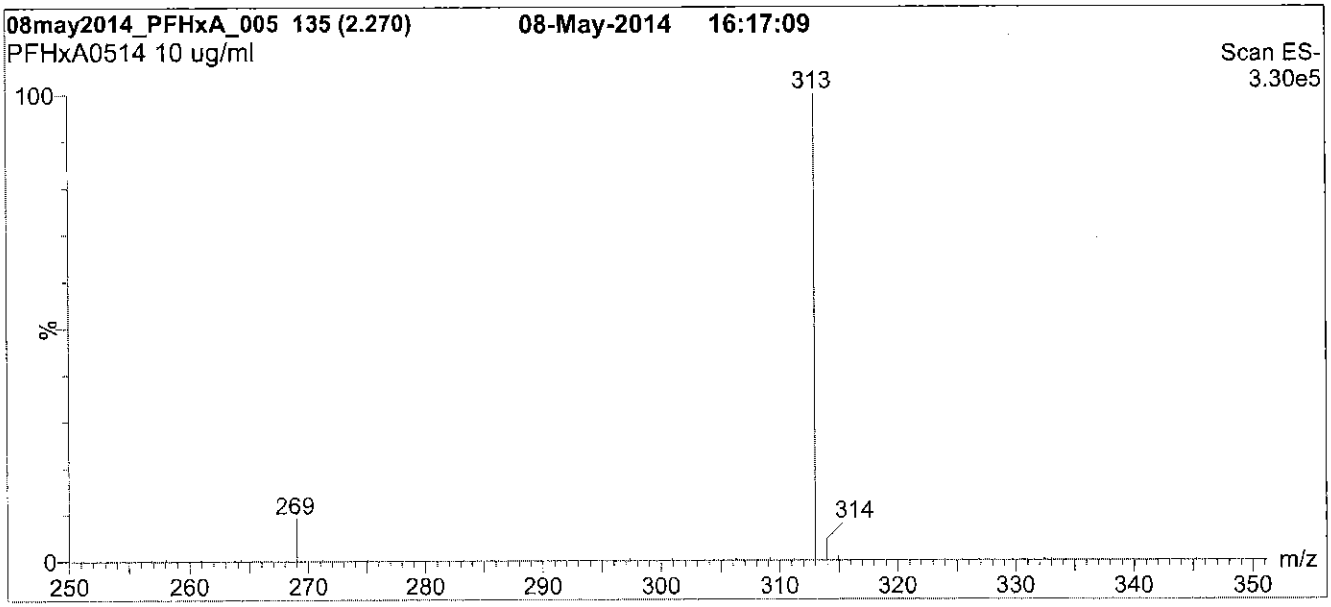
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

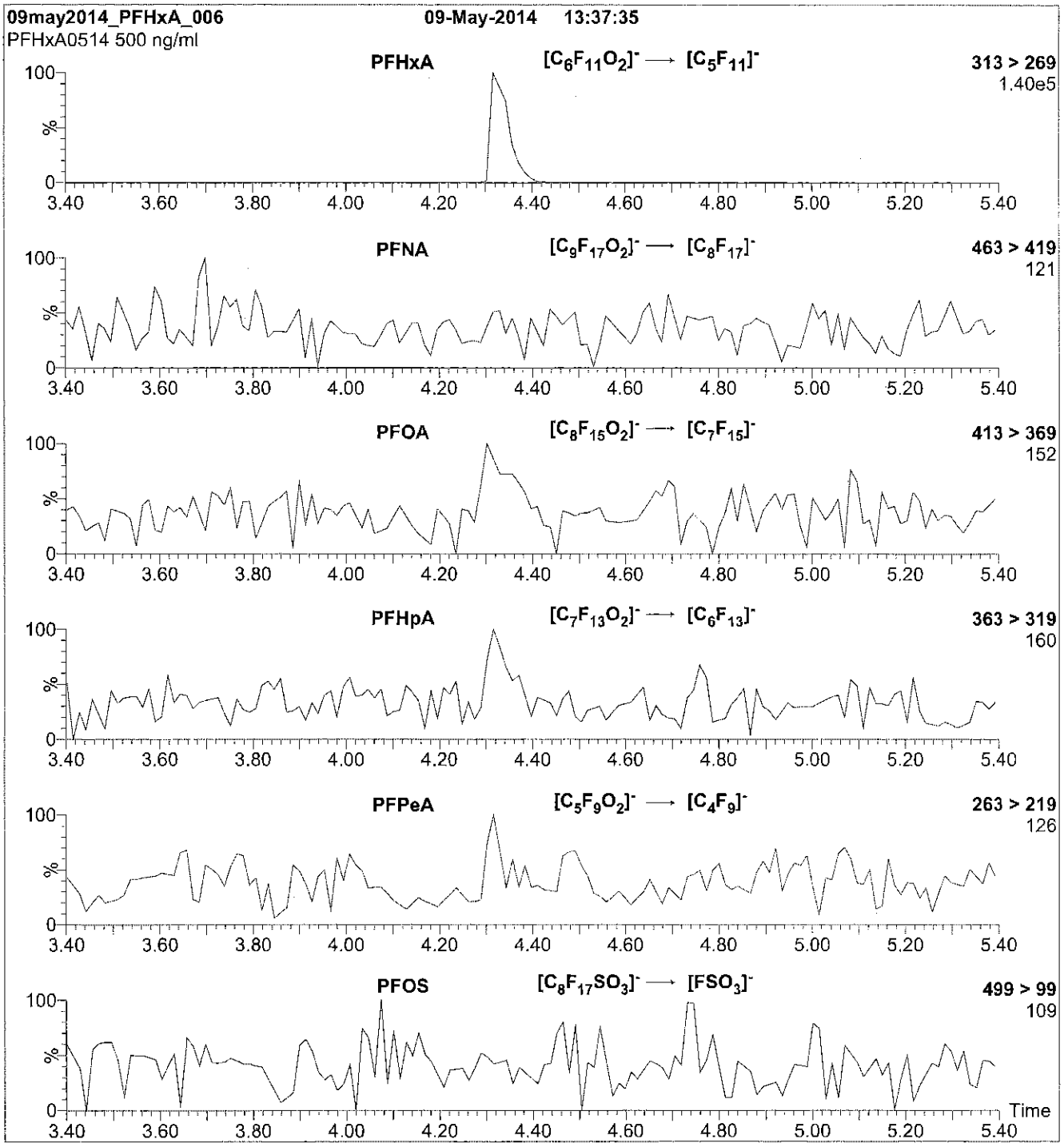
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 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: **PFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 10

Reagent

LCPFHxS_00003

VR 2/11/15 GV

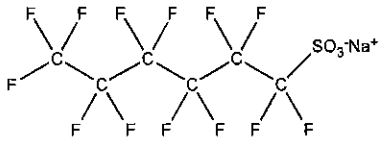
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHxS
LOT NUMBER: LPFHxS0514
COMPOUND: Sodium perfluoro-1-hexanesulfonate

STRUCTURE:

CAS #: 82382-12-5



MOLECULAR FORMULA: $C_6F_{13}SO_3Na$
MOLECULAR WEIGHT: 422.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (PFHxS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
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.

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Certified By: B.G. Chittim **Date:** 05/16/2014 (mm/dd/yyyy)

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

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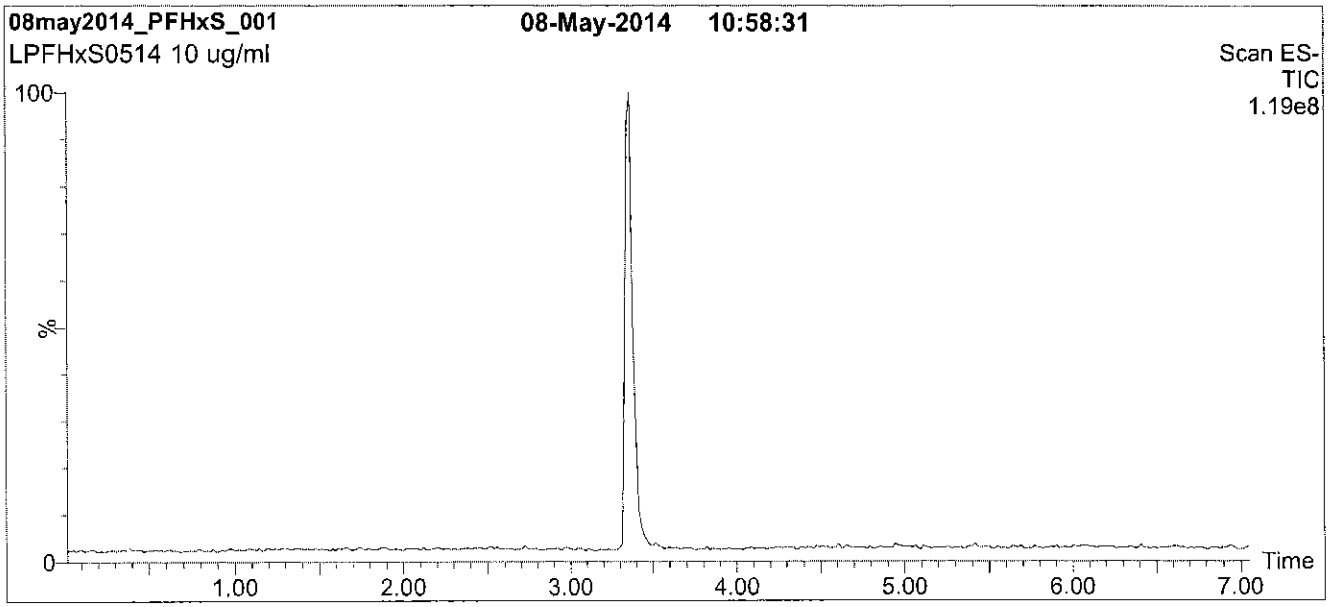
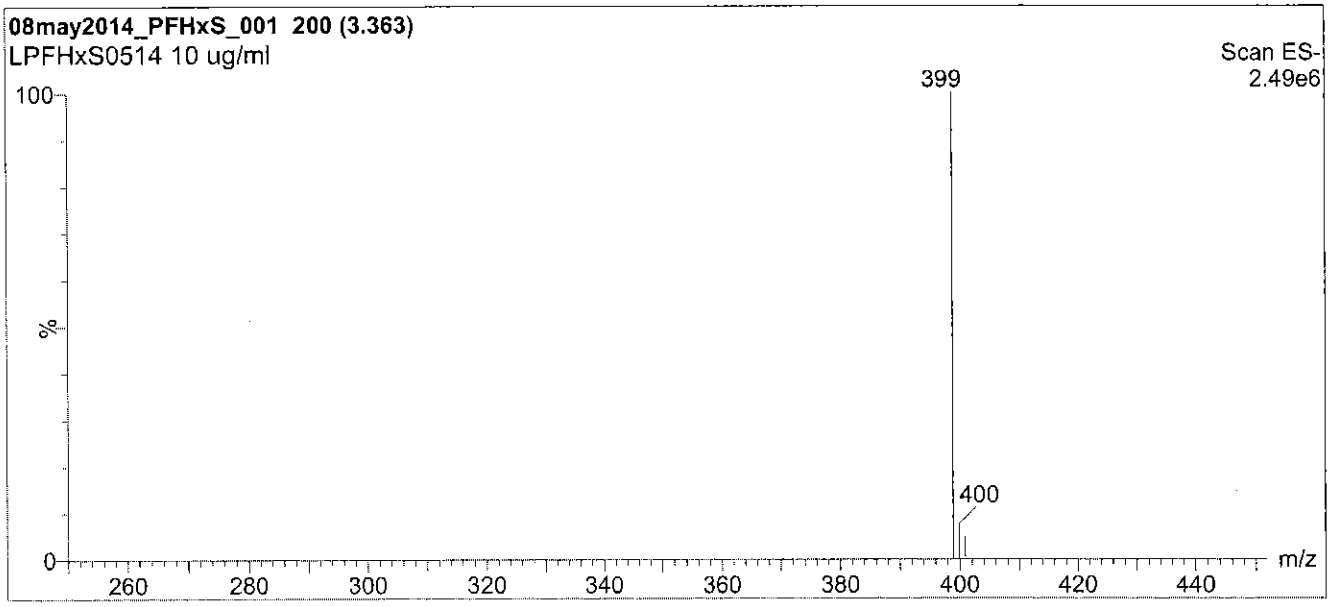
Figure 1: **L-PFHxS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

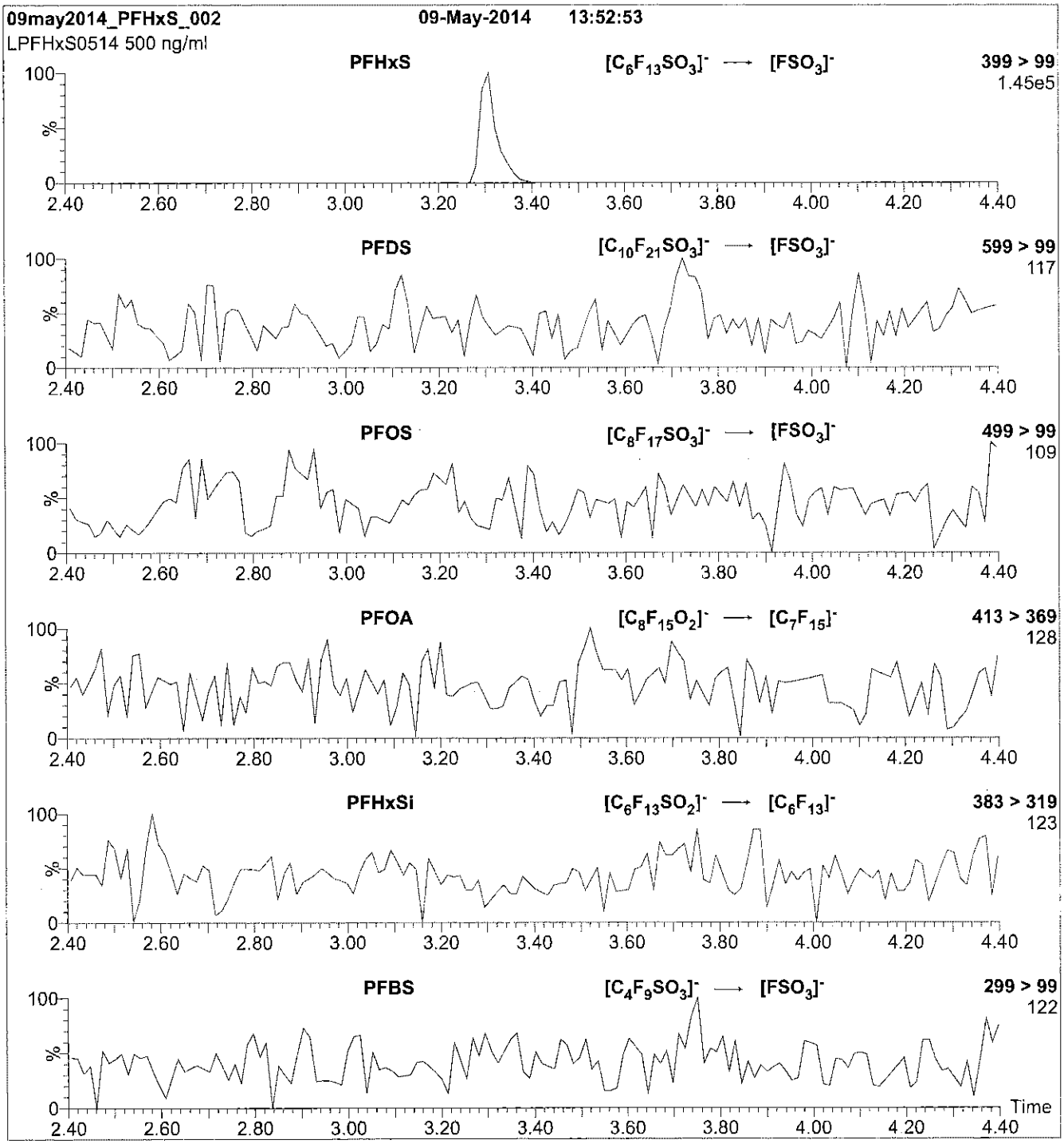
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00004

P: 3/27/15 sv

S:

WELLINGTON LABORATORIES

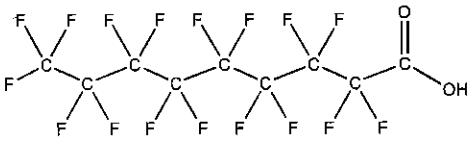
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFNA0514

STRUCTURE:

CAS #: 375-95-1



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

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/22/2014 (mm/dd/yyyy)

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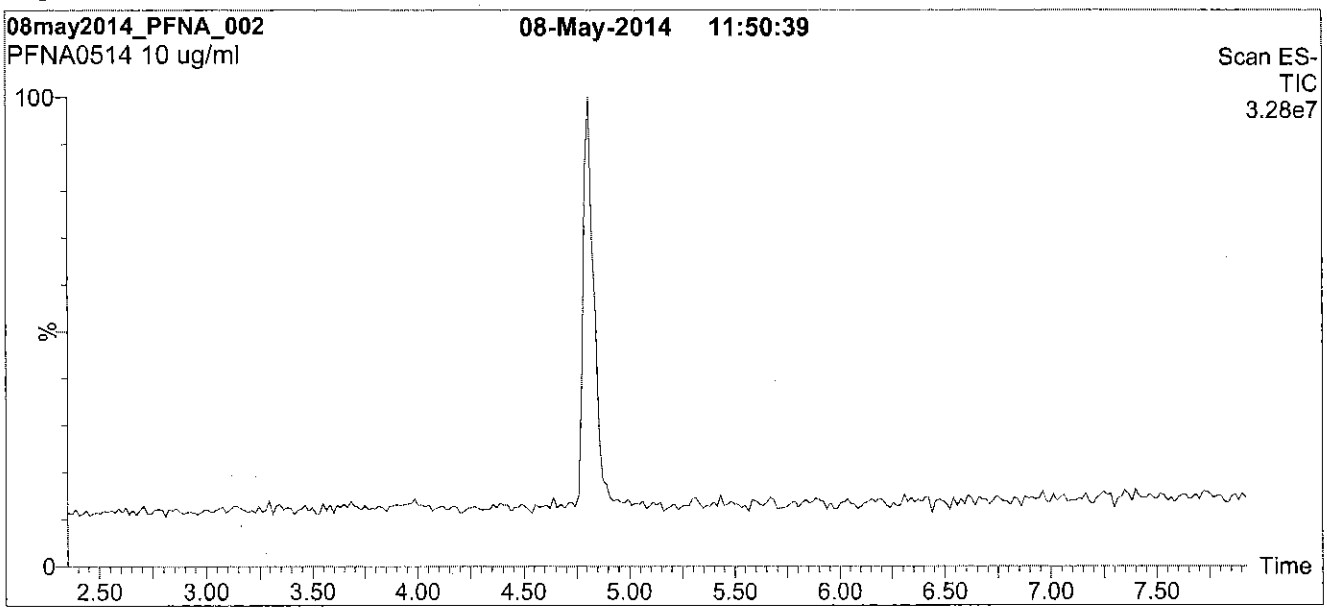

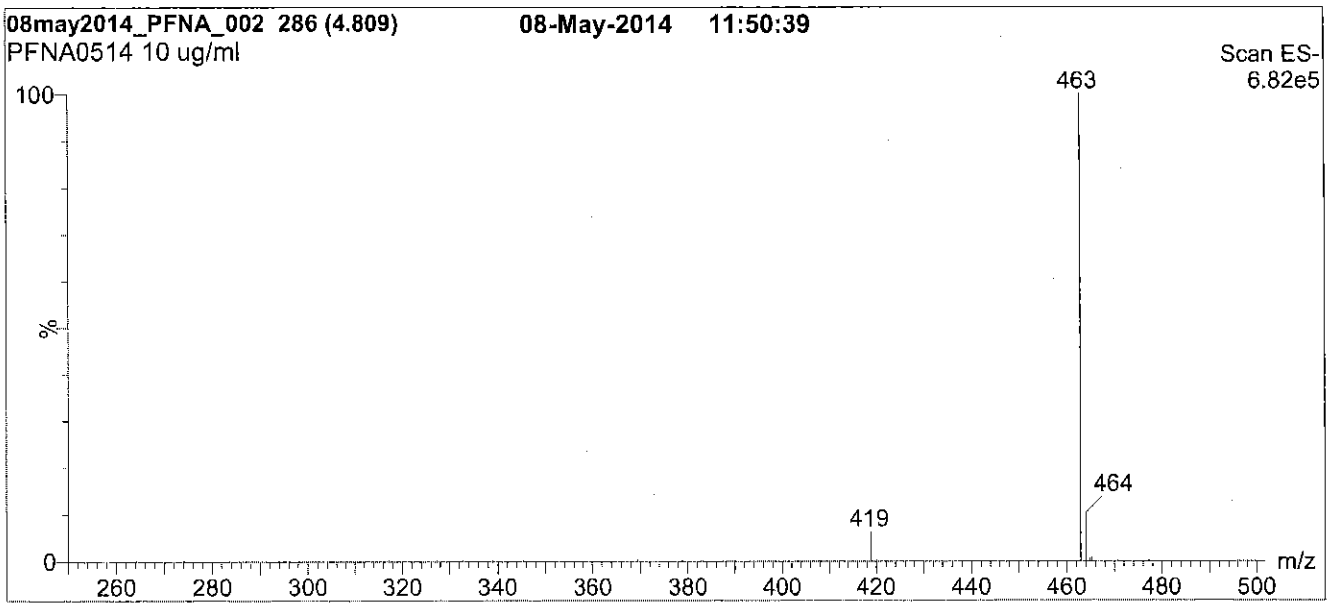

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Chromatographic Conditions

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

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

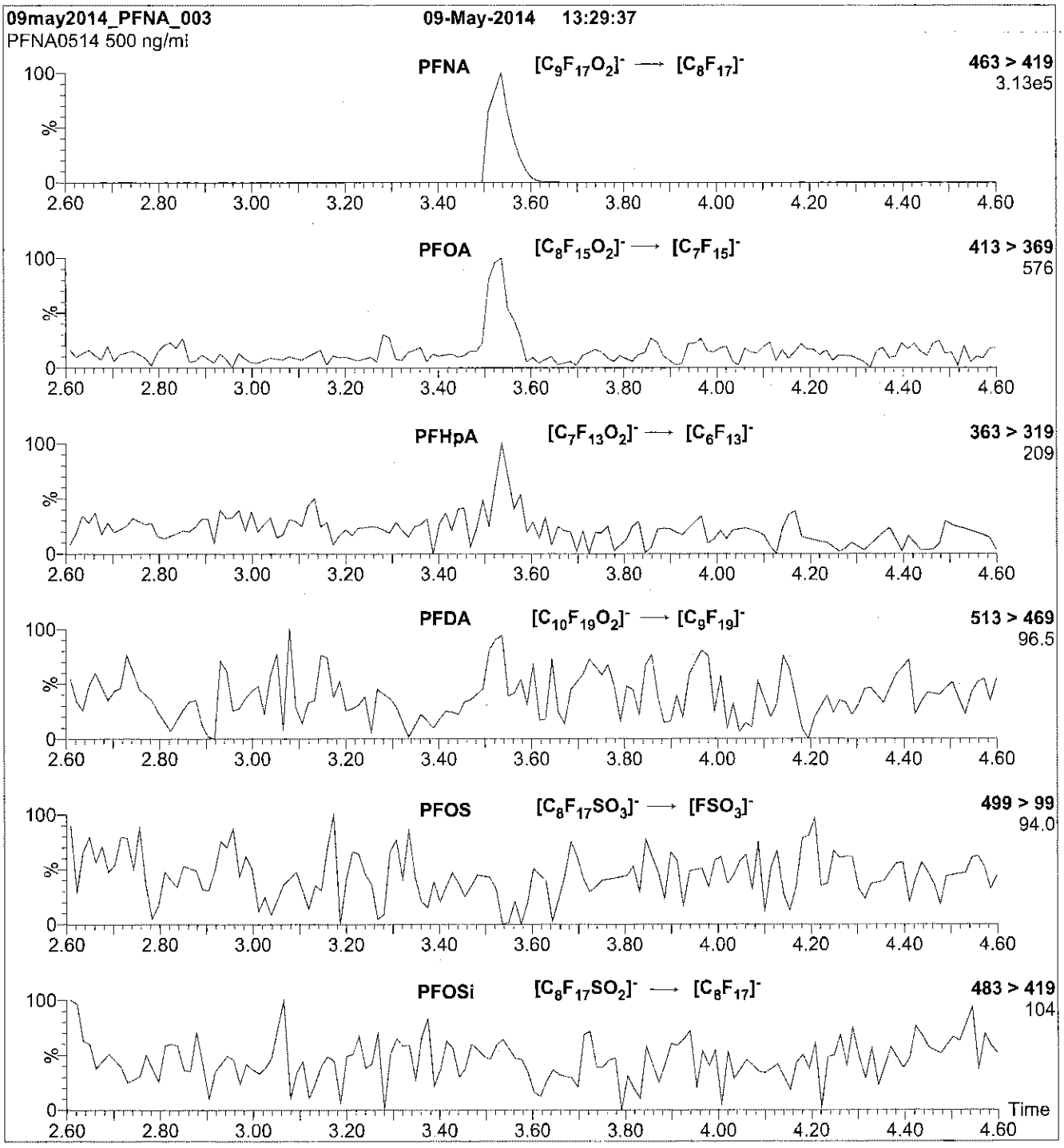
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 11

Reagent

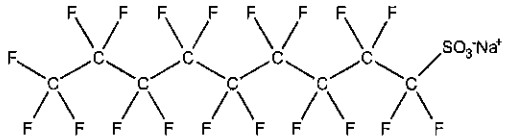
LCPFNS_00002

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFNS
LOT NUMBER: LPFNS0712
COMPOUND: Sodium perfluoro-1-nonanesulfonate

STRUCTURE:
CAS #: 98789-57-2



MOLECULAR FORMULA:	$C_9F_{19}SO_3Na$	**MOLECULAR WEIGHT:**	572.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.0 ± 2.4 µg/ml (PFNS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/04/2012		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2017		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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Certified By: B.G. Chittim **Date:** 01/15/2013 (mm/dd/yyyy)

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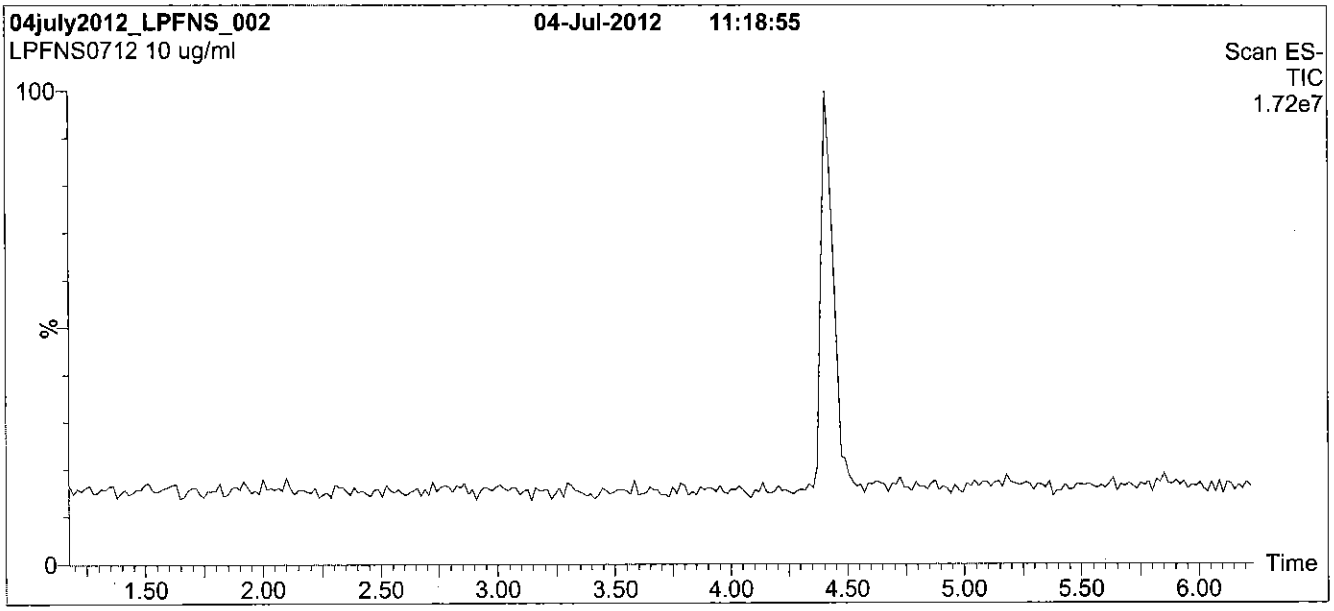
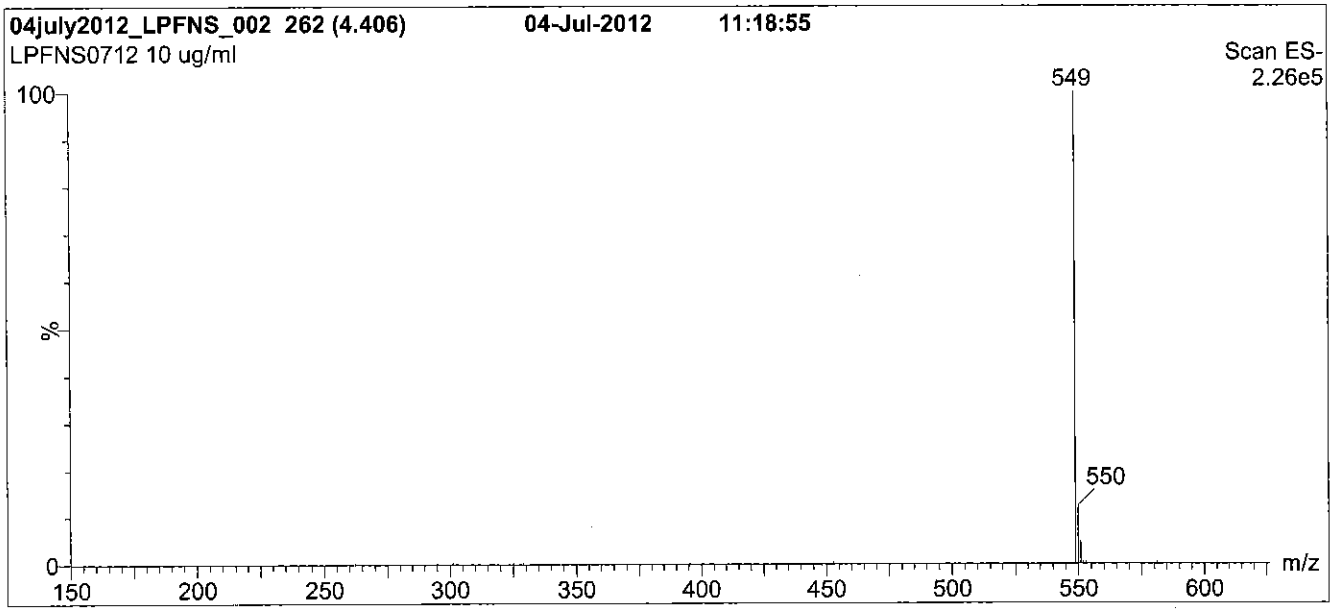




Conditions for Figure 1:

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

Chromatographic Conditions

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

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

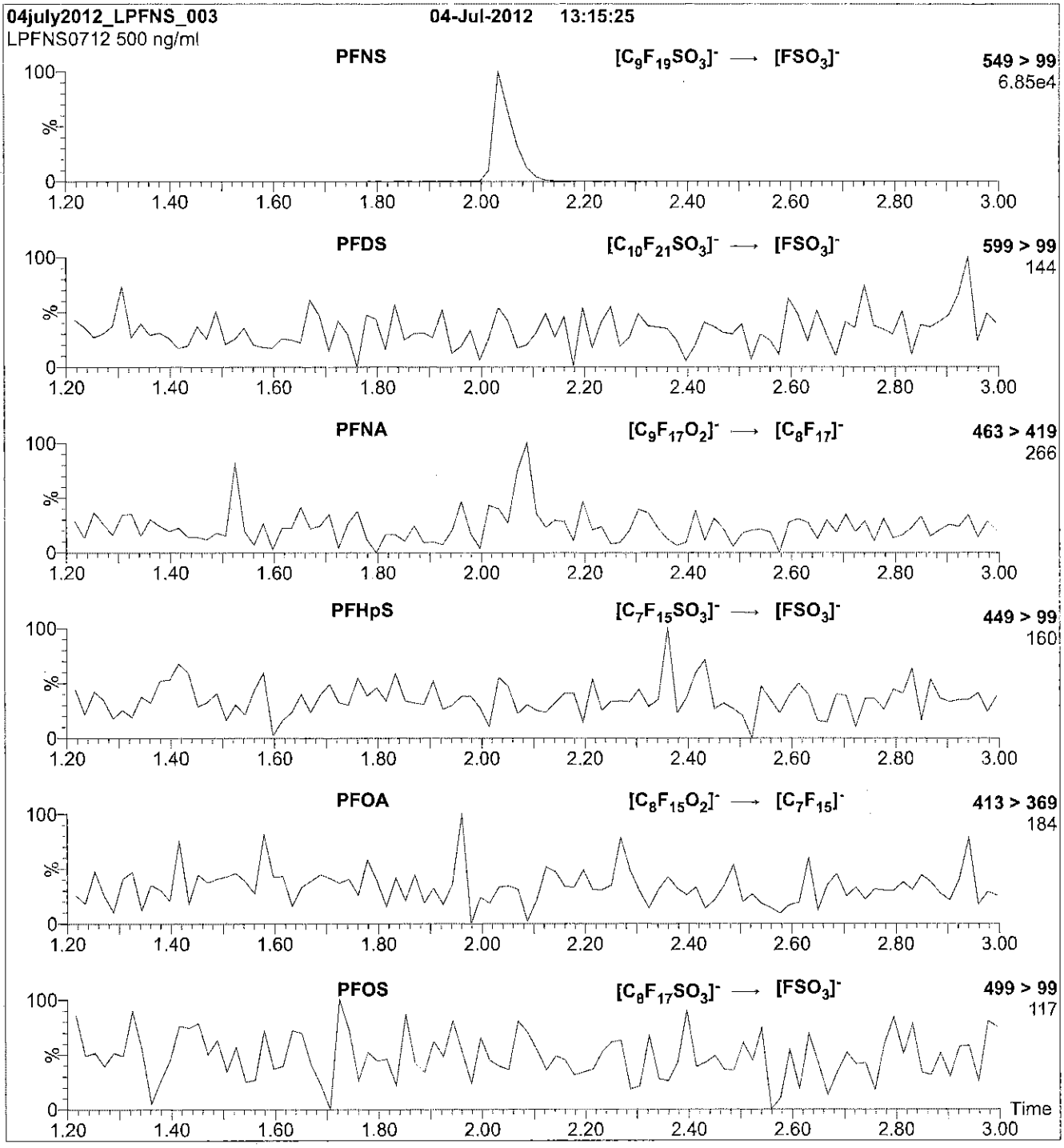
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 45

Reagent

LCPFOA_00004

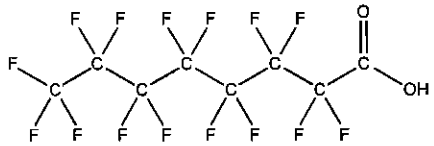
Rec 7/15/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA1013

STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
MOLECULAR WEIGHT: 414.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/11/2013
EXPIRY DATE: (mm/dd/yyyy) 10/11/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/18/2013 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

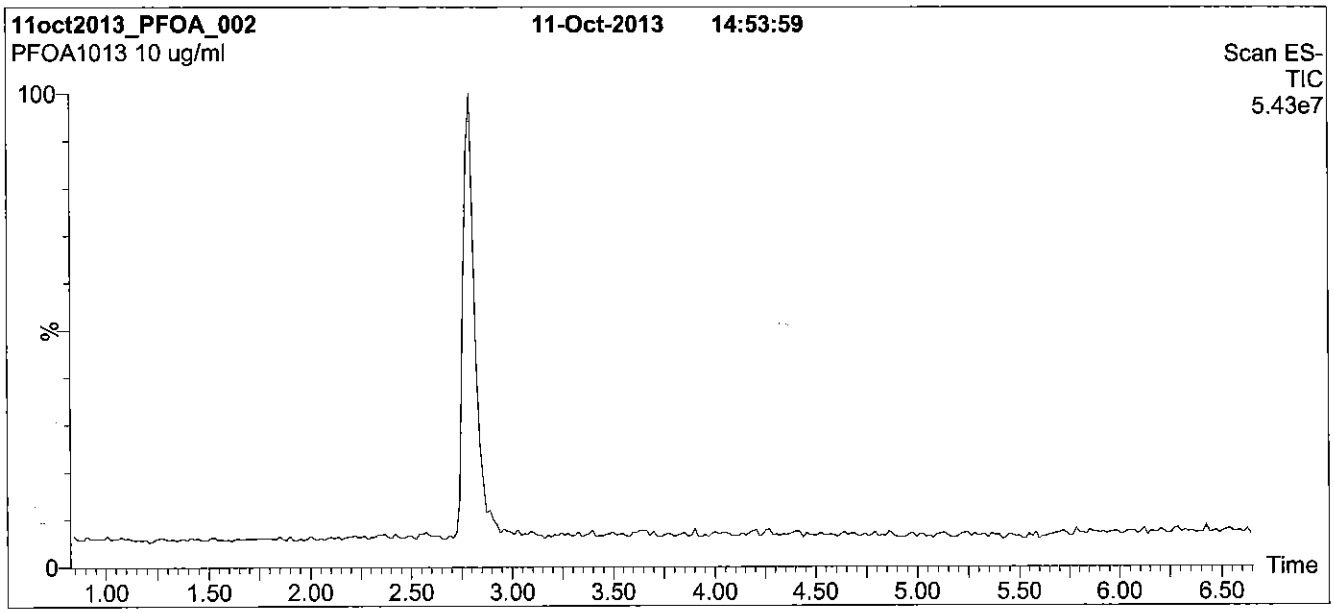
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

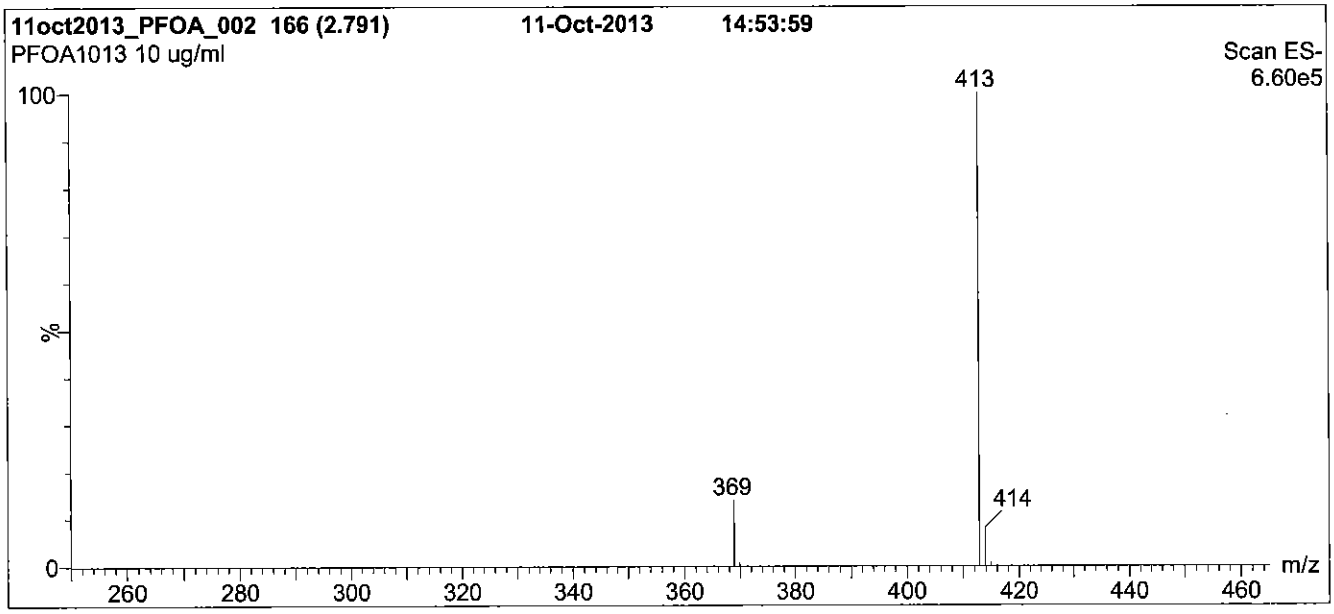
CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 10 min

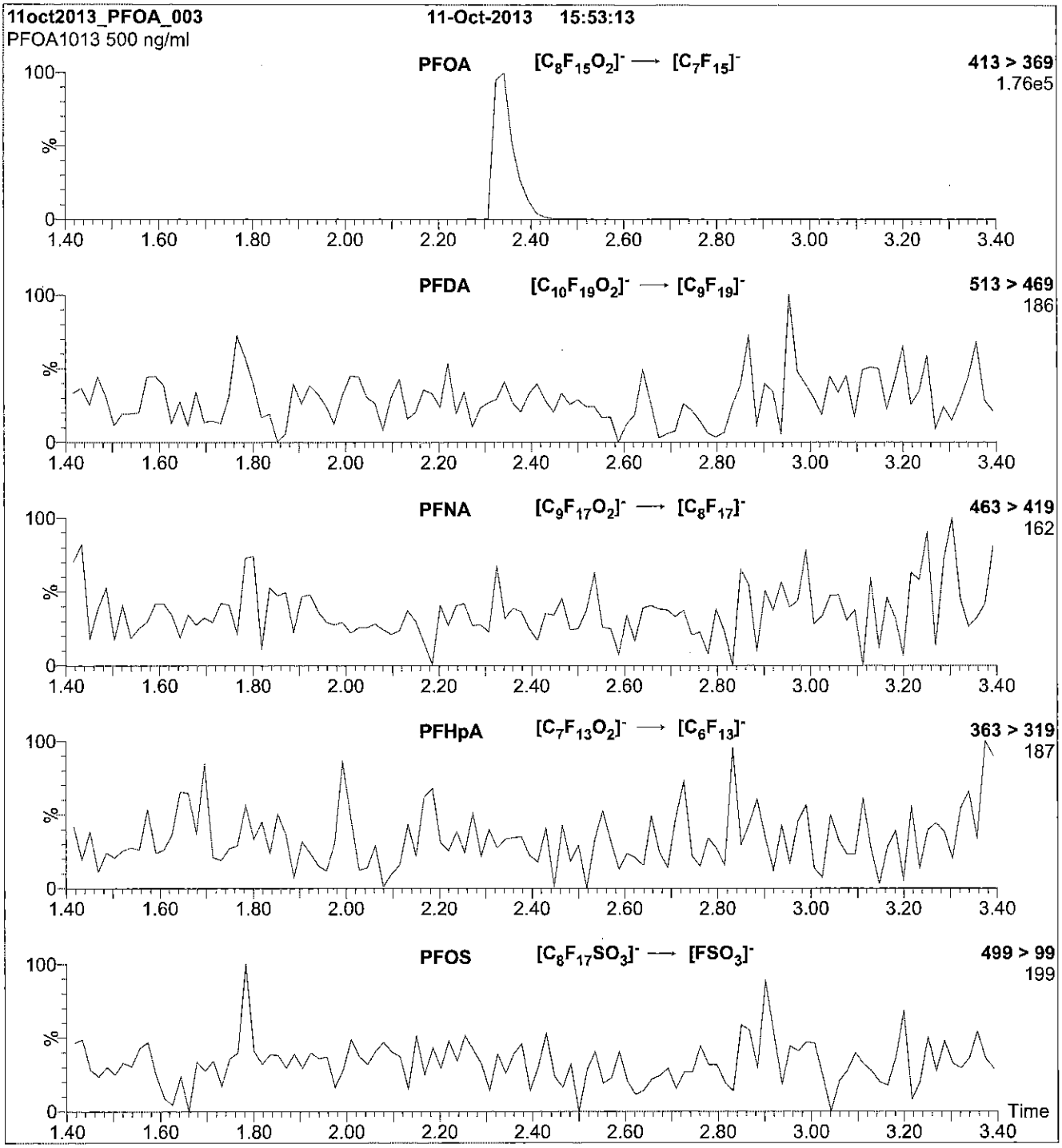
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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: **PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

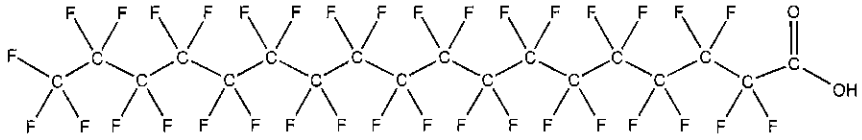
LCPFODA_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0807

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.15
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (4%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/25/2014
EXPIRY DATE: (mm/dd/yyyy) 04/25/2017
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:** 04/28/2014 (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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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

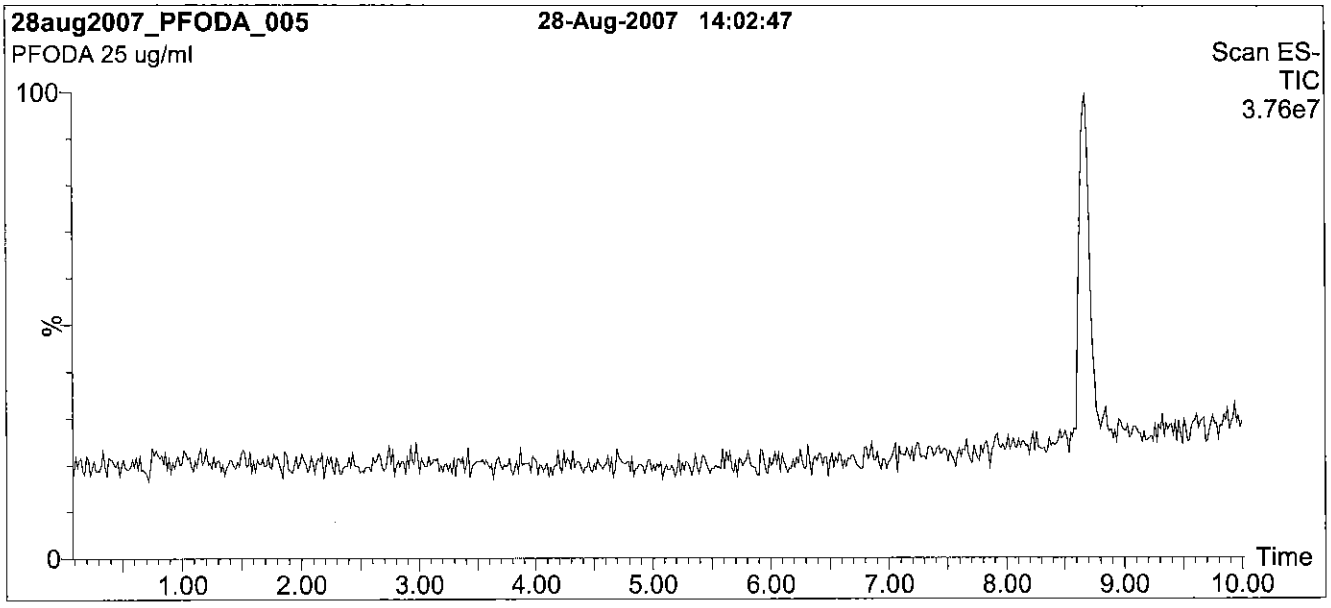
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

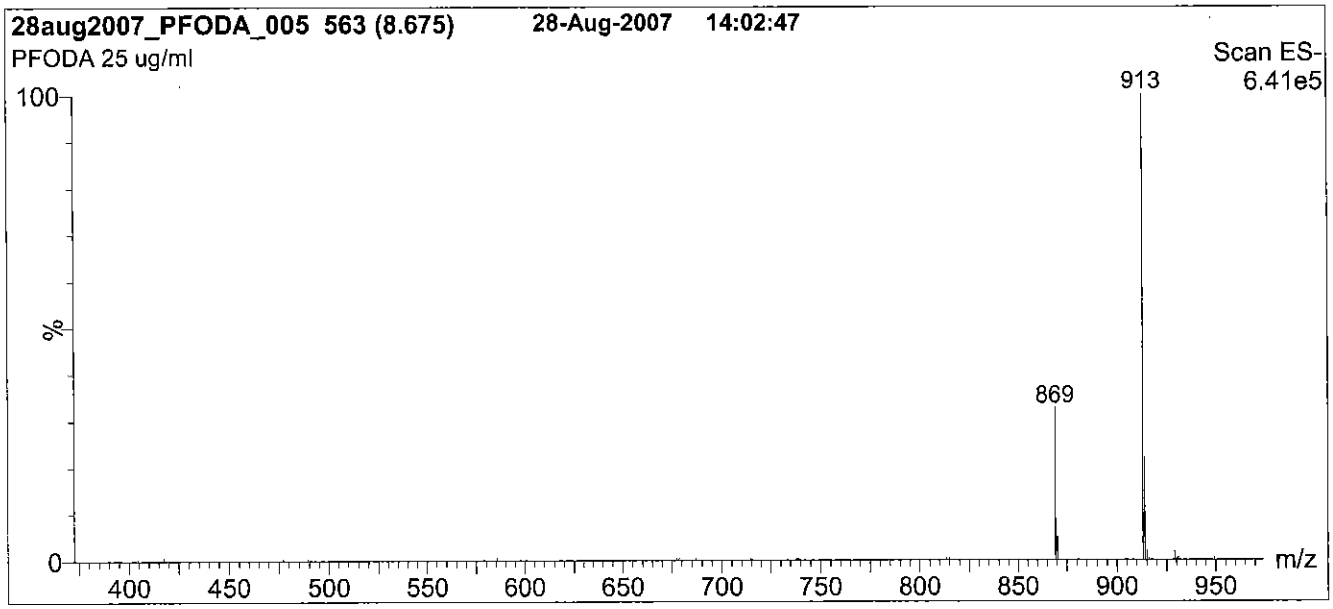
CALA Testing Accredited Méthodes No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 75% (80:20 MeOH:ACN) / 25% H_2O
(both with 10 mM NH_4OAc buffer)
Hold 5 min. Ramp to 100% organic over 6 min.
Hold 3 min before returning to initial conditions.
Time: 16 min

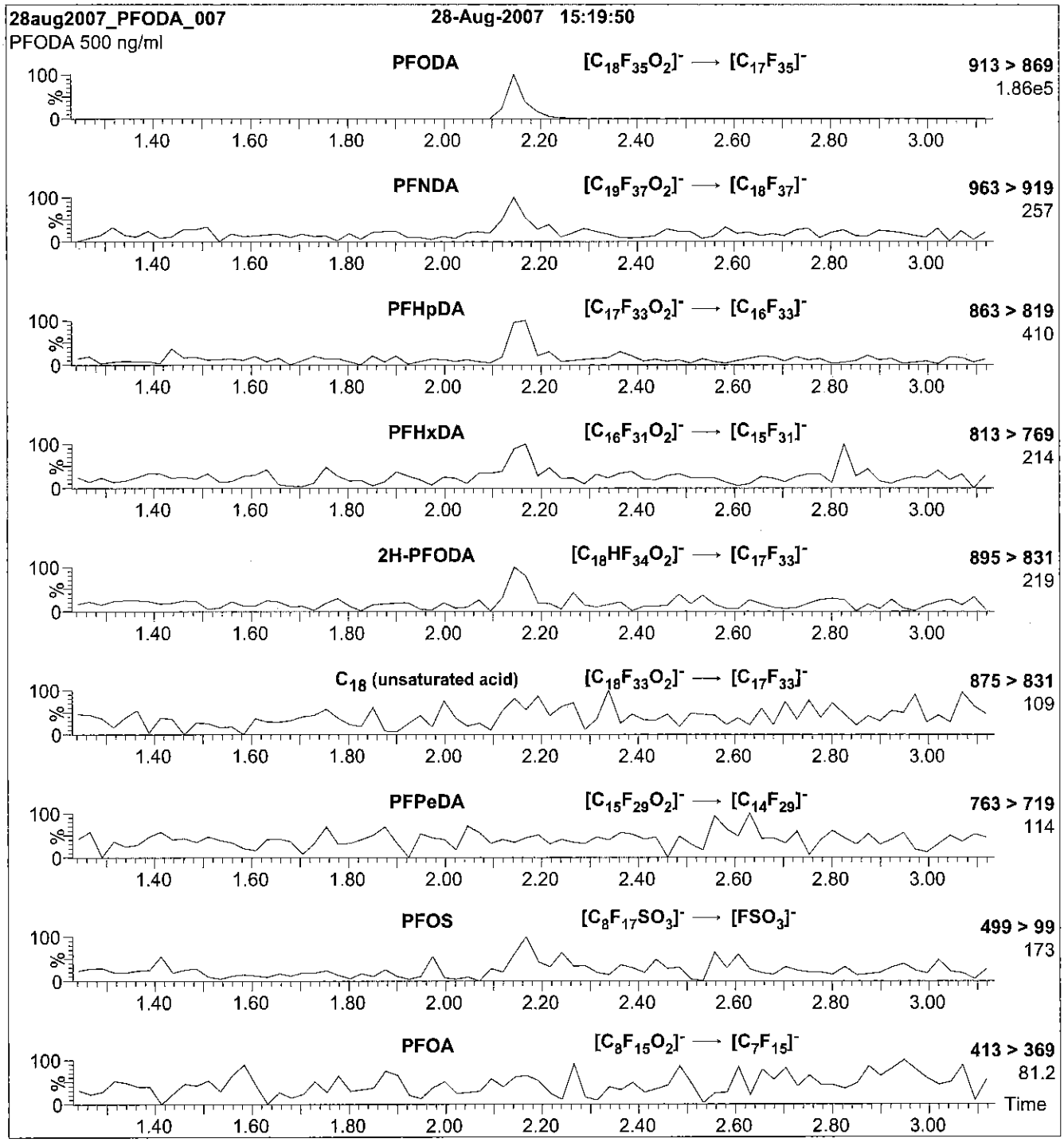
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1100 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 75% (80:20 MeOH:ACN) / 25% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 15

Reagent

LCPFOS_00004

C 3/17/15 SV

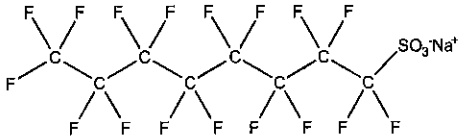
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFOS
COMPOUND: Sodium perfluoro-1-octanesulfonate
LOT NUMBER: LPFOS0614

STRUCTURE:

CAS #: 4021-47-0



MOLECULAR FORMULA:	$C_8F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	522.11
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.8 ± 2.4 µg/ml (PFOS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	06/20/2014		
EXPIRY DATE: (mm/dd/yyyy)	06/20/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/27/2014 (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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where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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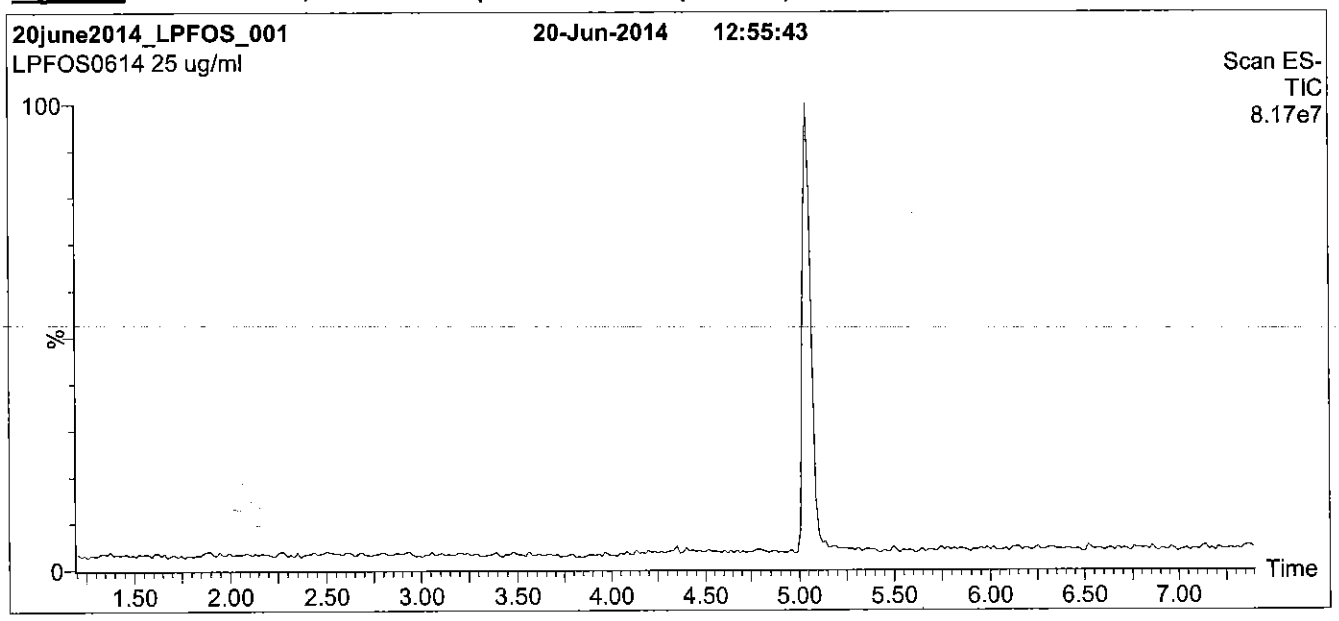
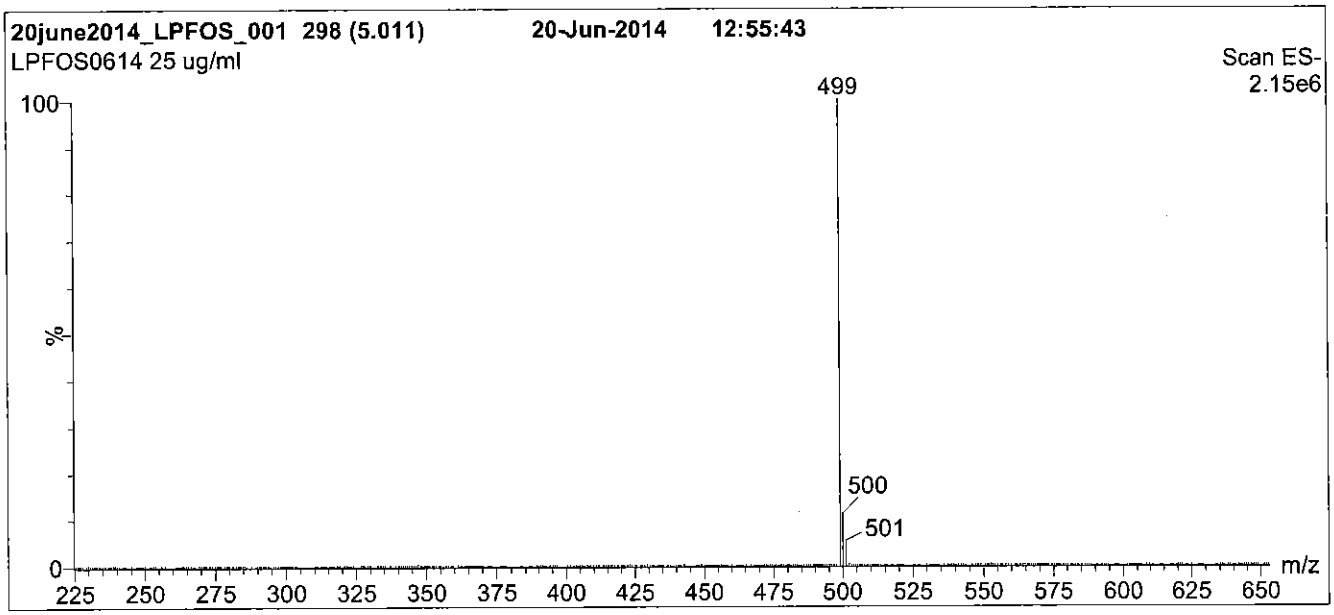
Figure 1: **L-PFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

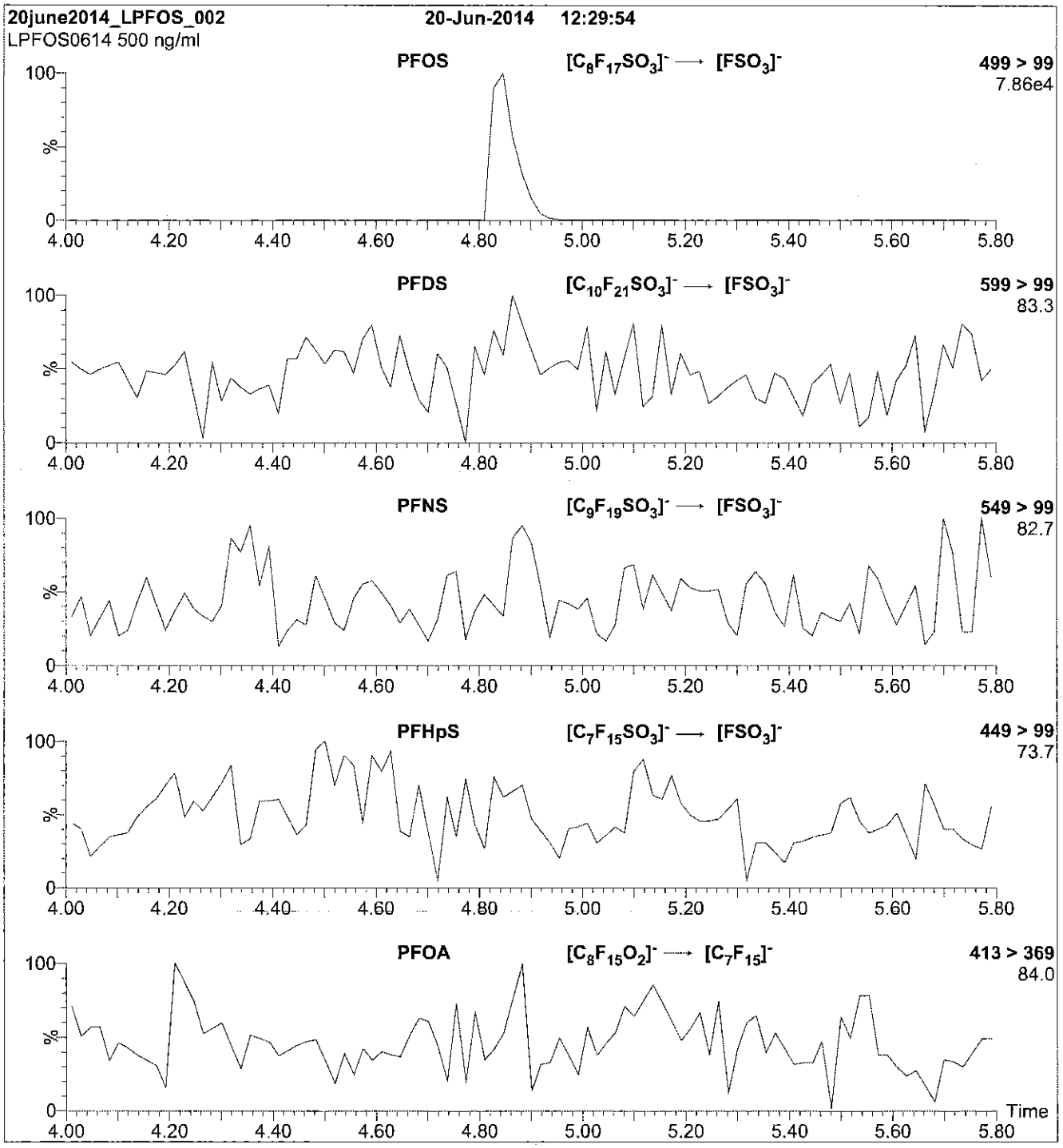
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 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: **L-PFOS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 40

Reagent

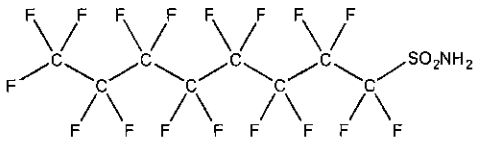
LCPFOSA_00005

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide
LOT NUMBER: FOSA0714I

STRUCTURE:
CAS #: 754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/31/2014		
EXPIRY DATE: (mm/dd/yyyy)	Stability studies ongoing		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2014 (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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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2,...x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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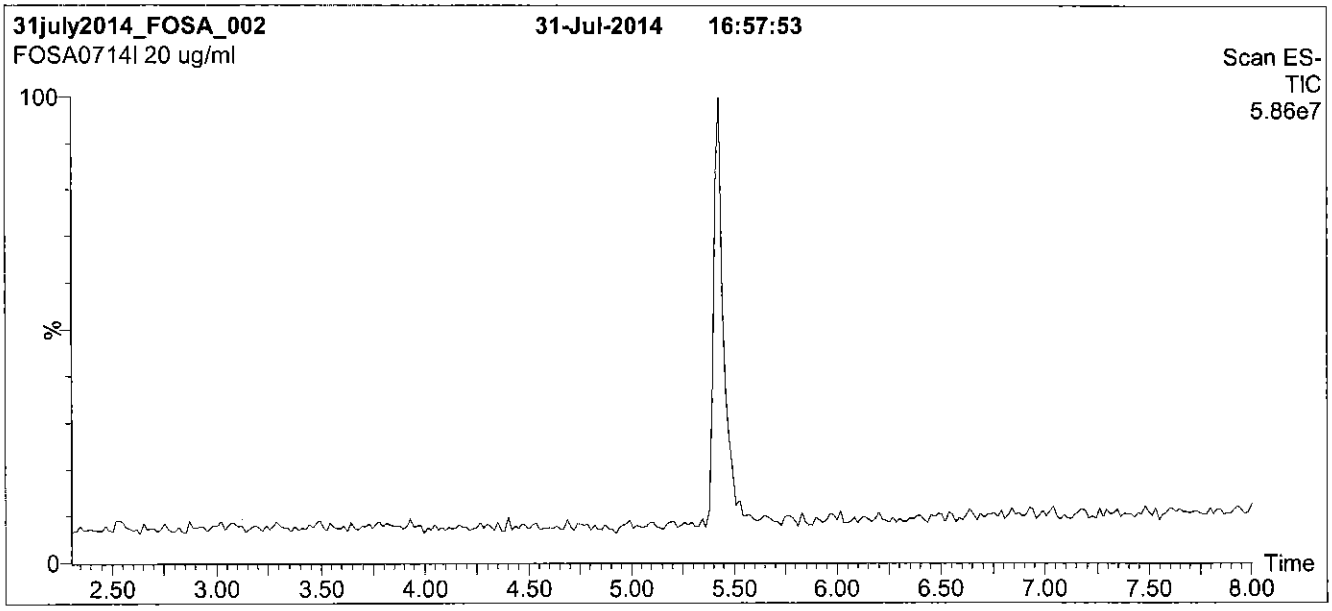
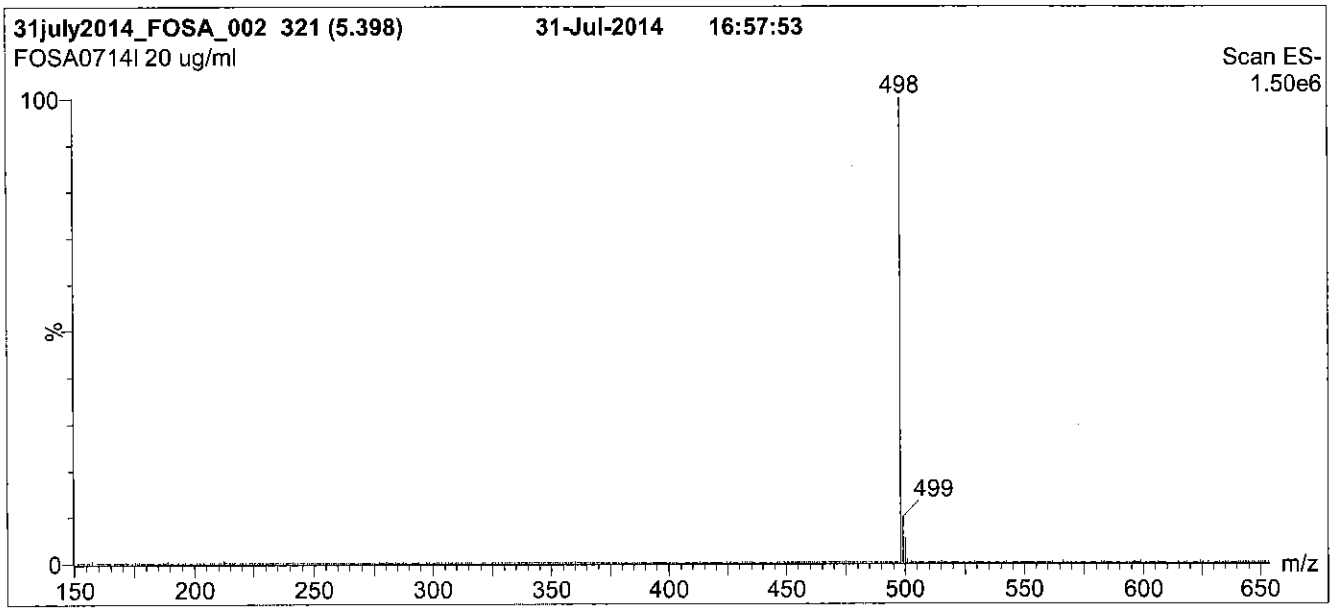
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

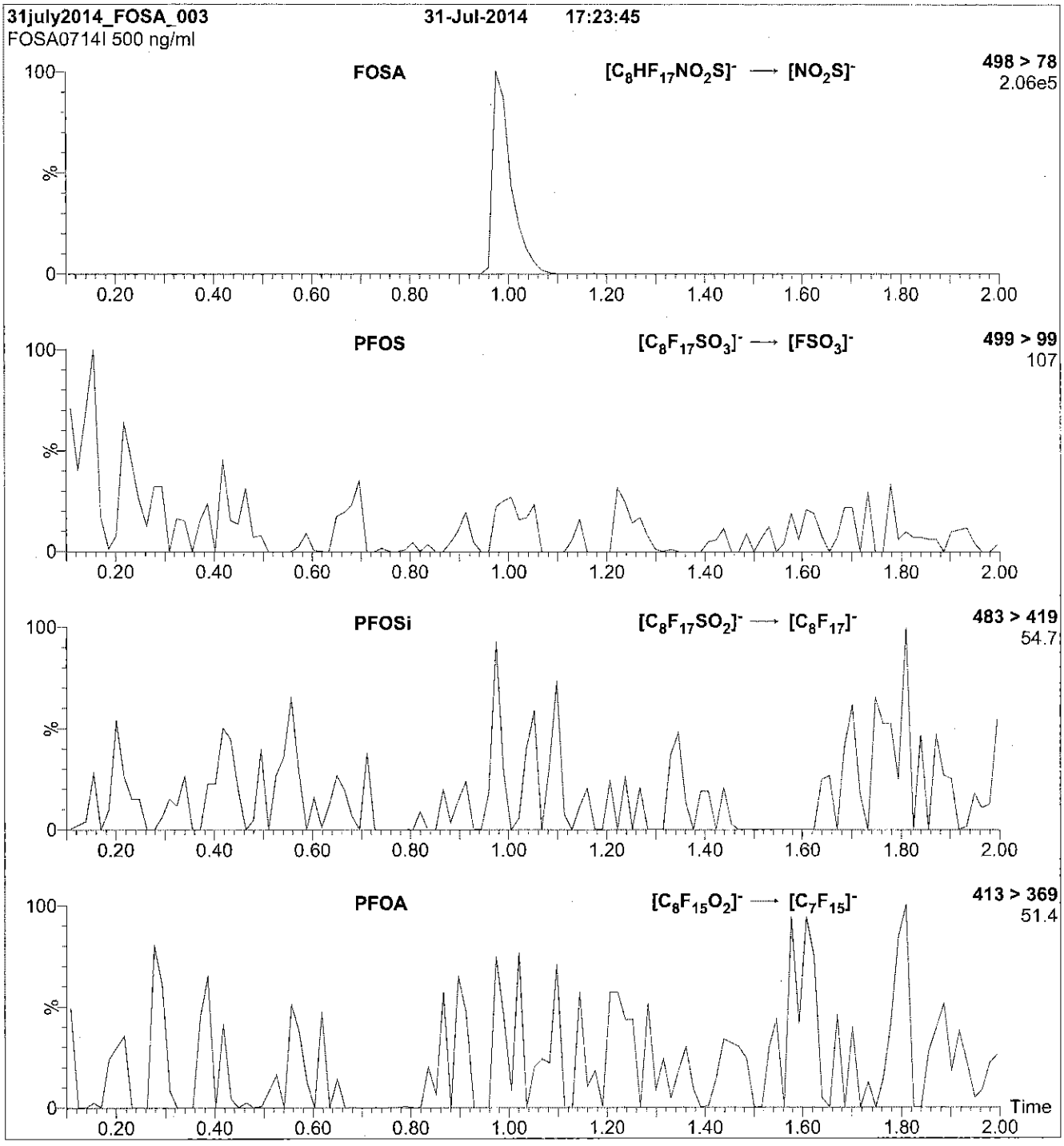
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00003

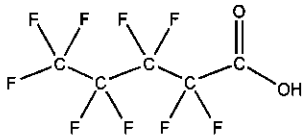
Rec 7/15/14

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid
LOT NUMBER: PFPeA0113

STRUCTURE:
CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
MOLECULAR WEIGHT: 264.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/03/2013
EXPIRY DATE: (mm/dd/yyyy) 01/03/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/14/2013 (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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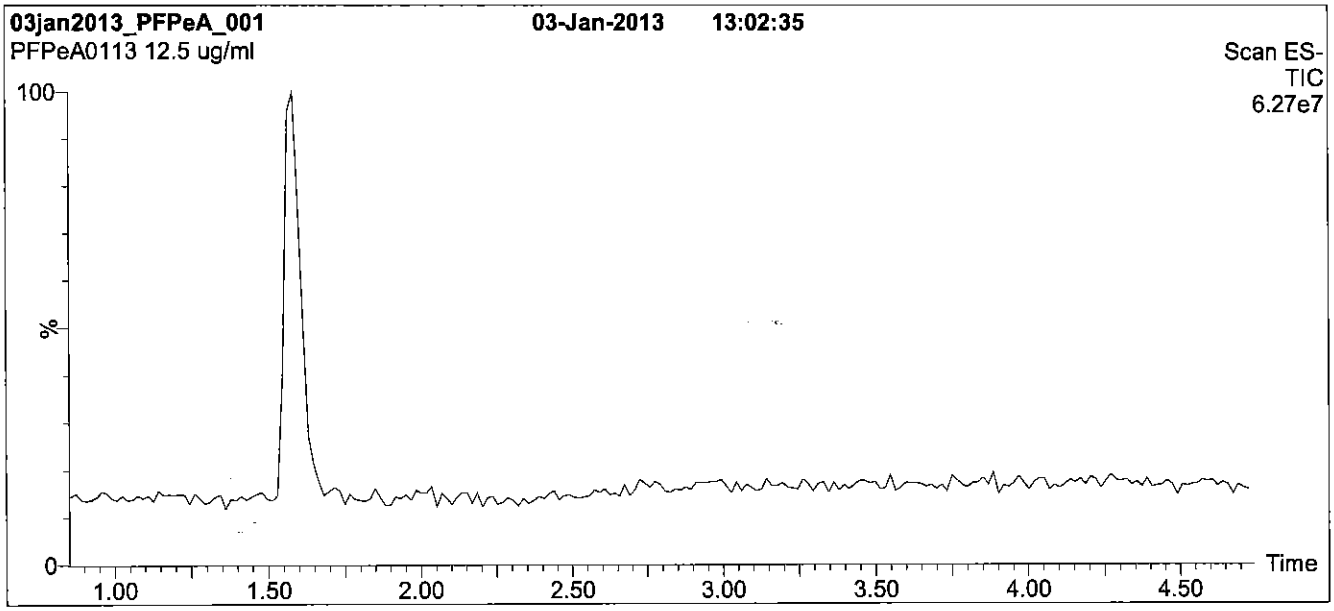
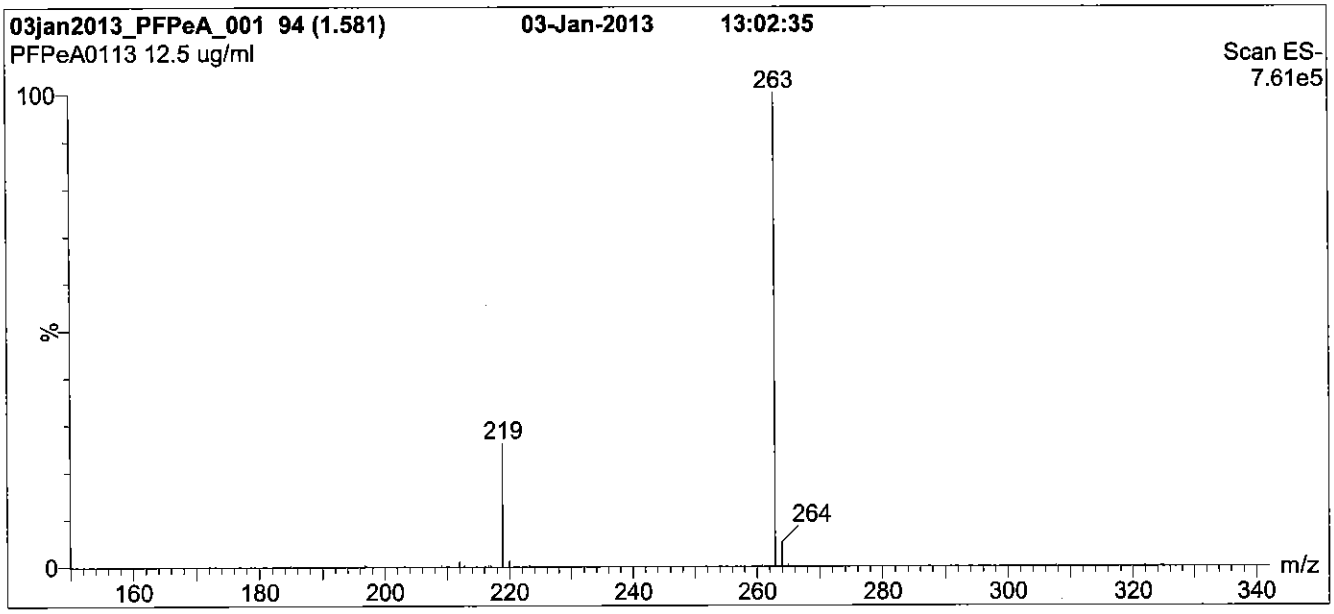
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

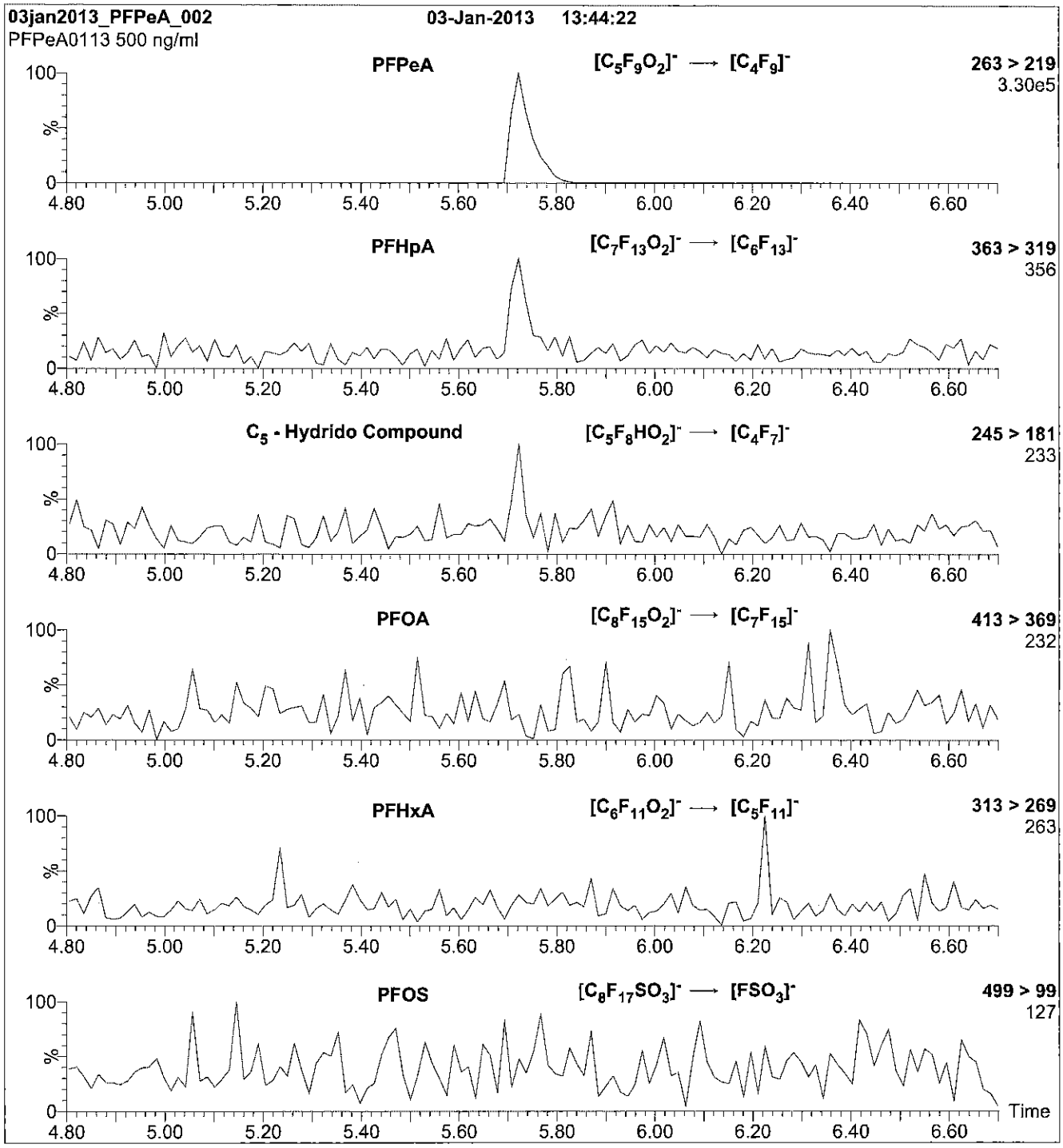
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

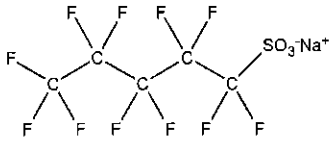
LCPFPeS_00002

R 2415 W

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
LOT NUMBER: LPFPeS0712
COMPOUND: Sodium perfluoro-1-pentanesulfonate
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_5F_{11}SO_3Na$	**MOLECULAR WEIGHT:**	372.09
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.9 ± 2.3 µg/ml (PFPeS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/04/2012		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2017		
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.

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Certified By: B.G. Chittim **Date:** 01/15/2013 (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

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CALA Testing Accreditation No. A 1226

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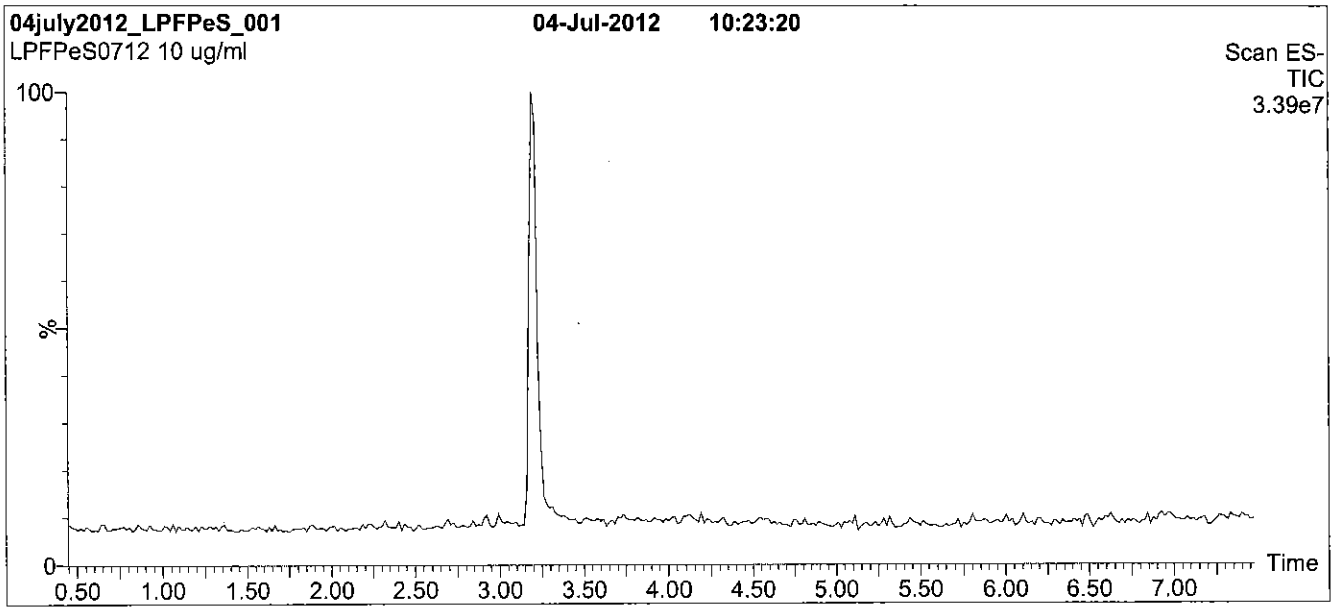
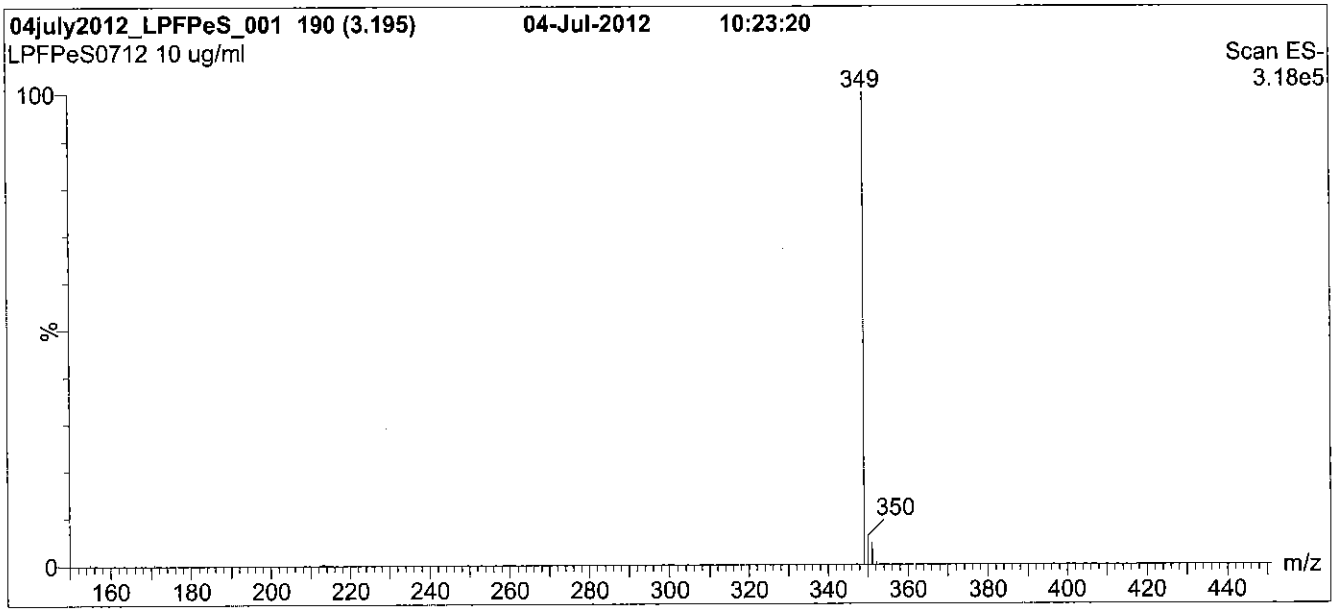
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

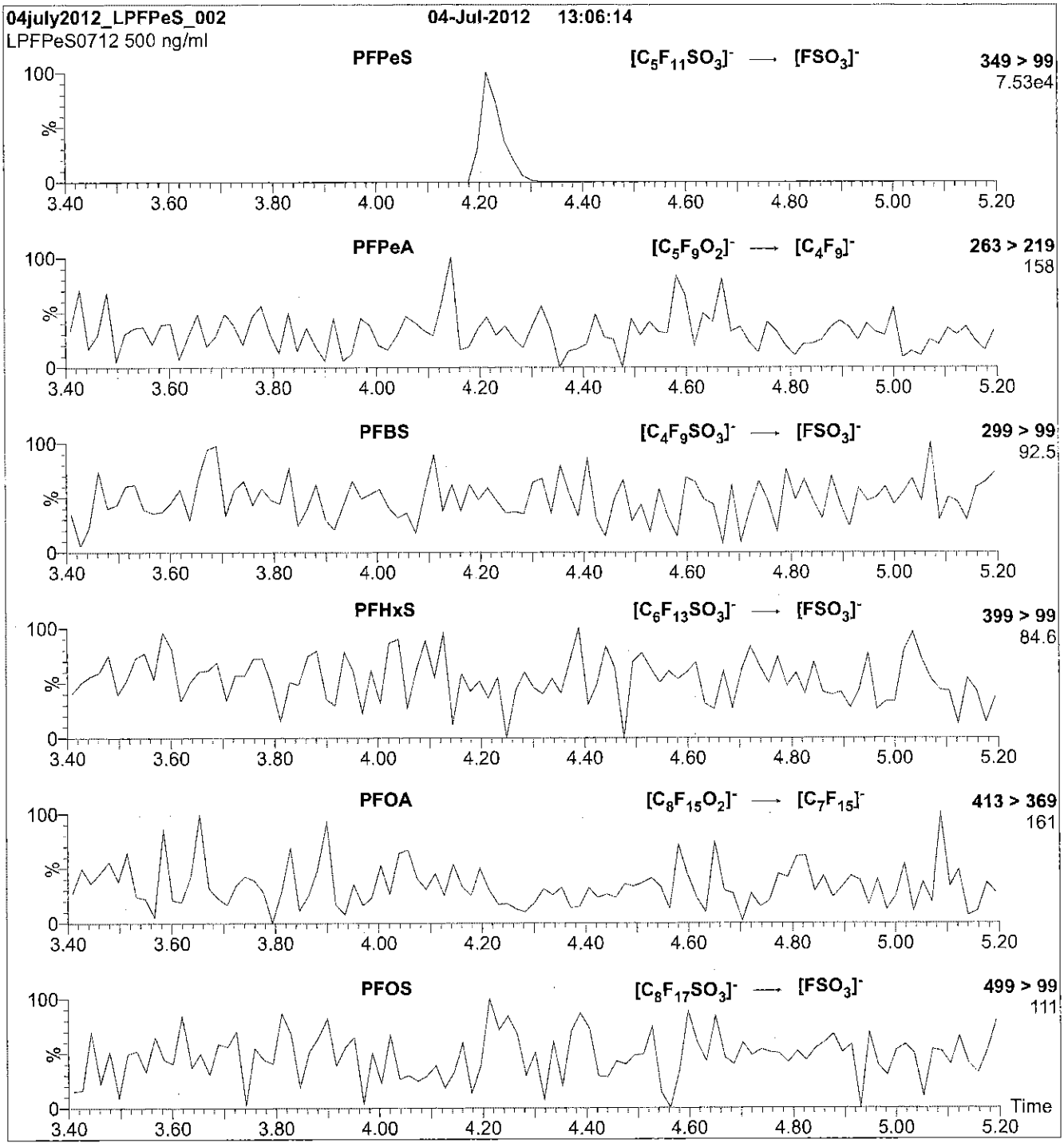
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 30

Reagent

LCPFTeDA_00003

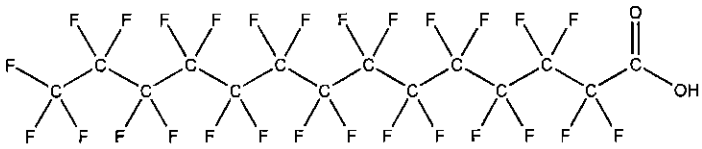
V: 2/11/15 SRV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0613
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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 ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/17/2013 (mm/dd/yyyy)

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CALA Testing Accredited Lab. No. A1226

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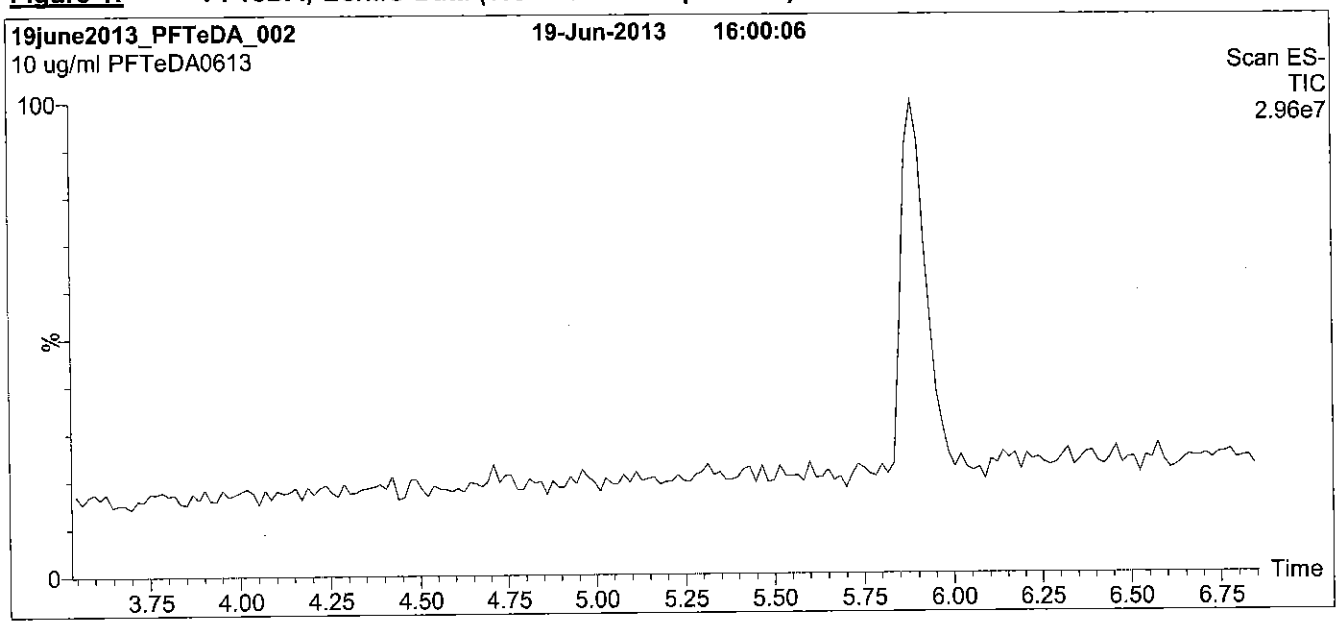
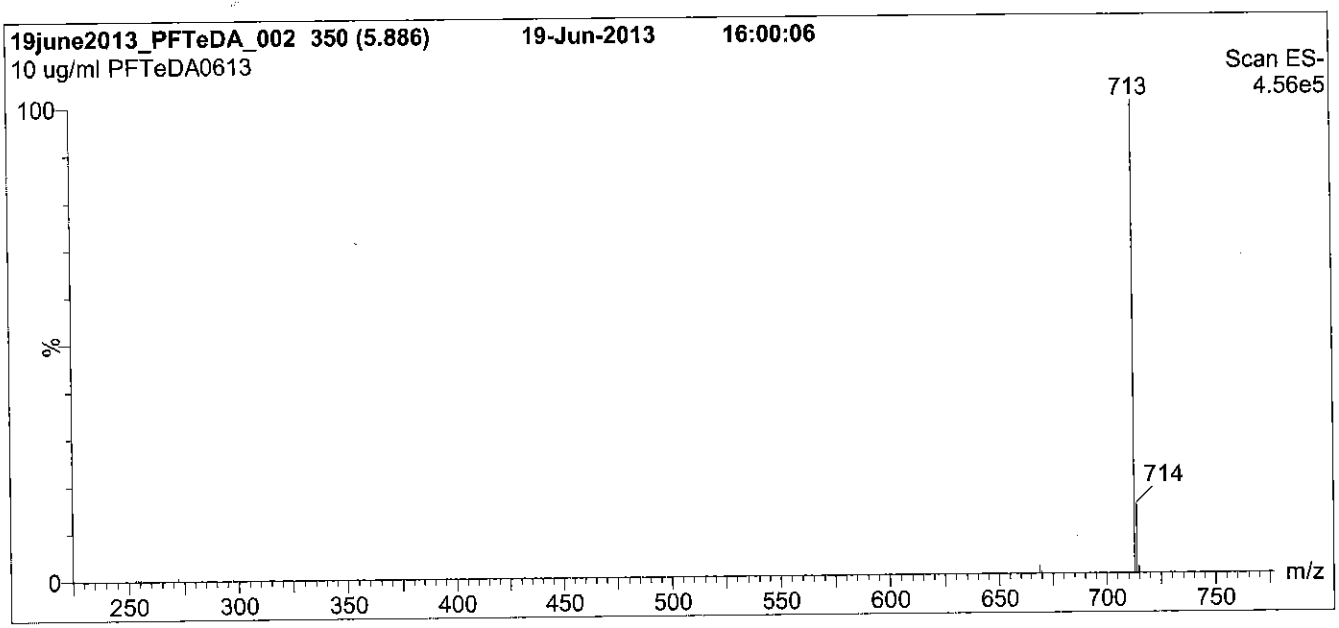
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.50 min.
Time: 10 min

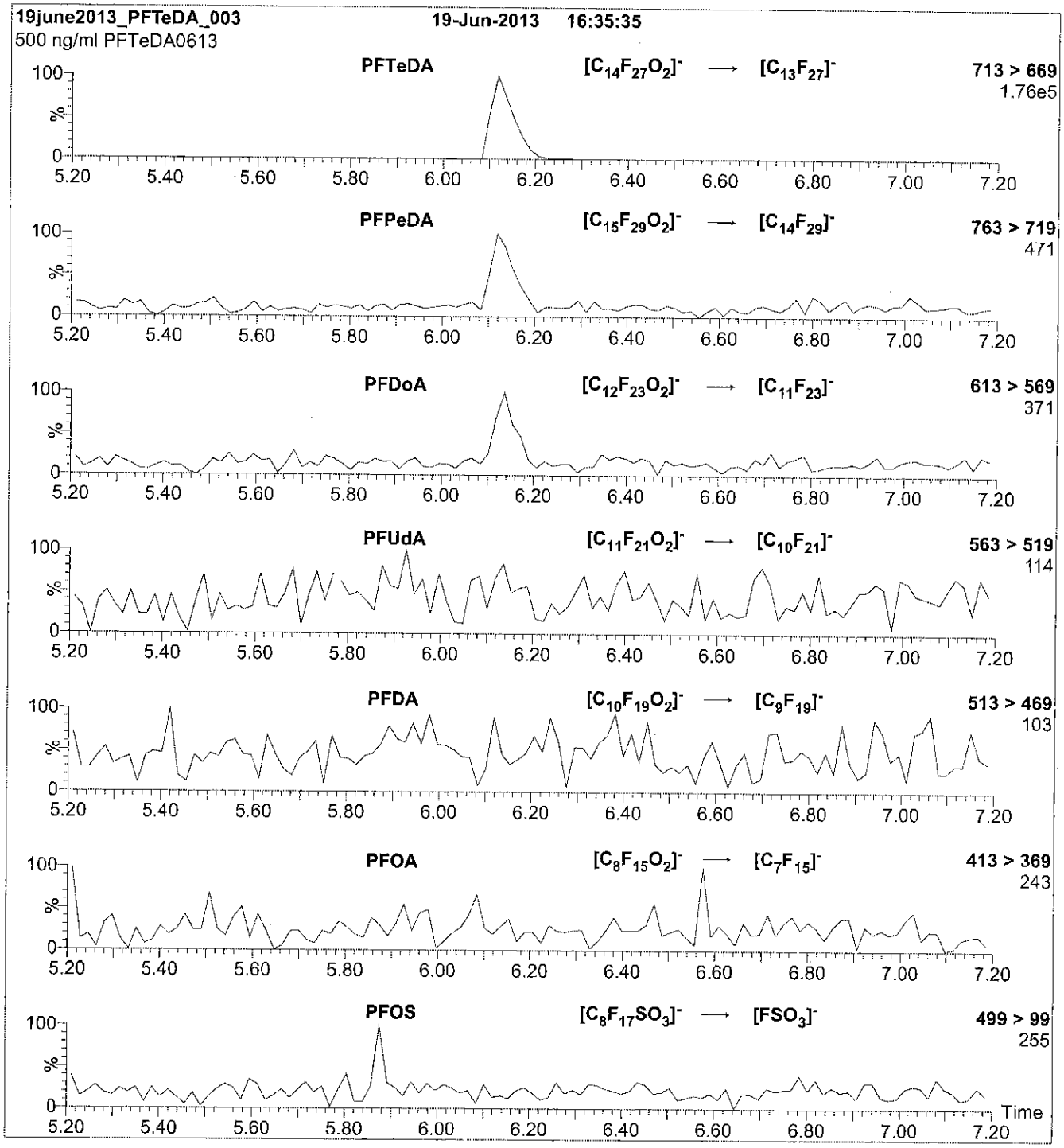
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 14

Reagent

LCPFTrDA_00003

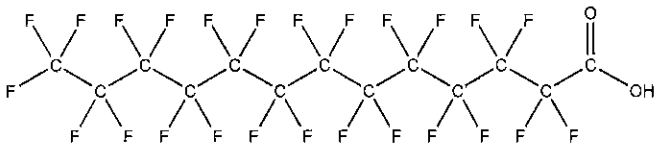
V. 2/11/15 CTN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA1213
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
MOLECULAR WEIGHT: 664.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
EXPIRY DATE: (mm/dd/yyyy) 12/10/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/11/2013 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

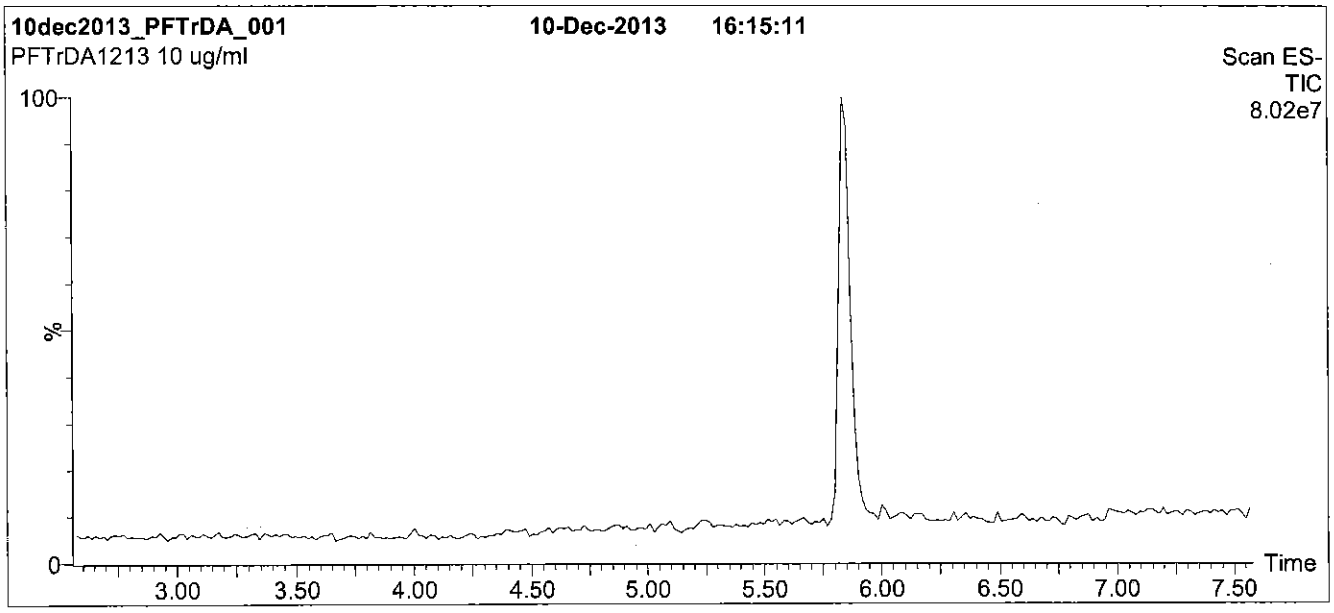
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

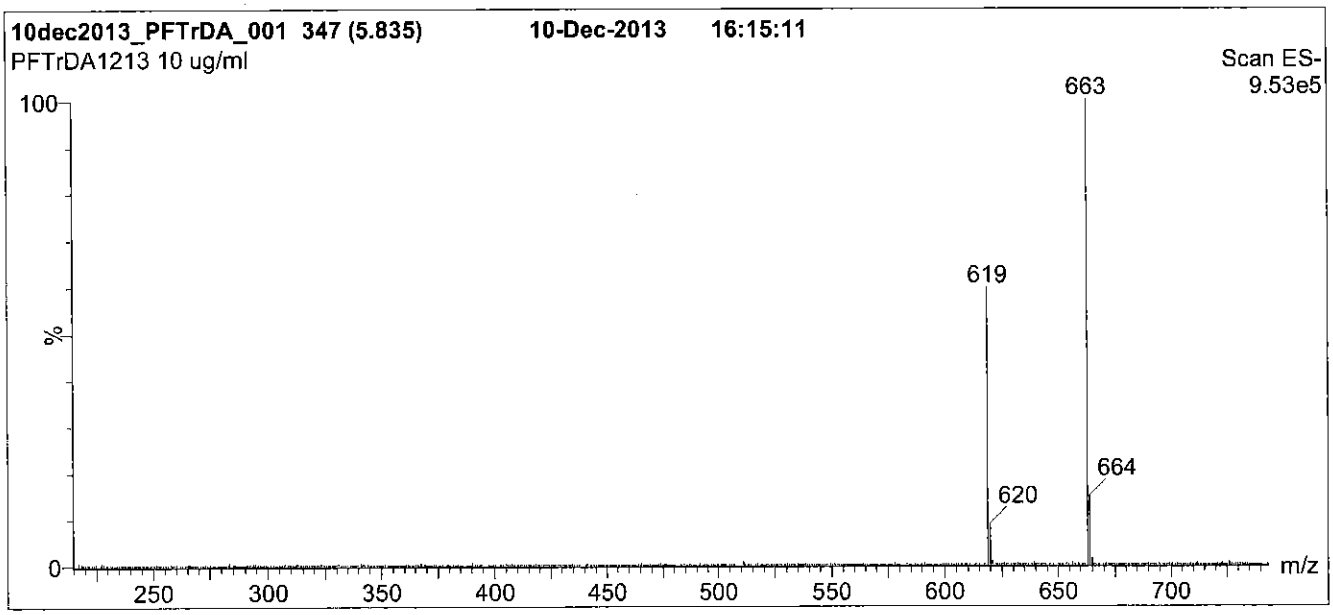
CALA Testing

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

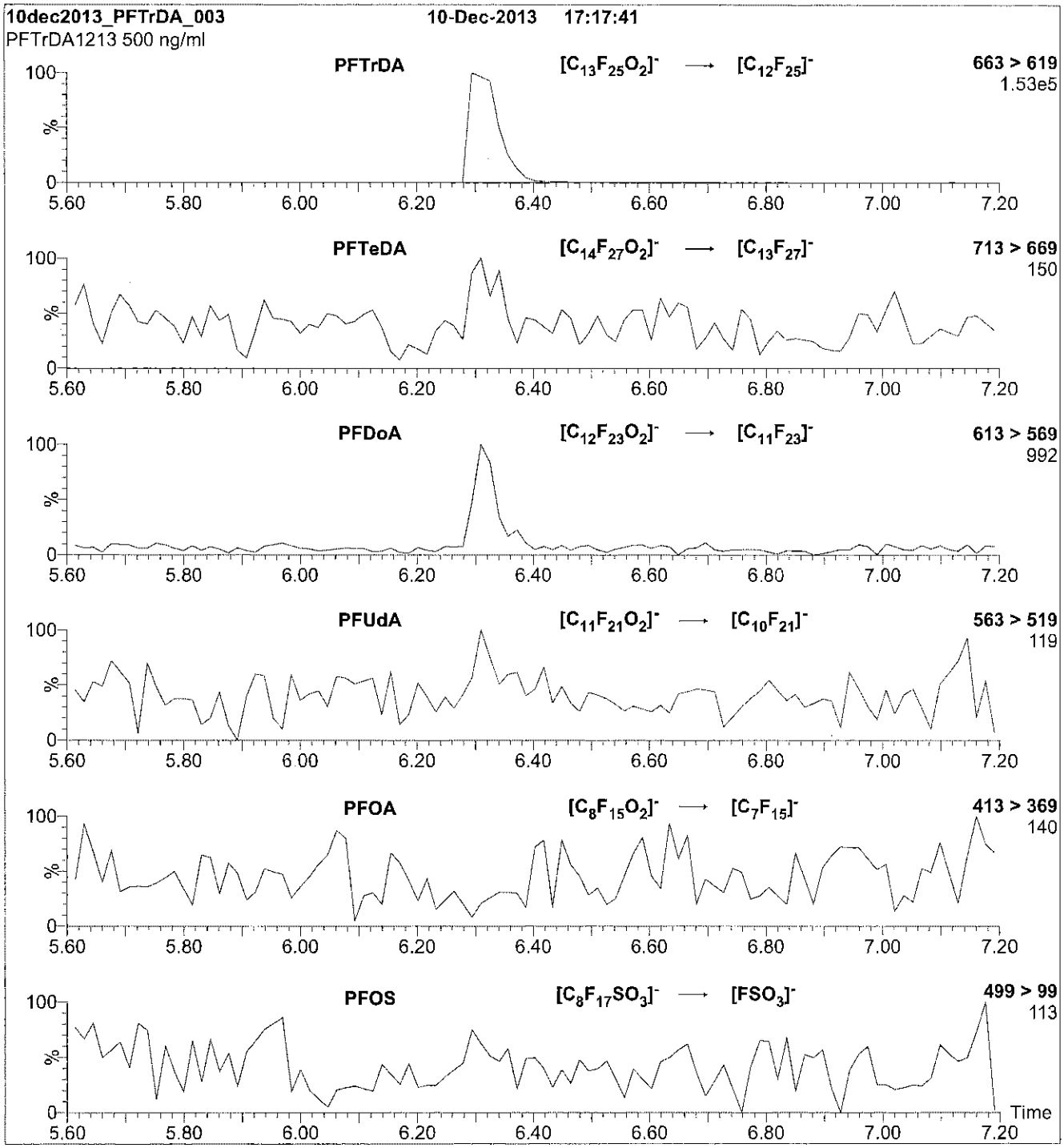
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00003

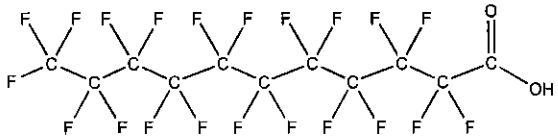
R 2/11/15 SFV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid
LOT NUMBER: PFUdA0613

STRUCTURE:
CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/03/2013 (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

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

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

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

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CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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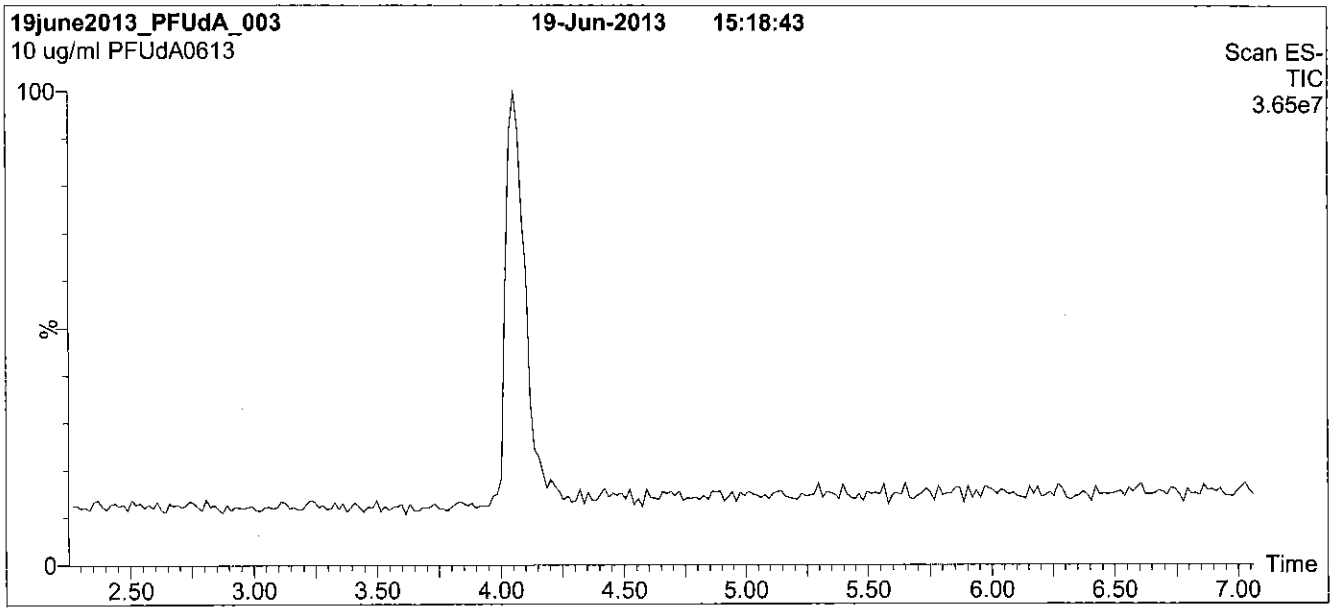
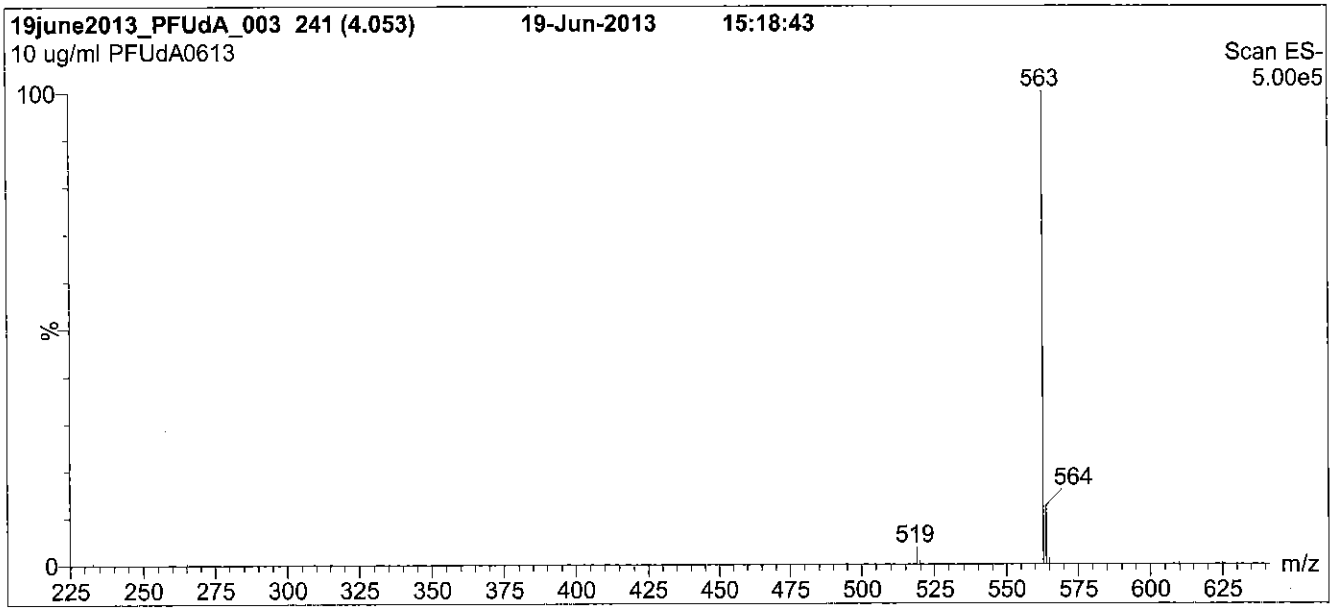
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

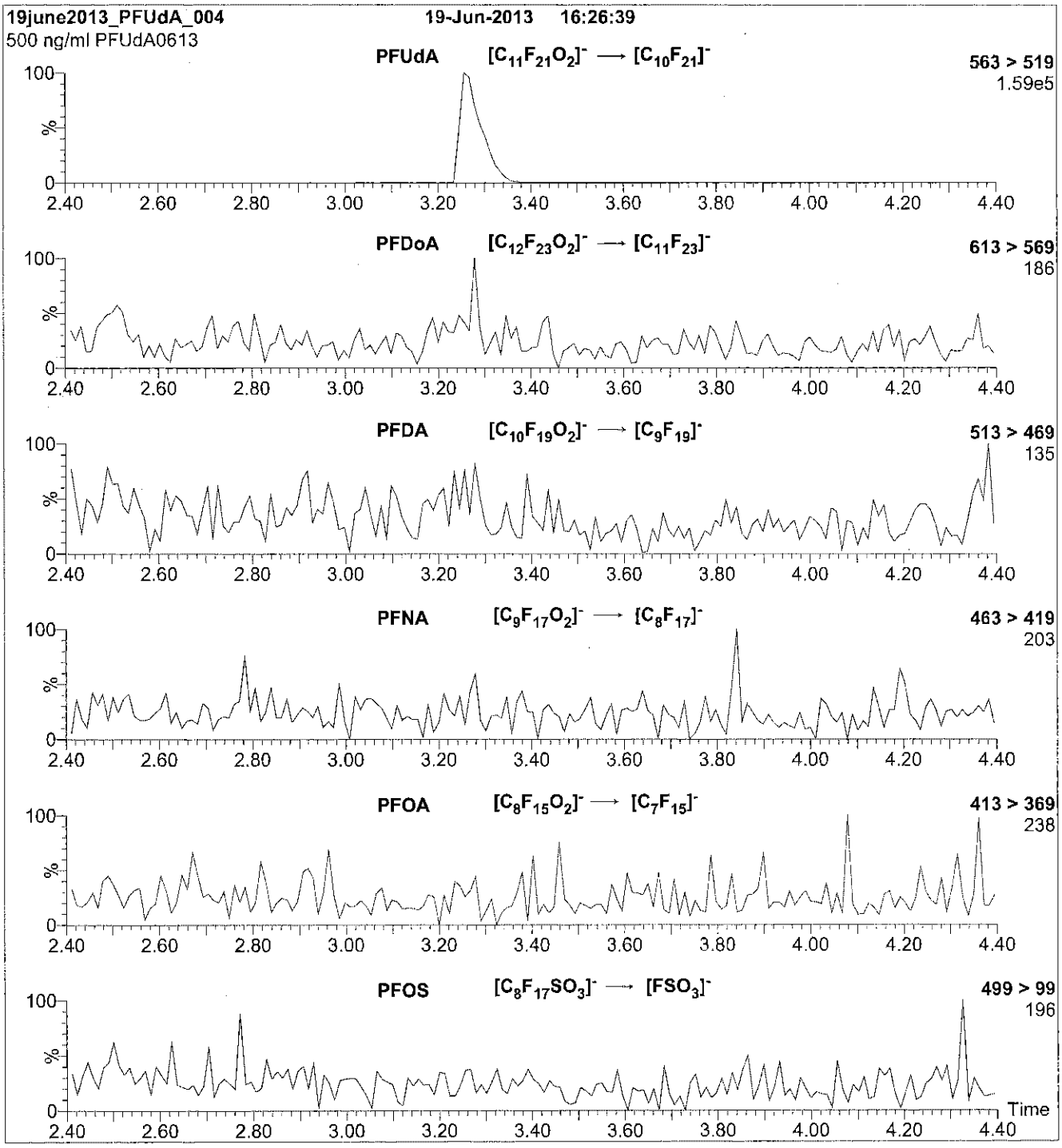
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS) by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
OF-FB42B-0216	320-17150-2	106	95	110	89	111
OF-FB42A-0216	320-17150-4	110	96	109	94	114
OF-FB35-0216	320-17150-6	115	104	111	96	117
OF-FB58-0216	320-17150-8	113	99	113	95	115
OF-FB39-0216	320-17150-9	108	98	112	91	113
OF-FB40-0216	320-17150-11	111	97	111	93	119
OF-FB43-0216	320-17150-13	117	106	124	98	123
	MB 320-100093/1-A	103	98	101	92	103
	LCS 320-100093/2-A	95	90	95	82	98
	LCSD 320-100093/3-A	95	86	88	80	91

	QC LIMITS
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Matrix: Water Level: Low Lab File ID: 19FEB2016A6A_048.d

Lab ID: LCS 320-100093/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0513	128	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0485	121	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0537	134	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0459	130	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0480	127	60-140	
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0515	135	60-140	
13C4-PFHpA	0.100	0.0955	95	25-150	
13C4 PFOA	0.100	0.0945	95	25-150	
13C5 PFNA	0.100	0.0975	98	25-150	
18O2 PFHxS	0.0946	0.0852	90	25-150	
13C4 PFOS	0.0956	0.0783	82	25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Matrix: Water Level: Low Lab File ID: 19FEB2016A6A_049.d

Lab ID: LCSD 320-100093/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0506	126	1	30	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0493	123	2	30	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0517	129	4	30	60-140	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0472	133	3	30	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0378	0.0486	128	1	30	60-140	
Perfluorooctanesulfonic acid (PFOS)	0.0382	0.0452	118	13	30	60-140	
13C4-PFHpA	0.100	0.0955	95			25-150	
13C4 PFOA	0.100	0.0880	88			25-150	
13C5 PFNA	0.100	0.0909	91			25-150	
18O2 PFHxS	0.0946	0.0810	86			25-150	
13C4 PFOS	0.0956	0.0761	80			25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Lab File ID: 19FEB2016A6A_047.d Lab Sample ID: MB 320-100093/1-A

Matrix: Water Date Extracted: 02/09/2016 10:23

Instrument ID: A6 Date Analyzed: 02/20/2016 06:23

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB42B-0216 | Lab Sample ID: 320-17150-2

Matrix: Water | Lab File ID: 19FEB2016A6A_050.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 09:42

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 532.6(mL) | Date Analyzed: 02/20/2016 07:26

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.0019	0.00075
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.0019	0.00070
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.0019	0.00061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.0019	0.00086
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0023	0.0019	0.00082
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0038	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	106		25-150
STL00990	13C4 PFOA	110		25-150
STL00995	13C5 PFNA	111		25-150
STL00994	18O2 PFHxS	95		25-150
STL00991	13C4 PFOS	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_050.d
Lims ID: 320-17150-A-2-A Lab Sample ID: 320-17150-2
Client ID: OF-FB42B-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 07:26:40 ALS Bottle#: 4 Worklist Smp#: 48
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:14:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.178	6.939	0.239	1.000	1484	0.1055				
D 8 13C4-PFHpA										
367.0 > 322.0	9.297	9.322	-0.025		1641068	53.2		106	5782	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.285	9.322	-0.037	1.000	1416	0.0414			6.2	
D 11 18O2 PFHxS										
403.0 > 84.0	9.332	9.358	-0.026		669928	44.8		94.6	2564	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.309	9.364	-0.055	1.000	4017	0.4200				
D 12 13C4 PFOA										
417.0 > 372.0	10.421	10.450	-0.029		1879280	55.0		110	6284	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.414	10.450	-0.036	1.000	2695	0.0714			5.9	
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		770740	42.4		88.7	2592	
D 17 13C5 PFNA										
468.0 > 423.0	11.408	11.434	-0.026		1563349	55.5		111	6280	

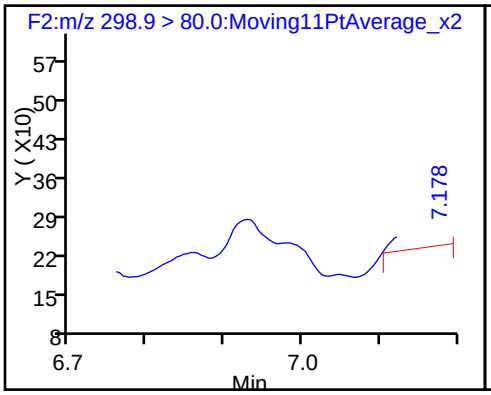
Report Date: 22-Feb-2016 13:14:14 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

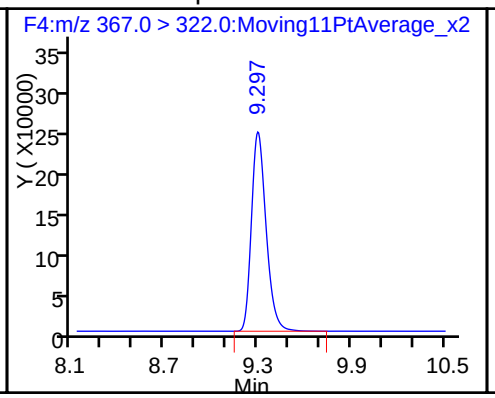
Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_050.d

Injection Date:	20-Feb-2016 07:26:40	Instrument ID:	A6		
Lims ID:	320-17150-A-2-A	Lab Sample ID:	320-17150-2		
Client ID:	OF-FB42B-0216				
Operator ID:	JRB	ALS Bottle#:	4	Worklist Smp#:	48
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		

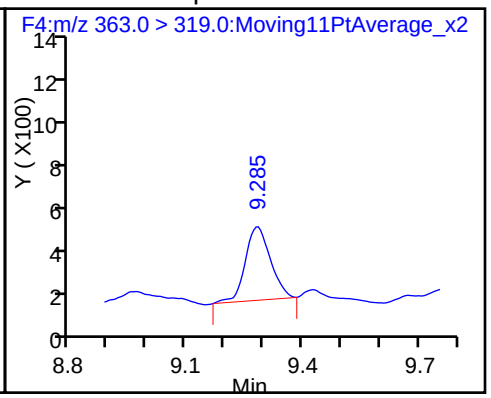
40 Perfluorobutanesulfonic acid



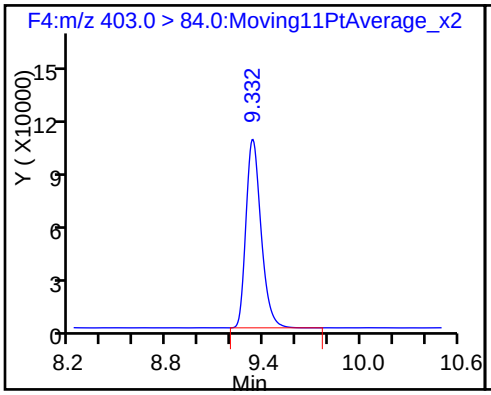
D 8 13C4-PFHpA



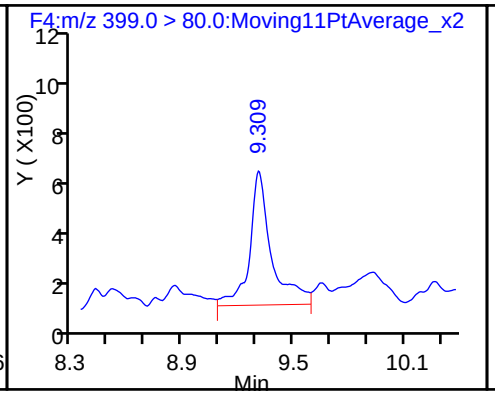
9 Perfluoroheptanoic acid



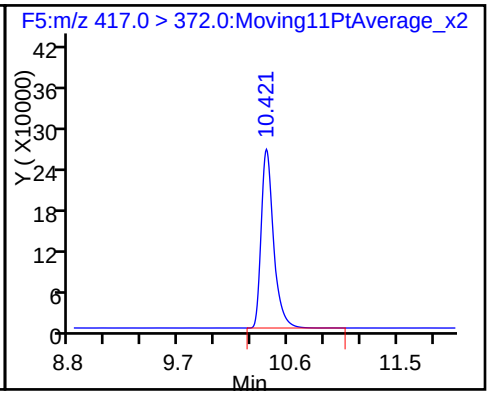
D 11 18O2 PFHxS



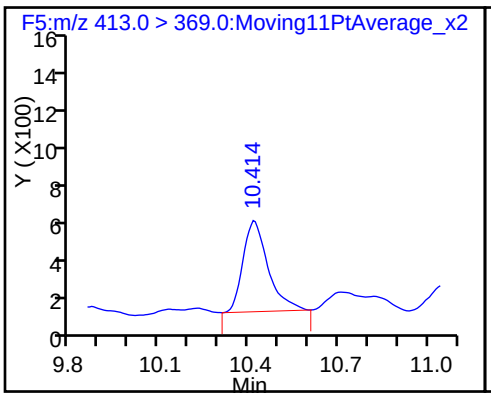
41 Perfluorohexanesulfonic acid



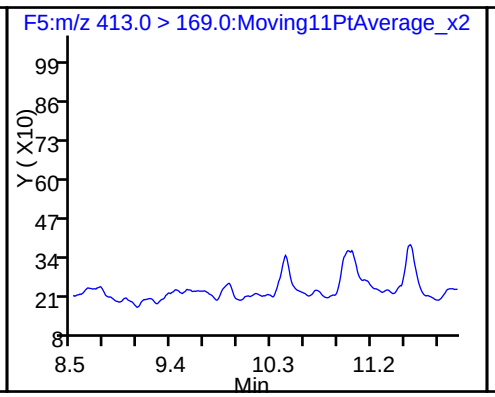
D 12 13C4 PFOA



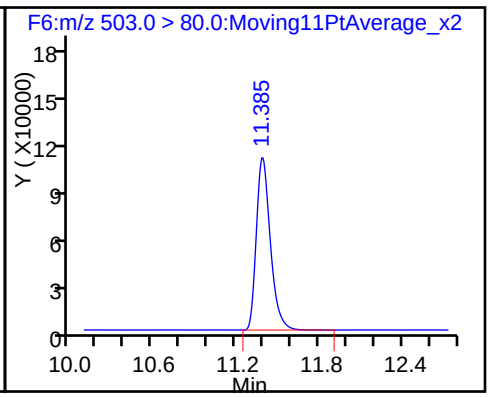
13 Perfluorooctanoic acid



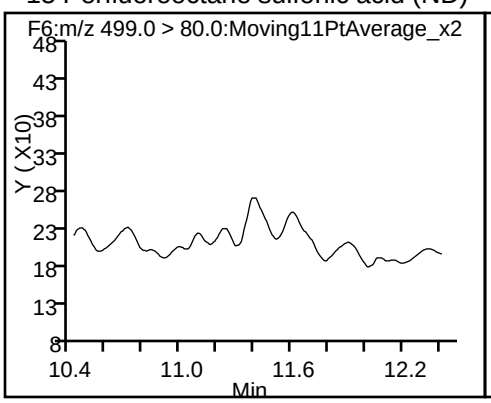
13 Perfluorooctanoic acid



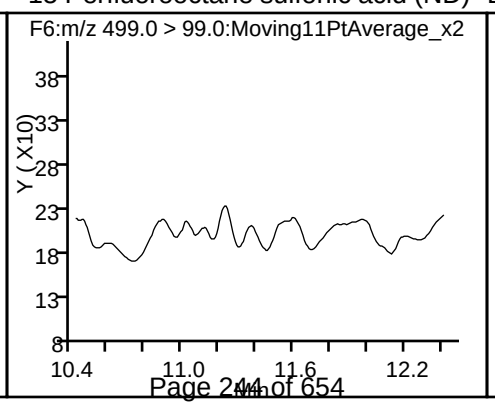
D 16 13C4 PFOS



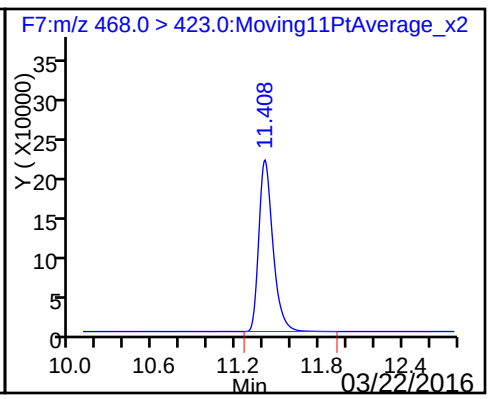
15 Perfluorooctane sulfonic acid (ND)



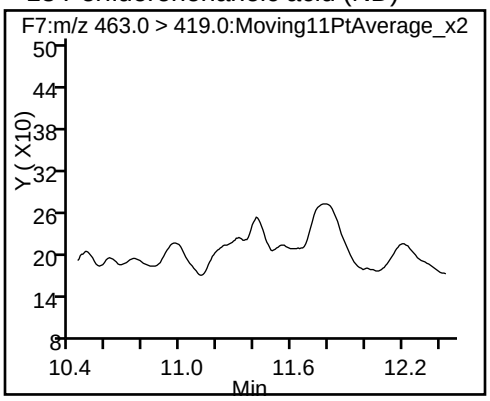
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB42A-0216 | Lab Sample ID: 320-17150-4

Matrix: Water | Lab File ID: 19FEB2016A6A_051.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 09:54

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 522(mL) | Date Analyzed: 02/20/2016 07:47

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.0019	0.00063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0038	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	110		25-150
STL00990	13C4 PFOA	109		25-150
STL00995	13C5 PFNA	114		25-150
STL00994	18O2 PFHxS	96		25-150
STL00991	13C4 PFOS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_051.d
Lims ID: 320-17150-A-4-A Lab Sample ID: 320-17150-4
Client ID: OF-FB42A-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 07:47:55 ALS Bottle#: 5 Worklist Smp#: 49
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-4-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:14:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA										
367.0 > 322.0	9.293	9.322	-0.029		1701871	55.2		110	6564	
D 11 18O2 PFHxS										
403.0 > 84.0	9.329	9.358	-0.029		679857	45.4		96.0	3020	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.340	9.364	-0.024	1.000	1713	0.1765				
D 12 13C4 PFOA										
417.0 > 372.0	10.419	10.450	-0.031		1862859	54.6		109	6759	
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		820066	45.1		94.4	2962	
D 17 13C5 PFNA										
468.0 > 423.0	11.407	11.434	-0.027		1607589	57.0		114	4131	

Report Date: 22-Feb-2016 13:14:29 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_051.d

Injection Date: 20-Feb-2016 07:47:55 Instrument ID: A6

Lims ID: 320-17150-A-4-A Lab Sample ID: 320-17150-4

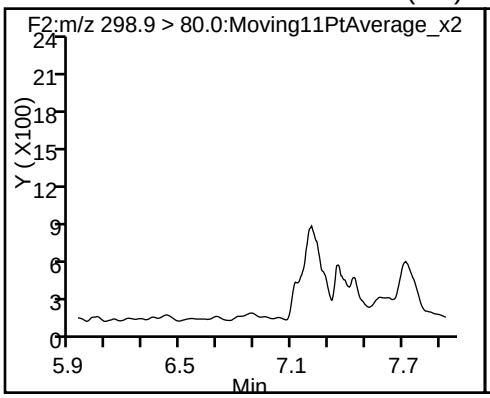
Client ID: OF-FB42A-0216

Operator ID: JRB ALS Bottle#: 5 Worklist Smp#: 49

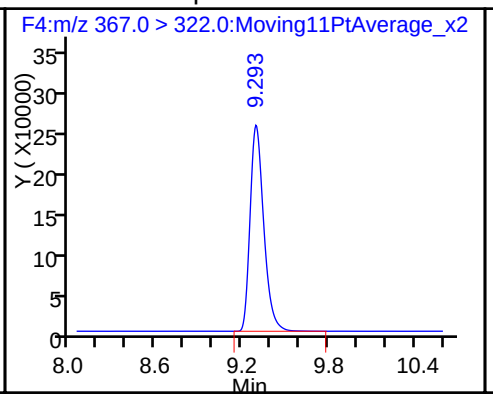
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

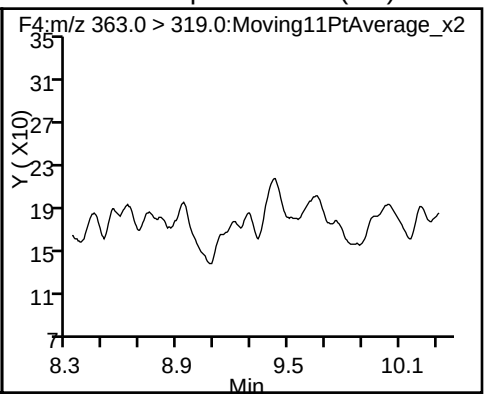
40 Perfluorobutanesulfonic acid (ND)



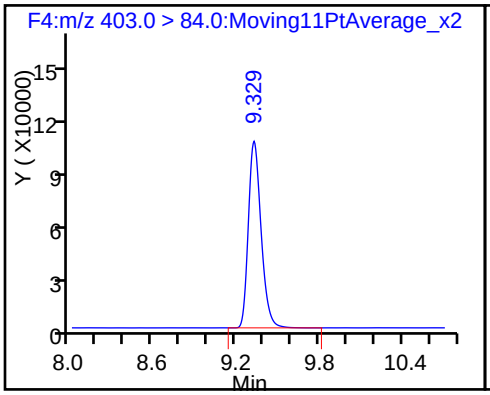
D 8 13C4-PFHpA



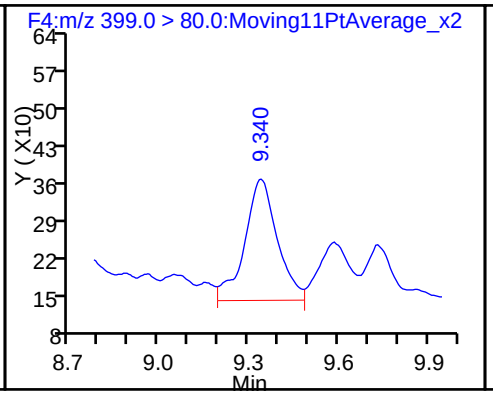
9 Perfluoroheptanoic acid (ND)



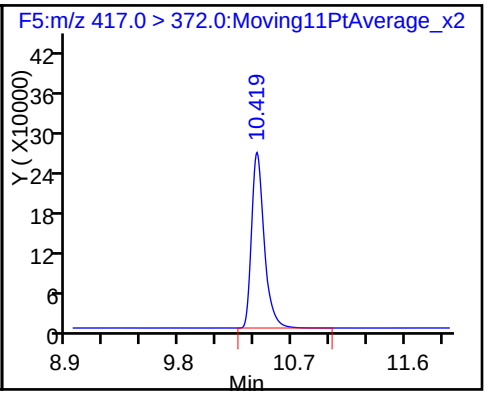
D 11 18O2 PFHxS



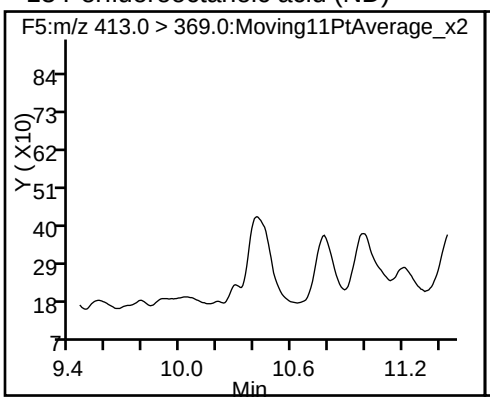
41 Perfluorohexanesulfonic acid



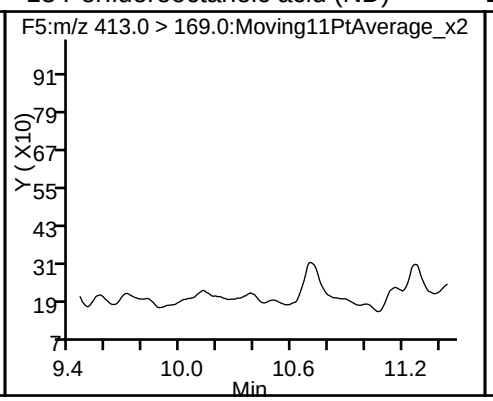
D 12 13C4 PFOA



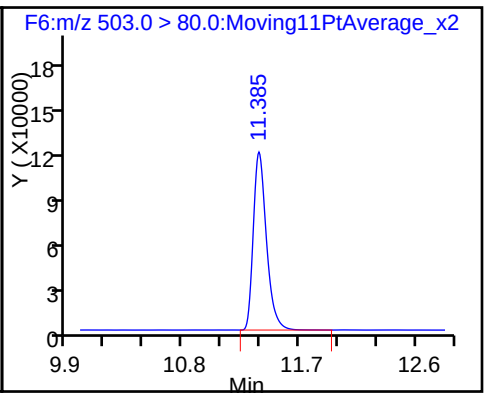
13 Perfluorooctanoic acid (ND)



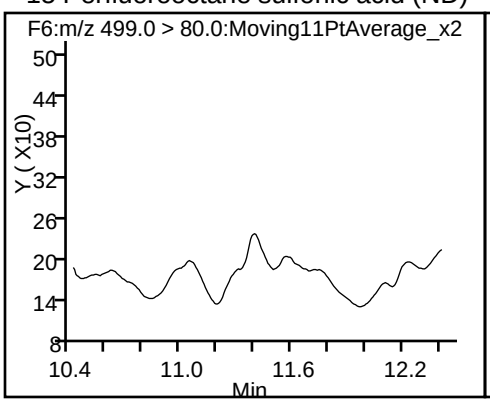
13 Perfluorooctanoic acid (ND)



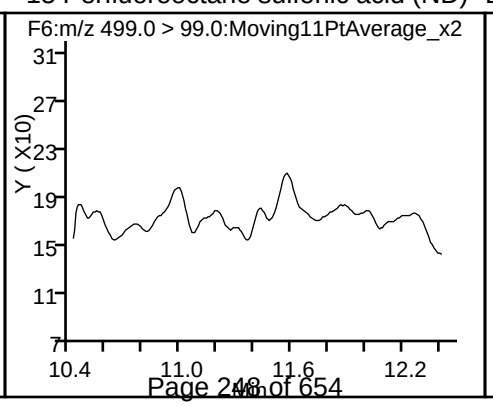
D 16 13C4 PFOS



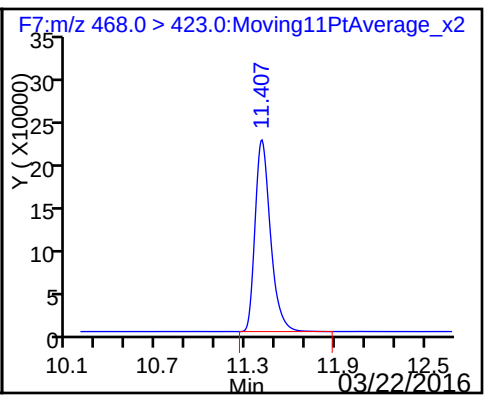
15 Perfluorooctane sulfonic acid (ND)



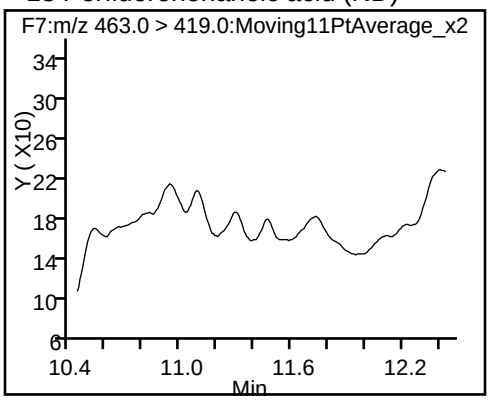
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB35-0216 | Lab Sample ID: 320-17150-6

Matrix: Water | Lab File ID: 19FEB2016A6A_052.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 10:40

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 534.9(mL) | Date Analyzed: 02/20/2016 08:09

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.0019	0.00075
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.0019	0.00070
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.0019	0.00061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.0019	0.00086
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0019	U	0.0023	0.0019	0.00081
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	115		25-150
STL00990	13C4 PFOA	111		25-150
STL00995	13C5 PFNA	117		25-150
STL00994	18O2 PFHxS	104		25-150
STL00991	13C4 PFOS	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_052.d
Lims ID: 320-17150-A-6-A Lab Sample ID: 320-17150-6
Client ID: OF-FB35-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 08:09:09 ALS Bottle#: 6 Worklist Smp#: 50
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-6-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:14:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.161	6.939	0.222	1.000	248	0.0161				
D 8 13C4-PFHpA										
367.0 > 322.0	9.299	9.322	-0.023		1773284	57.5		115	3937	
D 11 18O2 PFHxS										
403.0 > 84.0	9.329	9.358	-0.029		734484	49.1		104	2401	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.346	9.364	-0.018	1.000	1024	0.0977				
D 12 13C4 PFOA										
417.0 > 372.0	10.426	10.450	-0.024		1891776	55.4		111	5182	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.419	10.450	-0.031	1.000	2525	0.0665			4.1	
D 16 13C4 PFOS										
503.0 > 80.0	11.392	11.414	-0.022		835666	46.0		96.2	2220	
D 17 13C5 PFNA										
468.0 > 423.0	11.407	11.434	-0.027		1644584	58.3		117	4594	

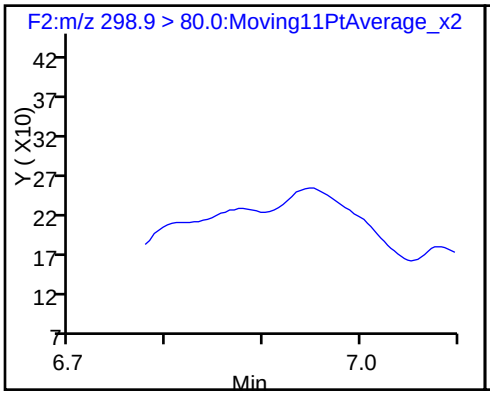
Report Date: 22-Feb-2016 13:14:46 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

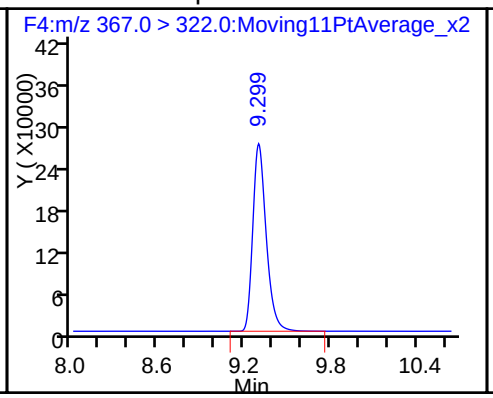
Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_052.d

Injection Date:	20-Feb-2016 08:09:09	Instrument ID:	A6		
Lims ID:	320-17150-A-6-A	Lab Sample ID:	320-17150-6		
Client ID:	OF-FB35-0216				
Operator ID:	JRB	ALS Bottle#:	6	Worklist Smp#:	50
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		

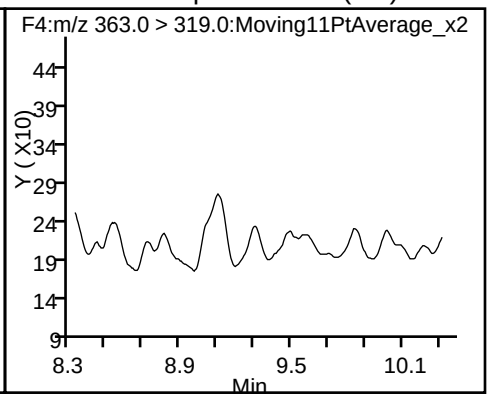
40 Perfluorobutanesulfonic acid



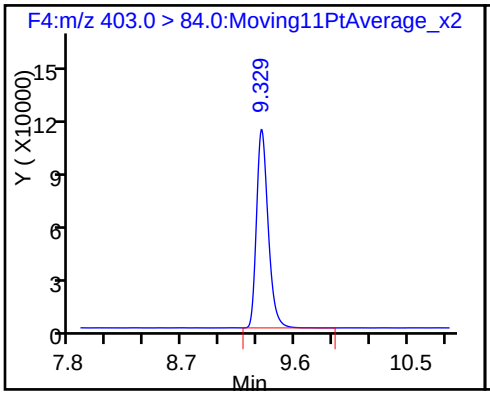
D 8 13C4-PFHpA



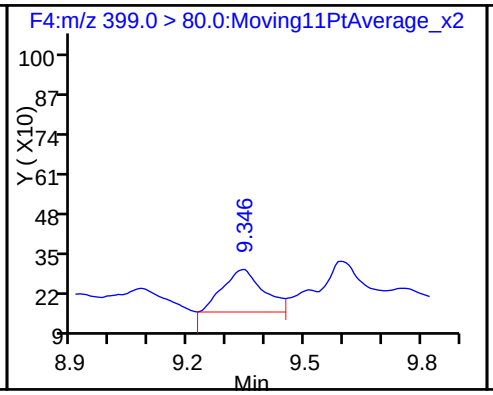
9 Perfluoroheptanoic acid (ND)



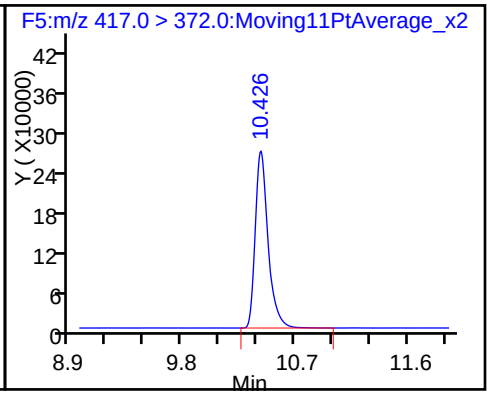
D 11 18O2 PFHxS



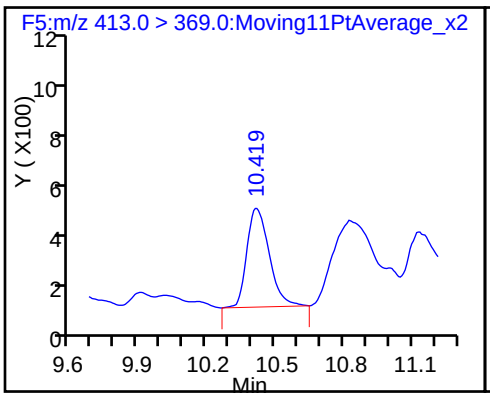
41 Perfluorohexanesulfonic acid



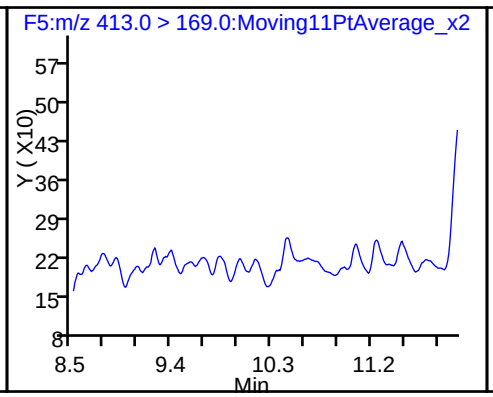
D 12 13C4 PFOA



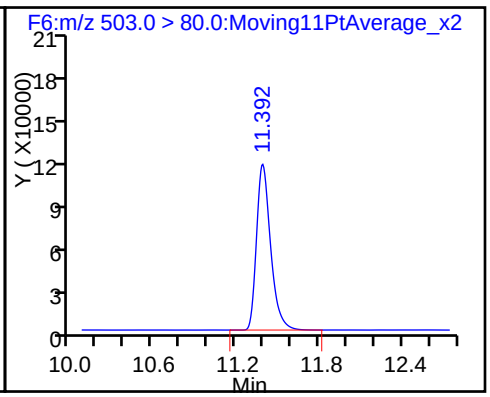
13 Perfluorooctanoic acid



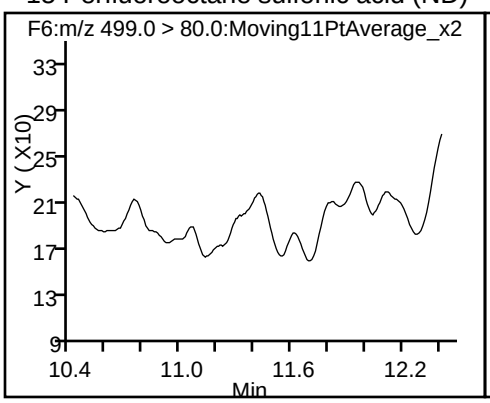
13 Perfluorooctanoic acid



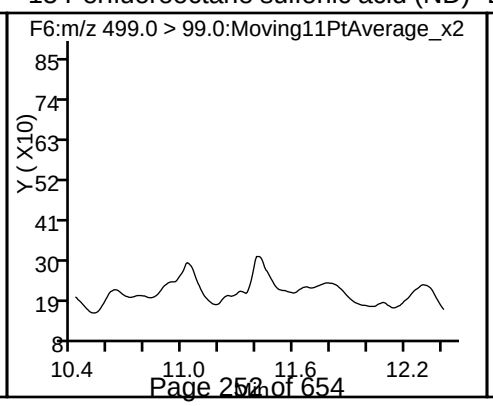
D 16 13C4 PFOS



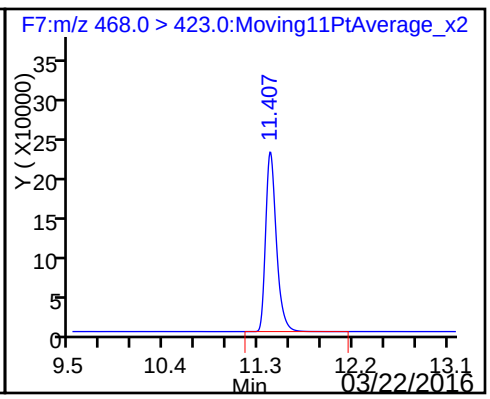
15 Perfluorooctane sulfonic acid (ND)



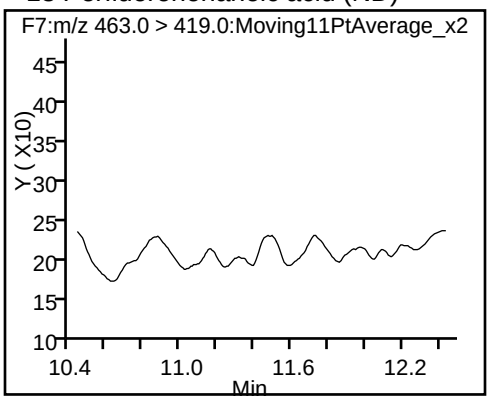
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB58-0216 | Lab Sample ID: 320-17150-8

Matrix: Water | Lab File ID: 19FEB2016A6A_053.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 11:12

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 540.9(mL) | Date Analyzed: 02/20/2016 08:30

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00085
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	113		25-150
STL00990	13C4 PFOA	113		25-150
STL00995	13C5 PFNA	115		25-150
STL00994	18O2 PFHxS	99		25-150
STL00991	13C4 PFOS	95		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_053.d
Lims ID: 320-17150-A-8-A Lab Sample ID: 320-17150-8
Client ID: OF-FB58-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 08:30:22 ALS Bottle#: 7 Worklist Smp#: 51
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-8-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:15:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA										
367.0 > 322.0	9.300	9.322	-0.022		1739290	56.4		113	6072	
D 11 18O2 PFHxS										
403.0 > 84.0	9.335	9.358	-0.023		701860	46.9		99.1	2415	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.412	9.364	0.048	1.000	208	0.0208				
D 12 13C4 PFOA										
417.0 > 372.0	10.427	10.450	-0.023		1931458	56.6		113	7629	
D 16 13C4 PFOS										
503.0 > 80.0	11.393	11.414	-0.021		823073	45.3		94.7	3079	
D 17 13C5 PFNA										
468.0 > 423.0	11.409	11.434	-0.025		1621730	57.5		115	5405	

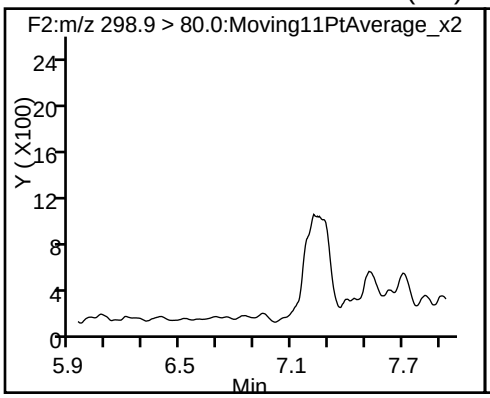
Report Date: 22-Feb-2016 13:15:04 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

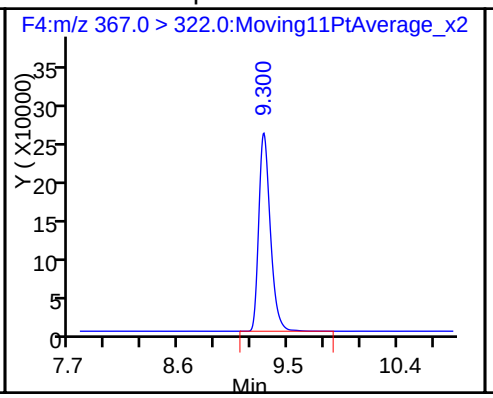
Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_053.d

Injection Date:	20-Feb-2016 08:30:22	Instrument ID:	A6		
Lims ID:	320-17150-A-8-A	Lab Sample ID:	320-17150-8		
Client ID:	OF-FB58-0216				
Operator ID:	JRB	ALS Bottle#:	7	Worklist Smp#:	51
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		

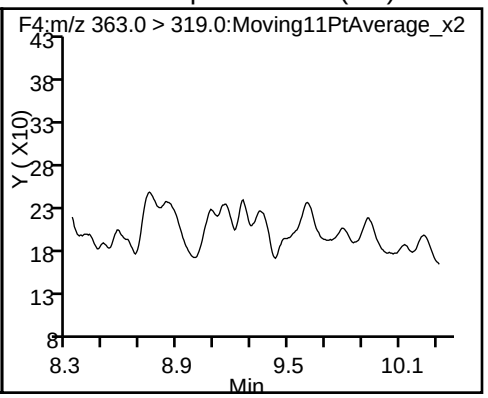
40 Perfluorobutanesulfonic acid (ND)



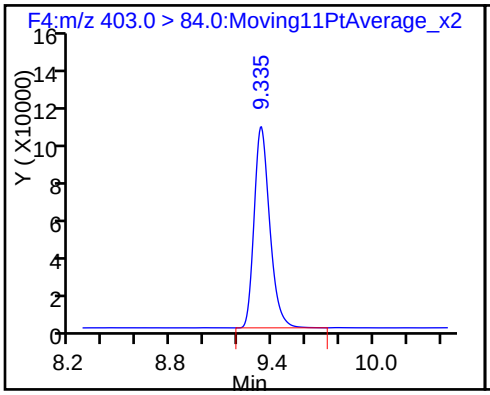
D 8 13C4-PFHpA



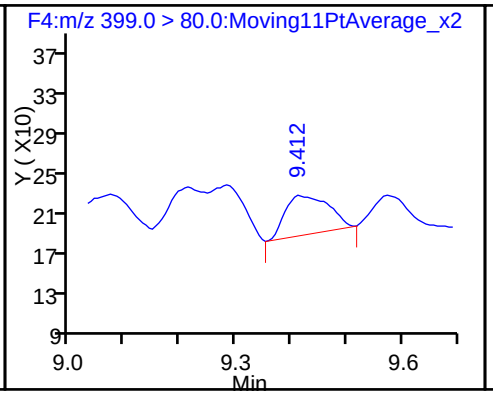
9 Perfluoroheptanoic acid (ND)



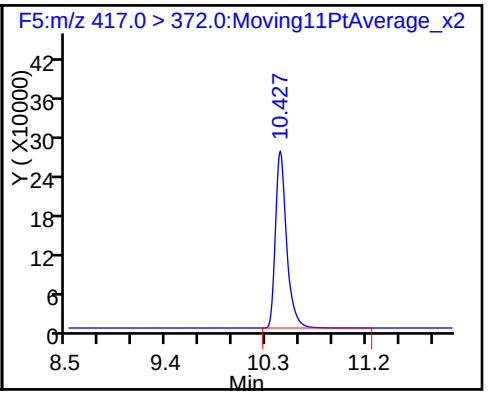
D 11 18O2 PFHxS



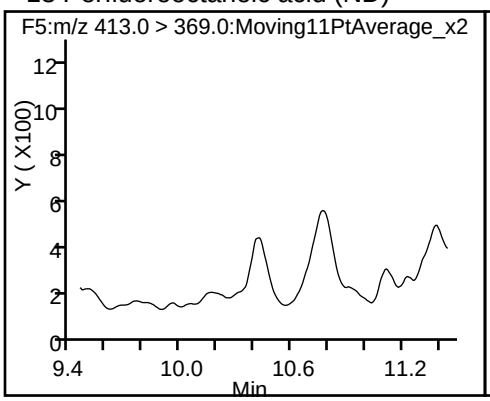
41 Perfluorohexanesulfonic acid



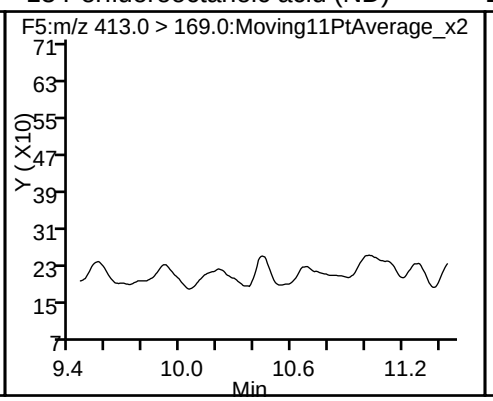
D 12 13C4 PFOA



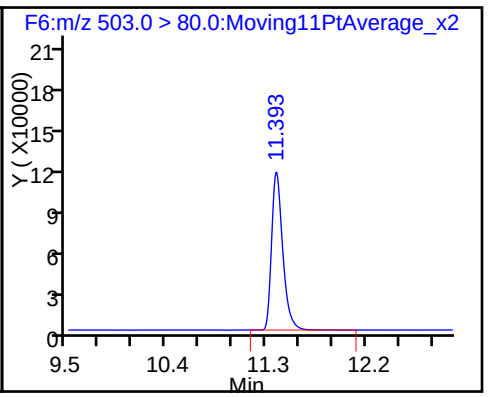
13 Perfluorooctanoic acid (ND)



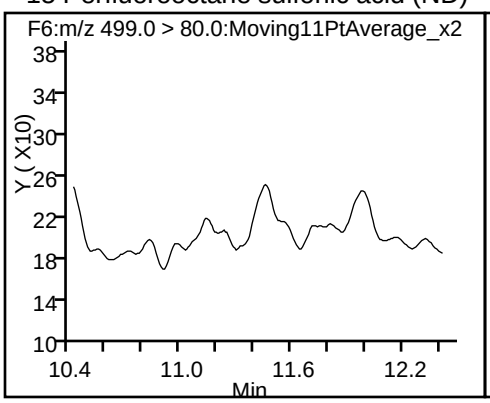
13 Perfluorooctanoic acid (ND)



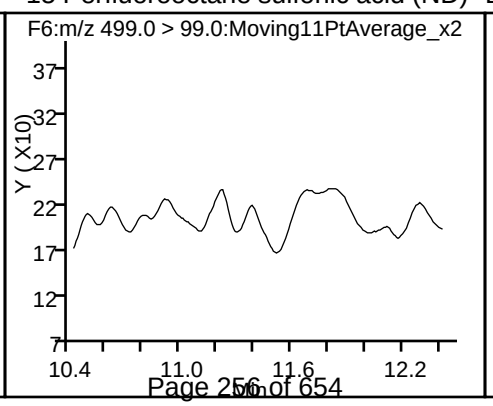
D 16 13C4 PFOS



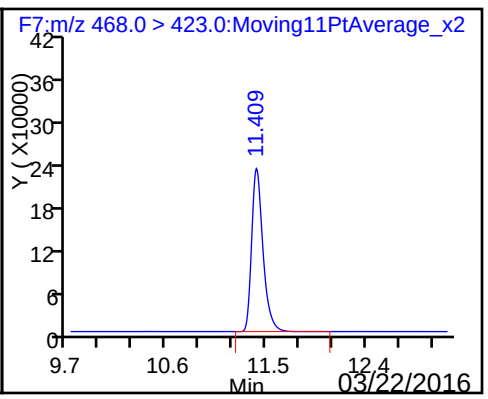
15 Perfluorooctane sulfonic acid (ND)



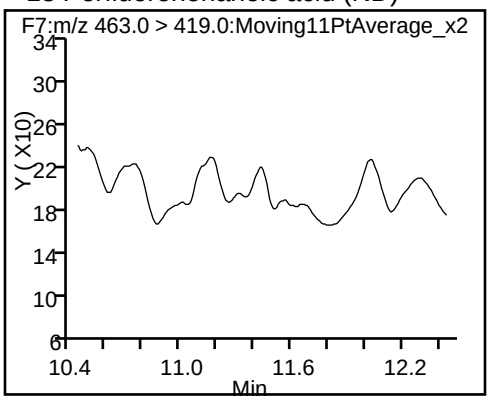
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB39-0216 | Lab Sample ID: 320-17150-9

Matrix: Water | Lab File ID: 19FEB2016A6A_054.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 11:50

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 544.7(mL) | Date Analyzed: 02/20/2016 08:51

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	108		25-150
STL00990	13C4 PFOA	112		25-150
STL00995	13C5 PFNA	113		25-150
STL00994	18O2 PFHxS	98		25-150
STL00991	13C4 PFOS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_054.d
Lims ID: 320-17150-A-9-A Lab Sample ID: 320-17150-9
Client ID: OF-FB39-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 08:51:37 ALS Bottle#: 8 Worklist Smp#: 52
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-9-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:15:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 8 13C4-PFHpA										
367.0 > 322.0	9.299	9.322	-0.023		1663213	54.0		108	7441	
D 11 18O2 PFHxS										
403.0 > 84.0	9.329	9.358	-0.029		696593	46.5		98.4	3476	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.299	9.364	-0.065	1.000	2109	0.2121				
D 12 13C4 PFOA										
417.0 > 372.0	10.419	10.450	-0.031		1918881	56.2		112	6533	
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		788301	43.4		90.7	2796	
D 17 13C5 PFNA										
468.0 > 423.0	11.407	11.434	-0.027		1591404	56.5		113	7307	

Report Date: 22-Feb-2016 13:15:33 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_054.d

Injection Date: 20-Feb-2016 08:51:37 Instrument ID: A6

Lims ID: 320-17150-A-9-A Lab Sample ID: 320-17150-9

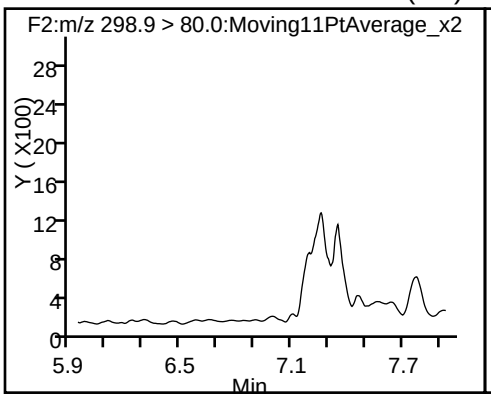
Client ID: OF-FB39-0216

Operator ID: JRB ALS Bottle#: 8 Worklist Smp#: 52

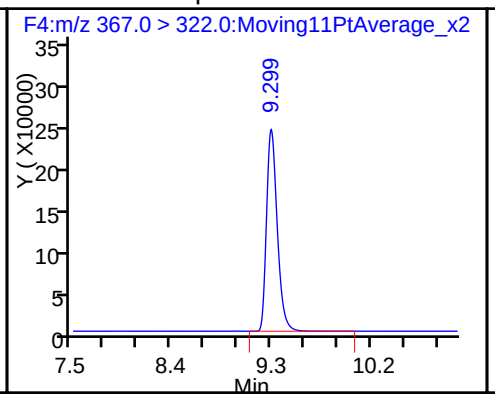
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

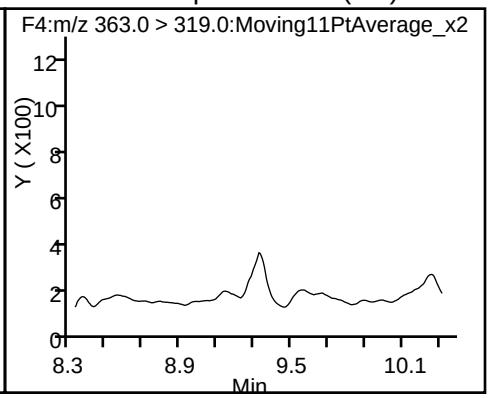
40 Perfluorobutanesulfonic acid (ND)



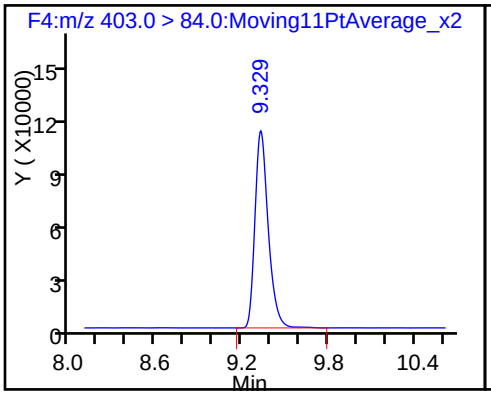
D 8 13C4-PFHpA



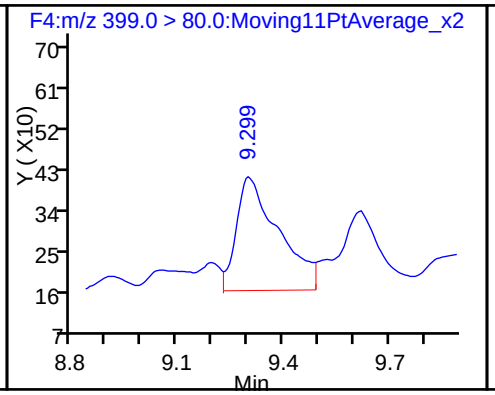
9 Perfluoroheptanoic acid (ND)



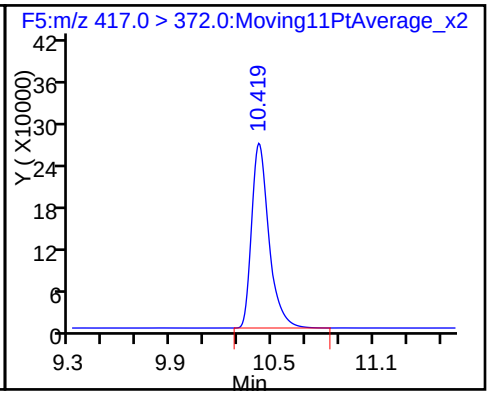
D 11 18O2 PFHxS



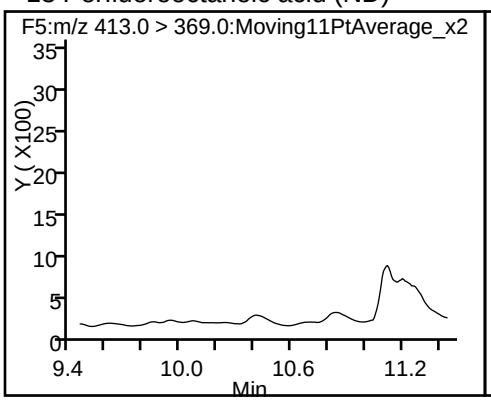
41 Perfluorohexanesulfonic acid



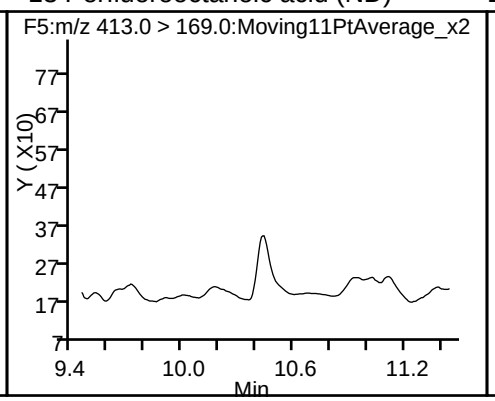
D 12 13C4 PFOA



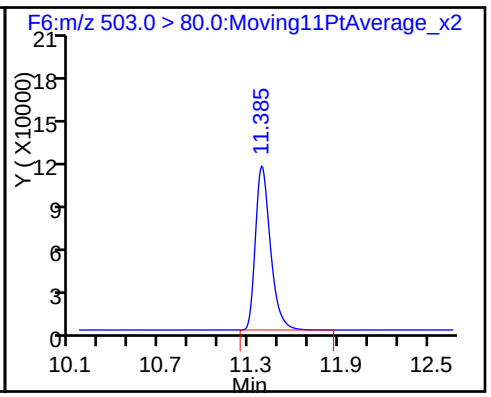
13 Perfluorooctanoic acid (ND)



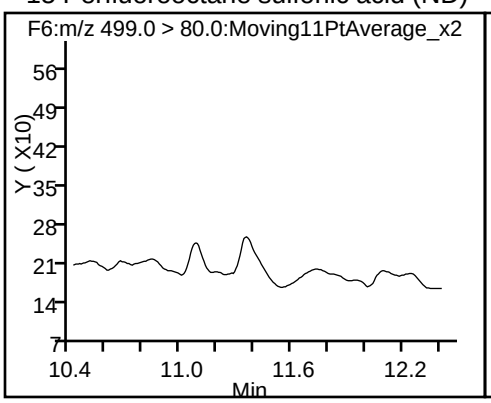
13 Perfluorooctanoic acid (ND)



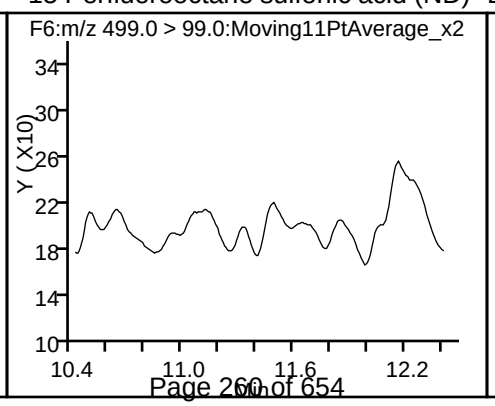
D 16 13C4 PFOS



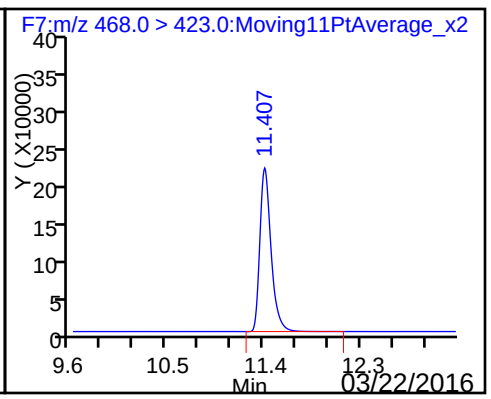
15 Perfluorooctane sulfonic acid (ND)



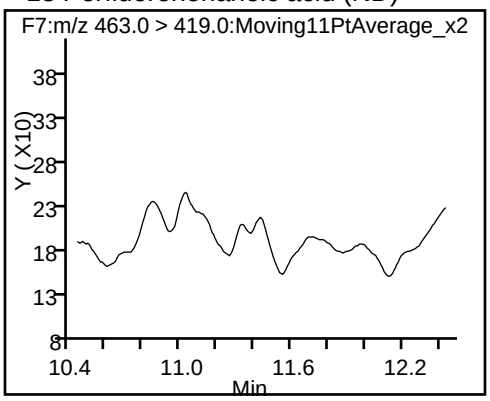
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB40-0216 | Lab Sample ID: 320-17150-11

Matrix: Water | Lab File ID: 19FEB2016A6A_055.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 12:15

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 554.3(mL) | Date Analyzed: 02/20/2016 09:12

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00072
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.0018	0.00067
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00059
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00083
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.0018	0.00078
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0027	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	111		25-150
STL00990	13C4 PFOA	111		25-150
STL00995	13C5 PFNA	119		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_055.d
Lims ID: 320-17150-A-11-A Lab Sample ID: 320-17150-11
Client ID: OF-FB40-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 09:12:52 ALS Bottle#: 9 Worklist Smp#: 53
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-11-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:15:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.181	6.939	0.242	1.000	3991	0.2758				
D 8 13C4-PFHpA										
367.0 > 322.0	9.291	9.322	-0.031		1704294	55.3		111	8256	
D 11 18O2 PFHxS										
403.0 > 84.0	9.327	9.358	-0.031		689202	46.1		97.4	3077	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.315	9.364	-0.049	1.000	1607	0.1633				
D 12 13C4 PFOA										
417.0 > 372.0	10.422	10.450	-0.028		1900259	55.7		111	5734	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.422	10.450	-0.028	1.000	2333	0.0612			4.1	
413.0 > 169.0	10.401	10.450	-0.049	0.998	1535		1.52(0.00-0.00)		5.4	
D 16 13C4 PFOS										
503.0 > 80.0	11.381	11.414	-0.033		808394	44.5		93.0	2314	
D 17 13C5 PFNA										
468.0 > 423.0	11.404	11.434	-0.030		1679884	59.6		119	5927	

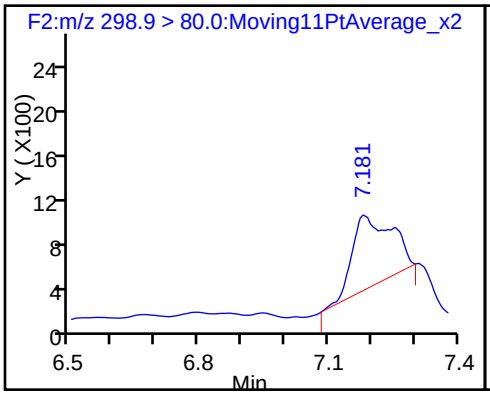
Report Date: 22-Feb-2016 13:15:59 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

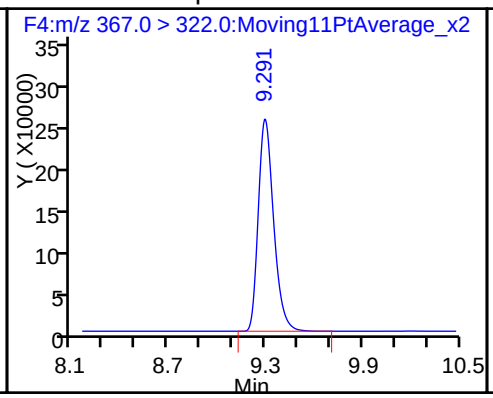
Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_055.d

Injection Date:	20-Feb-2016 09:12:52	Instrument ID:	A6		
Lims ID:	320-17150-A-11-A	Lab Sample ID:	320-17150-11		
Client ID:	OF-FB40-0216				
Operator ID:	JRB	ALS Bottle#:	9	Worklist Smp#:	53
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		

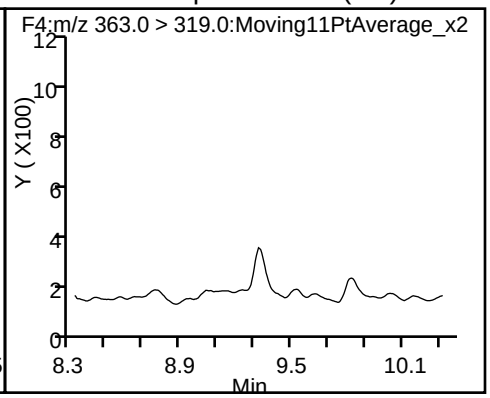
40 Perfluorobutanesulfonic acid



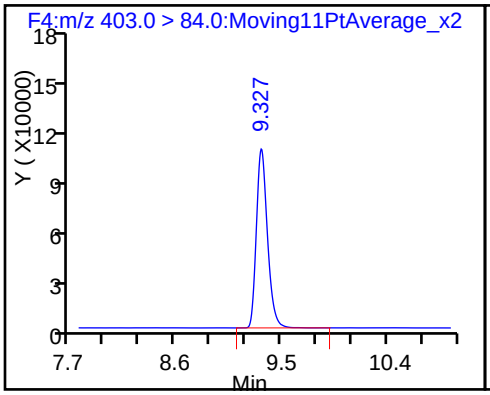
D 8 13C4-PFHpA



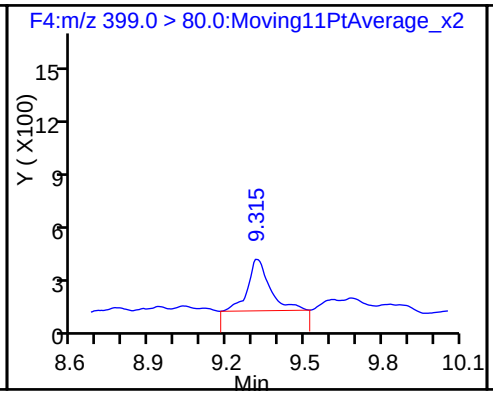
9 Perfluoroheptanoic acid (ND)



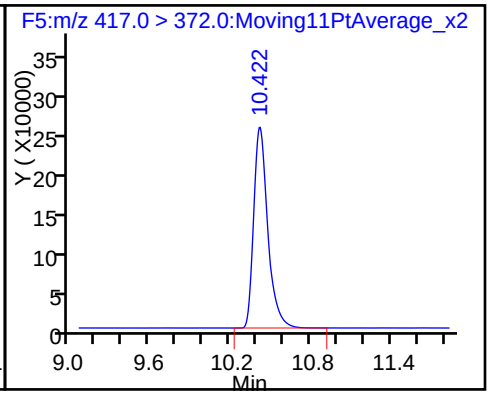
D 11 18O2 PFHxS



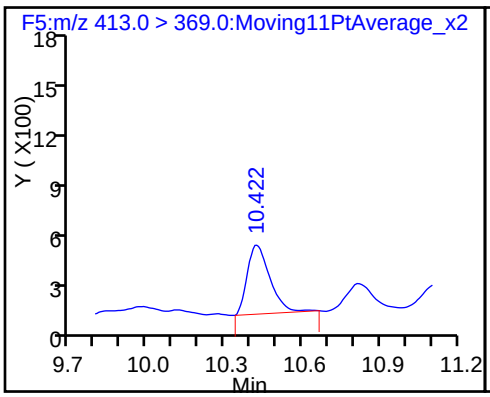
41 Perfluorohexanesulfonic acid



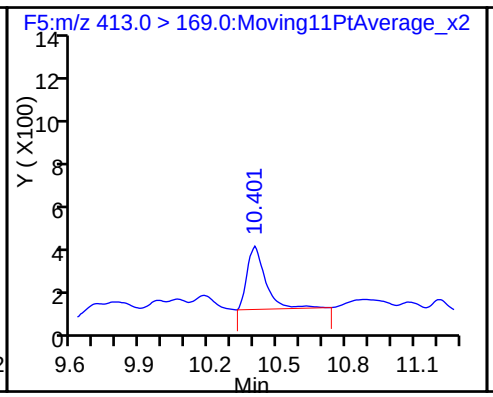
D 12 13C4 PFOA



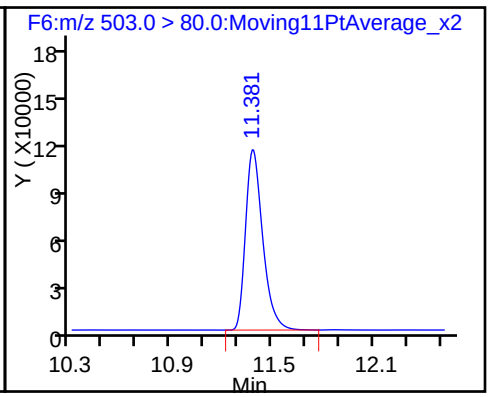
13 Perfluorooctanoic acid



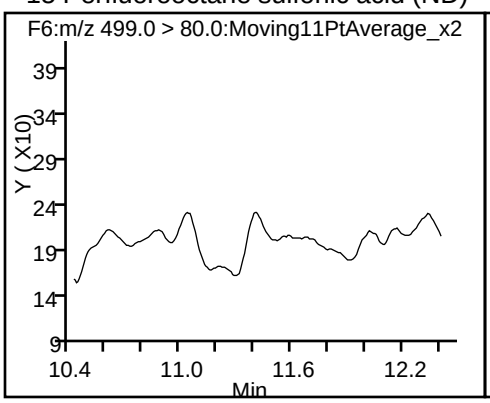
13 Perfluorooctanoic acid



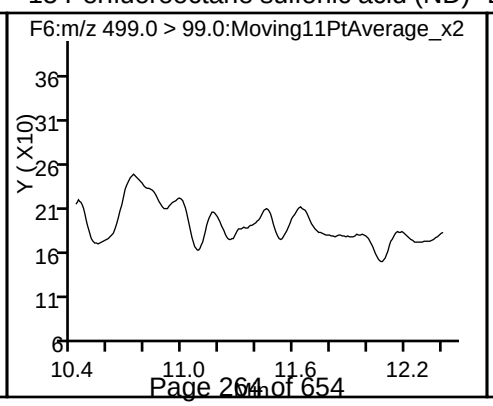
D 16 13C4 PFOS



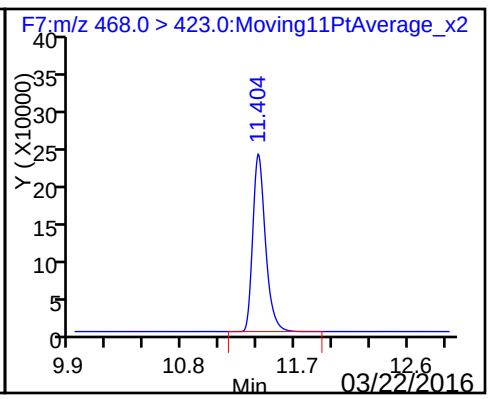
15 Perfluorooctane sulfonic acid (ND)



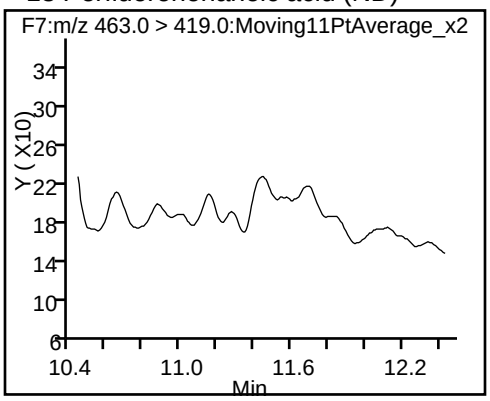
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: OF-FB43-0216 | Lab Sample ID: 320-17150-13

Matrix: Water | Lab File ID: 19FEB2016A6A_057.d

Analysis Method: WS-LC-0025 | Date Collected: 02/03/2016 16:05

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 545.3(mL) | Date Analyzed: 02/20/2016 09:55

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00060
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0028	U	0.0037	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	117		25-150
STL00990	13C4 PFOA	124		25-150
STL00995	13C5 PFNA	123		25-150
STL00994	18O2 PFHxS	106		25-150
STL00991	13C4 PFOS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_057.d
Lims ID: 320-17150-A-13-A Lab Sample ID: 320-17150-13
Client ID: OF-FB43-0216
Sample Type: Client
Inject. Date: 20-Feb-2016 09:55:18 ALS Bottle#: 10 Worklist Smp#: 55
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: 320-17150-A-13-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:16:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	7.181	6.939	0.242	1.000	1982	0.1262				
D 8 13C4-PFHpA										
367.0 > 322.0	9.293	9.322	-0.029		1799986	58.4		117	5987	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.276	9.322	-0.046	1.000	1624	0.0433			7.0	
D 11 18O2 PFHxS										
403.0 > 84.0	9.329	9.358	-0.029		748302	50.0		106	2742	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.352	9.364	-0.012	1.000	2014	0.1885				
D 12 13C4 PFOA										
417.0 > 372.0	10.419	10.450	-0.031		2111773	61.9		124	6984	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.426	10.450	-0.024	1.000	3508	0.0827			5.9	
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		851248	46.8		97.9	3747	
D 17 13C5 PFNA										
468.0 > 423.0	11.408	11.434	-0.026		1737510	61.6		123	6186	
18 Perfluorononanoic acid										
463.0 > 419.0	11.415	11.439	-0.024	1.000	3464	0.1235			7.6	

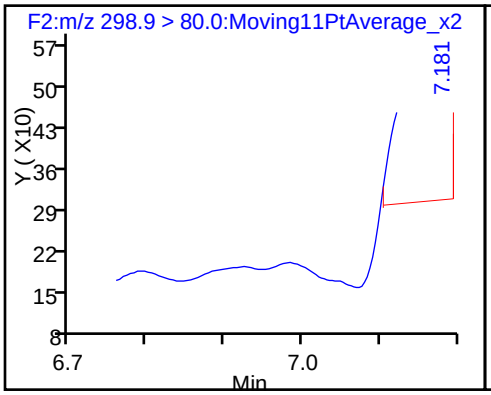
Report Date: 22-Feb-2016 13:16:22 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

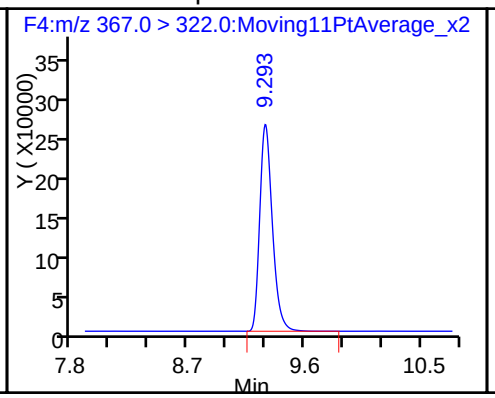
Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_057.d

Injection Date:	20-Feb-2016 09:55:18	Instrument ID:	A6		
Lims ID:	320-17150-A-13-A	Lab Sample ID:	320-17150-13		
Client ID:	OF-FB43-0216				
Operator ID:	JRB	ALS Bottle#:	10	Worklist Smp#:	55
Injection Vol:	15.0 ul	Dil. Factor:	1.0000		
Method:	PFAC_A6	Limit Group:	LC PFC_DOD ICAL		

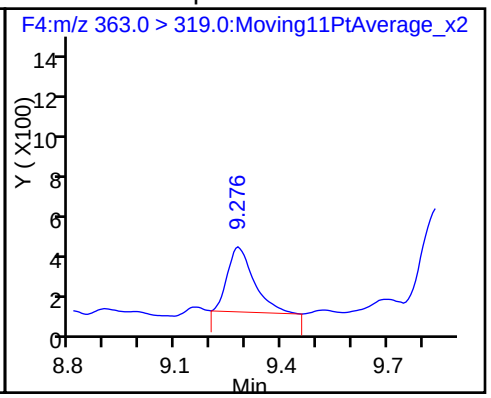
40 Perfluorobutanesulfonic acid



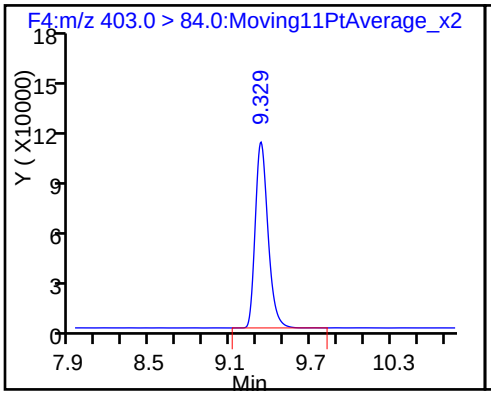
D 8 13C4-PFHpA



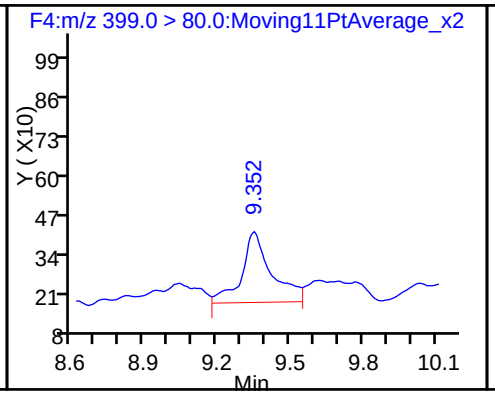
9 Perfluoroheptanoic acid



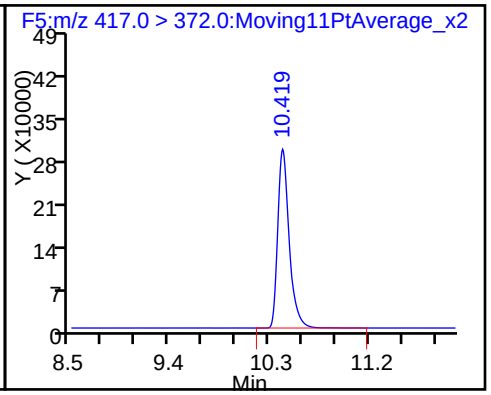
D 11 18O2 PFHxS



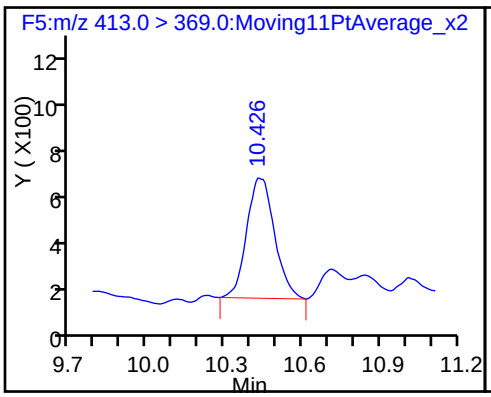
41 Perfluorohexanesulfonic acid



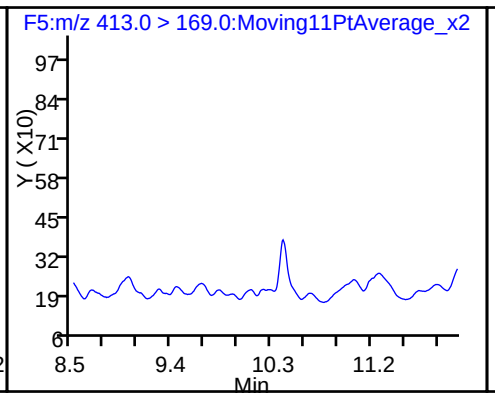
D 12 13C4 PFOA



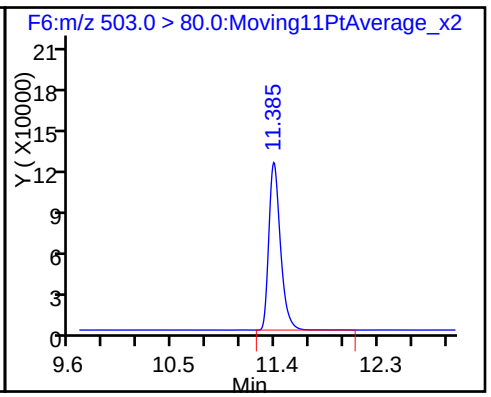
13 Perfluorooctanoic acid



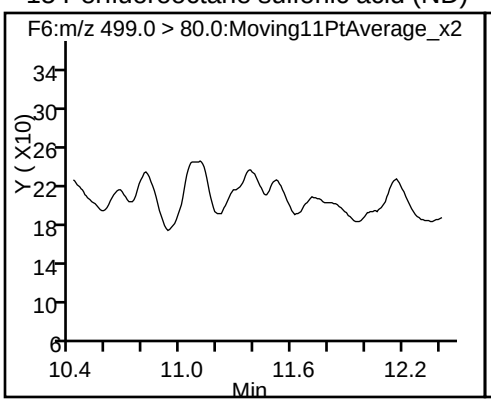
13 Perfluorooctanoic acid



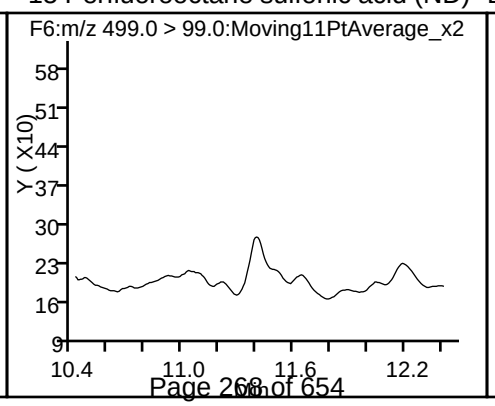
D 16 13C4 PFOS



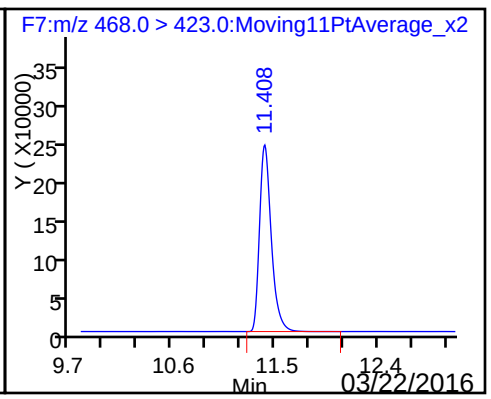
15 Perfluorooctane sulfonic acid (ND)



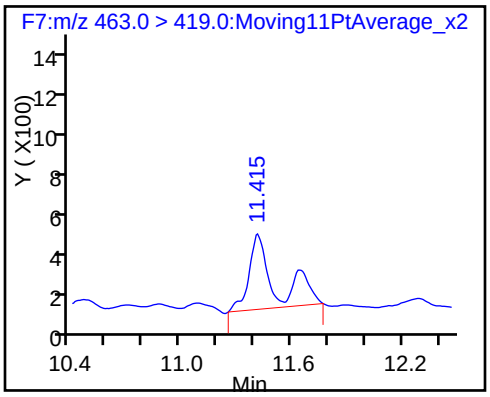
15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA



18 Perfluorononanoic acid



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1 Analy Batch No.: 100906

SDG No.: CTO WE7G PFC Sampling

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

Calibration Start Date: 02/19/2016 15:08 Calibration End Date: 02/19/2016 17:15 Calibration ID: 19191

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-100906/2	19FEB2016A6A_004.d
Level 2	STD 320-100906/3	19FEB2016A6A_005.d
Level 3	STD 320-100906/4	19FEB2016A6A_006.d
Level 4	STD 320-100906/5	19FEB2016A6A_007.d
Level 5	STD 320-100906/6	19FEB2016A6A_008.d
Level 6	STD 320-100906/7	19FEB2016A6A_009.d
Level 7	STD 320-100906/8	19FEB2016A6A_010.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	5.724	5.706	5.718	5.715	5.715	5.712	5.712				5.465 - 5.965	5.715
Perfluoropentanoic acid (PFPeA)	+++++	6.837	6.842	6.828	6.828	6.819	6.818				6.578 - 7.078	6.829
Perfluorobutanesulfonic acid (PFBS)	+++++	6.943	6.939	6.942	6.938	6.934	+++++				6.689 - 7.189	6.939
Perfluorohexanoic acid (PFHxA)	+++++	8.087	8.084	8.082	8.077	8.067	8.065				7.828 - 8.328	8.077
Perfluoroheptanoic acid (PFHpA)	+++++	9.334	9.328	9.323	9.323	9.310	9.305				9.072 - 9.572	9.321
Perfluorohexanesulfonic acid (PFHxS)	+++++	9.387	9.363	9.358	9.364	9.346	+++++				9.114 - 9.614	9.364
Perfluorooctanoic acid (PFOA)	10.453	10.461	10.453	10.454	10.454	10.439	+++++				10.200 - 10.700	10.452
Perfluoroheptanesulfonic Acid (PFHpS)	+++++	10.475	10.461	10.461	10.461	10.439	+++++				10.207 - 10.707	10.459
Perfluorooctanesulfonic acid (PFOS)	+++++	11.436	11.420	11.421	11.422	11.399	+++++				11.167 - 11.667	11.420
Perfluorononanoic acid (PFNA)	+++++	11.451	11.443	11.437	11.437	11.421	11.422				11.189 - 11.689	11.435
Perfluorodecanoic acid (PFDA)	+++++	12.296	12.286	12.276	12.280	12.254	+++++				12.026 - 12.526	12.278
Perfluorooctane Sulfonamide (FOSA)	+++++	12.824	12.814	12.814	12.818	12.793	12.793				12.562 - 13.062	12.809
Perfluorodecane Sulfonic acid	+++++	12.970	12.960	12.950	12.954	12.929	+++++				12.699 - 13.199	12.953
Perfluoroundecanoic acid (PFUnA)	13.010	13.010	13.010	13.002	13.005	12.981	+++++				12.750 - 13.250	13.003
Perfluorododecanoic acid (PFDoA)	13.625	13.624	13.615	13.615	13.620	13.588	13.588				13.361 - 13.861	13.611
Perfluorotridecanoic Acid (PFTriA)	14.147	14.139	14.139	14.132	14.136	14.109	14.109				13.880 - 14.380	14.130
Perfluorotetradecanoic acid (PFTeA)	14.585	14.585	14.578	14.572	14.576	14.552	14.552				14.321 - 14.821	14.571
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	15.218	15.213	15.213	15.210	15.193	15.193				14.958 - 15.458	15.207
Perfluoro-n-octandecanoic acid (PFODA)	15.557	15.549	15.544	15.544	15.546	15.529	15.529				15.293 - 15.793	15.543
13C4 PFBA	5.718	5.718	5.712	5.709	5.709	5.709	5.709				5.462 - 5.962	5.712
13C5-PFPeA	6.832	6.837	6.828	6.828	6.823	6.819	6.818				6.577 - 7.077	6.826
13C2 PFHxA	8.087	8.093	8.084	8.082	8.082	8.067	8.065				7.830 - 8.330	8.080
13C4-PFHpA	9.328	9.334	9.328	9.323	9.323	9.310	9.305				9.072 - 9.572	9.322
18O2 PFHxS	9.363	9.369	9.363	9.358	9.358	9.346	+++++				9.108 - 9.608	9.360
13C4 PFOA	10.453	10.468	10.453	10.454	10.454	10.432	+++++				10.200 - 10.700	10.452
13C4 PFOS	11.421	11.428	11.420	11.414	11.422	11.399	+++++				11.164 - 11.664	11.417
13C5 PFNA	11.444	11.451	11.443	11.437	11.437	11.414	11.415				11.184 - 11.684	11.434
13C2 PFDA	12.286	12.286	12.286	12.276	12.280	12.254	+++++				12.025 - 12.525	12.278
13C8 FOSA	12.814	12.824	12.814	12.814	12.818	12.793	12.793				12.560 - 13.060	12.810
13C2 PFUnA	13.010	13.010	13.010	13.002	13.005	12.981	+++++				12.750 - 13.250	13.003
13C2 PFDoA	13.616	13.624	13.615	13.615	13.620	13.588	13.588				13.359 - 13.859	13.609
13C2-PFTeDA	14.579	14.585	14.578	14.579	14.576	14.552	14.552				14.321 - 14.821	14.572
13C2-PFHxDA	15.216	15.218	15.213	15.213	15.210	15.188	15.193				14.957 - 15.457	15.207

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

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1 Analy Batch No.: 100906

SDG No.: CTO WE7G PFC Sampling

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

Calibration Start Date: 02/19/2016 15:08 Calibration End Date: 02/19/2016 17:15 Calibration ID: 19191

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-100906/2	19FEB2016A6A_004.d
Level 2	STD 320-100906/3	19FEB2016A6A_005.d
Level 3	STD 320-100906/4	19FEB2016A6A_006.d
Level 4	STD 320-100906/5	19FEB2016A6A_007.d
Level 5	STD 320-100906/6	19FEB2016A6A_008.d
Level 6	STD 320-100906/7	19FEB2016A6A_009.d
Level 7	STD 320-100906/8	19FEB2016A6A_010.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	17215 15573	18158 14290	17652 12637	16479	Ave		16000.4800				12.4		50.0			
13C5-PFPeA	33132 32092	37596 25883	31200 23439	31979	Ave		30760.1743				15.3		50.0			
13C2 PFHxA	31151 28249	32712 25751	29384 20807	30249	Ave		28328.9429				14.1		50.0			
13C4-PFHpA	33720 29961	37160 26279	32774 21986	33895	Ave		30825.1286				16.8		50.0			
18O2 PFHxS	16445 14414	15937 12069	15300 +++++	15633	Ave		14966.2297				10.5		50.0			
13C4 PFOA	36851 31471	39431 26220	35009 +++++	35877	Ave		34143.1967				13.7		50.0			
13C4 PFOS	19998 17191	20738 13980	18794 +++++	18393	Ave		18182.3013				13.2		50.0			
13C5 PFNA	32640 27720	35233 22861	29495 20201	29189	Ave		28191.1457				18.6		50.0			
13C2 PFDA	30433 26439	32141 20971	31311 +++++	30484	Ave		28629.7300				14.8		50.0			
13C8 FOSA	45384 42557	44125 37994	44477 31983	43988	Ave		41501.0343				11.7		50.0			
13C2 PFUnA	40172 34391	42368 28219	39609 +++++	39503	Ave		37377.2300				13.9		50.0			
13C2 PFDoA	43990 39123	44852 34183	40349 29026	42305	Ave		39118.3029				14.6		50.0			
13C2-PFTeDA	37943 36827	39228 31852	37299 30439	37717	Ave		35900.7657				9.3		50.0			
13C2-PFHxDA	45996 43682	46879 39154	44036 36320	45657	Ave		43103.4314				9.1		50.0			

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

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1 Analy Batch No.: 100906

SDG No.: CTO WE7G PFC Sampling

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

Calibration Start Date: 02/19/2016 15:08 Calibration End Date: 02/19/2016 17:15 Calibration ID: 19191

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 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	17268 20409	18332 18204	24759	23146	22421	AveID		1.3041				15.6		35.0			
Perfluoropentanoic acid (PFPeA)	+++++ 26519	41667 24011	33706	33699	31098	AveID		1.0434				4.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	+++++ 14042	11589 +++++	13996	16675	15750	AveID		0.9930				17.5		50.0			
Perfluorohexanoic acid (PFHxA)	+++++ 28593	29048 23704	35504	30900	31979	AveID		1.0832				10.4		35.0			
Perfluoroheptanoic acid (PFHpA)	+++++ 26755	35173 22997	33430	38937	32292	AveID		1.0429				6.5		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 8511.3	10001 +++++	10164	10841	9886.6	AveID		0.6753				4.5		35.0			
Perfluorooctanoic acid (PFOA)	41176 26427	32208 +++++	37796	35759	31611	AveID		1.0038				10.3		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	+++++ 8507.0	9112.4 +++++	11112	11362	10932	L2ID	-0.177	0.6259							1.0000		0.9900
Perfluorooctanesulfonic acid (PFOS)	+++++ 13560	19579 +++++	18099	18656	16687	AveID		0.9724				2.6		35.0			
Perfluorononanoic acid (PFNA)	+++++ 19794	23017 16627	24079	25918	22126	AveID		0.8075				10.2		35.0			
Perfluorodecanoic acid (PFDA)	+++++ 20747	42554 +++++	32768	28572	26974	L2ID	0.3477	0.9748							0.9990		0.9900
Perfluorooctane Sulfonamide (FOSA)	+++++ 33984	42097 29306	40773	41641	39679	AveID		0.9268				2.4		35.0			
Perfluorodecane Sulfonic acid	+++++ 7589.1	6534.2 +++++	10246	10522	10316	L1ID	-0.161	0.5576							0.9980		0.9900
Perfluoroundecanoic acid (PFUnA)	76472 22856	51520 +++++	42693	34710	30224	L1ID	0.5568	0.8236							0.9980		0.9900
Perfluorododecanoic acid (PFDoA)	28216 25891	23692 22968	32661	33950	30803	AveID		0.7311				14.6		35.0			
Perfluorotridecanoic Acid (PFTriA)	34658 29612	40040 23925	48646	43762	38156	AveID		0.9409				15.3		50.0			
Perfluorotetradecanoic acid (PFTeA)	49430 19999	42000 17283	27015	24942	23186	L2ID	0.2791	0.5968							0.9970		0.9900
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 37534	171017 32169	64991	49814	43976	L2ID	2.7370	1.0725							1.0000		0.9900
Perfluoro-n-octandecanoic acid (PFODA)	49252 37638	39408 34132	49070	48056	44933	AveID		1.1108				9.8		50.0			

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1 Analy Batch No.: 100906

SDG No.: CTO WE7G PFC Sampling

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

Calibration Start Date: 02/19/2016 15:08 Calibration End Date: 02/19/2016 17:15 Calibration ID: 19191

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-100906/2	19FEB2016A6A_004.d
Level 2	STD 320-100906/3	19FEB2016A6A_005.d
Level 3	STD 320-100906/4	19FEB2016A6A_006.d
Level 4	STD 320-100906/5	19FEB2016A6A_007.d
Level 5	STD 320-100906/6	19FEB2016A6A_008.d
Level 6	STD 320-100906/7	19FEB2016A6A_009.d
Level 7	STD 320-100906/8	19FEB2016A6A_010.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	860754 714491	907904 631840	882584	823965	778630	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	1656599 1294135	1879822 1171928	1560021	1598957	1604599	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	1557529 1287540	1635595 1040351	1469185	1512461	1412469	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	1685988 1313950	1858023 1099321	1638704	1694741	1498068	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	777834 570842	753810 +++++	723683	739449	681798	47.3 47.3	47.3 +++++	47.3	47.3	47.3
13C4 PFOA	Ave	1842532 1311023	1971561 +++++	1750451	1793859	1573533	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C4 PFOS	Ave	955905 668257	991283 +++++	898344	879178	821717	47.8 47.8	47.8 +++++	47.8	47.8	47.8
13C5 PFNA	Ave	1631991 1143055	1761627 1010032	1474756	1459436	1386004	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	1521664 1048548	1607037 +++++	1565532	1524195	1321943	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C8 FOSA	Ave	2269224 1899691	2206225 1599127	2223851	2199385	2127859	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2008621 1410933	2118412 +++++	1980471	1975170	1719562	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C2 PFDoA	Ave	2199484 1709160	2242621 1451296	2017427	2115244	1956174	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	1897170 1592616	1961399 1521958	1864931	1885833	1841361	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	2299786 1957713	2343949 1815999	2201810	2282833	2184111	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:
Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1 Analy Batch No.: 100906

SDG No.: CTO WE7G PFC Sampling

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

Calibration Start Date: 02/19/2016 15:08 Calibration End Date: 02/19/2016 17:15 Calibration ID: 19191

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-100906/2	19FEB2016A6A_004.d
Level 2	STD 320-100906/3	19FEB2016A6A_005.d
Level 3	STD 320-100906/4	19FEB2016A6A_006.d
Level 4	STD 320-100906/5	19FEB2016A6A_007.d
Level 5	STD 320-100906/6	19FEB2016A6A_008.d
Level 6	STD 320-100906/7	19FEB2016A6A_009.d
Level 7	STD 320-100906/8	19FEB2016A6A_010.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	8634 4081745	18332 7281727	123793	462922	1121027	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	+++++ 5303760	41667 9604476	168531	673970	1554916	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	+++++ 2482631	10245 +++++	61862	294821	696169	+++++ 177	0.884 +++++	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	+++++ 5718698	29048 9481665	177522	618008	1598966	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		AveID	+++++ 5350969	35173 9198751	167149	778743	1614588	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 1610335	9461 +++++	48077	205104	467634	+++++ 189	0.946 +++++	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	20588 5285370	32208 +++++	188978	715180	1580565	0.500 200	1.00 +++++	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		L2ID	+++++ 1619742	8675 +++++	52893	216336	520355	+++++ 190	0.952 +++++	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	+++++ 2592636	18718 +++++	86511	356703	797626	+++++ 191	0.956 +++++	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	+++++ 3958780	23017 6650814	120395	518362	1106311	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		L2ID	+++++ 4149384	42554 +++++	163841	571448	1348689	+++++ 200	1.00 +++++	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	+++++ 6796748	42097 11722467	203867	832823	1983962	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecane Sulfonic acid		L1ID	+++++ 1463184	6299 +++++	49387	202871	497252	+++++ 193	0.964 +++++	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L1ID	38236 4571131	51520 +++++	213464	694202	1511190	0.500 200	1.00 +++++	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	14108 5178123	23692 9187053	163307	679009	1540137	0.500 200	1.00 400	5.00	20.0	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1 Analy Batch No.: 100906

SDG No.: CTO WE7G PFC Sampling

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

Calibration Start Date: 02/19/2016 15:08 Calibration End Date: 02/19/2016 17:15 Calibration ID: 19191

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	17329 5922305	40040 9569869	243228	875238	1907812	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		L2ID	24715 3999720	42000 6913347	135077	498848	1159290	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 7506851	171017 12867499	324953	996289	2198803	+++++ 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octandecanoic acid (PFODA)		AveID	24626 7527521	39408 13652743	245350	961125	2246657	0.500 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_004.d
Lims ID: Std L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 19-Feb-2016 15:08:21 ALS Bottle#: 9 Worklist Smp#: 2
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L1
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:40 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.718	5.712	0.006		860754	53.8		108	3626	
2 Perfluorobutyric acid										
212.9 > 169.0	5.724	5.715	0.009	1.000	8634	0.3846		76.9	31.2	
D 3 13C5-PFPeA										
267.9 > 223.0	6.832	6.827	0.005		1656599	53.9		108	5445	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.823	6.828	-0.005	1.000	24416	0.7063		141	4.9	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.943	6.939	0.004	1.000	6549	NC			8.3	
298.9 > 99.0	6.947	6.939	0.008	1.001	2180		3.00(0.00-0.00)		6.8	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.943	6.939	0.004	1.000	6549	0.4011		90.7		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.082	8.078	0.004	1.000	17559	0.5204		104	63.7	
D 6 13C2 PFHxA										
315.0 > 270.0	8.087	8.080	0.007		1557529	55.0		110	5408	
D 8 13C4-PFHpA										
367.0 > 322.0	9.328	9.322	0.006		1685988	54.7		109	6243	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.328	9.322	0.006	1.000	21816	0.6204		124	116	
D 11 18O2 PFHxS										
403.0 > 84.0	9.363	9.358	0.005		777834	52.0		110	2685	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.381	9.364	0.017	1.000	6504	NC			21.0	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.381	9.364	0.017	1.000	6504	0.5857		124		
D 12 13C4 PFOA										
417.0 > 372.0	10.453	10.450	0.003		1842532	54.0		108	6072	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.453	10.450	0.003	1.000	20588	0.5566		111	21.4	
413.0 > 169.0	10.474	10.450	0.024	1.002	8191		2.51(0.00-0.00)	111	24.5	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.461	10.457	0.004	1.000	6248	NC			31.0	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.461	10.457	0.004	1.000	6248	0.7817		164		
D 16 13C4 PFOS										
503.0 > 80.0	11.421	11.414	0.007		955905	52.6		110	3294	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.421	11.417	0.004	1.000	10554	0.5427		114	37.9	
499.0 > 99.0	11.414	11.417	-0.003	0.999	3471		3.04(0.00-0.00)	114	16.8	
D 17 13C5 PFNA										
468.0 > 423.0	11.444	11.434	0.010		1631991	57.9		116	6715	
18 Perfluorononanoic acid										
463.0 > 419.0	11.458	11.439	0.019	1.000	11375	0.4316		86.3	38.1	
D 19 13C2 PFDA										
515.0 > 470.0	12.286	12.275	0.011		1521664	53.1		106	4154	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.286	12.276	0.010	1.000	28318	0.5978		120	92.0	
D 23 13C8 FOSA										
506.0 > 78.0	12.814	12.810	0.004		2269224	54.7		109	1690	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.825	12.812	0.013	1.000	16577	0.3941		78.8	56.9	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.950	12.949	0.001	1.000	2979	NC			5.8	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.950	12.949	0.001	1.000	2979	0.5554		115		
D 26 13C2 PFUnA										
565.0 > 520.0	13.010	13.000	0.010		2008621	53.7		107	5478	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.010	13.000	0.010	1.000	38236	0.4797		95.9	98.7	
D 28 13C2 PFDoA										
615.0 > 570.0	13.616	13.609	0.007		2199484	56.2		112	4878	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.625	13.611	0.014	1.000	14108	0.4387		87.7	18.9	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.147	14.130	0.017	1.000	17329	0.4187		83.7	16.0	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.585	14.571	0.014	1.000	24715	0.4738		94.8	13.2	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.579	14.571	0.008		1897170	52.8		106	6130	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.216	15.207	0.009		2299786	53.4		107	7006	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.216	15.208	0.008	1.000	178126	1.22		245	191	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.557	15.543	0.014	1.000	24626	0.5040		101	32.9	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L1_00018 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:41 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_004.d

Injection Date: 19-Feb-2016 15:08:21 Instrument ID: A6

Lims ID: Std L1

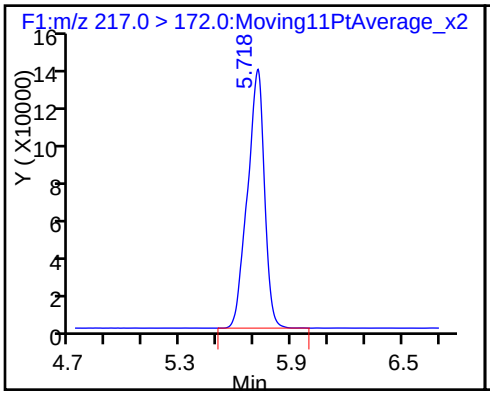
Client ID:

Operator ID: JRB ALS Bottle#: 9 Worklist Smp#: 2

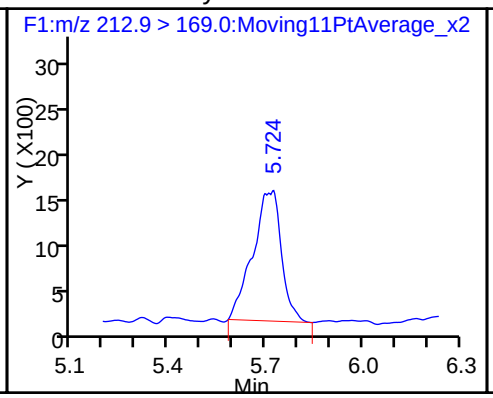
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

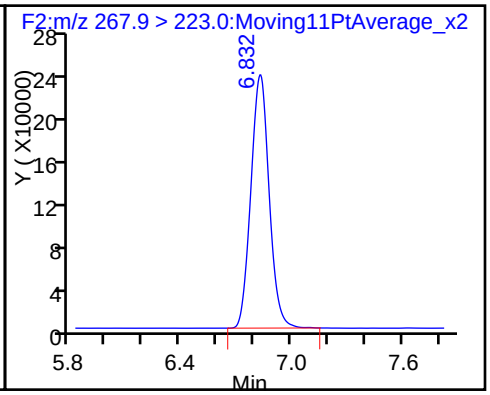
D 1 13C4 PFBA



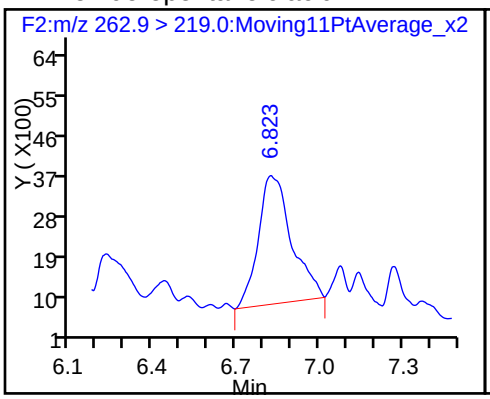
2 Perfluorobutyric acid



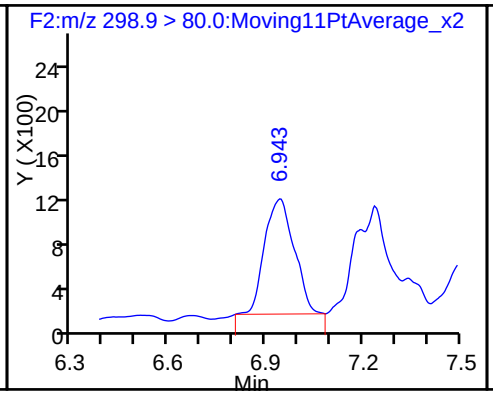
D 3 13C5-PFPeA



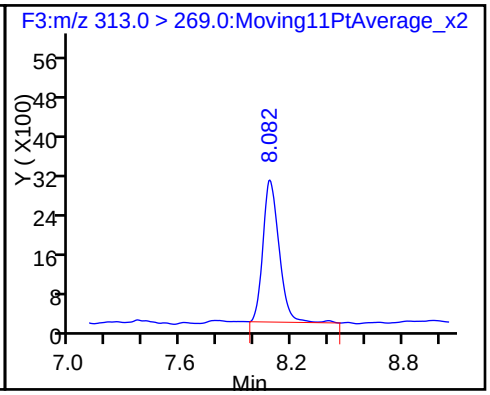
4 Perfluoropentanoic acid



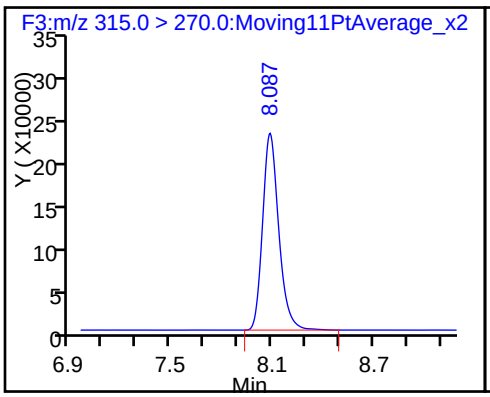
40 Perfluorobutanesulfonic acid



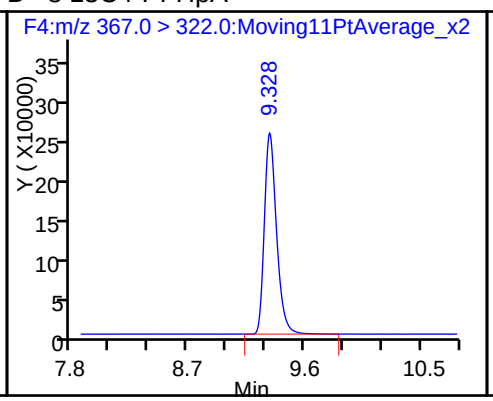
7 Perfluorohexanoic acid



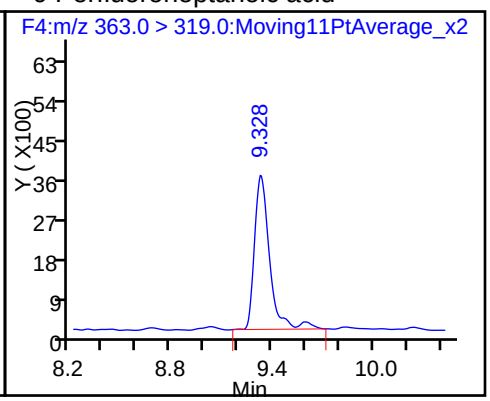
D 6 13C2 PFHxA



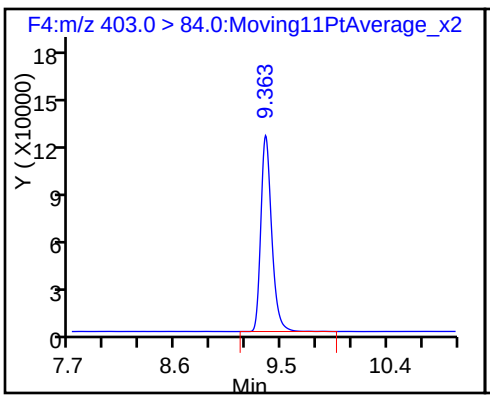
D 8 13C4-PFHpA



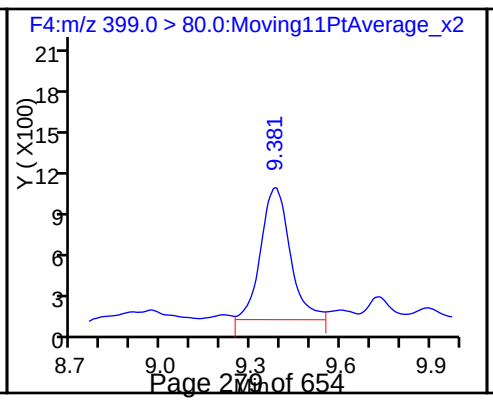
9 Perfluoroheptanoic acid



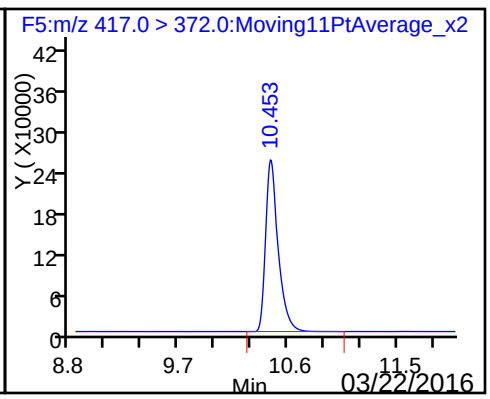
D 11 18O2 PFHxS



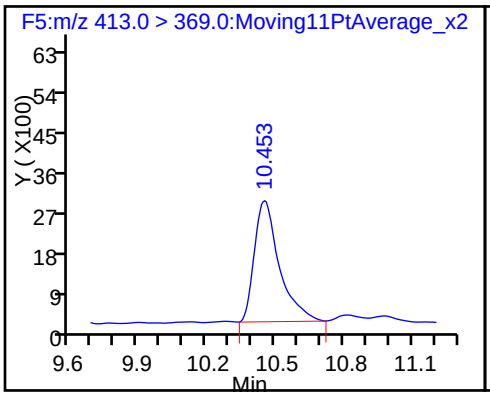
41 Perfluorohexanesulfonic acid



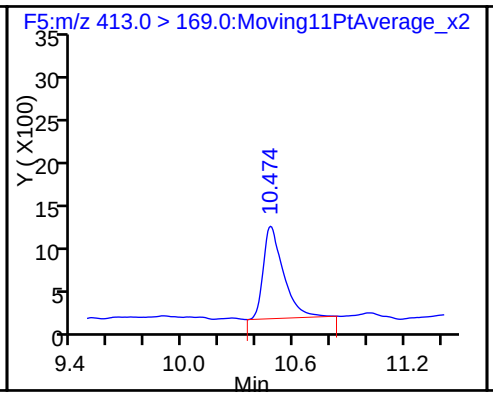
D 12 13C4 PFOA



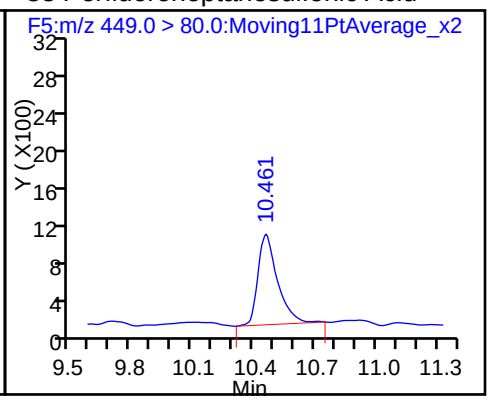
13 Perfluorooctanoic acid



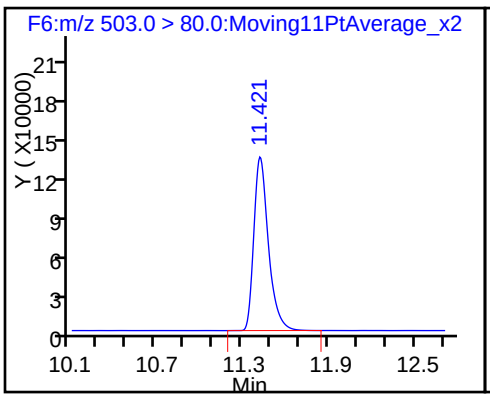
13 Perfluorooctanoic acid



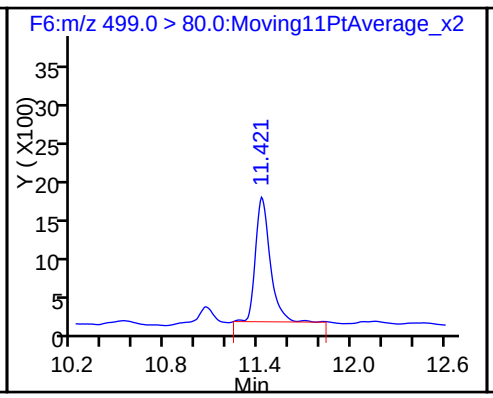
38 Perfluoroheptanesulfonic Acid



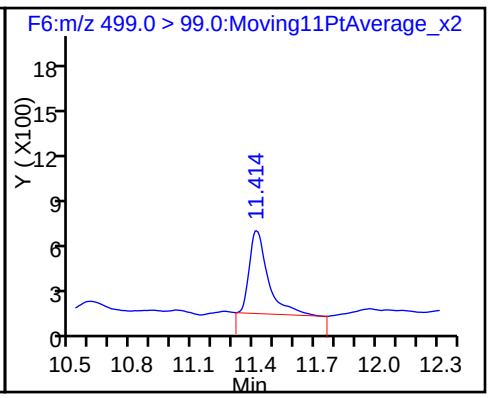
D 16 13C4 PFOS



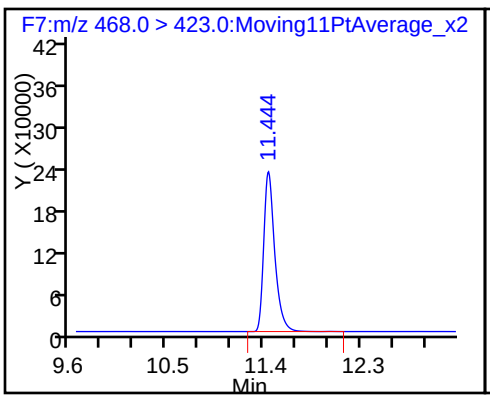
15 Perfluorooctane sulfonic acid



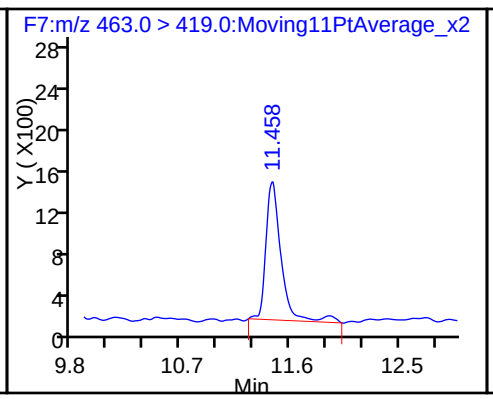
15 Perfluorooctane sulfonic acid



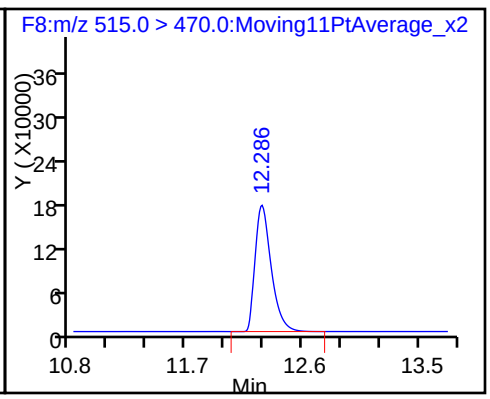
D 17 13C5 PFNA



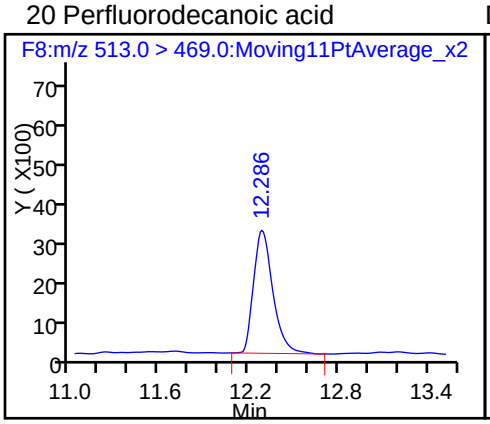
18 Perfluorononanoic acid



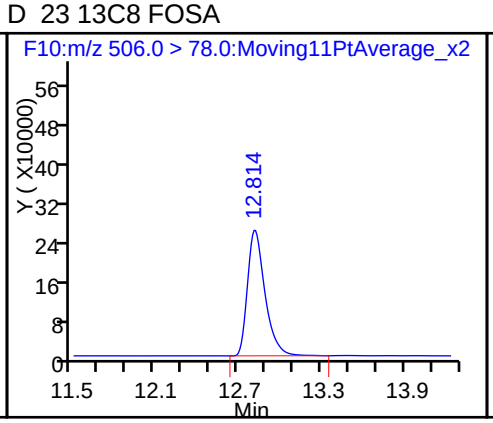
D 19 13C2 PFDA



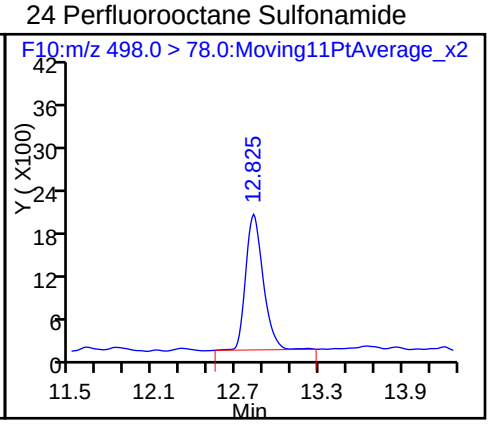
20 Perfluorodecanoic acid



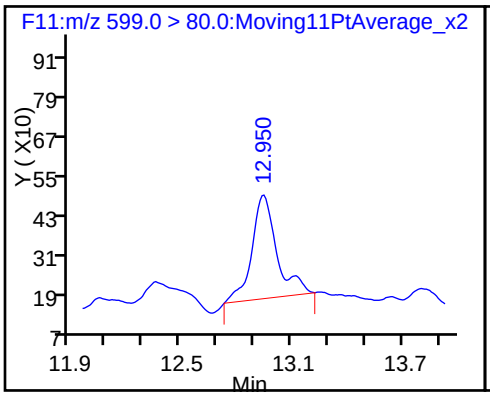
D 23 13C8 FOSA



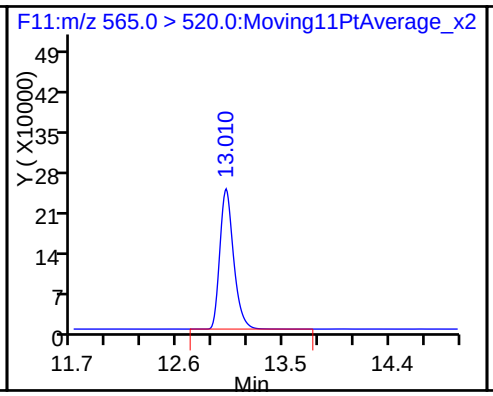
24 Perfluorooctane Sulfonamide



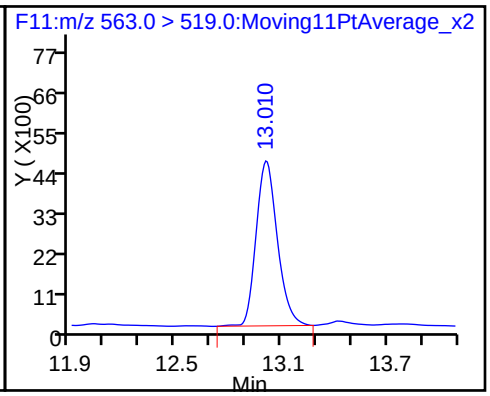
39 Perfluorodecane Sulfonic acid



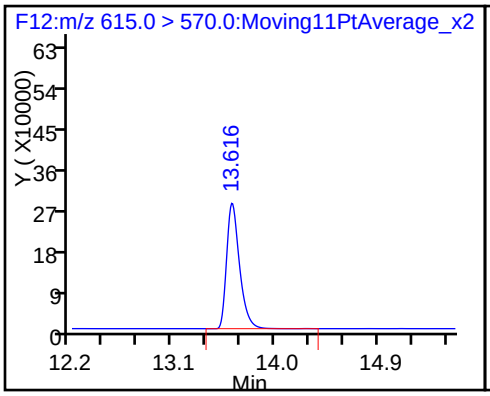
D 26 13C2 PFUnA



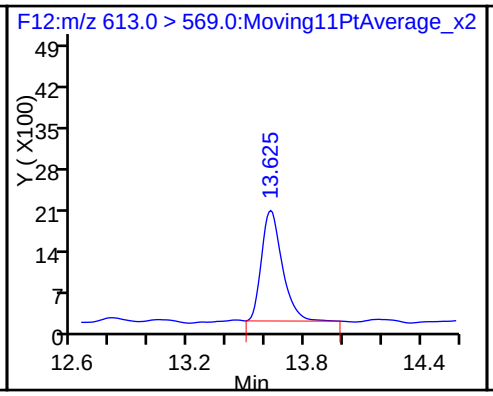
27 Perfluoroundecanoic acid



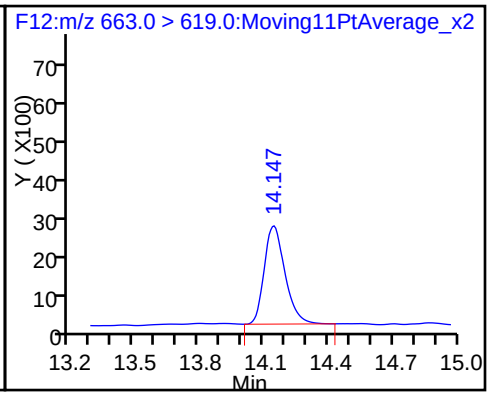
D 28 13C2 PFDoA



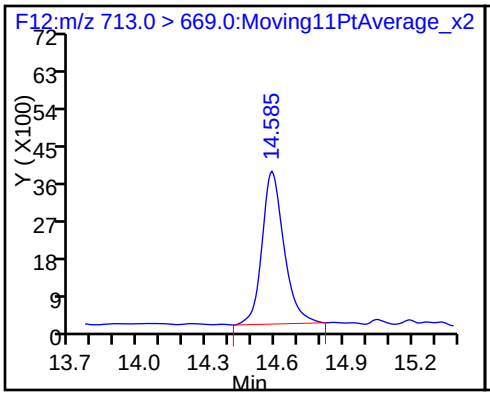
29 Perfluorododecanoic acid



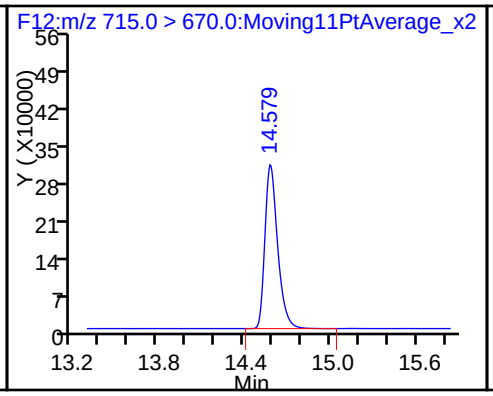
30 Perfluorotridecanoic acid



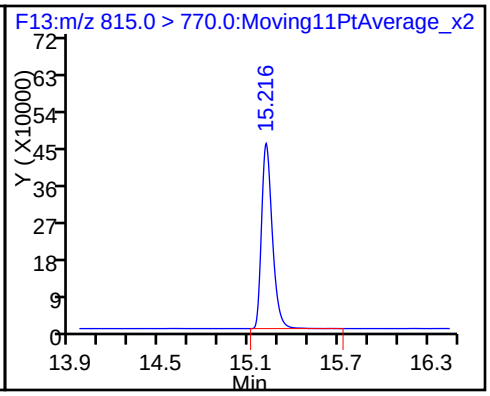
32 Perfluorotetradecanoic acid



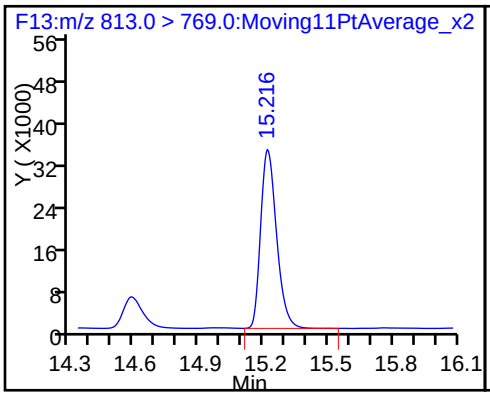
D 33 13C2-PFTeDA



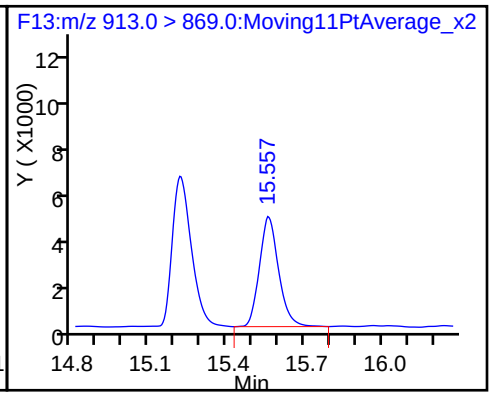
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_005.d
Lims ID: Std L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 19-Feb-2016 15:29:34 ALS Bottle#: 10 Worklist Smp#: 3
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L2
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:43 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.718	5.712	0.006		907904	56.7		113	2336	
2 Perfluorobutyric acid										
212.9 > 169.0	5.706	5.715	-0.009	1.000	18332	0.7742		77.4	48.8	
D 3 13C5-PFPeA										
267.9 > 223.0	6.837	6.827	0.010		1879822	61.1		122	4021	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.837	6.828	0.009	1.000	41667	1.06		106	9.8	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.943	6.939	0.004	1.000	10245	NC			11.2	
298.9 > 99.0	6.966	6.939	0.027	1.003	7619		1.34(0.00-0.00)		16.4	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.943	6.939	0.004	1.000	10245	0.6474		73.2		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.087	8.078	0.009	1.000	29048	0.8198		82.0	93.9	
D 6 13C2 PFHxA										
315.0 > 270.0	8.093	8.080	0.013		1635595	57.7		115	3642	
D 8 13C4-PFHpA										
367.0 > 322.0	9.334	9.322	0.012		1858023	60.3		121	6735	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.334	9.322	0.012	1.000	35173	0.9076		90.8	125	
D 11 18O2 PFHxS										
403.0 > 84.0	9.369	9.358	0.011		753810	50.4		106	2618	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.387	9.364	0.023	1.000	9461	NC			32.6	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.387	9.364	0.023	1.000	9461	0.8791		92.9		
D 12 13C4 PFOA										
417.0 > 372.0	10.468	10.450	0.018		1971561	57.7		115	5104	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.461	10.450	0.011	1.000	32208	0.8137		81.4	40.4	
413.0 > 169.0	10.468	10.450	0.018	1.001	15290		2.11(0.00-0.00)	81.4	38.9	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.475	10.457	0.018	1.000	8675	NC			20.9	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.475	10.457	0.018	1.000	8675	0.9509		99.9		
D 16 13C4 PFOS										
503.0 > 80.0	11.428	11.414	0.014		991283	54.5		114	3292	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.436	11.417	0.019	1.000	18718	0.9282		97.1	72.2	
499.0 > 99.0	11.428	11.417	0.011	0.999	4150		4.51(0.00-0.00)	97.1	19.5	
D 17 13C5 PFNA										
468.0 > 423.0	11.451	11.434	0.017		1761627	62.5		125	4150	
18 Perfluorononanoic acid										
463.0 > 419.0	11.451	11.439	0.012	1.000	23017	0.8091		80.9	58.4	
D 19 13C2 PFDA										
515.0 > 470.0	12.286	12.275	0.011		1607037	56.1		112	6838	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.296	12.276	0.020	1.000	42554	1.00		100	97.7	
D 23 13C8 FOSA										
506.0 > 78.0	12.824	12.810	0.014		2206225	53.2		106	1506	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.824	12.812	0.012	1.000	42097	1.03		103	188	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.970	12.949	0.021	1.000	6299	NC			16.0	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.970	12.949	0.021	1.000	6299	0.8330		86.4		
D 26 13C2 PFUnA										
565.0 > 520.0	13.010	13.000	0.010		2118412	56.7		113	6237	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.010	13.000	0.010	1.000	51520	0.8005		80.0	179	
D 28 13C2 PFDoA										
615.0 > 570.0	13.624	13.609	0.015		2242621	57.3		115	5907	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.624	13.611	0.013	1.000	23692	0.7225		72.3	32.2	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.139	14.130	0.009	1.000	40040	0.9488		94.9	60.9	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.585	14.571	0.014	1.000	42000	1.10		110	25.5	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.585	14.571	0.014		1961399	54.6		109	5975	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.218	15.207	0.011		2343949	54.4		109	6703	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.218	15.208	0.010	1.000	171017	1.00		100	211	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.549	15.543	0.006	1.000	39408	0.7910		79.1	62.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00019 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:44 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_005.d

Injection Date: 19-Feb-2016 15:29:34 Instrument ID: A6

Lims ID: Std L2

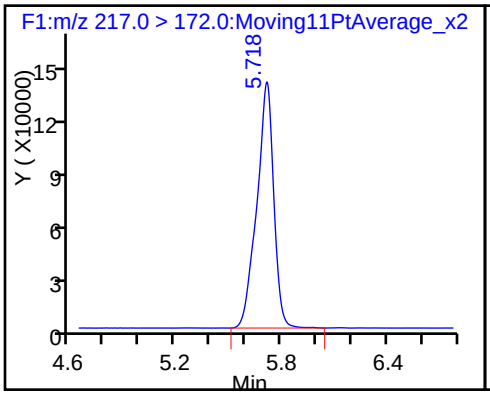
Client ID:

Operator ID: JRB ALS Bottle#: 10 Worklist Smp#: 3

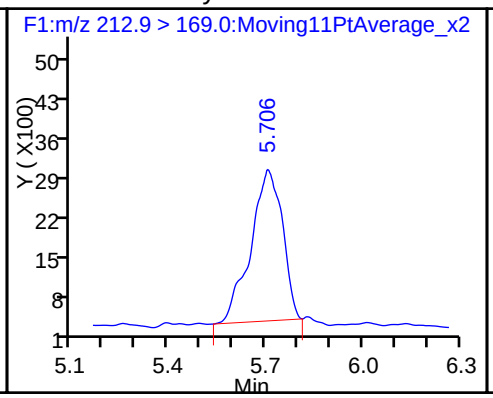
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

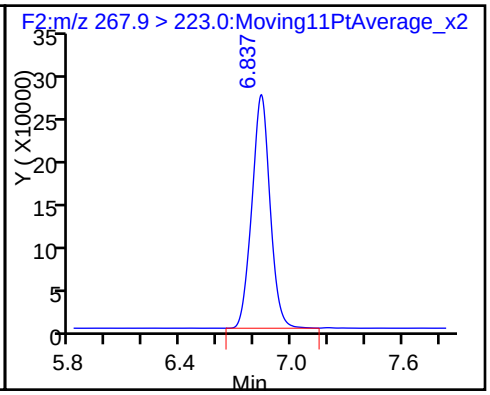
D 1 13C4 PFBA



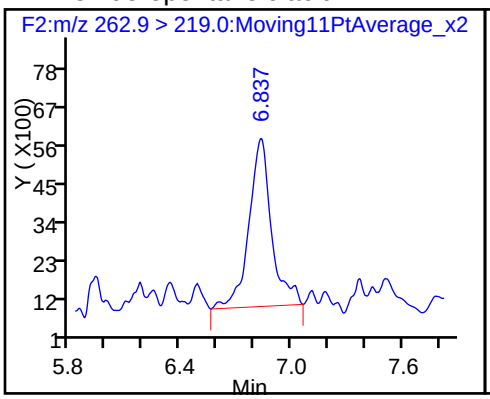
2 Perfluorobutyric acid



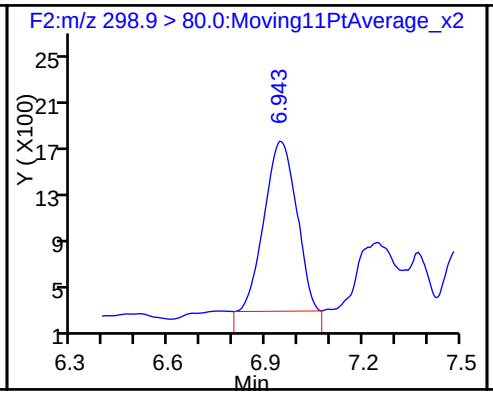
D 3 13C5-PFPeA



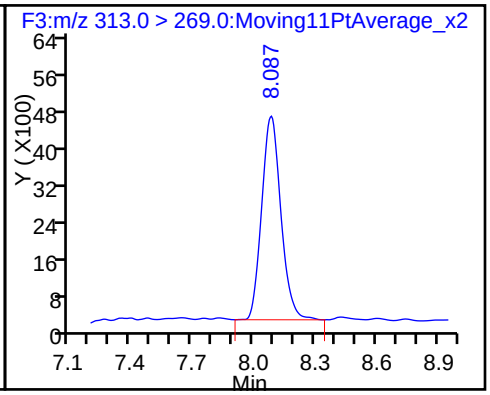
4 Perfluoropentanoic acid



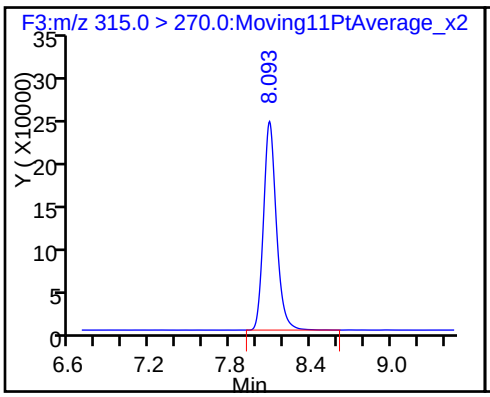
40 Perfluorobutanesulfonic acid



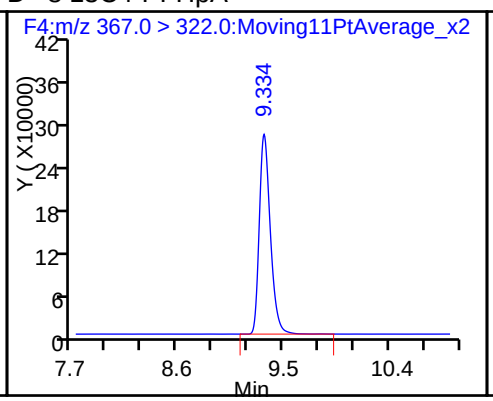
7 Perfluorohexanoic acid



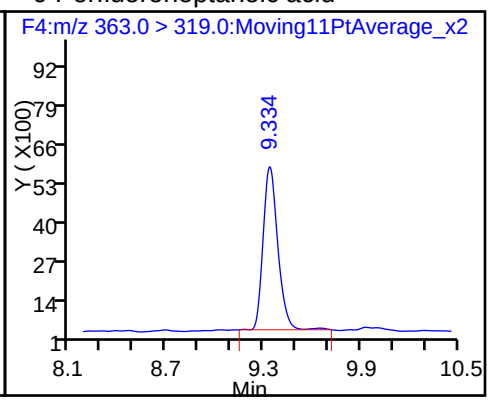
D 6 13C2 PFHxA



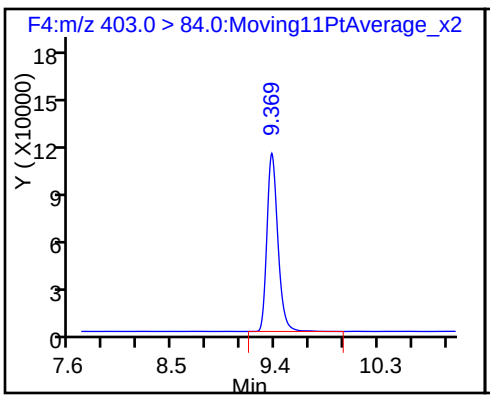
D 8 13C4-PFHpA



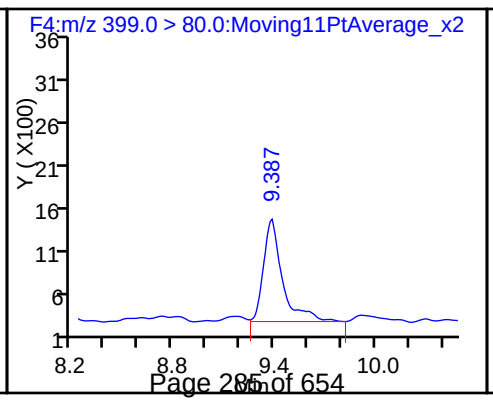
9 Perfluoroheptanoic acid



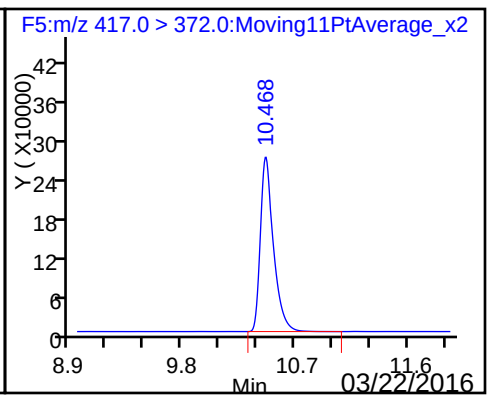
D 11 18O2 PFHxS



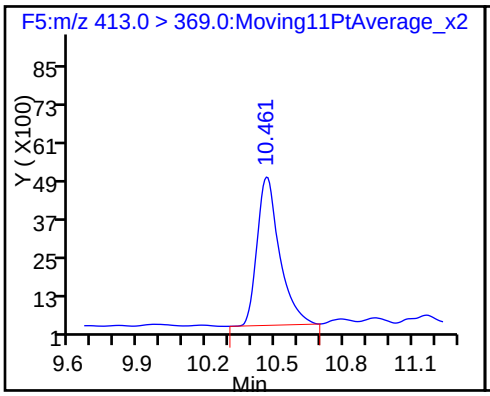
41 Perfluorohexanesulfonic acid



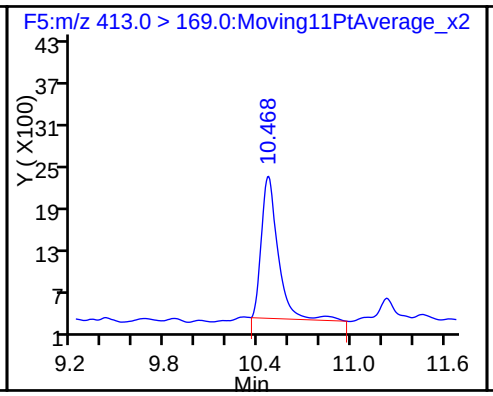
D 12 13C4 PFOA



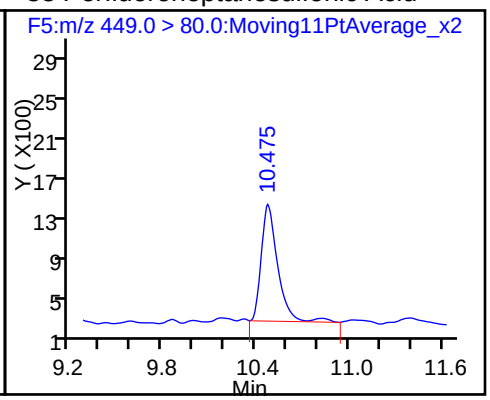
13 Perfluorooctanoic acid



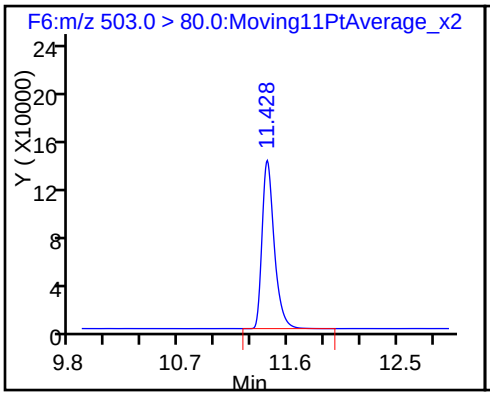
13 Perfluorooctanoic acid



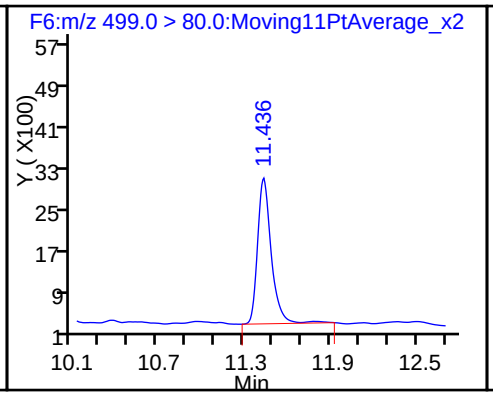
38 Perfluoroheptanesulfonic Acid



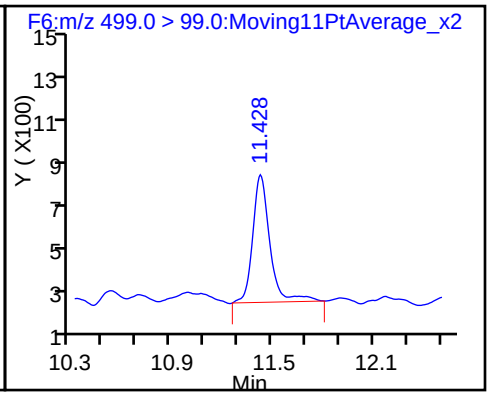
D 16 13C4 PFOS



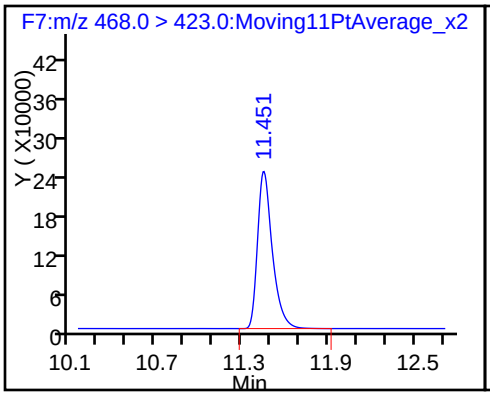
15 Perfluorooctane sulfonic acid



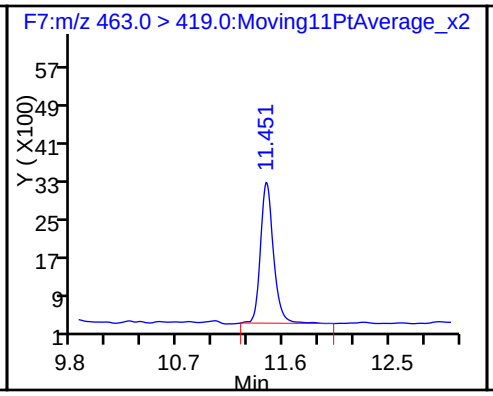
15 Perfluorooctane sulfonic acid



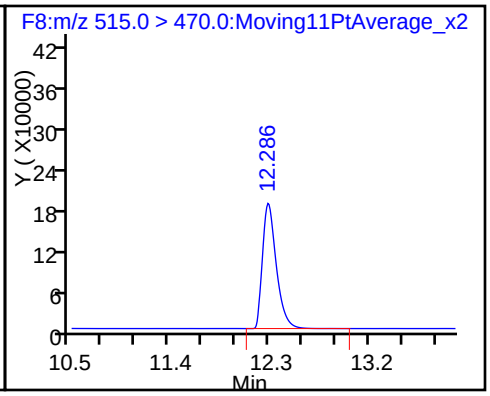
D 17 13C5 PFNA



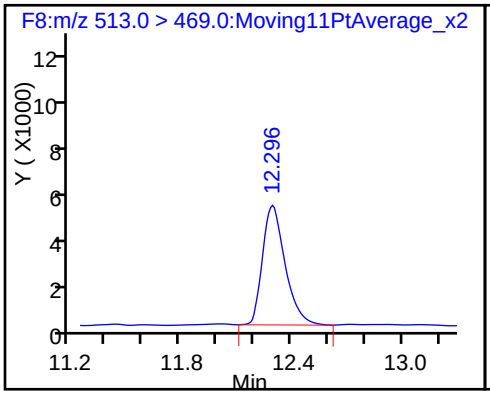
18 Perfluorononanoic acid



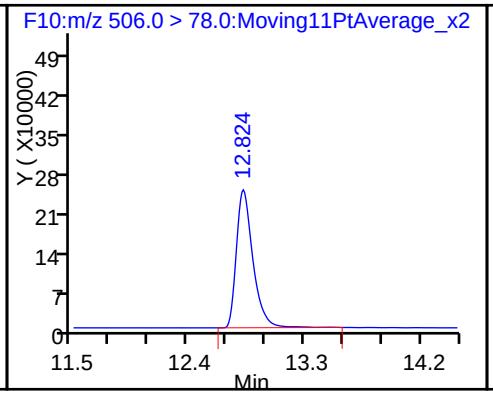
D 19 13C2 PFDA



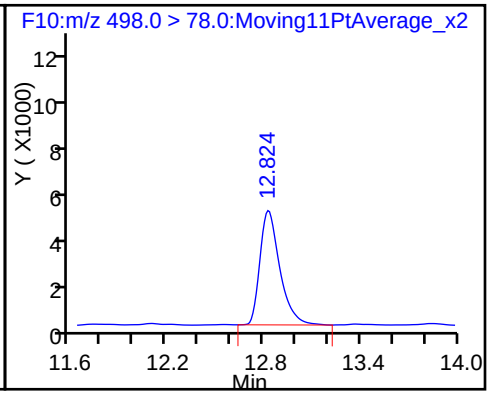
20 Perfluorodecanoic acid



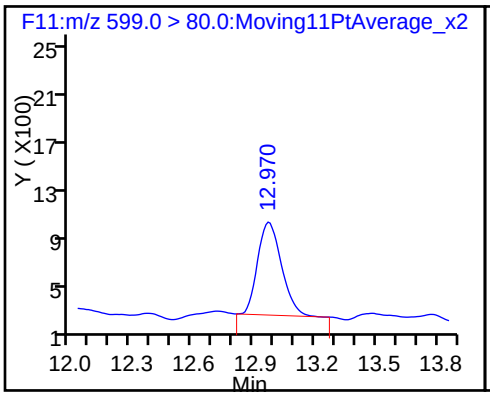
D 23 13C8 FOSA



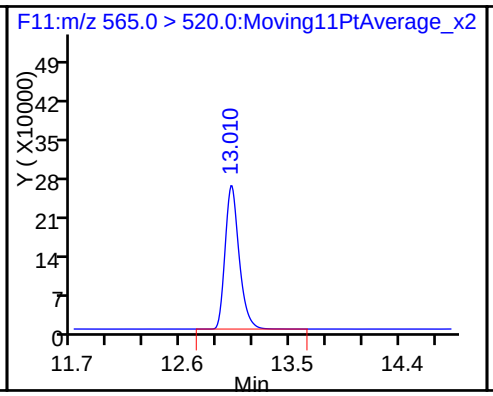
24 Perfluorooctane Sulfonamide



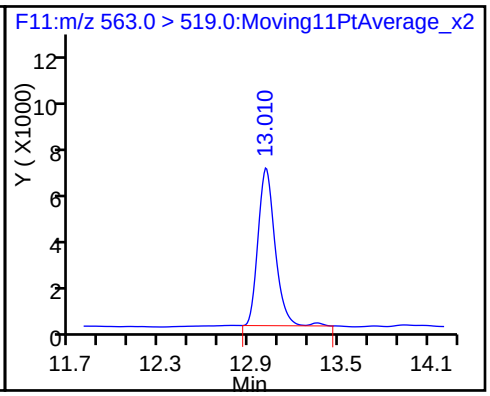
39 Perfluorodecane Sulfonic acid



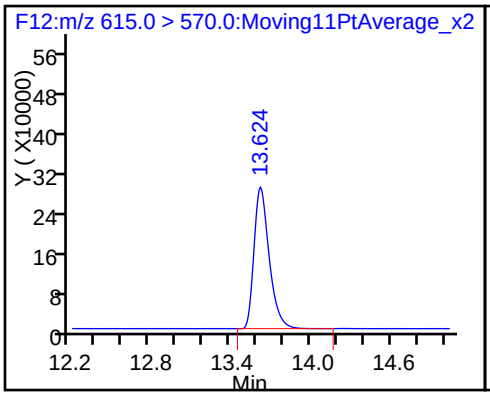
D 26 13C2 PFUnA



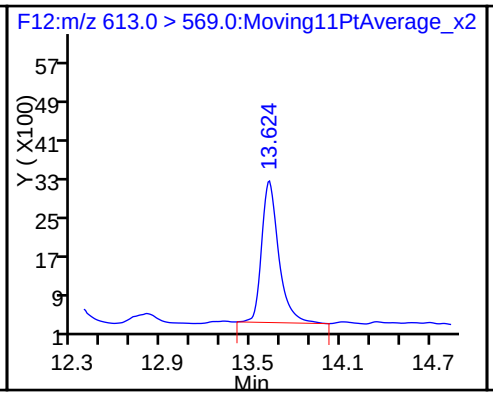
27 Perfluoroundecanoic acid



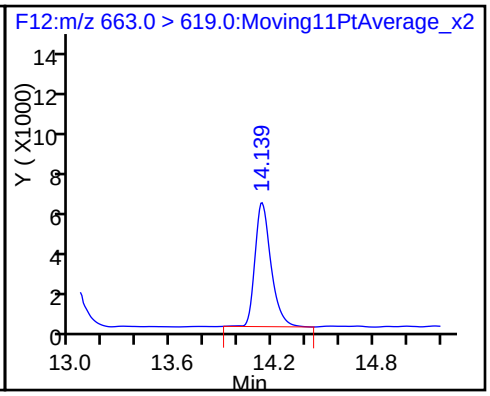
D 28 13C2 PFDoA



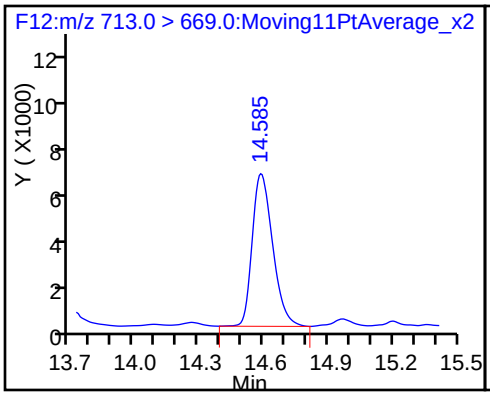
29 Perfluorododecanoic acid



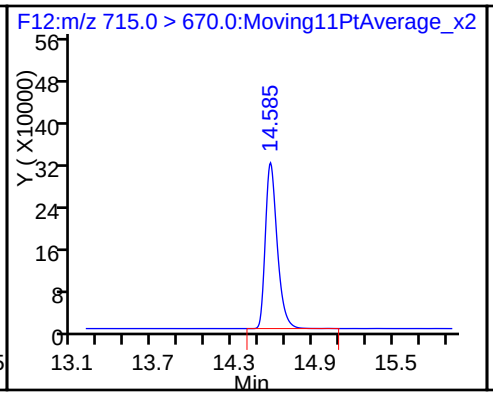
30 Perfluorotridecanoic acid



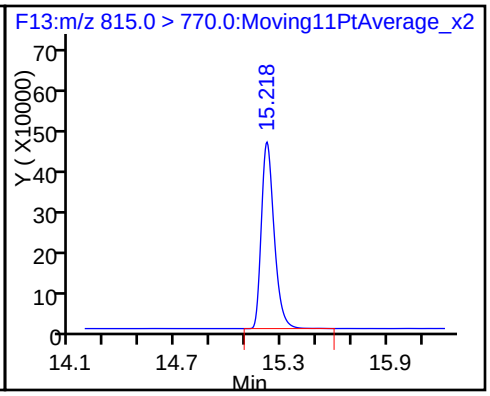
32 Perfluorotetradecanoic acid



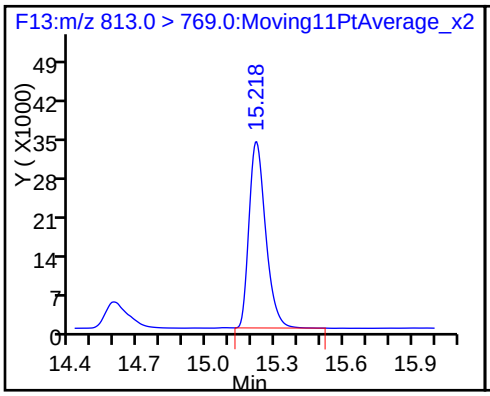
D 33 13C2-PFTeDA



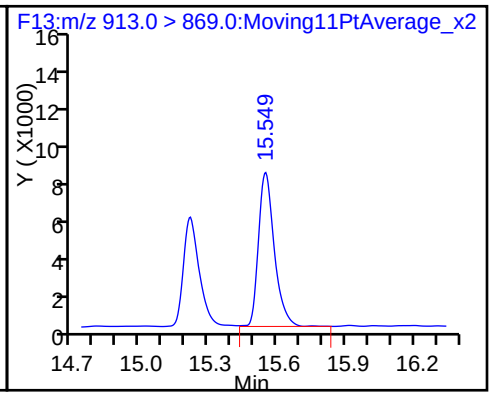
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_006.d
Lims ID: Std L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 19-Feb-2016 15:50:47 ALS Bottle#: 11 Worklist Smp#: 4
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L3
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:45 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.712	5.712	0.0		882584	55.2		110	3246	
2 Perfluorobutyric acid										
212.9 > 169.0	5.718	5.715	0.003	1.000	123793	5.38		108	317	
D 3 13C5-PFPeA										
267.9 > 223.0	6.828	6.827	0.001		1560021	50.7		101	4030	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.842	6.828	0.014	1.000	168531	5.18		104	40.4	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.939	6.939	0.0	1.000	61862	NC			60.9	
298.9 > 99.0	6.948	6.939	0.009	1.001	38678		1.60(0.00-0.00)		67.4	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.939	6.939	0.0	1.000	61862	4.07		92.1		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.084	8.078	0.006	1.000	177522	5.58		112	677	
D 6 13C2 PFHxA										
315.0 > 270.0	8.084	8.080	0.004		1469185	51.9		104	5297	
D 8 13C4-PFHpA										
367.0 > 322.0	9.328	9.322	0.006		1638704	53.2		106	5483	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.328	9.322	0.006	1.000	167149	4.89		97.8	599	
D 11 18O2 PFHxS										
403.0 > 84.0	9.363	9.358	0.005		723683	48.4		102	2722	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.363	9.364	-0.001	1.000	48077	NC			141	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.363	9.364	-0.001	1.000	48077	4.65		98.4		
D 12 13C4 PFOA										
417.0 > 372.0	10.453	10.450	0.003		1750451	51.3		103	8337	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.453	10.450	0.003	1.000	188978	5.38		108	203	
413.0 > 169.0	10.461	10.450	0.011	1.001	67070		2.82(0.00-0.00)	108	145	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.461	10.457	0.004	1.000	52893	NC			204	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.461	10.457	0.004	1.000	52893	4.78		100		
D 16 13C4 PFOS										
503.0 > 80.0	11.420	11.414	0.006		898344	49.4		103	3427	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.420	11.417	0.003	1.000	86511	4.73		99.0	229	
499.0 > 99.0	11.420	11.417	0.003	1.000	39257		2.20(0.00-0.00)	99.0	114	
D 17 13C5 PFNA										
468.0 > 423.0	11.443	11.434	0.009		1474756	52.3		105	5146	
18 Perfluorononanoic acid										
463.0 > 419.0	11.443	11.439	0.004	1.000	120395	5.06		101	398	
D 19 13C2 PFDA										
515.0 > 470.0	12.286	12.275	0.011		1565532	54.7		109	4281	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.286	12.276	0.010	1.000	163841	5.01		100	357	
D 23 13C8 FOSA										
506.0 > 78.0	12.814	12.810	0.004		2223851	53.6		107	1602	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.814	12.812	0.002	1.000	203867	4.95		98.9	406	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.960	12.949	0.011	1.000	49387	NC			162	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.960	12.949	0.011	1.000	49387	5.00		104		
D 26 13C2 PFUnA										
565.0 > 520.0	13.010	13.000	0.010		1980471	53.0		106	5969	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.010	13.000	0.010	1.000	213464	5.87		117	515	
D 28 13C2 PFDoA										
615.0 > 570.0	13.615	13.609	0.006		2017427	51.6		103	3234	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.615	13.611	0.004	1.000	163307	5.54		111	163	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.139	14.130	0.009	1.000	243228	6.41		128	291	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.578	14.571	0.007	1.000	135077	5.14		103	90.0	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.578	14.571	0.007		1864931	51.9		104	5864	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.213	15.207	0.006		2201810	51.1		102	5730	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.213	15.208	0.005	1.000	324953	4.96		99.1	522	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.544	15.543	0.001	1.000	245350	5.47		109	345	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L3_00016 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:46 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_006.d

Injection Date: 19-Feb-2016 15:50:47 Instrument ID: A6

Lims ID: Std L3

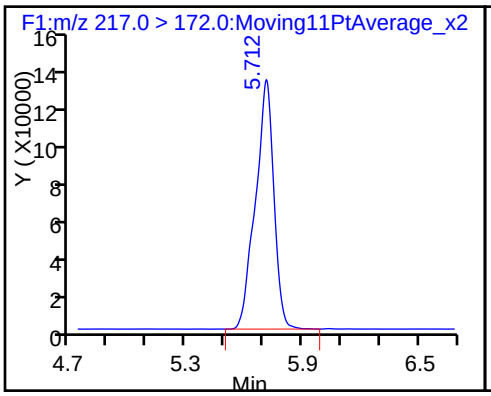
Client ID:

Operator ID: JRB ALS Bottle#: 11 Worklist Smp#: 4

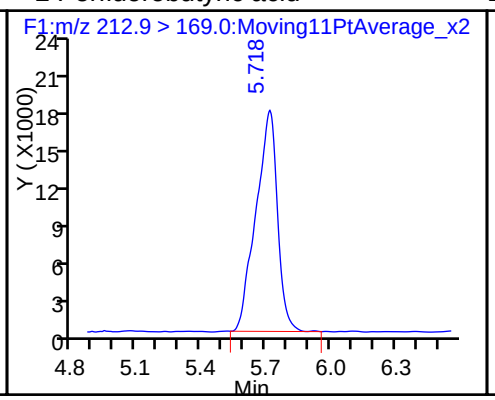
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

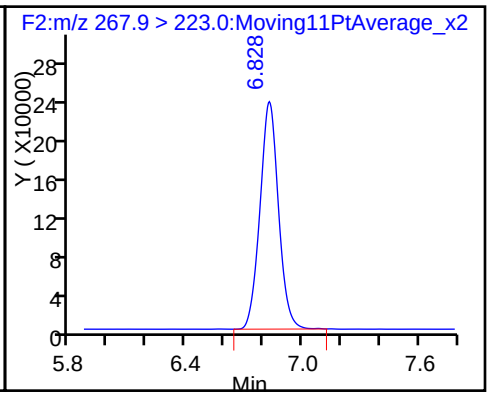
D 1 13C4 PFBA



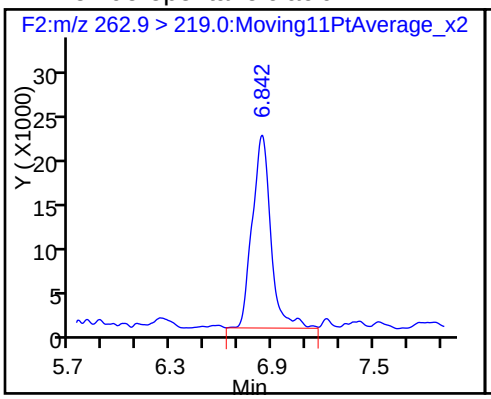
2 Perfluorobutyric acid



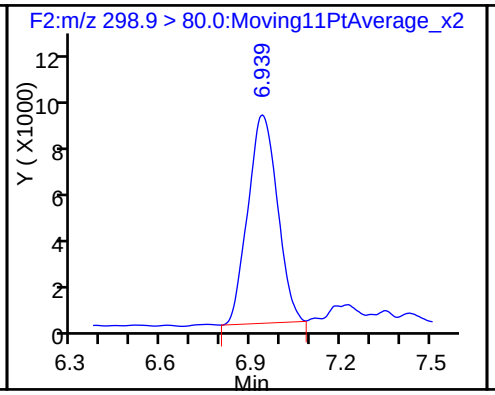
D 3 13C5-PFPeA



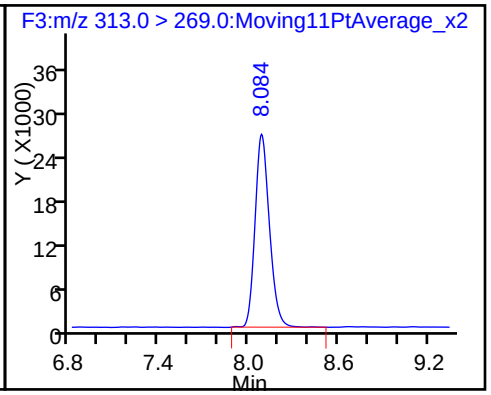
4 Perfluoropentanoic acid



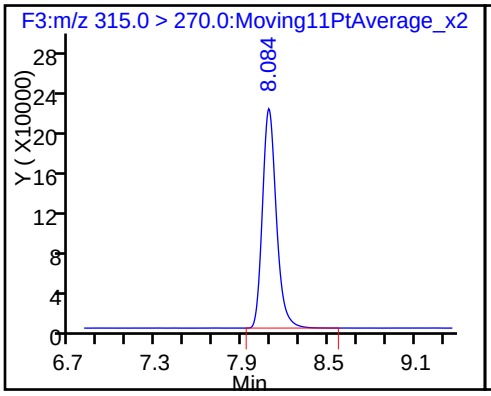
40 Perfluorobutanesulfonic acid



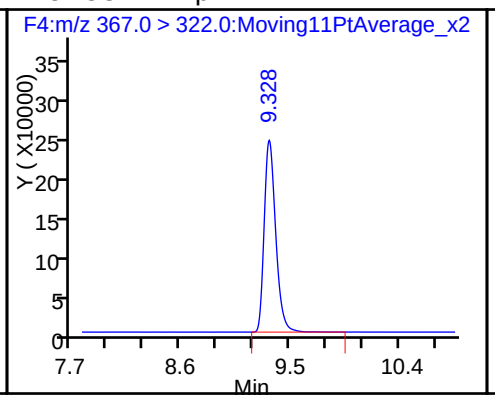
7 Perfluorohexanoic acid



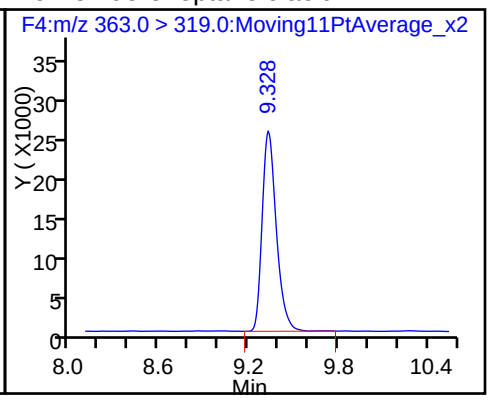
D 6 13C2 PFHxA



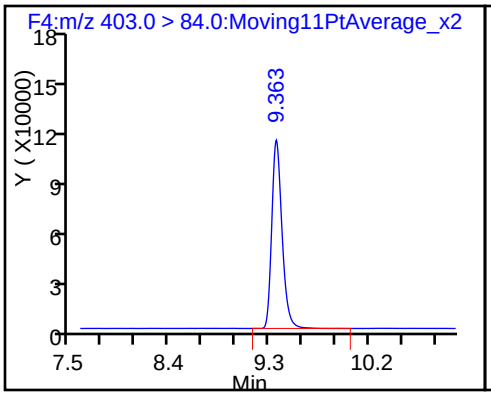
D 8 13C4-PFHpA



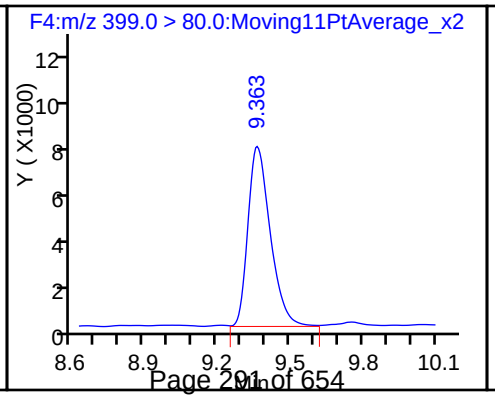
9 Perfluoroheptanoic acid



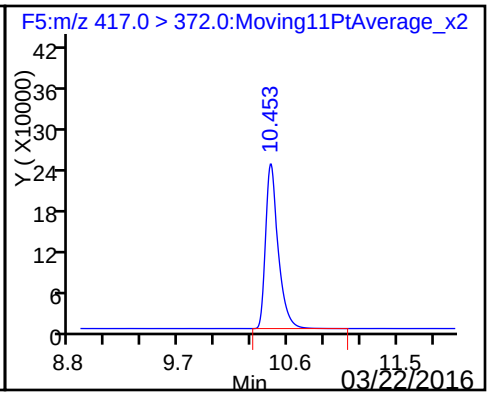
D 11 18O2 PFHxS



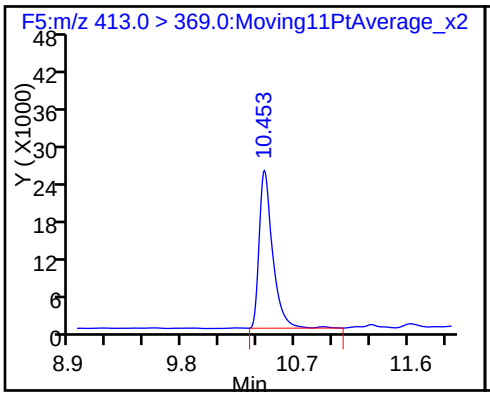
41 Perfluorohexanesulfonic acid



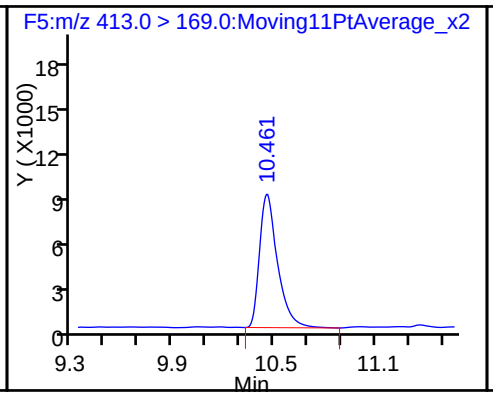
D 12 13C4 PFOA



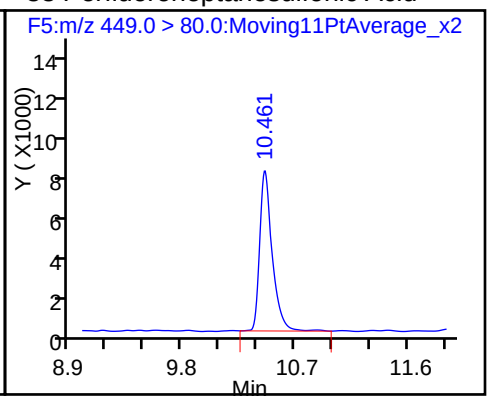
13 Perfluorooctanoic acid



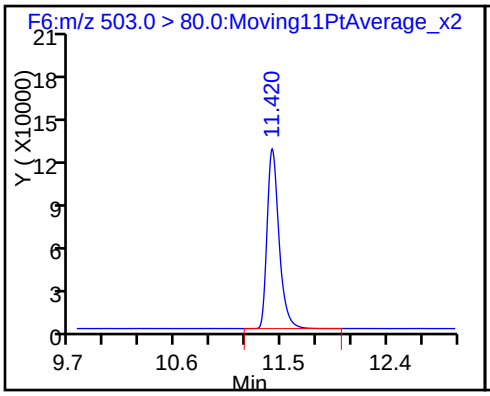
13 Perfluorooctanoic acid



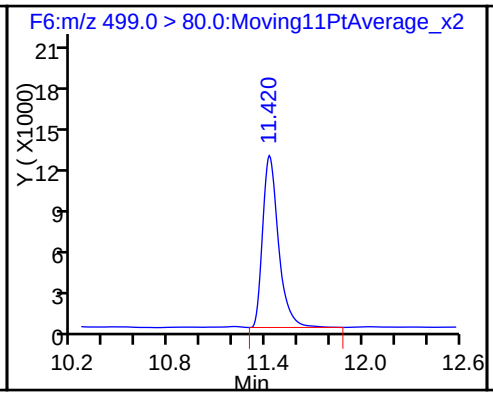
38 Perfluoroheptanesulfonic Acid



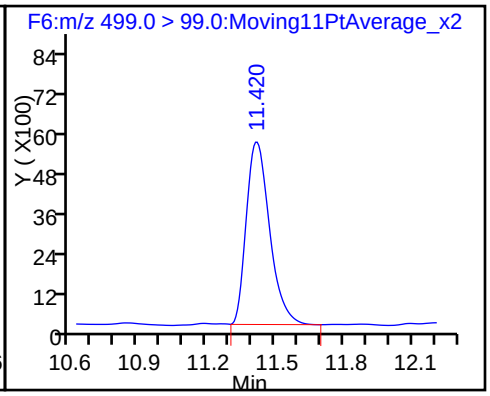
D 16 13C4 PFOS



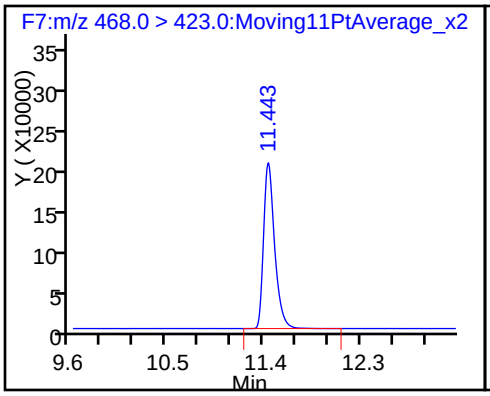
15 Perfluorooctane sulfonic acid



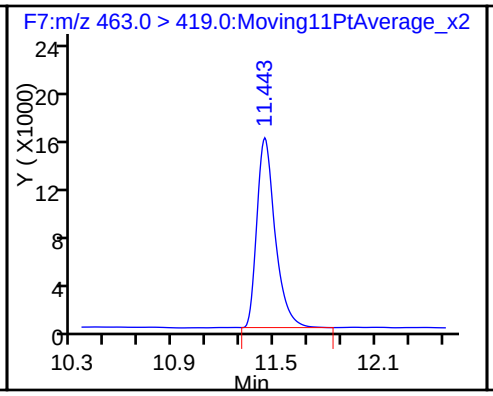
15 Perfluorooctane sulfonic acid



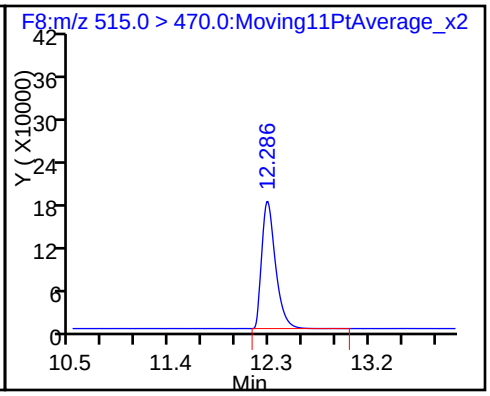
D 17 13C5 PFNA



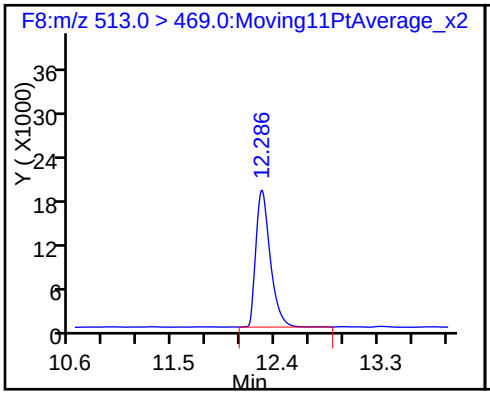
18 Perfluorononanoic acid



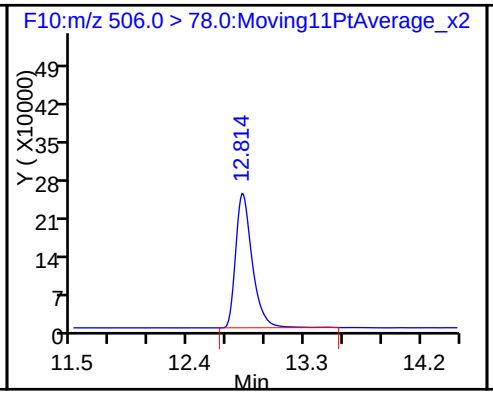
D 19 13C2 PFDA



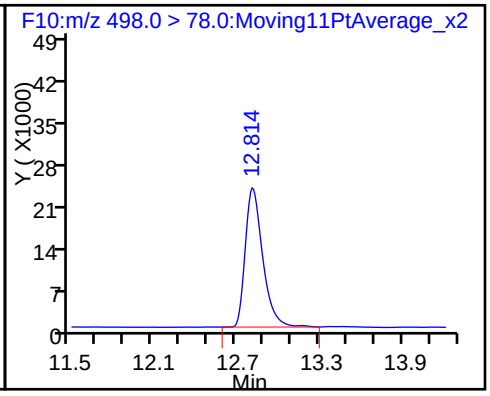
20 Perfluorodecanoic acid



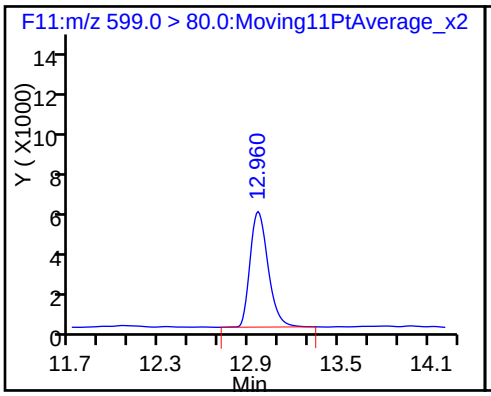
D 23 13C8 FOSA



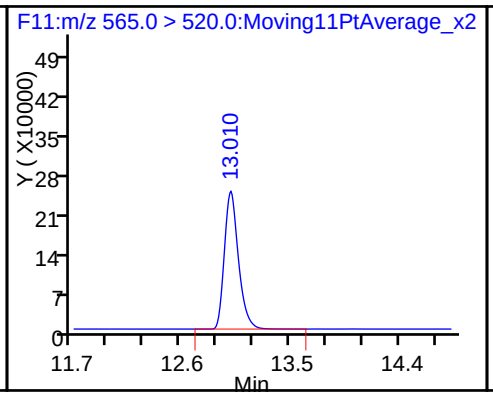
24 Perfluorooctane Sulfonamide



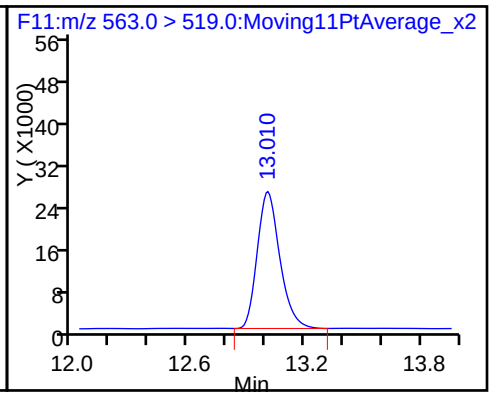
39 Perfluorodecane Sulfonic acid



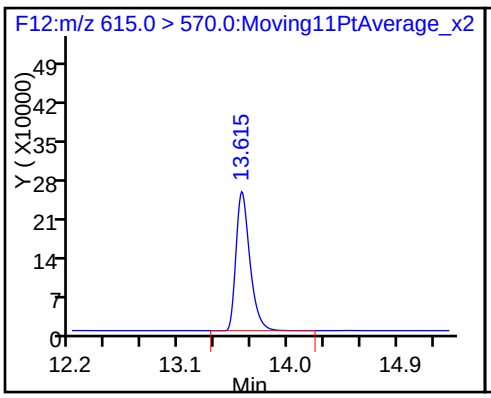
D 26 13C2 PFUnA



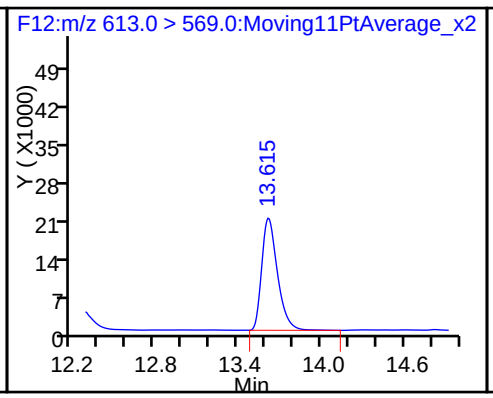
27 Perfluoroundecanoic acid



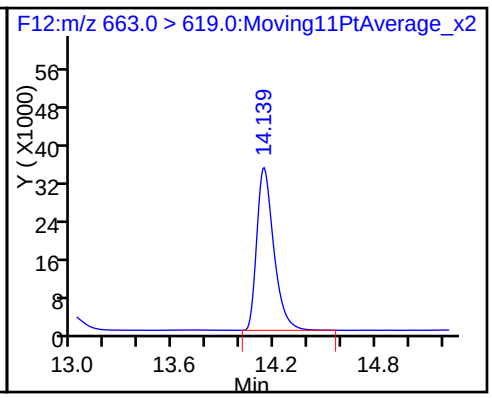
D 28 13C2 PFDoA



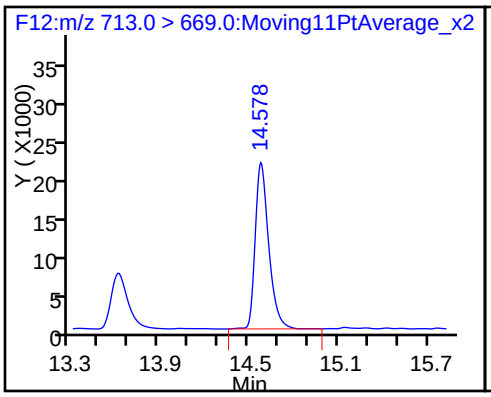
29 Perfluorododecanoic acid



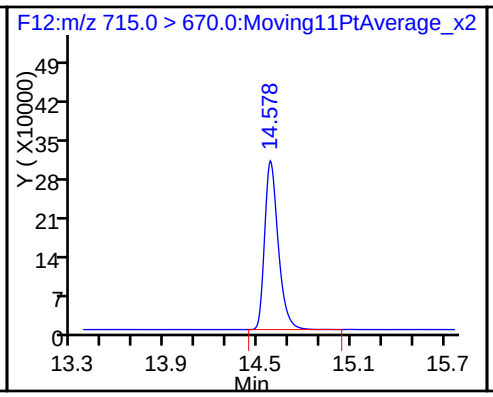
30 Perfluorotridecanoic acid



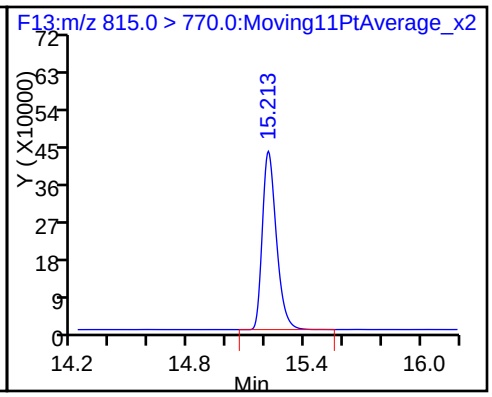
32 Perfluorotetradecanoic acid



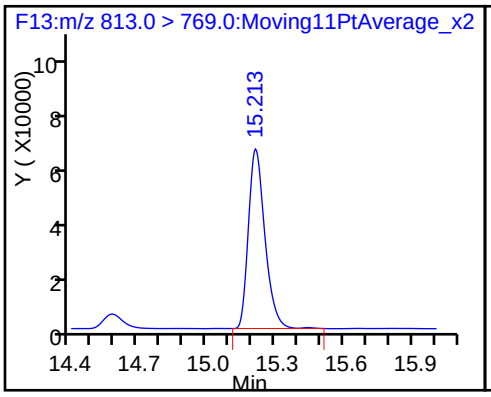
D 33 13C2-PFTeDA



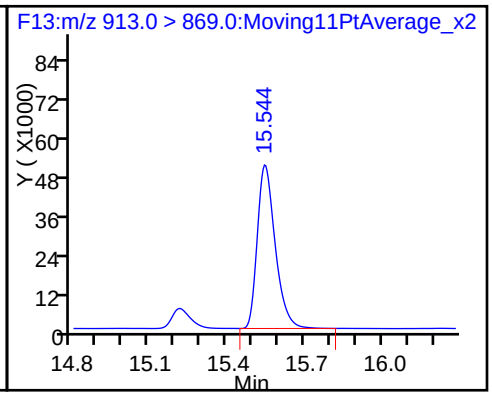
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_007.d
Lims ID: Std L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 19-Feb-2016 16:11:58 ALS Bottle#: 12 Worklist Smp#: 5
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:48 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: westendorfc Date: 21-Feb-2016 15:43:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.709	5.712	-0.003		823965	51.5		103	1860	
2 Perfluorobutyric acid										
212.9 > 169.0	5.715	5.715	0.0	1.000	462922	21.5		108	1792	
D 3 13C5-PFPeA										
267.9 > 223.0	6.828	6.827	0.001		1598957	52.0		104	5454	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.828	6.828	0.0	1.000	673970	20.2		101	192	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.942	6.939	0.003	1.000	294821	NC			430	
298.9 > 99.0	6.942	6.939	0.003	1.000	171078		1.72(0.00-0.00)		274	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.942	6.939	0.003	1.000	294821	19.0		107		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.082	8.078	0.004	1.000	618008	18.9		94.3	2035	
D 6 13C2 PFHxA										
315.0 > 270.0	8.082	8.080	0.002		1512461	53.4		107	5873	
D 8 13C4-PFHpA										
367.0 > 322.0	9.323	9.322	0.001		1694741	55.0		110	5704	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.323	9.322	0.001	1.000	778743	22.0		110	2475	
D 11 18O2 PFHxS										
403.0 > 84.0	9.358	9.358	0.0		739449	49.4		104	2322	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.358	9.364	-0.006	1.000	205104	NC			759	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.358	9.364	-0.006	1.000	205104	19.4		103		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.454	10.450	0.004		1793859	52.5		105	5536	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.454	10.450	0.004	1.000	715180	19.9		99.3	762	
413.0 > 169.0	10.454	10.450	0.004	1.000	250759		2.85(0.00-0.00)	99.3	716	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.461	10.457	0.004	1.000	216336	NC			809	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.461	10.457	0.004	1.000	216336	19.1		100		
D 16 13C4 PFOS										
503.0 > 80.0	11.414	11.414	0.0		879178	48.4		101	3624	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.421	11.417	0.004	1.000	356703	19.9		104	413	
499.0 > 99.0	11.414	11.417	-0.003	0.999	193440		1.84(0.00-0.00)	104	731	
D 17 13C5 PFNA										
468.0 > 423.0	11.437	11.434	0.003		1459436	51.8		104	5635	
18 Perfluorononanoic acid										
463.0 > 419.0	11.437	11.439	-0.002	1.000	518362	22.0		110	1486	
D 19 13C2 PFDA										
515.0 > 470.0	12.276	12.275	0.001		1524195	53.2		106	4870	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.276	12.276	0.0	1.000	571448	18.9		94.4	1987	
D 23 13C8 FOSA										
506.0 > 78.0	12.814	12.810	0.004		2199385	53.0		106	2293	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.814	12.812	0.002	1.000	832823	20.4		102	833	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.950	12.949	0.001	1.000	202871	NC			616	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.950	12.949	0.001	1.000	202871	20.1		104		
D 26 13C2 PFUnA										
565.0 > 520.0	13.002	13.000	0.002		1975170	52.8		106	5266	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.002	13.000	0.002	1.000	694202	20.7		103	1673	
D 28 13C2 PFDoA										
615.0 > 570.0	13.615	13.609	0.006		2115244	54.1		108	6995	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.615	13.611	0.004	1.000	679009	22.0		110	827	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.132	14.130	0.002	1.000	875238	22.0		110	983	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.572	14.571	0.001	1.000	498848	19.3		96.5	333	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.579	14.571	0.008		1885833	52.5		105	5639	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.213	15.207	0.006		2282833	53.0		106	5499	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.213	15.208	0.005	1.000	996289	19.4		97.0	1274	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.544	15.543	0.001	1.000	961125	20.5		102	1418	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:49 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_007.d

Injection Date: 19-Feb-2016 16:11:58 Instrument ID: A6

Lims ID: Std L4

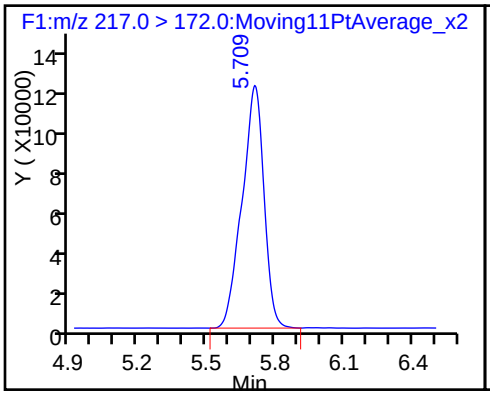
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 5

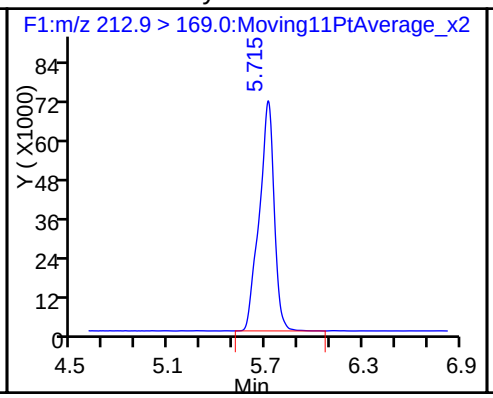
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

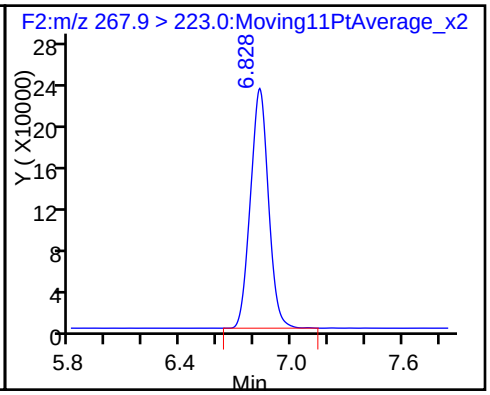
D 1 13C4 PFBA



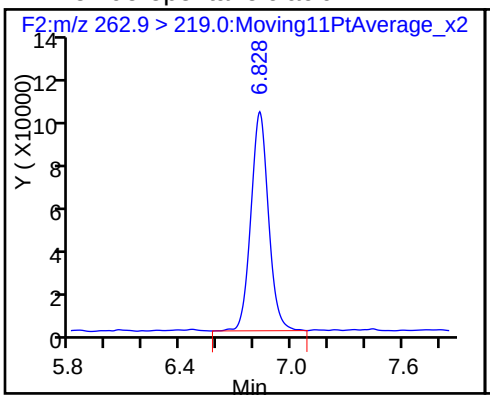
2 Perfluorobutyric acid



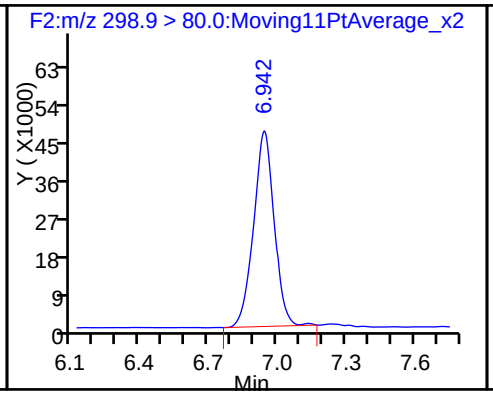
D 3 13C5-PFPeA



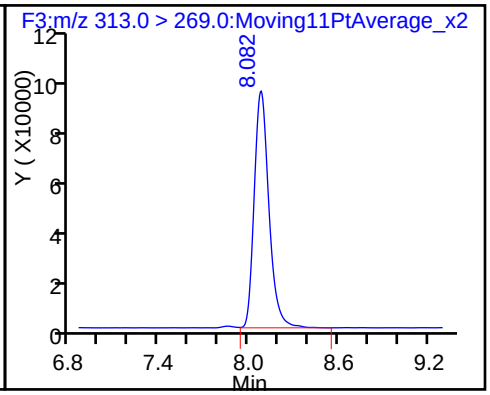
4 Perfluoropentanoic acid



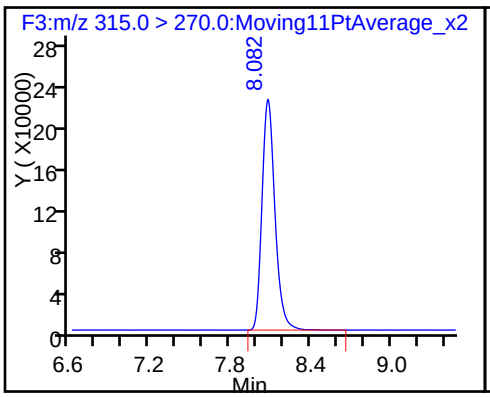
40 Perfluorobutanesulfonic acid



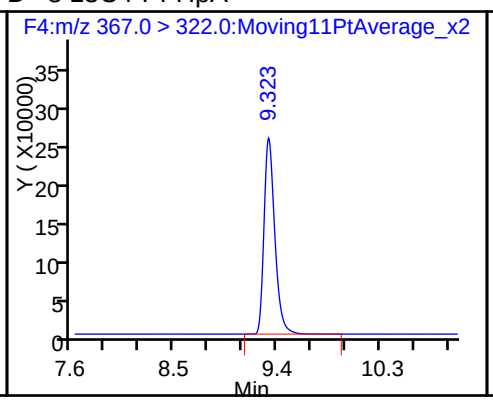
7 Perfluorohexanoic acid



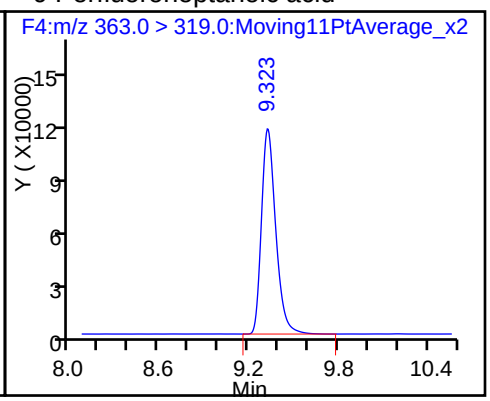
D 6 13C2 PFHxA



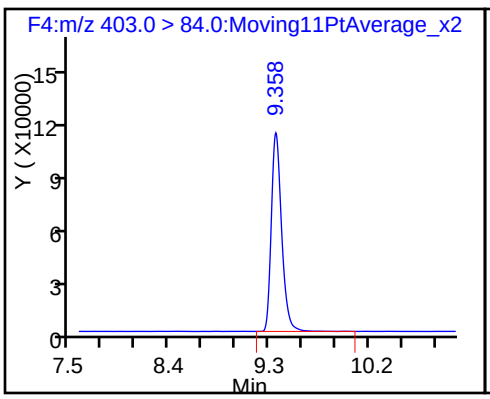
D 8 13C4-PFHpA



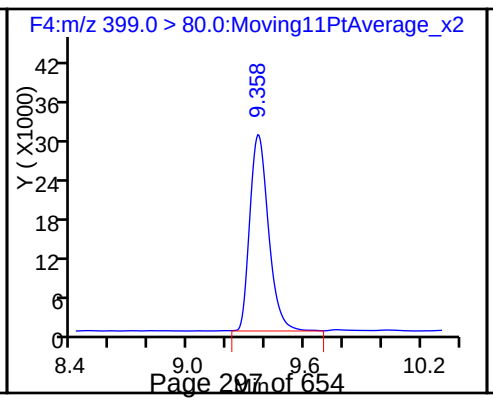
9 Perfluoroheptanoic acid



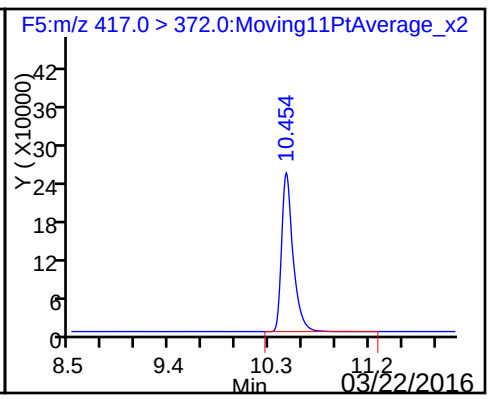
D 11 18O2 PFHxS



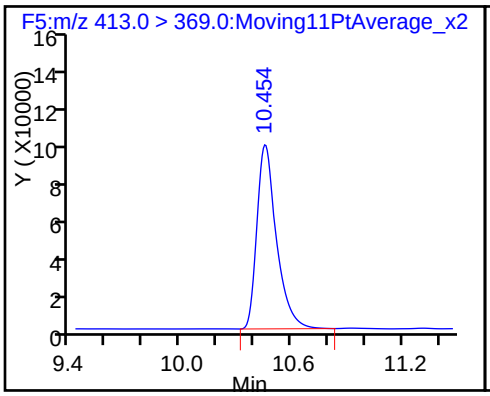
41 Perfluorohexanesulfonic acid



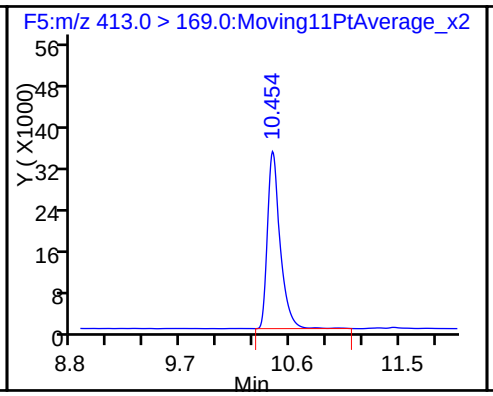
D 12 13C4 PFOA



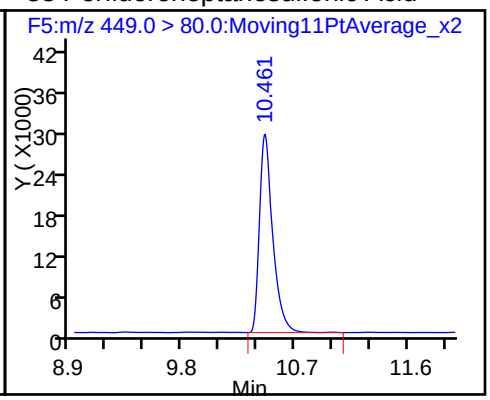
13 Perfluorooctanoic acid



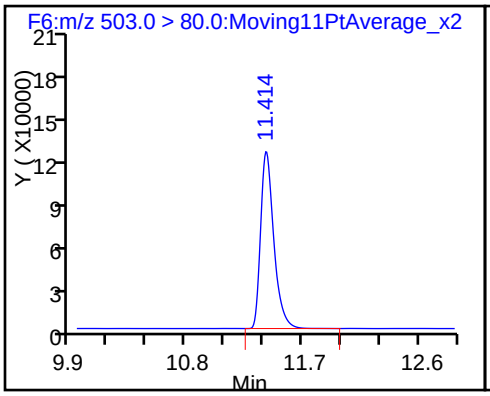
13 Perfluorooctanoic acid



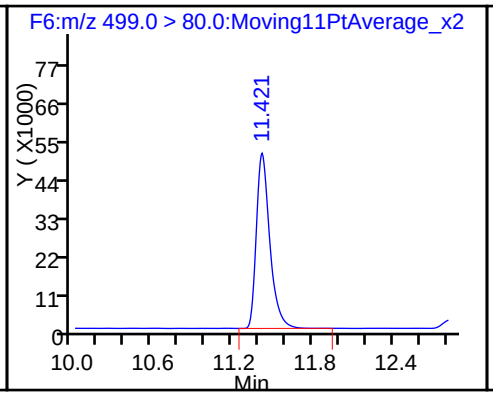
38 Perfluoroheptanesulfonic Acid



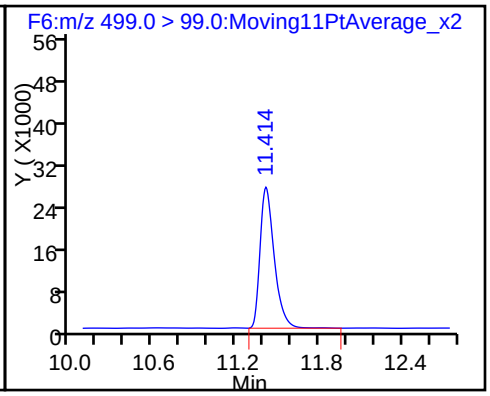
D 16 13C4 PFOS



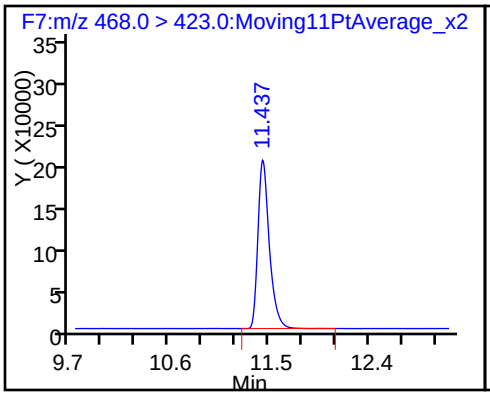
15 Perfluorooctane sulfonic acid



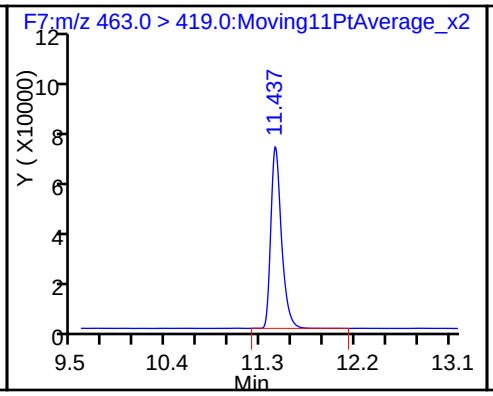
15 Perfluorooctane sulfonic acid



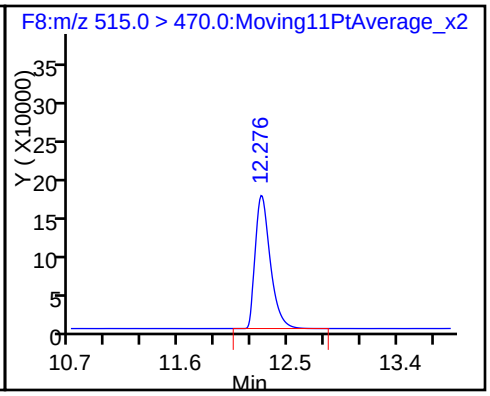
D 17 13C5 PFNA



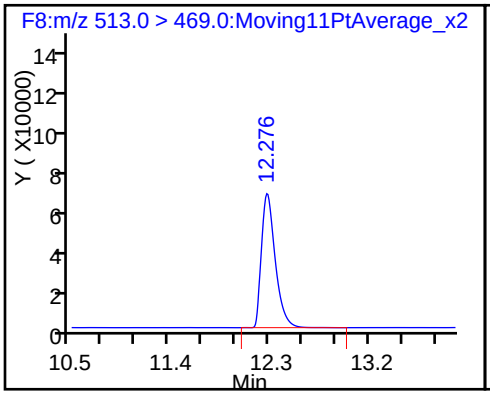
18 Perfluorononanoic acid



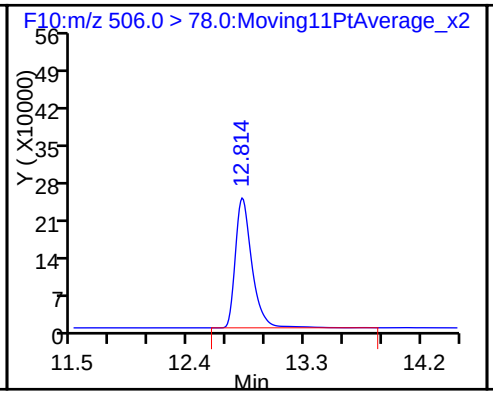
D 19 13C2 PFDA



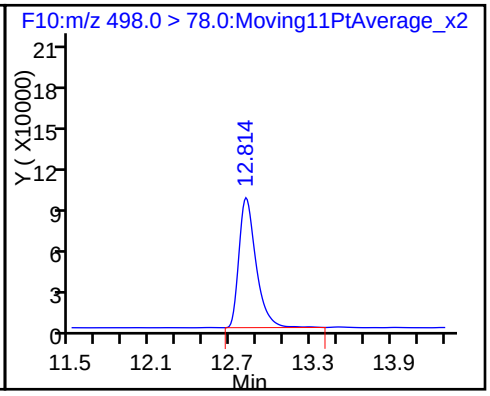
20 Perfluorodecanoic acid



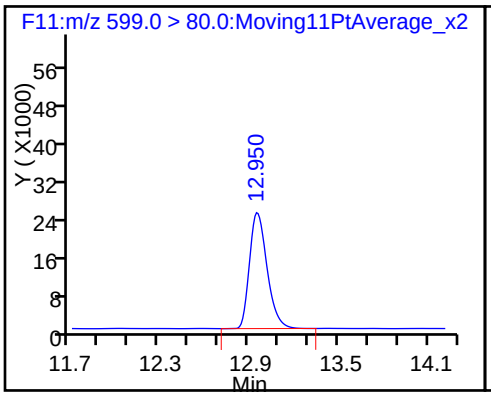
D 23 13C8 FOSA



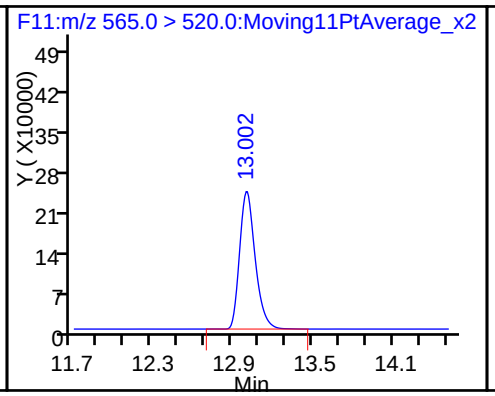
24 Perfluorooctane Sulfonamide



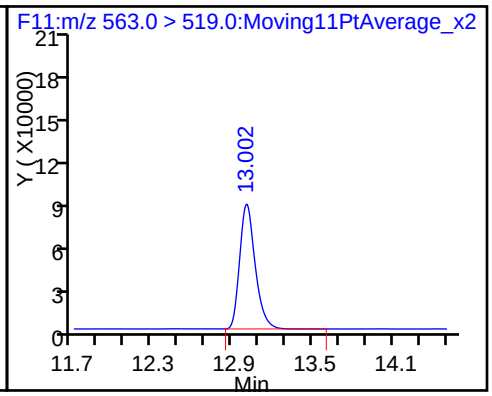
39 Perfluorodecane Sulfonic acid



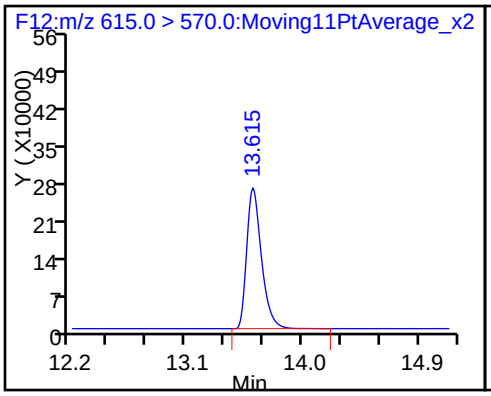
D 26 13C2 PFUnA



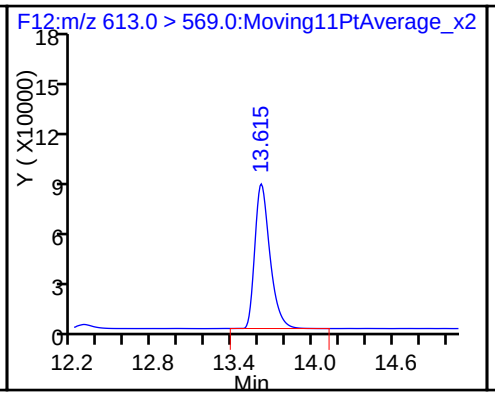
27 Perfluoroundecanoic acid



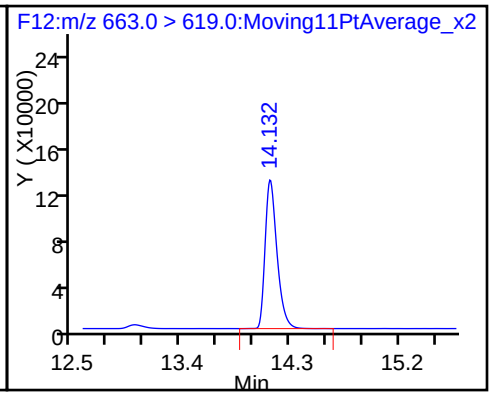
D 28 13C2 PFDoA



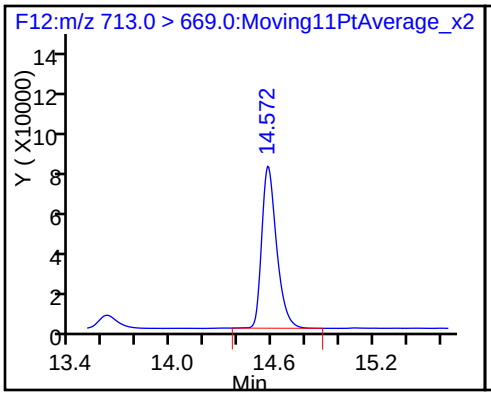
29 Perfluorododecanoic acid



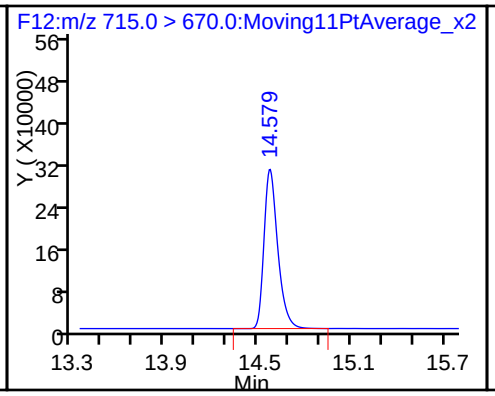
30 Perfluorotridecanoic acid



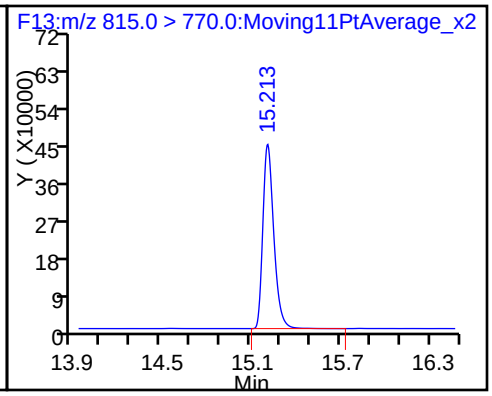
32 Perfluorotetradecanoic acid



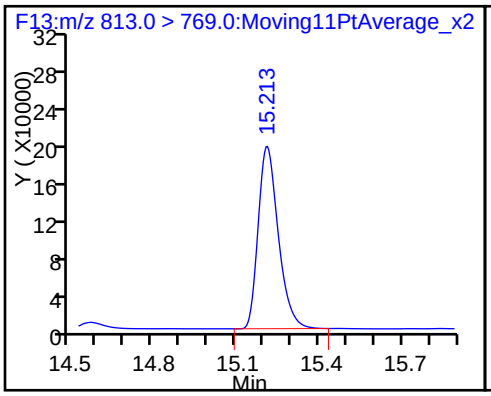
D 33 13C2-PFTeDA



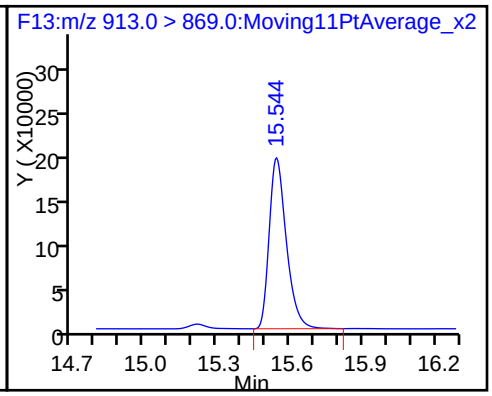
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_008.d
Lims ID: Std L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 19-Feb-2016 16:33:12 ALS Bottle#: 13 Worklist Smp#: 6
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:51 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 19-Feb-2016 17:45:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.709	5.712	-0.003		778630	48.7		97.3	2140	
2 Perfluorobutyric acid										
212.9 > 169.0	5.715	5.715	0.0	1.000	1121027	55.2		110	3299	
D 3 13C5-PFPeA										
267.9 > 223.0	6.823	6.827	-0.004		1604599	52.2		104	5949	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.828	6.828	0.0	1.000	1554916	46.4		92.9	382	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.938	6.939	-0.001	1.000	696169	NC			934	
298.9 > 99.0	6.943	6.939	0.004	1.001	378428		1.84(0.00-0.00)		526	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.938	6.939	-0.001	1.000	696169	48.6		110		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.077	8.078	-0.001	1.000	1598966	52.3		105	2420	
D 6 13C2 PFHxA										
315.0 > 270.0	8.082	8.080	0.002		1412469	49.9		99.7	3689	
D 8 13C4-PFHpA										
367.0 > 322.0	9.323	9.322	0.001		1498068	48.6		97.2	4589	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.323	9.322	0.001	1.000	1614588	51.7		103	4595	
D 11 18O2 PFHxS										
403.0 > 84.0	9.358	9.358	0.0		681798	45.6		96.3	3254	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.364	9.364	0.0	1.000	467634	NC			1449	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.364	9.364	0.0	1.000	467634	48.0		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.454	10.450	0.004		1573533	46.1		92.2	4818	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.454	10.450	0.004	1.000	1580565	50.0		100	1517	
413.0 > 169.0	10.454	10.450	0.004	1.000	544646		2.90(0.00-0.00)	100	1443	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.461	10.457	0.004	1.000	520355	NC			2081	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.461	10.457	0.004	1.000	520355	48.6		102		
D 16 13C4 PFOS										
503.0 > 80.0	11.422	11.414	0.008		821717	45.2		94.5	2661	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.422	11.417	0.005	1.000	797626	47.7		99.8	421	
499.0 > 99.0	11.422	11.417	0.005	1.000	433010		1.84(0.00-0.00)	99.8	1470	
D 17 13C5 PFNA										
468.0 > 423.0	11.437	11.434	0.003		1386004	49.2		98.3	7596	
18 Perfluorononanoic acid										
463.0 > 419.0	11.437	11.439	-0.002	1.000	1106311	49.4		98.9	3403	
D 19 13C2 PFDA										
515.0 > 470.0	12.280	12.275	0.005		1321943	46.2		92.3	3965	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.280	12.276	0.004	1.000	1348689	52.0		104	2340	
D 23 13C8 FOSA										
506.0 > 78.0	12.818	12.810	0.008		2127859	51.3		103	1526	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.818	12.812	0.006	1.000	1983962	50.3		101	2804	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.954	12.949	0.005	1.000	497252	NC			1216	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.954	12.949	0.005	1.000	497252	52.2		108		
D 26 13C2 PFUnA										
565.0 > 520.0	13.005	13.000	0.005		1719562	46.0		92.0	3390	
27 Perfluoroundecanoic acid										
563.0 > 519.0	13.005	13.000	0.005	1.000	1511190	52.7		105	4312	
D 28 13C2 PFDoA										
615.0 > 570.0	13.620	13.609	0.011		1956174	50.0		100	4217	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.620	13.611	0.009	1.000	1540137	53.8		108	1765	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.136	14.130	0.006	1.000	1907812	51.8		104	1846	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.576	14.571	0.005	1.000	1159290	49.2		98.4	877	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.576	14.571	0.005		1841361	51.3		103	6184	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.210	15.207	0.003		2184111	50.7		101	5115	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.210	15.208	0.002	1.000	2198803	49.9		99.7	2557	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.546	15.543	0.003	1.000	2246657	51.7		103	2473	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:52 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_008.d

Injection Date: 19-Feb-2016 16:33:12 Instrument ID: A6

Lims ID: Std L5

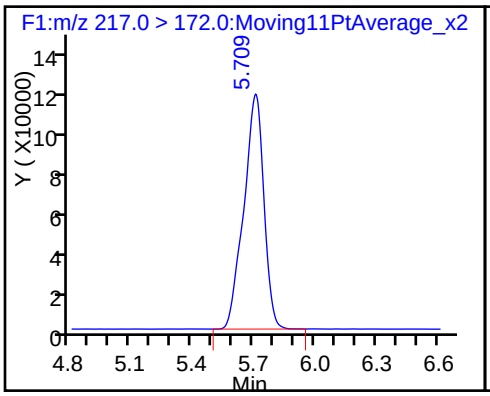
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 6

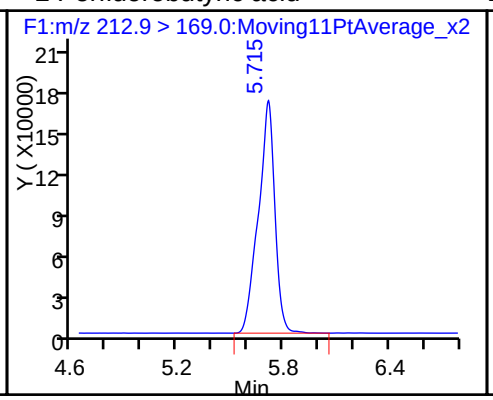
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

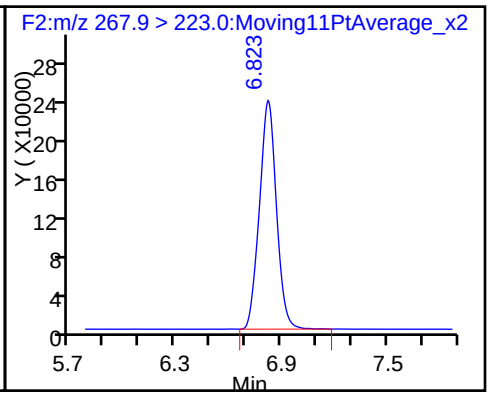
D 1 13C4 PFBA



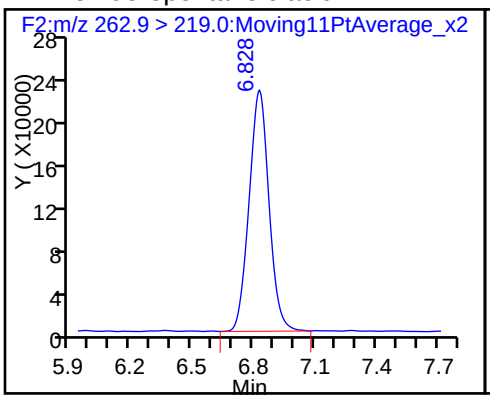
2 Perfluorobutyric acid



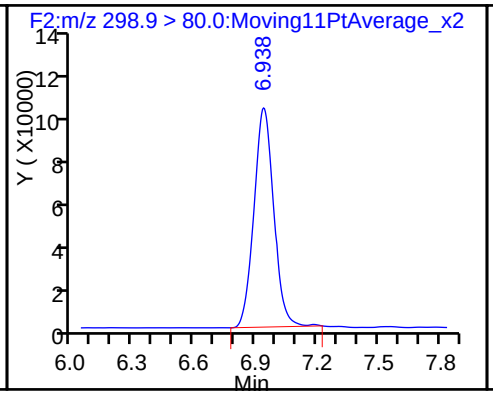
D 3 13C5-PFPeA



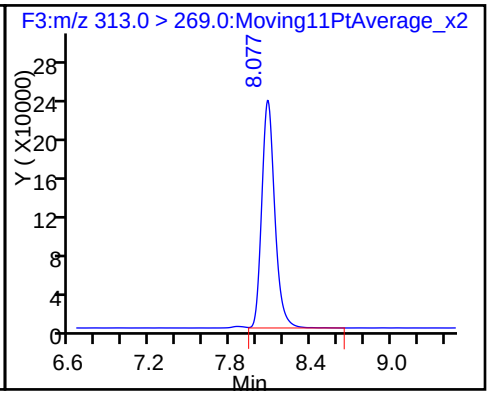
4 Perfluoropentanoic acid



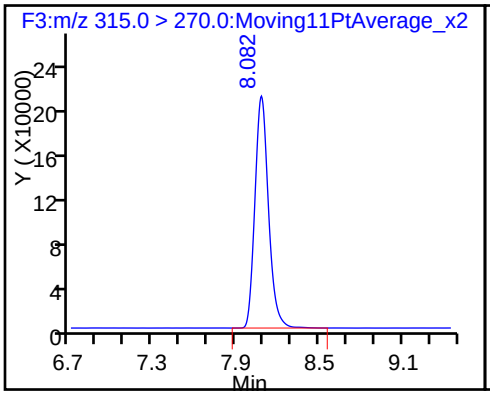
40 Perfluorobutanesulfonic acid



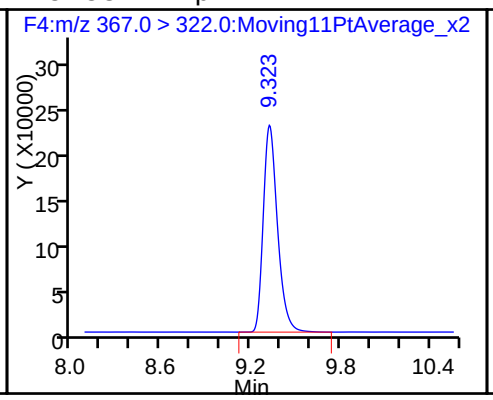
7 Perfluorohexanoic acid



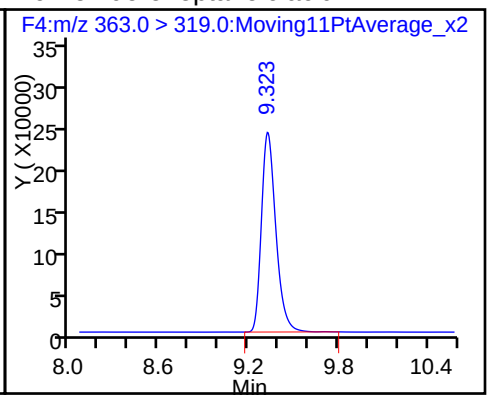
D 6 13C2 PFHxA



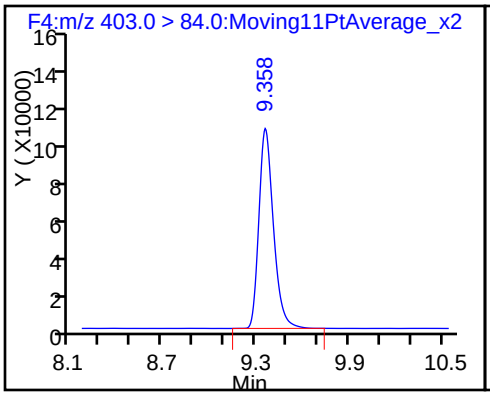
D 8 13C4-PFHpA



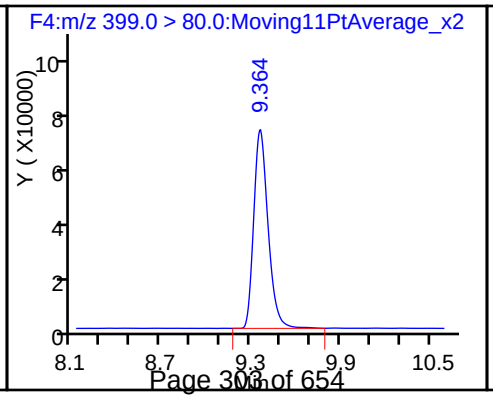
9 Perfluoroheptanoic acid



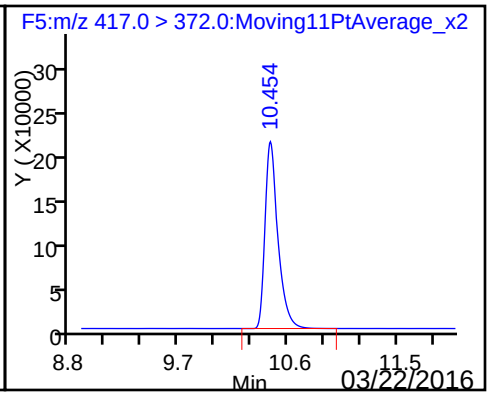
D 11 18O2 PFHxS



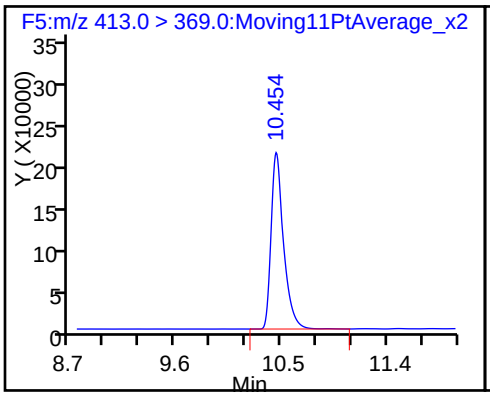
41 Perfluorohexanesulfonic acid



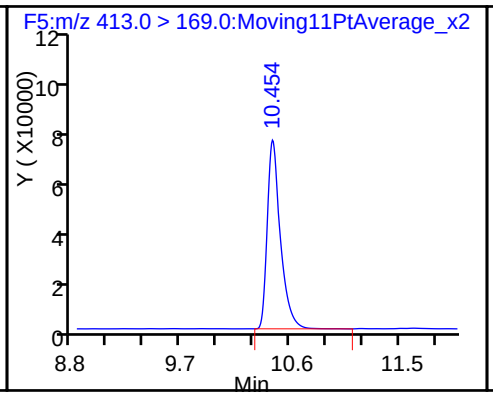
D 12 13C4 PFOA



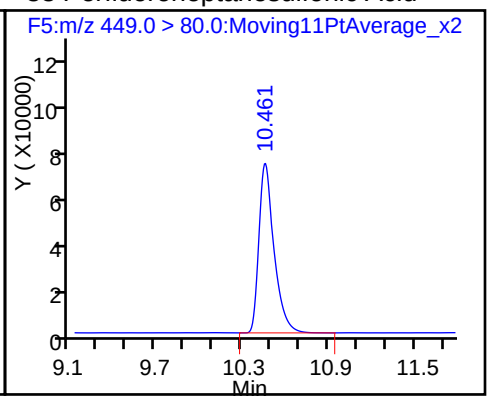
13 Perfluorooctanoic acid



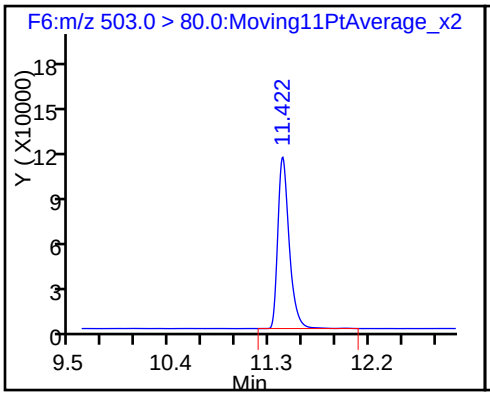
13 Perfluorooctanoic acid



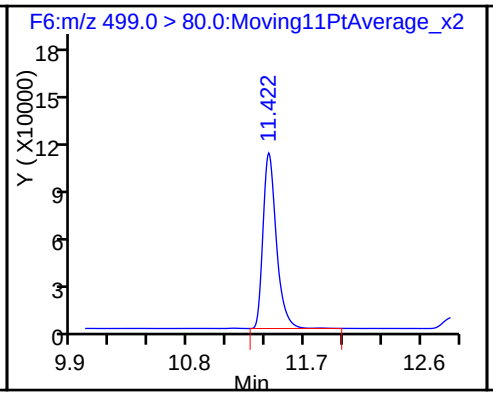
38 Perfluoroheptanesulfonic Acid



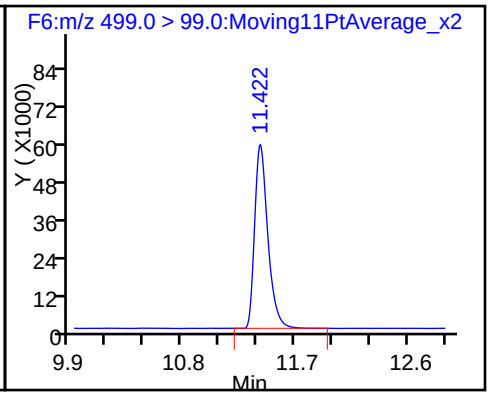
D 16 13C4 PFOS



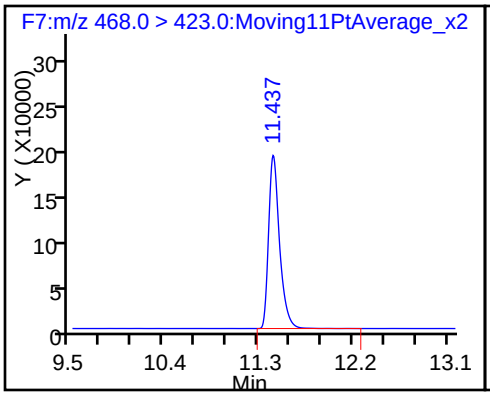
15 Perfluorooctane sulfonic acid



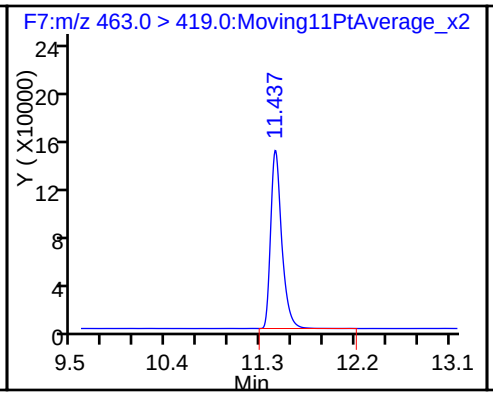
15 Perfluorooctane sulfonic acid



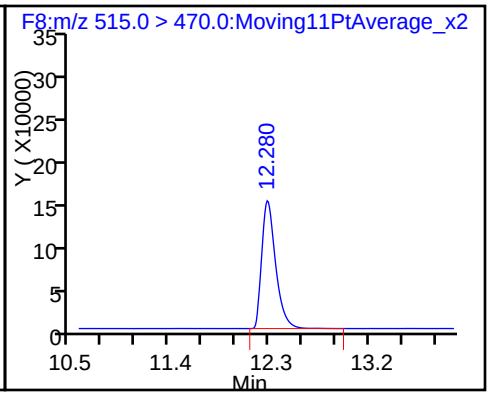
D 17 13C5 PFNA



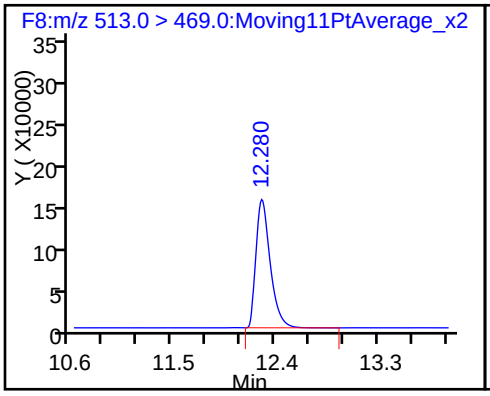
18 Perfluorononanoic acid



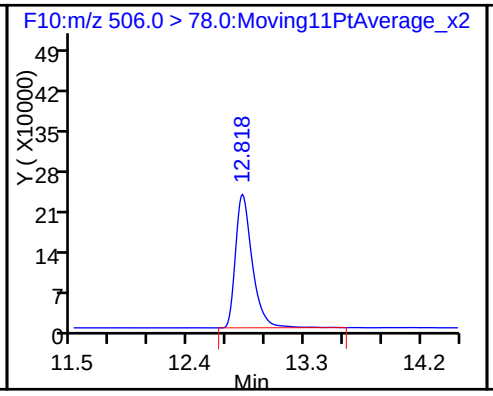
D 19 13C2 PFDA



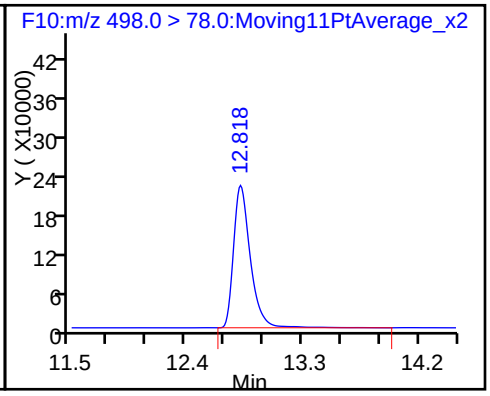
20 Perfluorodecanoic acid



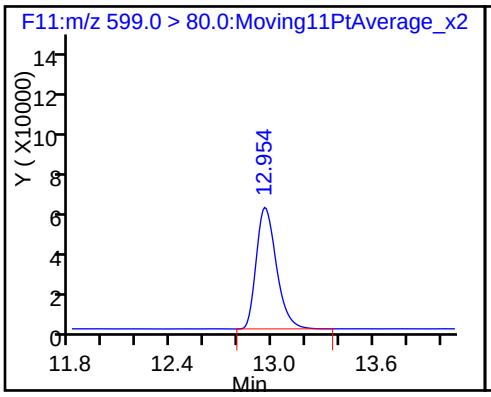
D 23 13C8 FOSA



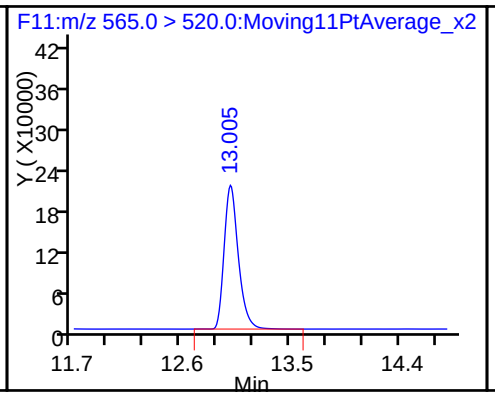
24 Perfluorooctane Sulfonamide



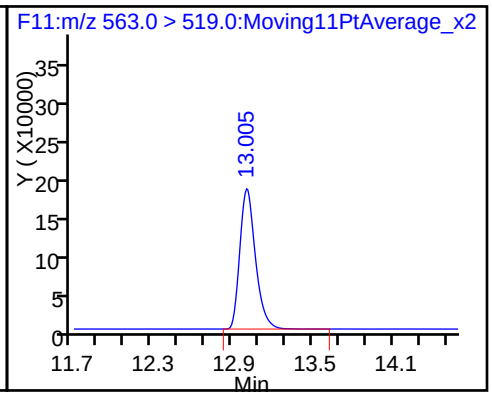
39 Perfluorodecane Sulfonic acid



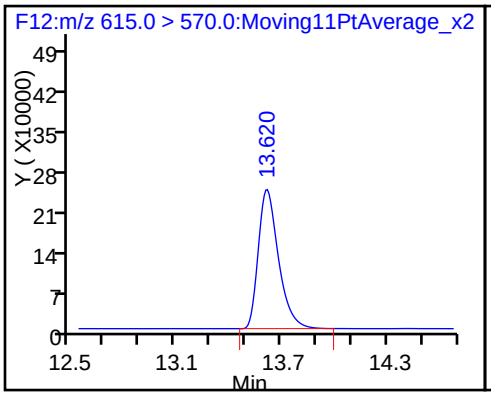
D 26 13C2 PFUnA



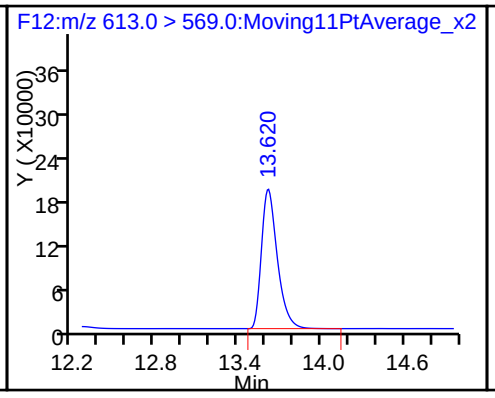
27 Perfluoroundecanoic acid



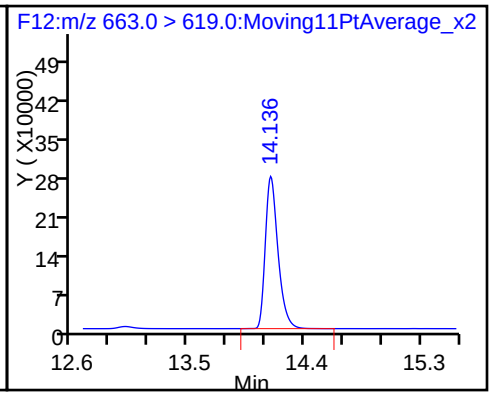
D 28 13C2 PFDoA



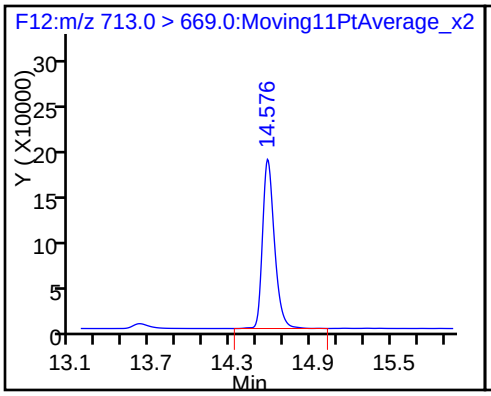
29 Perfluorododecanoic acid



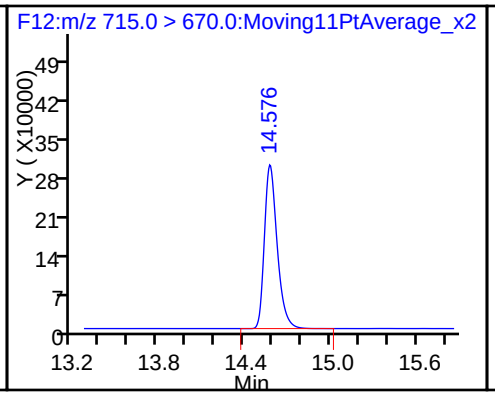
30 Perfluorotridecanoic acid



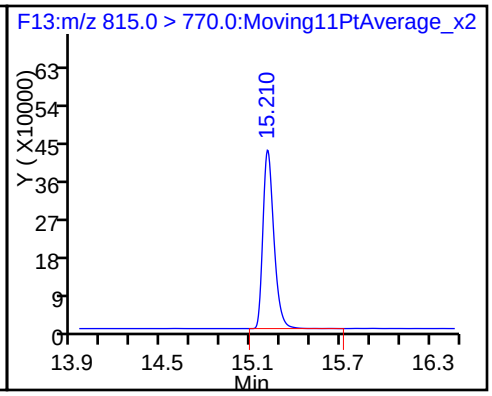
32 Perfluorotetradecanoic acid



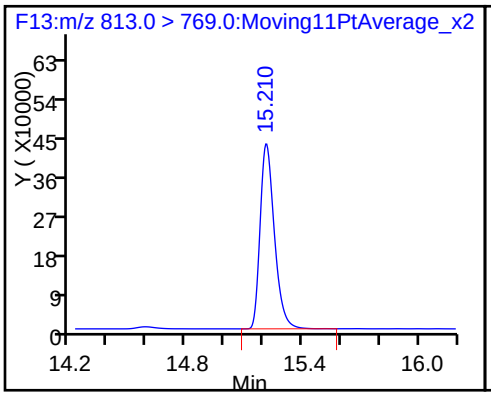
D 33 13C2-PFTeDA



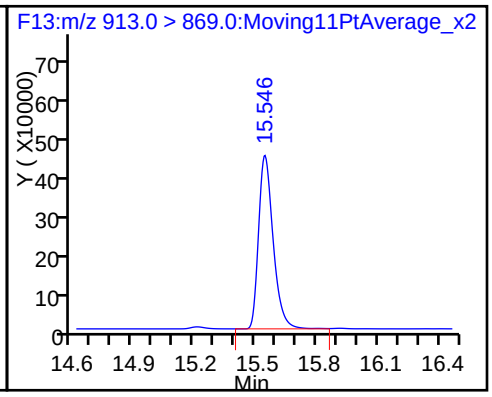
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_009.d
Lims ID: Std L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 19-Feb-2016 16:54:25 ALS Bottle#: 14 Worklist Smp#: 7
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L6
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:53 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 19-Feb-2016 17:45:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.709	5.712	-0.003		714491	44.7		89.3	2310	
2 Perfluorobutyric acid										
212.9 > 169.0	5.712	5.715	-0.003	1.000	4081745	219.0		110	10186	
D 3 13C5-PFPeA										
267.9 > 223.0	6.819	6.827	-0.008		1294135	42.1		84.1	3701	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.819	6.828	-0.009	1.000	5303760	196.4		98.2	1105	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.934	6.939	-0.005	1.000	2482631	NC			3270	
298.9 > 99.0	6.934	6.939	-0.005	1.000	1388611		1.79(0.00-0.00)		1814	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.934	6.939	-0.005	1.000	2482631	207.2		117		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.067	8.078	-0.011	1.000	5718698	205.0		103	2780	
D 6 13C2 PFHxA										
315.0 > 270.0	8.067	8.080	-0.013		1287540	45.4		90.9	4384	
D 8 13C4-PFHpA										
367.0 > 322.0	9.310	9.322	-0.012		1313950	42.6		85.3	4738	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.310	9.322	-0.012	1.000	5350969	195.3		97.6	8505	
D 11 18O2 PFHxS										
403.0 > 84.0	9.346	9.358	-0.012		570842	38.1		80.6	2260	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.346	9.364	-0.018	1.000	1610335	NC			3760	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.346	9.364	-0.018	1.000	1610335	197.6		104		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.432	10.450	-0.018		1311023	38.4		76.8	4940	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.439	10.450	-0.011	1.000	5285370	200.8		100	4885	
413.0 > 169.0	10.439	10.450	-0.011	1.000	1833992		2.88(0.00-0.00)	100	3465	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.439	10.457	-0.018	1.000	1619742	NC			4928	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.439	10.457	-0.018	1.000	1619742	185.4		97.4		
D 16 13C4 PFOS										
503.0 > 80.0	11.399	11.414	-0.015		668257	36.8		76.9	2419	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.399	11.417	-0.018	1.000	2592636	190.7		99.7	325	
499.0 > 99.0	11.399	11.417	-0.018	1.000	1437770		1.80(0.00-0.00)	99.7	3069	
D 17 13C5 PFNA										
468.0 > 423.0	11.414	11.434	-0.020		1143055	40.5		81.1	4555	
18 Perfluorononanoic acid										
463.0 > 419.0	11.421	11.439	-0.018	1.000	3958780	214.5		107	10634	
D 19 13C2 PFDA										
515.0 > 470.0	12.254	12.275	-0.021		1048548	36.6		73.2	3638	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.254	12.276	-0.022	1.000	4149384	202.6		101	8461	
D 23 13C8 FOSA										
506.0 > 78.0	12.793	12.810	-0.017		1899691	45.8		91.5	1488	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.793	12.812	-0.019	1.000	6796748	193.0		96.5	1161	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.929	12.949	-0.020	1.000	1463184	NC			4274	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.929	12.949	-0.020	1.000	1463184	188.0		97.5		
D 26 13C2 PFUnA										
565.0 > 520.0	12.981	13.000	-0.019		1410933	37.7		75.5	4400	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.981	13.000	-0.019	1.000	4571131	196.0		98.0	6731	
D 28 13C2 PFDoA										
615.0 > 570.0	13.588	13.609	-0.021		1709160	43.7		87.4	3686	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.588	13.611	-0.023	1.000	5178123	207.2		104	5811	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.109	14.130	-0.021	1.000	5922305	184.1		92.1	4913	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.552	14.571	-0.019	1.000	3999720	195.6		97.8	2278	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.552	14.571	-0.019		1592616	44.4		88.7	6647	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.188	15.207	-0.019		1957713	45.4		90.8	4814	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.193	15.208	-0.015	1.000	7506851	202.2		101	4498	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.529	15.543	-0.014	1.000	7527521	198.2		99.1	4555	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00015 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:54 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_009.d

Injection Date: 19-Feb-2016 16:54:25 Instrument ID: A6

Lims ID: Std L6

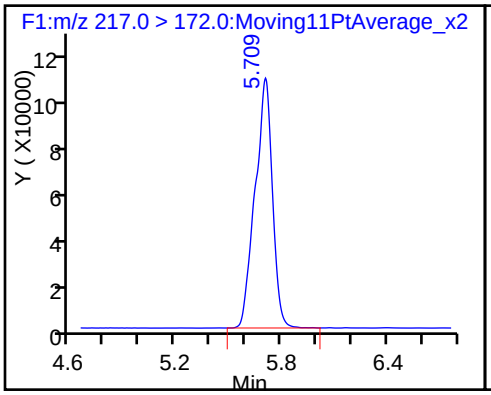
Client ID:

Operator ID: JRB ALS Bottle#: 14 Worklist Smp#: 7

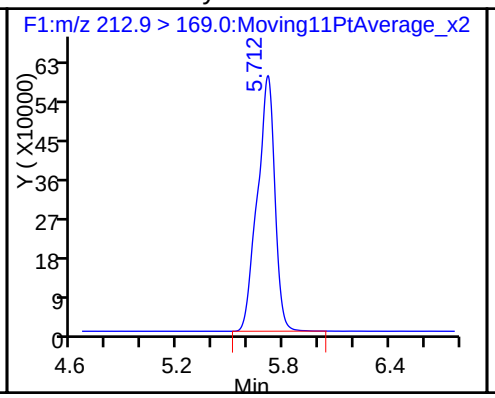
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

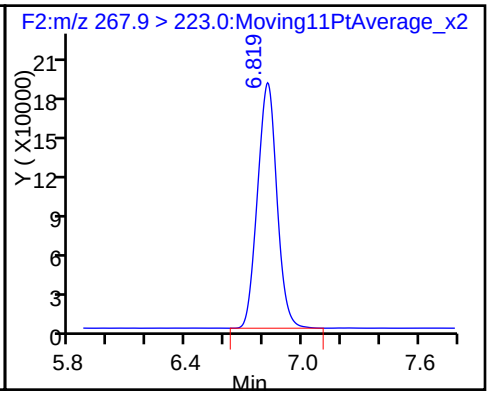
D 1 13C4 PFBA



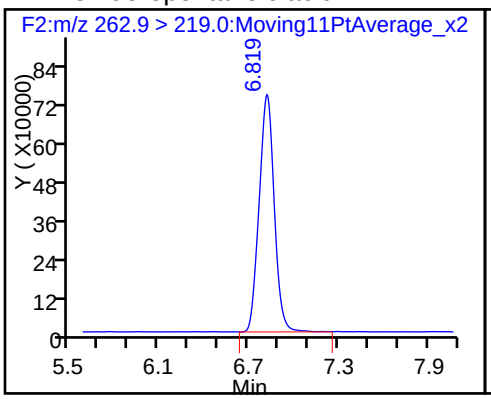
2 Perfluorobutyric acid



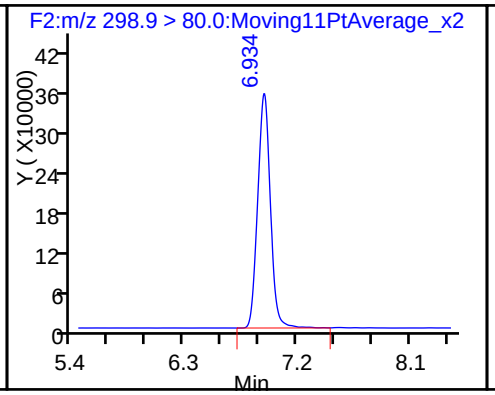
D 3 13C5-PFPeA



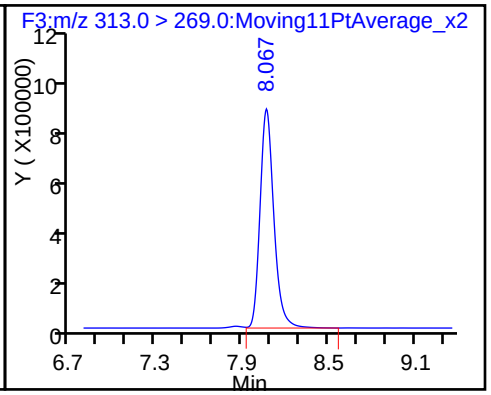
4 Perfluoropentanoic acid



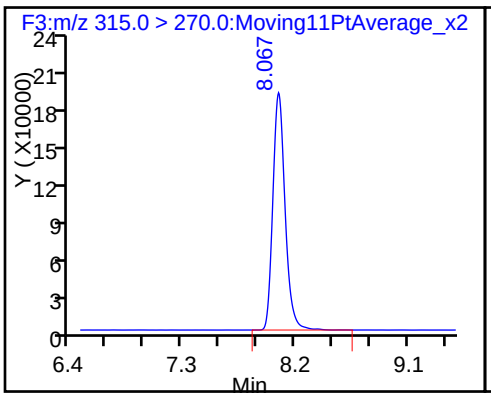
40 Perfluorobutanesulfonic acid



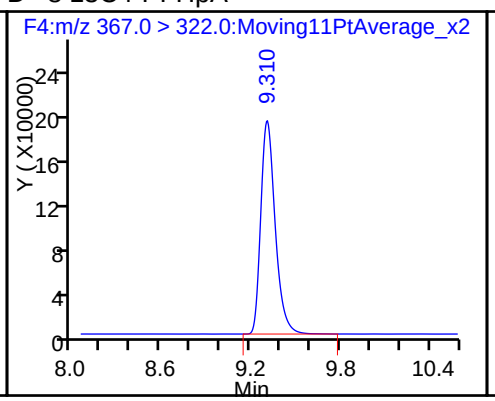
7 Perfluorohexanoic acid



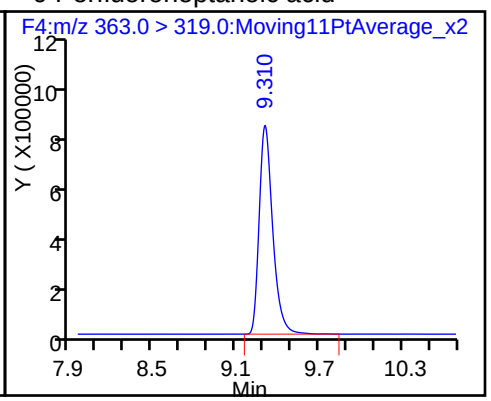
D 6 13C2 PFHxA



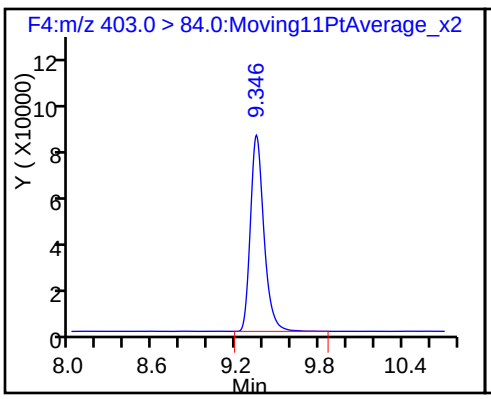
D 8 13C4-PFHpA



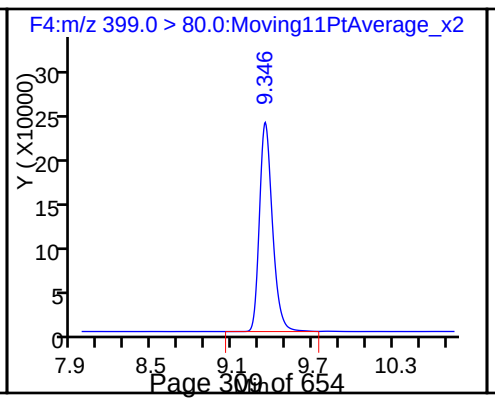
9 Perfluoroheptanoic acid



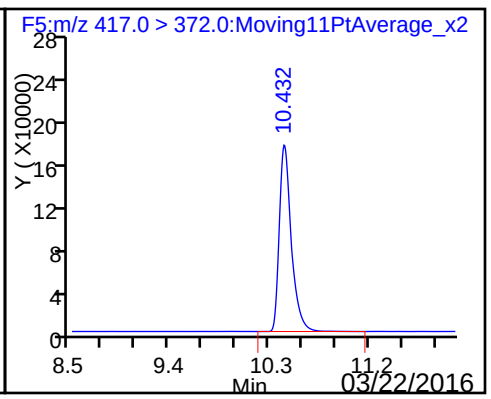
D 11 18O2 PFHxS



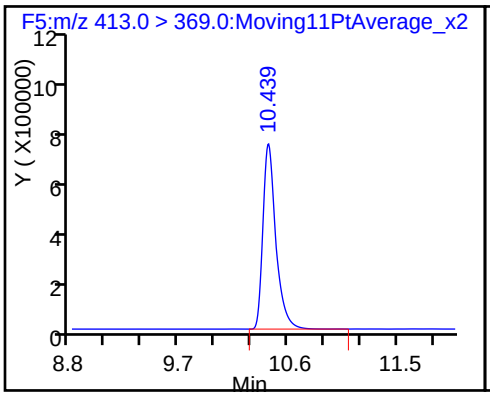
41 Perfluorohexanesulfonic acid



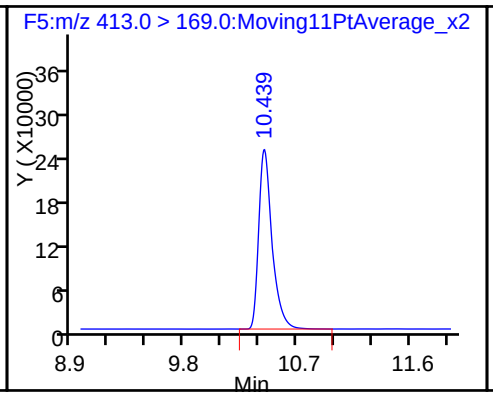
D 12 13C4 PFOA



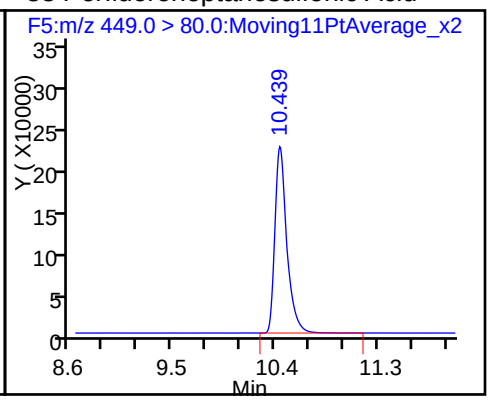
13 Perfluorooctanoic acid



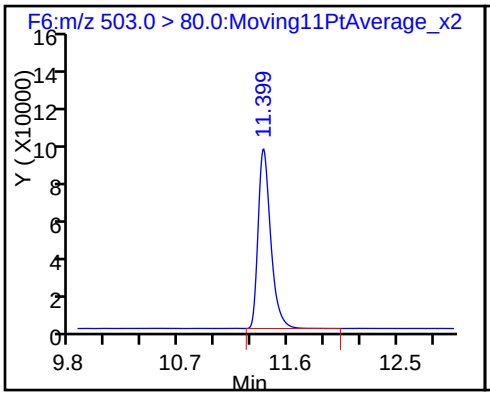
13 Perfluorooctanoic acid



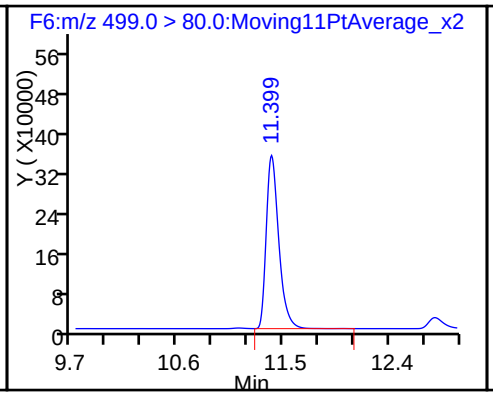
38 Perfluoroheptanesulfonic Acid



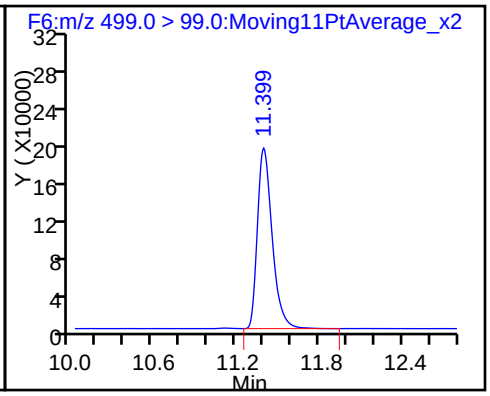
D 16 13C4 PFOS



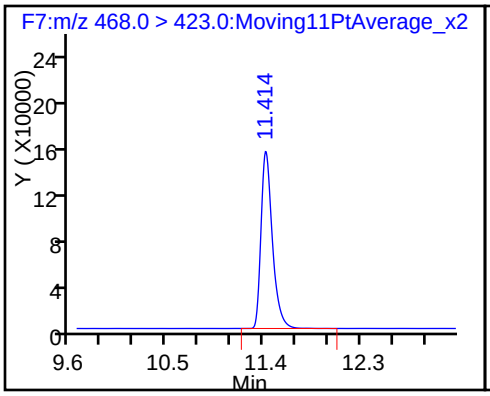
15 Perfluorooctane sulfonic acid



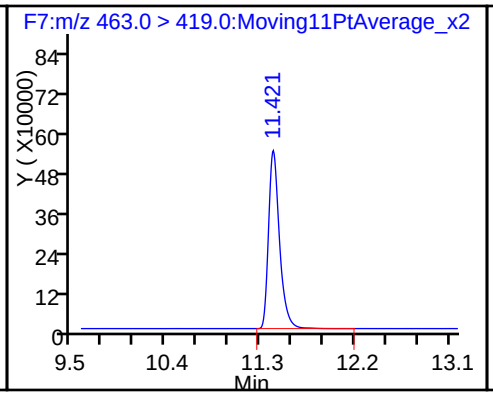
15 Perfluorooctane sulfonic acid



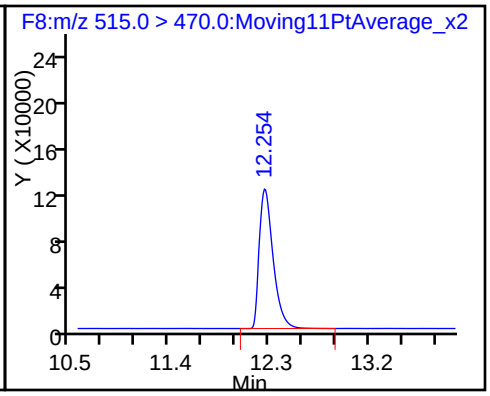
D 17 13C5 PFNA



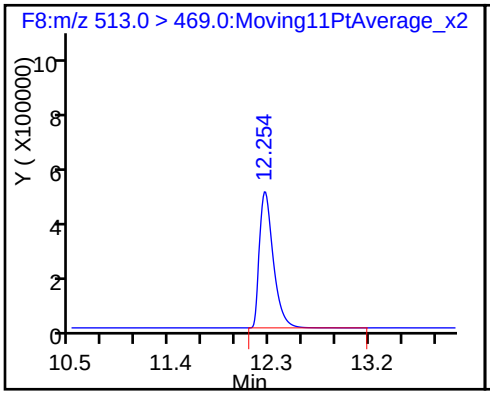
18 Perfluorononanoic acid



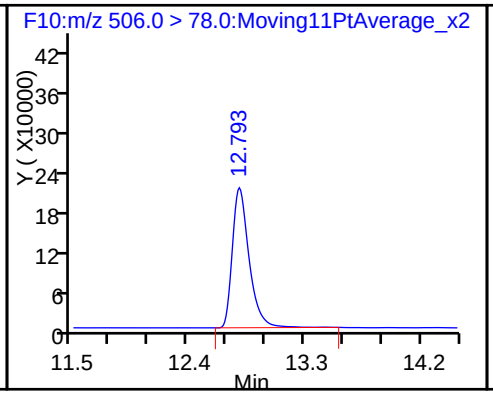
D 19 13C2 PFDA



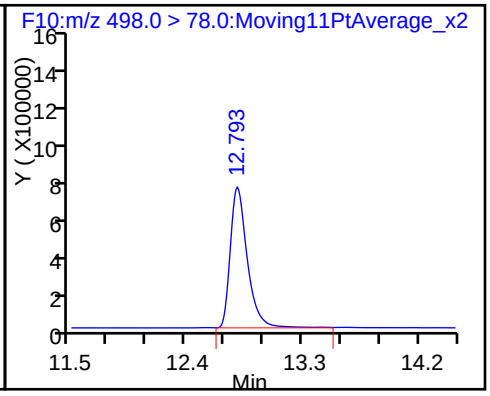
20 Perfluorodecanoic acid



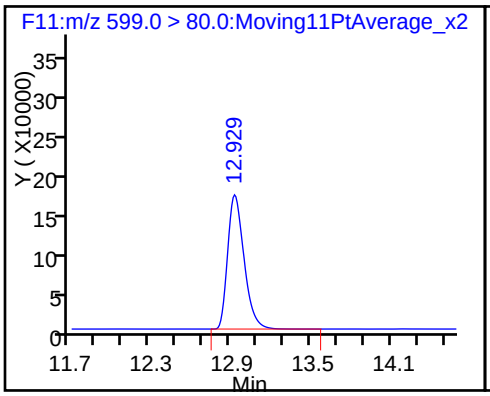
D 23 13C8 FOSA



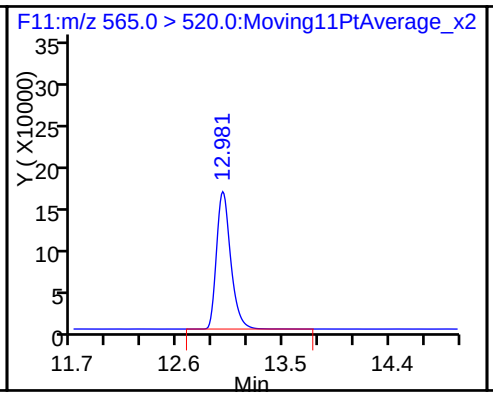
24 Perfluorooctane Sulfonamide



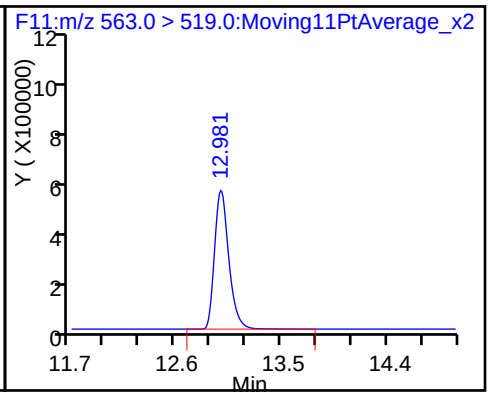
39 Perfluorodecane Sulfonic acid



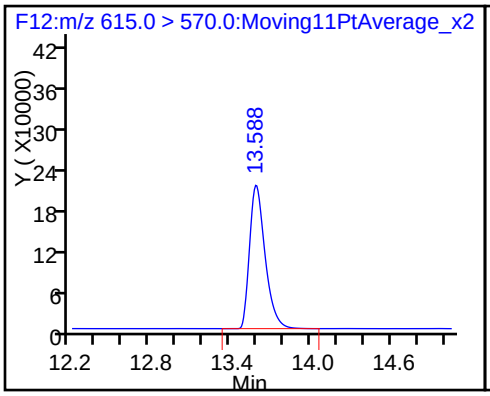
D 26 13C2 PFUnA



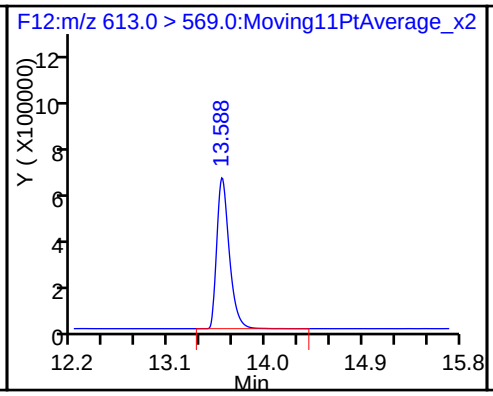
27 Perfluoroundecanoic acid



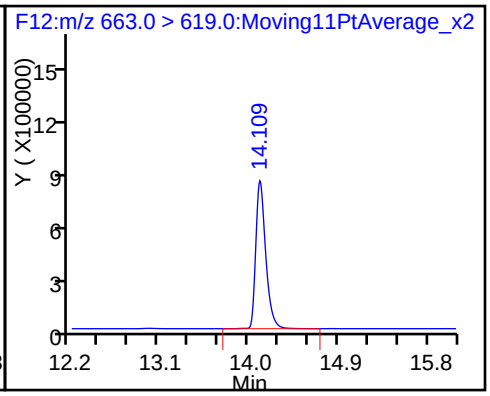
D 28 13C2 PFDoA



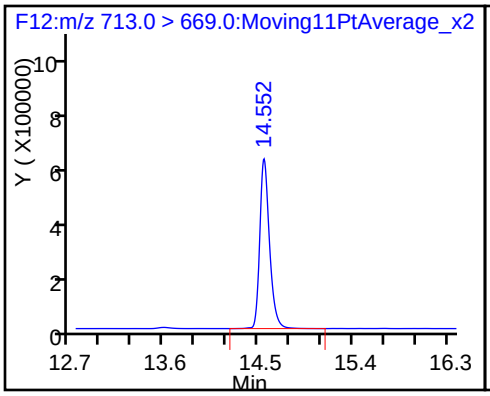
29 Perfluorododecanoic acid



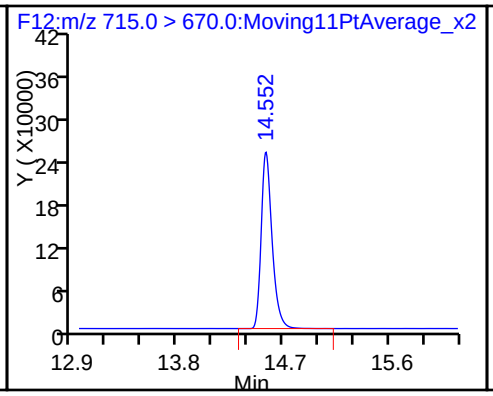
30 Perfluorotridecanoic acid



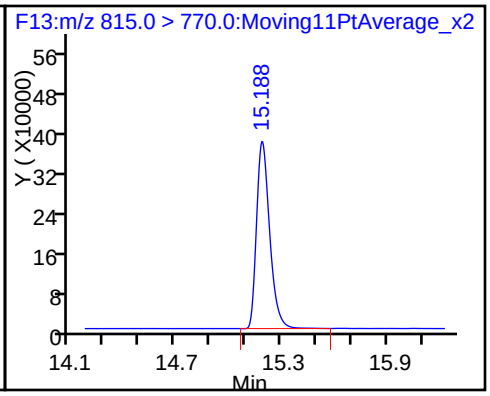
32 Perfluorotetradecanoic acid



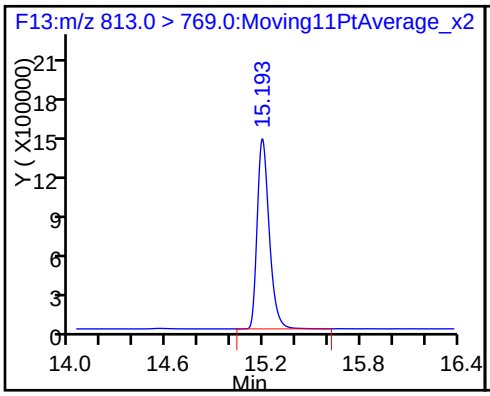
D 33 13C2-PFTeDA



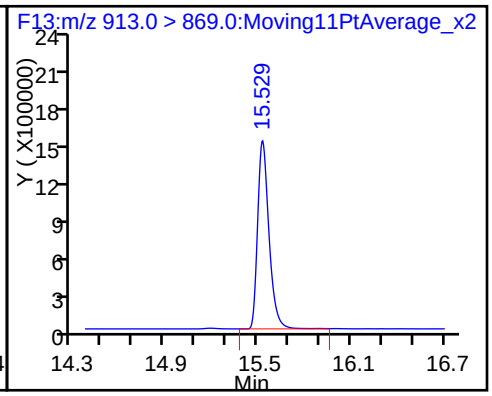
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d
Lims ID: Std L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 19-Feb-2016 17:15:39 ALS Bottle#: 15 Worklist Smp#: 8
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: STD L7
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:58:55 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 19-Feb-2016 17:46:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.709	5.712	-0.003		631840	39.5		79.0	1919	
2 Perfluorobutyric acid										
212.9 > 169.0	5.712	5.715	-0.003	1.000	7281727	441.9		110	11351	
D 3 13C5-PFPeA										
267.9 > 223.0	6.818	6.827	-0.009		1171928	38.1		76.2	3691	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.818	6.828	-0.010	1.000	9604476	392.7		98.2	1997	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.933	6.939	-0.006	1.000	4163359	NC			2718	
298.9 > 99.0	6.933	6.939	-0.006	1.000	2275031		1.83(0.00-0.00)		3395	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.933	6.939	-0.006	1.000	4163359	435.6		123		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.065	8.078	-0.013	1.000	9481665	420.7		105	2241	
D 6 13C2 PFHxA										
315.0 > 270.0	8.065	8.080	-0.015		1040351	36.7		73.4	2818	
D 8 13C4-PFHpA										
367.0 > 322.0	9.305	9.322	-0.017		1099321	35.7		71.3	3231	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.305	9.322	-0.017	1.000	9198751	401.2		100	11672	
D 11 18O2 PFHxS										
403.0 > 84.0	9.346	9.358	-0.012		455229	30.4		64.3	1441	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.346	9.364	-0.018	1.000	2660458	NC			6698	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.346	9.364	-0.018	1.000	2660458	409.4		108		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.433	10.450	-0.017		1023740	30.0		60.0	3518	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.433	10.450	-0.017	1.000	8666978	421.7		105	4474	
413.0 > 169.0	10.433	10.450	-0.017	1.000	2909884		2.98(0.00-0.00)	105	3285	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.440	10.457	-0.017	1.000	2666346	NC			7584	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.440	10.457	-0.017	1.000	2666346	381.1		100		
D 16 13C4 PFOS										
503.0 > 80.0	11.392	11.414	-0.022		534710	29.4		61.5	2475	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.399	11.417	-0.018	1.000	4278056	393.3		103	332	
499.0 > 99.0	11.399	11.417	-0.018	1.000	2357374		1.81(0.00-0.00)	103	3975	
D 17 13C5 PFNA										
468.0 > 423.0	11.415	11.434	-0.019		1010032	35.8		71.7	2370	
18 Perfluorononanoic acid										
463.0 > 419.0	11.422	11.439	-0.017	1.000	6650814	407.7		102	13388	
D 19 13C2 PFDA										
515.0 > 470.0	12.255	12.275	-0.020		925036	32.3		64.6	1991	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.255	12.276	-0.021	1.000	6815253	377.5		94.4	4656	
D 23 13C8 FOSA										
506.0 > 78.0	12.793	12.810	-0.017		1599127	38.5		77.1	1713	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.793	12.812	-0.019	1.000	11722467	395.5		98.9	1678	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.929	12.949	-0.020	1.000	2170020	NC			3636	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.929	12.949	-0.020	1.000	2170020	348.2		90.3		
D 26 13C2 PFUnA										
565.0 > 520.0	12.981	13.000	-0.019		1172072	31.4		62.7	3708	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.981	13.000	-0.019	1.000	7799843	403.3		101	7175	
D 28 13C2 PFDoA										
615.0 > 570.0	13.588	13.609	-0.021		1451296	37.1		74.2	3521	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.588	13.611	-0.023	1.000	9187053	432.9		108	6144	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.109	14.130	-0.021	1.000	9569869	350.4		87.6	4611	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.552	14.571	-0.019	1.000	6913347	398.6		99.7	3248	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.552	14.571	-0.019		1521958	42.4		84.8	4569	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.193	15.207	-0.014		1815999	42.1		84.3	3968	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.193	15.208	-0.015	1.000	12867499	410.8		103	4108	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.529	15.543	-0.014	1.000	13652743	423.4		106	3366	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L7_00015 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:58:56 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Injection Date: 19-Feb-2016 17:15:39 Instrument ID: A6

Lims ID: Std L7

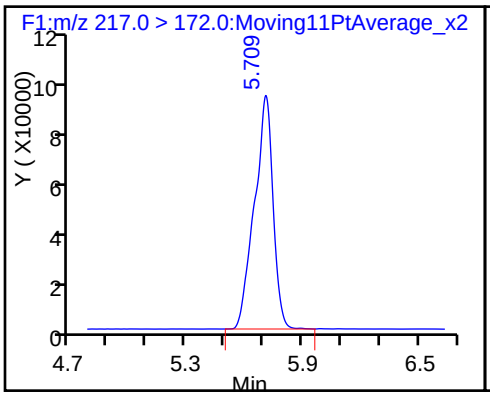
Client ID:

Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 8

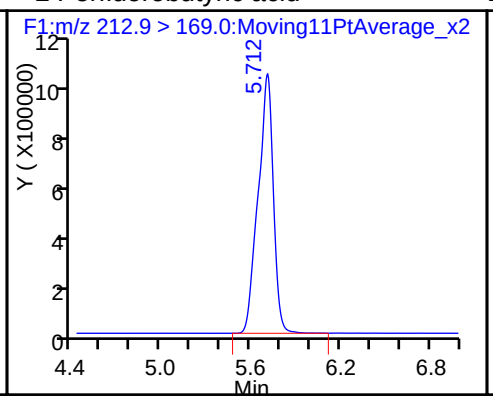
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

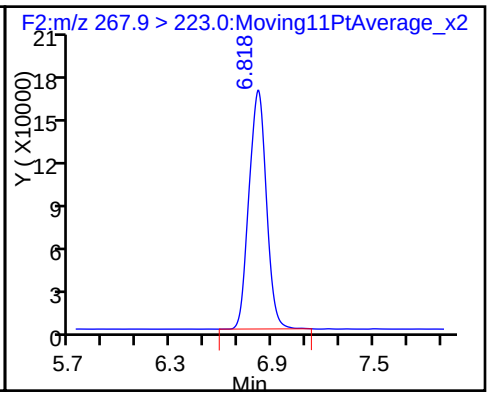
D 1 13C4 PFBA



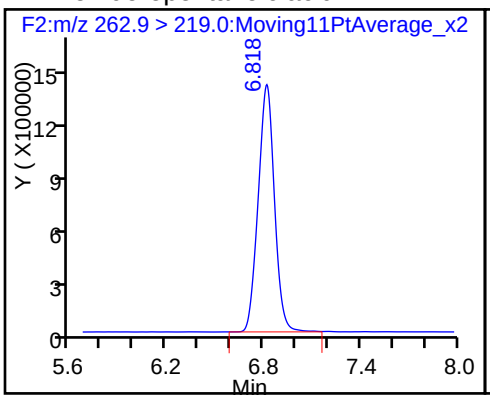
2 Perfluorobutyric acid



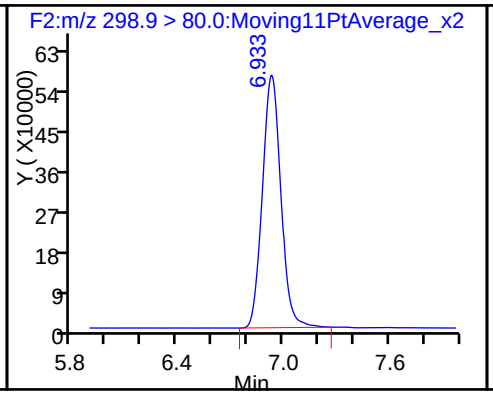
D 3 13C5-PFPeA



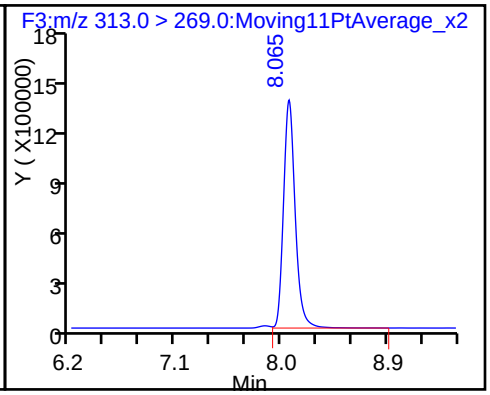
4 Perfluoropentanoic acid



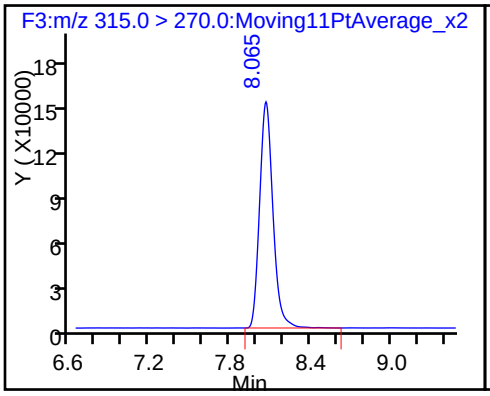
40 Perfluorobutanesulfonic acid



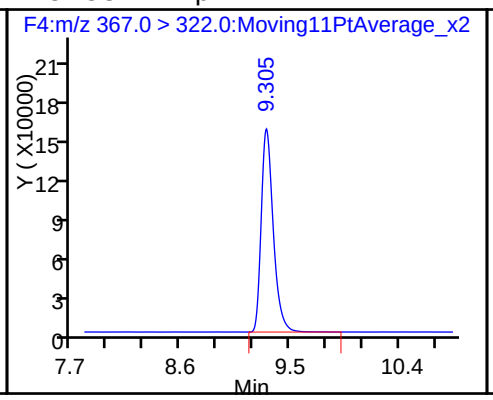
7 Perfluorohexanoic acid



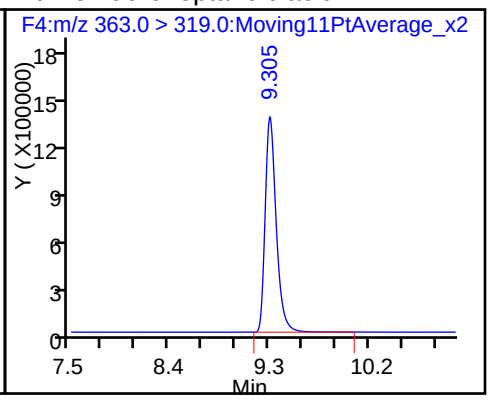
D 6 13C2 PFHxA



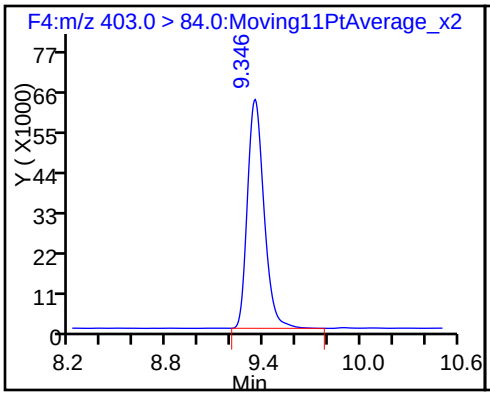
D 8 13C4-PFHpA



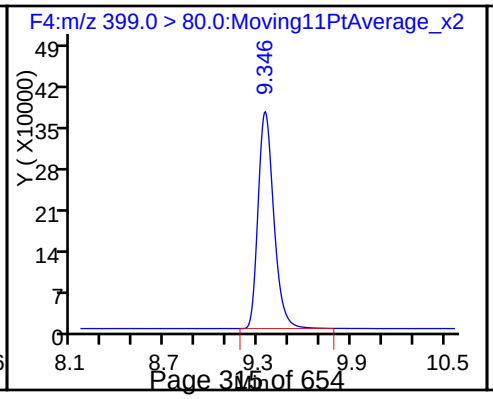
9 Perfluoroheptanoic acid



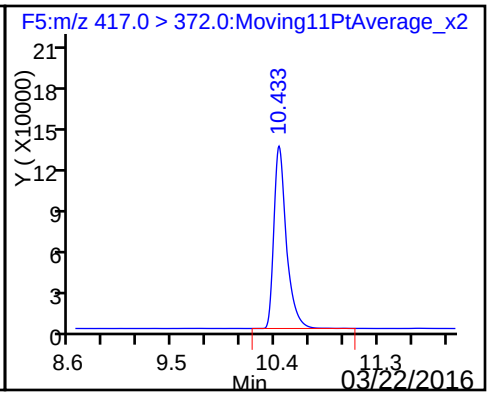
D 11 18O2 PFHxS



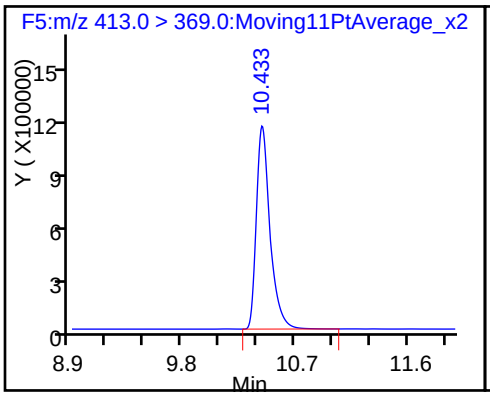
41 Perfluorohexanesulfonic acid



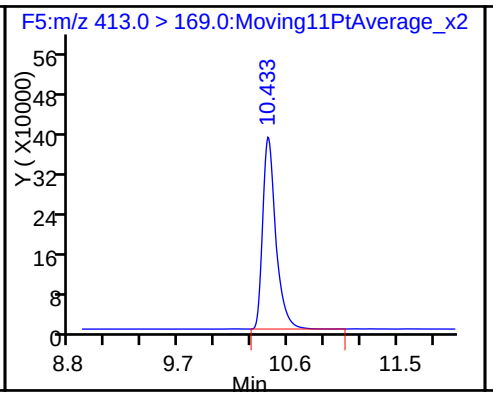
D 12 13C4 PFOA



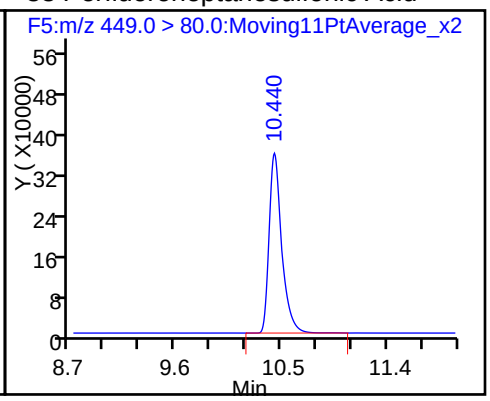
13 Perfluorooctanoic acid



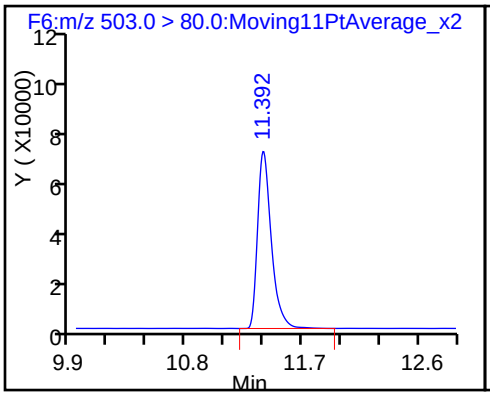
13 Perfluorooctanoic acid



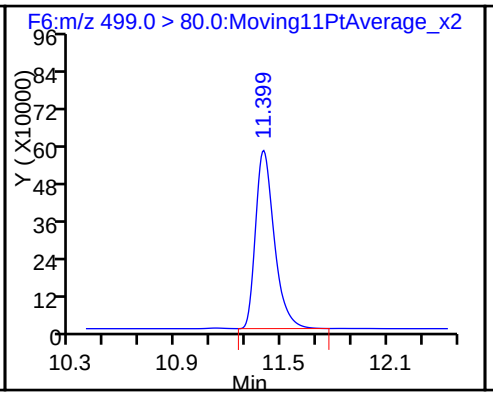
38 Perfluoroheptanesulfonic Acid



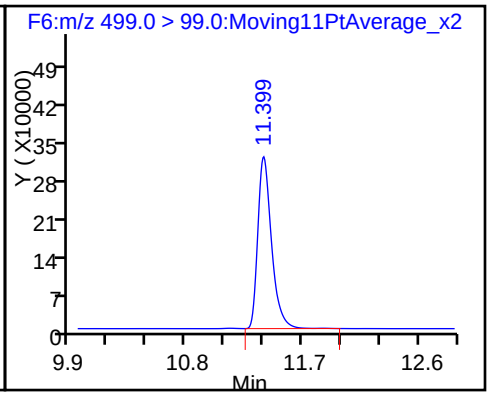
D 16 13C4 PFOS



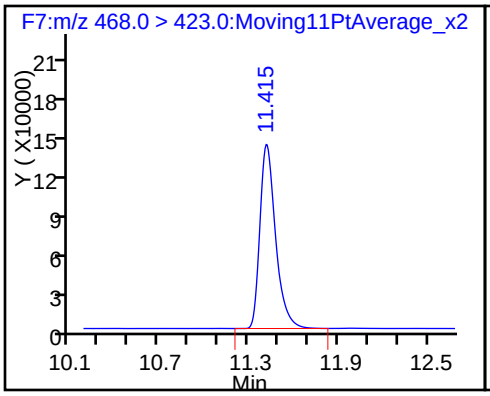
15 Perfluorooctane sulfonic acid



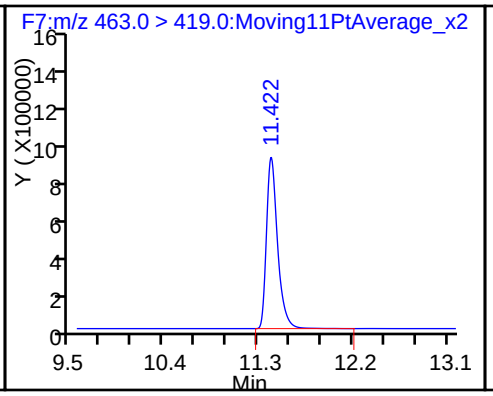
15 Perfluorooctane sulfonic acid



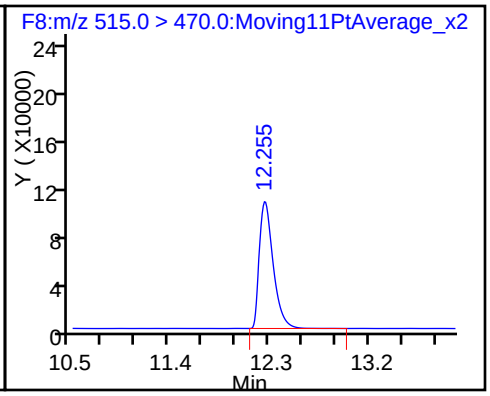
D 17 13C5 PFNA



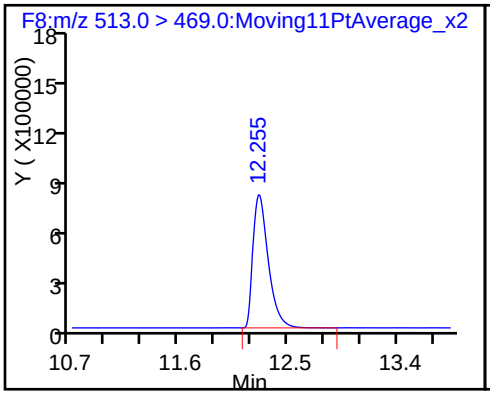
18 Perfluorononanoic acid



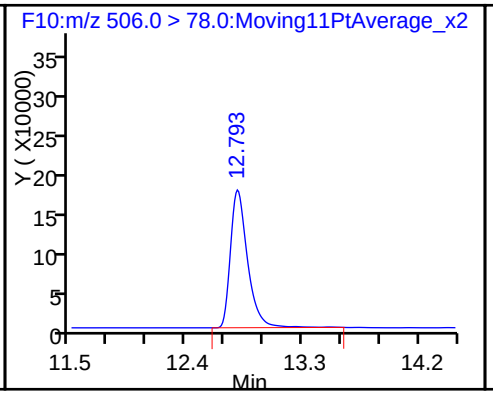
D 19 13C2 PFDA



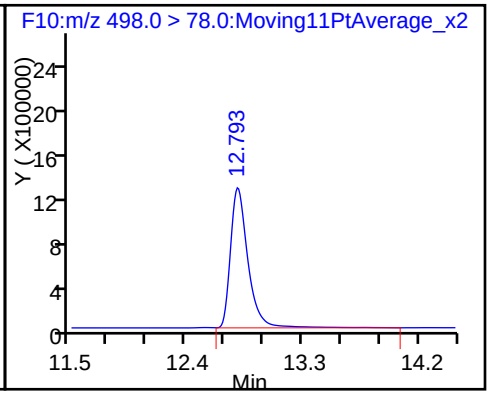
20 Perfluorodecanoic acid



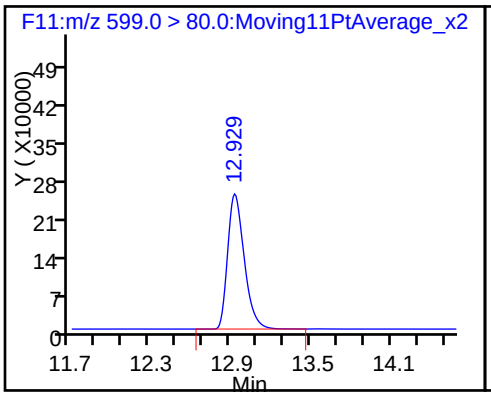
D 23 13C8 FOSA



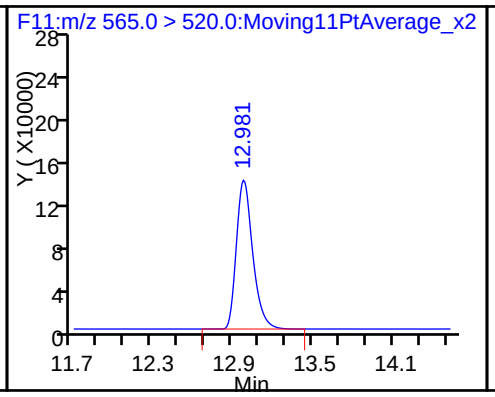
24 Perfluorooctane Sulfonamide



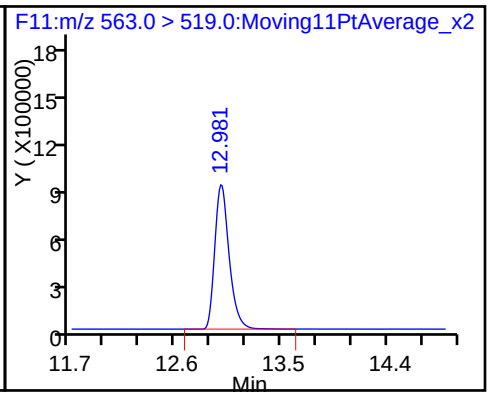
39 Perfluorodecane Sulfonic acid



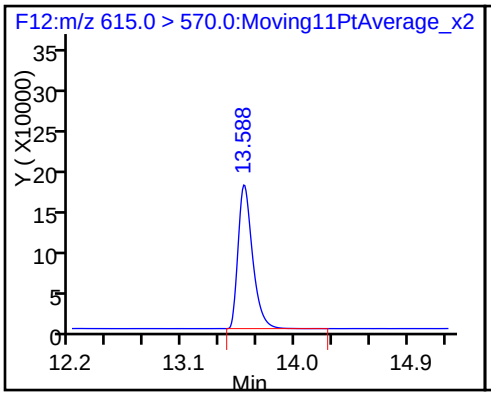
D 26 13C2 PFUnA



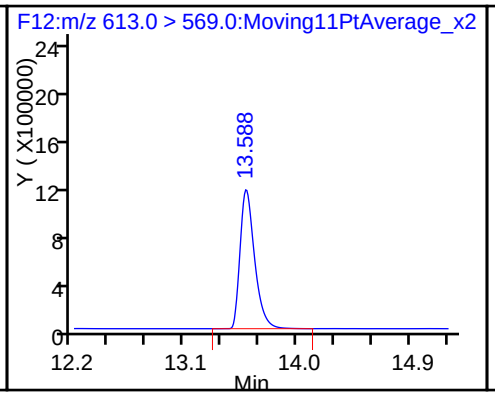
27 Perfluoroundecanoic acid



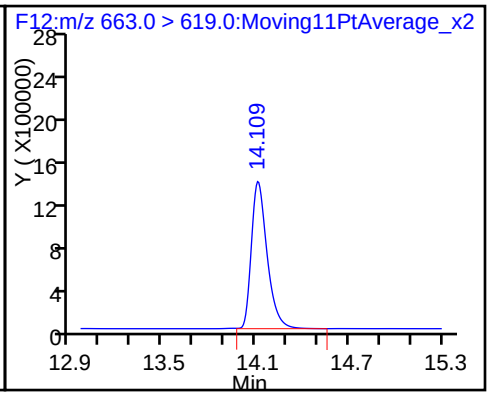
D 28 13C2 PFDoA



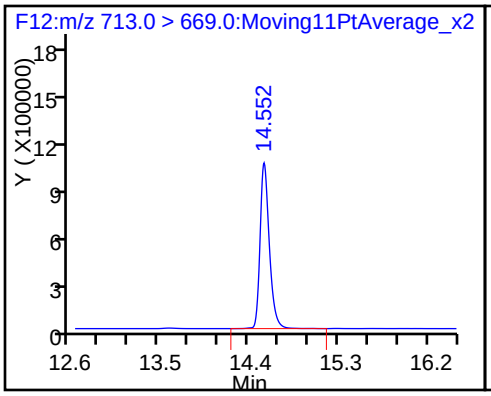
29 Perfluorododecanoic acid



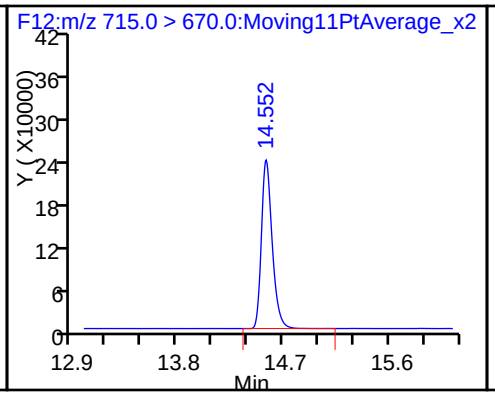
30 Perfluorotridecanoic acid



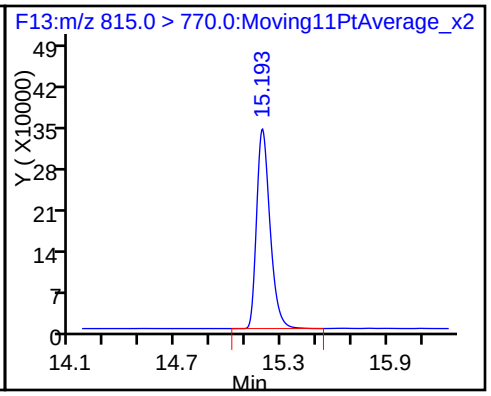
32 Perfluorotetradecanoic acid



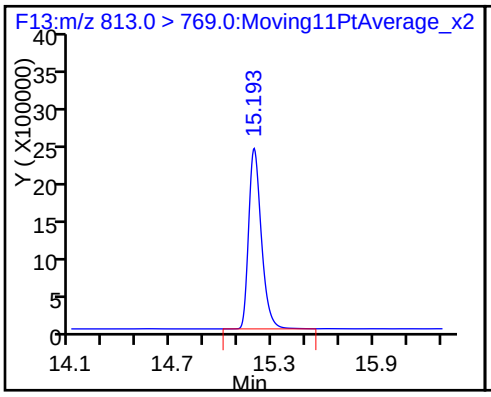
D 33 13C2-PFTeDA



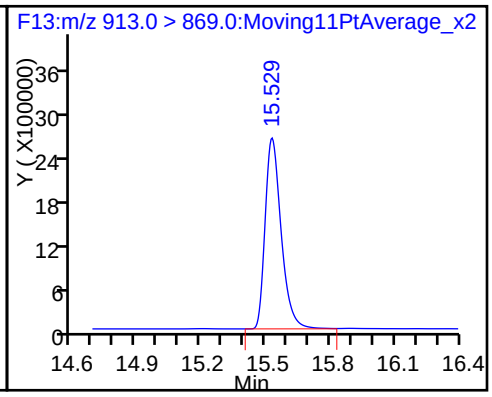
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Lab Sample ID: ICV 320-100906/10 Calibration Date: 02/19/2016 17:58

Instrument ID: A6 Calib Start Date: 02/19/2016 15:08

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/19/2016 17:15

Lab File ID: 19FEB2016A6A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.304	1.537		58.9	50.0	17.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.043	1.090		52.2	50.0	4.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9930	1.215		54.1	44.3	22.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.083	1.137		52.5	50.0	4.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.171		56.1	50.0	12.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.6753	0.6993		48.9	47.3	3.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.6445		49.3	47.6	3.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.004	1.026		51.1	50.0	2.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9724	1.110		54.5	47.8	14.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8075	0.8793		54.4	50.0	8.9	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.997		50.8	50.0	1.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9268	0.9404		50.7	50.0	1.5	25.0
Perfluorodecane Sulfonic acid	L1ID		0.6116		53.2	48.3	10.3	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.9581		57.5	50.0	15.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7311	0.8388		57.4	50.0	14.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9409	1.009		53.6	50.0	7.2	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.6279		52.1	50.0	4.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.181		52.5	50.0	5.1	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.111	1.148		51.7	50.0	3.4	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 19-Feb-2016 17:58:06 ALS Bottle#: 16 Worklist Smp#: 10
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A4*sub6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:59:00 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.705	5.712	-0.007		693136	43.3		86.6	2632	
2 Perfluorobutyric acid										
212.9 > 169.0	5.705	5.715	-0.010	1.000	1065572	58.9			3120	
D 3 13C5-PFPeA										
267.9 > 223.0	6.816	6.827	-0.011		1409700	45.8		91.7	4713	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.816	6.828	-0.012	1.000	1536827	52.2			395	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.931	6.939	-0.008	1.000	654025	NC			569	
298.9 > 99.0	6.931	6.939	-0.008	1.000	370497		1.77(0.00-0.00)		770	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.931	6.939	-0.008	1.000	654025	54.1				
7 Perfluorohexanoic acid										
313.0 > 269.0	8.066	8.078	-0.012	1.000	1540103	52.5			1860	
D 6 13C2 PFHxA										
315.0 > 270.0	8.066	8.080	-0.014		1354941	47.8		95.7	4025	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.142	8.158	-0.016	0.872	456683	NC			1959	
D 8 13C4-PFHpA										
367.0 > 322.0	9.305	9.322	-0.017		1318603	42.8		85.6	4607	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.305	9.322	-0.017	1.000	1543763	56.1			4041	
D 11 18O2 PFHxS										
403.0 > 84.0	9.341	9.358	-0.017		575394	38.4		81.3	2432	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.341	9.364	-0.023	1.000	401937	NC			1168	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.341	9.364	-0.023	1.000	401937	48.9				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.433	10.450	-0.017		1436383	42.1		84.1	5380	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.433	10.450	-0.017	1.000	1474139	51.1			1374	
413.0 > 169.0	10.433	10.450	-0.017	1.000	511709		2.88(0.00-0.00)		1005	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.433	10.457	-0.024	1.000	444139	NC			1618	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.433	10.457	-0.024	1.000	444139	49.3				
D 16 13C4 PFOS										
503.0 > 80.0	11.393	11.414	-0.021		691986	38.1		79.6	3094	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.393	11.417	-0.024	1.000	767227	54.5			354	
499.0 > 99.0	11.393	11.417	-0.024	1.000	394536		1.94(0.00-0.00)		1323	
D 17 13C5 PFNA										
468.0 > 423.0	11.415	11.434	-0.019		1208840	42.9		85.8	3370	
18 Perfluorononanoic acid										
463.0 > 419.0	11.415	11.439	-0.024	1.000	1062919	54.4			3617	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.224	12.249	-0.025	1.000	380394	NC			1433	
D 19 13C2 PFDA										
515.0 > 470.0	12.256	12.275	-0.019		1189272	41.5		83.1	5143	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.256	12.276	-0.020	1.000	1186169	50.8			4224	
D 23 13C8 FOSA										
506.0 > 78.0	12.794	12.810	-0.016		1917001	46.2		92.4	1321	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.794	12.812	-0.018	1.000	1802677	50.7			1040	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.930	12.949	-0.019	1.000	427181	NC			1632	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.930	12.949	-0.019	1.000	427181	53.2				
D 26 13C2 PFUnA										
565.0 > 520.0	12.982	13.000	-0.018		1413914	37.8		75.7	4613	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.982	13.000	-0.018	1.000	1354687	57.5			3853	
D 28 13C2 PFDoA										
615.0 > 570.0	13.589	13.609	-0.020		1717701	43.9		87.8	4484	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.589	13.611	-0.022	1.000	1440856	57.4			2048	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.056	14.083	-0.027	1.000	481182	NC			1600	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.110	14.130	-0.020	1.000	1733242	53.6			2403	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.553	14.571	-0.018	1.000	1078544	52.1			883	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.546	14.571	-0.025		1649978	46.0		91.9	6367	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.191	15.207	-0.016		2024385	47.0		93.9	5896	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.191	15.208	-0.017	1.000	2029338	52.5			2611	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.527	15.543	-0.016	1.000	1972635	51.7			2318	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_00016 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:59:01 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_012.d

Injection Date: 19-Feb-2016 17:58:06 Instrument ID: A6

Lims ID: ICV

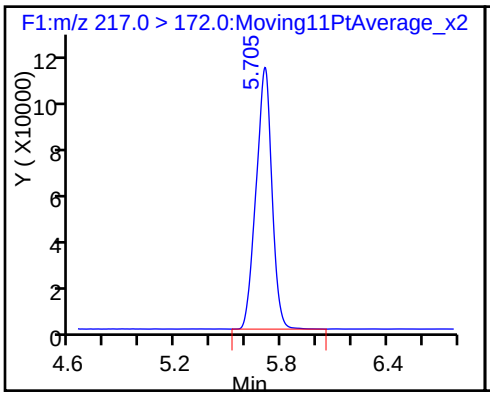
Client ID:

Operator ID: JRB ALS Bottle#: 16 Worklist Smp#: 10

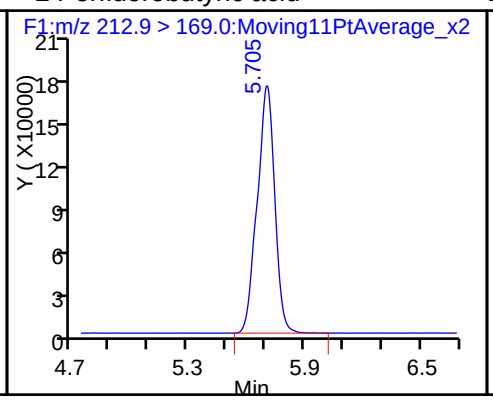
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

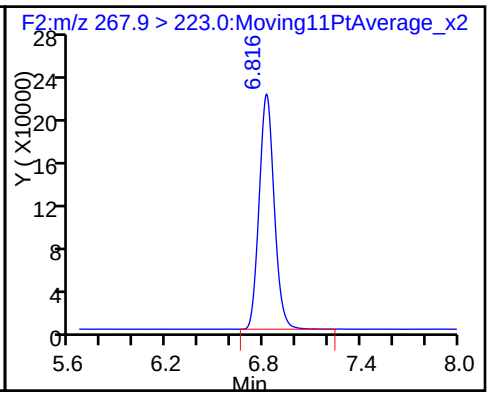
D 1 13C4 PFBA



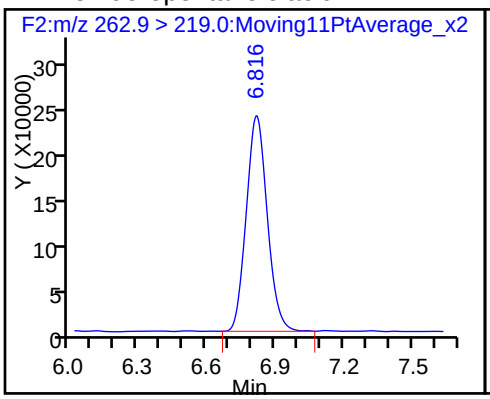
2 Perfluorobutyric acid



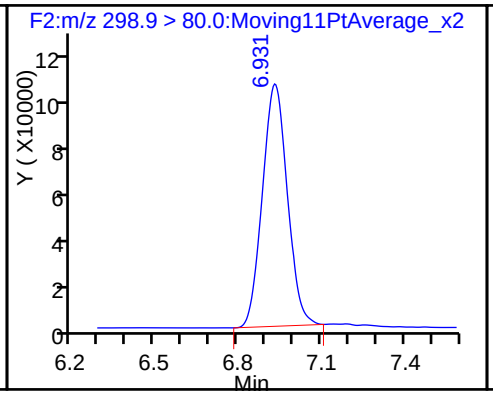
D 3 13C5-PFPeA



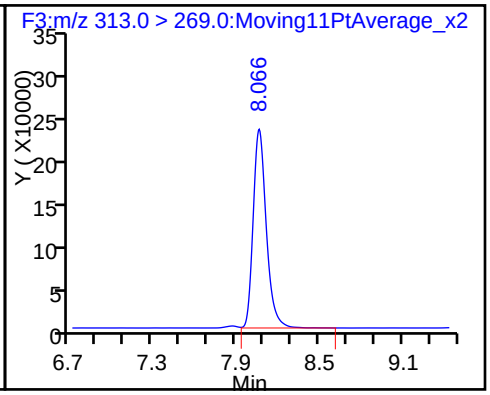
4 Perfluoropentanoic acid



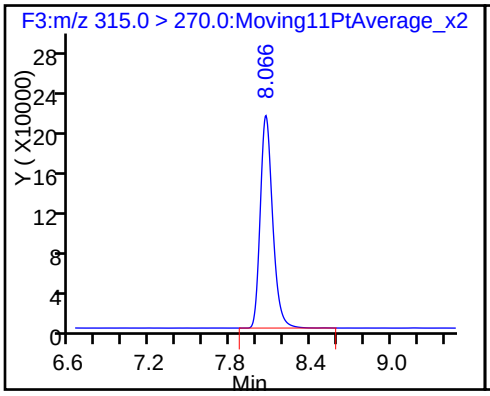
40 Perfluorobutanesulfonic acid



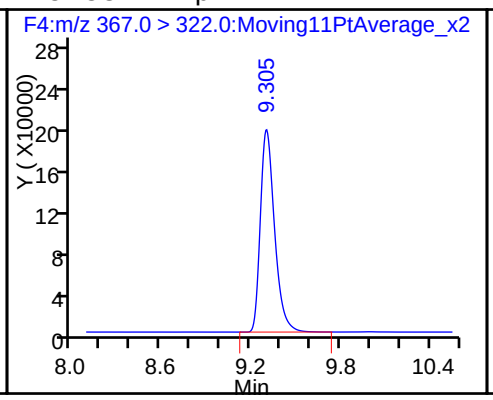
7 Perfluorohexanoic acid



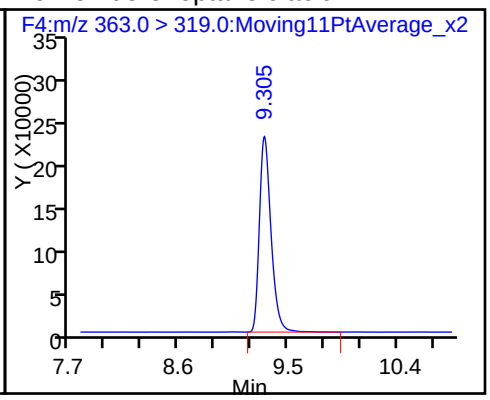
D 6 13C2 PFHxA



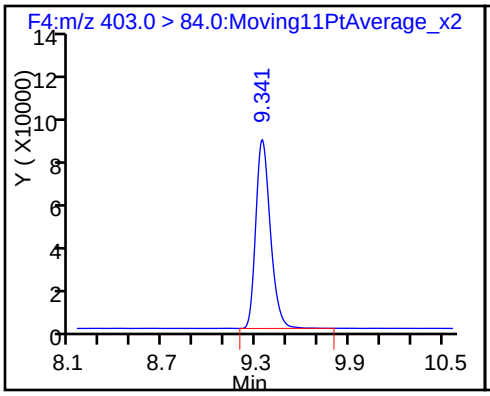
D 8 13C4-PFHpA



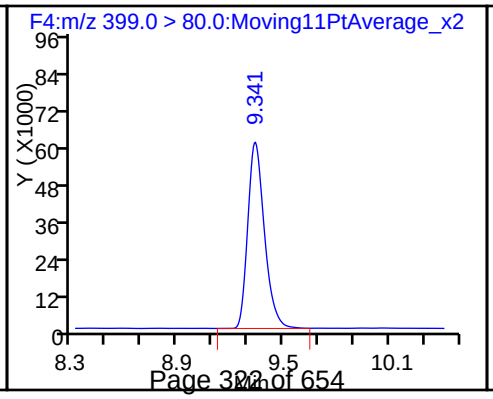
9 Perfluoroheptanoic acid



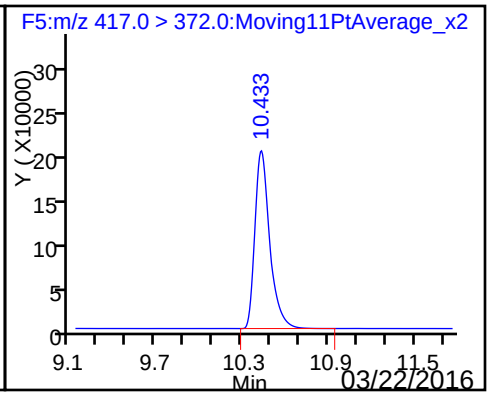
D 11 18O2 PFHxS



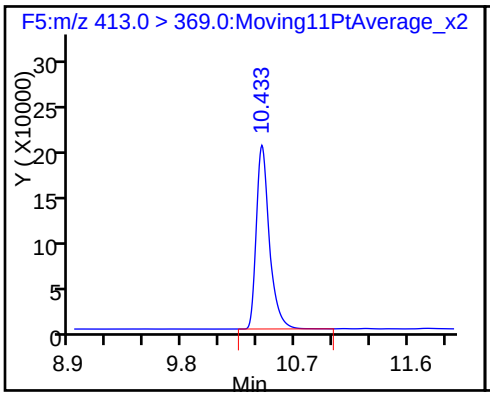
41 Perfluorohexanesulfonic acid



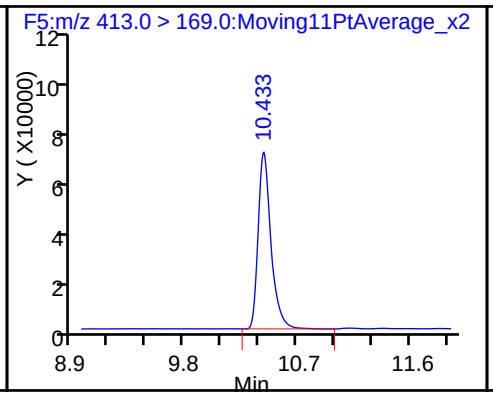
D 12 13C4 PFOA



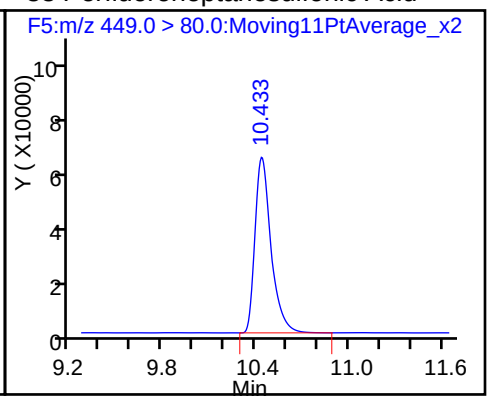
13 Perfluorooctanoic acid



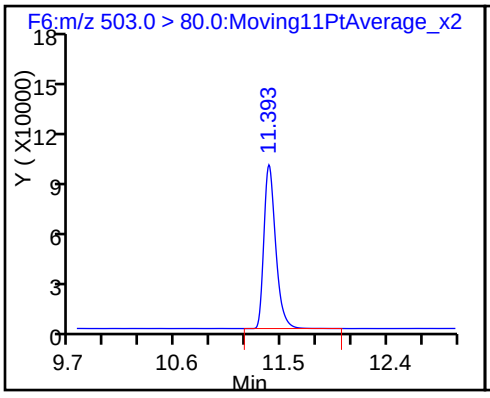
13 Perfluorooctanoic acid



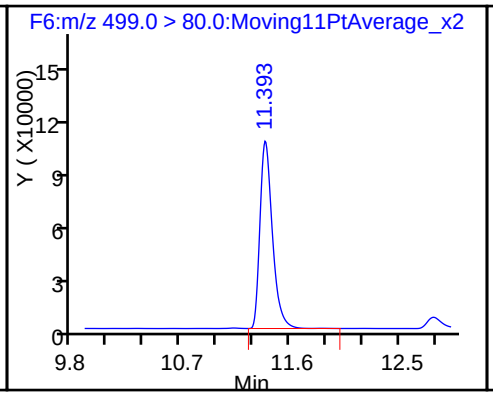
38 Perfluoroheptanesulfonic Acid



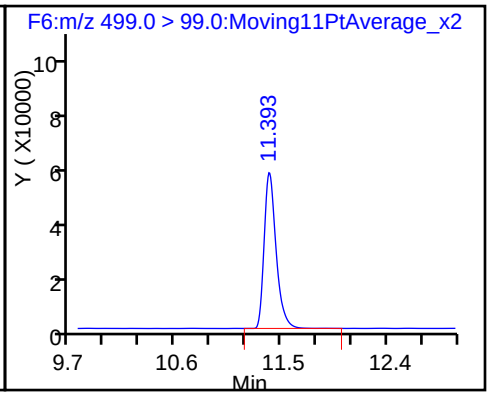
D 16 13C4 PFOS



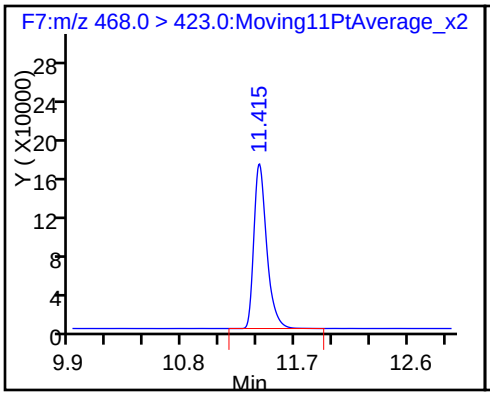
15 Perfluorooctane sulfonic acid



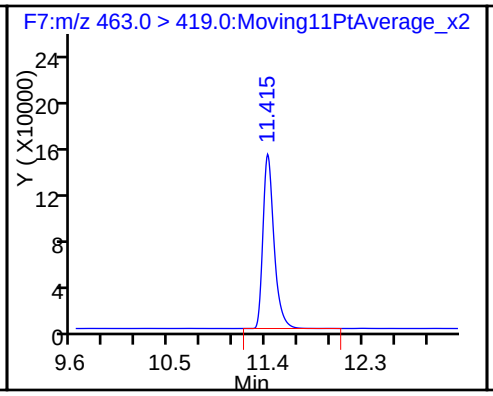
15 Perfluorooctane sulfonic acid



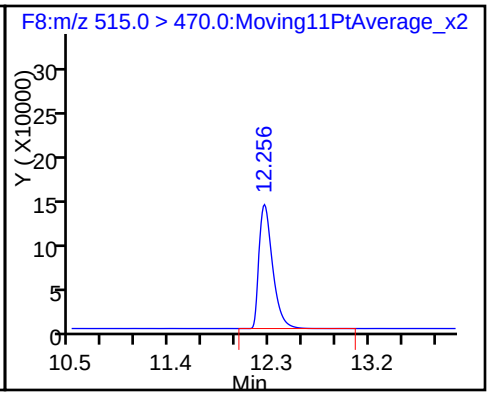
D 17 13C5 PFNA



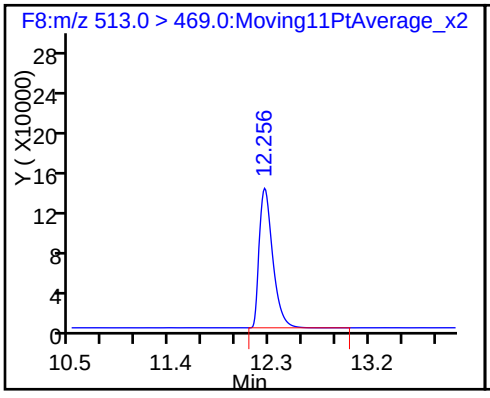
18 Perfluorononanoic acid



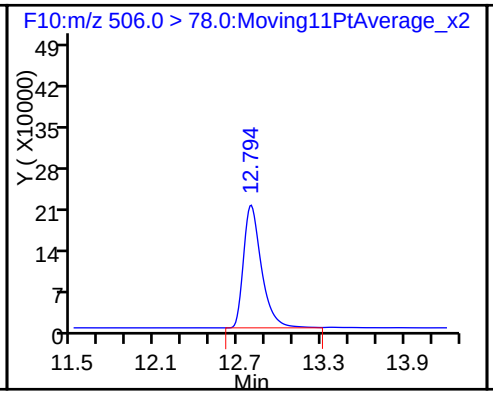
D 19 13C2 PFDA



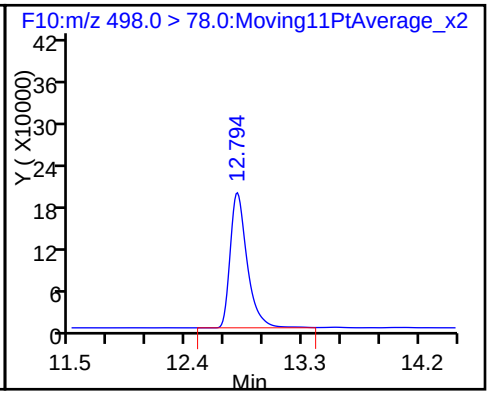
20 Perfluorodecanoic acid



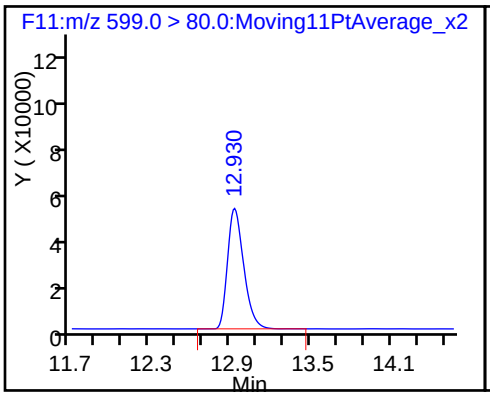
D 23 13C8 FOSA



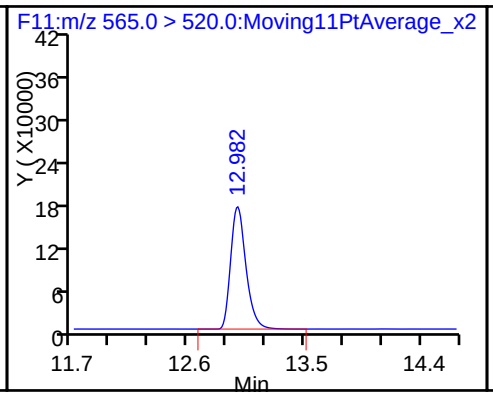
24 Perfluorooctane Sulfonamide



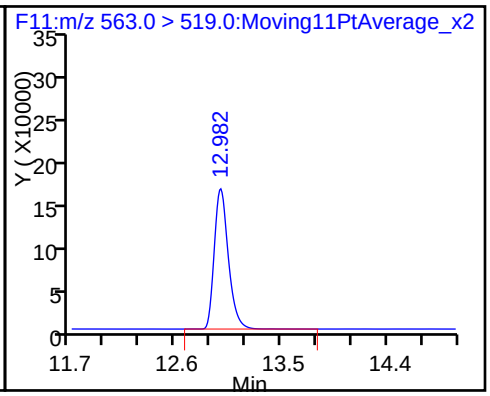
39 Perfluorodecane Sulfonic acid



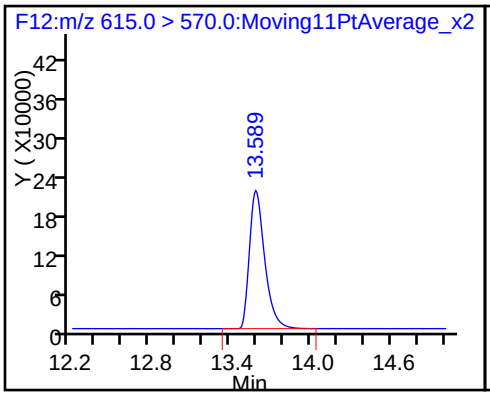
D 26 13C2 PFUnA



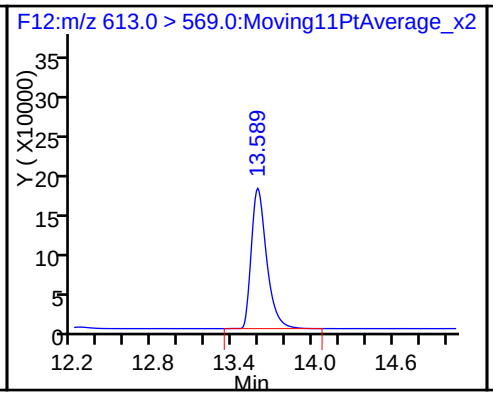
27 Perfluoroundecanoic acid



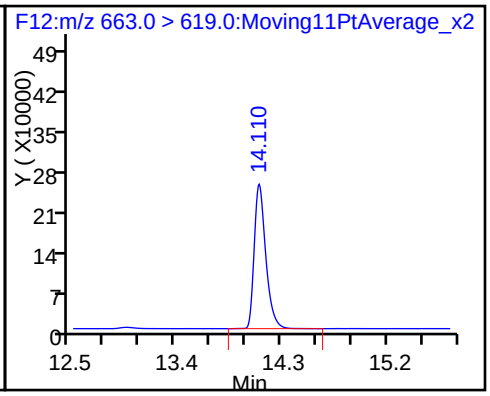
D 28 13C2 PFDoA



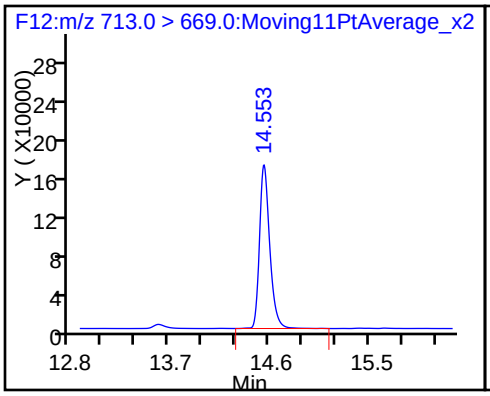
29 Perfluorododecanoic acid



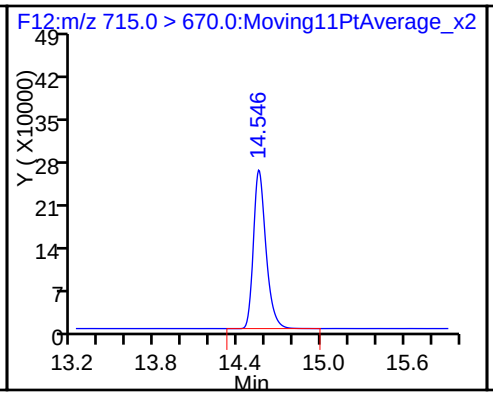
30 Perfluorotridecanoic acid



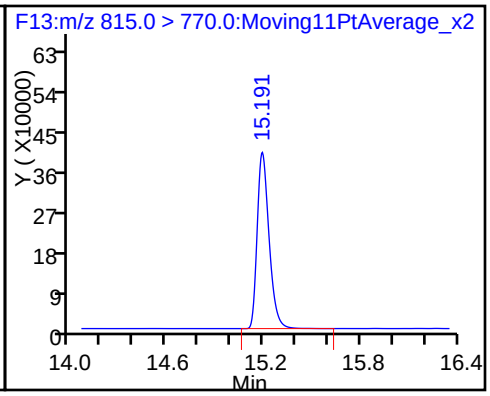
32 Perfluorotetradecanoic acid



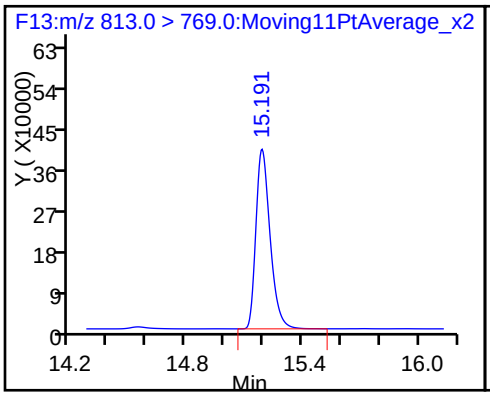
D 33 13C2-PFTeDA



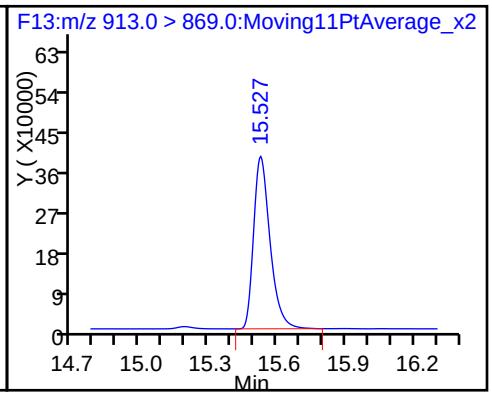
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Lab Sample ID: CCV 320-100906/43 Calibration Date: 02/20/2016 05:40

Instrument ID: A6 Calib Start Date: 02/19/2016 15:08

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/19/2016 17:15

Lab File ID: 19FEB2016A6A_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.304	1.434		22.0	20.0	10.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.043	1.028		19.7	20.0	-1.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9930	1.189		21.2	17.7	19.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.083	1.126		20.8	20.0	3.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.190		22.8	20.0	14.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.6753	0.7464		20.9	18.9	10.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.004	1.028		20.5	20.0	2.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.7230		22.3	19.0	17.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9724	1.073		21.1	19.1	10.4	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8075	0.7921		19.6	20.0	-1.9	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9104		18.3	20.0	-8.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9268	0.8822		19.0	20.0	-4.8	25.0
Perfluorodecane Sulfonic acid	L1ID		0.6729		23.6	19.3	22.2	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8914		21.0	20.0	4.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7311	0.8023		21.9	20.0	9.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9409	1.042		22.1	20.0	10.7	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.6163		20.2	20.0	0.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.126		18.4	20.0	-7.8	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.111	1.031		18.6	20.0	-7.1	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_045.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 20-Feb-2016 05:40:35 ALS Bottle#: 12 Worklist Smp#: 43
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 09:59:40 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: westendorfc Date: 22-Feb-2016 08:19:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.700	5.712	-0.012		739750	46.2		92.5	3474	
2 Perfluorobutyric acid										
212.9 > 169.0	5.697	5.715	-0.018	1.000	424275	22.0		110	916	
D 3 13C5-PFPeA										
267.9 > 223.0	6.805	6.827	-0.022		1587614	51.6		103	4733	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.805	6.828	-0.023	1.000	652654	19.7		98.5	158	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.920	6.939	-0.019	1.000	269562	NC			336	
298.9 > 99.0	6.920	6.939	-0.019	1.000	144355		1.87(0.00-0.00)		365	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.920	6.939	-0.019	1.000	269562	21.2		120		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.049	8.078	-0.029	1.000	603219	20.8		104	1219	
D 6 13C2 PFHxA										
315.0 > 270.0	8.049	8.080	-0.031		1339541	47.3		94.6	6869	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.125	8.158	-0.033	0.872	203419	NC			674	
D 8 13C4-PFHpA										
367.0 > 322.0	9.288	9.322	-0.034		1454678	47.2		94.4	6491	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.288	9.322	-0.034	1.000	692643	22.8		114	1501	
D 11 18O2 PFHxS										
403.0 > 84.0	9.323	9.358	-0.035		606393	40.5		85.7	2799	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.317	9.364	-0.047	1.000	181033	NC			433	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.317	9.364	-0.047	1.000	181033	20.9		111		
D 12 13C4 PFOA										
417.0 > 372.0	10.412	10.450	-0.038		1545984	45.3		90.6	5776	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.412	10.450	-0.038	1.000	635798	20.5		102	696	
413.0 > 169.0	10.412	10.450	-0.038	1.000	210818		3.02(0.00-0.00)		628	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.457	-0.038	1.000	200818	NC			691	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.419	10.457	-0.038	1.000	200818	22.3		117		
D 16 13C4 PFOS										
503.0 > 80.0	11.377	11.414	-0.037		697291	38.3		80.2	2392	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.377	11.417	-0.040	1.000	299312	21.1		110	470	
499.0 > 99.0	11.377	11.417	-0.040	1.000	141830		2.11(0.00-0.00)		479	
D 17 13C5 PFNA										
468.0 > 423.0	11.393	11.434	-0.041		1345222	47.7		95.4	4165	
18 Perfluorononanoic acid										
463.0 > 419.0	11.400	11.439	-0.039	1.000	426205	19.6		98.1	1868	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.203	12.249	-0.046	1.000	178226	NC			594	
D 19 13C2 PFDA										
515.0 > 470.0	12.234	12.275	-0.041		1304985	45.6		91.2	4599	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.234	12.276	-0.042	1.000	475208	18.3		91.6	1260	
D 23 13C8 FOSA										
506.0 > 78.0	12.783	12.810	-0.027		1591012	38.3		76.7	1051	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.783	12.812	-0.029	1.000	561444	19.0		95.2	1156	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.918	12.949	-0.031	1.000	189262	NC			962	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.918	12.949	-0.031	1.000	189262	23.6		122		
D 26 13C2 PFUnA										
565.0 > 520.0	12.960	13.000	-0.040		1676629	44.9		89.7	6651	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.960	13.000	-0.040	1.000	597798	21.0		105	1584	
D 28 13C2 PFDoA										
615.0 > 570.0	13.578	13.609	-0.031		1825247	46.7		93.3	7049	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.578	13.611	-0.033	1.000	585761	21.9		110	852	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.039	14.083	-0.044	1.000	191566	NC			863	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.093	14.130	-0.037	1.000	760506	22.1		111	1212	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.539	14.571	-0.032	1.000	449980	20.2		101	341	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 33 13C2-PFTeDA										
715.0 > 670.0	14.539	14.571	-0.032		1556683	43.4		86.7	5943	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.177	15.207	-0.030		1775802	41.2		82.4	6748	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.177	15.208	-0.031	1.000	822211	18.4		92.2	1559	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.514	15.543	-0.029	1.000	753047	18.6		92.9	1332	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 09:59:40 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_045.d

Injection Date: 20-Feb-2016 05:40:35 Instrument ID: A6

Lims ID: CCV L4

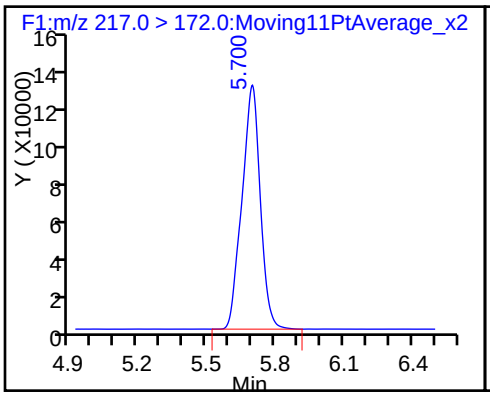
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 43

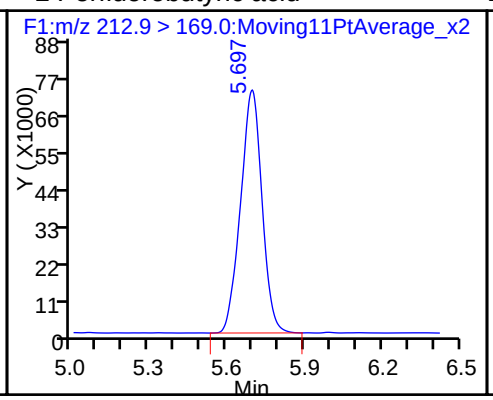
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

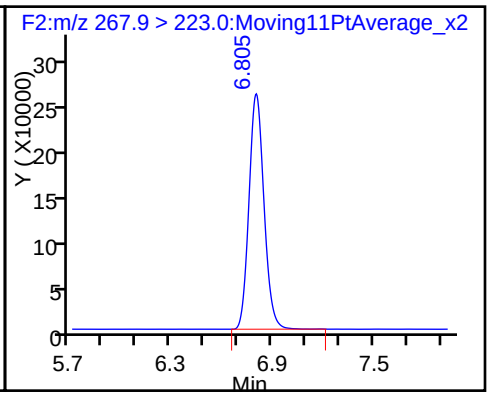
D 1 13C4 PFBA



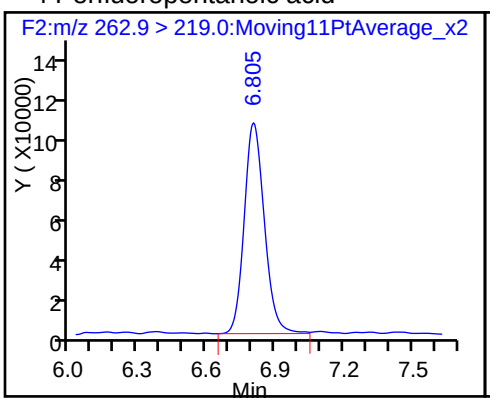
2 Perfluorobutyric acid



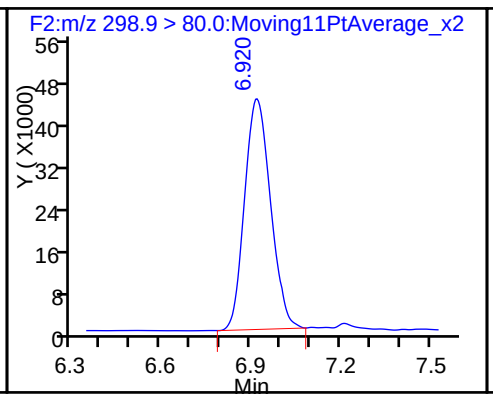
D 3 13C5-PFPeA



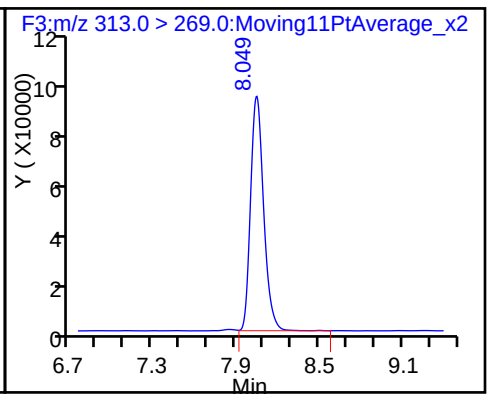
4 Perfluoropentanoic acid



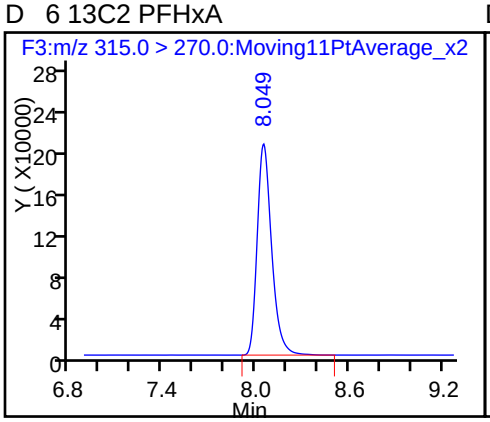
40 Perfluorobutanesulfonic acid



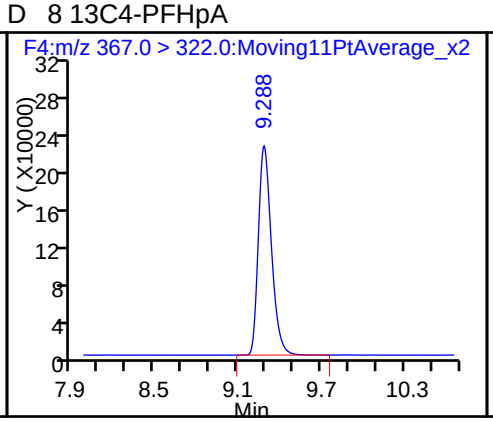
7 Perfluorohexanoic acid



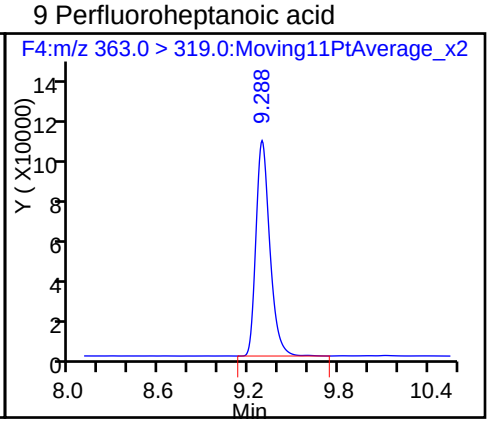
D 6 13C2 PFHxA



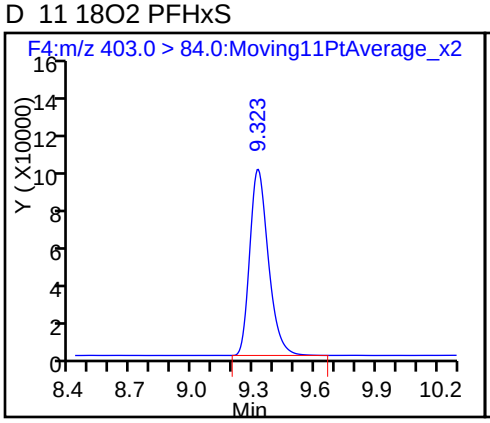
D 8 13C4-PFHpA



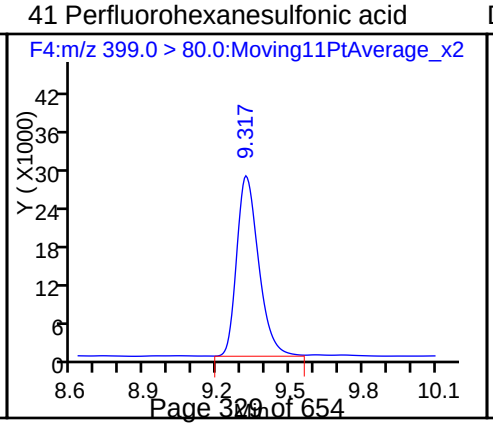
9 Perfluoroheptanoic acid



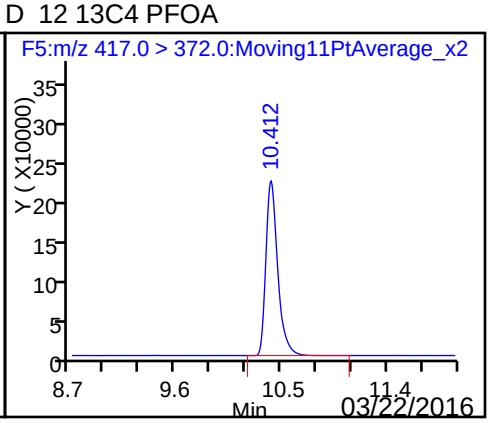
D 11 18O2 PFHxS



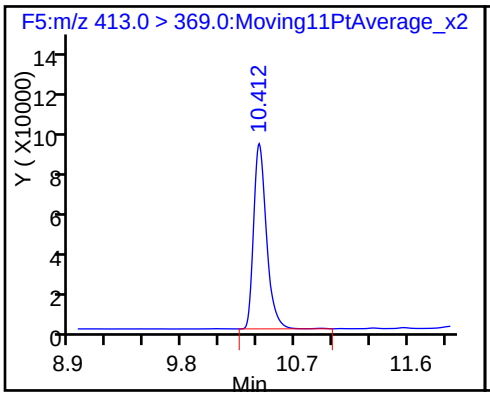
41 Perfluorohexanesulfonic acid



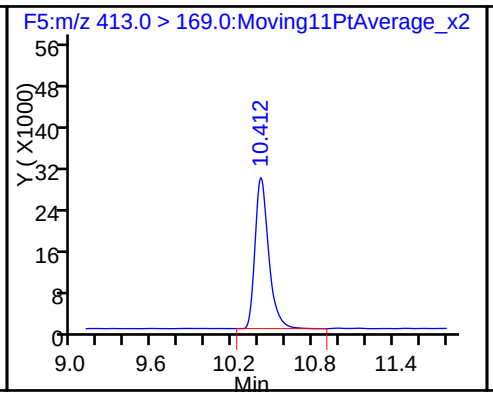
D 12 13C4 PFOA



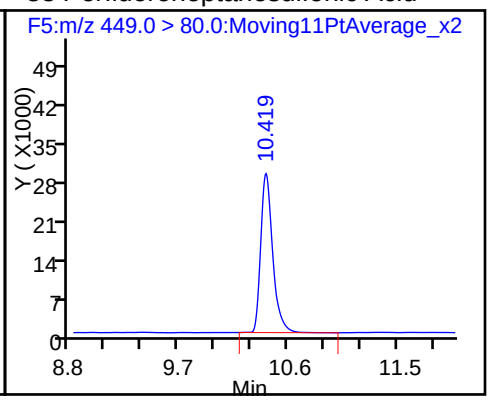
13 Perfluorooctanoic acid



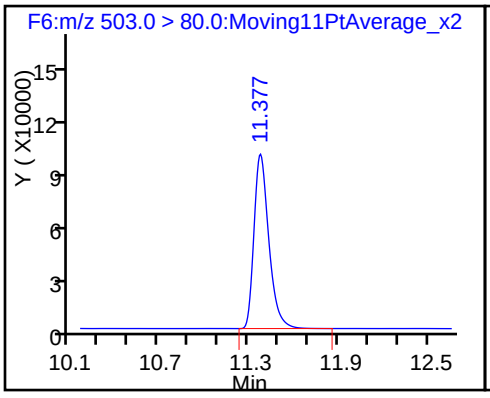
13 Perfluorooctanoic acid



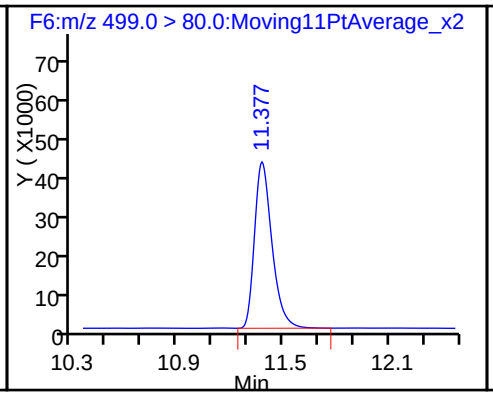
38 Perfluoroheptanesulfonic Acid



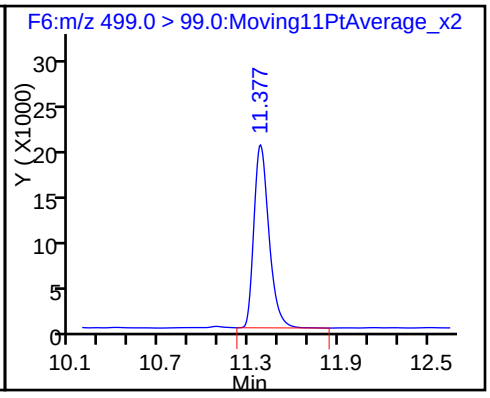
D 16 13C4 PFOS



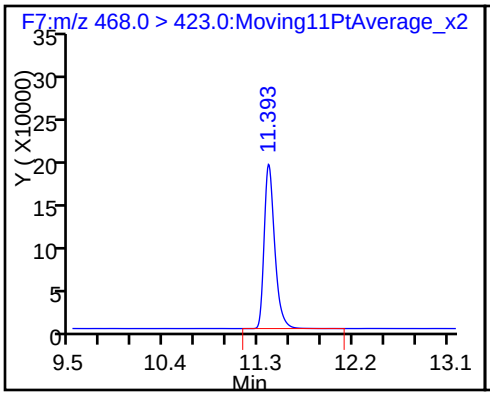
15 Perfluorooctane sulfonic acid



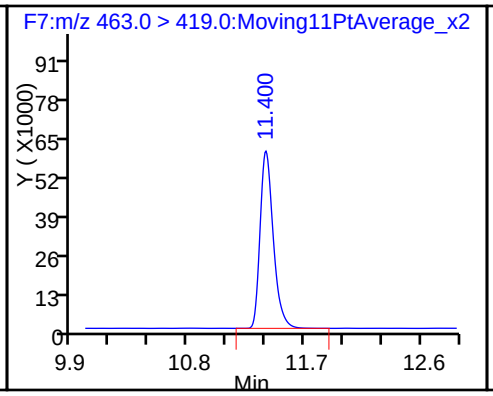
15 Perfluorooctane sulfonic acid



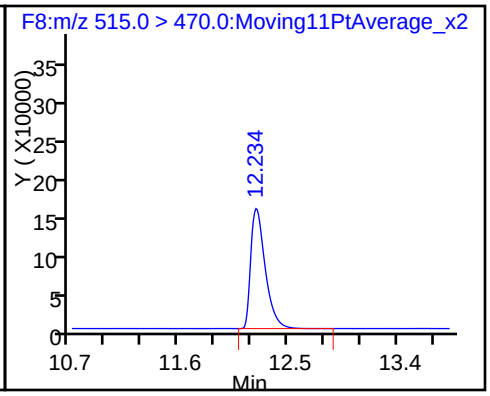
D 17 13C5 PFNA



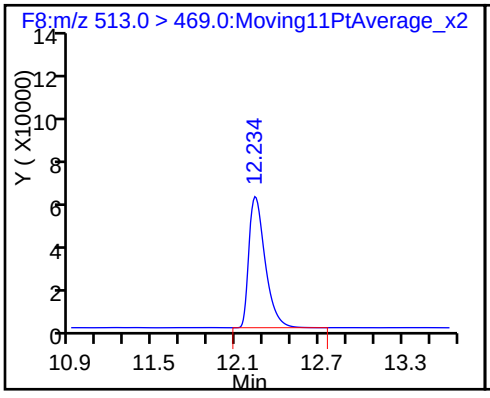
18 Perfluorononanoic acid



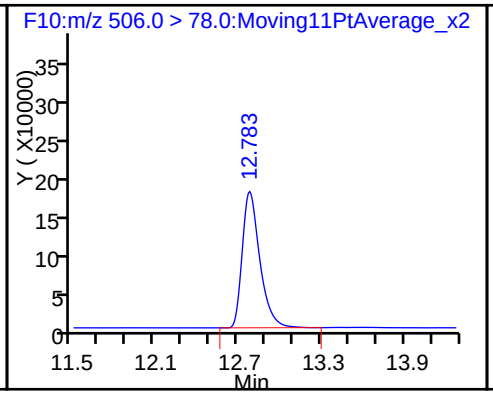
D 19 13C2 PFDA



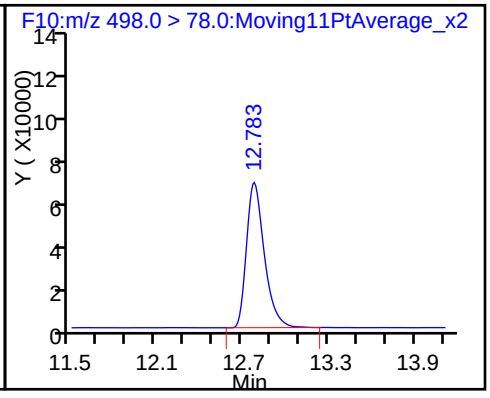
20 Perfluorodecanoic acid



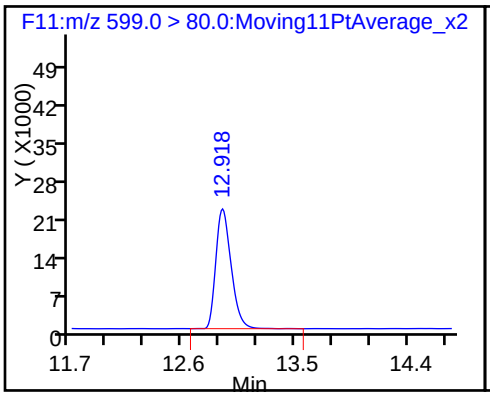
D 23 13C8 FOSA



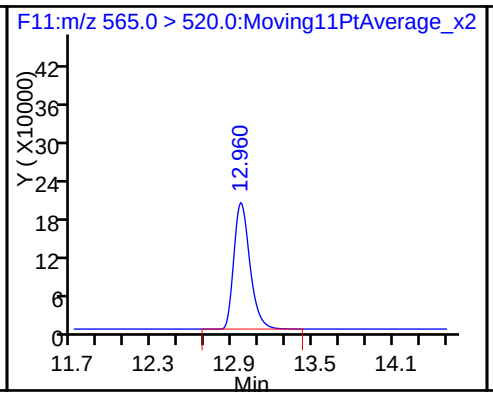
24 Perfluorooctane Sulfonamide



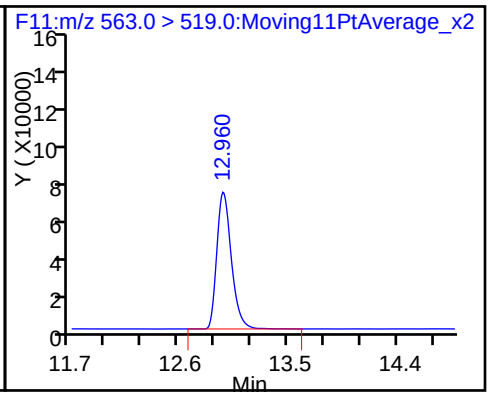
39 Perfluorodecane Sulfonic acid



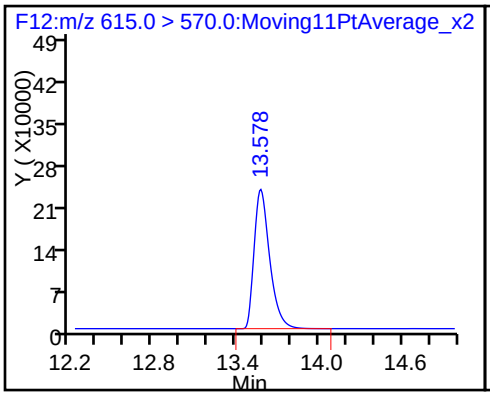
D 26 13C2 PFUnA



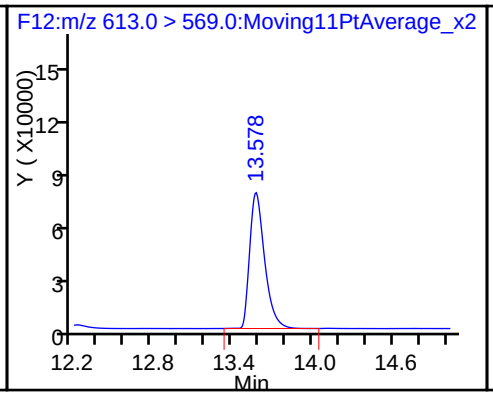
27 Perfluoroundecanoic acid



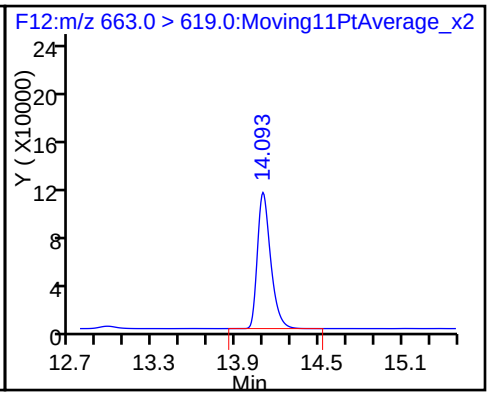
D 28 13C2 PFDoA



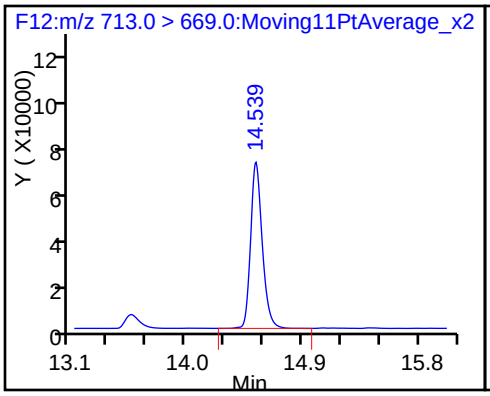
29 Perfluorododecanoic acid



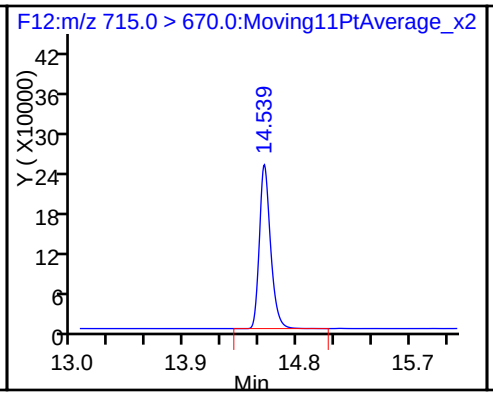
30 Perfluorotridecanoic acid



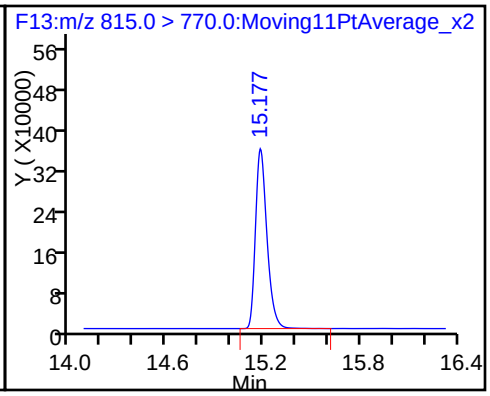
32 Perfluorotetradecanoic acid



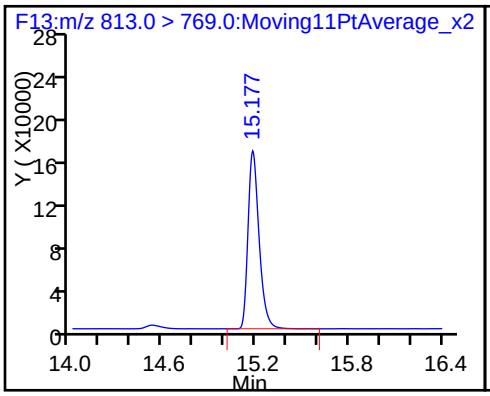
D 33 13C2-PFTeDA



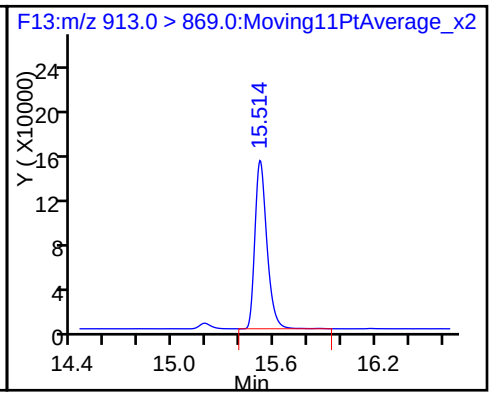
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Lab Sample ID: CCV 320-100906/54 Calibration Date: 02/20/2016 09:34

Instrument ID: A6 Calib Start Date: 02/19/2016 15:08

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/19/2016 17:15

Lab File ID: 19FEB2016A6A_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.304	1.412		54.1	50.0	8.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.043	0.9755		46.7	50.0	-6.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9930	1.104		49.1	44.2	11.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.083	1.144		52.8	50.0	5.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.018		48.8	50.0	-2.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.6753	0.7199		50.4	47.3	6.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.004	1.000		49.8	50.0	-0.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.6299		48.2	47.6	1.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9724	1.010		49.6	47.8	3.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8075	0.8407		52.1	50.0	4.1	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.010		51.5	50.0	2.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9268	0.8877		47.9	50.0	-4.2	25.0
Perfluorodecane Sulfonic acid	L1ID		0.6249		54.3	48.2	12.7	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.8572		51.4	50.0	2.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7311	0.8069		55.2	50.0	10.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9409	1.037		55.1	50.0	10.2	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.6323		52.5	50.0	5.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.064		47.0	50.0	-5.9	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.111	1.025		46.1	50.0	-7.7	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_056.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 20-Feb-2016 09:34:04 ALS Bottle#: 13 Worklist Smp#: 54
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 10:18:05 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.696	5.712	-0.016		735784	46.0		92.0	2562	
2 Perfluorobutyric acid										
212.9 > 169.0	5.696	5.715	-0.019	1.000	1038956	54.1		108	3162	
D 3 13C5-PFPeA										
267.9 > 223.0	6.800	6.827	-0.027		1596544	51.9		104	6136	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.805	6.828	-0.023	1.000	1557494	46.7		93.5	340	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.920	6.939	-0.019	1.000	634088	NC			805	
298.9 > 99.0	6.915	6.939	-0.024	0.999	340139		1.86(0.00-0.00)		723	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.920	6.939	-0.019	1.000	634088	49.1		111		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.049	8.078	-0.029	1.000	1592823	52.8		106	3176	
D 6 13C2 PFHxA										
315.0 > 270.0	8.049	8.080	-0.031		1392598	49.2		98.3	5464	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.131	8.158	-0.027	0.872	444944	NC			1556	
D 8 13C4-PFHpA										
367.0 > 322.0	9.288	9.322	-0.034		1592041	51.6		103	6480	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.288	9.322	-0.034	1.000	1619972	48.8		97.6	3886	
D 11 18O2 PFHxS										
403.0 > 84.0	9.323	9.358	-0.035		614918	41.1		86.9	2481	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.323	9.364	-0.041	1.000	442664	NC			1286	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.323	9.364	-0.041	1.000	442664	50.4		107		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.412	10.450	-0.038		1618742	47.4		94.8	5890	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.412	10.450	-0.038	1.000	1618258	49.8		99.6	2042	
413.0 > 169.0	10.419	10.450	-0.031	1.001	515853		3.14(0.00-0.00)		1384	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.457	-0.038	1.000	435358	NC			1348	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.419	10.457	-0.038	1.000	435358	48.2		101		
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		694093	38.2		79.9	2463	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.385	11.417	-0.032	1.000	700885	49.6		104	445	
499.0 > 99.0	11.385	11.417	-0.032	1.000	365929		1.92(0.00-0.00)		1939	
D 17 13C5 PFNA										
468.0 > 423.0	11.400	11.434	-0.034		1363986	48.4		96.8	6799	
18 Perfluorononanoic acid										
463.0 > 419.0	11.400	11.439	-0.039	1.000	1146645	52.1		104	3094	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.204	12.249	-0.045	1.000	413024	NC			1920	
D 19 13C2 PFDA										
515.0 > 470.0	12.245	12.275	-0.030		1287906	45.0		90.0	3873	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.245	12.276	-0.031	1.000	1300889	51.5		103	4985	
D 23 13C8 FOSA										
506.0 > 78.0	12.783	12.810	-0.027		1825198	44.0		88.0	3566	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.783	12.812	-0.029	1.000	1620215	47.9		95.8	1429	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.919	12.949	-0.030	1.000	437365	NC			1584	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.919	12.949	-0.030	1.000	437365	54.3		113		
D 26 13C2 PFUnA										
565.0 > 520.0	12.971	13.000	-0.029		1701977	45.5		91.1	5975	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.971	13.000	-0.029	1.000	1458974	51.4		103	4237	
D 28 13C2 PFDoA										
615.0 > 570.0	13.578	13.609	-0.031		1913739	48.9		97.8	4707	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.578	13.611	-0.033	1.000	1544099	55.2		110	2102	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.048	14.083	-0.035	1.000	468581	NC			1591	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.102	14.130	-0.028	1.000	1985226	55.1		110	1838	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.546	14.571	-0.025	1.000	1209996	52.5		105	605	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.546	14.571	-0.025		1833393	51.1		102	6312	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.180	15.207	-0.027		2004655	46.5		93.0	6714	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.180	15.208	-0.028	1.000	2035836	47.0		94.1	2224	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.517	15.543	-0.026	1.000	1961521	46.1		92.3	1793	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 10:18:05 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_056.d

Injection Date: 20-Feb-2016 09:34:04 Instrument ID: A6

Lims ID: CCV L5

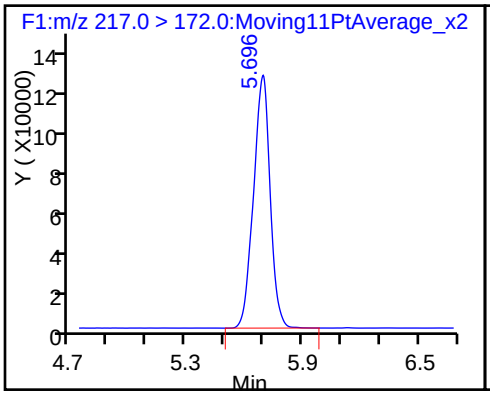
Client ID:

Operator ID: JRB ALS Bottle#: 13 Worklist Smp#: 54

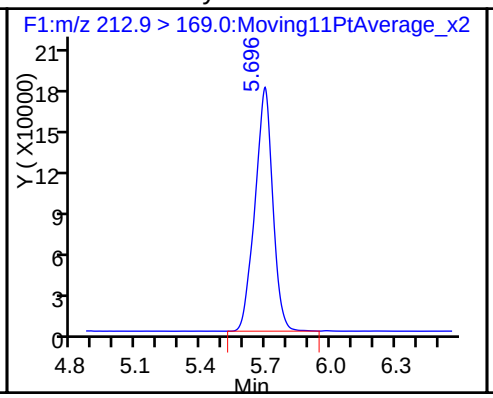
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

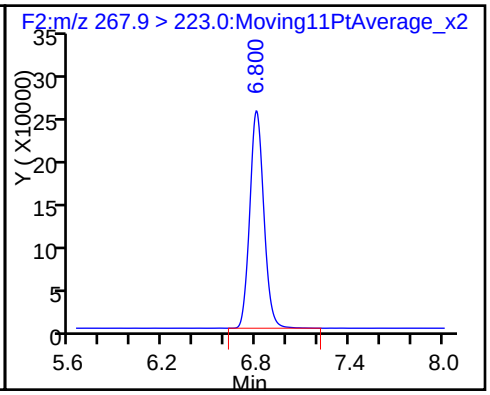
D 1 13C4 PFBA



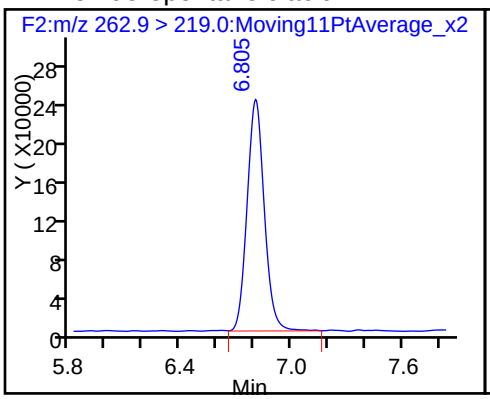
2 Perfluorobutyric acid



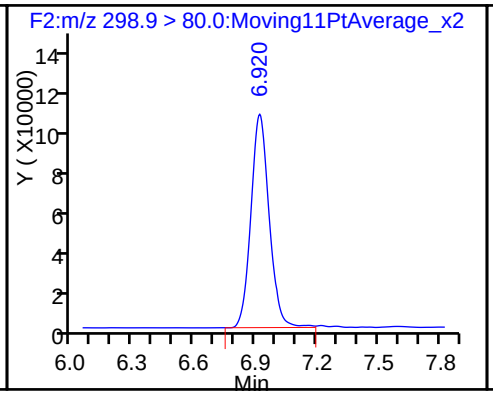
D 3 13C5-PFPeA



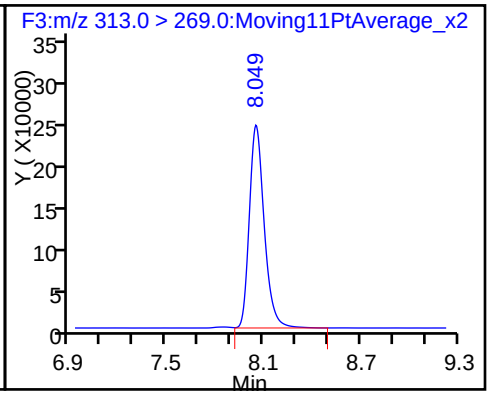
4 Perfluoropentanoic acid



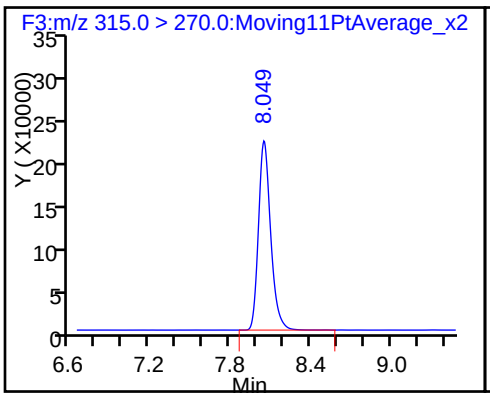
40 Perfluorobutanesulfonic acid



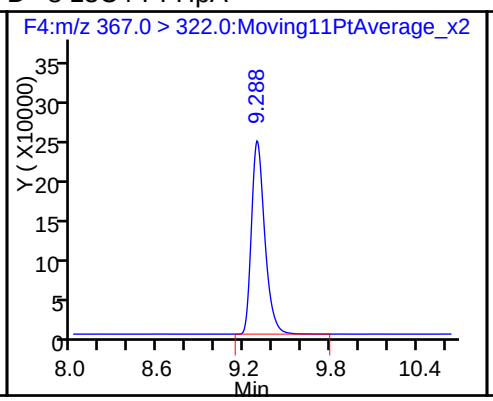
7 Perfluorohexanoic acid



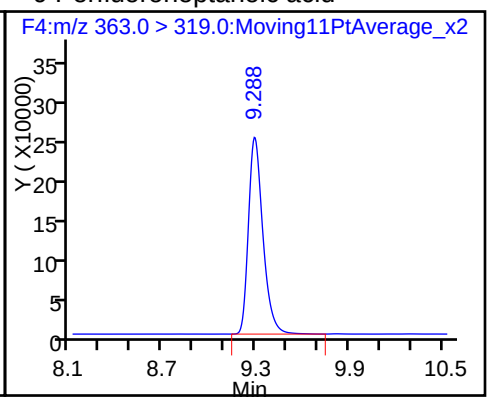
D 6 13C2 PFHxA



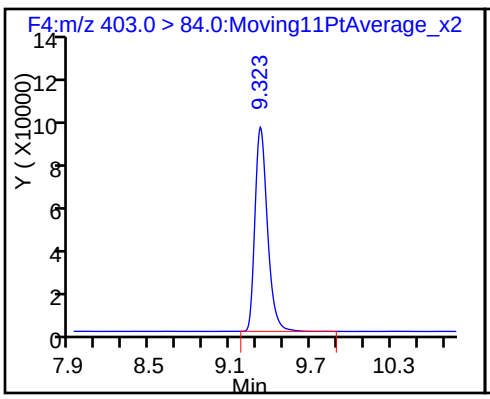
D 8 13C4-PFHpA



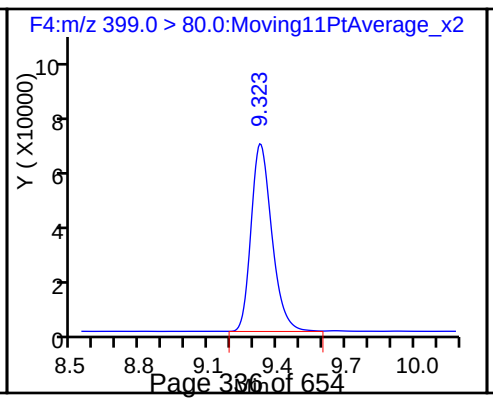
9 Perfluoroheptanoic acid



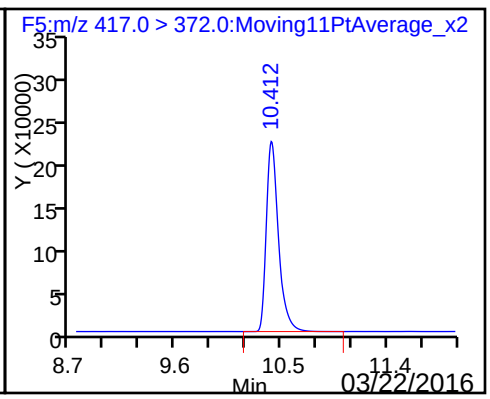
D 11 18O2 PFHxS



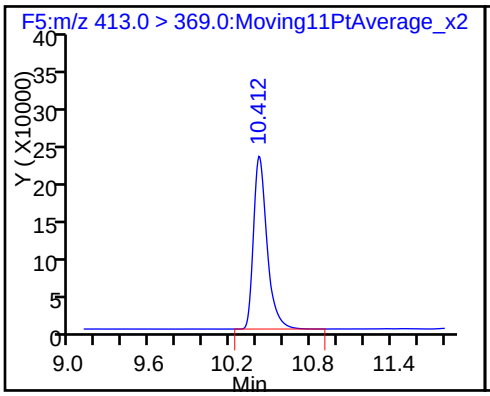
41 Perfluorohexanesulfonic acid



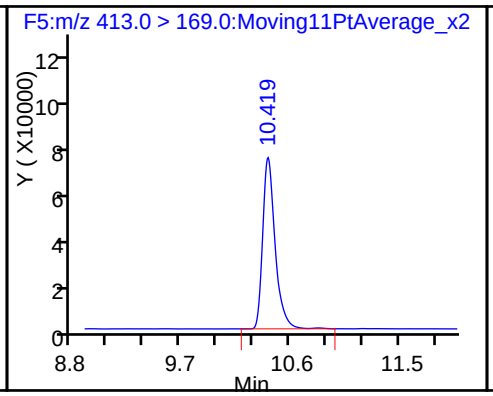
D 12 13C4 PFOA



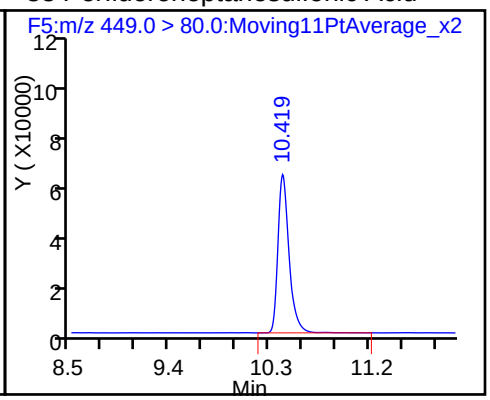
13 Perfluorooctanoic acid



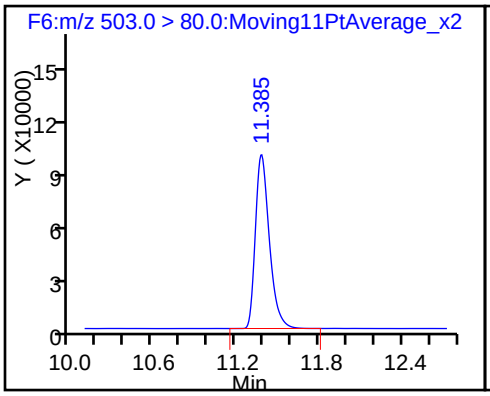
13 Perfluorooctanoic acid



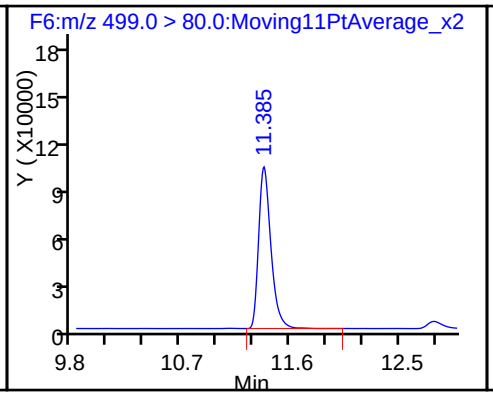
38 Perfluoroheptanesulfonic Acid



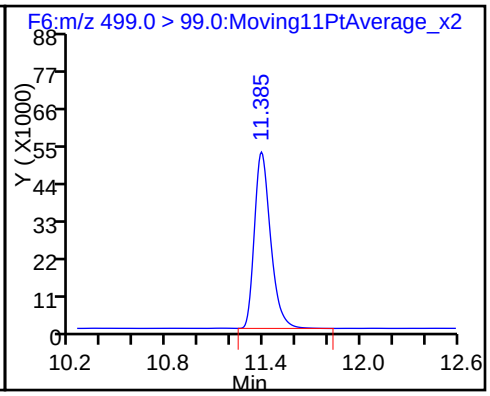
D 16 13C4 PFOS



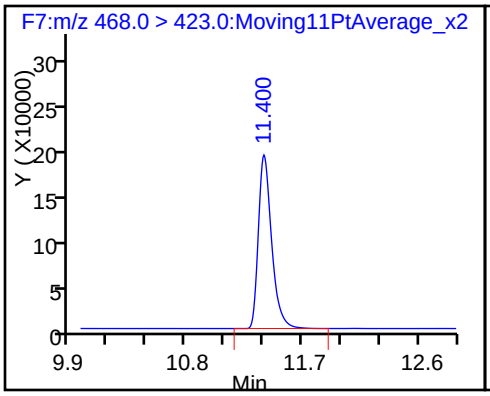
15 Perfluorooctane sulfonic acid



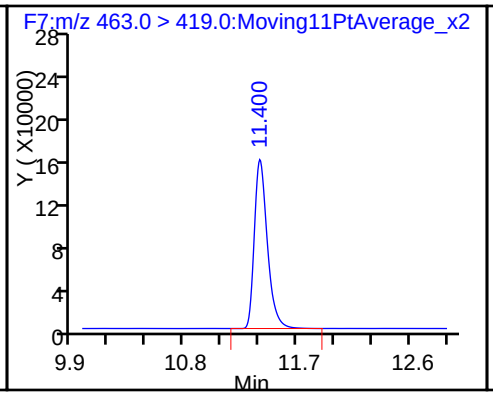
15 Perfluorooctane sulfonic acid



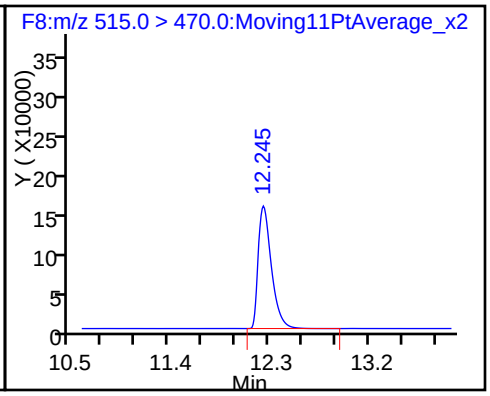
D 17 13C5 PFNA



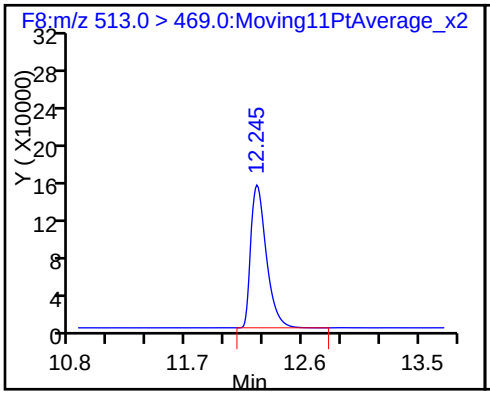
18 Perfluorononanoic acid



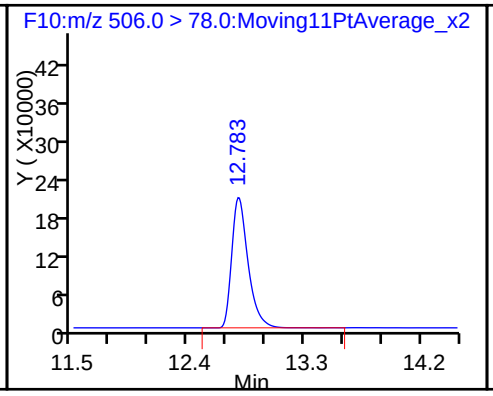
D 19 13C2 PFDA



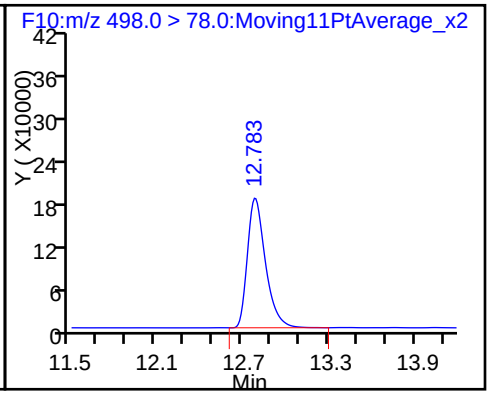
20 Perfluorodecanoic acid



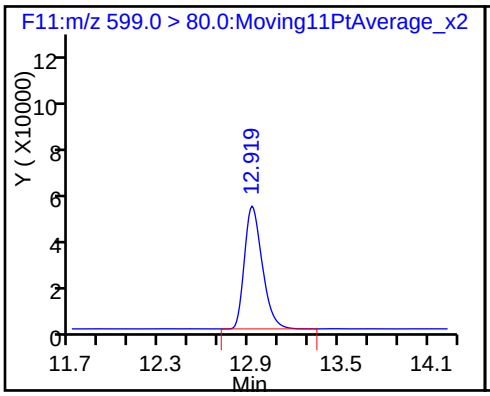
D 23 13C8 FOSA



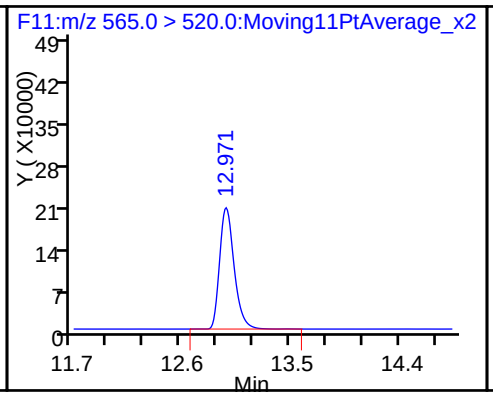
24 Perfluorooctane Sulfonamide



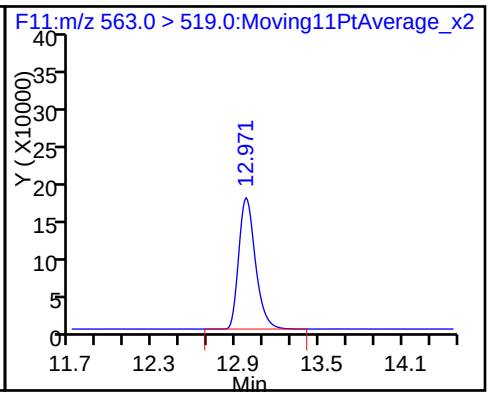
39 Perfluorodecane Sulfonic acid



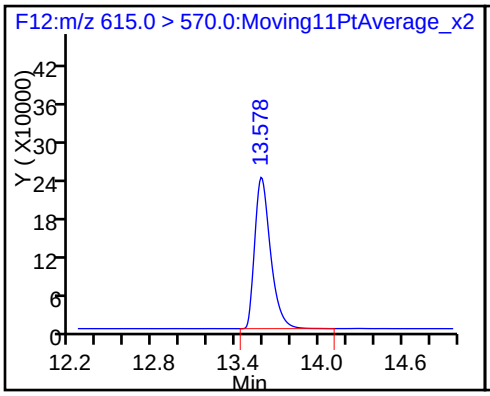
D 26 13C2 PFUnA



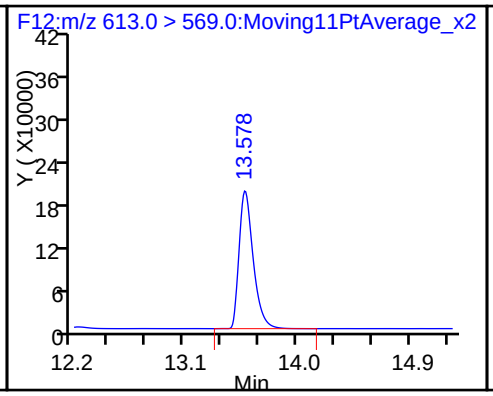
27 Perfluoroundecanoic acid



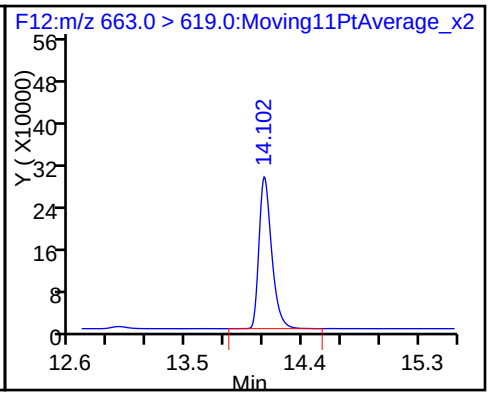
D 28 13C2 PFDoA



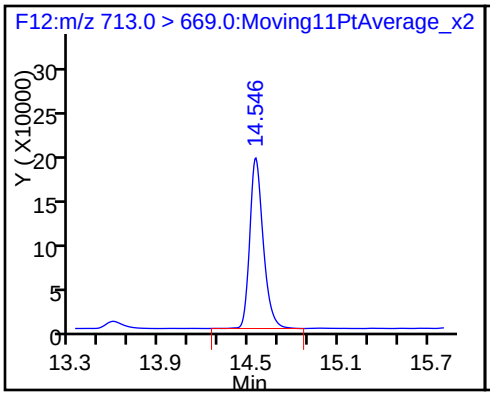
29 Perfluorododecanoic acid



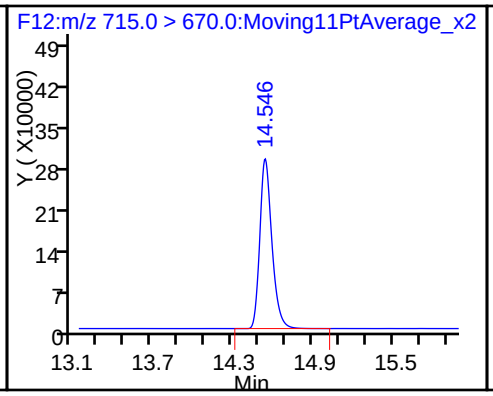
30 Perfluorotridecanoic acid



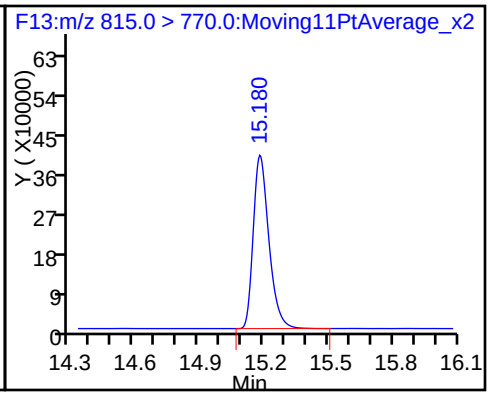
32 Perfluorotetradecanoic acid



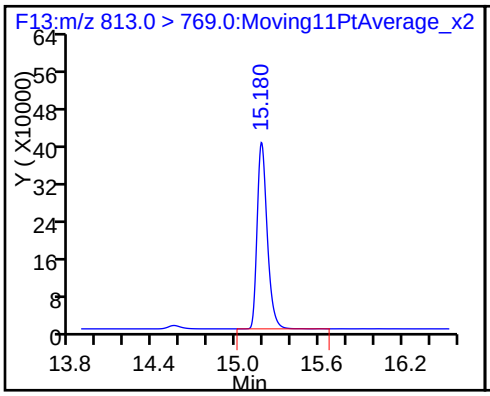
D 33 13C2-PFTeDA



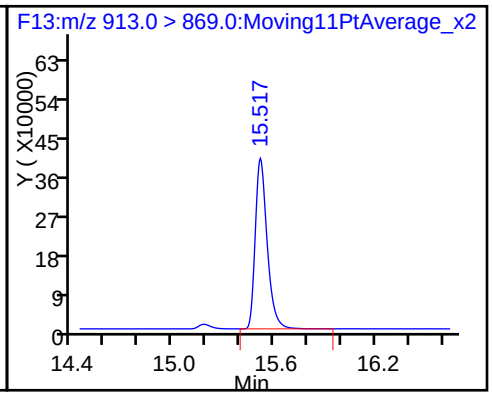
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Lab Sample ID: CCV 320-100906/65 Calibration Date: 02/20/2016 13:27

Instrument ID: A6 Calib Start Date: 02/19/2016 15:08

GC Column: Acquity ID: 2.10(mm) Calib End Date: 02/19/2016 17:15

Lab File ID: 19FEB2016A6A_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.304	1.413		21.7	20.0	8.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.043	1.005		19.3	20.0	-3.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.9930	0.9556		17.0	17.7	-3.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.083	1.152		21.3	20.0	6.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.043	1.149		22.0	20.0	10.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	0.6753	0.6952		19.5	18.9	2.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.6011		18.6	19.0	-2.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.004	0.9799		19.5	20.0	-2.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9724	0.9873		19.4	19.1	1.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8075	0.9268		23.0	20.0	14.8	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9888		19.9	20.0	-0.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9268	0.9281		20.0	20.0	0.1	25.0
Perfluorodecane Sulfonic acid	L1ID		0.5449		19.1	19.3	-0.8	25.0
Perfluoroundecanoic acid (PFUnA)	L1ID		0.9003		21.2	20.0	5.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7311	0.7269		19.9	20.0	-0.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9409	0.9810		20.9	20.0	4.3	25.0
Perfluorotetradecanoic acid (PFTeA)	L2ID		0.5337		17.4	20.0	-12.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.202		19.9	20.0	-0.7	25.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.111	0.9712		17.5	20.0	-12.6	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_067.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 20-Feb-2016 13:27:32 ALS Bottle#: 12 Worklist Smp#: 65
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6
Sublist: chrom-PFAC_A6*sub5

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 11:18:21 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: westendorfc Date: 21-Feb-2016 13:19:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.699	5.712	-0.013		844637	52.8		106	3042	
2 Perfluorobutyric acid										
212.9 > 169.0	5.699	5.715	-0.016	1.000	477412	21.7		108	1440	
D 3 13C5-PFPeA										
267.9 > 223.0	6.804	6.827	-0.023		1885401	61.3		123	5167	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.804	6.828	-0.024	1.000	757574	19.3		96.3	163	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.929	6.939	-0.010	1.000	277743	NC			326	
298.9 > 99.0	6.920	6.939	-0.019	0.999	153377		1.81(0.00-0.00)		222	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.929	6.939	-0.010	1.000	277743	17.0		96.2		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.055	8.078	-0.023	1.000	730390	21.3		106	1455	
D 6 13C2 PFHxA										
315.0 > 270.0	8.055	8.080	-0.025		1585078	56.0		112	5137	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.131	8.158	-0.027	0.872	217669	NC			1096	
D 8 13C4-PFHpA										
367.0 > 322.0	9.288	9.322	-0.034		1821976	59.1		118	6569	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.294	9.322	-0.028	1.000	837547	22.0		110	3808	
D 11 18O2 PFHxS										
403.0 > 84.0	9.329	9.358	-0.029		777616	52.0		110	3271	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.329	9.364	-0.035	1.000	216237	NC			848	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.329	9.364	-0.035	1.000	216237	19.5		103		
D 12 13C4 PFOA										
417.0 > 372.0	10.419	10.450	-0.031		1951511	57.2		114	10200	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.419	10.450	-0.031	1.000	764939	19.5		97.6	803	
413.0 > 169.0	10.419	10.450	-0.031	1.000	285474		2.68(0.00-0.00)		705	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.457	-0.038	1.000	212630	NC			693	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.419	10.457	-0.038	1.000	212630	18.6		97.5		
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		888097	48.8		102	3468	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.385	11.417	-0.032	1.000	350731	19.4		102	295	
499.0 > 99.0	11.385	11.417	-0.032	1.000	168205		2.09(0.00-0.00)		725	
D 17 13C5 PFNA										
468.0 > 423.0	11.408	11.434	-0.026		1605407	56.9		114	7343	
18 Perfluorononanoic acid										
463.0 > 419.0	11.408	11.439	-0.031	1.000	595129	23.0		115	1413	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.214	12.249	-0.035	1.000	216600	NC			797	
D 19 13C2 PFDA										
515.0 > 470.0	12.245	12.275	-0.030		1606537	56.1		112	3436	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.245	12.276	-0.031	1.000	635386	19.9		99.6	1693	
D 23 13C8 FOSA										
506.0 > 78.0	12.794	12.810	-0.016		2216095	53.4		107	2538	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.794	12.812	-0.018	1.000	822680	20.0		100	1616	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.919	12.949	-0.030	1.000	195178	NC			580	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.919	12.949	-0.030	1.000	195178	19.1		99.2		
D 26 13C2 PFUnA										
565.0 > 520.0	12.971	13.000	-0.029		2056267	55.0		110	5372	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.971	13.000	-0.029	1.000	740493	21.2		106	2090	
D 28 13C2 PFDoA										
615.0 > 570.0	13.579	13.609	-0.030		2309380	59.0		118	6770	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.579	13.611	-0.032	1.000	671444	19.9		99.4	904	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.048	14.083	-0.035	1.000	225190	NC			743	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.102	14.130	-0.028	1.000	906215	20.9		104	935	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.546	14.571	-0.025	1.000	492963	17.4		87.1	248	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 33 13C2-PFTeDA										
715.0 > 670.0	14.546	14.571	-0.025		1919727	53.5		107	6759	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.180	15.207	-0.027		2251795	52.2		104	5198	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.180	15.208	-0.028	1.000	1109943	19.9		99.3	1278	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.517	15.543	-0.026	1.000	897159	17.5		87.4	997	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017 Amount Added: 1.00 Units: mL

Report Date: 22-Feb-2016 11:18:21 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_067.d

Injection Date: 20-Feb-2016 13:27:32 Instrument ID: A6

Lims ID: CCV L4

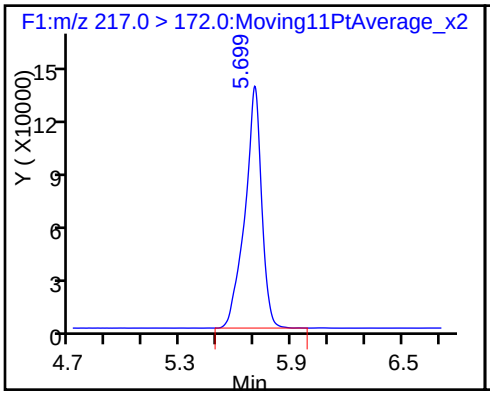
Client ID:

Operator ID: JRB ALS Bottle#: 12 Worklist Smp#: 65

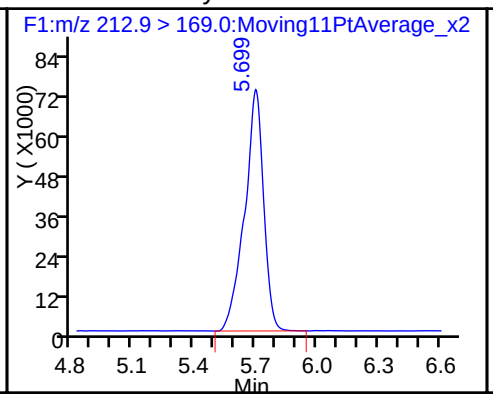
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

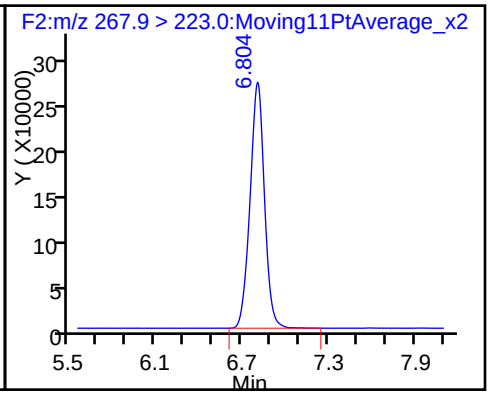
D 1 13C4 PFBA



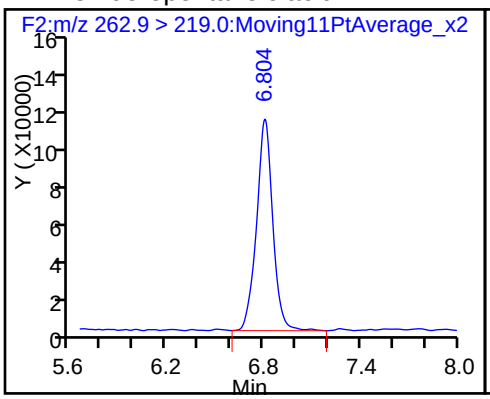
2 Perfluorobutyric acid



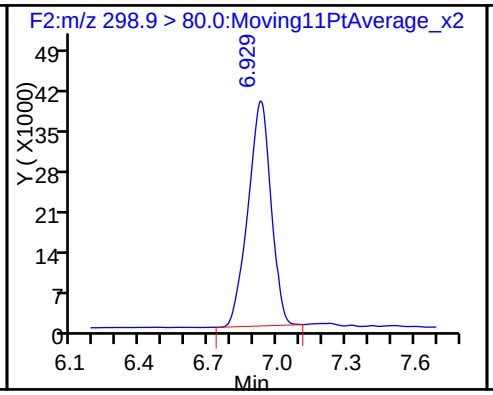
D 3 13C5-PFPeA



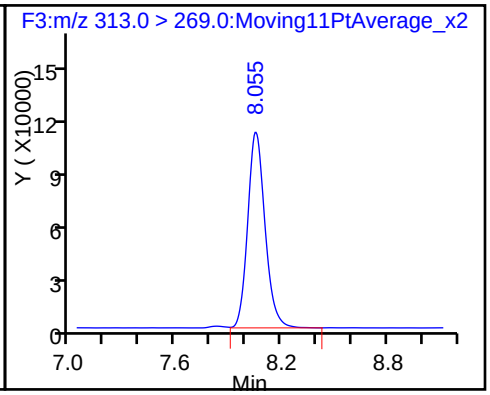
4 Perfluoropentanoic acid



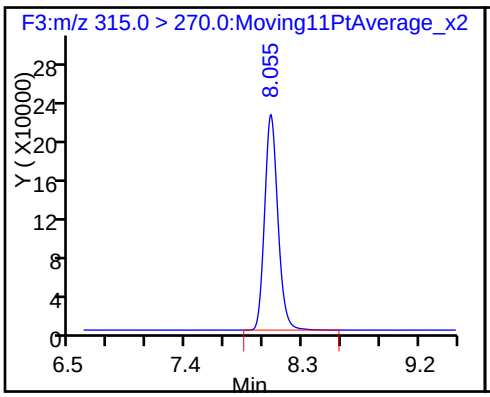
40 Perfluorobutanesulfonic acid



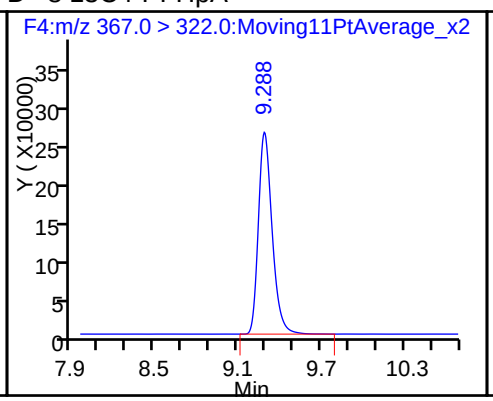
7 Perfluorohexanoic acid



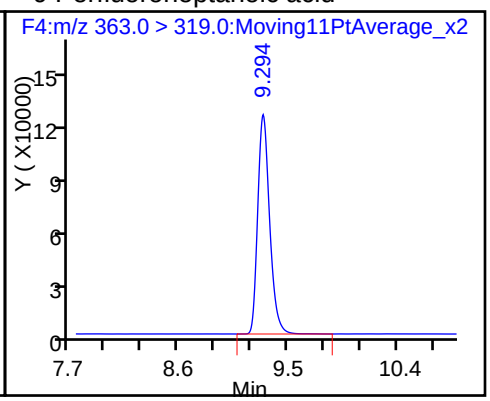
D 6 13C2 PFHxA



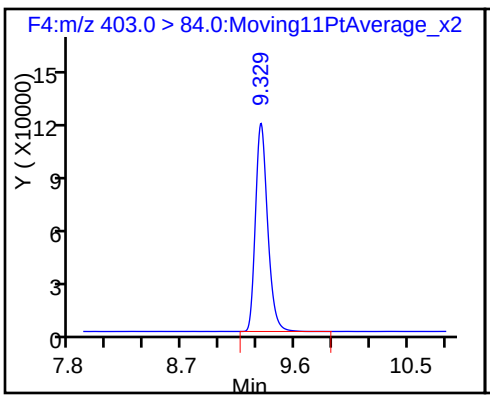
D 8 13C4-PFHpA



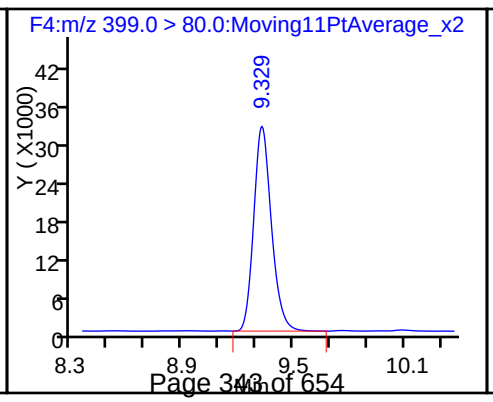
9 Perfluoroheptanoic acid



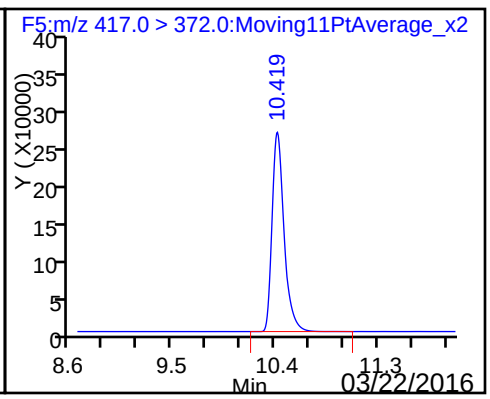
D 11 18O2 PFHxS



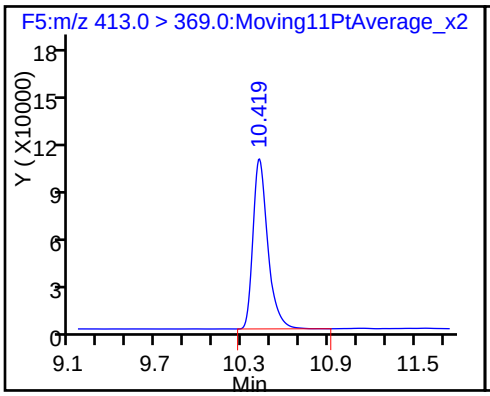
41 Perfluorohexanesulfonic acid



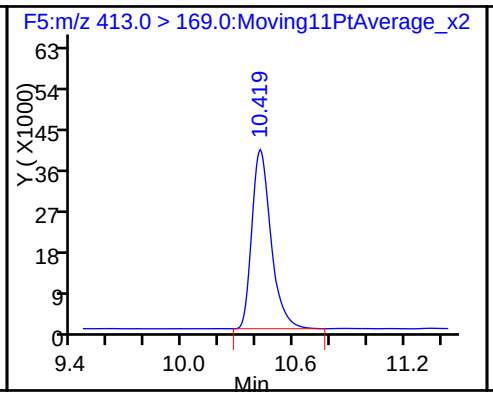
D 12 13C4 PFOA



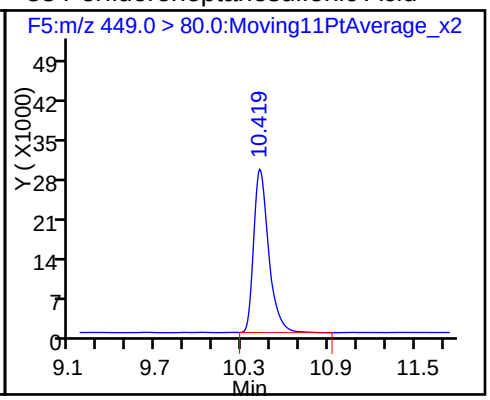
13 Perfluorooctanoic acid



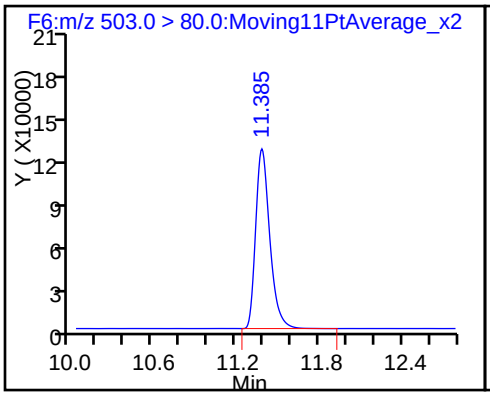
13 Perfluorooctanoic acid



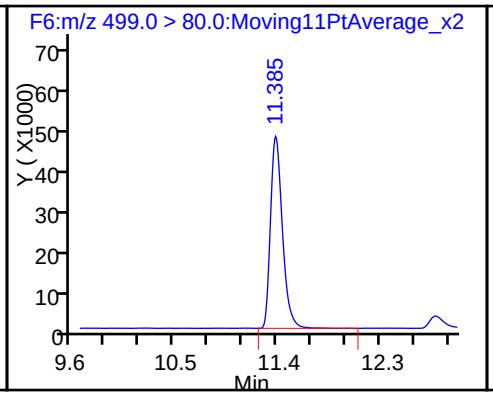
38 Perfluoroheptanesulfonic Acid



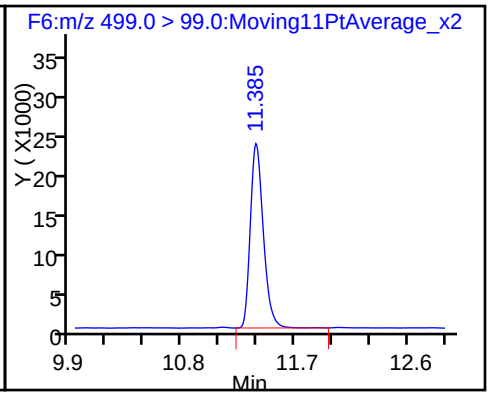
D 16 13C4 PFOS



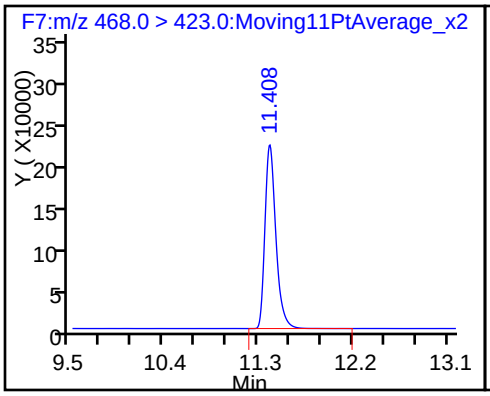
15 Perfluorooctane sulfonic acid



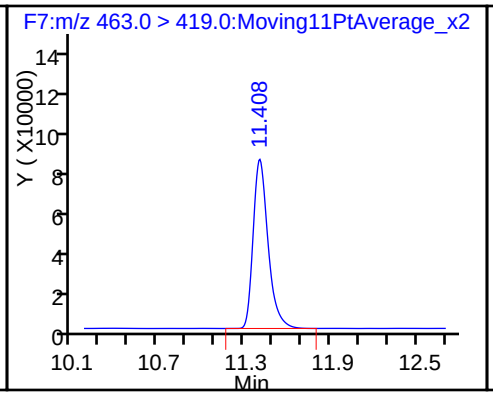
15 Perfluorooctane sulfonic acid



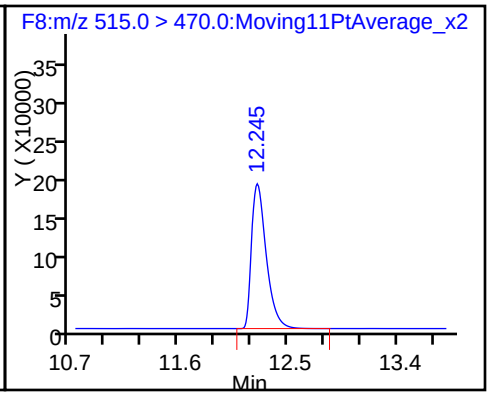
D 17 13C5 PFNA



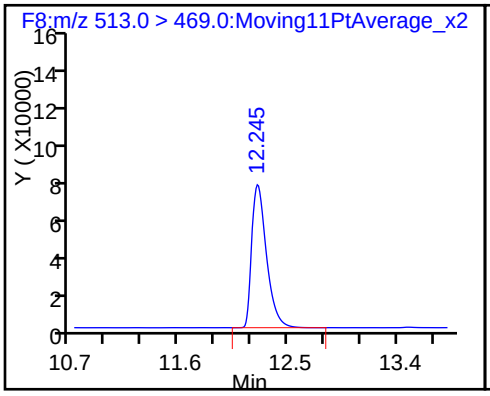
18 Perfluorononanoic acid



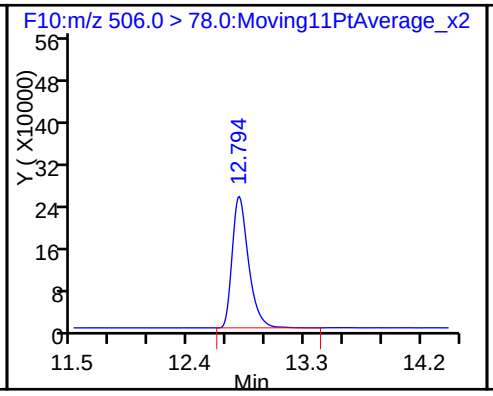
D 19 13C2 PFDA



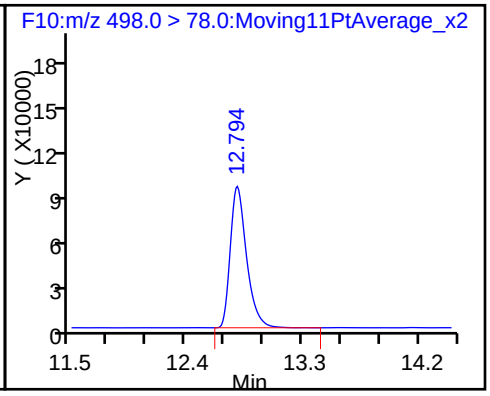
20 Perfluorodecanoic acid



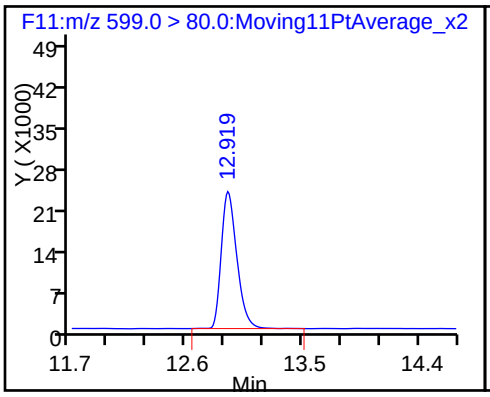
D 23 13C8 FOSA



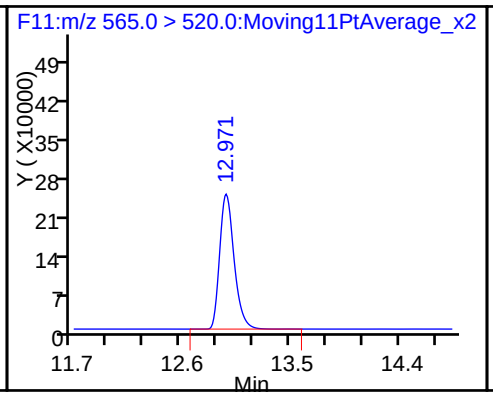
24 Perfluorooctane Sulfonamide



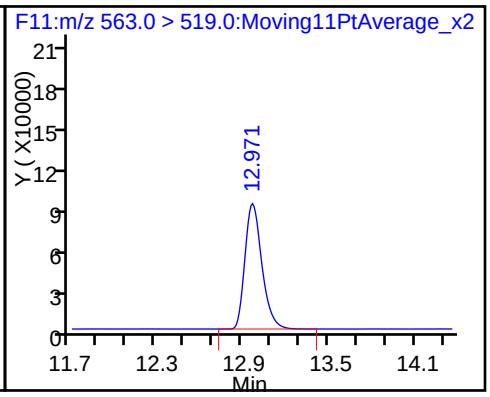
39 Perfluorodecane Sulfonic acid



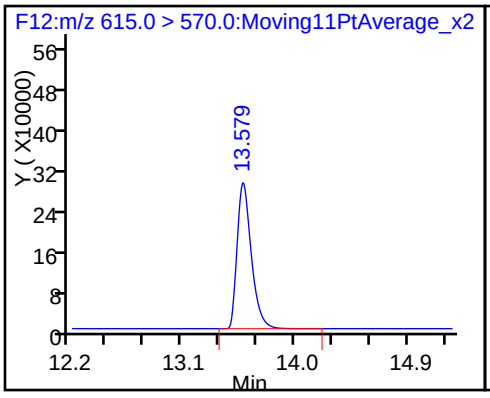
D 26 13C2 PFUnA



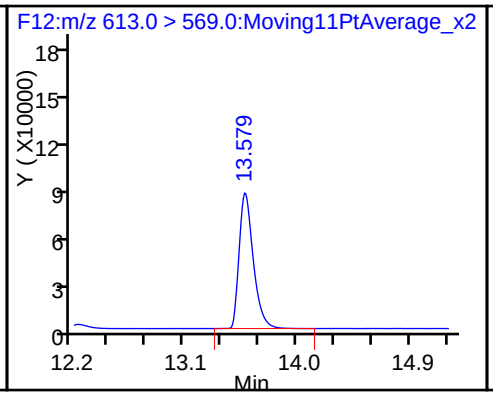
27 Perfluoroundecanoic acid



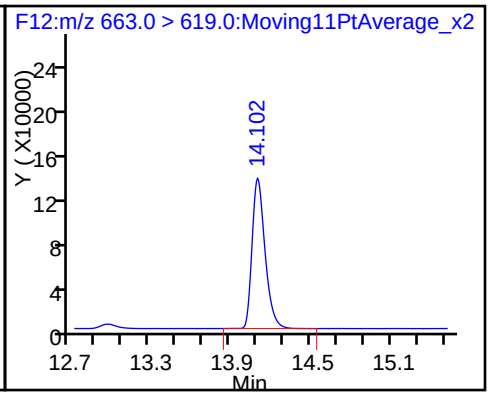
D 28 13C2 PFDoA



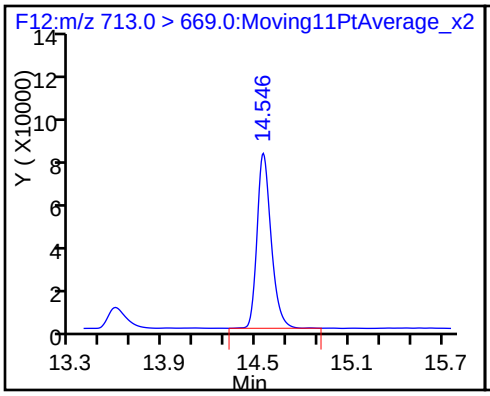
29 Perfluorododecanoic acid



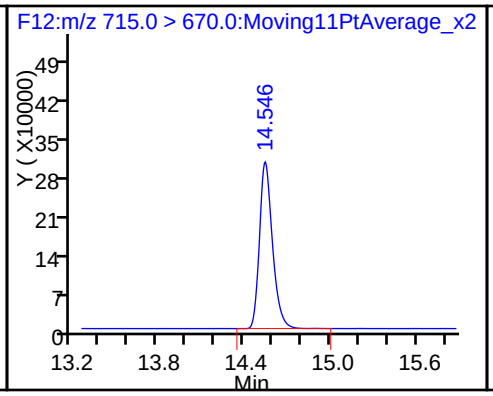
30 Perfluorotridecanoic acid



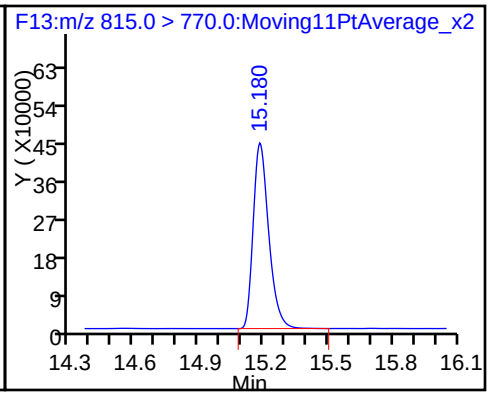
32 Perfluorotetradecanoic acid



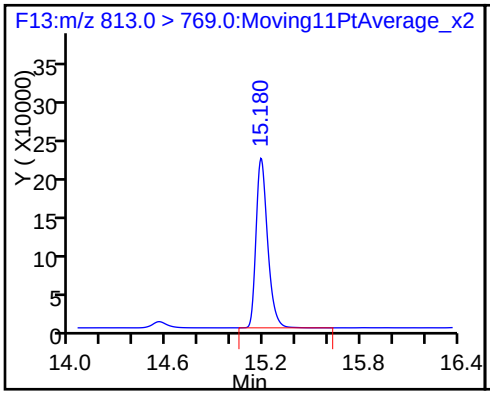
D 33 13C2-PFTeDA



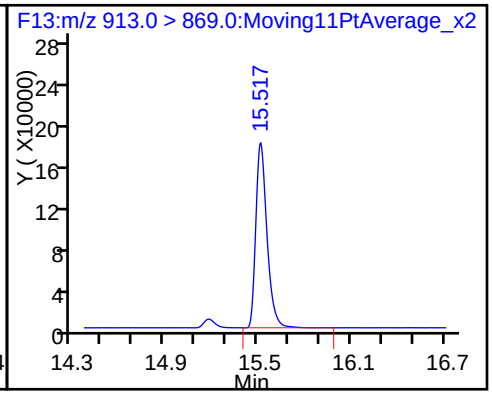
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: | Lab Sample ID: MB 320-100093/1-A

Matrix: Water | Lab File ID: 19FEB2016A6A_047.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 500(mL) | Date Analyzed: 02/20/2016 06:23

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00344		0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00143	J	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	103		25-150
STL00994	18O2 PFHxS	98		25-150
STL00991	13C4 PFOS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_047.d
Lims ID: MB 320-100093/1-A
Client ID:
Sample Type: MB
Inject. Date: 20-Feb-2016 06:23:01 ALS Bottle#: 1 Worklist Smp#: 45
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: MB 320-100093/1-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 22-Feb-2016 13:29:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.690	5.712	-0.022		796044	49.8		99.5	3613	
2 Perfluorobutyric acid										
212.9 > 169.0	5.635	5.715	-0.080	1.000	3850	0.1854			3.2	
D 3 13C5-PFPeA										
267.9 > 223.0	6.800	6.827	-0.027		1689147	54.9		110	5481	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.823	6.828	-0.005	1.000	8535	0.2421			1.5	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.924	6.939	-0.015	1.000	2554	NC			5.0	
298.9 > 99.0	6.938	6.939	-0.001	1.002	2255		1.13(0.00-0.00)		8.8	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.924	6.939	-0.015	1.000	2554	0.1761				
7 Perfluorohexanoic acid										
313.0 > 269.0	8.047	8.078	-0.031	1.000	55187	1.78			69.6	
D 6 13C2 PFHxA										
315.0 > 270.0	8.047	8.080	-0.033		1431721	50.5		101	4817	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.129	8.158	-0.029	0.872	1631	NC			9.9	
D 8 13C4-PFHpA										
367.0 > 322.0	9.285	9.322	-0.037		1588868	51.5		103	7407	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.297	9.322	-0.025	1.000	1477	0.0446			5.8	
D 11 18O2 PFHxS										
403.0 > 84.0	9.320	9.358	-0.038		690758	46.2		97.6	2532	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.320	9.364	-0.044	1.000	16976	NC			55.3	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.320	9.364	-0.044	1.000	16976	1.72				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.407	10.450	-0.043		1722358	50.4		101	6977	
D 16 13C4 PFOS										
503.0 > 80.0	11.379	11.414	-0.035		796221	43.8		91.6	2247	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.365	11.417	-0.052	1.000	11575	0.7146			37.5	
499.0 > 99.0	11.394	11.417	-0.023	1.003	6957		1.66(0.00-0.00)		21.9	
D 17 13C5 PFNA										
468.0 > 423.0	11.395	11.434	-0.039		1454345	51.6		103	3476	
D 19 13C2 PFDA										
515.0 > 470.0	12.238	12.275	-0.037		1396539	48.8		97.6	3223	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.228	12.276	-0.048	1.000	11670	0.0719			34.1	
D 23 13C8 FOSA										
506.0 > 78.0	12.787	12.810	-0.023		425415	10.3		20.5	1512	
D 26 13C2 PFUnA										
565.0 > 520.0	12.964	13.000	-0.036		1751587	46.9		93.7	4655	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.954	13.000	-0.046	1.000	30855	0.3934			116	
D 28 13C2 PFDoA										
615.0 > 570.0	13.581	13.609	-0.028		1880421	48.1		96.1	5575	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.548	14.571	-0.023	1.000	15510	0.2234			7.8	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.542	14.571	-0.029		1428562	39.8		79.6	5027	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.178	15.207	-0.029		1657995	38.5		76.9	4788	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.178	15.208	-0.030	1.000	134780	0.7895			194	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.524	15.543	-0.019	1.000	1666	0.0399			4.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 22-Feb-2016 13:29:41 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_047.d

Injection Date: 20-Feb-2016 06:23:01 Instrument ID: A6

Lims ID: MB 320-100093/1-A

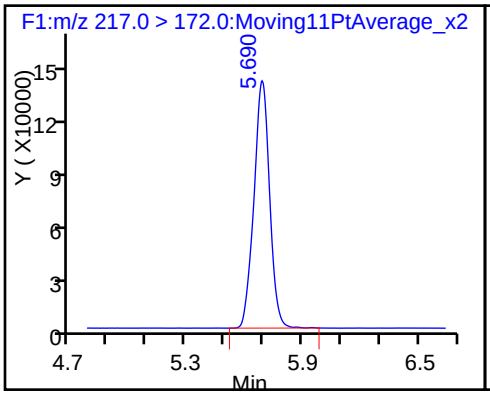
Client ID:

Operator ID: JRB ALS Bottle#: 1 Worklist Smp#: 45

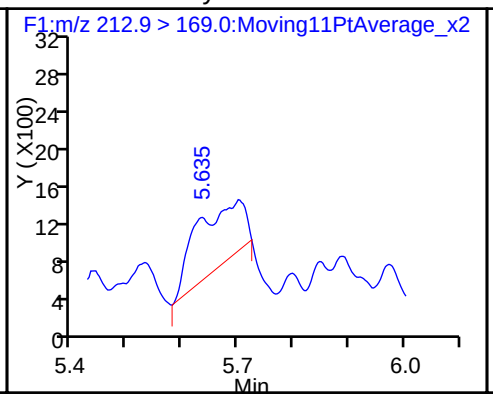
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

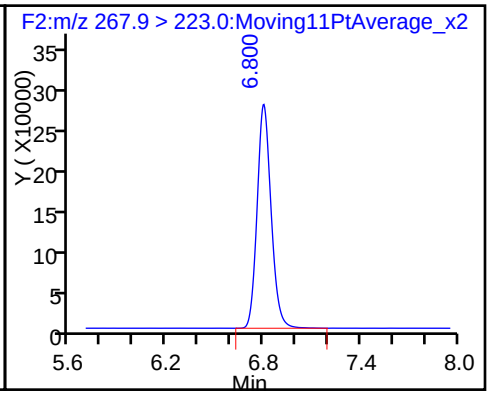
D 1 13C4 PFBA



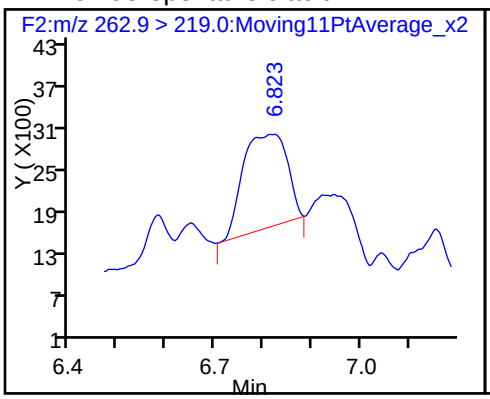
2 Perfluorobutyric acid



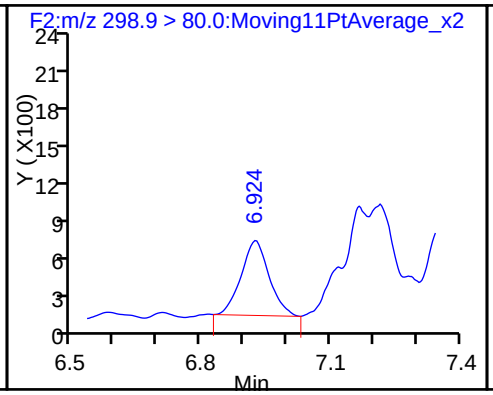
D 3 13C5-PFPeA



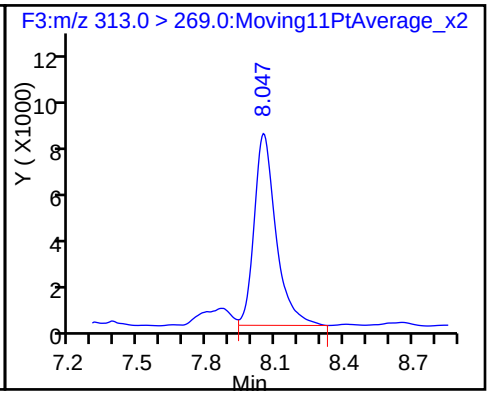
4 Perfluoropentanoic acid



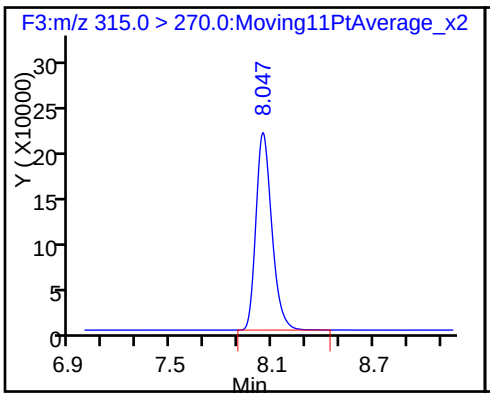
40 Perfluorobutanesulfonic acid



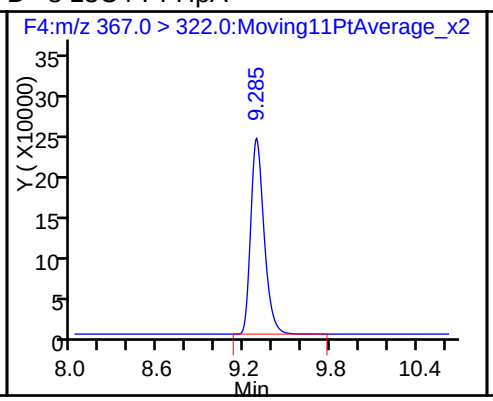
7 Perfluorohexanoic acid



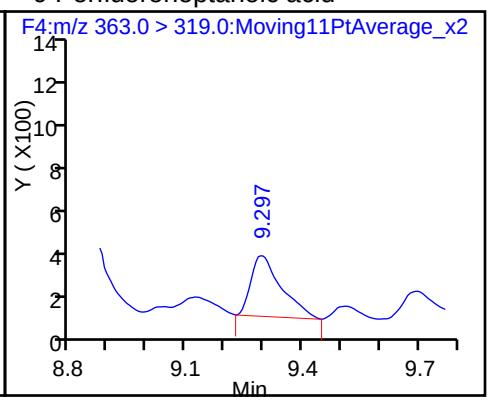
D 6 13C2 PFHxA



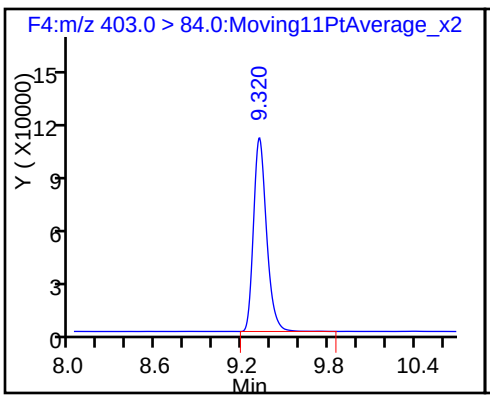
D 8 13C4-PFHpA



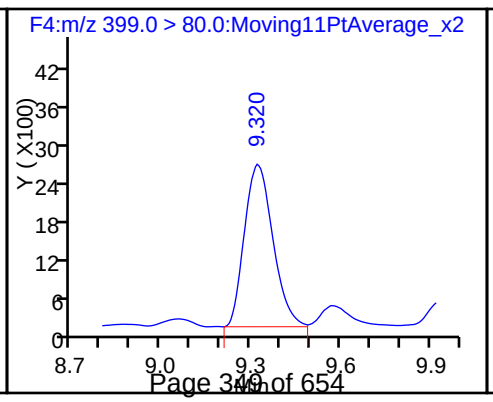
9 Perfluoroheptanoic acid



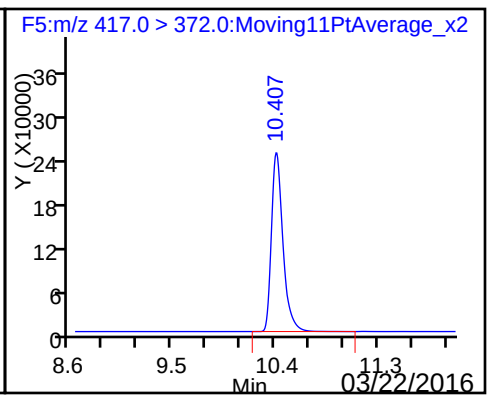
D 11 18O2 PFHxS



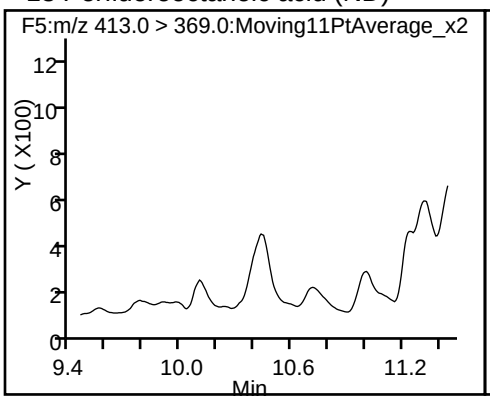
41 Perfluorohexanesulfonic acid



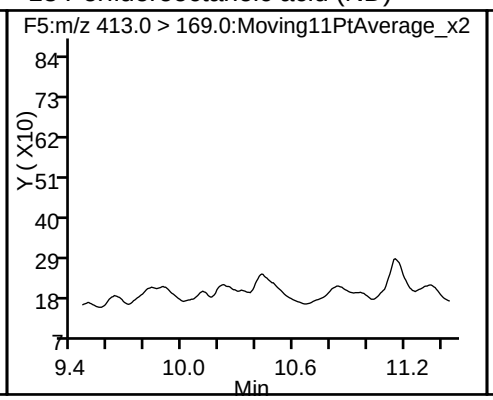
D 12 13C4 PFOA



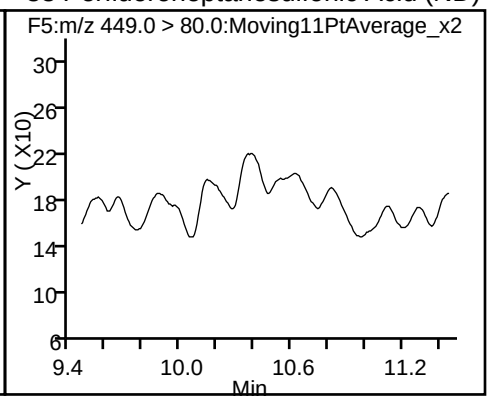
13 Perfluorooctanoic acid (ND)



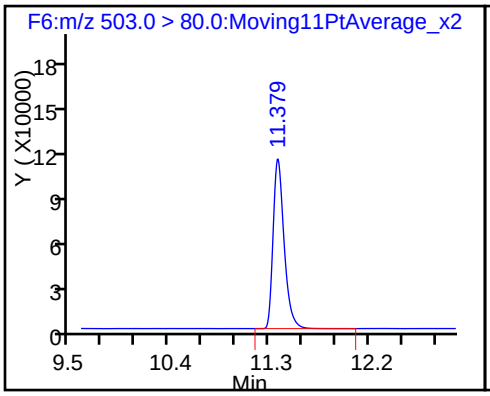
13 Perfluorooctanoic acid (ND)



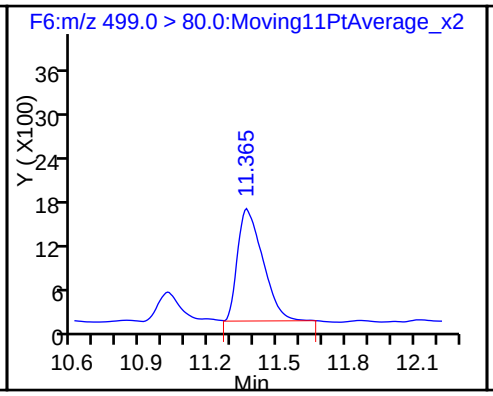
38 Perfluoroheptanesulfonic Acid (ND)



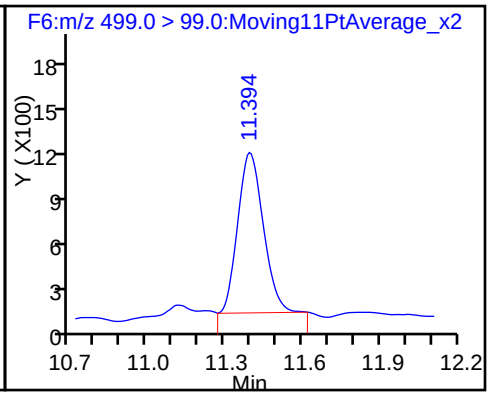
D 16 13C4 PFOS



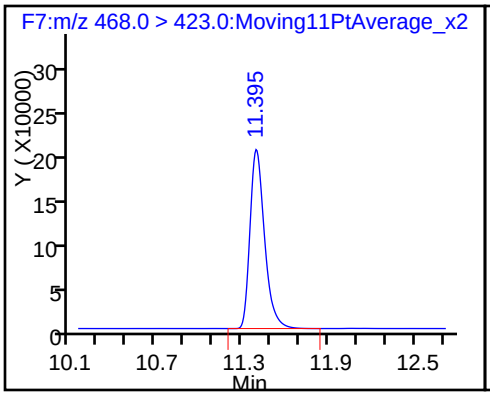
15 Perfluorooctane sulfonic acid



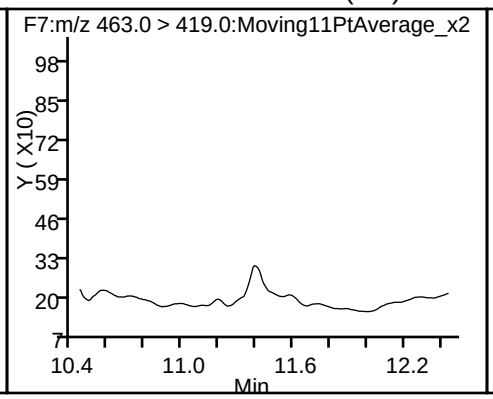
15 Perfluorooctane sulfonic acid



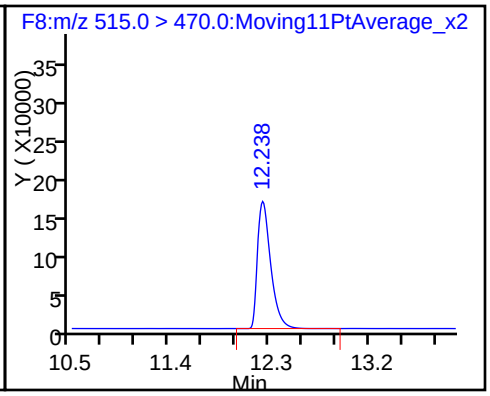
D 17 13C5 PFNA



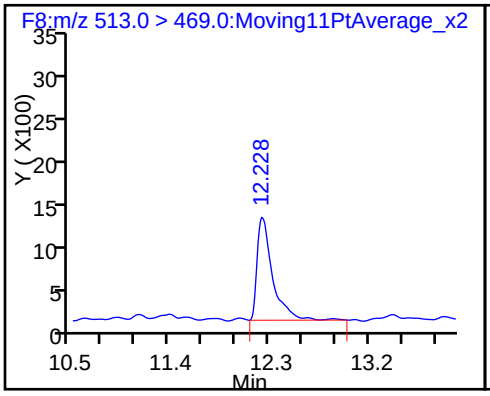
18 Perfluorononanoic acid (ND)



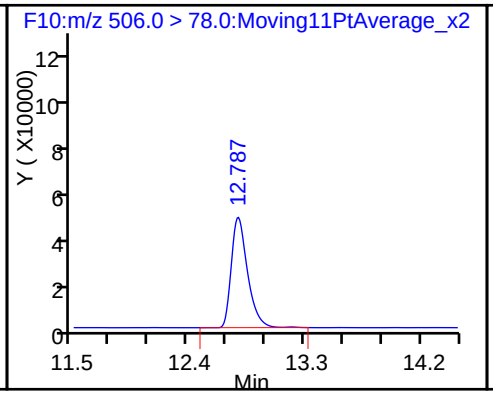
D 19 13C2 PFDA



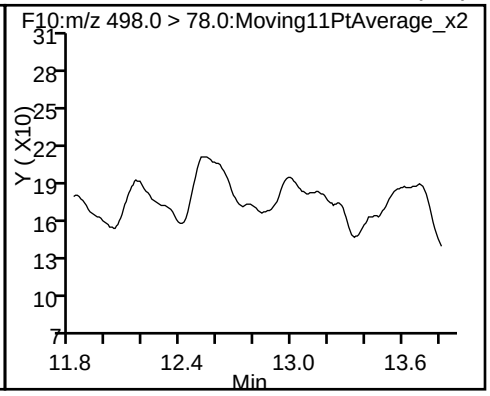
20 Perfluorodecanoic acid



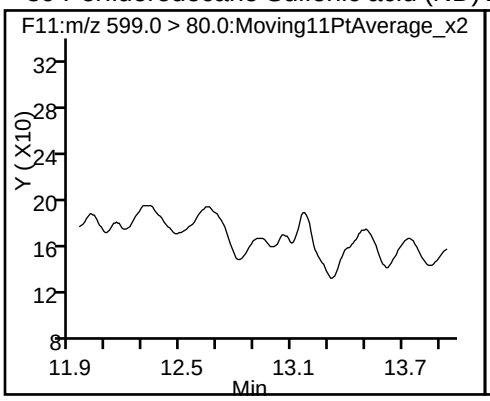
D 23 13C8 FOSA



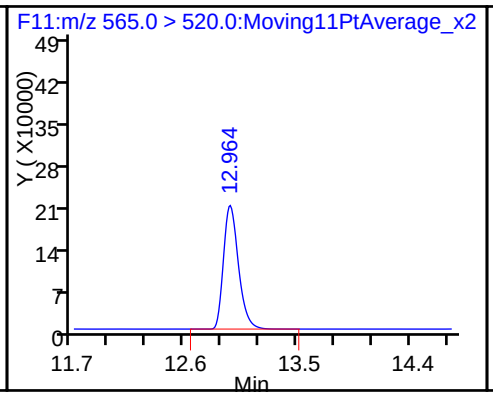
24 Perfluorooctane Sulfonamide (ND)



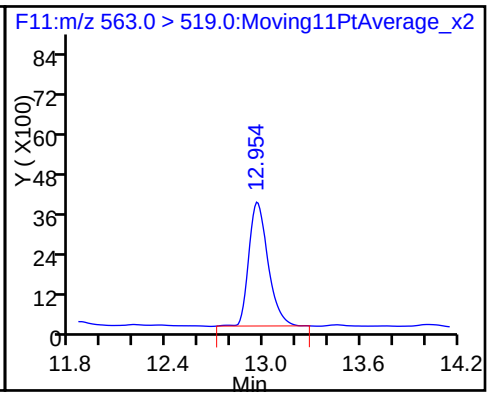
39 Perfluorodecane Sulfonic acid (ND)



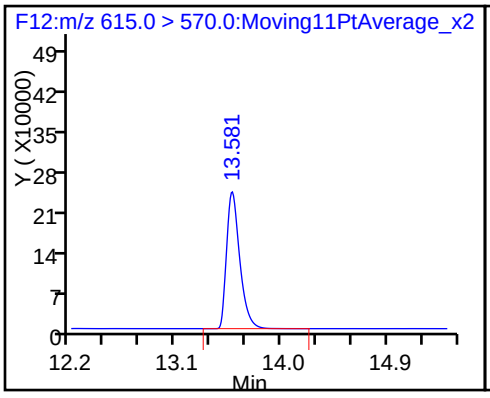
D 26 13C2 PFUnA



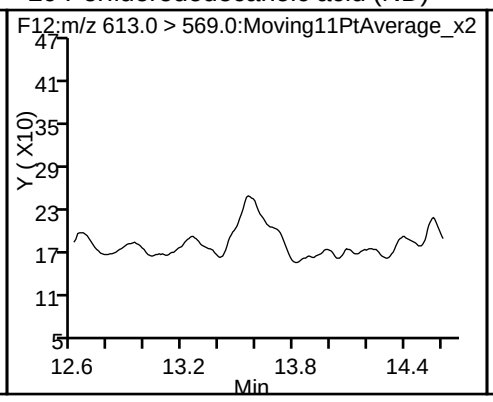
27 Perfluoroundecanoic acid



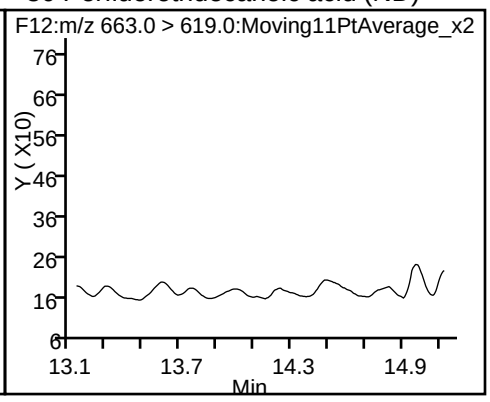
D 28 13C2 PFDoA



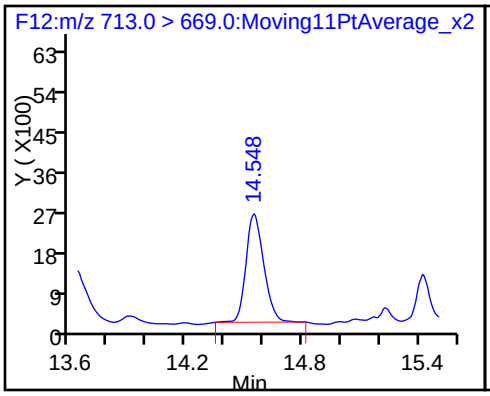
29 Perfluorododecanoic acid (ND)



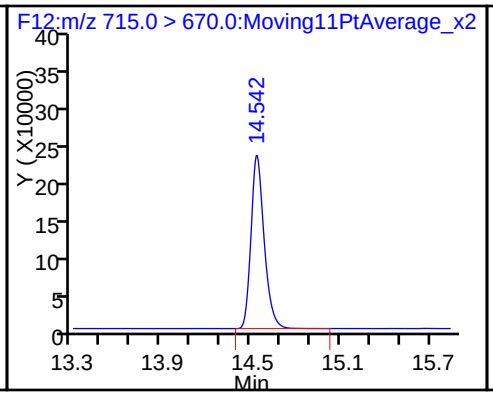
30 Perfluorotridecanoic acid (ND)



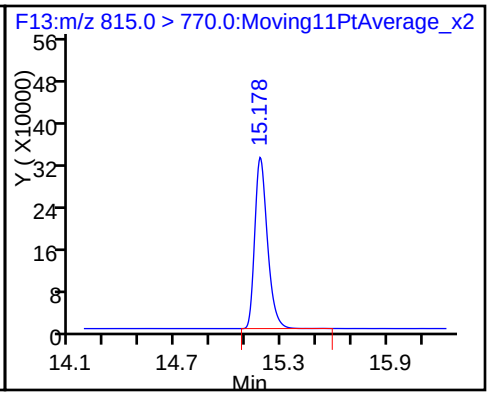
32 Perfluorotetradecanoic acid



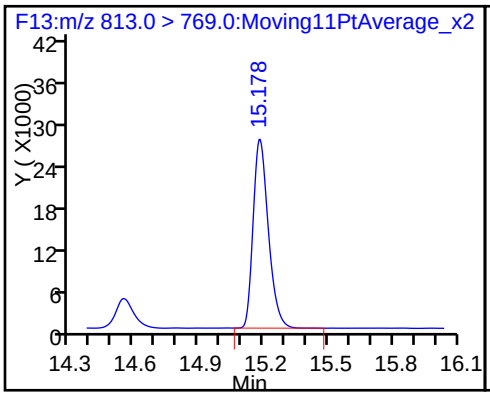
D 33 13C2-PFTeDA



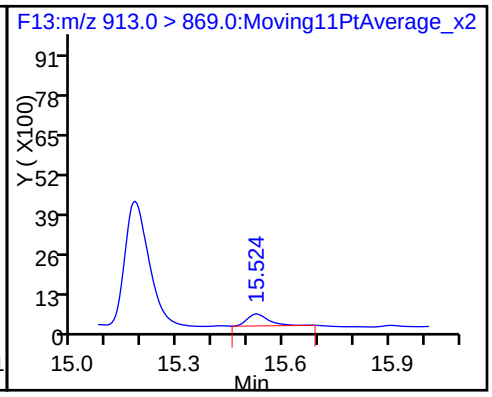
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: | Lab Sample ID: LCS 320-100093/2-A

Matrix: Water | Lab File ID: 19FEB2016A6A_048.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 500(mL) | Date Analyzed: 02/20/2016 06:44

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0513		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0485		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0537		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0459		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0480		0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0515		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	95		25-150
STL00990	13C4 PFOA	95		25-150
STL00995	13C5 PFNA	98		25-150
STL00994	18O2 PFHxS	90		25-150
STL00991	13C4 PFOS	82		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_048.d
Lims ID: LCS 320-100093/2-A
Client ID:
Sample Type: LCS
Inject. Date: 20-Feb-2016 06:44:15 ALS Bottle#: 2 Worklist Smp#: 46
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCS 320-100093/2-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 13:06:10 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: westendorfc Date: 21-Feb-2016 15:38:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.697	5.712	-0.015		758399	47.4		94.8	3128	
2 Perfluorobutyric acid										
212.9 > 169.0	5.697	5.715	-0.018	1.000	480442	24.3		121	892	
D 3 13C5-PFPeA										
267.9 > 223.0	6.805	6.827	-0.022		1590400	51.7		103	5164	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.809	6.828	-0.019	1.000	770505	23.2		116	224	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.924	6.939	-0.015	1.000	306961	NC			348	
298.9 > 99.0	6.924	6.939	-0.015	1.000	166428		1.84(0.00-0.00)		290	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.924	6.939	-0.015	1.000	306961	22.9		130		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.055	8.078	-0.023	1.000	727454	25.3		127	1385	
D 6 13C2 PFHxA										
315.0 > 270.0	8.055	8.080	-0.025		1326503	46.8		93.7	4748	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.131	8.158	-0.027	0.872	239493	NC			932	
D 8 13C4-PFHpA										
367.0 > 322.0	9.288	9.322	-0.034		1471383	47.7		95.5	4291	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.294	9.322	-0.028	1.000	787432	25.7		128	3152	
D 11 18O2 PFHxS										
403.0 > 84.0	9.323	9.358	-0.035		637656	42.6		90.1	3184	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.323	9.364	-0.041	1.000	218573	NC			829	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.323	9.364	-0.041	1.000	218573	24.0		127		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.419	10.450	-0.031		1613824	47.3		94.5	6332	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.419	10.450	-0.031	1.000	785558	24.2		121	1043	
413.0 > 169.0	10.419	10.450	-0.031	1.000	236834		3.32(0.00-0.00)		760	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.419	10.457	-0.038	1.000	252668	NC			1450	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.419	10.457	-0.038	1.000	252668	27.4		144		
D 16 13C4 PFOS										
503.0 > 80.0	11.385	11.414	-0.029		711939	39.2		81.9	3408	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.385	11.417	-0.032	1.000	373063	25.8		135	880	
499.0 > 99.0	11.385	11.417	-0.032	1.000	211135		1.77(0.00-0.00)		669	
D 17 13C5 PFNA										
468.0 > 423.0	11.401	11.434	-0.033		1374538	48.8		97.5	6797	
18 Perfluorononanoic acid										
463.0 > 419.0	11.408	11.439	-0.031	1.000	596415	26.9		134	1966	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.203	12.249	-0.046	1.000	212396	NC			888	
D 19 13C2 PFDA										
515.0 > 470.0	12.245	12.275	-0.030		1265366	44.2		88.4	5404	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.245	12.276	-0.031	1.000	649916	26.0		130	2595	
D 23 13C8 FOSA										
506.0 > 78.0	12.793	12.810	-0.017		165922	4.00		8.0	445	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.793	12.812	-0.019	1.000	58737	19.1		95.5	196	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.919	12.949	-0.030	1.000	211472	NC			820	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.919	12.949	-0.030	1.000	211472	25.8		134		
D 26 13C2 PFUnA										
565.0 > 520.0	12.970	13.000	-0.030		1646373	44.0		88.1	4319	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.970	13.000	-0.030	1.000	708085	25.4		127	2414	
D 28 13C2 PFDoA										
615.0 > 570.0	13.578	13.609	-0.031		1801826	46.1		92.1	5300	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.578	13.611	-0.033	1.000	663674	25.2		126	894	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.048	14.083	-0.035	1.000	215474	NC			709	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.101	14.130	-0.029	1.000	859635	25.4		127	1189	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.546	14.571	-0.025	1.000	471466	21.5		107	292	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.539	14.571	-0.032		1400557	39.0		78.0	3533	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.183	15.207	-0.024		1666171	38.7		77.3	4296	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.183	15.208	-0.025	1.000	958744	22.3		111	1477	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.514	15.543	-0.029	1.000	873096	21.8		109	1349	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 22-Feb-2016 13:08:00 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_048.d

Injection Date: 20-Feb-2016 06:44:15 Instrument ID: A6

Lims ID: LCS 320-100093/2-A

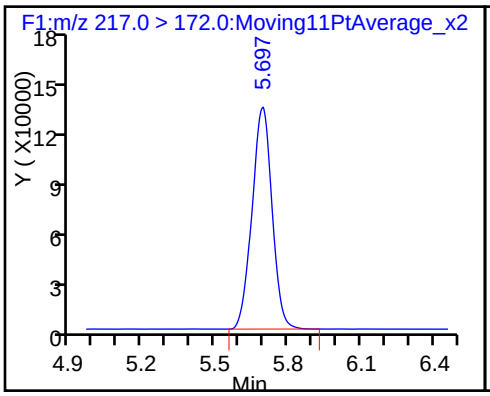
Client ID:

Operator ID: JRB ALS Bottle#: 2 Worklist Smp#: 46

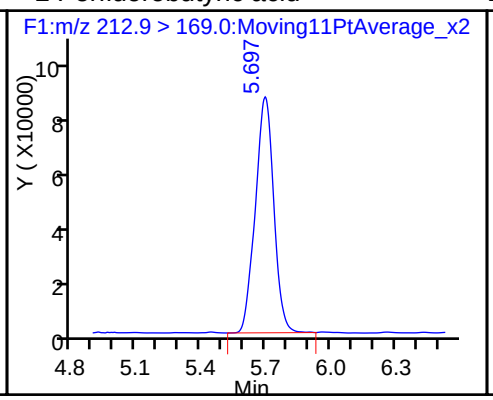
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

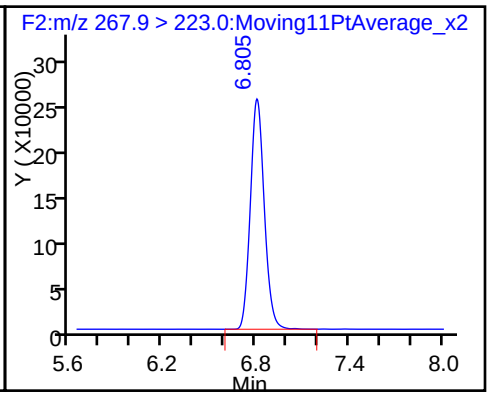
D 1 13C4 PFBA



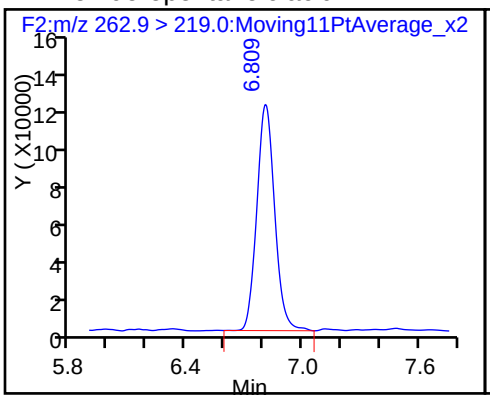
2 Perfluorobutyric acid



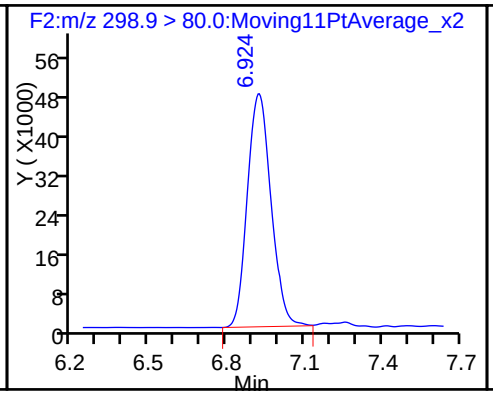
D 3 13C5-PFPeA



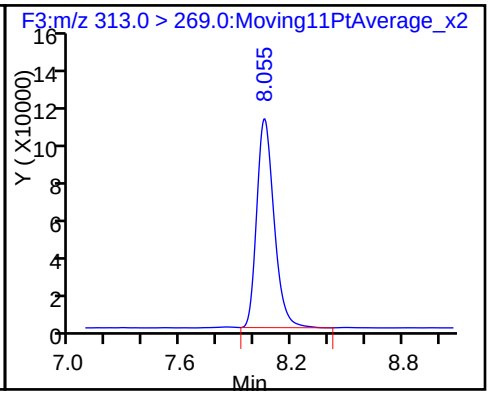
4 Perfluoropentanoic acid



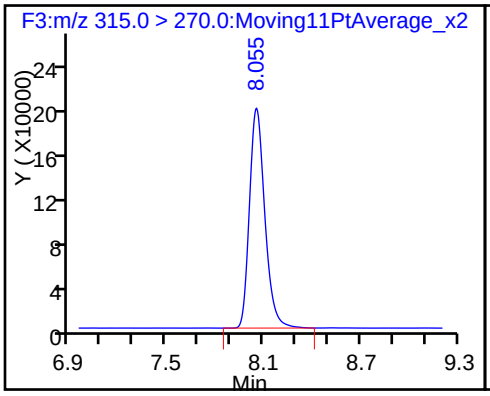
40 Perfluorobutanesulfonic acid



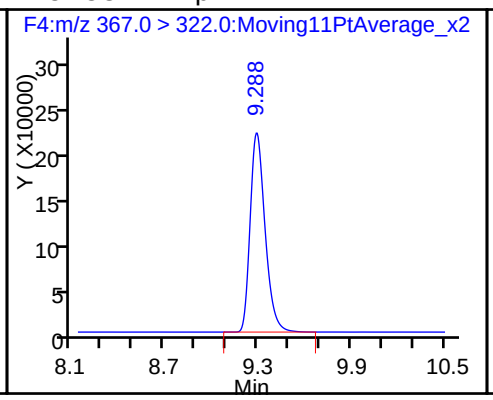
7 Perfluorohexanoic acid



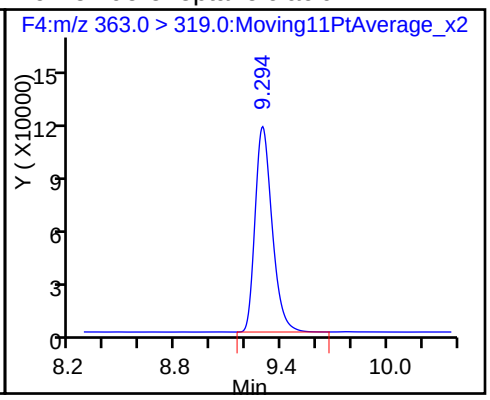
D 6 13C2 PFHxA



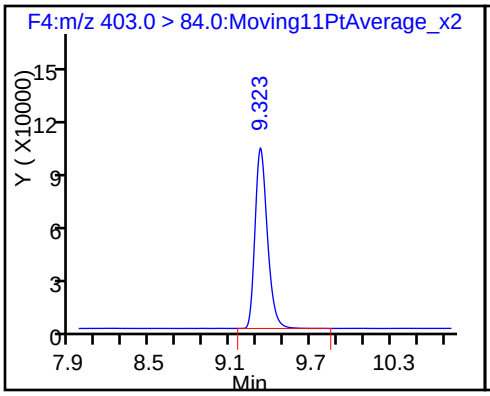
D 8 13C4-PFHpA



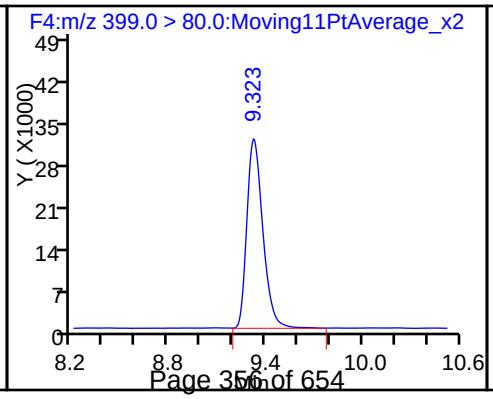
9 Perfluoroheptanoic acid



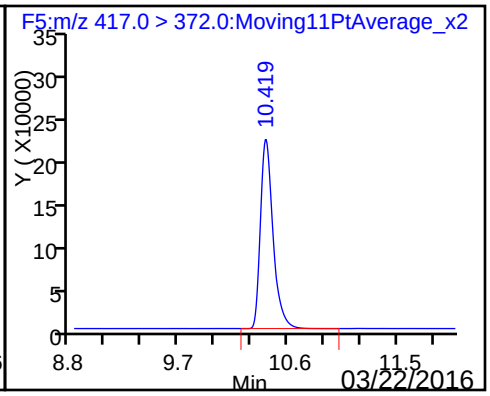
D 11 18O2 PFHxS



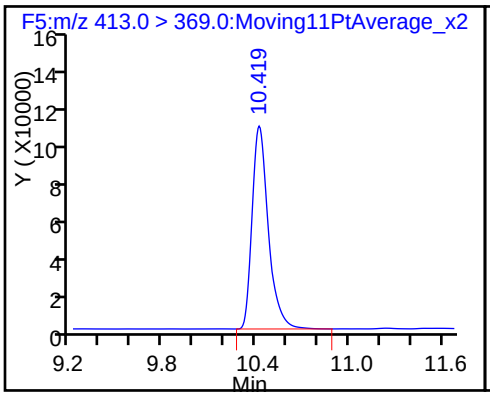
41 Perfluorohexanesulfonic acid



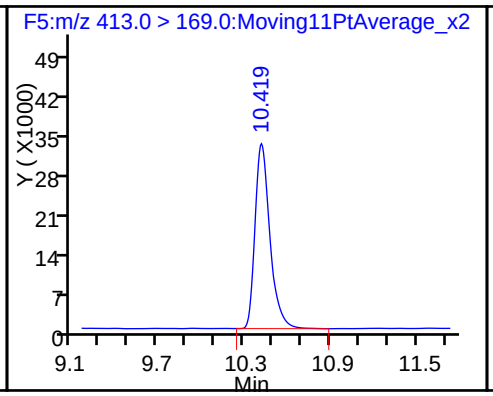
D 12 13C4 PFOA



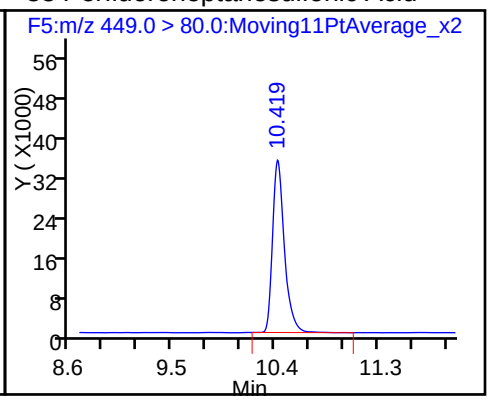
13 Perfluorooctanoic acid



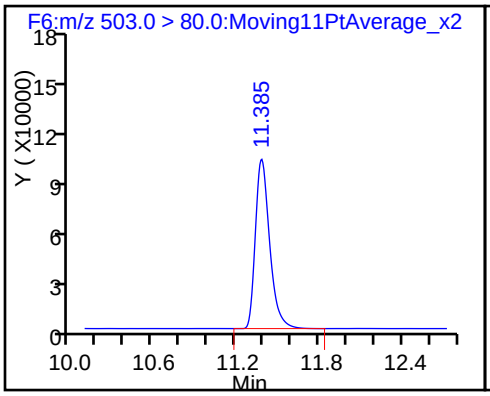
13 Perfluorooctanoic acid



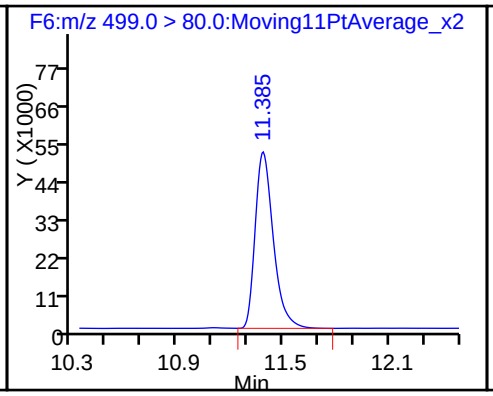
38 Perfluoroheptanesulfonic Acid



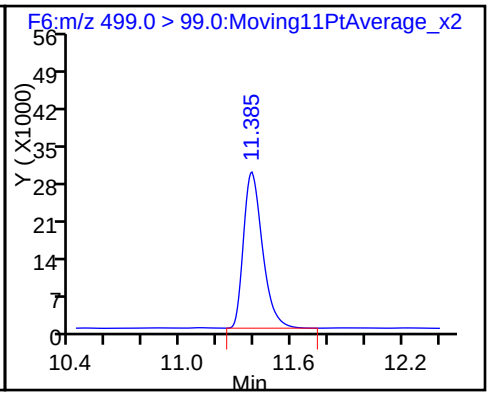
D 16 13C4 PFOS



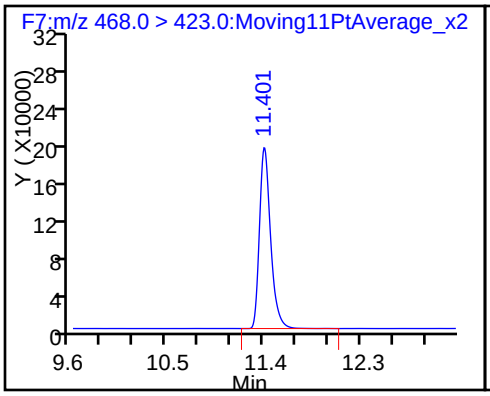
15 Perfluorooctane sulfonic acid



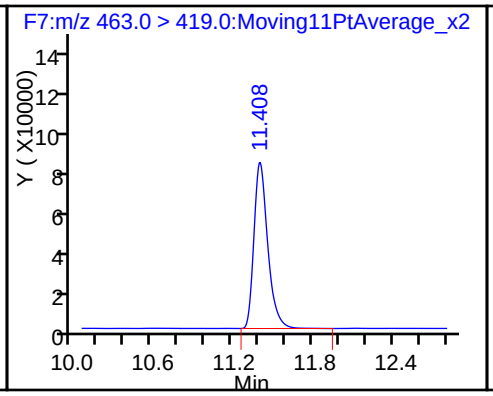
15 Perfluorooctane sulfonic acid



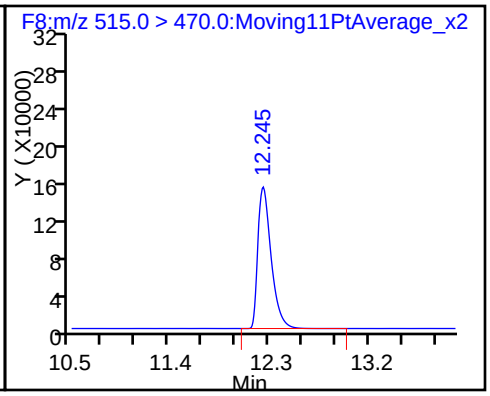
D 17 13C5 PFNA



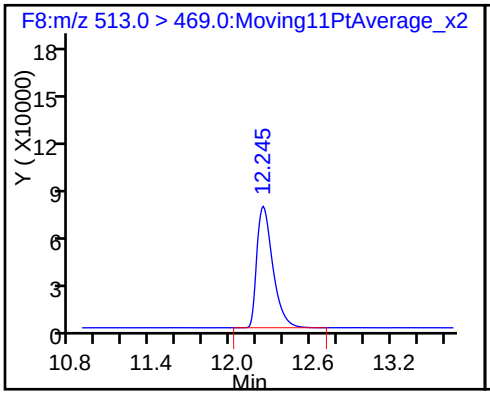
18 Perfluorononanoic acid



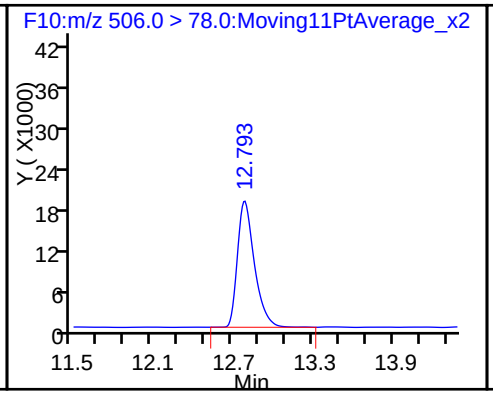
D 19 13C2 PFDA



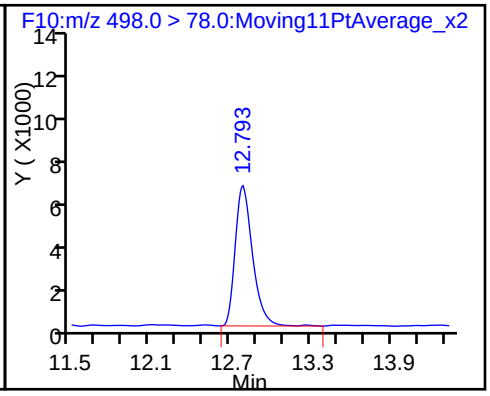
20 Perfluorodecanoic acid



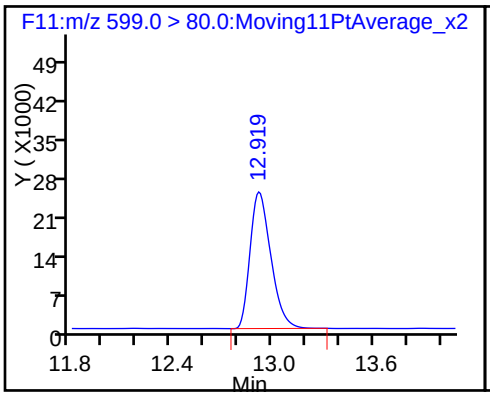
D 23 13C8 FOSA



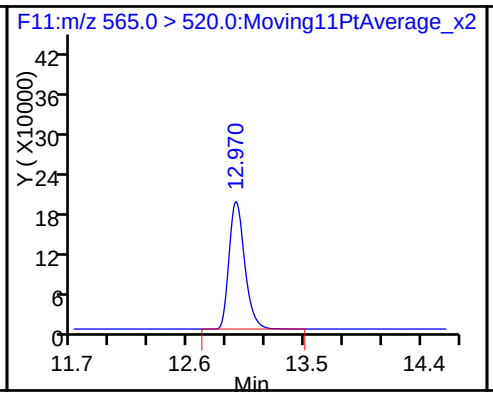
24 Perfluorooctane Sulfonamide



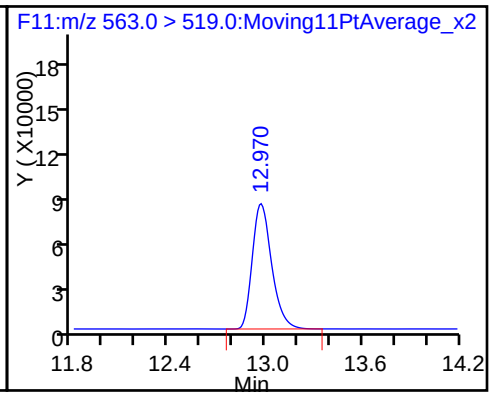
39 Perfluorodecane Sulfonic acid



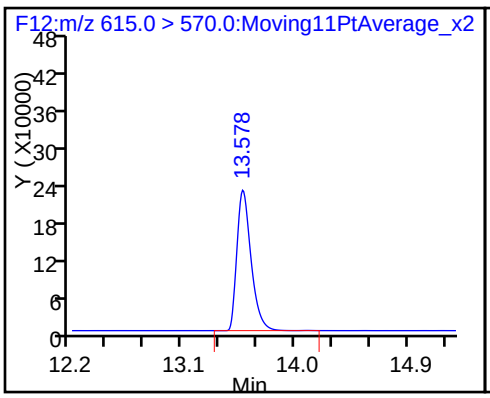
D 26 13C2 PFUnA



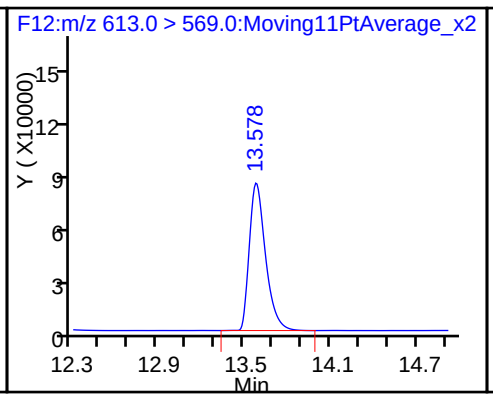
27 Perfluoroundecanoic acid



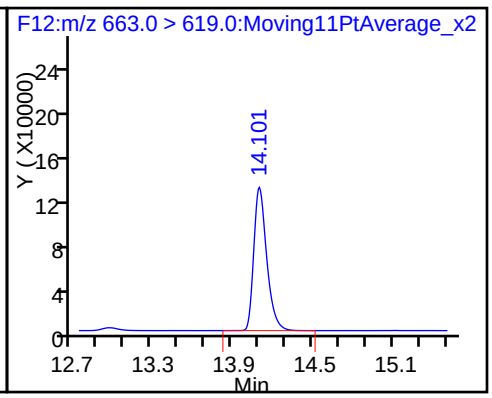
D 28 13C2 PFDoA



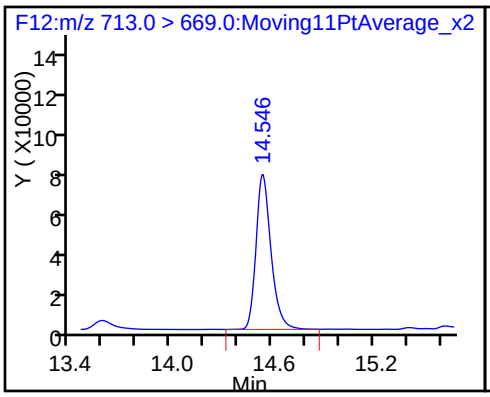
29 Perfluorododecanoic acid



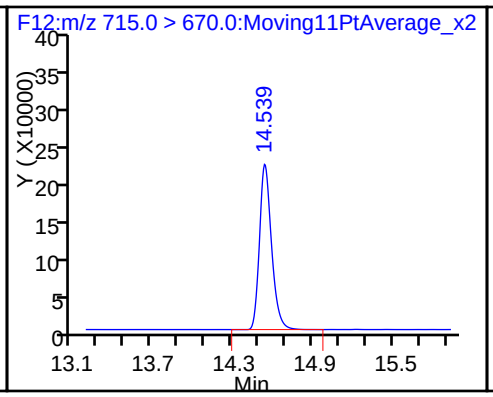
30 Perfluorotridecanoic acid



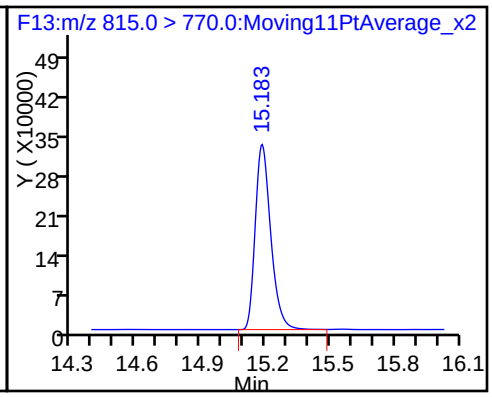
32 Perfluorotetradecanoic acid



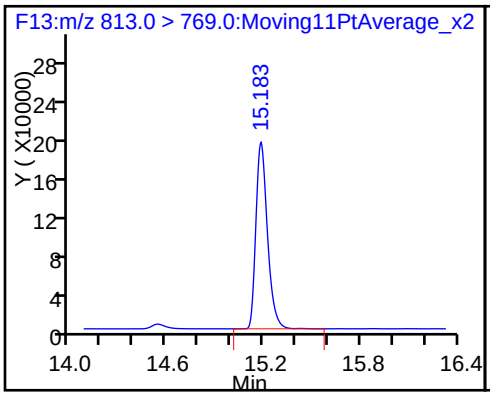
D 33 13C2-PFTeDA



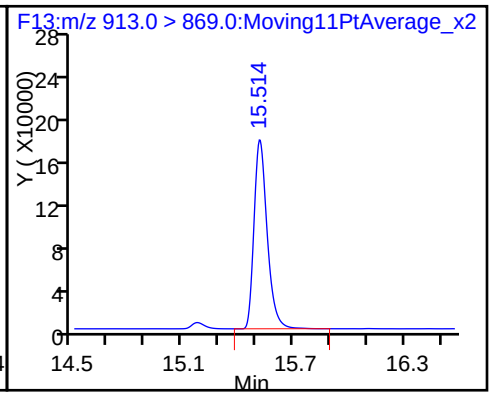
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Client Sample ID: | Lab Sample ID: LCSD 320-100093/3-A

Matrix: Water | Lab File ID: 19FEB2016A6A_049.d

Analysis Method: WS-LC-0025 | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/09/2016 10:23

Sample wt/vol: 500(mL) | Date Analyzed: 02/20/2016 07:05

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

Injection Volume: 15(uL) | GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 100906 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0506		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0493		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0517		0.0025	0.0020	0.00065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0472		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0486		0.0025	0.0020	0.00087
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0452		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01892	13C4-PFHpA	95		25-150
STL00990	13C4 PFOA	88		25-150
STL00995	13C5 PFNA	91		25-150
STL00994	18O2 PFHxS	86		25-150
STL00991	13C4 PFOS	80		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_049.d
Lims ID: LCSD 320-100093/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 20-Feb-2016 07:05:28 ALS Bottle#: 3 Worklist Smp#: 47
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 320-100093/3-A
Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
Operator ID: JRB Instrument ID: A6

Method: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\PFAC_A6.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Feb-2016 10:48:20 Calib Date: 19-Feb-2016 17:15:39
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 20-Feb-2016 13:11:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.0 > 172.0	5.699	5.712	-0.013		734641	45.9		91.8	2704	
2 Perfluorobutyric acid										
212.9 > 169.0	5.696	5.715	-0.019	1.000	485146	25.3		127	1247	
D 3 13C5-PFPeA										
267.9 > 223.0	6.803	6.827	-0.024		1540503	50.1		100	5533	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.803	6.828	-0.025	1.000	722067	22.5		112	178	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.918	6.939	-0.021	1.000	300270	NC			379	
298.9 > 99.0	6.923	6.939	-0.016	1.001	149697		2.01(0.00-0.00)		240	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.918	6.939	-0.021	1.000	300270	23.6		133		
7 Perfluorohexanoic acid										
313.0 > 269.0	8.050	8.078	-0.028	1.000	733184	25.9		130	1978	
D 6 13C2 PFHxA										
315.0 > 270.0	8.050	8.080	-0.030		1305099	46.1		92.1	6340	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.126	8.158	-0.032	0.872	224529	NC			920	
D 8 13C4-PFHpA										
367.0 > 322.0	9.288	9.322	-0.034		1471294	47.7		95.5	5622	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.288	9.322	-0.034	1.000	776183	25.3		126	2978	
D 11 18O2 PFHxS										
403.0 > 84.0	9.318	9.358	-0.040		606231	40.5		85.6	2633	
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.323	9.364	-0.041	1.000	210408	NC			687	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.323	9.364	-0.041	1.000	210408	24.3		128		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
417.0 > 372.0	10.413	10.450	-0.037		1501627	44.0		88.0	5693	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.413	10.450	-0.037	1.000	743776	24.7		123	1424	
413.0 > 169.0	10.420	10.450	-0.030	1.001	224572		3.31(0.00-0.00)		836	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.420	10.457	-0.037	1.000	220037	NC			800	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.420	10.457	-0.037	1.000	220037	24.6		129		
D 16 13C4 PFOS										
503.0 > 80.0	11.378	11.414	-0.036		691703	38.0		79.6	3976	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.385	11.417	-0.032	1.000	318089	22.6		118	1062	
499.0 > 99.0	11.385	11.417	-0.032	1.000	192858		1.65(0.00-0.00)		754	
D 17 13C5 PFNA										
468.0 > 423.0	11.401	11.434	-0.033		1281775	45.5		90.9	3447	
18 Perfluorononanoic acid										
463.0 > 419.0	11.401	11.439	-0.038	1.000	534851	25.8		129	1565	
21 PFNS (Perflouro-1-nonanesulfonate)										
549.0 > 80.0	12.207	12.249	-0.042	1.000	199232	NC			591	
D 19 13C2 PFDA										
515.0 > 470.0	12.238	12.275	-0.037		1277810	44.6		89.3	4187	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.238	12.276	-0.038	1.000	617874	24.4		122	2237	
D 23 13C8 FOSA										
506.0 > 78.0	12.787	12.810	-0.023		187222	4.51		9.0	565	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.787	12.812	-0.025	1.000	75363	21.7		109	298	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.923	12.949	-0.026	1.000	208463	NC			652	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.923	12.949	-0.026	1.000	208463	26.1		136		
D 26 13C2 PFUnA										
565.0 > 520.0	12.964	13.000	-0.036		1543585	41.3		82.6	4747	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.964	13.000	-0.036	1.000	678501	26.0		130	2991	
D 28 13C2 PFDoA										
615.0 > 570.0	13.583	13.609	-0.026		1775672	45.4		90.8	5236	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.583	13.611	-0.028	1.000	659146	25.4		127	1290	
31 PFDoS (Perflouro-1-dodecanesulfona										
699.0 > 80.0	14.044	14.083	-0.039	1.000	206389	NC			628	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.098	14.130	-0.032	1.000	827090	24.8		124	1247	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.537	14.571	-0.034	1.000	478423	22.1		111	277	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.543	14.571	-0.028		1463155	40.8		81.5	4057	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.179	15.207	-0.028		1834802	42.6		85.1	6199	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.179	15.208	-0.029	1.000	946964	22.3		112	1317	
36 Perfluorooctandecanoic acid										
913.0 > 869.0	15.516	15.543	-0.027	1.000	838124	21.2		106	1517	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Report Date: 22-Feb-2016 11:14:31 Chrom Revision: 2.2 02-Dec-2015 11:51:48

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160219-28492.b\19FEB2016A6A_049.d

Injection Date: 20-Feb-2016 07:05:28 Instrument ID: A6

Lims ID: LCSD 320-100093/3-A

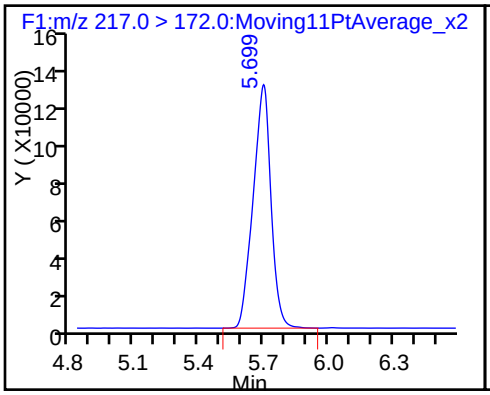
Client ID:

Operator ID: JRB ALS Bottle#: 3 Worklist Smp#: 47

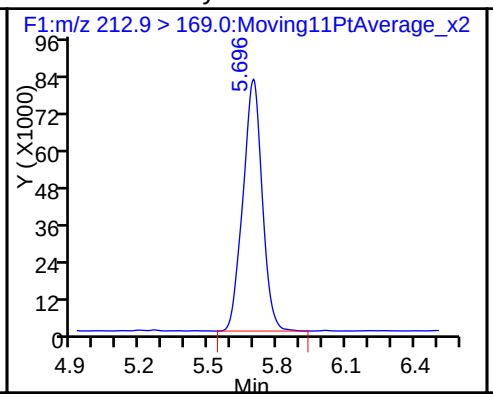
Injection Vol: 15.0 ul Dil. Factor: 1.0000

Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL

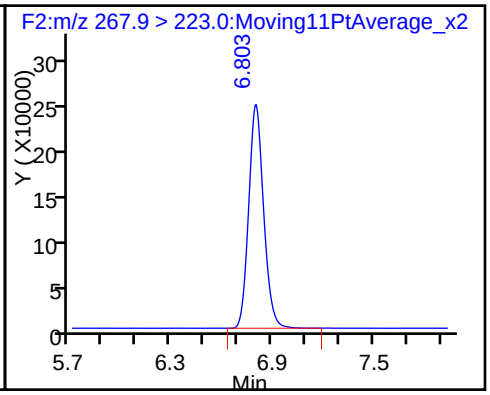
D 1 13C4 PFBA



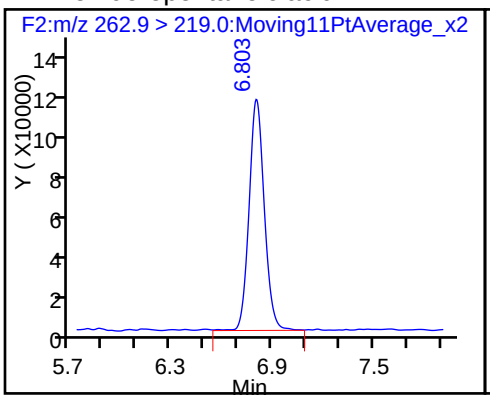
2 Perfluorobutyric acid



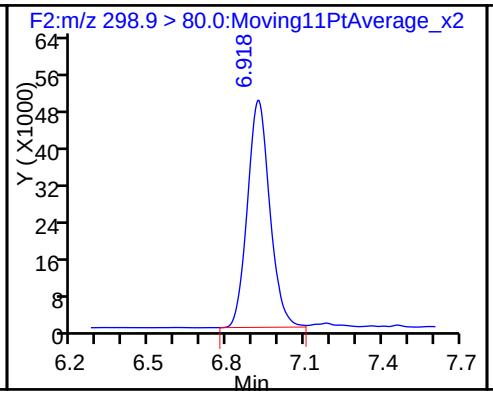
D 3 13C5-PFPeA



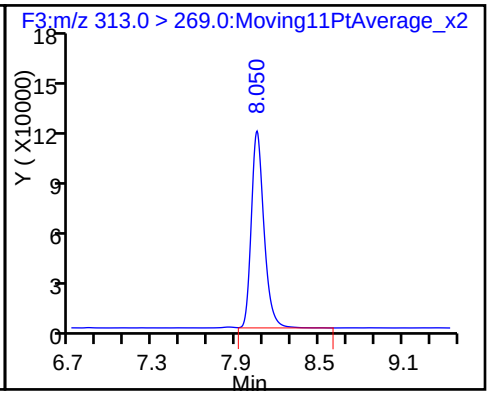
4 Perfluoropentanoic acid



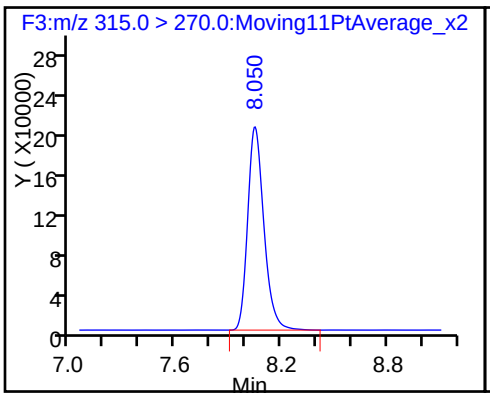
40 Perfluorobutanesulfonic acid



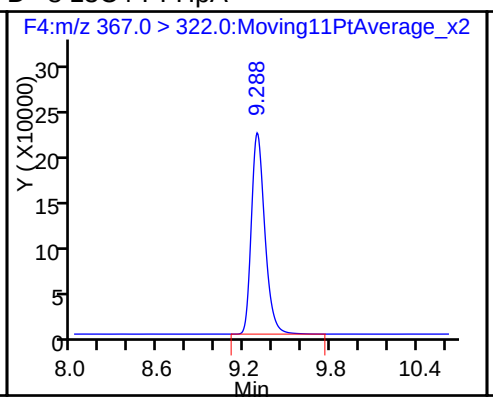
7 Perfluorohexanoic acid



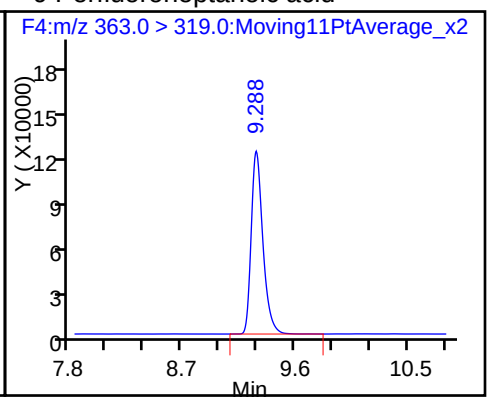
D 6 13C2 PFHxA



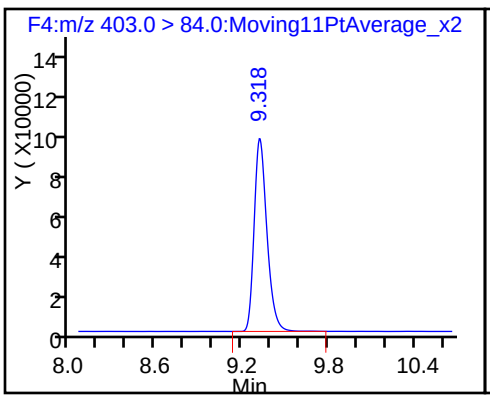
D 8 13C4-PFHpA



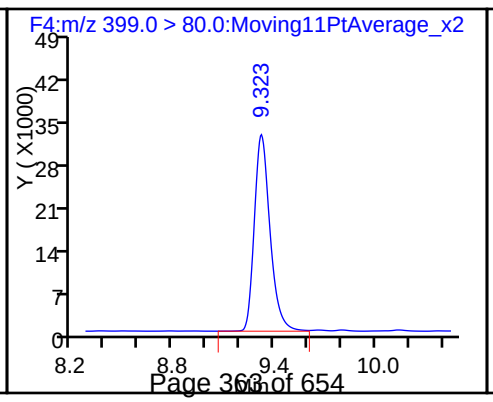
9 Perfluoroheptanoic acid



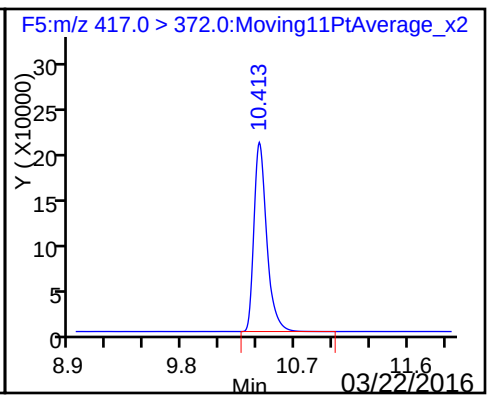
D 11 18O2 PFHxS



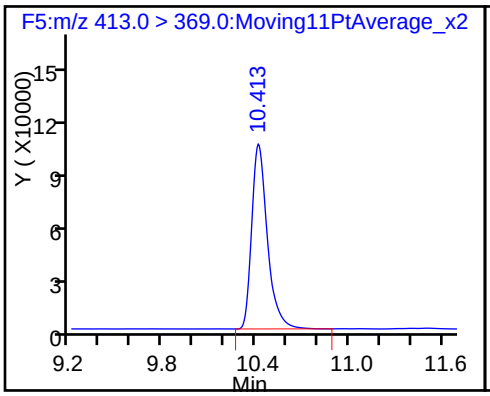
41 Perfluorohexanesulfonic acid



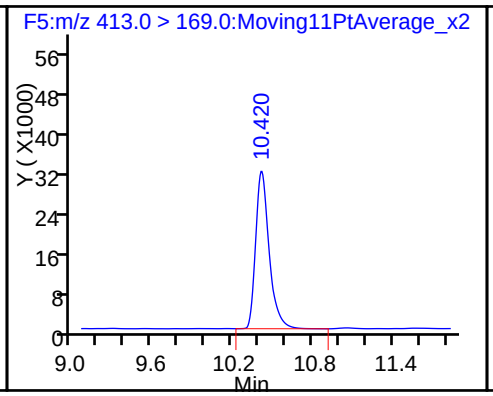
D 12 13C4 PFOA



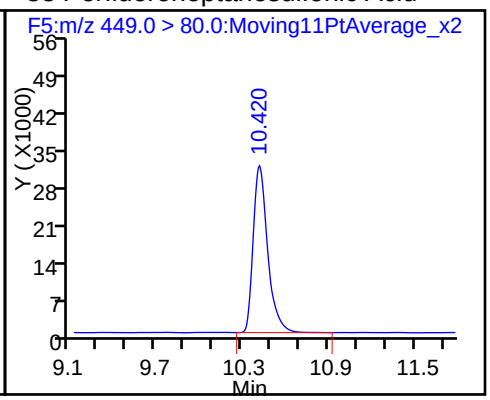
13 Perfluorooctanoic acid



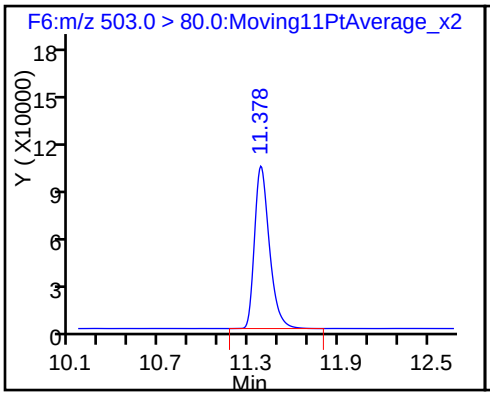
13 Perfluorooctanoic acid



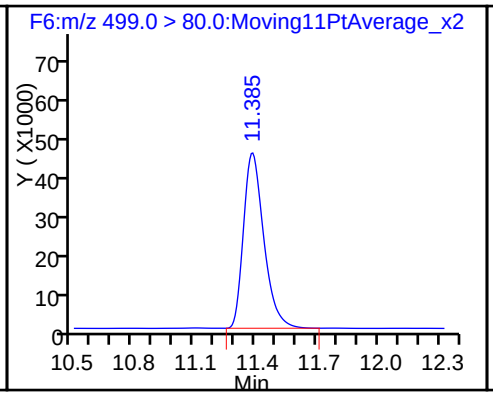
38 Perfluoroheptanesulfonic Acid



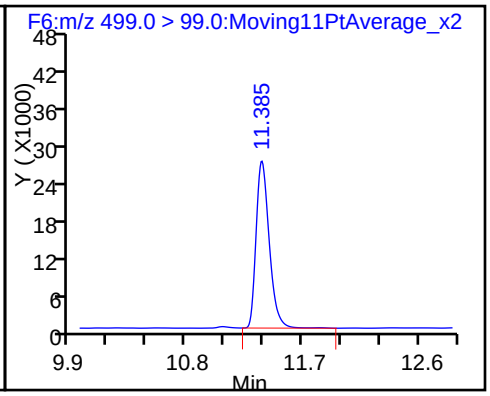
D 16 13C4 PFOS



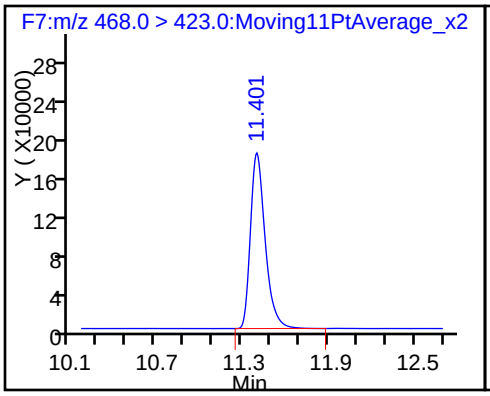
15 Perfluorooctane sulfonic acid



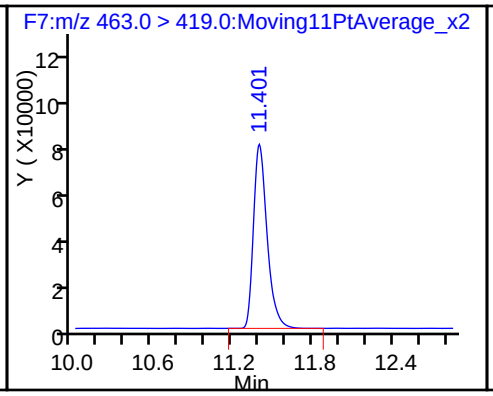
15 Perfluorooctane sulfonic acid



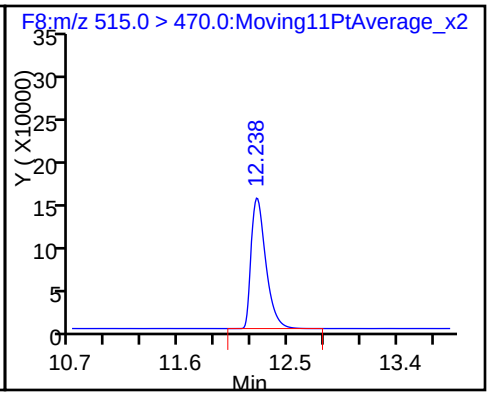
D 17 13C5 PFNA



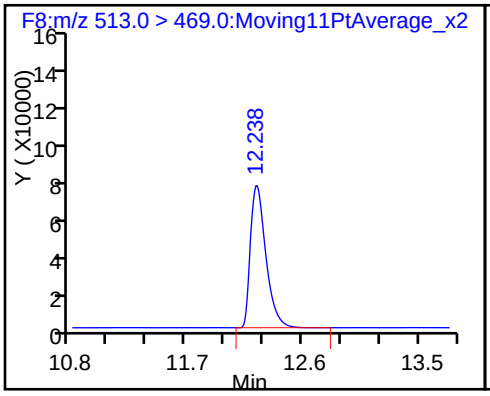
18 Perfluorononanoic acid



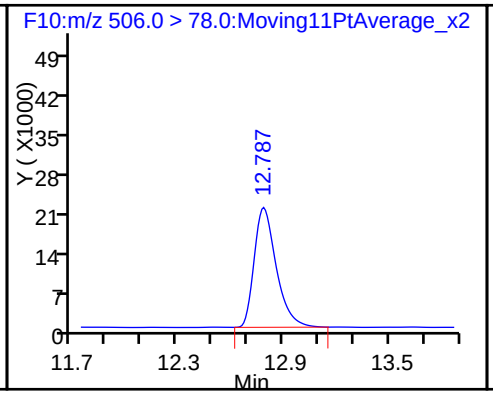
D 19 13C2 PFDA



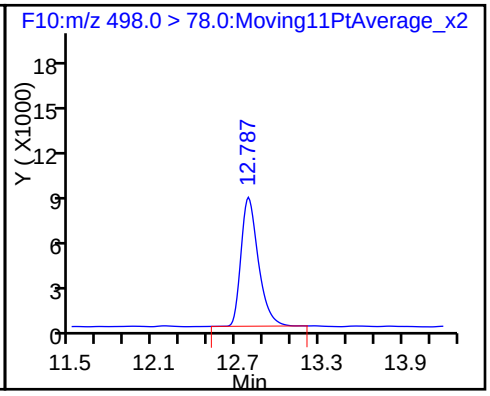
20 Perfluorodecanoic acid



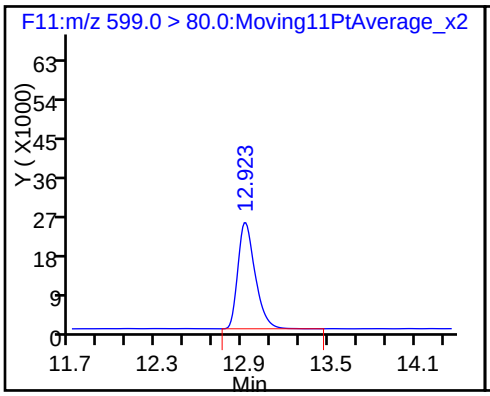
D 23 13C8 FOSA



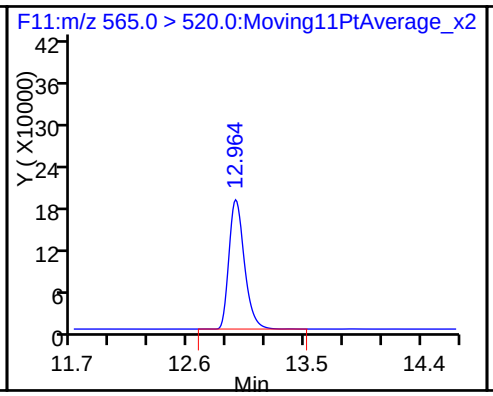
24 Perfluorooctane Sulfonamide



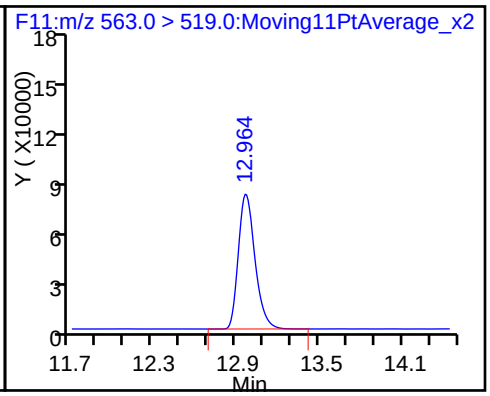
39 Perfluorodecane Sulfonic acid



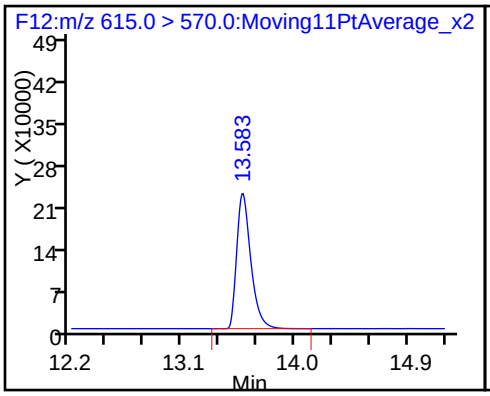
D 26 13C2 PFUnA



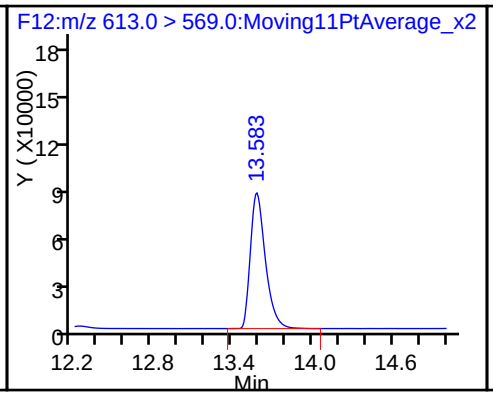
27 Perfluoroundecanoic acid



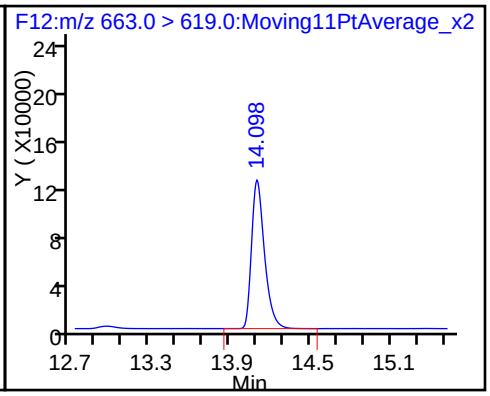
D 28 13C2 PFDoA



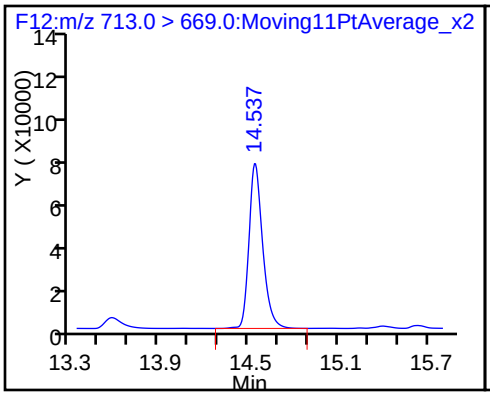
29 Perfluorododecanoic acid



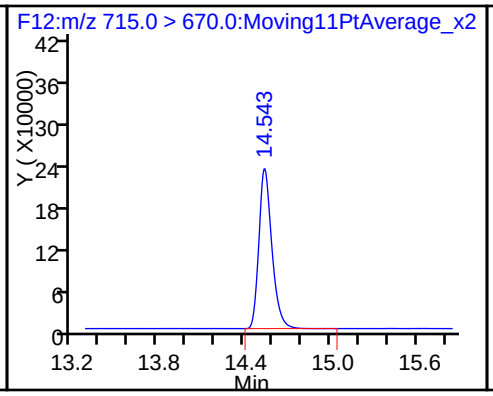
30 Perfluorotridecanoic acid



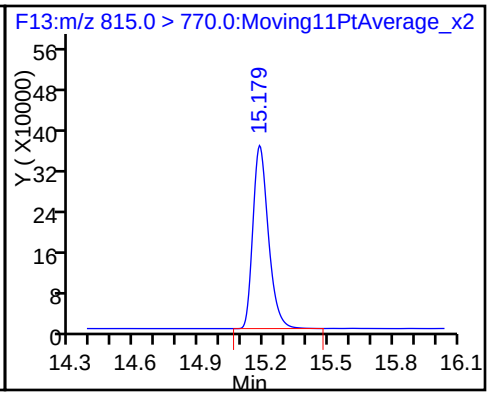
32 Perfluorotetradecanoic acid



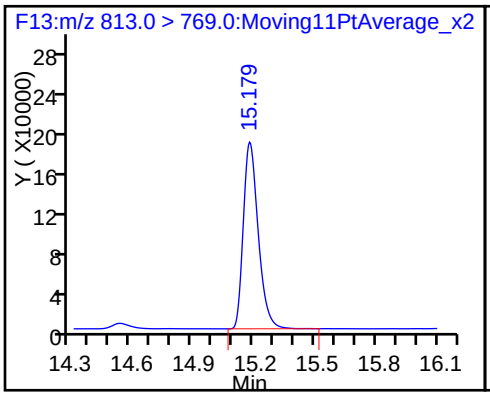
D 33 13C2-PFTeDA



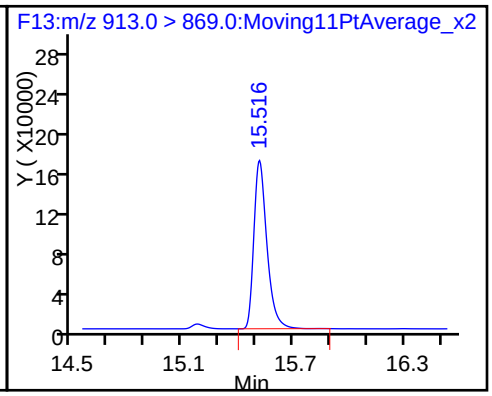
D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid



36 Perfluorooctandecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Instrument ID: A6 Start Date: 02/19/2016 15:08

Analysis Batch Number: 100906 End Date: 02/20/2016 16:59

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-100906/2 IC		02/19/2016 15:08	1	19FEB2016A6A_004.d	Acquity 2.1(mm)
STD 320-100906/3 IC		02/19/2016 15:29	1	19FEB2016A6A_005.d	Acquity 2.1(mm)
STD 320-100906/4 IC		02/19/2016 15:50	1	19FEB2016A6A_006.d	Acquity 2.1(mm)
STD 320-100906/5 IC		02/19/2016 16:11	1	19FEB2016A6A_007.d	Acquity 2.1(mm)
STD 320-100906/6 IC		02/19/2016 16:33	1	19FEB2016A6A_008.d	Acquity 2.1(mm)
STD 320-100906/7 IC		02/19/2016 16:54	1	19FEB2016A6A_009.d	Acquity 2.1(mm)
STD 320-100906/8 IC		02/19/2016 17:15	1	19FEB2016A6A_010.d	Acquity 2.1(mm)
ZZZZZ		02/19/2016 17:36	1		Acquity 2.1(mm)
ICV 320-100906/10		02/19/2016 17:58	1	19FEB2016A6A_012.d	Acquity 2.1(mm)
CCV 320-100906/43		02/20/2016 05:40	1	19FEB2016A6A_045.d	Acquity 2.1(mm)
MB 320-100093/1-A		02/20/2016 06:23	1	19FEB2016A6A_047.d	Acquity 2.1(mm)
LCS 320-100093/2-A		02/20/2016 06:44	1	19FEB2016A6A_048.d	Acquity 2.1(mm)
LCSD 320-100093/3-A		02/20/2016 07:05	1	19FEB2016A6A_049.d	Acquity 2.1(mm)
320-17150-2		02/20/2016 07:26	1	19FEB2016A6A_050.d	Acquity 2.1(mm)
320-17150-4		02/20/2016 07:47	1	19FEB2016A6A_051.d	Acquity 2.1(mm)
320-17150-6		02/20/2016 08:09	1	19FEB2016A6A_052.d	Acquity 2.1(mm)
320-17150-8		02/20/2016 08:30	1	19FEB2016A6A_053.d	Acquity 2.1(mm)
320-17150-9		02/20/2016 08:51	1	19FEB2016A6A_054.d	Acquity 2.1(mm)
320-17150-11		02/20/2016 09:12	1	19FEB2016A6A_055.d	Acquity 2.1(mm)
CCV 320-100906/54		02/20/2016 09:34	1	19FEB2016A6A_056.d	Acquity 2.1(mm)
320-17150-13		02/20/2016 09:55	1	19FEB2016A6A_057.d	Acquity 2.1(mm)
ZZZZZ		02/20/2016 10:16	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 10:37	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 10:58	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 11:20	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 11:41	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 12:02	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 12:23	1		Acquity 2.1(mm)
ZZZZZ		02/20/2016 12:45	1		Acquity 2.1(mm)
CCV 320-100906/65		02/20/2016 13:27	1	19FEB2016A6A_067.d	Acquity 2.1(mm)
CCV 320-100906/75		02/20/2016 16:59	1		Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Batch Number: 100093 Batch Start Date: 02/09/16 10:23 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 02/09/16 20:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00025	LCPFCSP 00039
MB 320-100093/1		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	
LCS 320-100093/2		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
LCSD 320-100093/3		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
320-17150-A-2	OF-FB42B-0216	3535, WS-LC-0025	T	575.48 g	42.91 g	532.6 mL	1.00 mL	50 uL	
320-17150-A-4	OF-FB42A-0216	3535, WS-LC-0025	T	564.91 g	42.89 g	522 mL	1.00 mL	50 uL	
320-17150-A-6	OF-FB35-0216	3535, WS-LC-0025	T	577.94 g	43.02 g	534.9 mL	1.00 mL	50 uL	
320-17150-A-8	OF-FB58-0216	3535, WS-LC-0025	T	583.91 g	42.98 g	540.9 mL	1.00 mL	50 uL	
320-17150-A-9	OF-FB39-0216	3535, WS-LC-0025	T	588.67 g	44.02 g	544.7 mL	1.00 mL	50 uL	
320-17150-A-11	OF-FB40-0216	3535, WS-LC-0025	T	597.25 g	42.99 g	554.3 mL	1.00 mL	50 uL	
320-17150-A-13	OF-FB43-0216	3535, WS-LC-0025	T	589.34 g	44.06 g	545.3 mL	1.00 mL	50 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N Sodium Hydrox./H2O 565548; MeOH 572662; J.T.B Hexane 0000101243
H2O ID	02-09-16
Pipette ID	EC15219
Analyst ID - Reagent Drop	HJA
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SNE
Solvent Lot #	578365
Solvent Name	0.3% Ammonium hydroxide/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk ID	002635307A

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.: 320-17150-1

SDG No.: CTO WE7G PFC Sampling

Batch Number: 100093 Batch Start Date: 02/09/16 10:23 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 02/09/16 20:35

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.

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West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 320-17150, 320-17154 Work List ID(s): 28353, 28492

Extraction Batch: 100093, 100147 Analysis Batch(es): 100305, 100906

Delivery Rank 4 Due Date: 2/8/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch#	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.			✓
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?			✓
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?			✓
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.			✓
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#			✓
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): JRB Date: 2/22/16

2nd Level Reviewer: MWolf Date: 2/22/2016

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100093
Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 2/9/2016 10:23:08AM
Batch End: 2/09/16 20:35

(1)

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-100093/1 N/A	N/A		500 mL 1.00 mL				N/A	N/A	N/A		MB 320-100093/1-A
2	LCS~320-100093/2 N/A	N/A		500 mL 1.00 mL				N/A	N/A	N/A		LCS 320-100093/2-A
3	LCSD~320-100093/3 N/A	N/A		500 mL 1.00 mL				N/A	N/A	N/A		LCSD 320-100093/3-A
	320-17150-A-1 (PFC_IDA_DOD5)	N/A (320-17150-1)	603.30 g 44.76 g	558.5 mL 1.00 mL				2/8/16	5_Days	4	cancel	320-17150-A-1-A
	320-17150-A-2 (PFC_IDA_DOD5)	N/A (320-17150-1)	575.48 g 42.91 g	532.6 mL 1.00 mL				2/8/16	5_Days	4		320-17150-A-2-A
6	320-17150-A-3 (PFC_IDA_DOD5)	N/A (320-17150-1)	597.46 g 44.83 g	552.6 mL 1.00 mL				2/8/16	5_Days	4	cancel	320-17150-A-3-A
7	320-17150-A-4 (PFC_IDA_DOD5)	N/A (320-17150-1)	564.91 g 42.89 g	522 mL 1.00 mL				2/8/16	5_Days	4		320-17150-A-4-A
8	320-17150-A-5 (PFC_IDA_DOD5)	N/A (320-17150-1)	578.05 g 43.87 g	534.2 mL 1.00 mL				2/8/16	5_Days	4	cancel	320-17150-A-5-A
9	320-17150-A-6 (PFC_IDA_DOD5)	N/A (320-17150-1)	577.94 g 43.02 g	534.9 mL 1.00 mL				2/8/16	5_Days	4		320-17150-A-6-A
10	320-17150-A-7 (PFC_IDA_DOD5)	N/A (320-17150-1)	582.39 g 44.94 g	537.5 mL 1.00 mL				2/8/16	5_Days	4	cancel	320-17150-A-7-A

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100093 Analyst: Arauz, Horacio J Batch Open: 2/9/2016 10:23:08AM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-17150-A-8 (PFC_IDA_DOD5)	N/A (320-17150-1)	583.91 g / 42.98 g	540.9 mL / 1.00 mL				2/8/16	5_Days	4		
12	320-17150-A-9 (PFC_IDA_DOD5)	N/A (320-17150-1)	588.67 g / 44.02 g	544.7 mL / 1.00 mL				2/8/16	5_Days	4		
13	320-17150-A-10 (PFC_IDA_DOD5)	N/A (320-17150-1)	583.36 g / 44.57 g	538.8 mL / 1.00 mL				2/8/16	5_Days	4	Cancel	
14	320-17150-A-11 (PFC_IDA_DOD5)	N/A (320-17150-1)	597.25 g / 42.99 g	554.3 mL / 1.00 mL				2/8/16	5_Days	4		
15	320-17150-A-12 (PFC_IDA_DOD5)	N/A (320-17150-1)	596.09 g / 44.90 g	551.2 mL / 1.00 mL				2/8/16	5_Days	4	Cancel	
16	320-17150-A-13 (PFC_IDA_DOD5)	N/A (320-17150-1)	589.34 g / 44.06 g	545.3 mL / 1.00 mL				2/8/16	5_Days	4		
17	320-17150-A-14 (PFC_IDA_DOD5)	N/A (320-17150-1)	593.57 g / 44.47 g	549.1 mL / 1.00 mL				2/8/16	5_Days	4	Cancel	
18	320-17154-A-1 (PFC_IDA_DOD5)	N/A (320-17154-1)	549.36 g / 44.49 g	504.9 mL / 1.00 mL				2/8/16	5_Days	4		
19	320-17154-A-2 (PFC_IDA_DOD5)	N/A (320-17154-1)	577.08 g / 45.84 g	531.2 mL / 1.00 mL				2/8/16	5_Days	4	Cancel	
20	320-17154-A-3 (PFC_IDA_DOD5)	N/A (320-17154-1)	593.62 g / 42.89 g	550.7 mL / 1.00 mL				2/8/16	5_Days	4		
21	320-17154-A-4 (PFC_IDA_DOD5)	N/A (320-17154-1)	581.63 g / 43.14 g	538.5 mL / 1.00 mL				2/8/16	5_Days	4	Cancel	
22	320-17154-A-5 (PFC_IDA_DOD5)	N/A (320-17154-1)	586.86 g / 45.91 g	541 mL / 1.00 mL				2/8/16	5_Days	4	Cancel	

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments),

Batch Number: 320-100093 Analyst: Arauz, Horacio J Batch Open: 2/9/2016 10:23:08AM

Method Code: 320-3535_IVWT-320 Batch End:

23	320-17154-A-6 (PFC_IDA_DOD5)	N/A (320-17154-1)	596.20 g 44.78 g	551.4 mL 1.00 mL				2/8/16	5_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100093 Analyst: Arauz, Horacio J Batch Open: 2/9/2016 10:23:08AM

Method Code: 320-3535_IVWT-320 Batch End:

Batch Notes

First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk Lot Number	002635307A
H2O Lot used	02-09-16
Pipette ID	EC15219
Solvent Name	0.3% Ammonium hydroxide/MeOH
Solvent Lot #	578365
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	SNE
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	0.1N Sodium Hydrox./H2O 565548; MeOH 572662; J.T.B Hexane 0000101243

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100093
Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 2/9/2016 10:23:08AM
Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100093 Analyst: Arauz, Horacio J Batch Open: 2/9/2016 10:23:08AM

Method Code: 320-3535_IVWT-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-100093/1	LCMPFCSU_00025	50 uL	1.00 mL	HJA 2-9-16	SNE 2/9/16
LCS 320-100093/2	LCMPFCSU_00025	50 uL	1.00 mL		
LCS 320-100093/2	LCPFCSP_00039	20 uL	1.00 mL		
LCSD 320-100093/3	LCMPFCSU_00025	50 uL	1.00 mL		
LCSD 320-100093/3	LCPFCSP_00039	20 uL	1.00 mL		
320-17150-A-1	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-2	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-3	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-4	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-5	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-6	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-7	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-8	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-9	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-10	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-11	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-12	LCMPFCSU_00025	50 uL	1.00 mL		
320-17150-A-13	LCMPFCSU_00025	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100093 Analyst: Arauz, Horacio J Batch Open: 2/9/2016 10:23:08AM

Method Code: 320-3535_IVWT-320 Batch End:

320-17150-A-14	LCMPFCSU_00025	50 uL	1.00 mL	HJA 2-9-16	SNE 2/9/16
320-17154-A-1	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-2	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-3	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-4	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-5	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-6	LCMPFCSU_00025	50 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

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Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-100093 Test: PFC-L

Earliest Holding Time: 2-10-16

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

1st Level Reviewer: [signature] Date: 2/09/16

2nd Level Reviewer: SNE Date: 2/10/16

Comments:

Box #18

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 2/10/2016 7:14:29AM

Batch End: 2/10/16 20:25

(2)

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-100147/1 N/A	N/A		500 mL				N/A	N/A	N/A		MB 320-100147/1-A
				1.00 mL								
2	LCS~320-100147/2 N/A	N/A		500 mL				N/A	N/A	N/A		LCS 320-100147/2-A
				1.00 mL								
3	LCSD~320-100147/3 N/A	N/A		500 mL				N/A	N/A	N/A		LCSD 320-100147/3-A
				1.00 mL								
4	320-17154-A-7 (PFC_IDA_DOD5)	N/A (320-17154-1)	606.10 g	561.2 mL				2/8/16	5_Days	4	Cancel	320-17154-A-7-A
			44.87 g	1.00 mL								
5	320-17154-A-8 (PFC_IDA_DOD5)	N/A (320-17154-1)	566.05 g	521.6 mL				2/8/16	5_Days	4		320-17154-A-8-A
			44.50 g	1.00 mL								
6	320-17154-A-9 (PFC_IDA_DOD5)	N/A (320-17154-1)	572.25 g	526.9 mL				2/8/16	5_Days	4	Cancel	320-17154-A-9-A
			45.31 g	1.00 mL								
7	320-17154-A-10 (PFC_IDA_DOD5)	N/A (320-17154-1)	578.68 g	535.9 mL				2/8/16	5_Days	4		320-17154-A-10-A
			42.81 g	1.00 mL								
8	320-17183-A-1 (PFC_IDA_DOD5)	N/A (320-17183-1)	572.46 g	527.2 mL				2/9/16	5_Days	4		320-17183-A-1-A
			45.30 g	1.00 mL								
9	320-17183-A-2 (PFC_IDA_DOD5)	N/A (320-17183-1)	573.90 g	529.2 mL				2/9/16	5_Days	4		320-17183-A-2-A
			44.66 g	1.00 mL								
10	320-17183-A-3 (PFC_IDA_DOD5)	N/A (320-17183-1)	599.77 g	553.8 mL				2/9/16	5_Days	4		320-17183-A-3-A
			45.94 g	1.00 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147 Analyst: Arauz, Horacio J Batch Open: 2/10/2016 7:14:29AM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-17183-A-4 (PFC_IDA_DOD5)	N/A (320-17183-1)	591.89 g 44.22 g	547.7 mL 1.00 mL				2/9/16	5_Days	4	
12	320-17183-A-5 (PFC_IDA_DOD5)	N/A (320-17183-1)	595.34 g 45.96 g	549.4 mL 1.00 mL				2/9/16	5_Days	4	
13	320-17183-A-6 (PFC_IDA_DOD5)	N/A (320-17183-1)	582.18 g 44.82 g	537.4 mL 1.00 mL				2/9/16	5_Days	4	
14	320-17183-A-7 (PFC_IDA_DOD5)	N/A (320-17183-1)	604.2 g 43.25 g	561 mL 1.00 mL				2/9/16	5_Days	4	
15	320-17183-A-8 (PFC_IDA_DOD5)	N/A (320-17183-1)	593.22 g 44.26 g	549 mL 1.00 mL				2/9/16	5_Days	4	
16	320-17183-A-9 (PFC_IDA_DOD5)	N/A (320-17183-1)	598.43 g 44.88 g	553.6 mL 1.00 mL				2/9/16	5_Days	4	
17	320-17183-A-10 (PFC_IDA_DOD5)	N/A (320-17183-1)	574.41 g 44.85 g	529.6 mL 1.00 mL				2/9/16	5_Days	4	
18	320-17184-A-1 (PFC_IDA_DOD5)	N/A (320-17184-1)	573.03 g 44.43 g	528.6 mL 1.00 mL				2/10/16	8_Day_Rush	4	
19	320-17184-A-2 (PFC_IDA_DOD5)	N/A (320-17184-1)	582.88 g 44.14 g	538.7 mL 1.00 mL				2/10/16	8_Day_Rush	4	
20	320-17184-A-3 (PFC_IDA_DOD5)	N/A (320-17184-1)	574.41 g 44.44 g	530 mL 1.00 mL				2/10/16	8_Day_Rush	4	
21	320-17184-A-4 (PFC_IDA_DOD5)	N/A (320-17184-1)	591.29 g 44.50 g	546.8 mL 1.00 mL				2/10/16	8_Day_Rush	4	
22	320-17184-A-5 (PFC_IDA_DOD5)	N/A (320-17184-1)	582.37 g 45.04 g	537.3 mL 1.00 mL				2/10/16	8_Day_Rush	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147 Analyst: Arauz, Horacio J Batch Open: 2/10/2016 7:14:29AM

Method Code: 320-3535_IVWT-320 Batch End:

23	320-17184-A-6 (PFC_IDA_DOD5)	N/A (320-17184-1)	574.59 g 44.63 g	530 mL 1.00 mL				2/10/16	8_Day_Rush	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147 Analyst: Arauz, Horacio J Batch Open: 2/10/2016 7:14:29AM

Method Code: 320-3535_IVWT-320 Batch End:

Batch Notes

First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk Lot Number	002635307A
H2O Lot used	02-09-16
Pipette ID	EC15219
Solvent Name	0.3% Ammonium hydroxide/MeOH
Solvent Lot #	578365
Analyst who added reagent	HJA
SU Reagent Drop	HJA
SU Reagent Drop Witness	CRF
Acid Name	NA
Acid Lot	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl Lot #	NA
SOP Number	WS-LC-0025
Batch Comment	0.1N Sodium Hydrox./H2O 565548; MeOH 572662; J.T.B Hexane 0000101243

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147
Analyst: Arauz, Horacio J
Batch Open: 2/10/2016 7:14:29AM

Method Code: 320-3535_IVWT-320
Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147
Analyst: Arauz, Horacio J
Batch Open: 2/10/2016 7:14:29AM
Method Code: 320-3535_IVWT-320
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-100147/1	LCMPFCSU_00025	50 uL	1.00 mL	HJA 2-10-16	CFR 2/10/16
LCS 320-100147/2	LCMPFCSU_00025	50 uL	1.00 mL		
LCS 320-100147/2	LCPFCSP_00039	20 uL	1.00 mL		
LCSD 320-100147/3	LCMPFCSU_00025	50 uL	1.00 mL		
LCSD 320-100147/3	LCPFCSP_00039	20 uL	1.00 mL		
320-17154-A-7	LCMPFCSU_00025	50 uCi	1.00 mL		
320-17154-A-8	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-9	LCMPFCSU_00025	50 uL	1.00 mL		
320-17154-A-10	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-1	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-2	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-3	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-4	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-5	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-6	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-7	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-8	LCMPFCSU_00025	50 uL	1.00 mL		
320-17183-A-9	LCMPFCSU_00025	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-100147 Analyst: Arauz, Horacio J Batch Open: 2/10/2016 7:14:29AM

Method Code: 320-3535_IVWT-320 Batch End:

320-17183-A-10	LCMPFCSU_00025	50 uL	1.00 mL	HSA 2-10-16	CFR 2/10/16
320-17184-A-1	LCMPFCSU_00025	50 uL	1.00 mL		
320-17184-A-2	LCMPFCSU_00025	50 uL	1.00 mL		
320-17184-A-3	LCMPFCSU_00025	50 uL	1.00 mL		
320-17184-A-4	LCMPFCSU_00025	50 uL	1.00 mL		
320-17184-A-5	LCMPFCSU_00025	50 uL	1.00 mL		
320-17184-A-6	LCMPFCSU_00025	50 uL	1.00 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-100197 Test: PFC-L

Earliest Holding Time: 2-10-16 / 2-11-16

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

1st Level Reviewer: [signature] Date: 2/10/16

2nd Level Reviewer: SAE Date: 2/10/16

Comments:

BOX 20

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento
ESC-Extraction Master Sheet

Holding Time Due: _____ Project Due: _____

BATCH #: _____ Initiated By: HSA Date: 2-18-16

Test: QC-537 Spike Extn Comp'd By: HSA Date: 2-18-16

QC Code	Lot ID	Sample #	Sample Size / Initial Mass	Final Volume / Final Mass	Chlorine checked
			ml	ml	
	LC537-SU_00012		500	ml	
	LC537-MSP_00008		500	1.00	

SOP No.:

EXTRACTION COMMENTS:

Multi-Incremental Sampling/Date: _____

Dried/Date_____ Ground//Date_____

Sonicated - Start: End: Date:

Cleanup by/Date_____ Dilution by/Date_____

Final Vialling /Date_____

Millipore Water Dispensed / Date_____

SPE Cartridge: Waters Lot #_____

QCCodes	

QCCodes	Standard Information				
	Volume	STD ID	Expire	STD Name	Std Conc.
HSA 50	50 ml	LC537-SU_00012	2/25/16	537 Surrogat	0.2 µg/ml
	50 ml	LC537-MSP_00008	4-1-16	537-Spike	200-1500 ng
	10 ml	LC537-IS_00010	3-16-16	IS	1-2.5 µg/ml

Spiked By / Date: _____ Witnessed By / Date: _____

QC Codes: B = MB, C = LCS, L = LCSD, S = MS, D = SD, FB = Filter Blank

Subcontract Data

Prepared for: Test America

Project: 480-95806
Hoosick Falls, NY

Analytical Data Package
(Level IV)

Analysis: Low level PFOS and PFOA in water (Method 537)

Maxxam Job #: B630796

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639

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Maxxam Analytics International
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Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Table of Contents

I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

M Di Grazia

Project Manager

Maxxam
A Bureau Veritas Group Company

Melissa DiGrazia
2016.03.08 13:11:31 -05'00'

Maxxam Analytics International
6740 Campobello Rd.
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www.maxxamanalytics.com

Glossary of Terms

- ***Detection Limit (DL)*** this can also be called ***Method Detection Limit (MDL***): The lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value. (Clarification): The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence. At the DL, the false positive rate (Type I error) is 1%.

- ***Limit of Detection (LOD*)**: An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. (Clarification): The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

- ***Limits of Quantitation (LOQ)*** this can also be called ***Reporting Detection Limit (RDL)***: The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. (Clarification): The lowest concentration that produces a quantitative result within specified limits of precision and bias. For DoD projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard.

- ***Acceptance Criteria*** are values used by the laboratory to determine that a process is in control.

- ***Accuracy*** is the degree of agreement of a measured value with the true or expected value.

- ***Calibration Standards*** are a set of solutions containing the analytes of interest at a specified concentration.

- ***Calibration Verification Standard*** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to access whether the initial calibration is still valid

- ***Certified Reference Material*** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.

- ***Internal Standard*** a deuterated or ^{13}C-labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.

- ***Isomer*** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.

- ***Method Blank*** is a laboratory control sample using reagents that are known to be free of contamination.

- ***Precision*** is the degree of agreement between the data generated from repetitive measurements under specific conditions.

- ***Quality Assurance*** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.

- ***Quality Control*** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.

- ***RSD*** is the relative standard deviation.

- ***Blank Spike*** is a laboratory control sample that has been fortified with native analytes of interest.

- ***Window Defining Mixture*** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.

- ***RPD*** or Relative Percent Difference. A measure used to compare duplicate sample analysis.

- ***EMPC/NDR –*** Peak detected does not meet ratio criteria and has resulted in a higher detection limit.

1.0 Project Narrative

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Maxxam Job: B630803

Sample Analysis

All samples were initially analyzed on QC batch 4384677 (2016/02/18). Recoveries of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) were above the upper control limit. Laboratory spiked water (LCS) resulted in satisfactory recovery of the compounds of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were U-flagged, this potential bias has no impact.

The concentrations of Perfluorohexanesulfonate (PFHxS) and Perfluorooctanoic acid (PFOA) exceeded the upper calibration range for the following sample originally analyzed on QC batch 4384677 (2016/02/18):

BVX947 *OF-RW42B-0216*

This sample was re-analyzed with an appropriate dilution on QC batch 4385924 (2016/02/18). Detection limits were adjusted accordingly. Re-analysis of the diluted sample with was performed a day after hold time had passed. Due to the chemical stability of perfluorinated compounds, the hold time exceedance is not expected to have a significant impact on data quality.

Data Qualifiers

In the Results of Analyses, U-flags are applied to results that are less than the DL (MDL). J-flags are applied to results that are less than the RDL (LOQ) but greater than the DL (MDL). Due to limitations in LIMS, the results cannot be U-flagged to the LOD. The LODs for each analyte are presented in the table below.

Parameter	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)
Perfluorobutane sulfonate (PFBS)	0.27	1.0	2.0
Perfluorohexane sulfonate (PFHxS)	0.40	1.0	2.0
Perfluoroheptanoic acid (PFHpA)	0.39	1.0	2.0
Perfluorooctanoic acid (PFOA)	0.39	1.0	2.0
Perfluorooctane sulfonate (PFOS)	0.30	1.0	2.0
Perfluorononanoic acid (PFNA)	0.33	1.0	2.0

Sin Chii Chia, B.Sc.
schia@maxxam.ca
Office 905 817 5700

PROJECT NARRATIVE

Maxxam Analytics
Client Project #: 320-17150

Client: TestAmerica
Client Project: 320-17150

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run	Initial Calibration
Low level PFOS and PFOA in water						
BVX947	OF-RW42B-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18
BVX948	OF-RW42A-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18
BVX949	OF-RW35-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18
BVX950	OF-RW58-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18
BVX951	OF-RW39-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18
BVX952	OF-RW40-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18
BVX953	OF-RW43-0216	2016/02/03	2016/02/13	2016/02/17	2016/02/18	2016/02/18

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: Sample OF-FB43-0216 was not received.

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

M Di Grazia

2016/03/08
Date

2. Sample Management Records

Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

2.1 Sample Custody

Maxxam Analytics International
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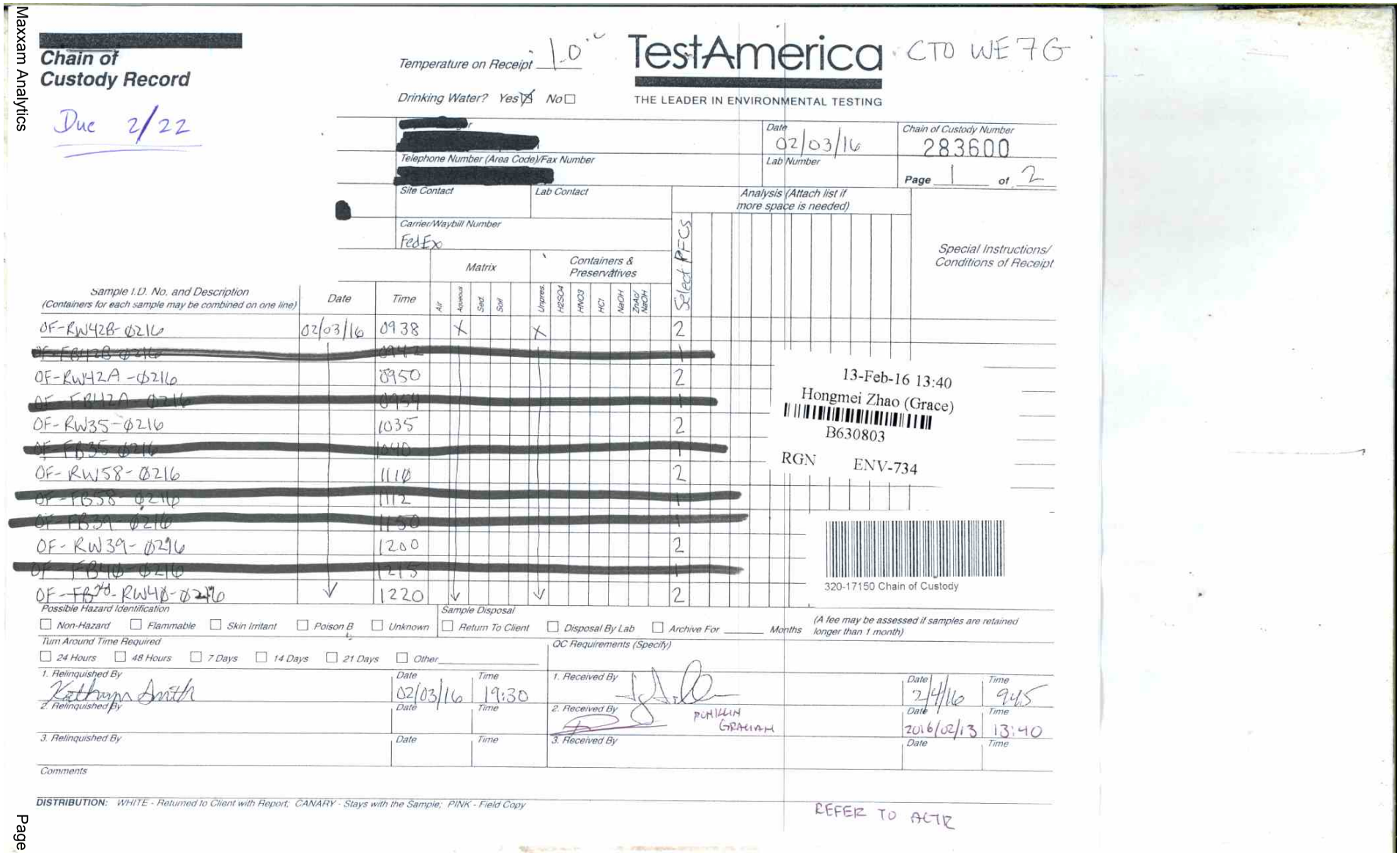

Chain of Custody Record

Due 2/22

Temperature on Receipt 1.0 °C

Drinking Water? Yes ☒ No ☐

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

[redacted]

Telephone Number (Area Code)/Fax Number [redacted]

Date 02/03/16 | Chain of Custody Number 283600 | Lab Number | Page 1 of 2

Site Contact | Lab Contact

Carrier/Waybill Number: FedEx

Analysis (Attach list if more space is needed): Select PFCs

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Select PFCs
OF-RW42B-0216	02/03/16	0938		X			X						2
~~OF-FB42B-0216~~		~~0944~~											1
OF-RW42A-0216		0950											2
~~OF-FB42A-0216~~		~~0954~~											1
OF-RW35-0216		1035											2
~~OF-FB35-0216~~		~~1040~~											1
OF-RW58-0216		1110											2
~~OF-FB58-0216~~		~~1112~~											1
~~OF-FB39-0216~~		~~1150~~											1
OF-RW39-0216		1200											2
~~OF-FB10-0216~~		~~1215~~											1
OF-FB20-RW48-0216	↓	1220	↓				↓						2

13-Feb-16 13:40
Hongmei Zhao (Grace)
B630803
RGN ENV-734

320-17150 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kathryn Smith	02/03/16	19:30	1. Received By	2/4/16	945
2. Relinquished By			2. Received By: PHILLIP GRAHAM	2016/02/13	13:40
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

REFER TO ACTR

...of
...stody Record

Due 2/22

Temperature on Receipt 1.0

Drinking Water? Yes☒ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

Project Manager [redacted]		Date	Chain of Custody Number 283601
Telephone Number (Area Code)/Fax Number [redacted]		Lab Number	Page 2 of 2
Site Contact	Lab Contact	Analysis (Attach list if more space is needed)	
Carrier/Waybill Number FedEx			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Select PFCs	Special Instructions/ Conditions of Receipt
OF-EB43-160216	02/03/16	1605		X			X						1	
OF-RW43-160216	↓	1610		X			X						2	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By [redacted] Smith	Date 02/03/16	Time 19:30	1. Received By		
2. Relinquished By	Date	Time	2. Received By	Date 2/4/16	Time 945
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

3. Analytical Results

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3.1 Summary Report

Maxxam Analytics International
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Your Project #: 320-17150
Your C.O.C. #: NA

Attention:PFC Reporting Group

TestAmerica
Sacramento
880 Riverside Parkway
West Sacramento, CA
USA 95605

Report Date: 2016/03/08
Report #: R3920718
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B630803
Received: 2016/02/13, 13:40

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Low level PFOS and PFOA in water	7	2016/02/17	2016/02/18	CAM SOP-00894	EPA 537 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiGrazia, Project Manager - ATUT
Email: MDiGrazia@maxxam.ca
Phone# (905) 817-5700
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B630803
Report Date: 2016/03/08

TestAmerica
Client Project #: 320-17150

RESULTS OF ANALYSES OF WATER

Maxxam ID		BVX947				BVX948	BVX949			
Sampling Date		2016/02/03 09:38				2016/02/03 09:50	2016/02/03 10:35			
COC Number		NA				NA	NA			
	UNITS	OF-RW42B-0216	RDL	MDL	QC Batch	OF-RW42A-0216	OF-RW35-0216	RDL	MDL	QC Batch
Miscellaneous Parameters										
Perfluorobutane Sulfonate (PFBS)	ng/L	62	2.0	0.27	4384677	1.8 J	0.27 U	2.0	0.27	4384677
Perfluoroheptanoic Acid (PFHpA)	ng/L	16	2.0	0.39	4384677	0.94 J	0.39 U	2.0	0.39	4384677
Perfluorohexane Sulfonate (PFHxS)	ng/L	700 (1)	20	4.0	4385924	9.7	0.40 U	2.0	0.40	4384677
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	240 (1)	20	3.9	4385924	5.0	0.39 U	2.0	0.39	4384677
Perfluorononanoic Acid (PFNA)	ng/L	0.88 J	2.0	0.33	4384677	0.33 U	0.33 U	2.0	0.33	4384677
Perfluorooctane Sulfonate (PFOS)	ng/L	16	2.0	0.30	4384677	0.30 U	0.30 U	2.0	0.30	4384677
Surrogate Recovery (%)										
13C4-Perfluoroheptanoic acid	%	62	N/A	N/A	4384677	54	54	N/A	N/A	4384677
13C4-Perfluorooctanesulfonate	%	64	N/A	N/A	4384677	59	56	N/A	N/A	4384677
13C4-Perfluorooctanoic acid	%	60	N/A	N/A	4385924	60	60	N/A	N/A	4384677
13C5-Perfluorononanoic acid	%	71	N/A	N/A	4384677	62	67	N/A	N/A	4384677
18O2-Perfluorohexanesulfonate	%	70	N/A	N/A	4385924	59	59	N/A	N/A	4384677

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

Maxxam ID		BVX950	BVX951	BVX952	BVX953			
Sampling Date		2016/02/03 11:10	2016/02/03 12:00	2016/02/03 12:20	2016/02/03 16:10			
COC Number		NA	NA	NA	NA			
	UNITS	OF-RW58-0216	OF-RW39-0216	OF-RW40-0216	OF-RW43-0216	RDL	MDL	QC Batch
Miscellaneous Parameters								
Perfluorobutane Sulfonate (PFBS)	ng/L	0.27 U	0.27 U	0.27 U	1.2 J	2.0	0.27	4384677
Perfluoroheptanoic Acid (PFHpA)	ng/L	0.39 U	0.39 U	0.39 U	0.81 J	2.0	0.39	4384677
Perfluorohexane Sulfonate (PFHxS)	ng/L	0.40 U	0.40 U	0.40 U	10	2.0	0.40	4384677
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	0.39 U	0.39 U	0.39 U	7.9	2.0	0.39	4384677
Perfluorononanoic Acid (PFNA)	ng/L	0.33 U	0.33 U	0.33 U	0.57 J	2.0	0.33	4384677
Perfluorooctane Sulfonate (PFOS)	ng/L	0.30 U	1.8 J	0.30 U	11	2.0	0.30	4384677
Surrogate Recovery (%)								
13C4-Perfluoroheptanoic acid	%	51	51	56	59	N/A	N/A	4384677
13C4-Perfluorooctanesulfonate	%	59	63	63	63	N/A	N/A	4384677
13C4-Perfluorooctanoic acid	%	57	60	60	59	N/A	N/A	4384677
13C5-Perfluorononanoic acid	%	66	61	68	66	N/A	N/A	4384677
18O2-Perfluorohexanesulfonate	%	57	58	59	56	N/A	N/A	4384677

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

TEST SUMMARY

Maxxam ID: BVX947 **Collected:** 2016/02/03
Sample ID: OF-RW42B-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX948 **Collected:** 2016/02/03
Sample ID: OF-RW42A-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX949 **Collected:** 2016/02/03
Sample ID: OF-RW35-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX950 **Collected:** 2016/02/03
Sample ID: OF-RW58-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX951 **Collected:** 2016/02/03
Sample ID: OF-RW39-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX952 **Collected:** 2016/02/03
Sample ID: OF-RW40-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

Maxxam ID: BVX953 **Collected:** 2016/02/03
Sample ID: OF-RW43-0216 **Shipped:**
Matrix: Water **Received:** 2016/02/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA in water	LCMS	4384677	2016/02/17	2016/02/18	Colm McNamara

GENERAL COMMENTS

Report revised to include dilution factors and correct MDL values.

Perfluoroheptanoic acid (PFHpA) MDL = 0.39, LOD = 1.0, LOQ = 2.0
Perfluorooctanoic acid (PFOA) MDL = 0.39, LOD = 1.0, LOQ = 2.0
Perfluorononanoic acid (PFNA) MDL = 0.33, LOD = 1.0, LOQ = 2.0
Perfluorobutane sulfonate (PFBS) MDL = 0.27, LOD = 1.0, LOQ = 2.0
Perfluorohexane sulfonate (PFHxS) MDL = 0.40, LOD = 1.0, LOQ = 2.0
Perfluorooctane sulfonate (PFOS) MDL = 0.30, LOD = 1.0, LOQ = 2.0
All Units are in ng/L
Sample BVX947, Low level PFOS and PFOA in water: Test repeated.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4384677	CM5	Matrix Spike	13C4-Perfluoroheptanoic acid	2016/02/18		65	%	50 - 130
			13C4-Perfluorooctanesulfonate	2016/02/18		66	%	50 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		64	%	50 - 130
			13C5-Perfluorononanoic acid	2016/02/18		68	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/18		65	%	50 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18		133 (1)	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18		123	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18		132 (1)	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/18		119	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		128	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		131 (1)	%	70 - 130
4384677	CM5	RPD	Perfluorobutane Sulfonate (PFBS)	2016/02/18	7.1		%	30
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18	20		%	30
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18	7.7		%	30
			Perfluorononanoic Acid (PFNA)	2016/02/18	14		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	11		%	30
			Perfluorooctane Sulfonate (PFOS)	2016/02/18	15		%	30
4384677	CM5	Spiked Blank	13C4-Perfluoroheptanoic acid	2016/02/18		86	%	50 - 130
			13C4-Perfluorooctanesulfonate	2016/02/18		88	%	50 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		87	%	50 - 130
			13C5-Perfluorononanoic acid	2016/02/18		86	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/18		85	%	50 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18		111	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18		111	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18		109	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2016/02/18		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18		107	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2016/02/18		106	%	70 - 130
4384677	CM5	Method Blank	13C4-Perfluoroheptanoic acid	2016/02/18		88	%	50 - 130
			13C4-Perfluorooctanesulfonate	2016/02/18		91	%	50 - 130
			13C4-Perfluorooctanoic acid	2016/02/18		84	%	50 - 130
			13C5-Perfluorononanoic acid	2016/02/18		91	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/18		89	%	50 - 130
			Perfluorobutane Sulfonate (PFBS)	2016/02/18	0.27 U, MDL=0.27		ng/L	
			Perfluoroheptanoic Acid (PFHpA)	2016/02/18	0.39 U, MDL=0.39		ng/L	
			Perfluorohexane Sulfonate (PFHxS)	2016/02/18	0.40 U, MDL=0.40		ng/L	
			Perfluorononanoic Acid (PFNA)	2016/02/18	0.33 U, MDL=0.33		ng/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/18	0.39 U, MDL=0.39		ng/L	
			Perfluorooctane Sulfonate (PFOS)	2016/02/18	0.30 U, MDL=0.30		ng/L	
4385924	CM5	Matrix Spike	13C4-Perfluorooctanoic acid	2016/02/19		118	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/19		113	%	50 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/19		93	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19		92	%	70 - 130
4385924	CM5	RPD	Perfluorohexane Sulfonate (PFHxS)	2016/02/19	13		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19	18		%	30
4385924	CM5	Spiked Blank	13C4-Perfluorooctanoic acid	2016/02/19		115	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/19		108	%	50 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/19		94	%	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19		93	%	70 - 130
4385924	CM5	Method Blank	13C4-Perfluorooctanoic acid	2016/02/19		108	%	50 - 130
			18O2-Perfluorohexanesulfonate	2016/02/19		99	%	50 - 130
			Perfluorohexane Sulfonate (PFHxS)	2016/02/19	0.40 U, MDL=0.40		ng/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2016/02/19	0.39 U, MDL=0.39		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B630803
Report Date: 2016/03/08

TestAmerica
Client Project #: 320-17150

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

METHOD 537

DETERMINATION OF SELECTED PERFLUORINATED ALKYL ACIDS IN DRINKING WATER BY SOLID PHASE EXTRACTION AND LIQUID CHROMATOGRAPHY/TANDEM MASS SPECTROMETRY (LC/MS/MS)

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3.2 Sample Chromatograms

Maxxam Analytics International
6740 Campobello Rd
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L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

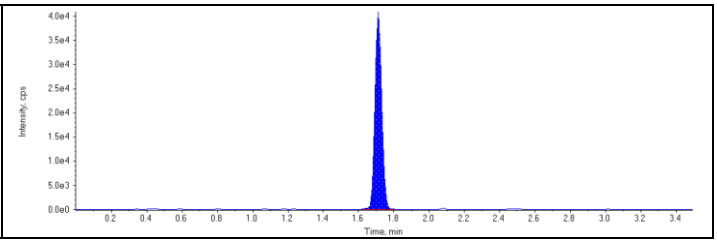
Sample Name	**4384677~BVX947-01**	**Injection Vial**	26
Sample ID	4384677~BVX947-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 2:54:16 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Re-injected
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	108000.	1.71	1.00	-
MPFHpA	357000.	1.75	1.00	-
MPFOA	296000.	1.92	1.00	-
MPFOS	140000.	2.00	1.00	-
MPFNA	218000.	2.06	1.00	-
13C6-PFHxA IS	4120000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	3010000	1.17	N/A	72.8	N/A
PFHxS 1	23100000	1.71	N/A	542.	N/A
PFHpA 1	900000	1.75	N/A	16.5	N/A
PFOA 1	11000000	1.92	N/A	197.	N/A
PFOS 1	477000	1.95	N/A	15.8	N/A
PFNA 1	15100	2.06	N/A	0.826	N/A
18O2-PFHxS	108000	1.71	N/A	52.2	N/A
13C4-PFHpA	357000	1.75	N/A	59.3	N/A
13C4-PFOA	296000	1.92	N/A	55.5	N/A
13C4-PFOS	140000	2.00	N/A	61.4	N/A
13C5-PFNA	218000	2.06	N/A	61.8	N/A
13C6-PFHxA	4120000	1.49	N/A	111.	N/A

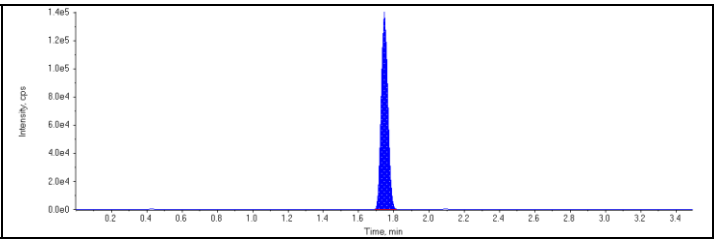
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



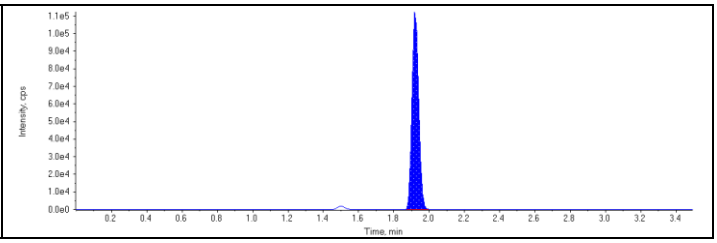
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



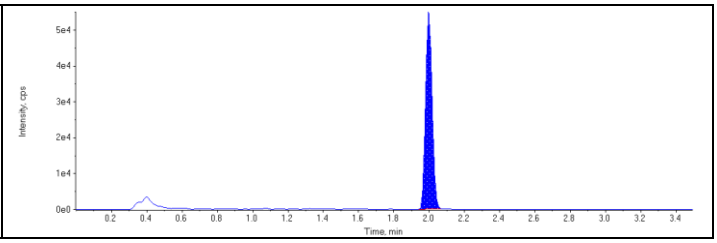
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



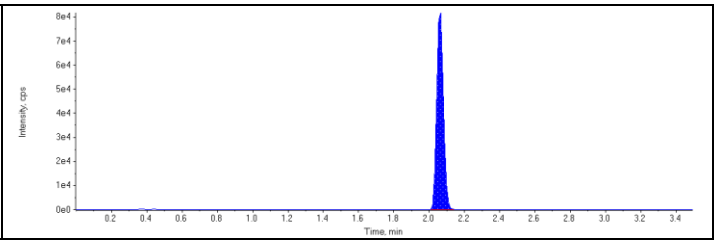
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



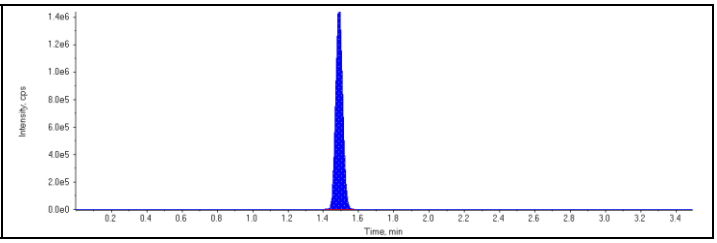
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

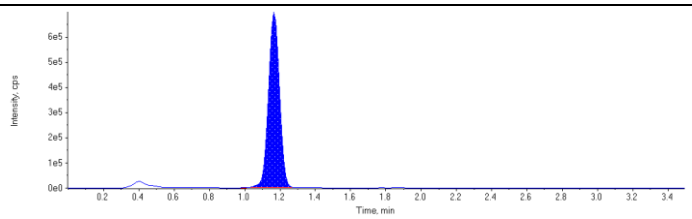
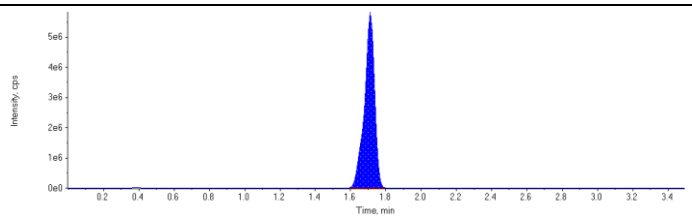
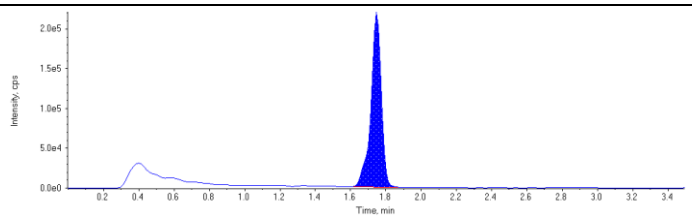
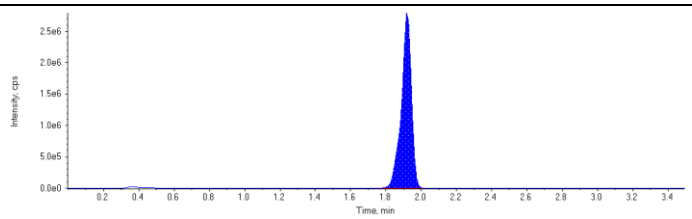
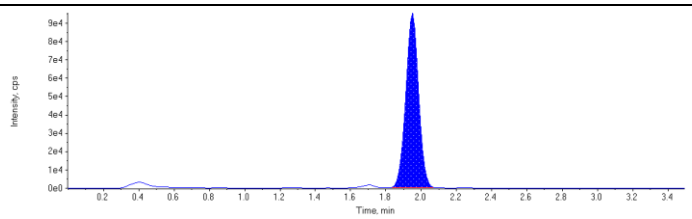
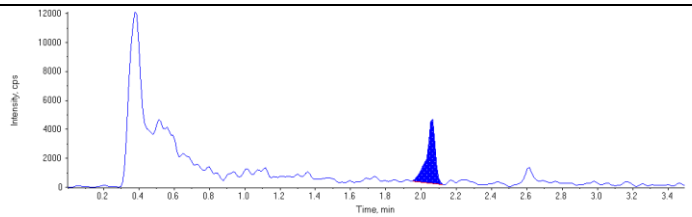
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

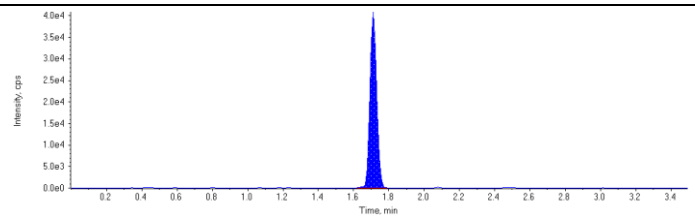
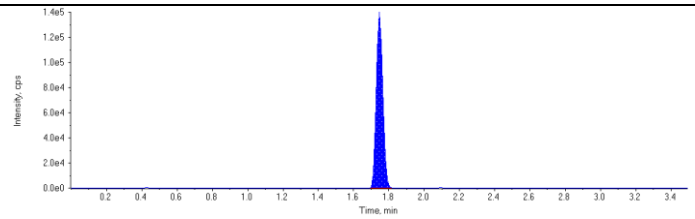
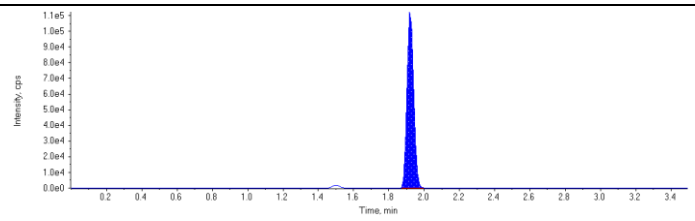
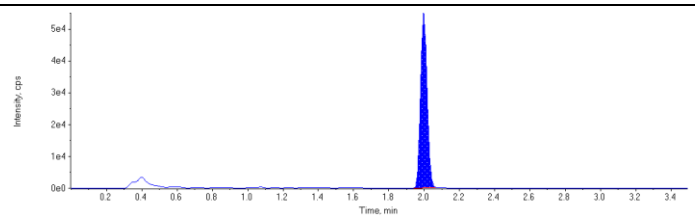
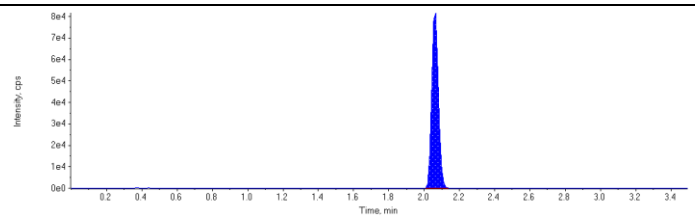
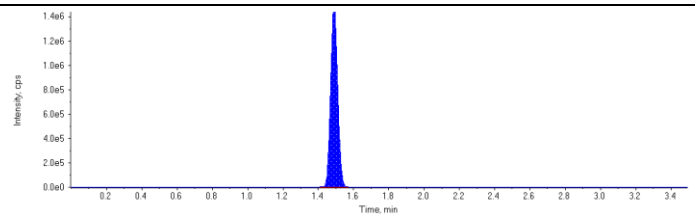


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 72.8 µg/L Area Ratio: 27.8 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 542. µg/L Area Ratio: 213. Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 16.5 µg/L Area Ratio: 2.52 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 197. µg/L Area Ratio: 37.3 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.95 (2.00) min Calculated Conc: 15.8 µg/L Area Ratio: 3.40 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 0.826 µg/L Area Ratio: 0.0693 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 52.2 µg/L Area Ratio: 0.0263 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 59.3 µg/L Area Ratio: 0.0866 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 55.5 µg/L Area Ratio: 0.0718 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 61.4 µg/L Area Ratio: 0.0340 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 61.8 µg/L Area Ratio: 0.0528 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 111. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

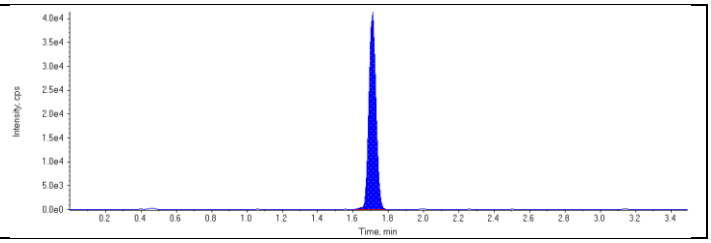
Sample Name	**4384677~BVX947-01**	**Injection Vial**	26
Sample ID	4384677~BVX947-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 5:01:46 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Reported
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	114000.	1.71	1.00	-
MPFHpA	334000.	1.74	1.00	-
MPFOA	293000.	1.92	1.00	-
MPFOS	132000.	2.00	1.00	-
MPFNA	224000.	2.06	1.00	-
13C6-PFHxA IS	3720000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	2700000	1.16	N/A	62.1	N/A
PFHxS 1	22300000	1.71	N/A	498.	N/A
PFHpA 1	822000	1.74	N/A	16.1	N/A
PFOA 1	10400000	1.92	N/A	189.	N/A
PFOS 1	455000	1.95	N/A	15.9	N/A
PFNA 1	17900	2.06	N/A	0.881	N/A
18O2-PFHxS	114000	1.71	N/A	60.9	N/A
13C4-PFHpA	334000	1.74	N/A	61.5	N/A
13C4-PFOA	293000	1.92	N/A	60.9	N/A
13C4-PFOS	132000	2.00	N/A	64.3	N/A
13C5-PFNA	224000	2.06	N/A	70.6	N/A
13C6-PFHxA	3720000	1.48	N/A	100.	N/A

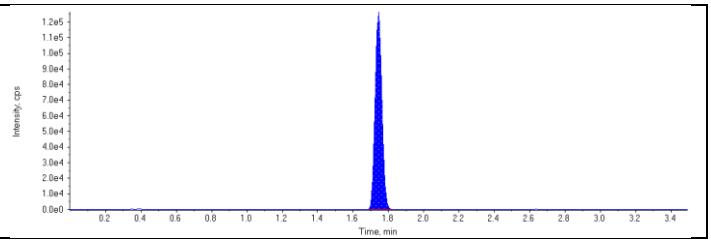
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



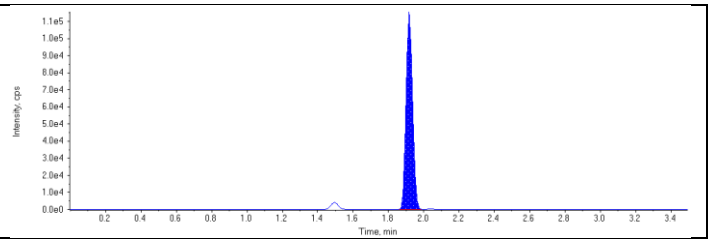
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



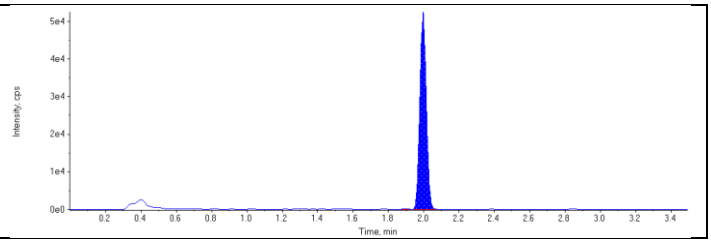
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



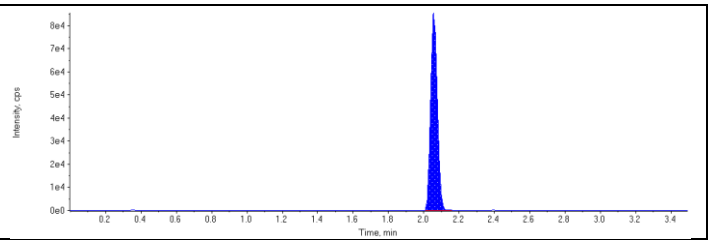
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



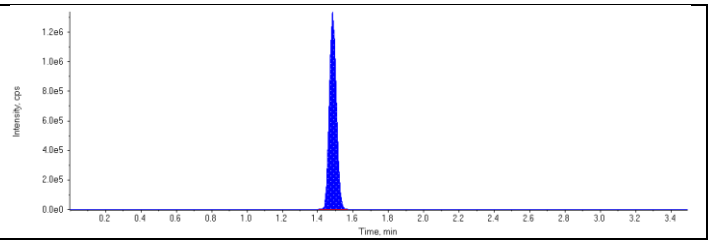
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

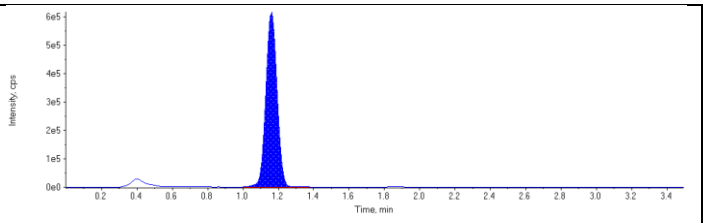
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 62.1 µg/L

Area Ratio: 23.7

Sample Type: (Unknown)



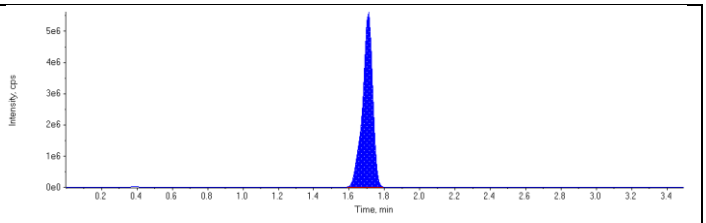
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 498. µg/L

Area Ratio: 196.

Sample Type: (Unknown)



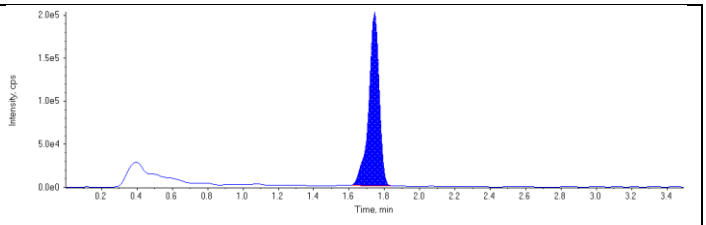
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 16.1 µg/L

Area Ratio: 2.46

Sample Type: (Unknown)



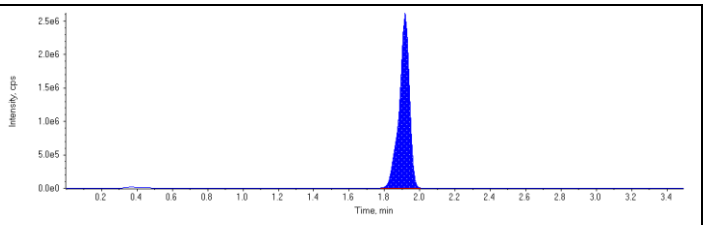
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 189. µg/L

Area Ratio: 35.7

Sample Type: (Unknown)



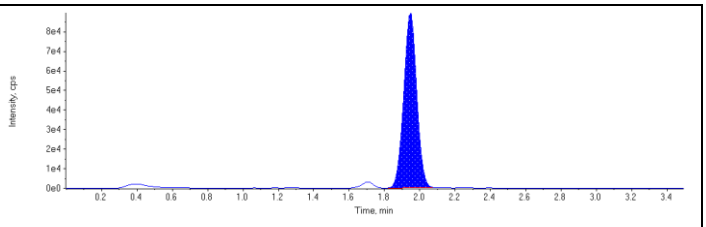
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.95 (2.00) min

Calculated Conc: 15.9 µg/L

Area Ratio: 3.44

Sample Type: (Unknown)



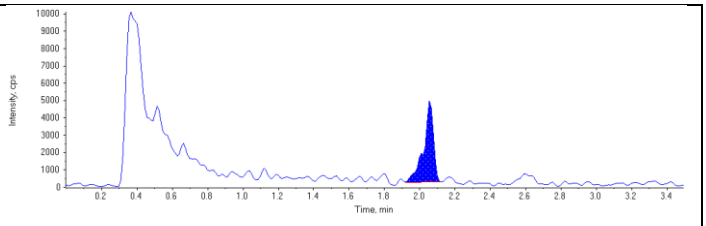
PFNA 1 (462.900/419.000 Da)

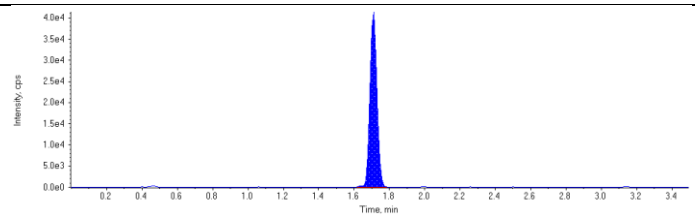
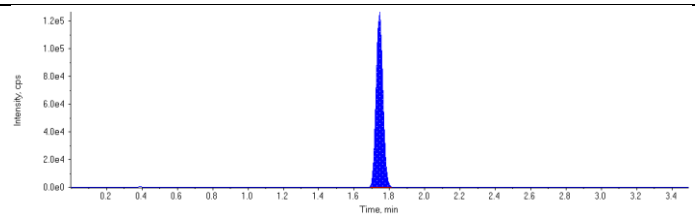
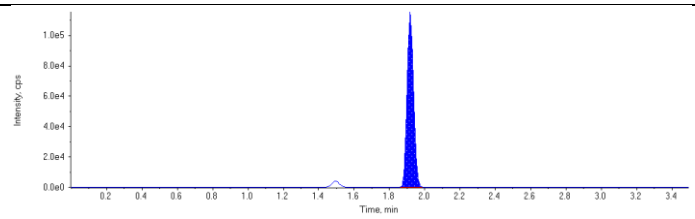
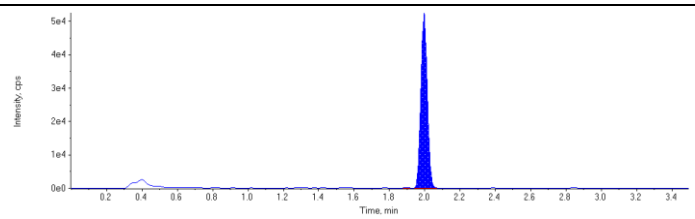
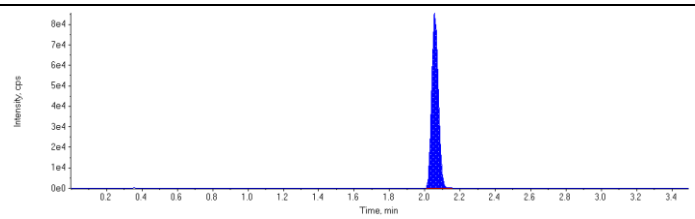
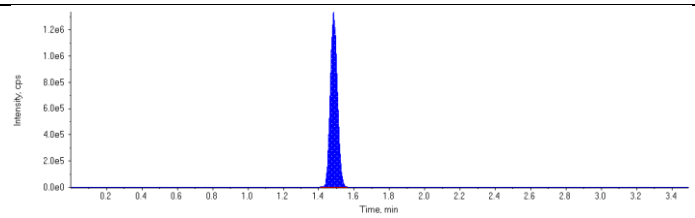
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 0.881 µg/L

Area Ratio: 0.0800

Sample Type: (Unknown)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 60.9 µg/L Area Ratio: 0.0306 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 61.5 µg/L Area Ratio: 0.0898 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 60.9 µg/L Area Ratio: 0.0787 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 64.3 µg/L Area Ratio: 0.0356 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 70.6 µg/L Area Ratio: 0.0603 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.42) min Calculated Conc: 100. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

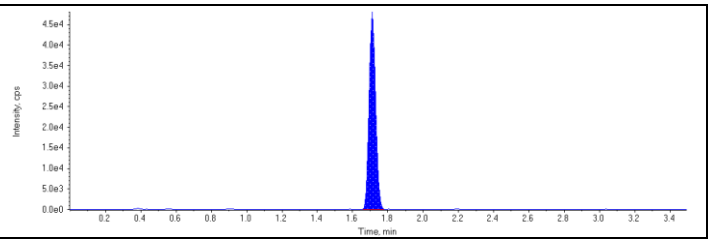
Sample Name	**4384677~BVX948-01**	**Injection Vial**	27
Sample ID	4384677~BVX948-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 2:59:22 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Re-injected
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	121000.	1.71	1.00	-
MPFHpA	353000.	1.75	1.00	-
MPFOA	319000.	1.92	1.00	-
MPFOS	135000.	2.00	1.00	-
MPFNA	210000.	2.06	1.00	-
13C6-PFHxA IS	4210000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	52800	1.16	N/A	1.86	N/A
PFHxS 1	451000	1.71	N/A	10.1	N/A
PFHpA 1	28400	1.75	N/A	0.990	N/A
PFOA 1	273000	1.92	N/A	4.88	N/A
PFOS 1	0	0.00	N/A	N/A	N/A
PFNA 1	0	0.00	N/A	N/A	N/A
18O2-PFHxS	121000	1.71	N/A	57.2	N/A
13C4-PFHpA	353000	1.75	N/A	57.3	N/A
13C4-PFOA	319000	1.92	N/A	58.6	N/A
13C4-PFOS	135000	2.00	N/A	57.9	N/A
13C5-PFNA	210000	2.06	N/A	58.3	N/A
13C6-PFHxA	4210000	1.49	N/A	113.	N/A

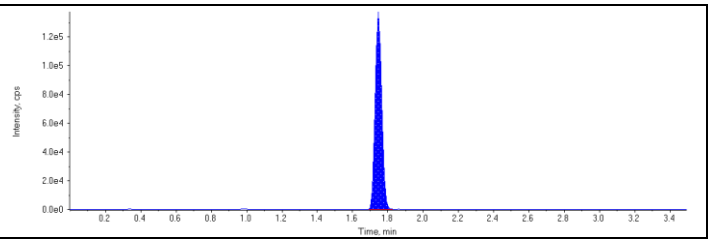
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



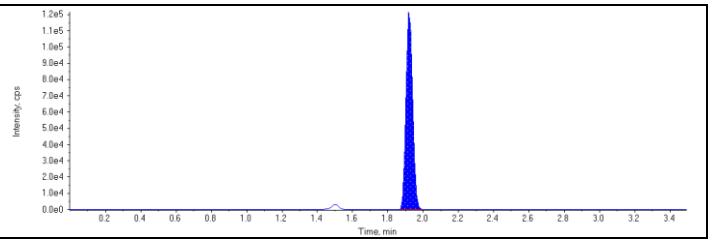
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



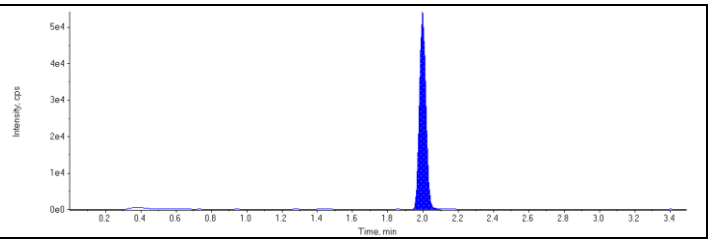
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



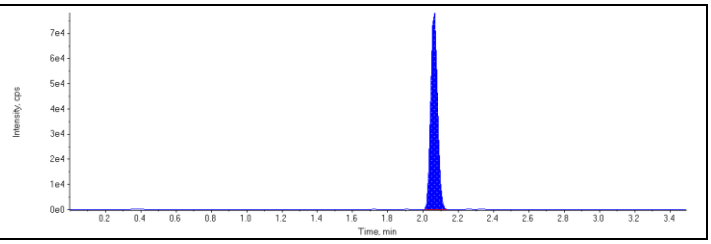
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



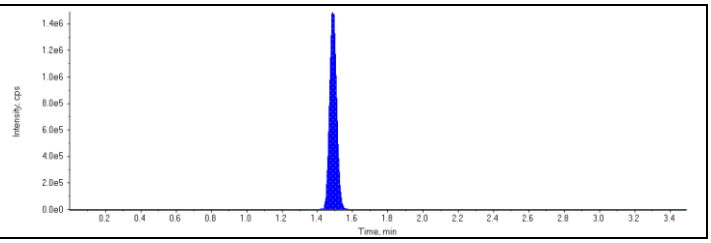
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

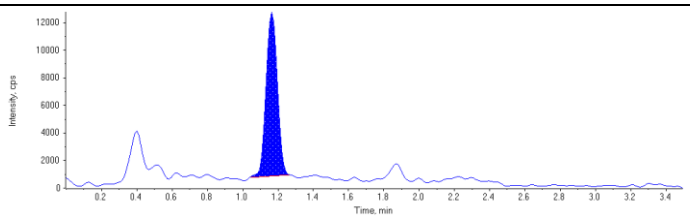
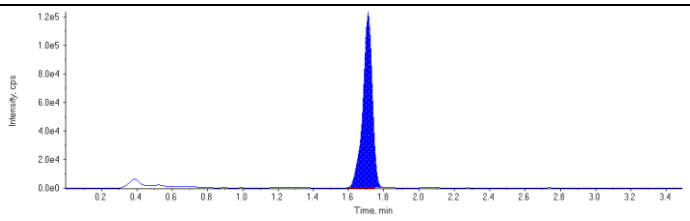
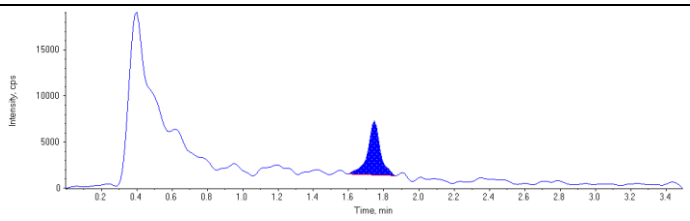
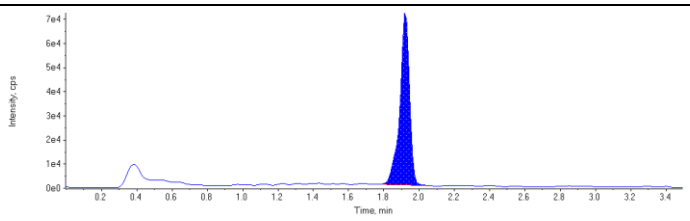
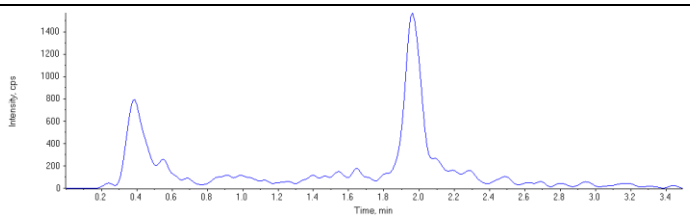
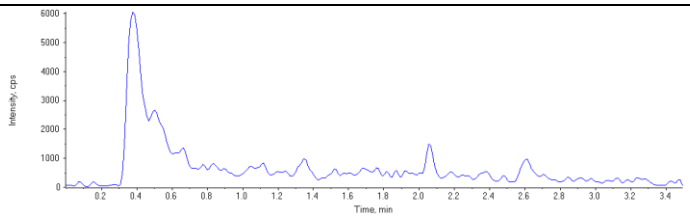
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

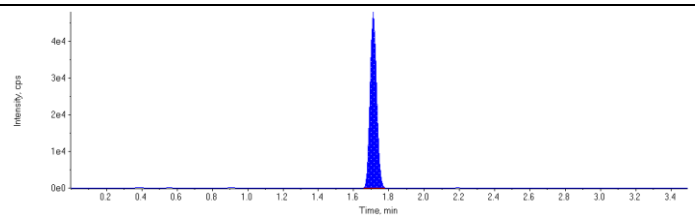
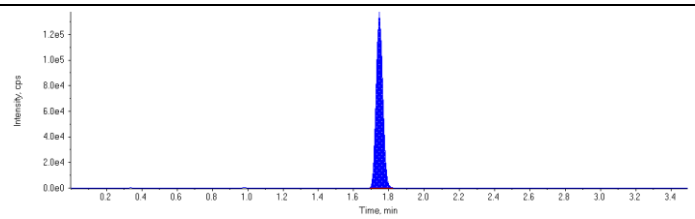
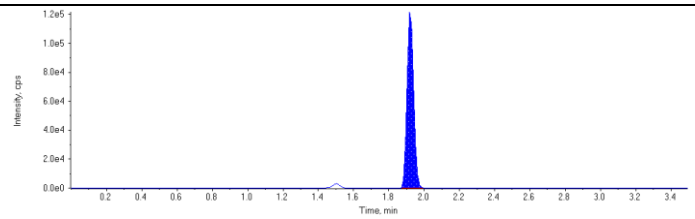
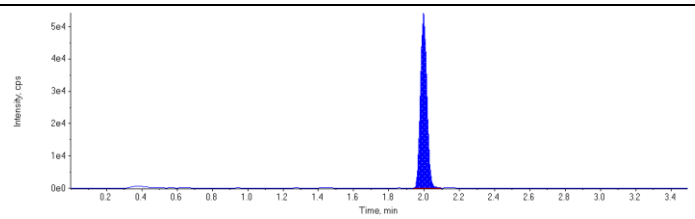
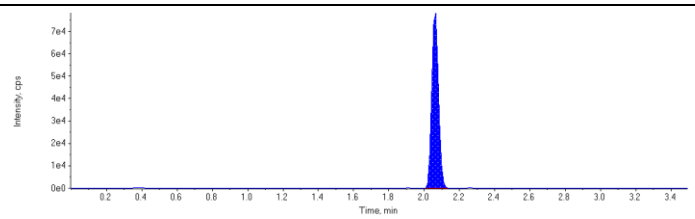
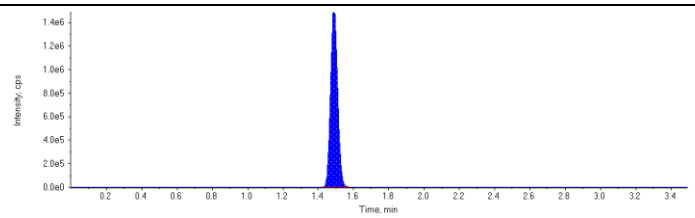


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 1.86 µg/L Area Ratio: 0.435 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 10.1 µg/L Area Ratio: 3.72 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 0.990 µg/L Area Ratio: 0.0804 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 4.88 µg/L Area Ratio: 0.857 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 0.00 (2.00) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 0.00 (2.02) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 57.2 µg/L Area Ratio: 0.0288 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 57.3 µg/L Area Ratio: 0.0838 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 58.6 µg/L Area Ratio: 0.0757 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 57.9 µg/L Area Ratio: 0.0321 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 58.3 µg/L Area Ratio: 0.0498 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 113. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

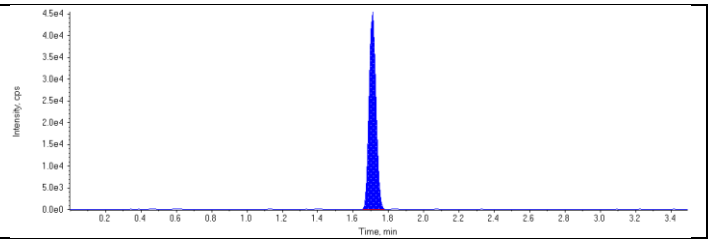
Sample Name	**4384677~BVX948-01**	**Injection Vial**	27
Sample ID	4384677~BVX948-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 4:36:16 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Reported
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	122000.	1.71	1.00	-
MPFHpA	325000.	1.74	1.00	-
MPFOA	320000.	1.92	1.00	-
MPFOS	136000.	2.00	1.00	-
MPFNA	220000.	2.06	1.00	-
13C6-PFHxA IS	4140000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	47500	1.16	N/A	1.75	N/A
PFHxS 1	437000	1.71	N/A	9.72	N/A
PFHpA 1	23300	1.74	N/A	0.935	N/A
PFOA 1	284000	1.92	N/A	5.04	N/A
PFOS 1	0	0.00	N/A	N/A	N/A
PFNA 1	0	0.00	N/A	N/A	N/A
18O2-PFHxS	122000	1.71	N/A	58.5	N/A
13C4-PFHpA	325000	1.74	N/A	53.8	N/A
13C4-PFOA	320000	1.92	N/A	59.8	N/A
13C4-PFOS	136000	2.00	N/A	59.4	N/A
13C5-PFNA	220000	2.06	N/A	62.2	N/A
13C6-PFHxA	4140000	1.49	N/A	111.	N/A

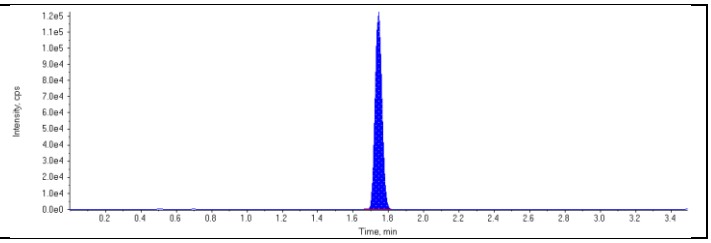
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



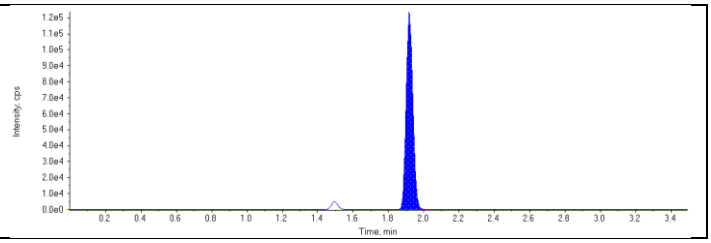
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



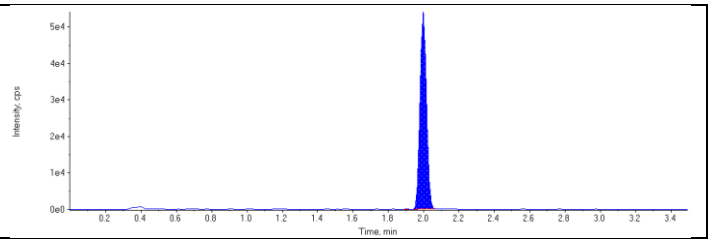
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



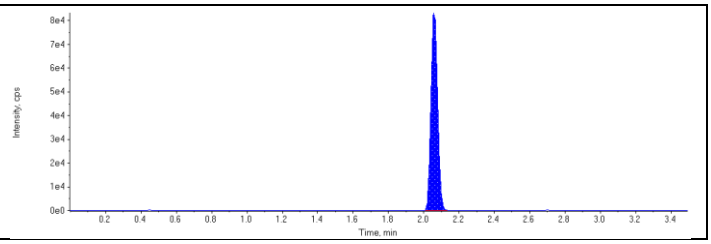
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



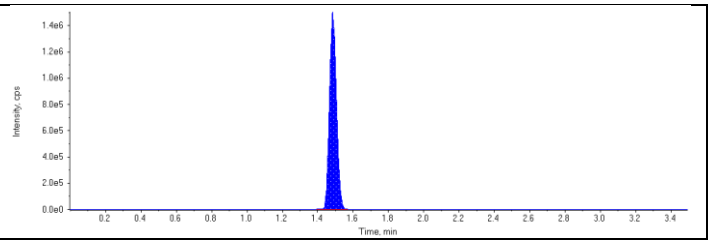
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

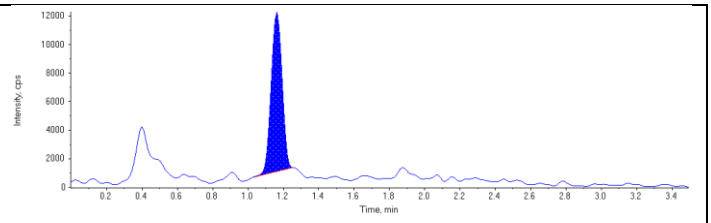
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 1.75 µg/L

Area Ratio: 0.390

Sample Type: (Unknown)



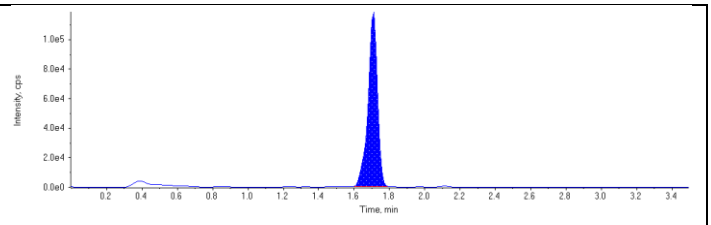
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 9.72 µg/L

Area Ratio: 3.58

Sample Type: (Unknown)



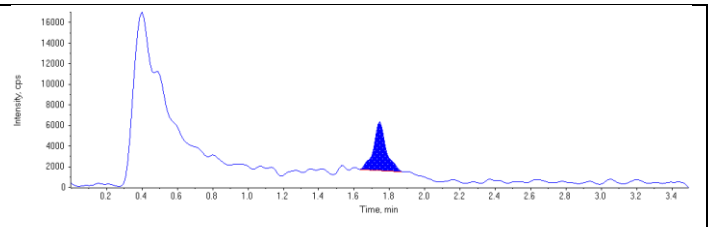
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 0.935 µg/L

Area Ratio: 0.0717

Sample Type: (Unknown)



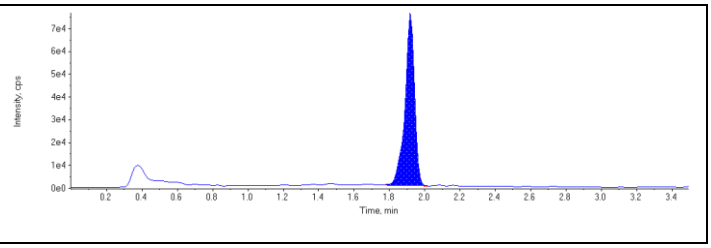
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 5.04 µg/L

Area Ratio: 0.887

Sample Type: (Unknown)



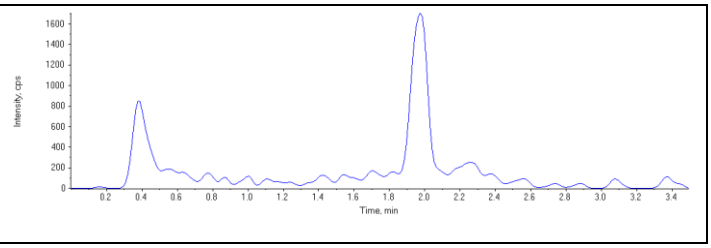
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 0.00 (2.00) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Unknown)



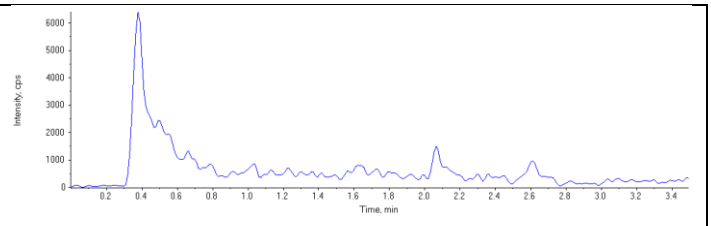
PFNA 1 (462.900/419.000 Da)

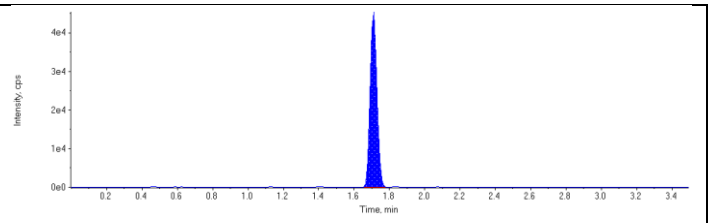
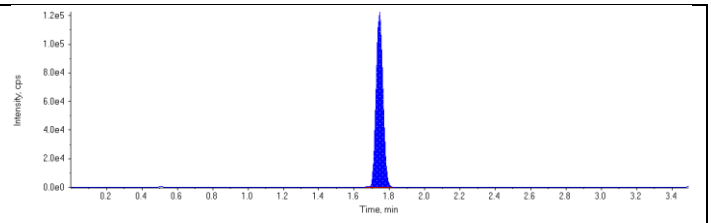
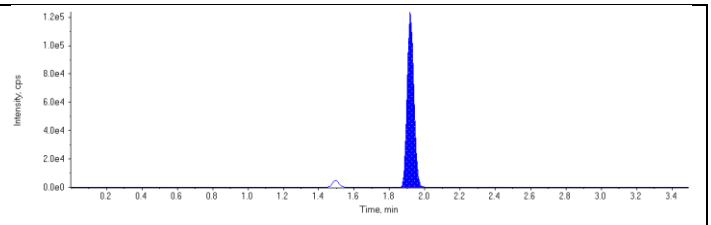
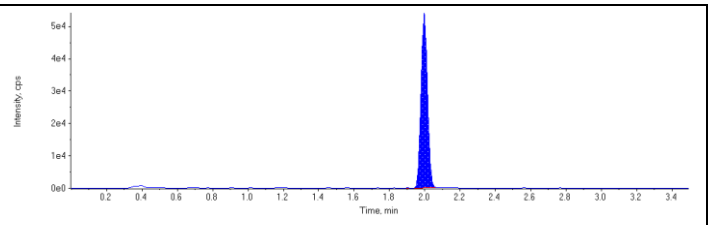
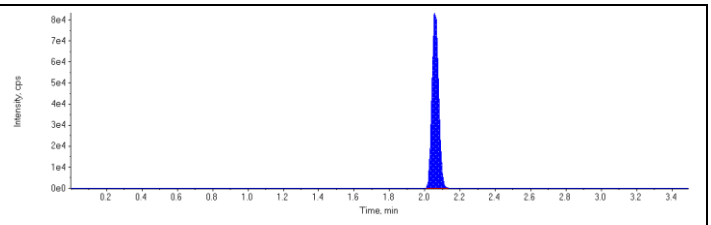
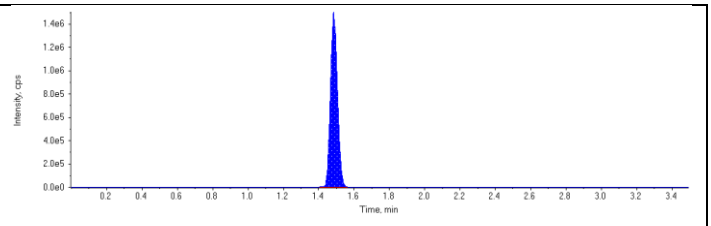
RT (Exp. RT): 0.00 (2.02) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Unknown)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 58.5 µg/L Area Ratio: 0.0294 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 53.8 µg/L Area Ratio: 0.0785 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 59.8 µg/L Area Ratio: 0.0773 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 59.4 µg/L Area Ratio: 0.0329 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 62.2 µg/L Area Ratio: 0.0532 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 111. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

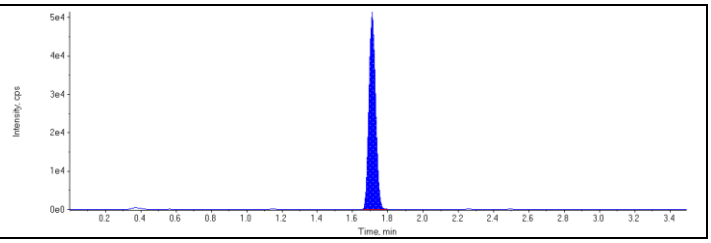
Sample Name	**4384677~BVX949-01**	**Injection Vial**	28
Sample ID	4384677~BVX949-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 3:04:28 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	132000.	1.71	1.00	-
MPFHpA	346000.	1.75	1.00	-
MPFOA	343000.	1.92	1.00	-
MPFOS	136000.	2.00	1.00	-
MPFNA	253000.	2.06	1.00	-
13C6-PFHxA IS	4420000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	0	0.00	N/A	N/A	N/A
PFHxS 1	0	0.00	N/A	N/A	N/A
PFHpA 1	0	0.00	N/A	N/A	N/A
PFOA 1	0	0.00	N/A	N/A	N/A
PFOS 1	0	0.00	N/A	N/A	N/A
PFNA 1	0	0.00	N/A	N/A	N/A
18O2-PFHxS	132000	1.71	N/A	59.3	N/A
13C4-PFHpA	346000	1.75	N/A	53.5	N/A
13C4-PFOA	343000	1.92	N/A	59.9	N/A
13C4-PFOS	136000	2.00	N/A	55.6	N/A
13C5-PFNA	253000	2.06	N/A	66.9	N/A
13C6-PFHxA	4420000	1.49	N/A	119.	N/A

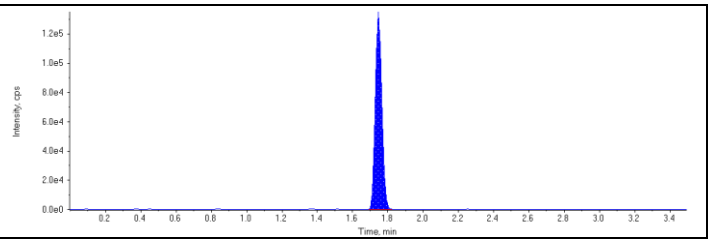
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



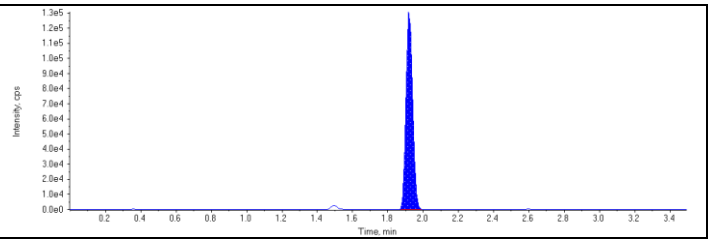
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



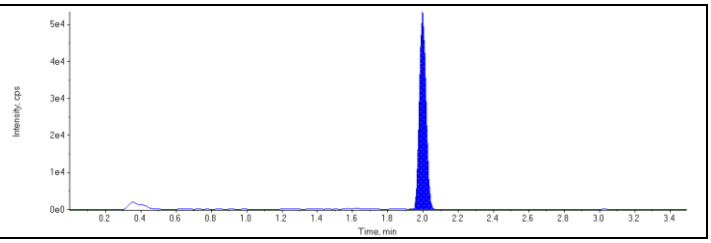
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



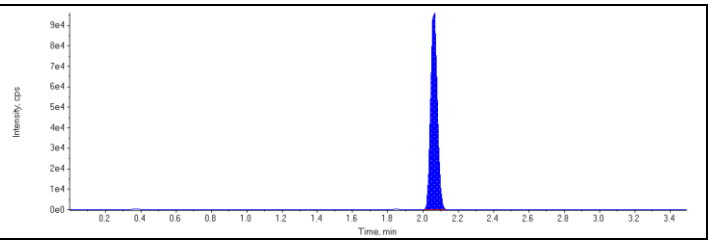
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



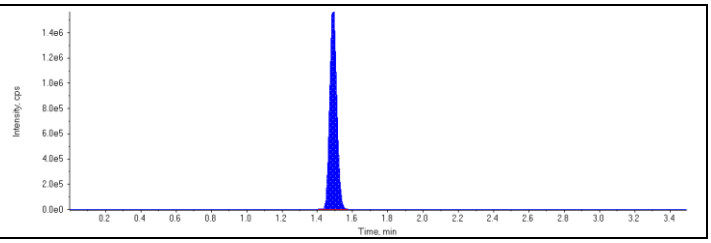
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

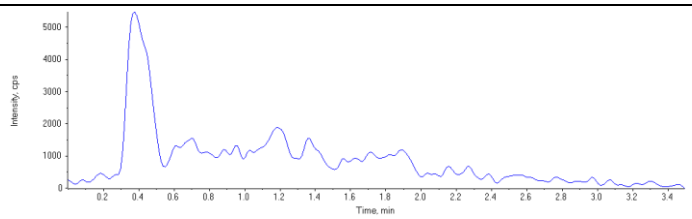
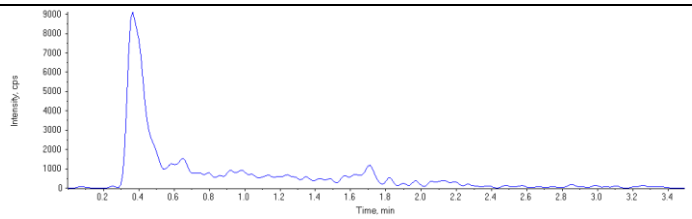
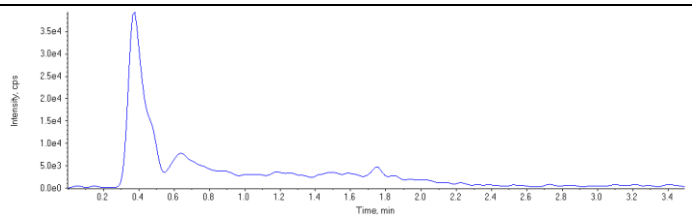
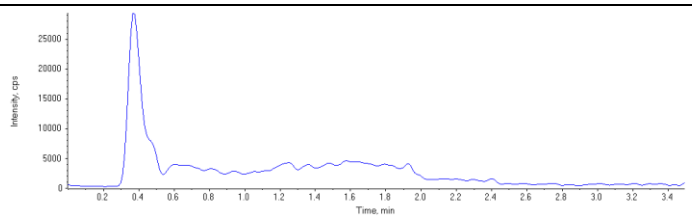
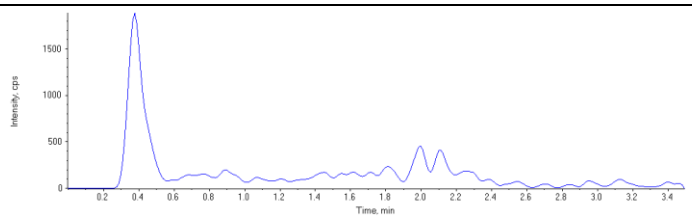
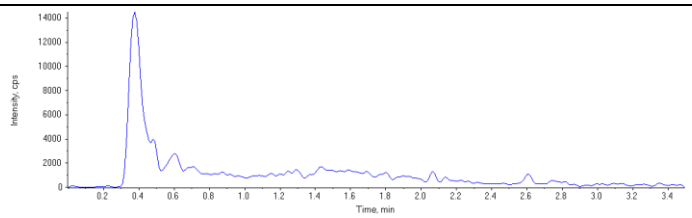
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

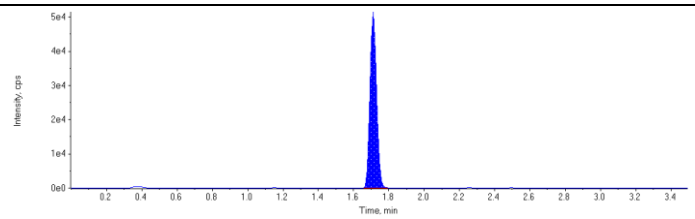
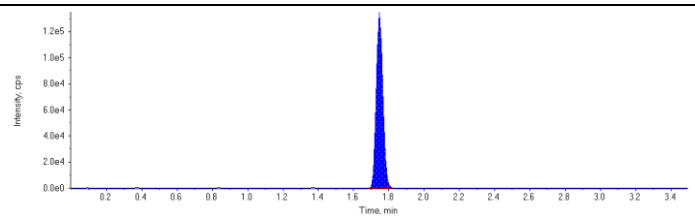
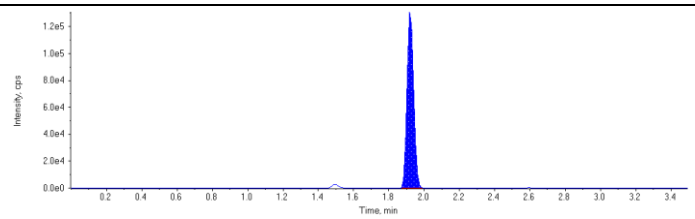
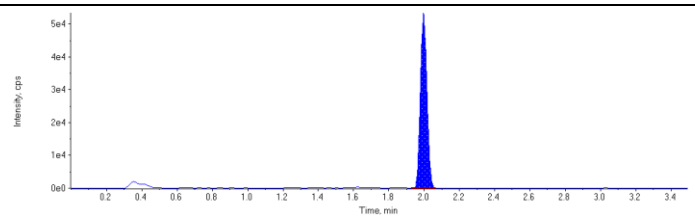
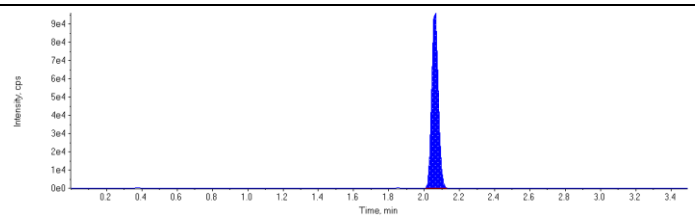
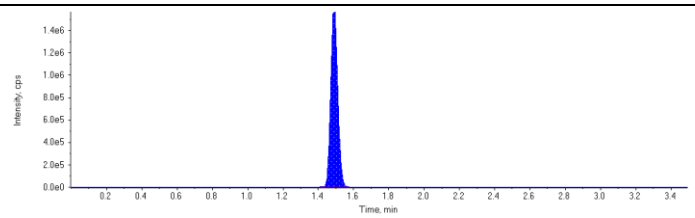


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 0.00 (1.16) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 0.00 (1.68) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 0.00 (1.75) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 0.00 (1.88) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 0.00 (2.00) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 0.00 (2.02) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 59.3 µg/L Area Ratio: 0.0299 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 53.5 µg/L Area Ratio: 0.0781 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 59.9 µg/L Area Ratio: 0.0775 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 55.6 µg/L Area Ratio: 0.0308 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 66.9 µg/L Area Ratio: 0.0572 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 119. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

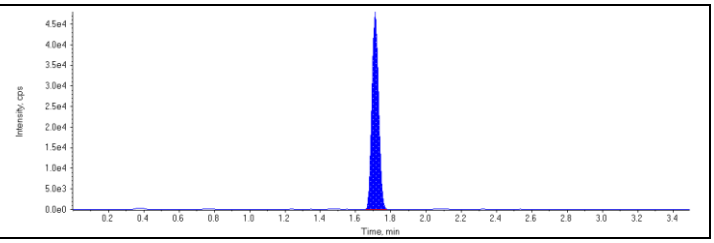
Sample Name	**4384677~BVX950-01**	**Injection Vial**	29
Sample ID	4384677~BVX950-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 3:09:34 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	124000.	1.71	1.00	-
MPFHpA	323000.	1.75	1.00	-
MPFOA	320000.	1.92	1.00	-
MPFOS	142000.	2.00	1.00	-
MPFNA	246000.	2.06	1.00	-
13C6-PFHxA IS	4340000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	0	0.00	N/A	N/A	N/A
PFHxS 1	0	0.00	N/A	N/A	N/A
PFHpA 1	0	0.00	N/A	N/A	N/A
PFOA 1	0	0.00	N/A	N/A	N/A
PFOS 1	0	0.00	N/A	N/A	N/A
PFNA 1	0	0.00	N/A	N/A	N/A
18O2-PFHxS	124000	1.71	N/A	56.6	N/A
13C4-PFHpA	323000	1.75	N/A	50.9	N/A
13C4-PFOA	320000	1.92	N/A	57.1	N/A
13C4-PFOS	142000	2.00	N/A	59.0	N/A
13C5-PFNA	246000	2.06	N/A	66.3	N/A
13C6-PFHxA	4340000	1.49	N/A	117.	N/A

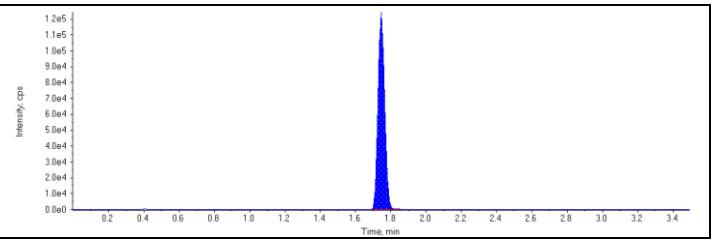
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



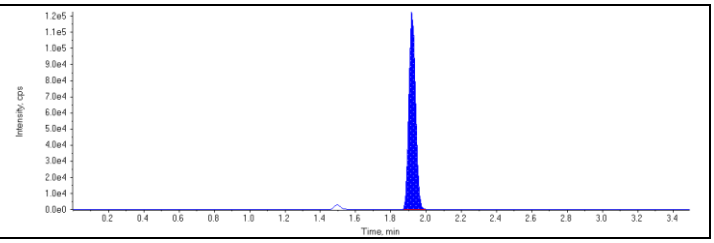
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



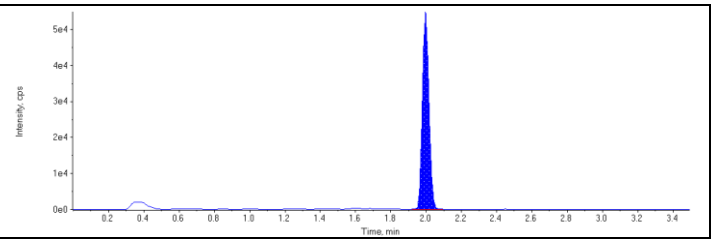
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



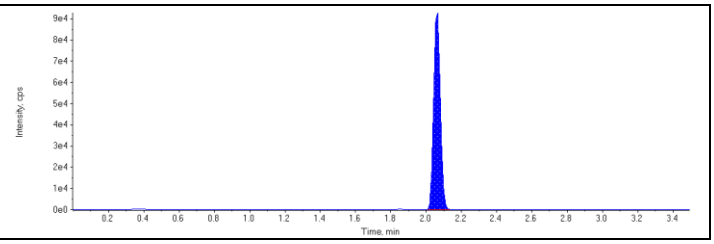
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



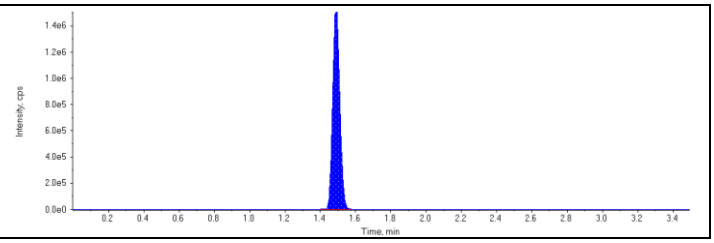
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

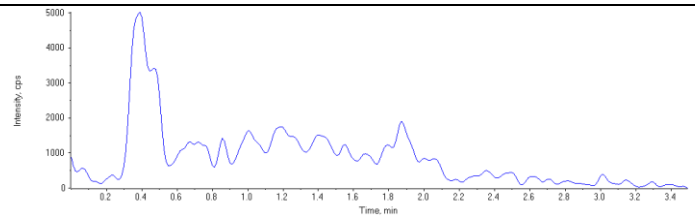
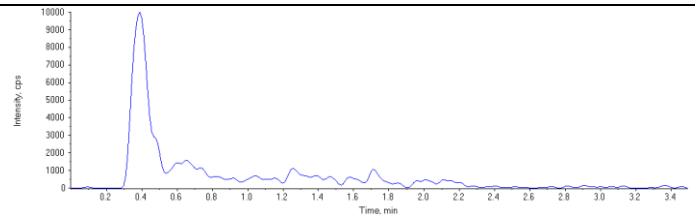
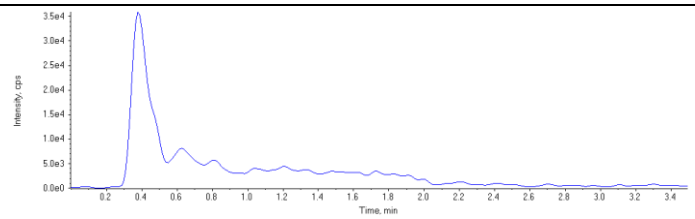
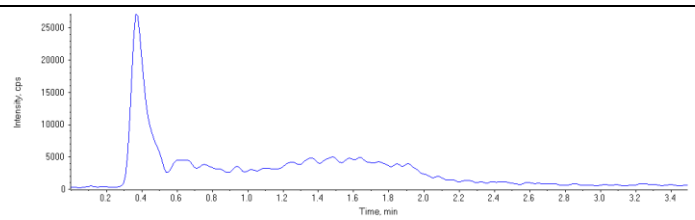
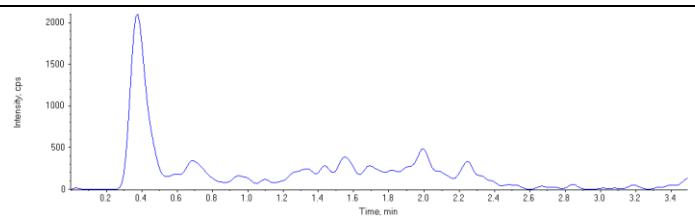
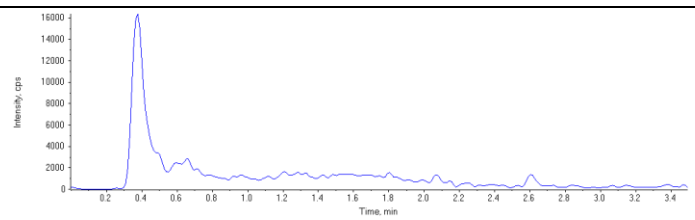
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

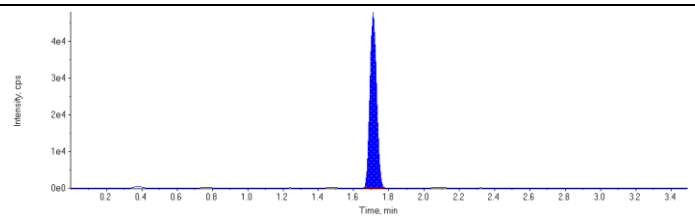
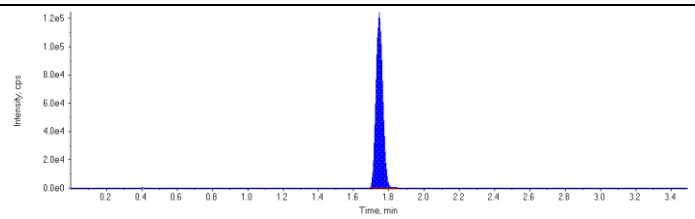
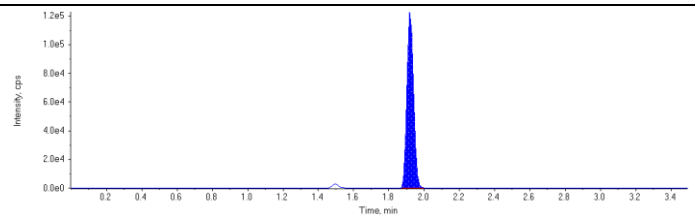
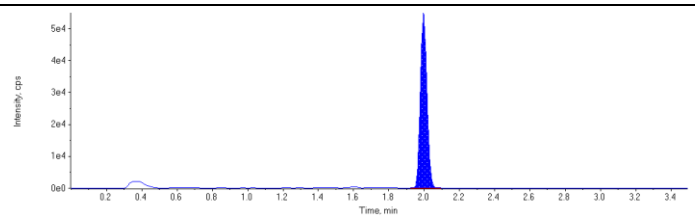
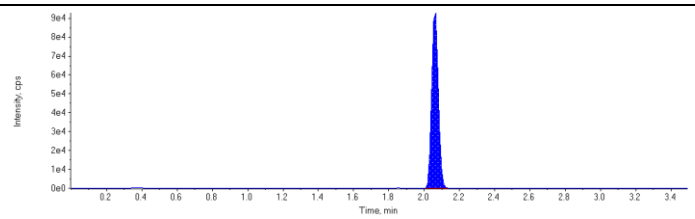
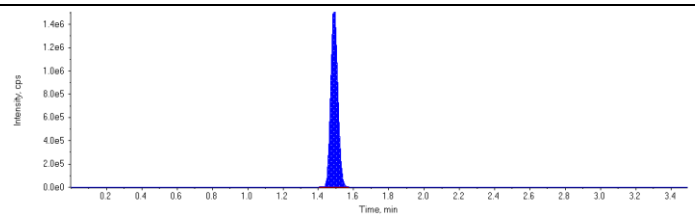


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 0.00 (1.16) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 0.00 (1.68) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 0.00 (1.75) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 0.00 (1.88) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 0.00 (2.00) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 0.00 (2.02) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 56.6 µg/L Area Ratio: 0.0285 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 50.9 µg/L Area Ratio: 0.0744 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 57.1 µg/L Area Ratio: 0.0738 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 59.0 µg/L Area Ratio: 0.0327 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 66.3 µg/L Area Ratio: 0.0566 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 117. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

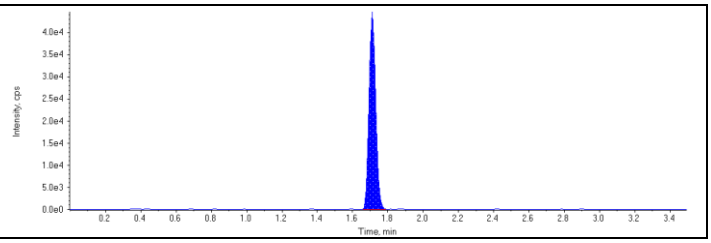
Sample Name	**4384677~BVX951-01**	**Injection Vial**	30
Sample ID	4384677~BVX951-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 3:14:40 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	116000.	1.71	1.00	-
MPFHpA	293000.	1.75	1.00	-
MPFOA	305000.	1.92	1.00	-
MPFOS	139000.	2.00	1.00	-
MPFNA	208000.	2.06	1.00	-
13C6-PFHxA IS	3970000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	0	0.00	N/A	N/A	N/A
PFHxS 1	0	0.00	N/A	N/A	N/A
PFHpA 1	0	0.00	N/A	N/A	N/A
PFOA 1	0	0.00	N/A	N/A	N/A
PFOS 1	40400	2.00	N/A	1.83	N/A
PFNA 1	0	0.00	N/A	N/A	N/A
18O2-PFHxS	116000	1.71	N/A	58.0	N/A
13C4-PFHpA	293000	1.75	N/A	50.6	N/A
13C4-PFOA	305000	1.92	N/A	59.5	N/A
13C4-PFOS	139000	2.00	N/A	63.3	N/A
13C5-PFNA	208000	2.06	N/A	61.4	N/A
13C6-PFHxA	3970000	1.49	N/A	107.	N/A

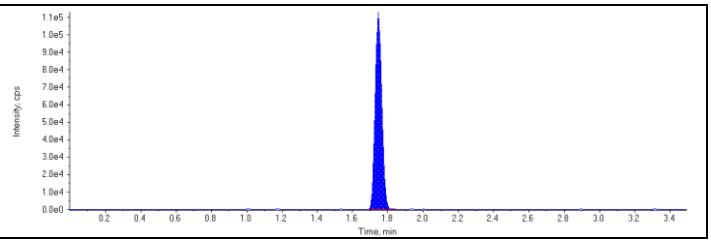
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



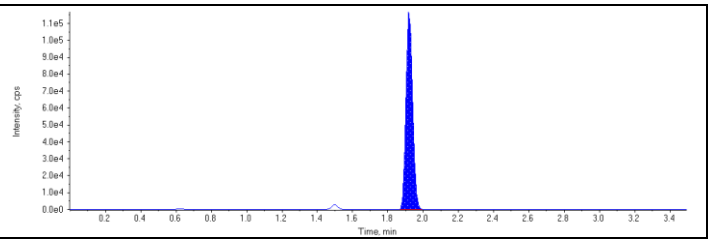
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



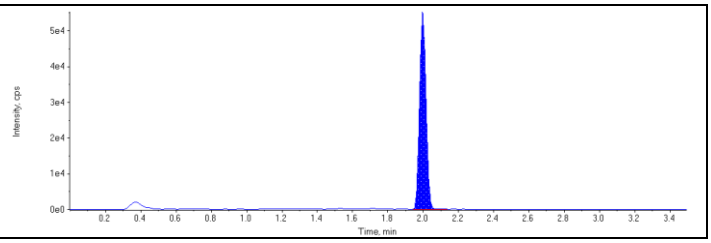
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



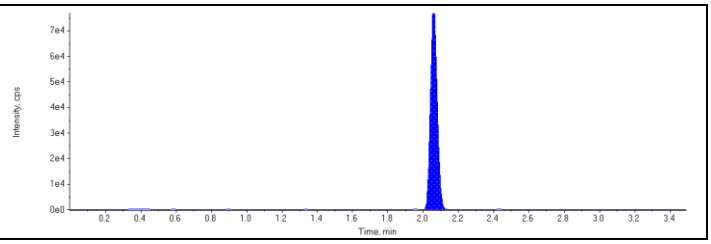
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



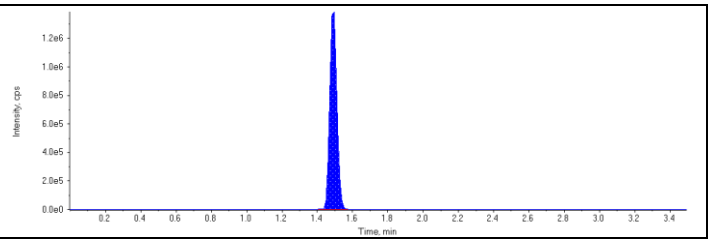
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

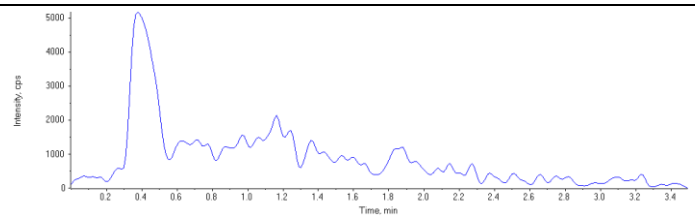
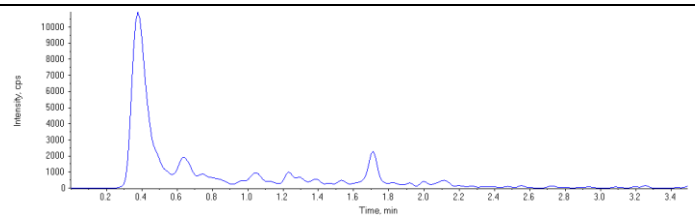
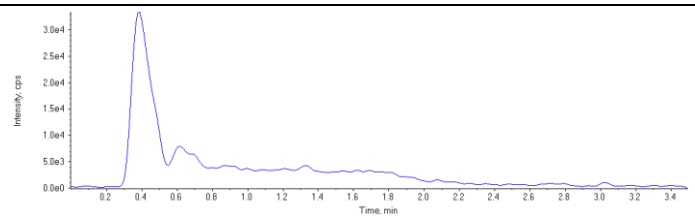
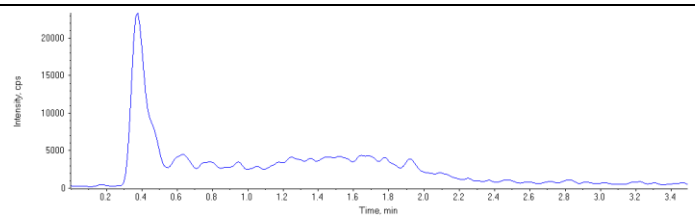
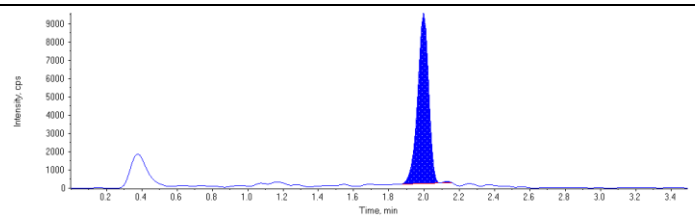
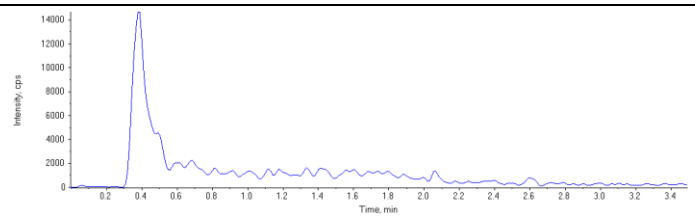
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

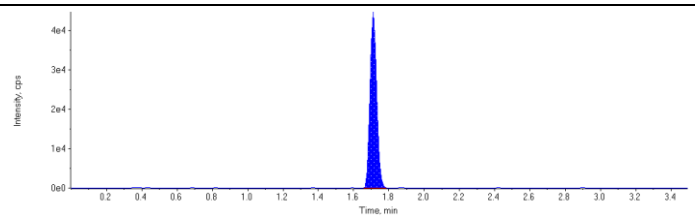
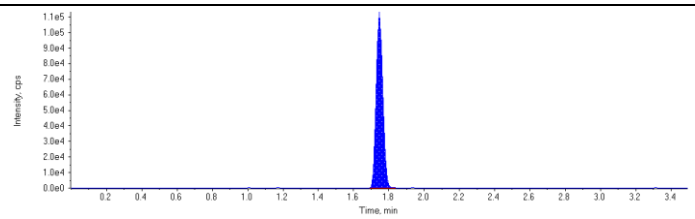
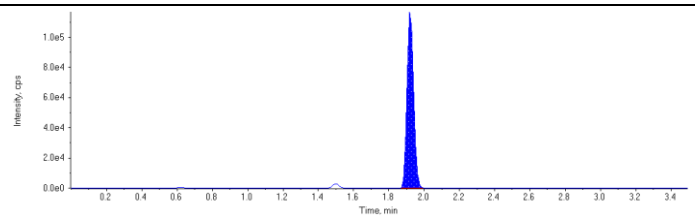
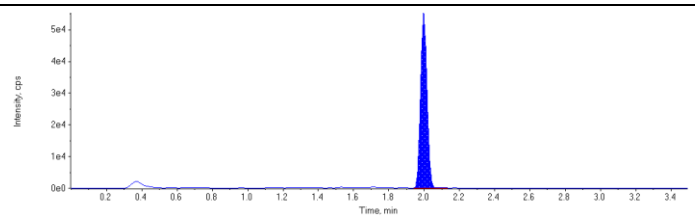
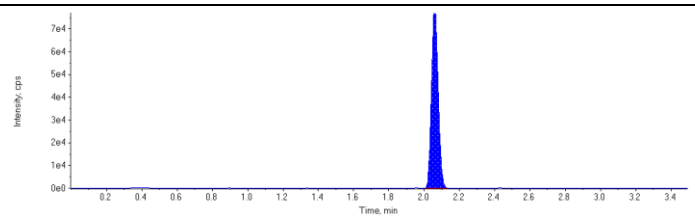
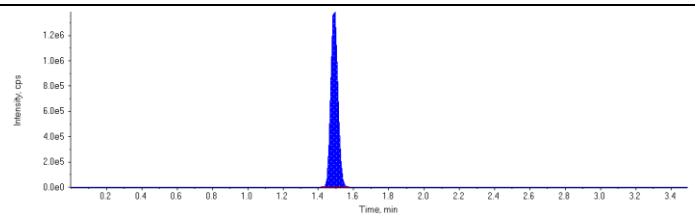


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 0.00 (1.16) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 0.00 (1.68) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 0.00 (1.75) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 0.00 (1.88) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 1.83 µg/L Area Ratio: 0.290 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 0.00 (2.02) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 58.0 µg/L Area Ratio: 0.0292 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 50.6 µg/L Area Ratio: 0.0739 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 59.5 µg/L Area Ratio: 0.0769 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 63.3 µg/L Area Ratio: 0.0351 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 61.4 µg/L Area Ratio: 0.0525 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 107. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

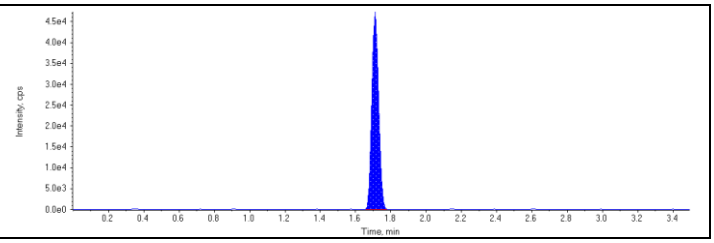
Sample Name	**4384677~BVX952-01**	**Injection Vial**	31
Sample ID	4384677~BVX952-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 3:19:46 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	125000.	1.71	1.00	-
MPFHpA	340000.	1.75	1.00	-
MPFOA	326000.	1.92	1.00	-
MPFOS	145000.	2.00	1.00	-
MPFNA	242000.	2.06	1.00	-
13C6-PFHxA IS	4190000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	0	0.00	N/A	N/A	N/A
PFHxS 1	0	0.00	N/A	N/A	N/A
PFHpA 1	0	0.00	N/A	N/A	N/A
PFOA 1	0	0.00	N/A	N/A	N/A
PFOS 1	0	0.00	N/A	N/A	N/A
PFNA 1	0	0.00	N/A	N/A	N/A
18O2-PFHxS	125000	1.71	N/A	59.3	N/A
13C4-PFHpA	340000	1.75	N/A	55.6	N/A
13C4-PFOA	326000	1.92	N/A	60.1	N/A
13C4-PFOS	145000	2.00	N/A	62.6	N/A
13C5-PFNA	242000	2.06	N/A	67.5	N/A
13C6-PFHxA	4190000	1.49	N/A	113.	N/A

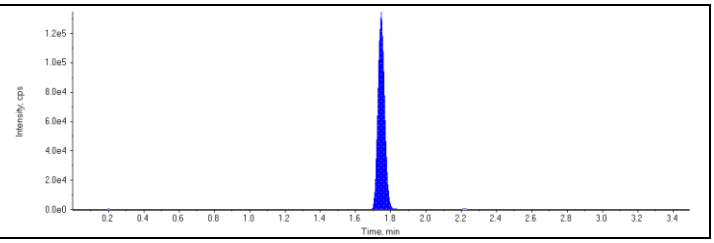
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



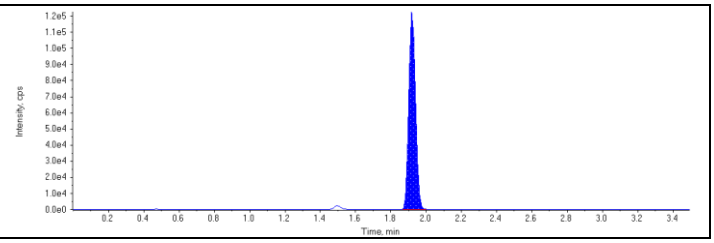
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



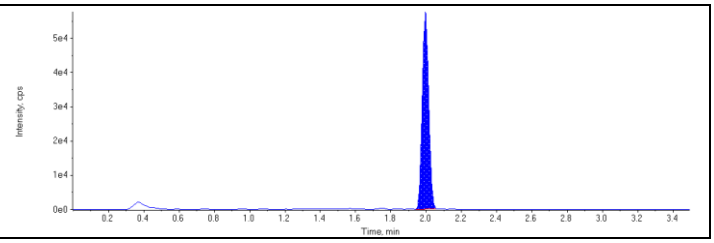
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



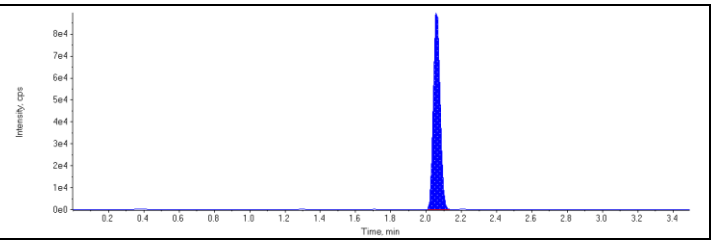
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



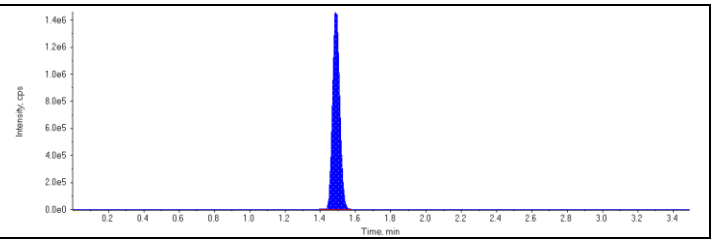
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

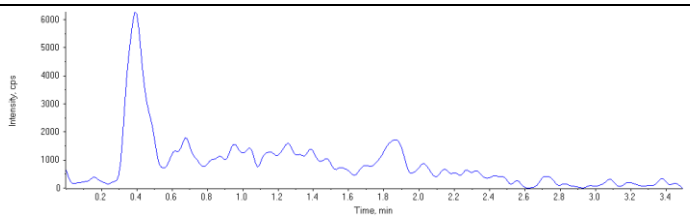
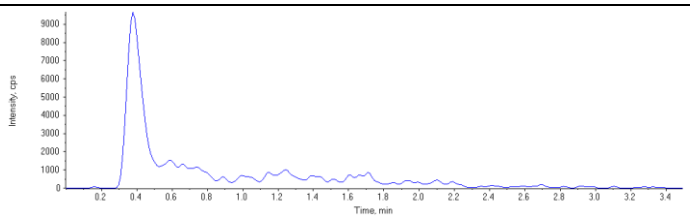
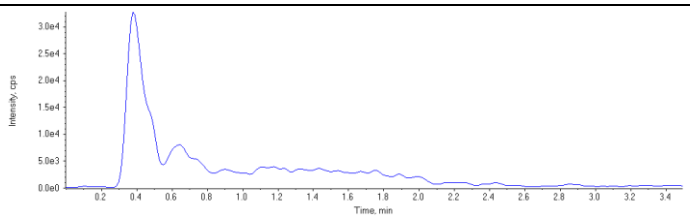
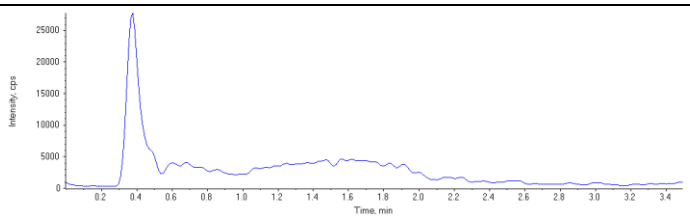
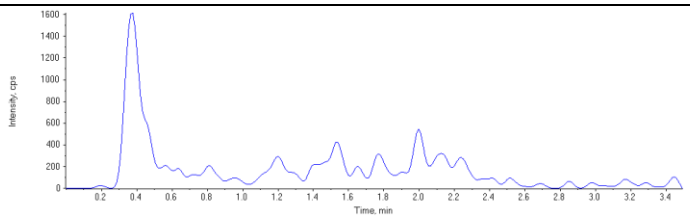
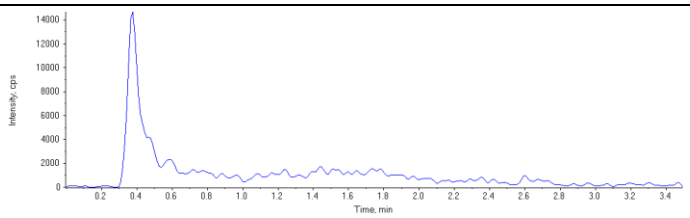
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

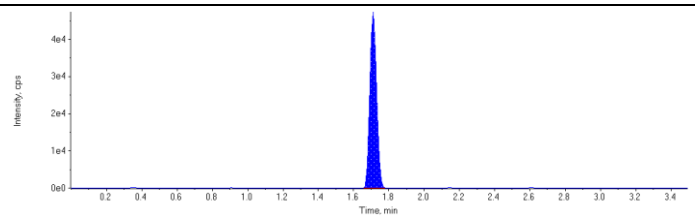
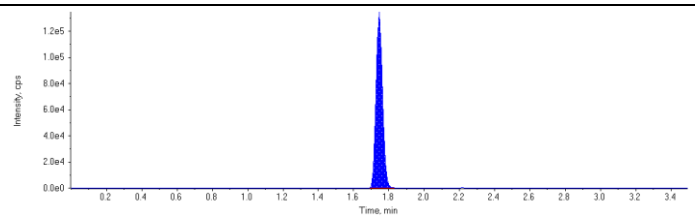
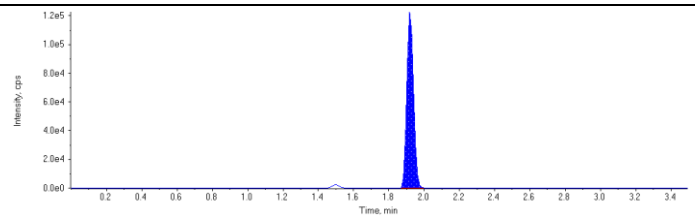
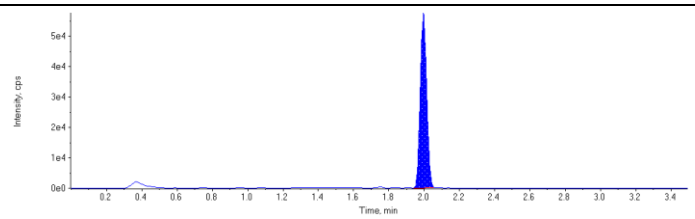
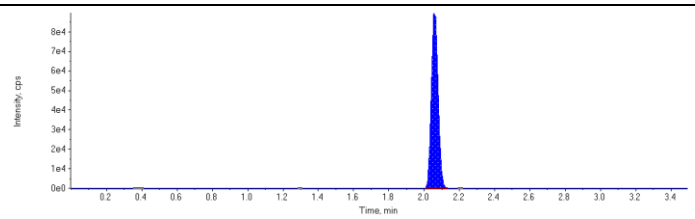
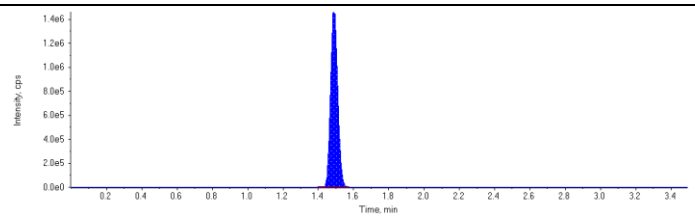


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 0.00 (1.16) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 0.00 (1.68) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 0.00 (1.75) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 0.00 (1.88) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 0.00 (2.00) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 0.00 (2.02) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 59.3 µg/L Area Ratio: 0.0299 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 55.6 µg/L Area Ratio: 0.0812 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 60.1 µg/L Area Ratio: 0.0777 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 62.6 µg/L Area Ratio: 0.0347 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 67.5 µg/L Area Ratio: 0.0577 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 113. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

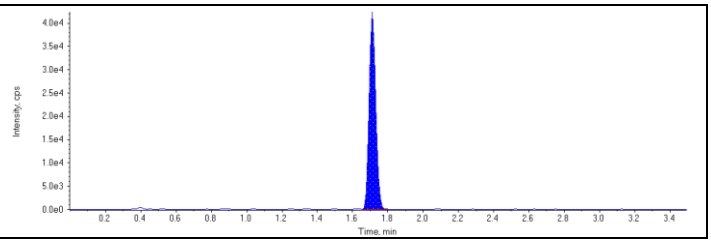
Sample Name	**4384677~BVX953-01**	**Injection Vial**	32
Sample ID	4384677~BVX953-01	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 3:24:52 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	108000.	1.71	1.00	-
MPFHpA	326000.	1.75	1.00	-
MPFOA	291000.	1.92	1.00	-
MPFOS	134000.	2.00	1.00	-
MPFNA	215000.	2.06	1.00	-
13C6-PFHxA IS	3810000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	19000	1.17	N/A	1.19	N/A
PFHxS 1	413000	1.71	N/A	10.3	N/A
PFHpA 1	16800	1.74	N/A	0.807	N/A
PFOA 1	416000	1.92	N/A	7.92	N/A
PFOS 1	326000	1.99	N/A	11.4	N/A
PFNA 1	3910	2.06	N/A	0.565	N/A
18O2-PFHxS	108000	1.71	N/A	56.3	N/A
13C4-PFHpA	326000	1.75	N/A	58.6	N/A
13C4-PFOA	291000	1.92	N/A	59.0	N/A
13C4-PFOS	134000	2.00	N/A	63.4	N/A
13C5-PFNA	215000	2.06	N/A	66.0	N/A
13C6-PFHxA	3810000	1.49	N/A	102.	N/A

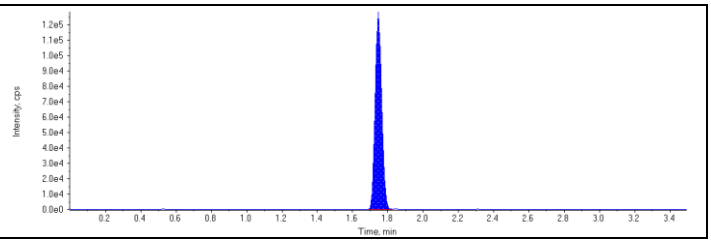
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



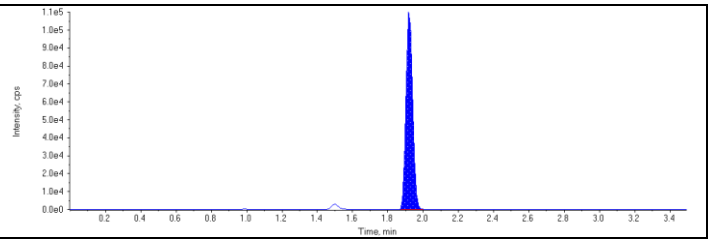
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



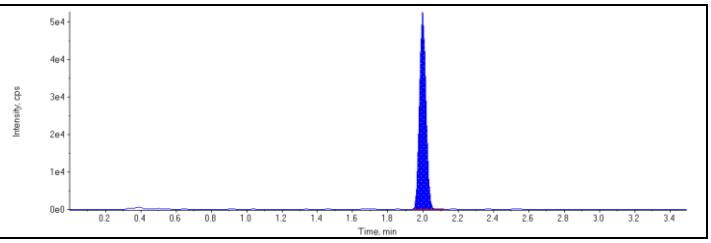
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



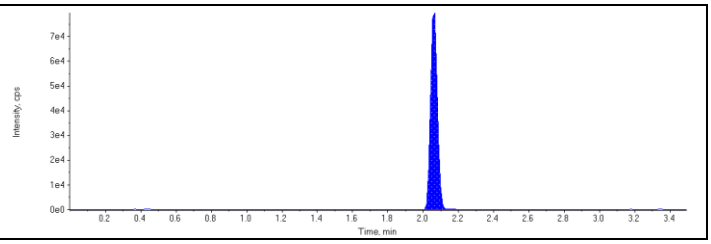
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



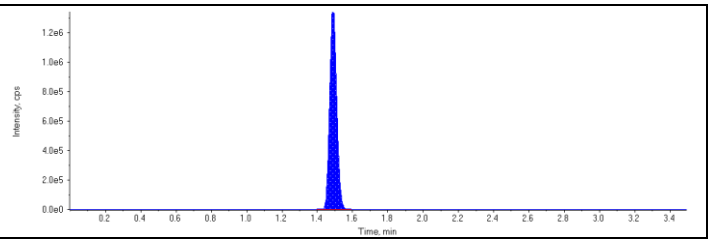
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

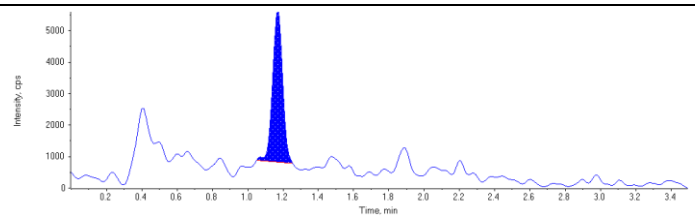
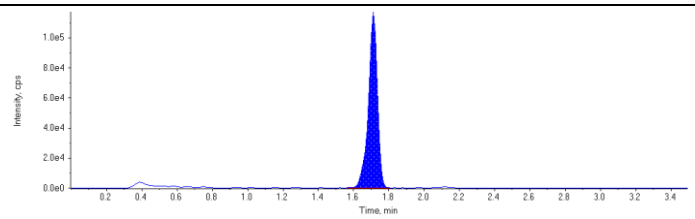
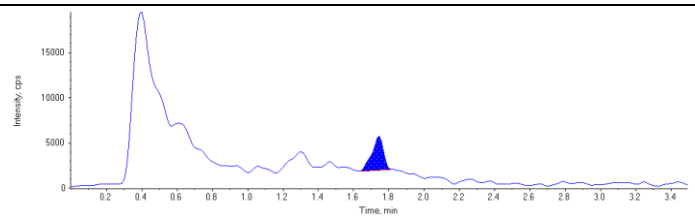
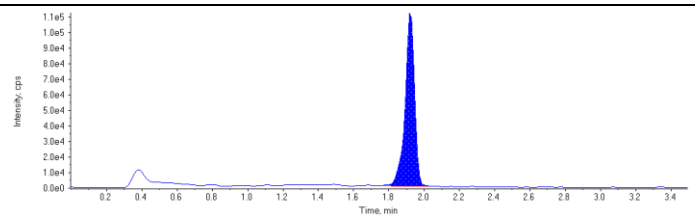
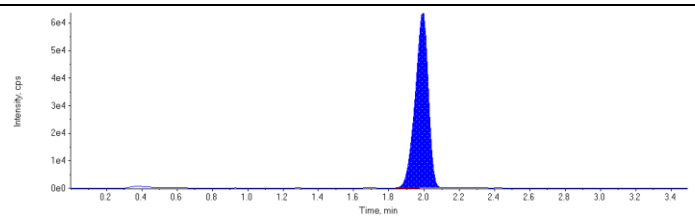
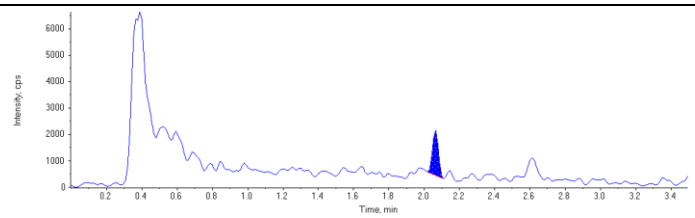
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)

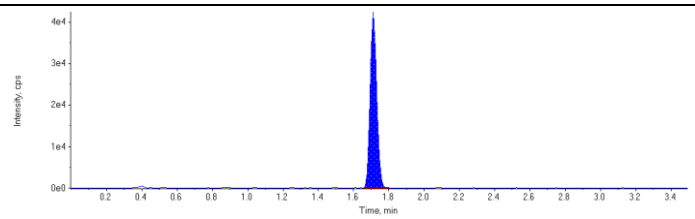
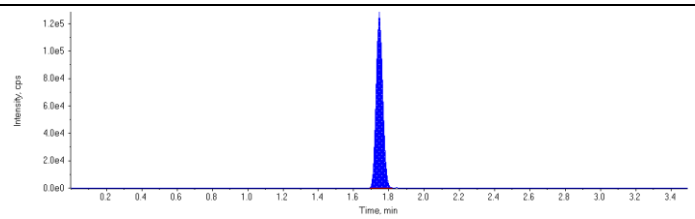
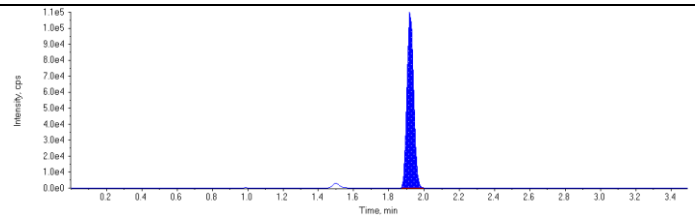
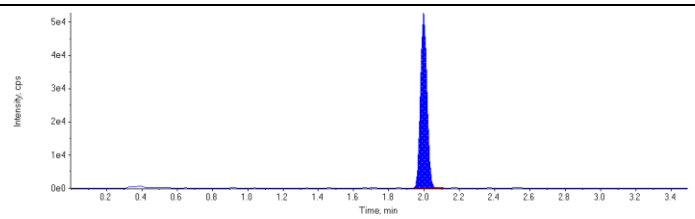
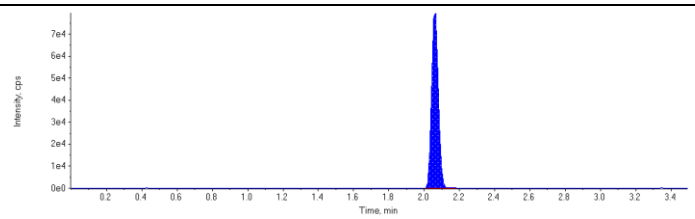
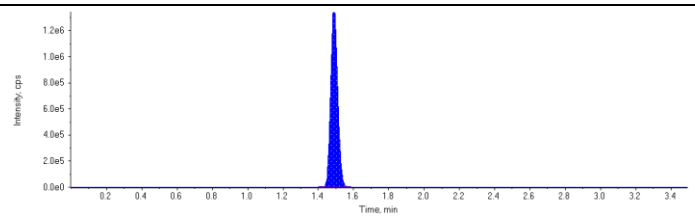


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 1.19 µg/L Area Ratio: 0.175 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 10.3 µg/L Area Ratio: 3.82 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 0.807 µg/L Area Ratio: 0.0516 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 7.92 µg/L Area Ratio: 1.43 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 11.4 µg/L Area Ratio: 2.44 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 0.565 µg/L Area Ratio: 0.0182 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 56.3 µg/L Area Ratio: 0.0284 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 58.6 µg/L Area Ratio: 0.0856 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 59.0 µg/L Area Ratio: 0.0763 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 63.4 µg/L Area Ratio: 0.0351 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 66.0 µg/L Area Ratio: 0.0564 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 102. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

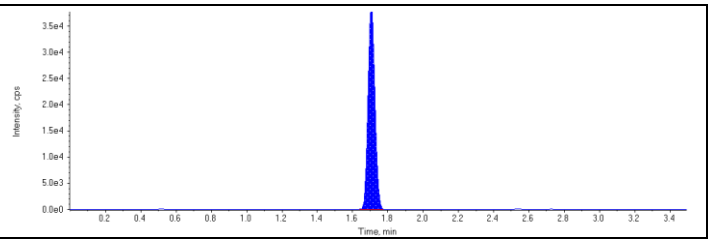
Sample Name	**4385924~BVX947-01 (10x)**	**Injection Vial**	37
Sample ID	4385924~BVX947-01 (10x)	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 11:29:22 AM	**Dilution Factor**	10.0
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Re-injected
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	105000.	1.71	1.00	-
MPFHpA	247000.	1.74	1.00	-
MPFOA	245000.	1.91	1.00	-
MPFOS	125000.	1.99	1.00	-
MPFNA	188000.	2.05	1.00	-
13C6-PFHxA IS	3900000.	1.48	0.100	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	177000	1.16	N/A	59.4	N/A
PFHxS 1	2430000	1.71	N/A	699.	N/A
PFHpA 1	80800	1.74	N/A	25.1	N/A
PFOA 1	1010000	1.91	N/A	251.	N/A
PFOS 1	43900	1.95	N/A	21.2	N/A
PFNA 1	3480	2.06	N/A	2.75	N/A
18O2-PFHxS	105000	1.71	N/A	73.3	N/A
13C4-PFHpA	247000	1.74	N/A	51.1	N/A
13C4-PFOA	245000	1.91	N/A	58.1	N/A
13C4-PFOS	125000	1.99	N/A	74.0	N/A
13C5-PFNA	188000	2.05	N/A	65.5	N/A
13C6-PFHxA	3900000	1.48	N/A	978.	N/A

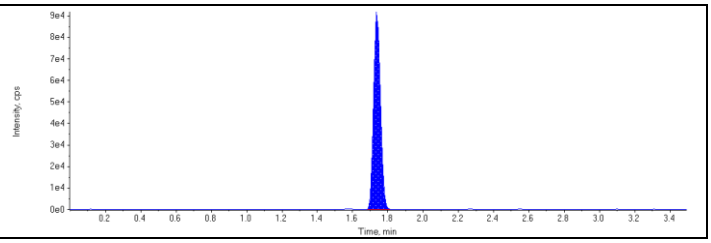
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



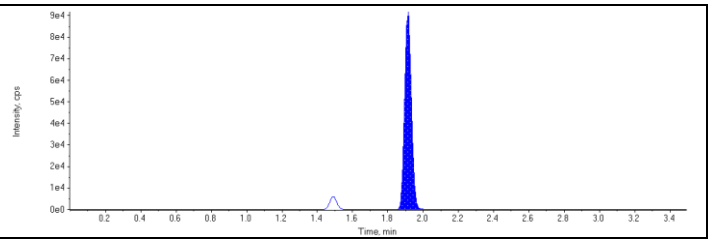
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



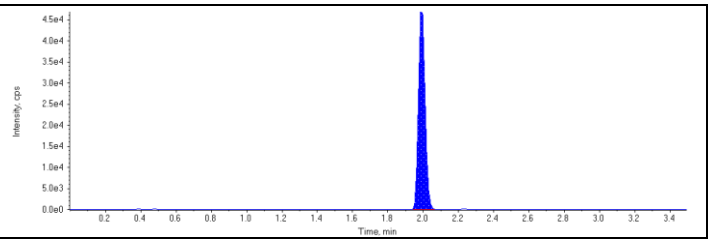
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



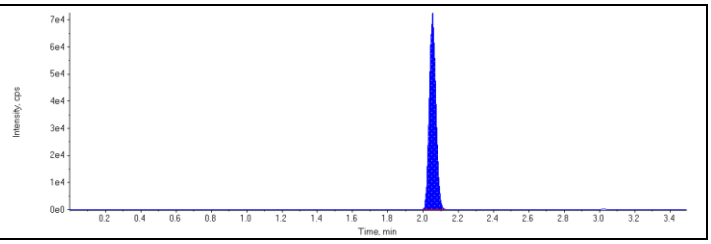
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



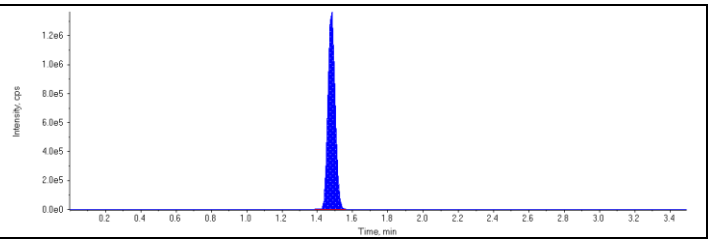
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

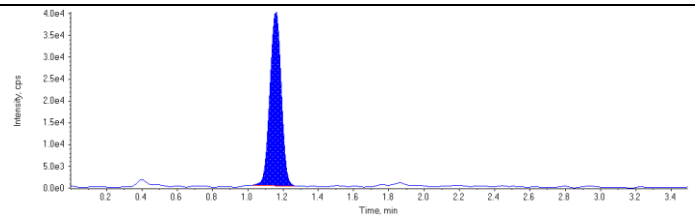
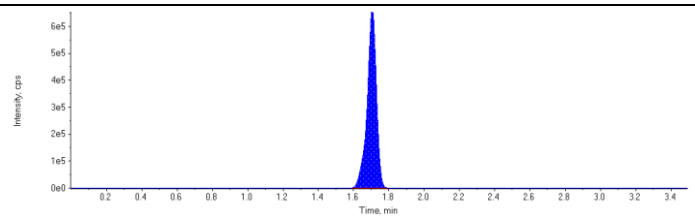
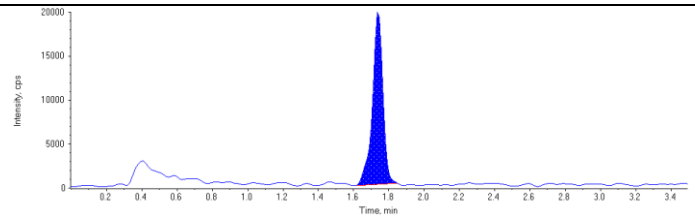
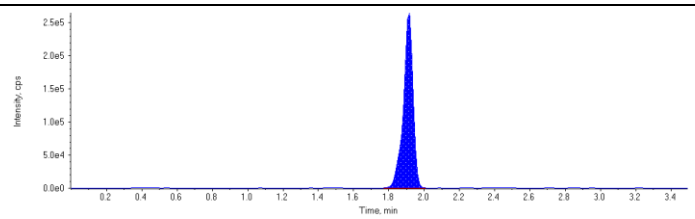
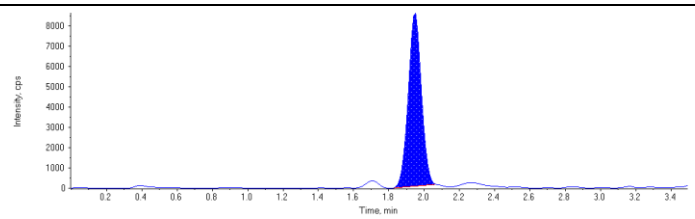
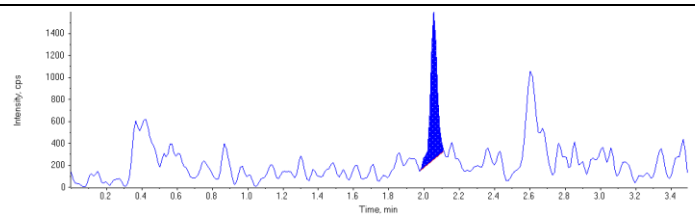
RT (Exp. RT): 1.48(1.50) min
Concentration: 0.100 ng/L
Sample Type: (Unknown)

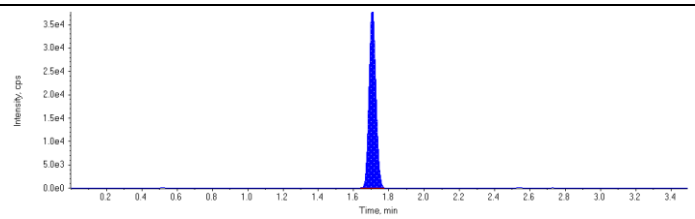
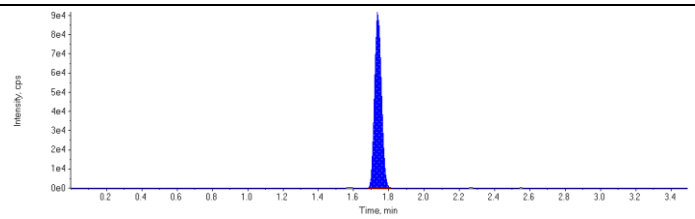
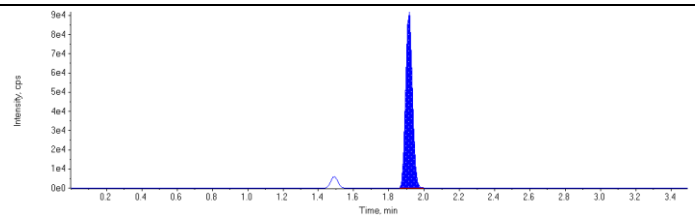
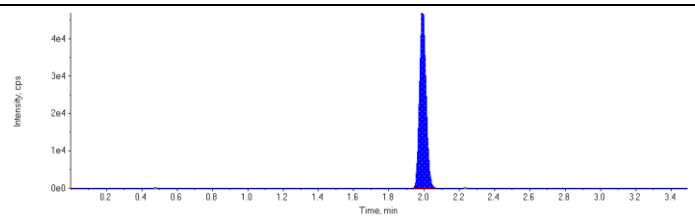
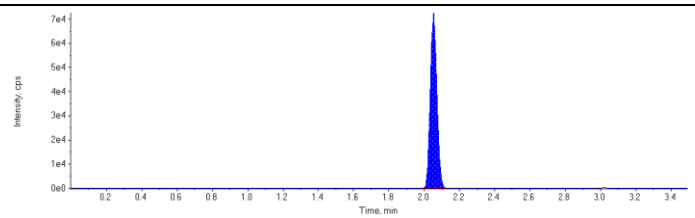
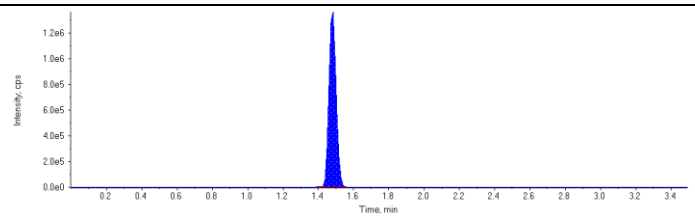


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 59.4 µg/L Area Ratio: 1.68 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 699. µg/L Area Ratio: 23.0 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 25.1 µg/L Area Ratio: 0.328 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.91 (1.88) min Calculated Conc: 251. µg/L Area Ratio: 4.11 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.95 (2.00) min Calculated Conc: 21.2 µg/L Area Ratio: 0.352 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 2.75 µg/L Area Ratio: 0.0185 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 73.3 µg/L Area Ratio: 0.0270 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 51.1 µg/L Area Ratio: 0.0632 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 58.1 µg/L Area Ratio: 0.0627 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 74.0 µg/L Area Ratio: 0.0320 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 65.5 µg/L Area Ratio: 0.0482 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 978. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

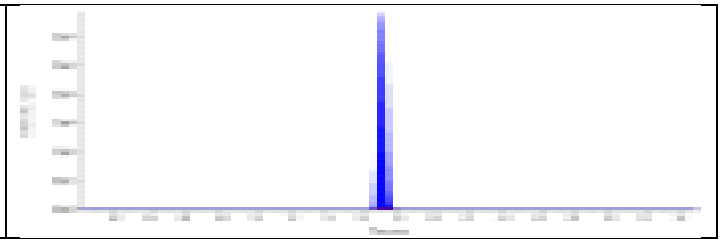
Sample Name	**4385924~BVX947-01 (10x)**	**Injection Vial**	37
Sample ID	4385924~BVX947-01 (10x)	**Injection Volume (µL)**	3
Sample Type	Unknown	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 12:50:55 PM	**Dilution Factor**	10.0
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Reported
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	94000.	1.71	1.00	-
MPFHpA	219000.	1.74	1.00	-
MPFOA	235000.	1.91	1.00	-
MPFOS	123000.	1.99	1.00	-
MPFNA	171000.	2.05	1.00	-
13C6-PFHxA IS	3630000.	1.48	0.100	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	157000	1.16	N/A	59.3	N/A
PFHxS 1	2160000	1.71	N/A	697.	N/A
PFHpA 1	64000	1.74	N/A	22.5	N/A
PFOA 1	931000	1.91	N/A	242.	N/A
PFOS 1	46800	1.95	N/A	22.9	N/A
PFNA 1	3430	2.06	N/A	2.84	N/A
18O2-PFHxS	94000	1.71	N/A	70.4	N/A
13C4-PFHpA	219000	1.74	N/A	48.8	N/A
13C4-PFOA	235000	1.91	N/A	60.0	N/A
13C4-PFOS	123000	1.99	N/A	78.2	N/A
13C5-PFNA	171000	2.05	N/A	64.1	N/A
13C6-PFHxA	3630000	1.48	N/A	909.	N/A

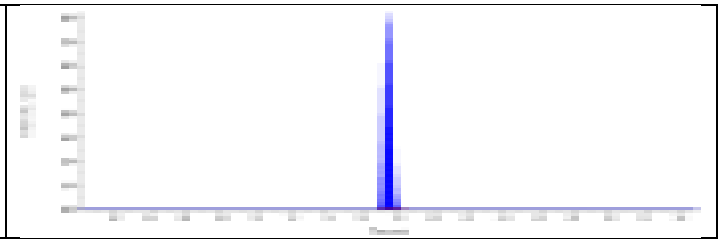
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



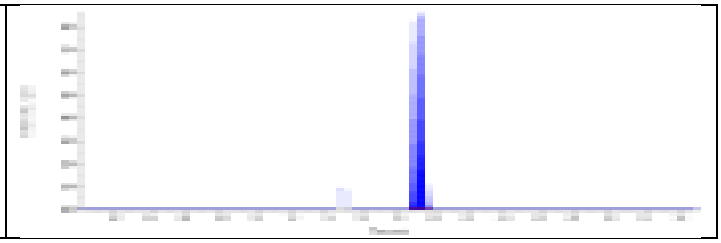
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



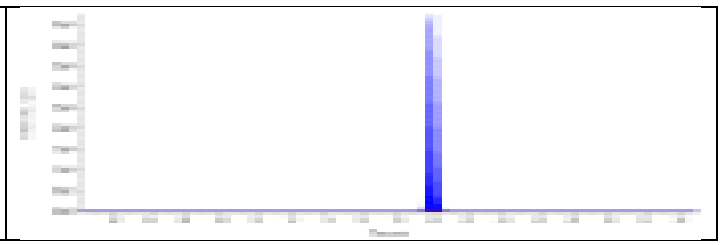
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



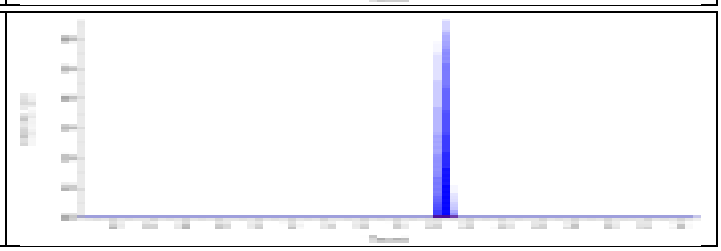
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



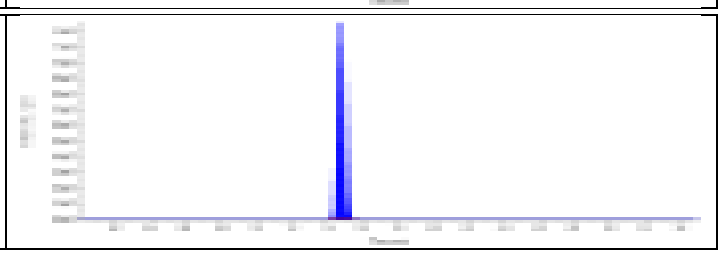
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Unknown)



13C6-PFHxA IS (Internal Standard)

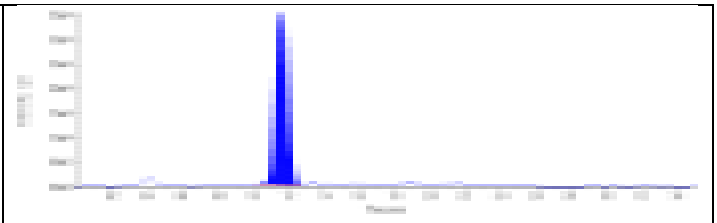
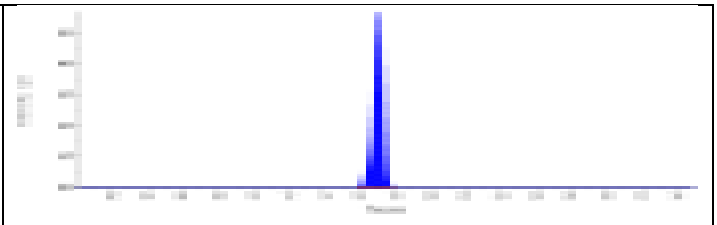
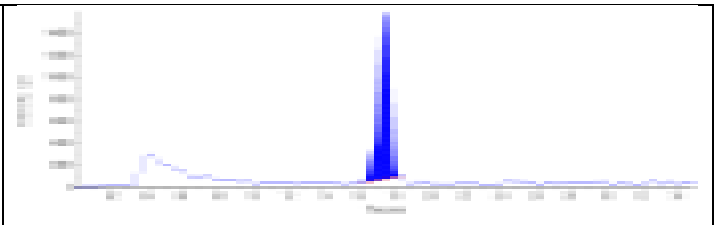
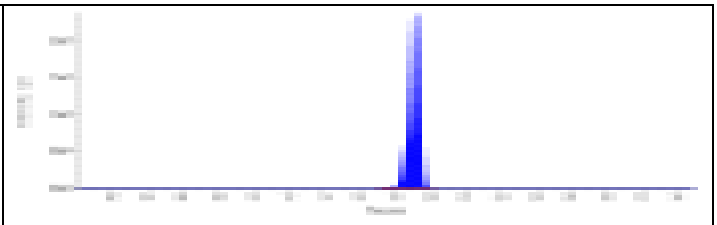
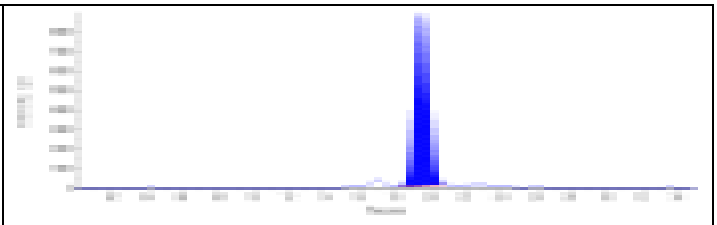
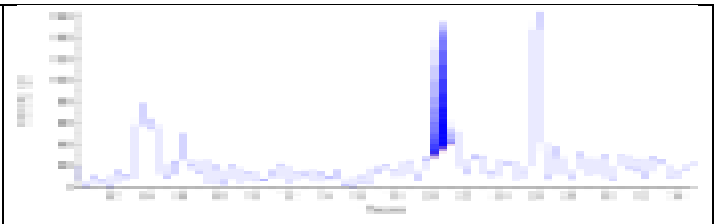
RT (Exp. RT): 1.48(1.50) min
Concentration: 0.100 ng/L
Sample Type: (Unknown)

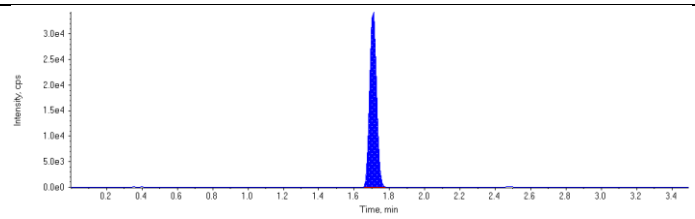
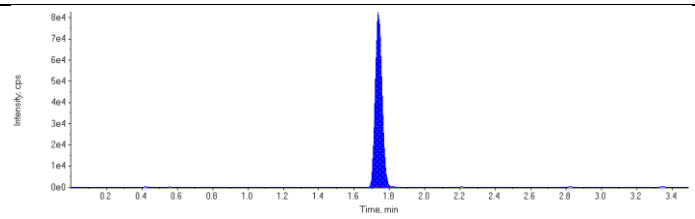
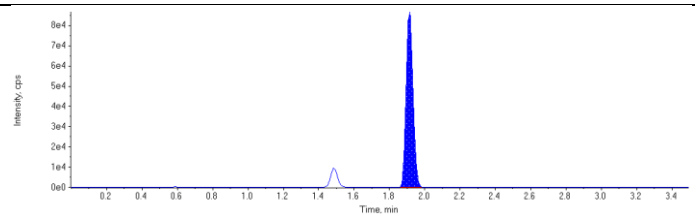
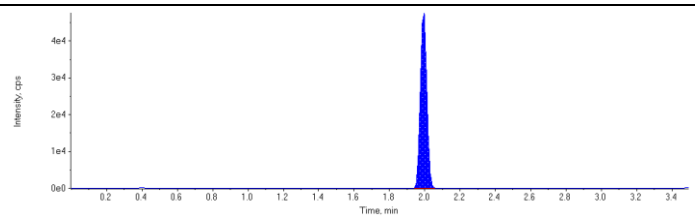
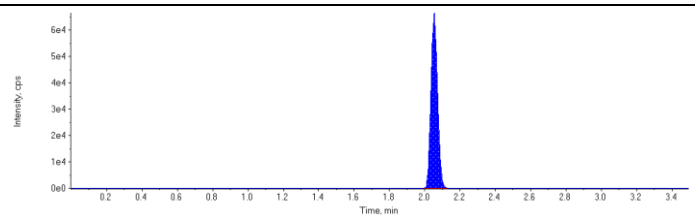
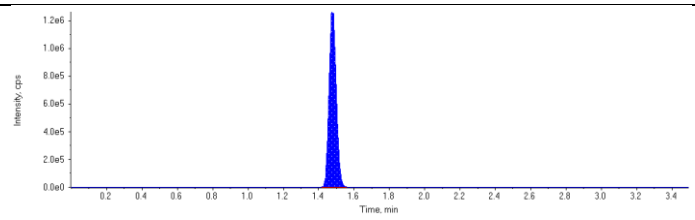


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Unknown)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 59.3 µg/L Area Ratio: 1.67 Sample Type: (Unknown)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 697. µg/L Area Ratio: 22.9 Sample Type: (Unknown)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 22.5 µg/L Area Ratio: 0.292 Sample Type: (Unknown)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.91 (1.88) min Calculated Conc: 242. µg/L Area Ratio: 3.97 Sample Type: (Unknown)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.95 (2.00) min Calculated Conc: 22.9 µg/L Area Ratio: 0.382 Sample Type: (Unknown)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 2.84 µg/L Area Ratio: 0.0200 Sample Type: (Unknown)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 70.4 µg/L Area Ratio: 0.0259 Sample Type: (Unknown)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 48.8 µg/L Area Ratio: 0.0604 Sample Type: (Unknown)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 60.0 µg/L Area Ratio: 0.0647 Sample Type: (Unknown)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 78.2 µg/L Area Ratio: 0.0338 Sample Type: (Unknown)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 64.1 µg/L Area Ratio: 0.0472 Sample Type: (Unknown)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 909. µg/L Area Ratio: 0.00 Sample Type: (Unknown)	

4. QA/QC Data

Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

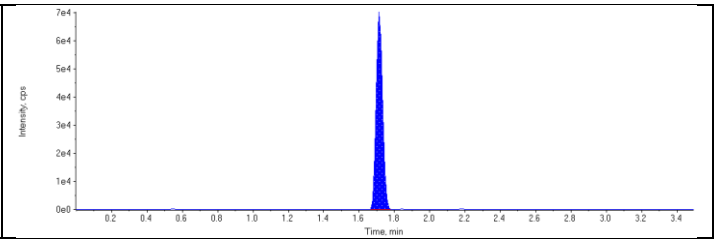
Sample Name	**4384677~BLANK**	**Injection Vial**	2
Sample ID	4384677~BLANK	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 12:41:41 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	176000.	1.71	1.00	-
MPFHpA	510000.	1.75	1.00	-
MPFOA	431000.	1.93	1.00	-
MPFOS	199000.	2.00	1.00	-
MPFNA	308000.	2.07	1.00	-
13C6-PFHxA IS	3950000.	1.50	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	0	0.00	0.00	N/A	0.0
PFHxS 1	0	0.00	0.00	N/A	0.0
PFHpA 1	0	0.00	0.00	N/A	0.0
PFOA 1	0	0.00	0.00	N/A	0.0
PFOS 1	0	0.00	0.00	N/A	0.0
PFNA 1	0	0.00	0.00	N/A	0.0
18O2-PFHxS	176000	1.71	100.	88.6	88.6
13C4-PFHpA	510000	1.75	100.	88.4	88.4
13C4-PFOA	431000	1.93	100.	84.4	84.4
13C4-PFOS	199000	2.00	100.	91.1	91.1
13C5-PFNA	308000	2.07	100.	91.2	91.2
13C6-PFHxA	3950000	1.50	100.	106.	106.0

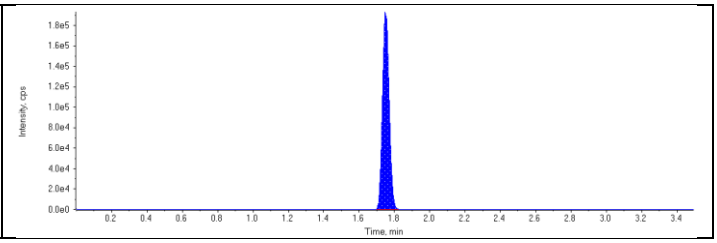
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



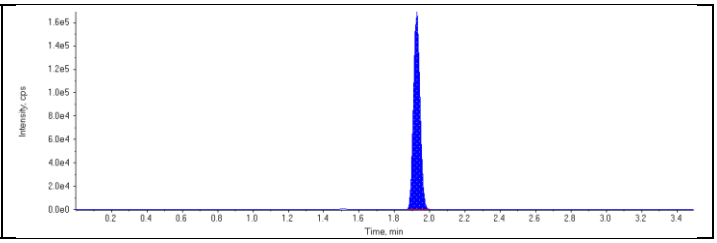
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



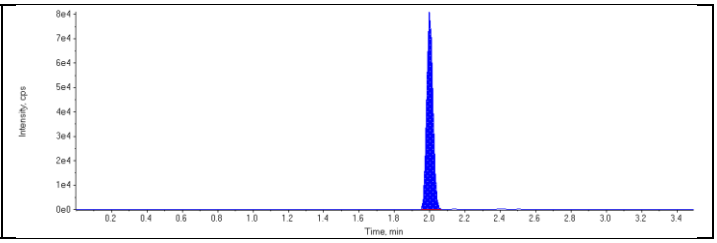
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



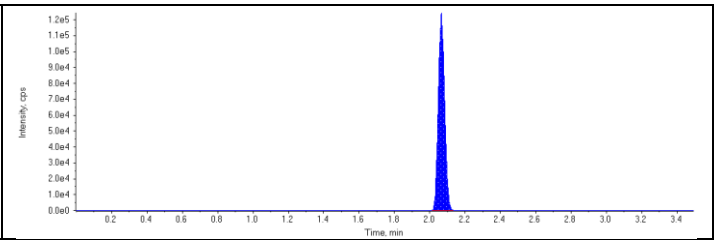
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



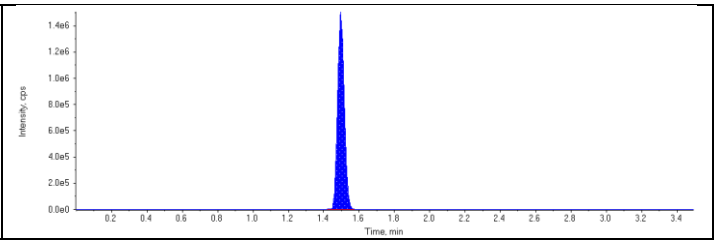
MPFNA (Internal Standard)

RT (Exp. RT): 2.07(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.50(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

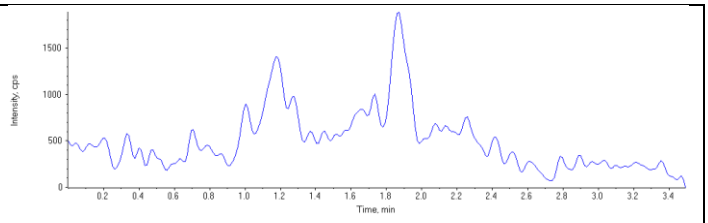
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 0.00 (1.16) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



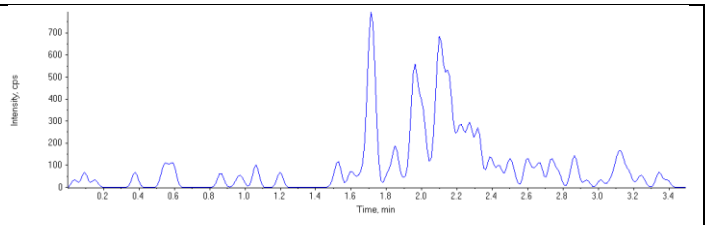
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 0.00 (1.68) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



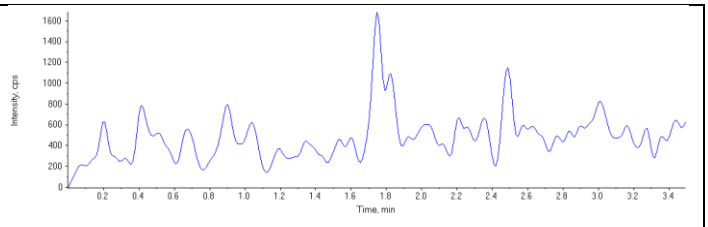
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 0.00 (1.75) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



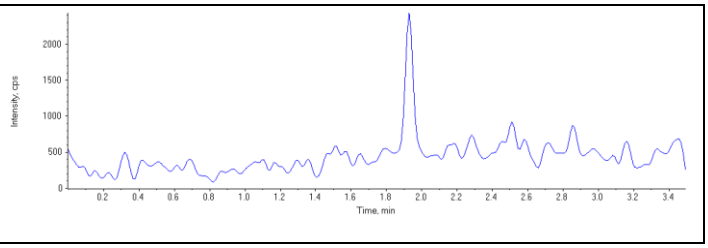
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 0.00 (1.88) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



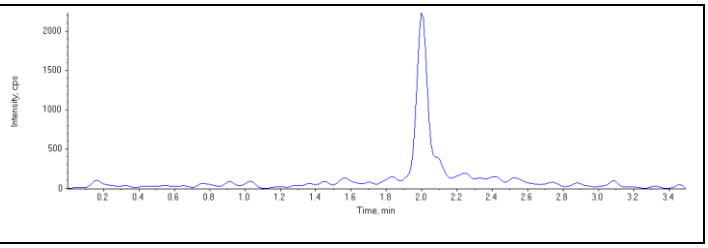
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 0.00 (2.00) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



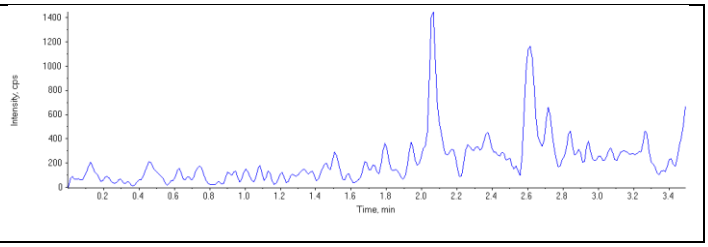
PFNA 1 (462.900/419.000 Da)

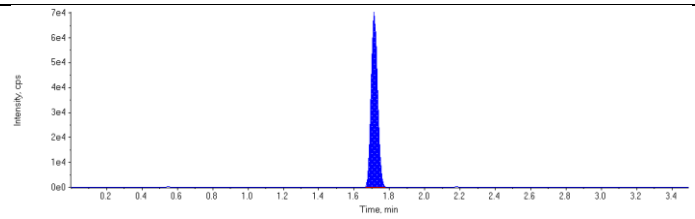
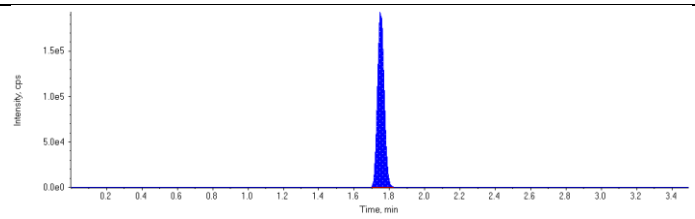
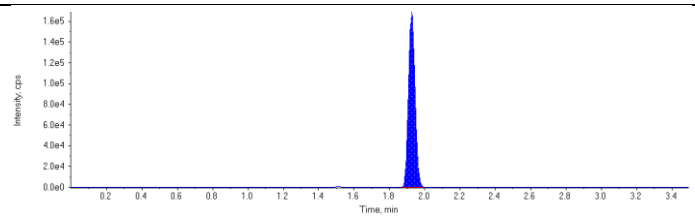
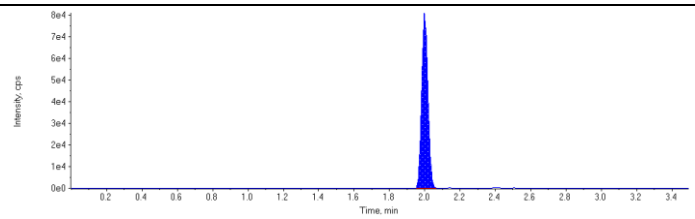
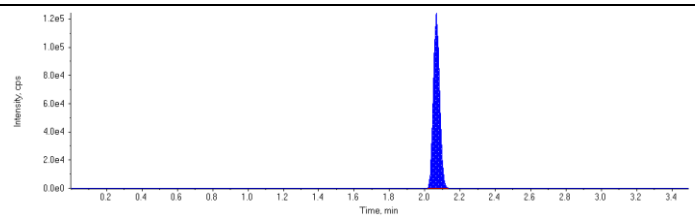
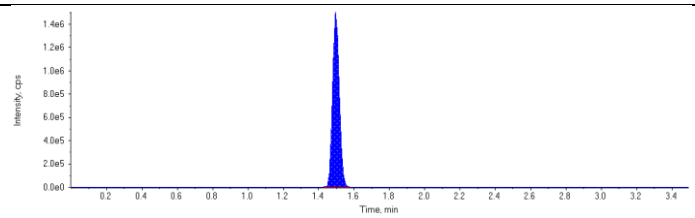
RT (Exp. RT): 0.00 (2.02) min

Calculated Conc: N/A µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 88.6 µg/L Area Ratio: 0.0446 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 88.4 µg/L Area Ratio: 0.129 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 84.4 µg/L Area Ratio: 0.109 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 91.1 µg/L Area Ratio: 0.0505 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 91.2 µg/L Area Ratio: 0.0779 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.50 (1.42) min Calculated Conc: 106. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

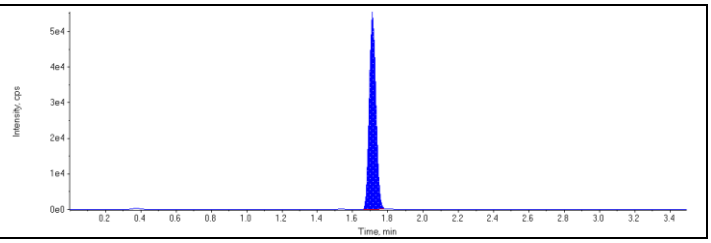
Sample Name	**4384677~MTRX SPK**	**Injection Vial**	10
Sample ID	4384677~MTRX SPK (BVX821)	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:27:34 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Re-injected
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	142000.	1.71	1.00	-
MPFHpA	370000.	1.75	1.00	-
MPFOA	351000.	1.92	1.00	-
MPFOS	149000.	2.00	1.00	-
MPFNA	240000.	2.06	1.00	-
13C6-PFHxA IS	4600000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	4040000	1.17	50.0	74.4	149.0
PFHxS 1	3480000	1.71	50.0	62.7	125.0
PFHpA 1	3910000	1.75	50.0	67.7	135.0
PFOA 1	4580000	1.93	50.0	69.3	139.0
PFOS 1	2130000	2.00	50.0	64.5	129.0
PFNA 1	2760000	2.06	50.0	59.4	119.0
18O2-PFHxS	142000	1.71	100.	61.4	61.4
13C4-PFHpA	370000	1.75	100.	55.2	55.2
13C4-PFOA	351000	1.92	100.	59.1	59.1
13C4-PFOS	149000	2.00	100.	58.5	58.5
13C5-PFNA	240000	2.06	100.	61.1	61.1
13C6-PFHxA	4600000	1.49	100.	124.	124.0

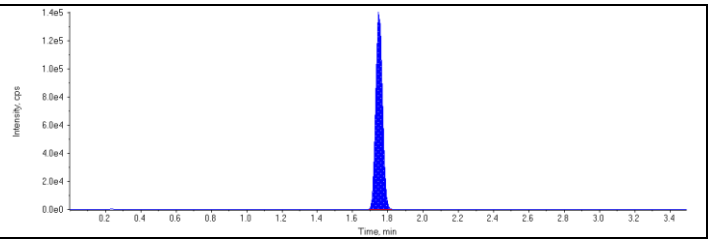
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



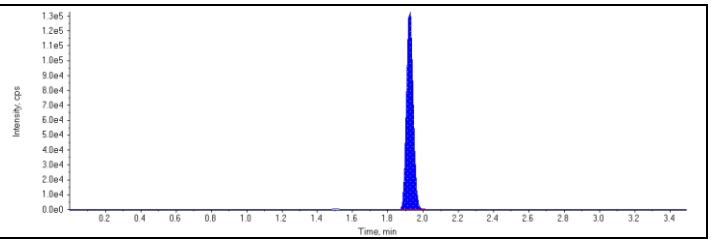
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



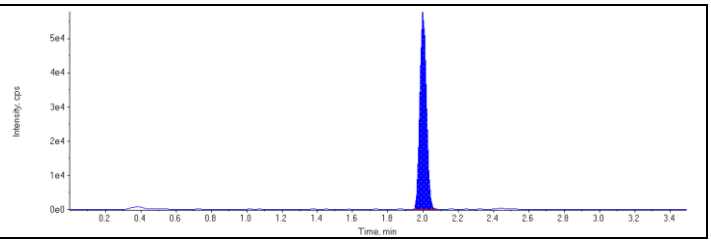
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



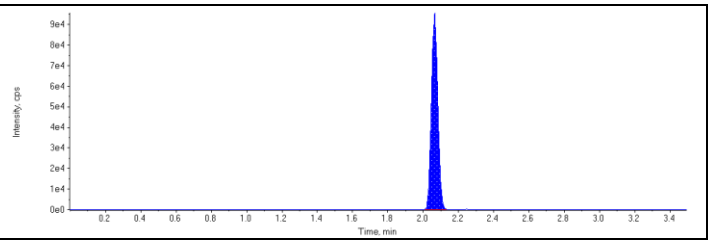
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



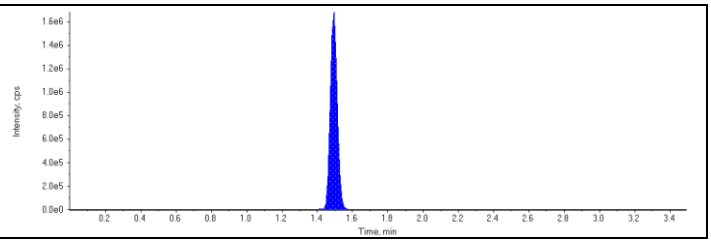
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

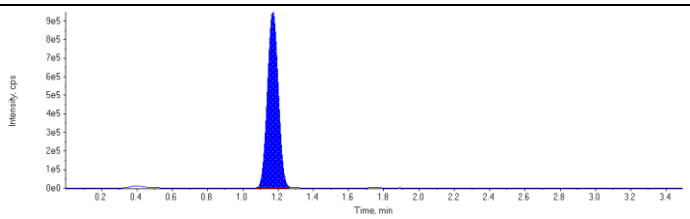
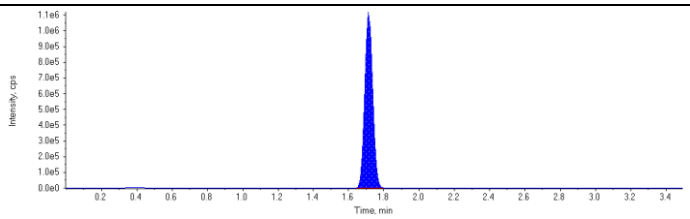
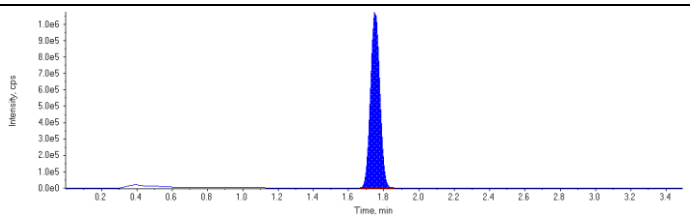
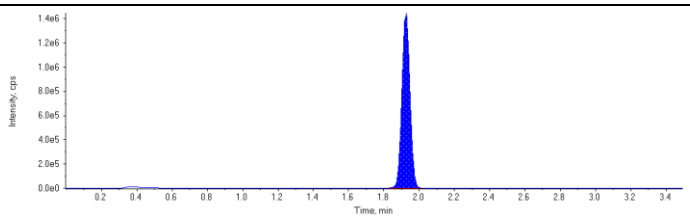
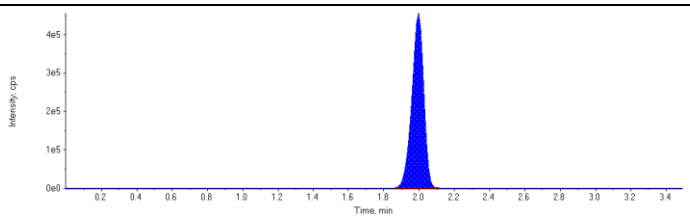
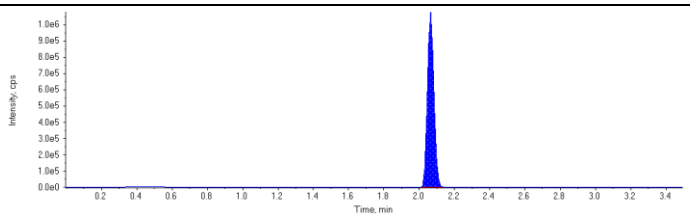
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

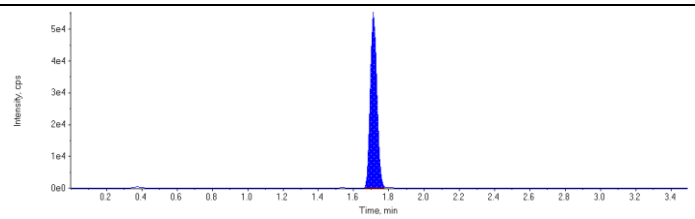
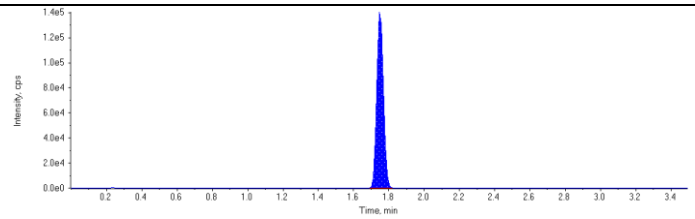
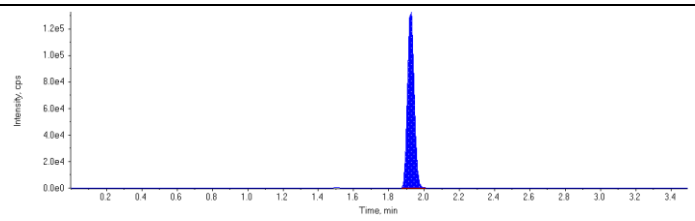
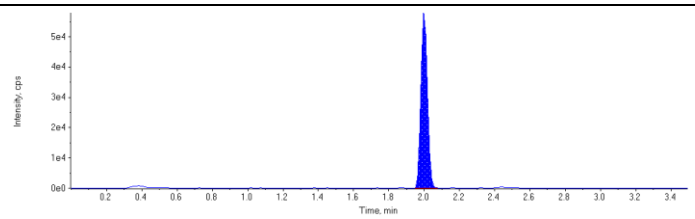
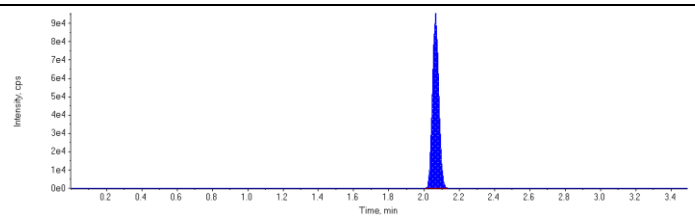
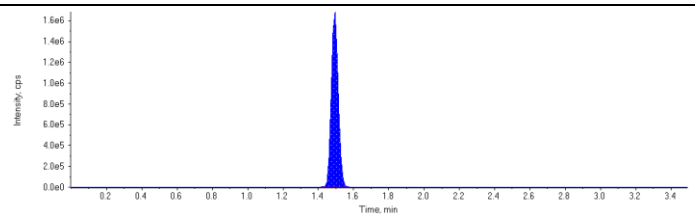


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 74.4 µg/L Area Ratio: 28.4 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 62.7 µg/L Area Ratio: 24.5 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 67.7 µg/L Area Ratio: 10.6 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 69.3 µg/L Area Ratio: 13.1 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 64.5 µg/L Area Ratio: 14.3 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 59.4 µg/L Area Ratio: 11.5 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 61.4 µg/L Area Ratio: 0.0309 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 55.2 µg/L Area Ratio: 0.0806 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 59.1 µg/L Area Ratio: 0.0764 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 58.5 µg/L Area Ratio: 0.0324 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 61.1 µg/L Area Ratio: 0.0522 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 124. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

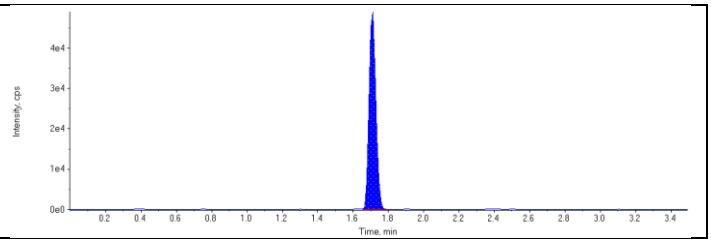
Sample Name	**4384677~MTRX SPK**	**Injection Vial**	10
Sample ID	4384677~MTRX SPK (BVX821)	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 4:15:53 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Reported
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	130000.	1.71	1.00	-
MPFHpA	373000.	1.74	1.00	-
MPFOA	326000.	1.92	1.00	-
MPFOS	144000.	2.00	1.00	-
MPFNA	228000.	2.06	1.00	-
13C6-PFHxA IS	3950000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	3330000	1.16	50.0	67.2	134.0
PFHxS 1	3390000	1.71	50.0	66.8	134.0
PFHpA 1	3640000	1.74	50.0	62.5	125.0
PFOA 1	4370000	1.92	50.0	71.2	142.0
PFOS 1	2130000	1.99	50.0	66.9	134.0
PFNA 1	2670000	2.06	50.0	60.3	121.0
18O2-PFHxS	130000	1.71	100.	65.4	65.4
13C4-PFHpA	373000	1.74	100.	64.7	64.7
13C4-PFOA	326000	1.92	100.	63.9	63.9
13C4-PFOS	144000	2.00	100.	65.7	65.7
13C5-PFNA	228000	2.06	100.	67.5	67.5
13C6-PFHxA	3950000	1.49	100.	106.	106.0

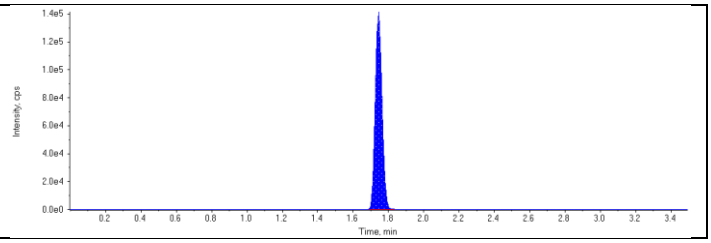
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



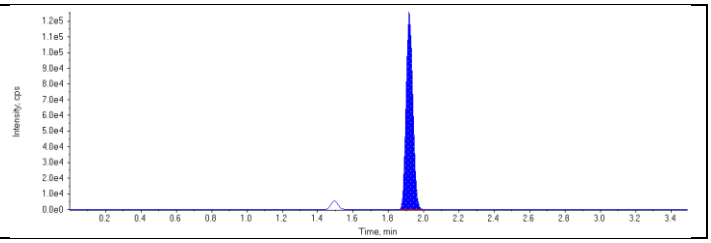
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



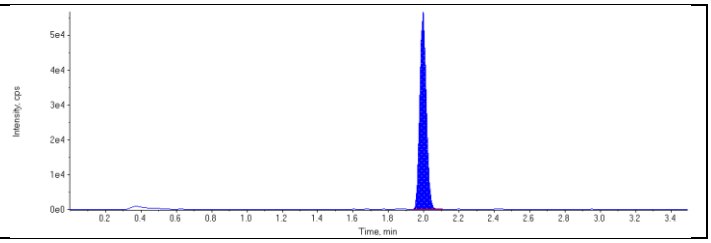
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



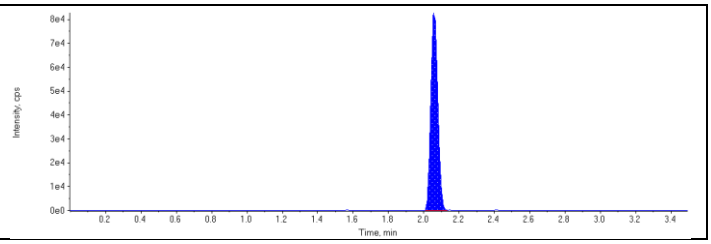
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



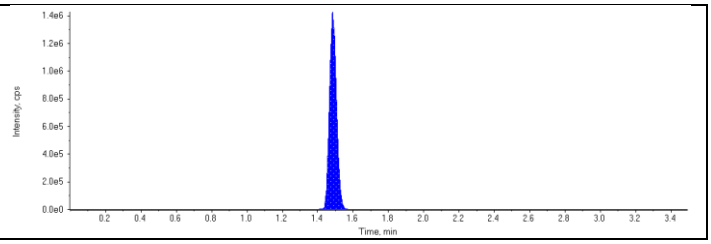
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

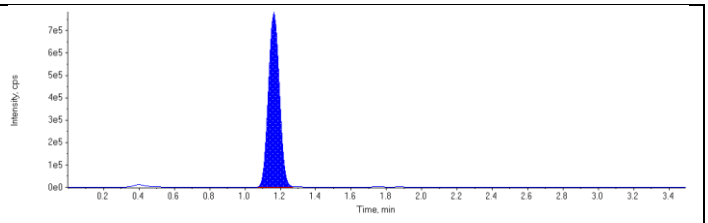
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 67.2 µg/L

Area Ratio: 25.6

Sample Type: (Quality Control)



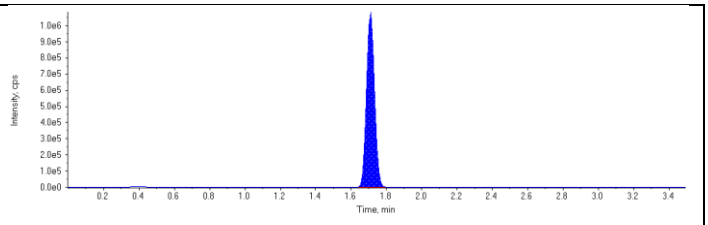
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 66.8 µg/L

Area Ratio: 26.1

Sample Type: (Quality Control)



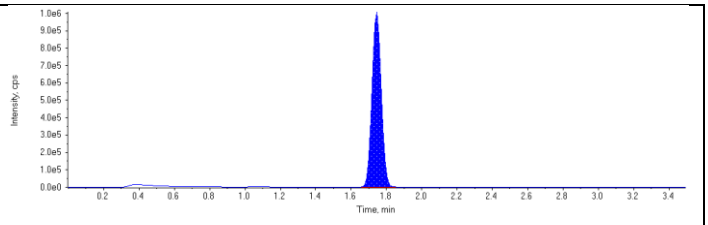
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 62.5 µg/L

Area Ratio: 9.75

Sample Type: (Quality Control)



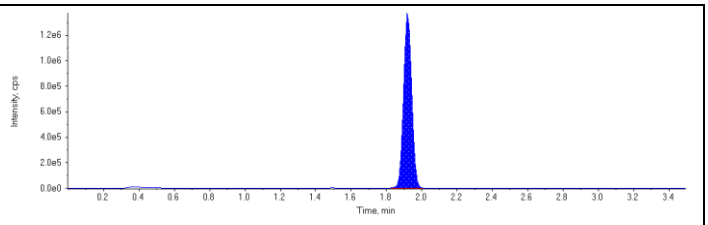
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 71.2 µg/L

Area Ratio: 13.4

Sample Type: (Quality Control)



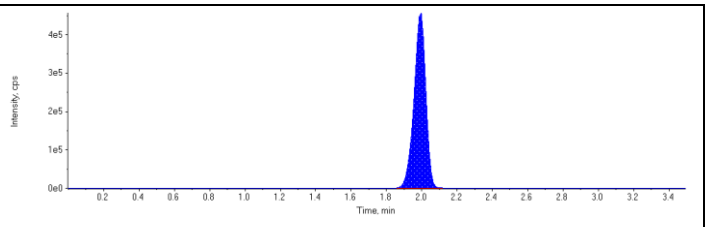
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 66.9 µg/L

Area Ratio: 14.8

Sample Type: (Quality Control)



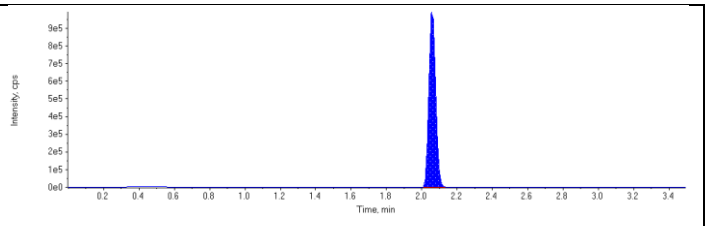
PFNA 1 (462.900/419.000 Da)

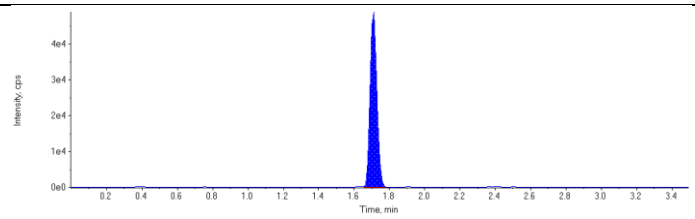
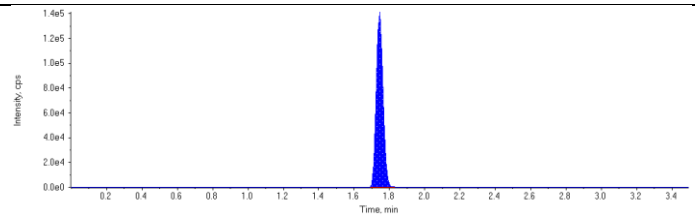
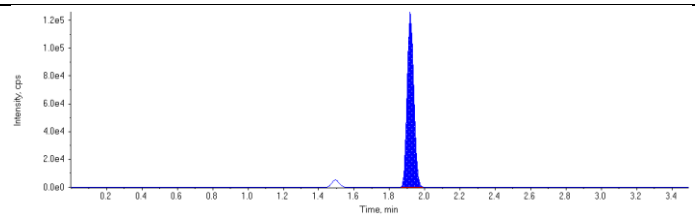
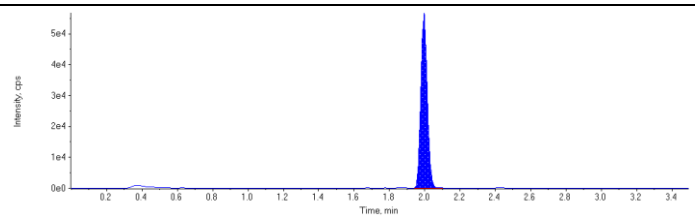
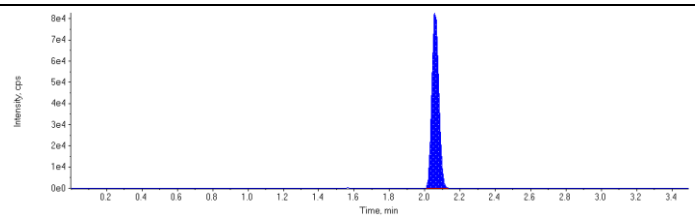
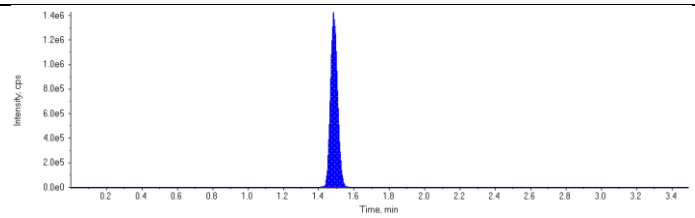
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 60.3 µg/L

Area Ratio: 11.7

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 65.4 µg/L Area Ratio: 0.0329 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 64.7 µg/L Area Ratio: 0.0945 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 63.9 µg/L Area Ratio: 0.0826 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 65.7 µg/L Area Ratio: 0.0364 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 67.5 µg/L Area Ratio: 0.0577 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 106. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

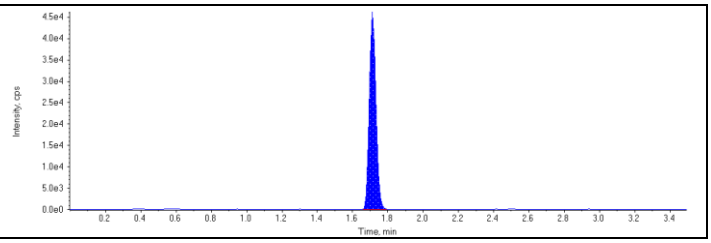
Sample Name	**4384677~MTRX SPK:D1**	**Injection Vial**	11
Sample ID	4384677~MTRX SPK:D1 (BVX821)	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:32:40 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Re-injected
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	119000.	1.71	1.00	-
MPFHpA	335000.	1.75	1.00	-
MPFOA	280000.	1.92	1.00	-
MPFOS	132000.	2.00	1.00	-
MPFNA	195000.	2.06	1.00	-
13C6-PFHxA IS	4380000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	3860000	1.17	50.0	84.6	169.0
PFHxS 1	3580000	1.71	50.0	76.8	154.0
PFHpA 1	3770000	1.75	50.0	72.3	145.0
PFOA 1	4440000	1.93	50.0	84.3	169.0
PFOS 1	2180000	2.00	50.0	74.4	149.0
PFNA 1	2770000	2.06	50.0	73.1	146.0
18O2-PFHxS	119000	1.71	100.	54.2	54.2
13C4-PFHpA	335000	1.75	100.	52.3	52.3
13C4-PFOA	280000	1.92	100.	49.4	49.4
13C4-PFOS	132000	2.00	100.	54.6	54.6
13C5-PFNA	195000	2.06	100.	52.2	52.2
13C6-PFHxA	4380000	1.49	100.	118.	118.0

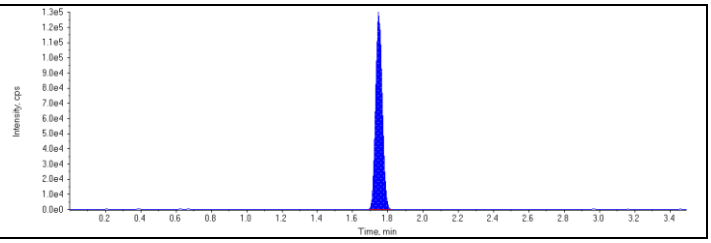
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



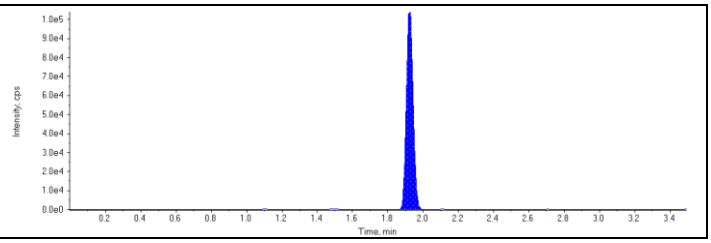
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



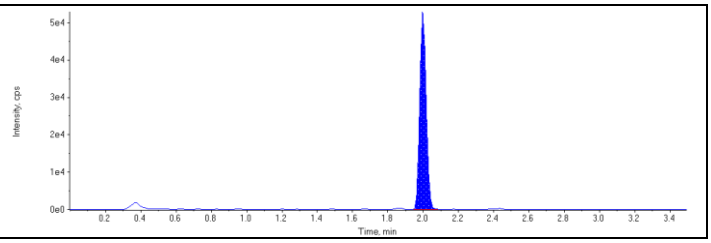
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



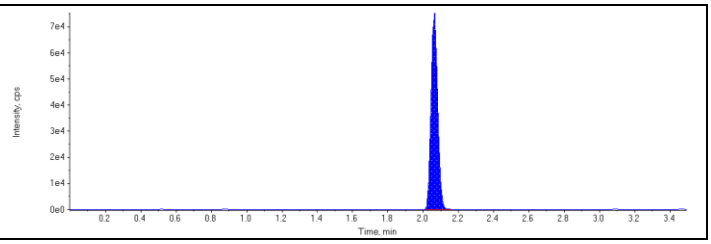
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



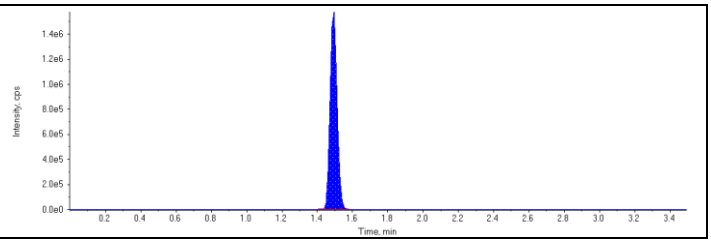
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

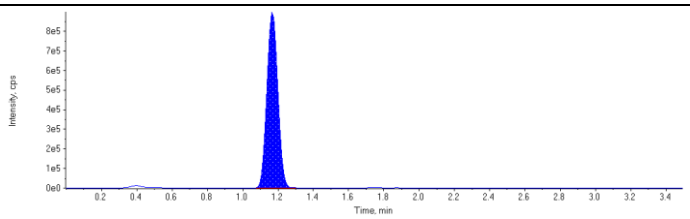
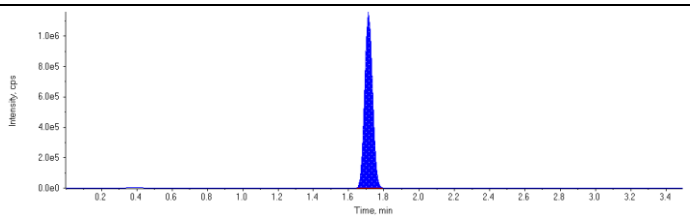
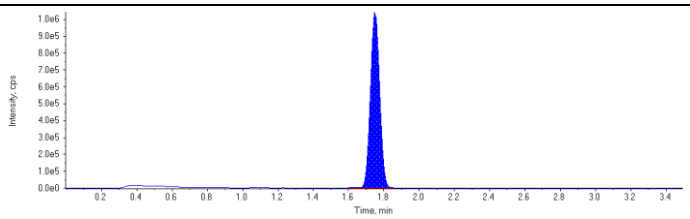
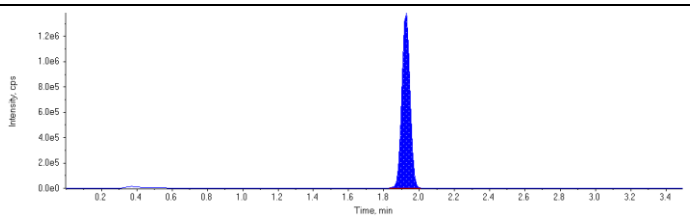
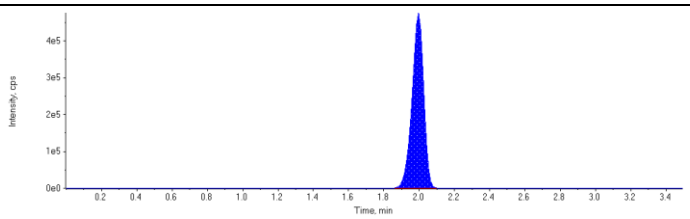
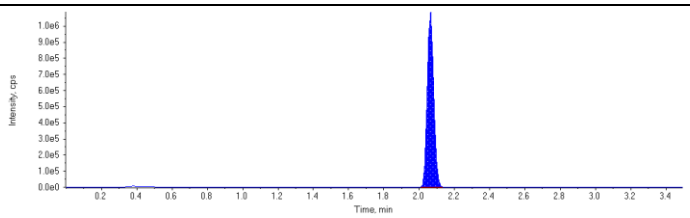
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

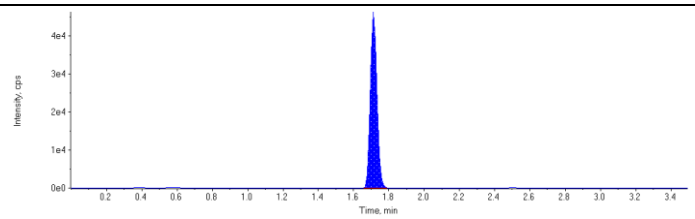
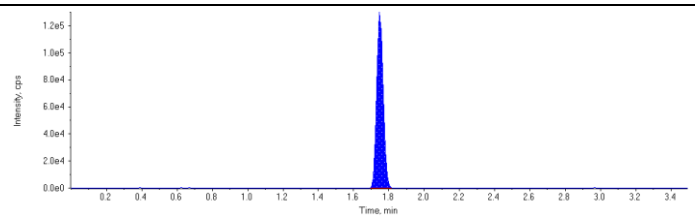
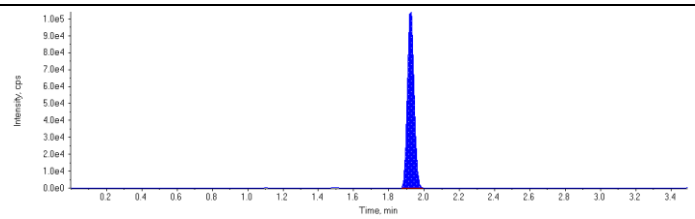
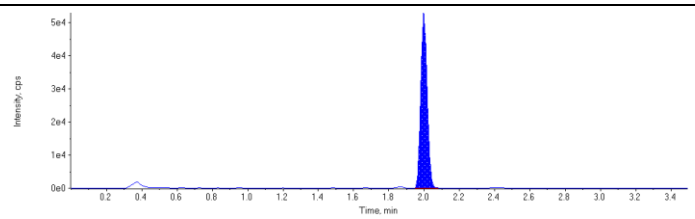
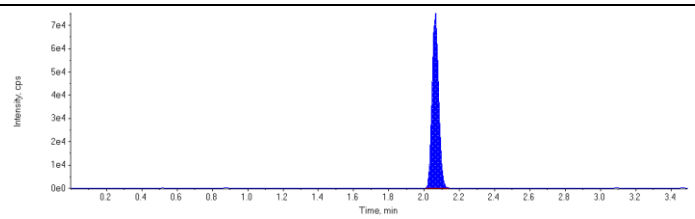
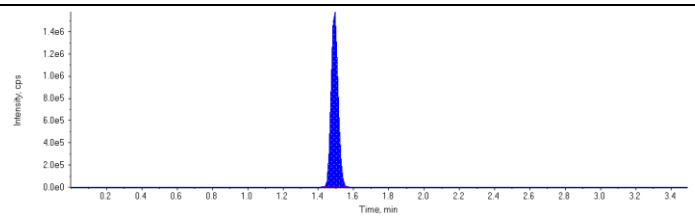


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 84.6 µg/L Area Ratio: 32.4 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 76.8 µg/L Area Ratio: 30.0 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 72.3 µg/L Area Ratio: 11.3 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 84.3 µg/L Area Ratio: 15.9 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 74.4 µg/L Area Ratio: 16.5 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 73.1 µg/L Area Ratio: 14.2 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 54.2 µg/L Area Ratio: 0.0273 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 52.3 µg/L Area Ratio: 0.0764 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 49.4 µg/L Area Ratio: 0.0639 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 54.6 µg/L Area Ratio: 0.0302 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 52.2 µg/L Area Ratio: 0.0446 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 118. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

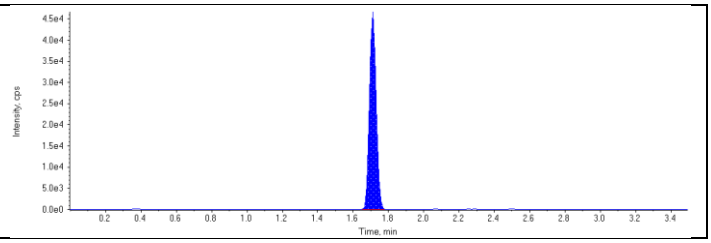
Sample Name	**4384677~MTRX SPK:D1**	**Injection Vial**	11
Sample ID	4384677~MTRX SPK:D1 (BVX821)	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 4:20:59 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	Reported
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	122000.	1.71	1.00	-
MPFHpA	309000.	1.75	1.00	-
MPFOA	292000.	1.92	1.00	-
MPFOS	128000.	2.00	1.00	-
MPFNA	200000.	2.06	1.00	-
13C6-PFHxA IS	3880000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	3360000	1.16	50.0	72.1	144.0
PFHxS 1	3430000	1.71	50.0	72.1	144.0
PFHpA 1	3680000	1.75	50.0	76.2	152.0
PFOA 1	4330000	1.92	50.0	78.8	158.0
PFOS 1	2190000	1.99	50.0	77.3	155.0
PFNA 1	2690000	2.06	50.0	69.1	138.0
18O2-PFHxS	122000	1.71	100.	62.4	62.4
13C4-PFHpA	309000	1.75	100.	54.5	54.5
13C4-PFOA	292000	1.92	100.	58.1	58.1
13C4-PFOS	128000	2.00	100.	59.3	59.3
13C5-PFNA	200000	2.06	100.	60.4	60.4
13C6-PFHxA	3880000	1.49	100.	104.	104.0

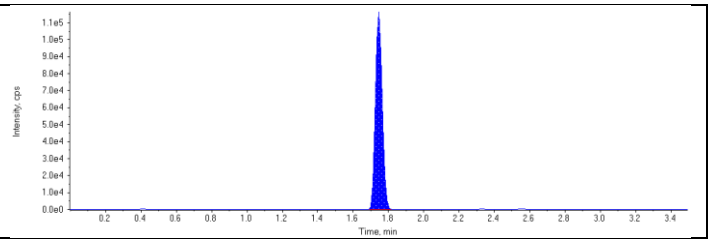
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



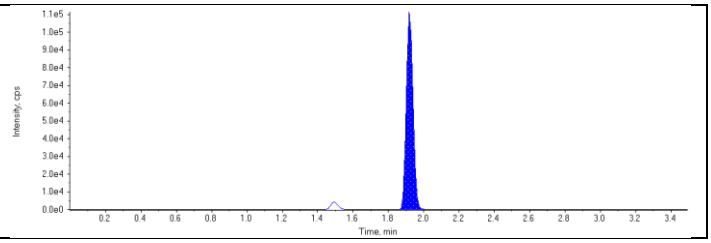
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



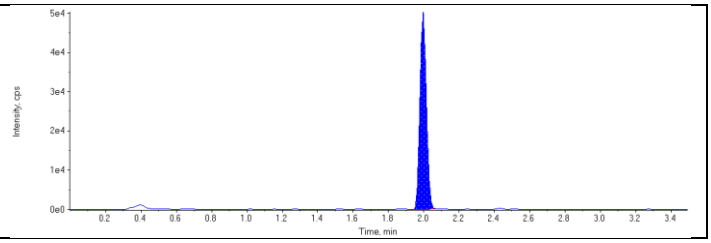
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



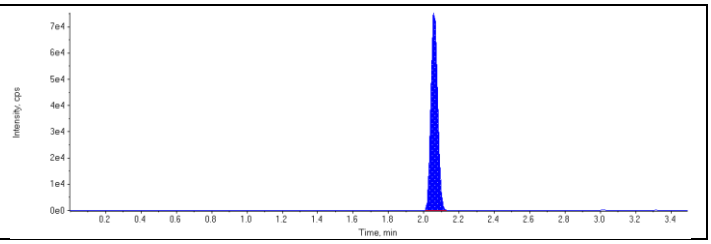
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



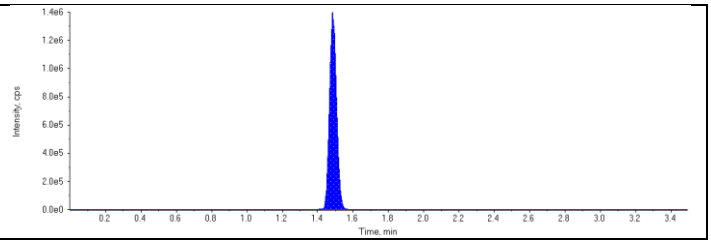
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

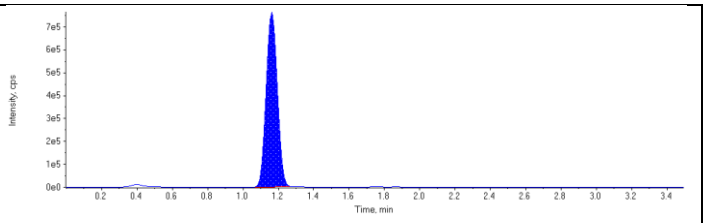
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 72.1 µg/L

Area Ratio: 27.5

Sample Type: (Quality Control)



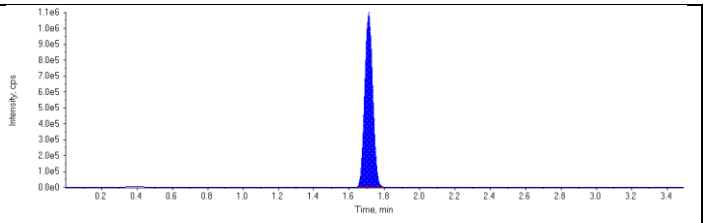
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 72.1 µg/L

Area Ratio: 28.2

Sample Type: (Quality Control)



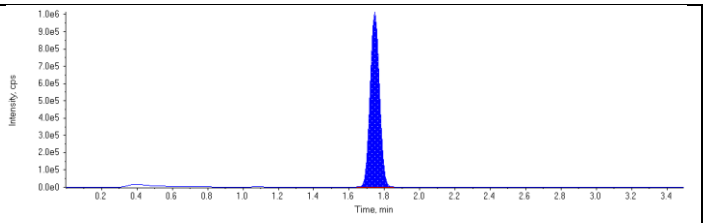
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.75 (1.75) min

Calculated Conc: 76.2 µg/L

Area Ratio: 11.9

Sample Type: (Quality Control)



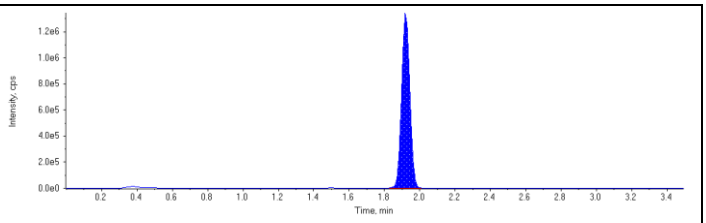
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 78.8 µg/L

Area Ratio: 14.8

Sample Type: (Quality Control)



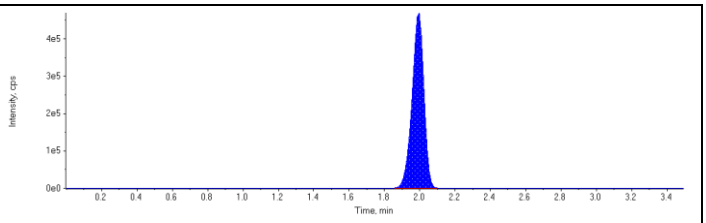
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 77.3 µg/L

Area Ratio: 17.1

Sample Type: (Quality Control)



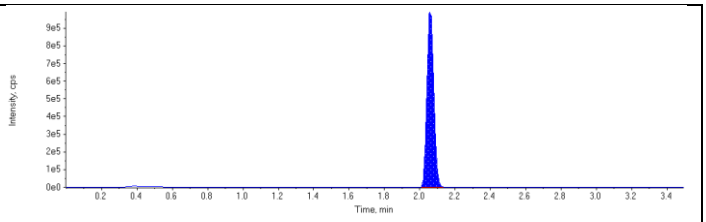
PFNA 1 (462.900/419.000 Da)

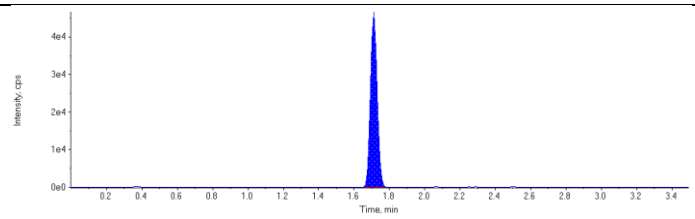
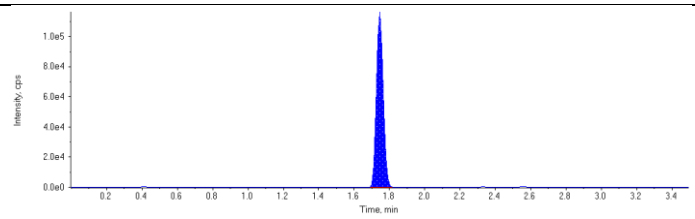
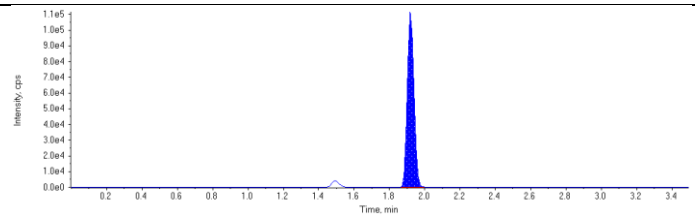
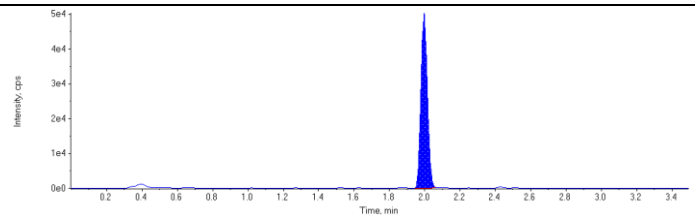
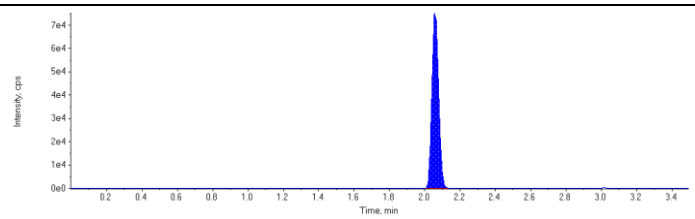
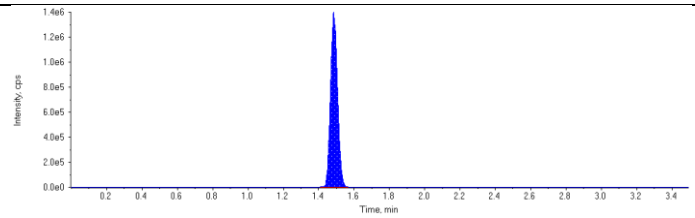
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 69.1 µg/L

Area Ratio: 13.4

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 62.4 µg/L Area Ratio: 0.0314 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 54.5 µg/L Area Ratio: 0.0796 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 58.1 µg/L Area Ratio: 0.0751 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 59.3 µg/L Area Ratio: 0.0329 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 60.4 µg/L Area Ratio: 0.0516 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 104. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

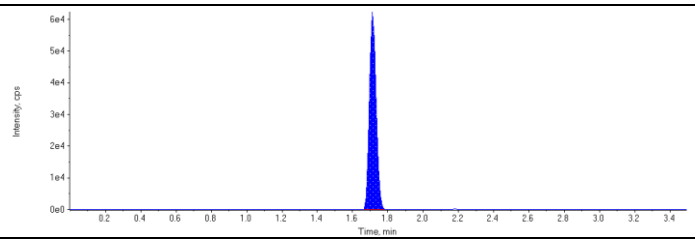
Sample Name	**4384677~SPIKE**	**Injection Vial**	12
Sample ID	4384677~SPIKE	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:37:46 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	163000.	1.71	1.00	-
MPFHpA	475000.	1.75	1.00	-
MPFOA	425000.	1.93	1.00	-
MPFOS	185000.	2.00	1.00	-
MPFNA	279000.	2.06	1.00	-
13C6-PFHxA IS	3790000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	3450000	1.18	50.0	55.5	111.0
PFHxS 1	3470000	1.71	50.0	54.6	109.0
PFHpA 1	4090000	1.75	50.0	55.3	111.0
PFOA 1	4290000	1.93	50.0	53.7	107.0
PFOS 1	2170000	2.00	50.0	53.0	106.0
PFNA 1	2900000	2.07	50.0	53.7	107.0
18O2-PFHxS	163000	1.71	100.	85.4	85.4
13C4-PFHpA	475000	1.75	100.	85.6	85.6
13C4-PFOA	425000	1.93	100.	86.6	86.6
13C4-PFOS	185000	2.00	100.	88.1	88.1
13C5-PFNA	279000	2.06	100.	86.0	86.0
13C6-PFHxA	3790000	1.49	100.	102.	102.0

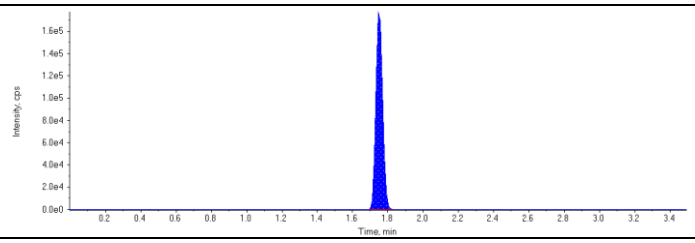
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



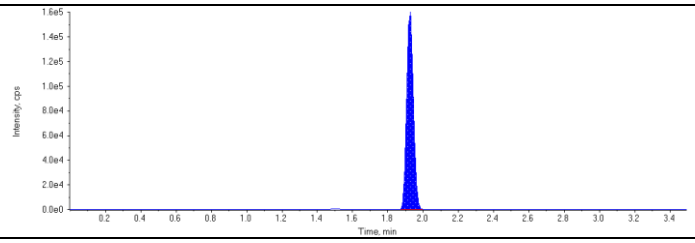
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



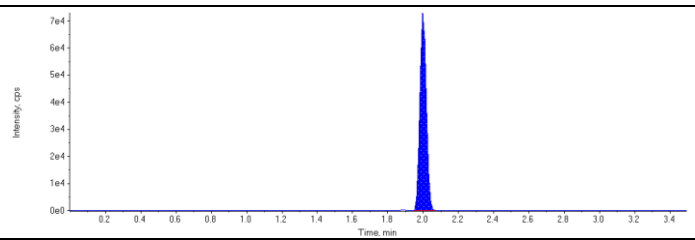
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



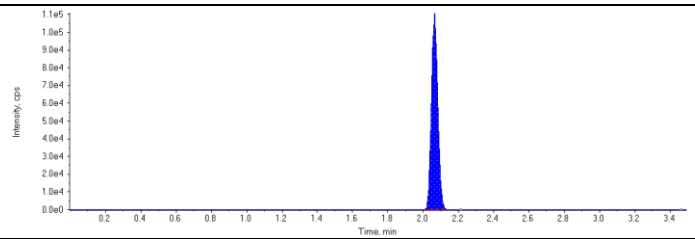
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



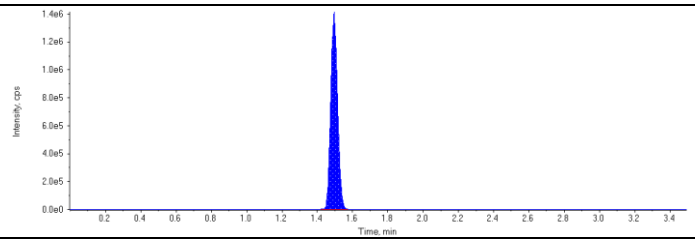
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

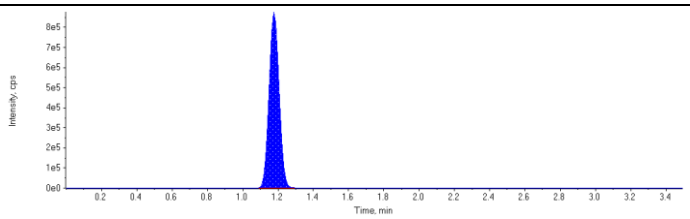
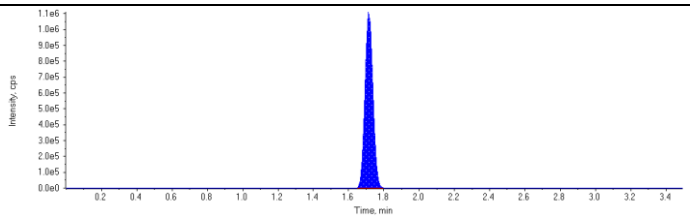
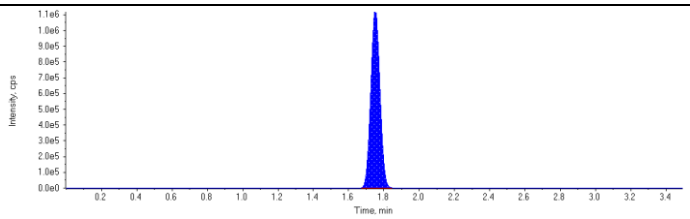
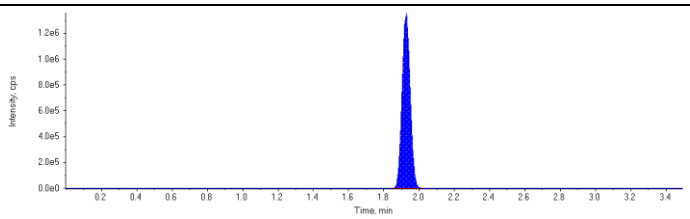
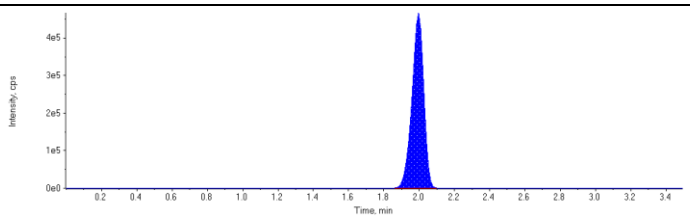
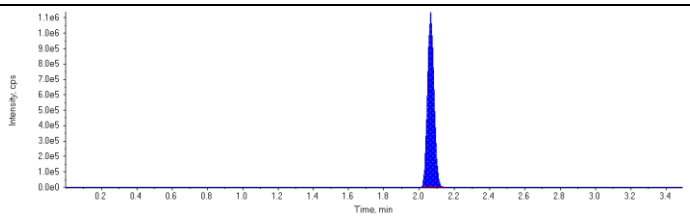
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

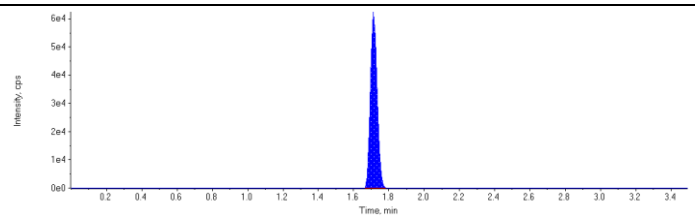
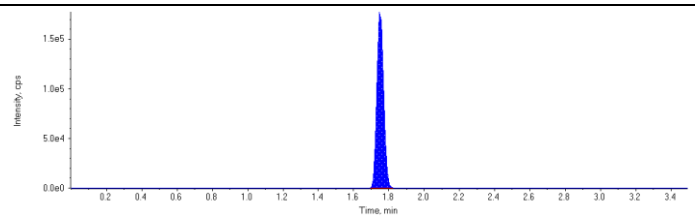
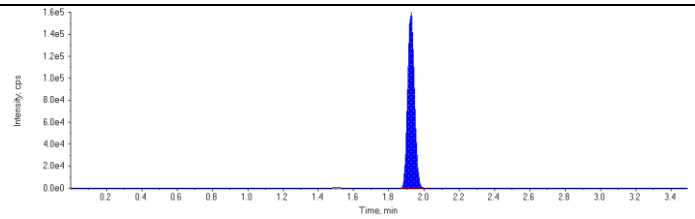
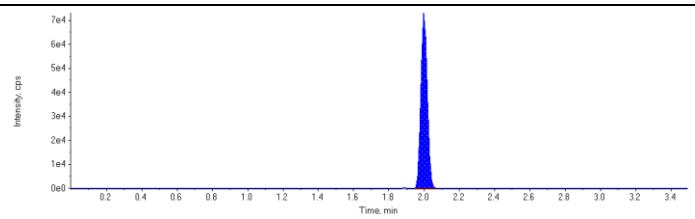
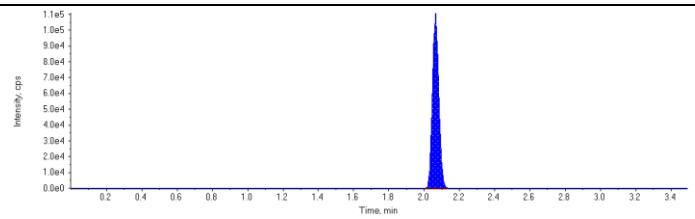
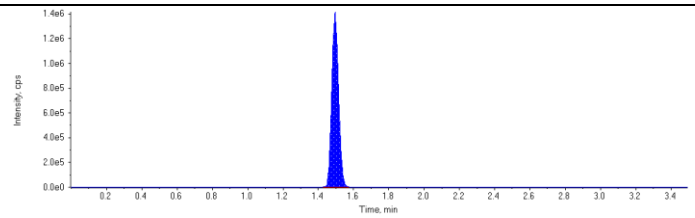


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.18 (1.16) min Calculated Conc: 55.5 µg/L Area Ratio: 21.1 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 54.6 µg/L Area Ratio: 21.3 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 55.3 µg/L Area Ratio: 8.61 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 53.7 µg/L Area Ratio: 10.1 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 53.0 µg/L Area Ratio: 11.7 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 53.7 µg/L Area Ratio: 10.4 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 85.4 µg/L Area Ratio: 0.0430 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 85.6 µg/L Area Ratio: 0.125 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 86.6 µg/L Area Ratio: 0.112 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 88.1 µg/L Area Ratio: 0.0488 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 86.0 µg/L Area Ratio: 0.0734 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 102. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

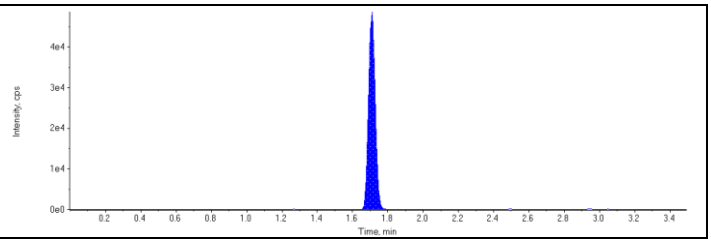
Sample Name	**4385924~BLANK**	**Injection Vial**	33
Sample ID	4385924~BLANK	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 11:09:00 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	127000.	1.71	1.00	-
MPFHpA	462000.	1.74	1.00	-
MPFOA	407000.	1.91	1.00	-
MPFOS	161000.	1.99	1.00	-
MPFNA	288000.	2.05	1.00	-
13C6-PFHxA IS	3500000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	0	0.00	0.00	N/A	0.0
PFHxS 1	0	0.00	0.00	N/A	0.0
PFHpA 1	0	0.00	0.00	N/A	0.0
PFOA 1	0	0.00	0.00	N/A	0.0
PFOS 1	0	0.00	0.00	N/A	0.0
PFNA 1	0	0.00	0.00	N/A	0.0
18O2-PFHxS	127000	1.71	100.	98.5	98.5
13C4-PFHpA	462000	1.74	100.	107.	107.0
13C4-PFOA	407000	1.91	100.	108.	108.0
13C4-PFOS	161000	1.99	100.	107.	107.0
13C5-PFNA	288000	2.05	100.	112.	112.0
13C6-PFHxA	3500000	1.48	100.	87.6	87.6

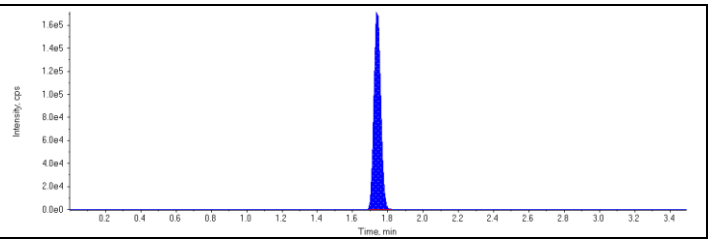
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



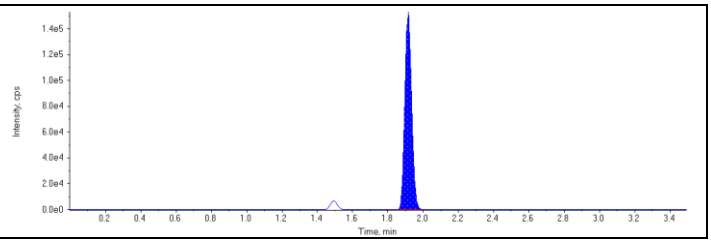
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



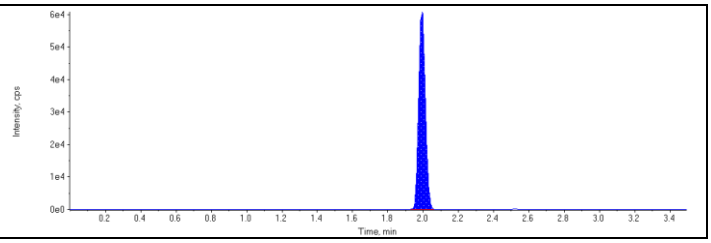
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



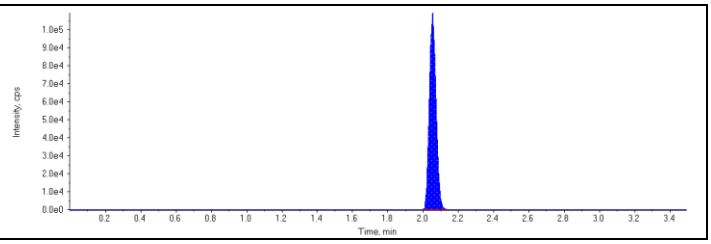
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



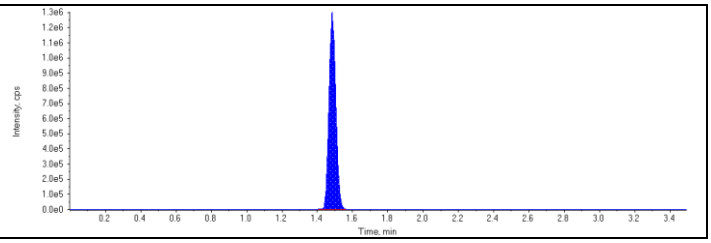
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

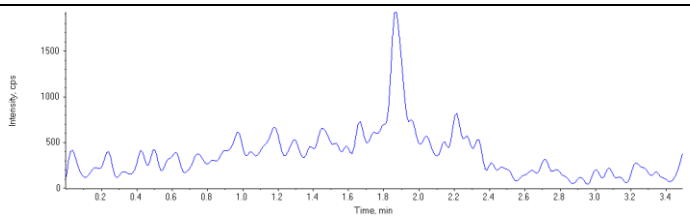
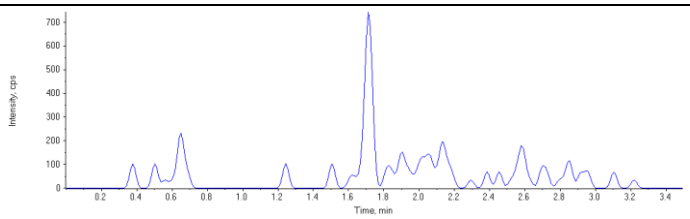
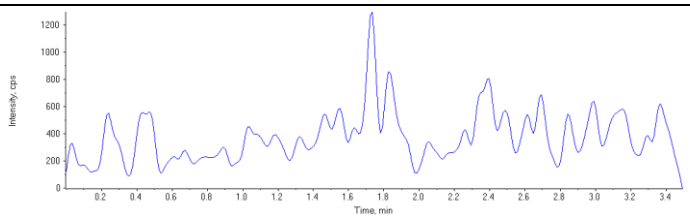
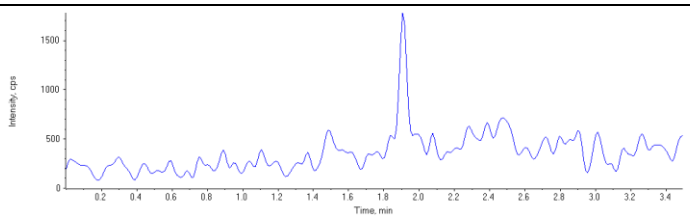
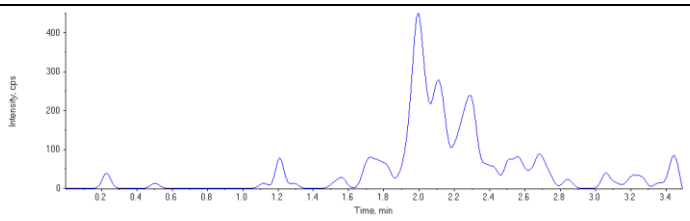
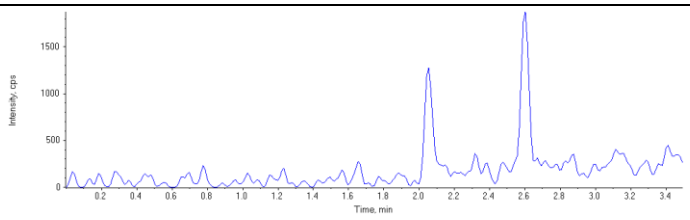
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

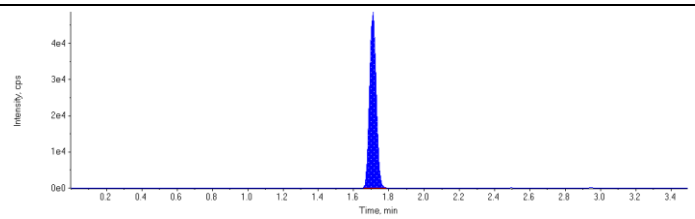
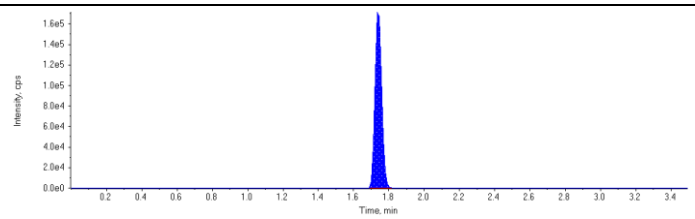
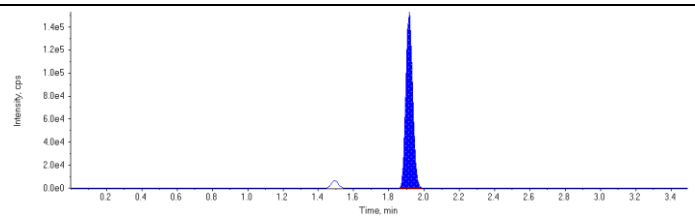
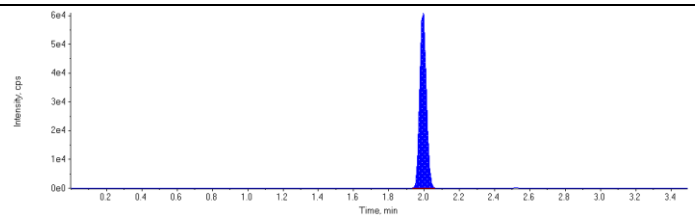
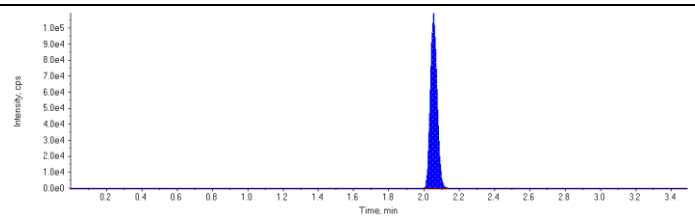
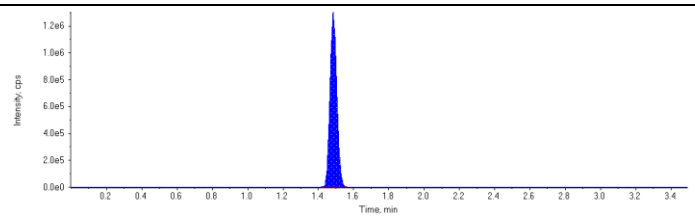


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 0.00 (1.16) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 0.00 (1.68) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 0.00 (1.75) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 0.00 (1.88) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 0.00 (2.00) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 0.00 (2.02) min Calculated Conc: N/A µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 98.5 µg/L Area Ratio: 0.0363 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 107. µg/L Area Ratio: 0.132 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 108. µg/L Area Ratio: 0.116 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 107. µg/L Area Ratio: 0.0461 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 112. µg/L Area Ratio: 0.0824 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 87.6 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

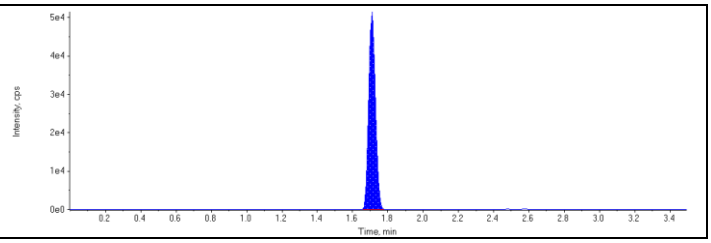
Sample Name	**4385924~MTRX SPK**	**Injection Vial**	34
Sample ID	4385924~MTRX SPK (BVX793)	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 11:14:05 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	135000.	1.71	1.00	-
MPFHpA	421000.	1.74	1.00	-
MPFOA	413000.	1.92	1.00	-
MPFOS	163000.	1.99	1.00	-
MPFNA	276000.	2.06	1.00	-
13C6-PFHxA IS	3240000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1480000	1.18	50.0	35.6	71.2
PFHxS 1	2060000	1.71	50.0	46.3	92.6
PFHpA 1	2800000	1.74	50.0	49.3	98.7
PFOA 1	3130000	1.92	50.0	46.0	92.0
PFOS 1	1320000	1.99	50.0	44.4	88.8
PFNA 1	2240000	2.06	50.0	49.0	98.0
18O2-PFHxS	135000	1.71	100.	113.	113.0
13C4-PFHpA	421000	1.74	100.	105.	105.0
13C4-PFOA	413000	1.92	100.	118.	118.0
13C4-PFOS	163000	1.99	100.	117.	117.0
13C5-PFNA	276000	2.06	100.	115.	115.0
13C6-PFHxA	3240000	1.49	100.	81.3	81.3

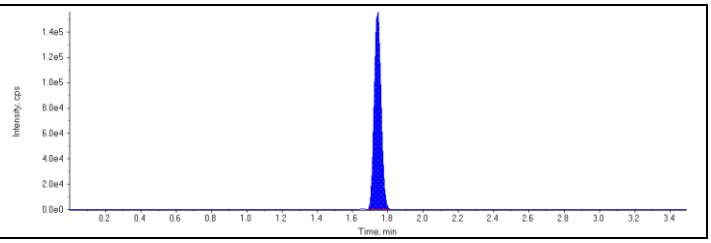
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



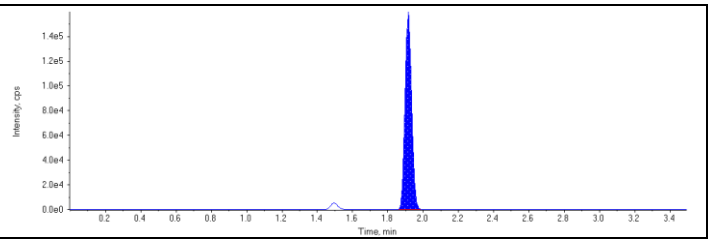
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



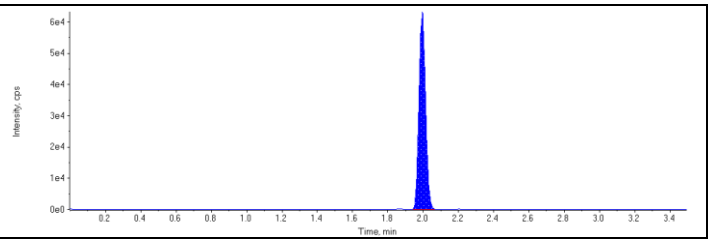
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



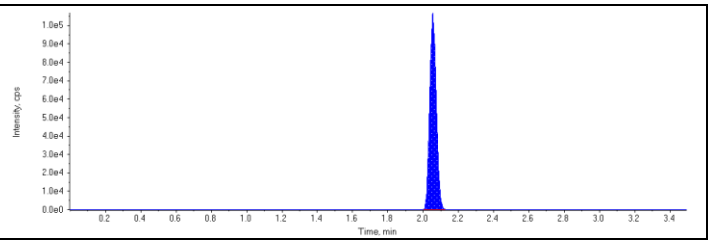
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



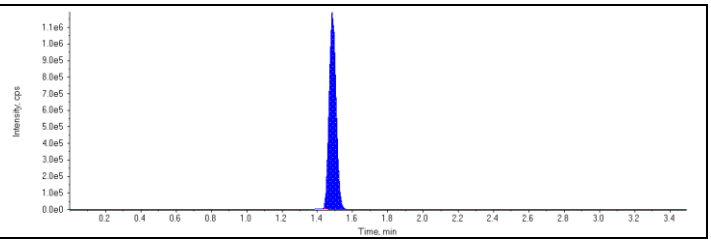
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

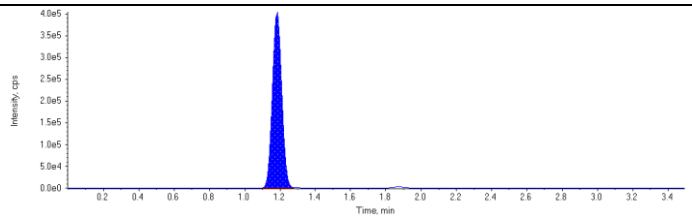
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.18 (1.16) min

Calculated Conc: 35.6 µg/L

Area Ratio: 10.9

Sample Type: (Quality Control)



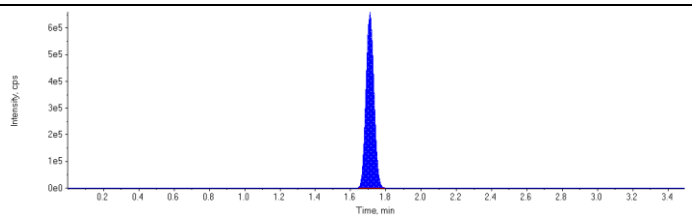
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 46.3 µg/L

Area Ratio: 15.2

Sample Type: (Quality Control)



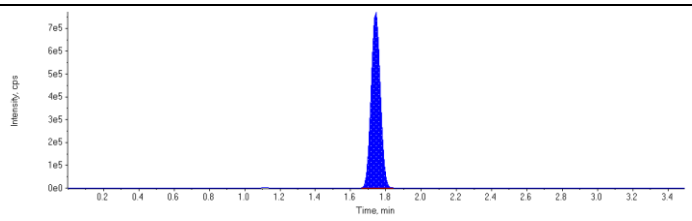
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 49.3 µg/L

Area Ratio: 6.63

Sample Type: (Quality Control)



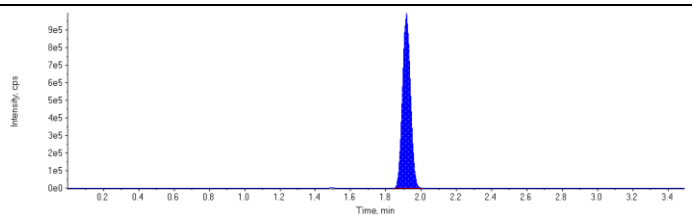
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 46.0 µg/L

Area Ratio: 7.57

Sample Type: (Quality Control)



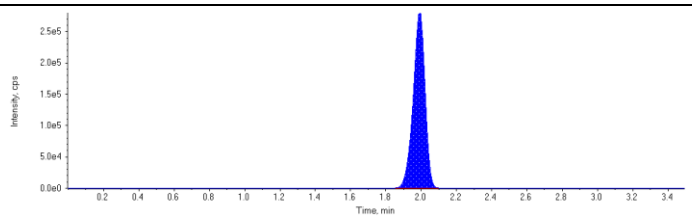
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 44.4 µg/L

Area Ratio: 8.05

Sample Type: (Quality Control)



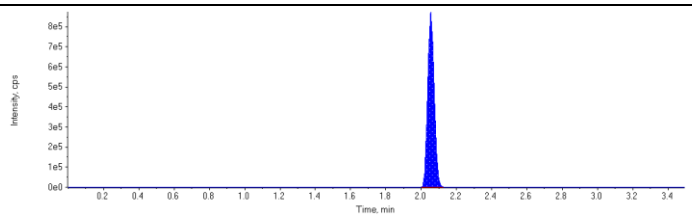
PFNA 1 (462.900/419.000 Da)

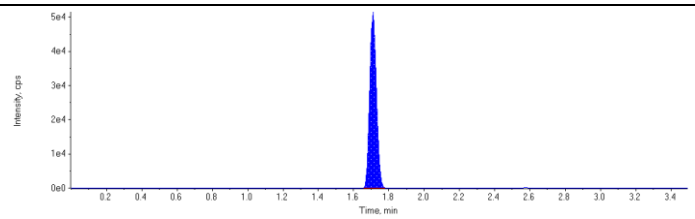
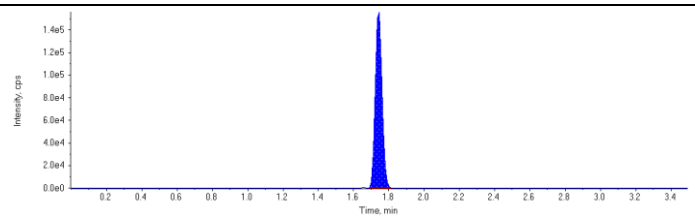
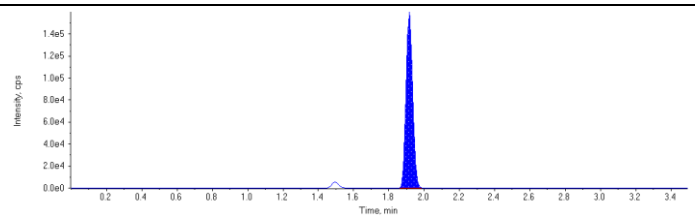
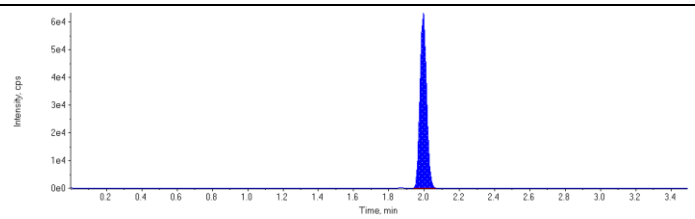
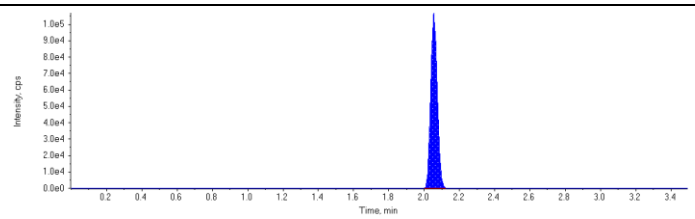
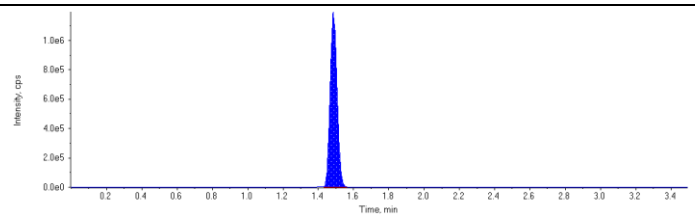
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 49.0 µg/L

Area Ratio: 8.13

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 113. µg/L Area Ratio: 0.0418 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 105. µg/L Area Ratio: 0.130 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 118. µg/L Area Ratio: 0.127 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 117. µg/L Area Ratio: 0.0504 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 115. µg/L Area Ratio: 0.0850 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.48) min Calculated Conc: 81.3 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

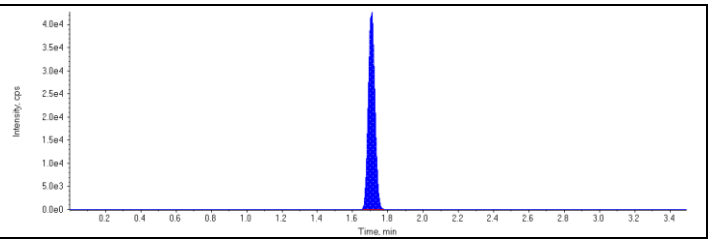
Sample Name	**4385924~MTRX SPK:D1**	**Injection Vial**	35
Sample ID	4385924~MTRX SPK:D1 (BVX793)	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 11:19:11 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	113000.	1.71	1.00	-
MPFHpA	374000.	1.74	1.00	-
MPFOA	340000.	1.91	1.00	-
MPFOS	142000.	1.99	1.00	-
MPFNA	238000.	2.05	1.00	-
13C6-PFHxA IS	3140000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1530000	1.17	50.0	44.0	88.0
PFHxS 1	1950000	1.71	50.0	52.7	105.0
PFHpA 1	2790000	1.74	50.0	55.5	111.0
PFOA 1	3080000	1.92	50.0	55.0	110.0
PFOS 1	1420000	1.99	50.0	55.2	110.0
PFNA 1	2180000	2.05	50.0	55.1	110.0
18O2-PFHxS	113000	1.71	100.	97.5	97.5
13C4-PFHpA	374000	1.74	100.	96.3	96.3
13C4-PFOA	340000	1.91	100.	100.	100.0
13C4-PFOS	142000	1.99	100.	105.	105.0
13C5-PFNA	238000	2.05	100.	103.	103.0
13C6-PFHxA	3140000	1.48	100.	78.6	78.6

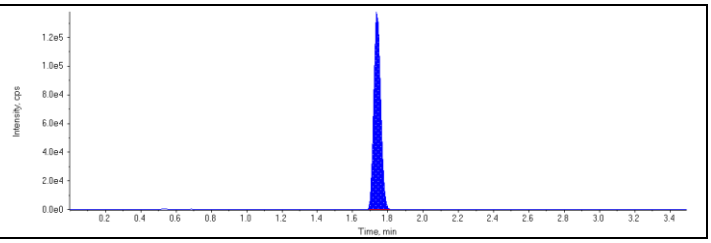
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



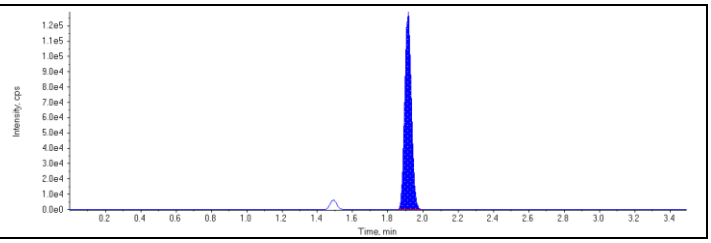
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



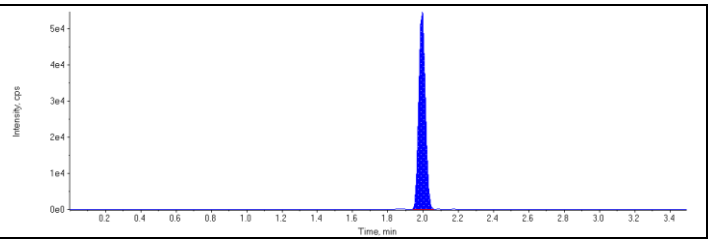
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



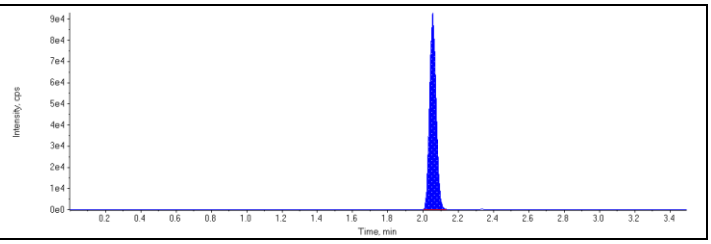
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



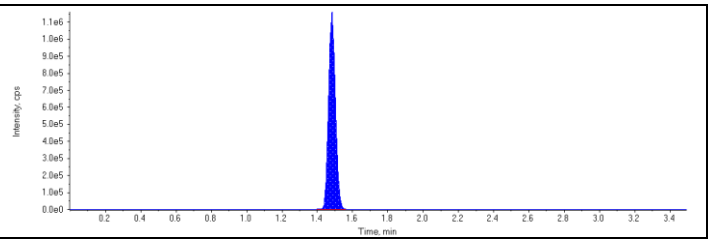
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

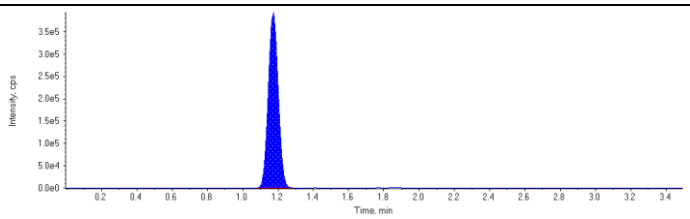
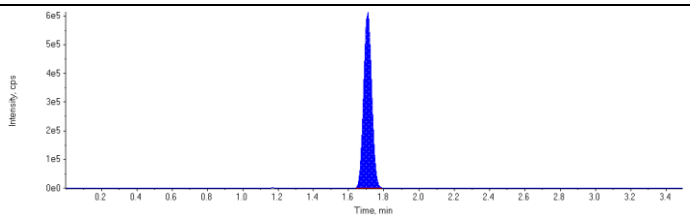
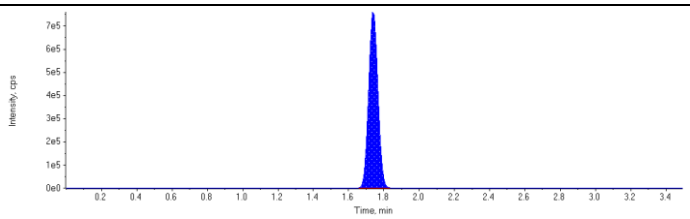
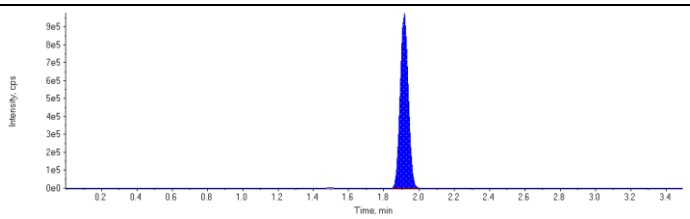
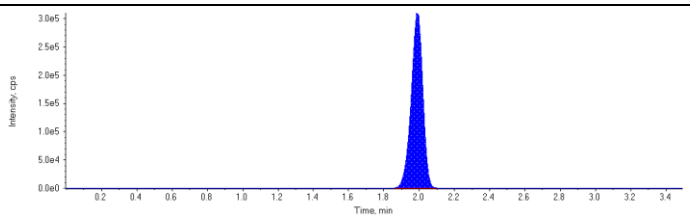
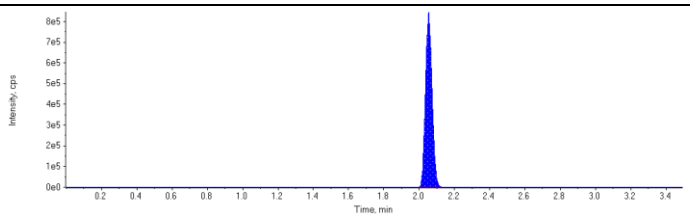
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

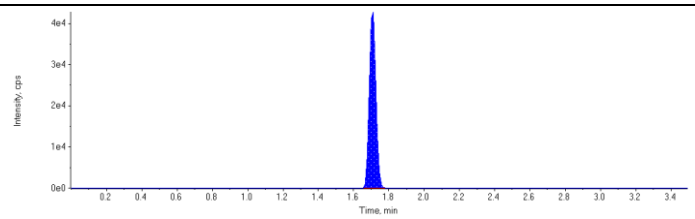
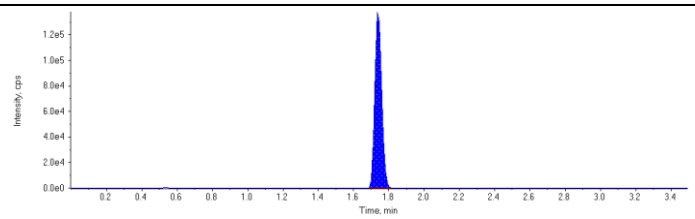
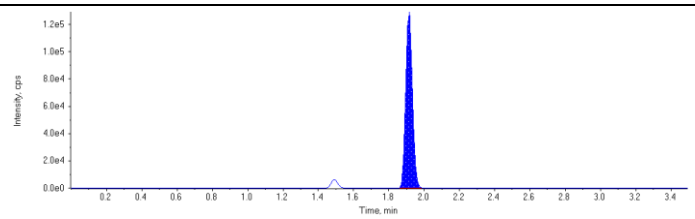
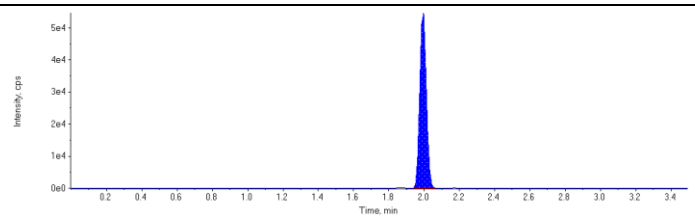
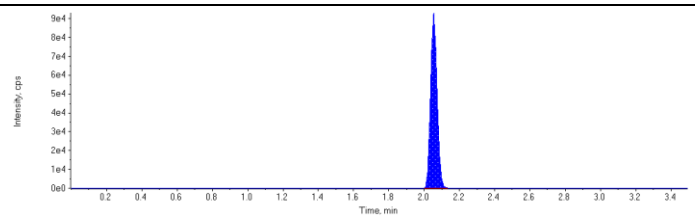
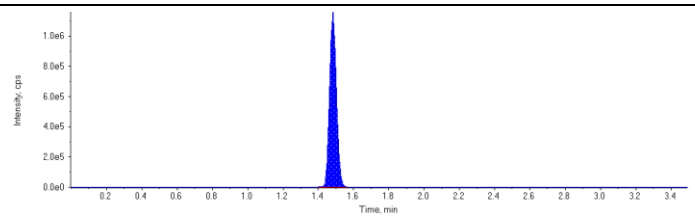


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 44.0 µg/L Area Ratio: 13.6 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 52.7 µg/L Area Ratio: 17.3 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 55.5 µg/L Area Ratio: 7.47 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 55.0 µg/L Area Ratio: 9.06 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 55.2 µg/L Area Ratio: 10.0 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 55.1 µg/L Area Ratio: 9.15 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 97.5 µg/L Area Ratio: 0.0359 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 96.3 µg/L Area Ratio: 0.119 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 100. µg/L Area Ratio: 0.108 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 105. µg/L Area Ratio: 0.0452 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 103. µg/L Area Ratio: 0.0759 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 78.6 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

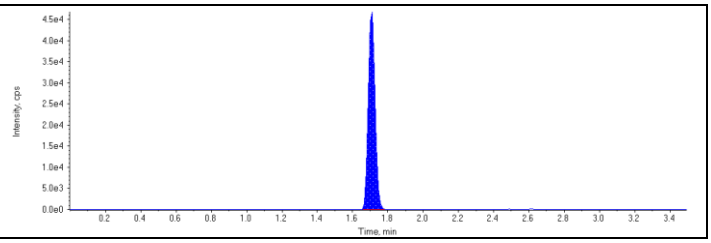
Sample Name	**4385924~SPIKE**	**Injection Vial**	36
Sample ID	4385924~SPIKE	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 11:24:17 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	126000.	1.71	1.00	-
MPFHpA	409000.	1.74	1.00	-
MPFOA	393000.	1.91	1.00	-
MPFOS	158000.	1.99	1.00	-
MPFNA	266000.	2.05	1.00	-
13C6-PFHxA IS	3170000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1500000	1.18	50.0	38.9	77.7
PFHxS 1	1930000	1.71	50.0	46.8	93.5
PFHpA 1	2680000	1.74	50.0	48.6	97.3
PFOA 1	3020000	1.91	50.0	46.7	93.4
PFOS 1	1350000	1.99	50.0	47.1	94.2
PFNA 1	2170000	2.05	50.0	49.2	98.5
18O2-PFHxS	126000	1.71	100.	108.	108.0
13C4-PFHpA	409000	1.74	100.	105.	105.0
13C4-PFOA	393000	1.91	100.	115.	115.0
13C4-PFOS	158000	1.99	100.	116.	116.0
13C5-PFNA	266000	2.05	100.	114.	114.0
13C6-PFHxA	3170000	1.48	100.	79.3	79.3

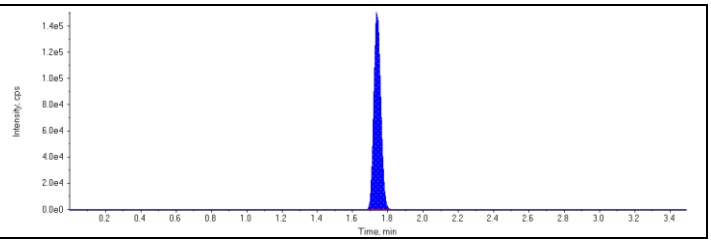
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



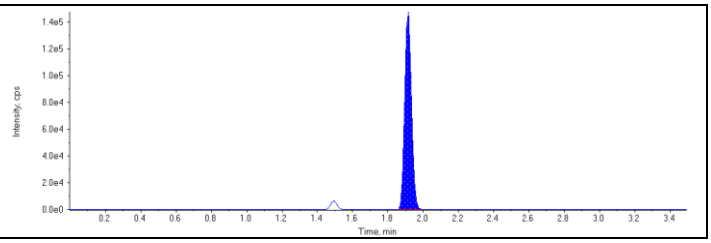
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



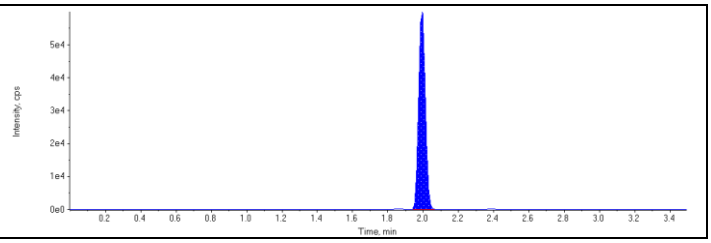
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



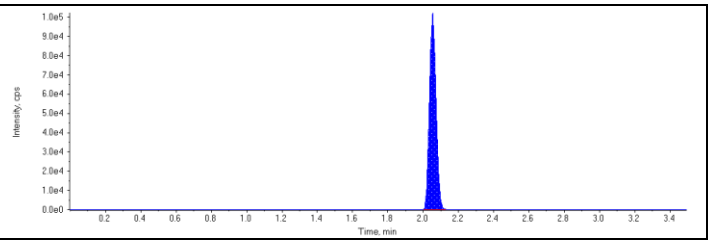
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



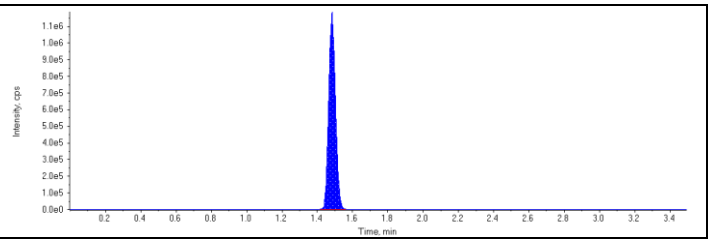
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

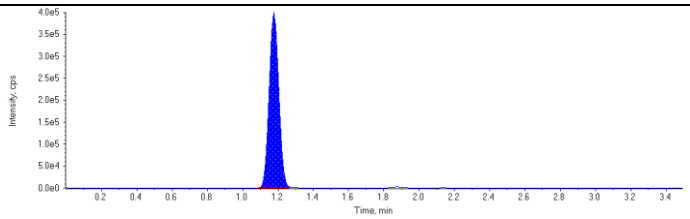
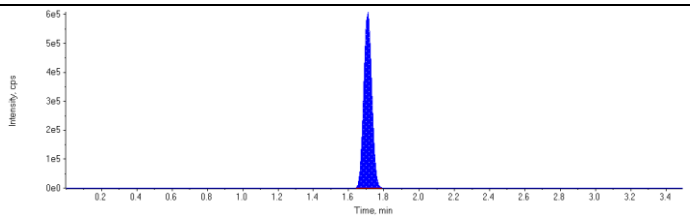
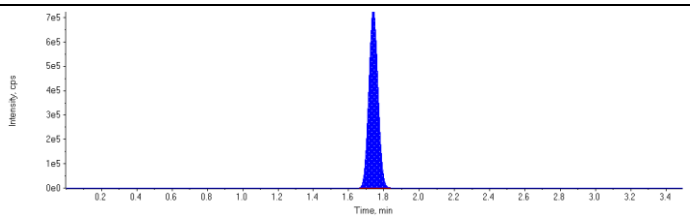
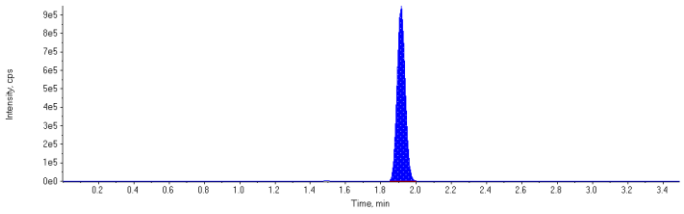
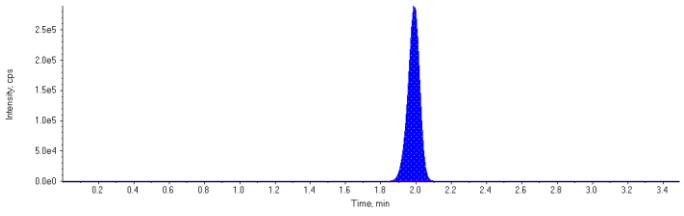
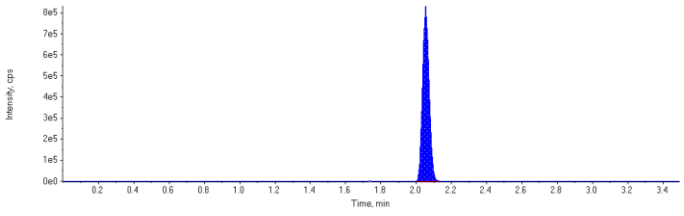
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

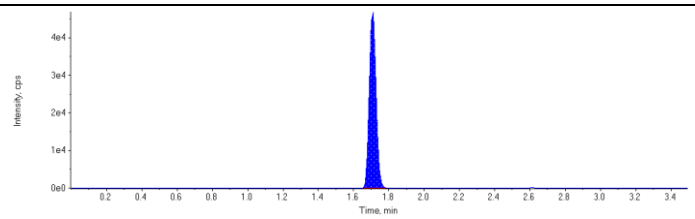
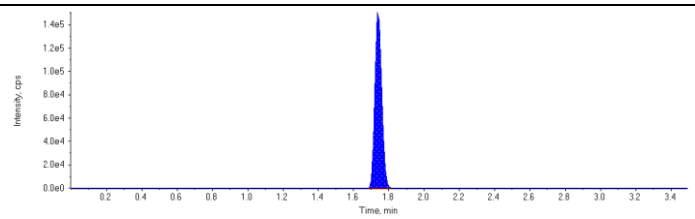
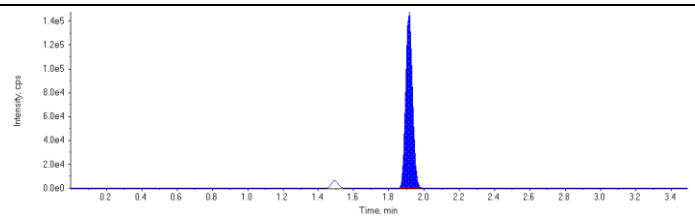
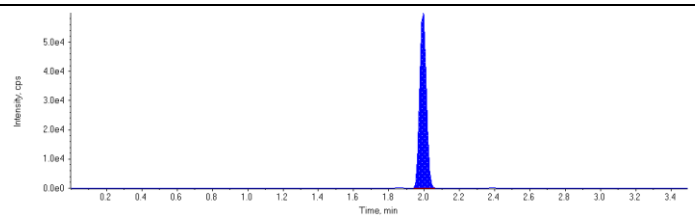
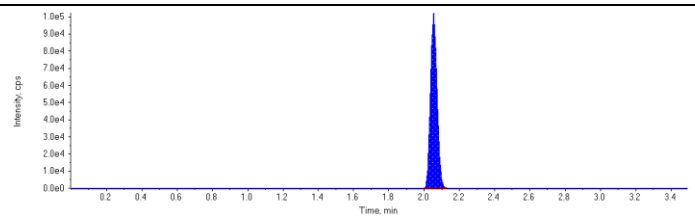
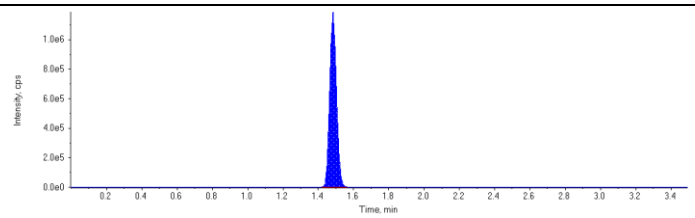


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.18 (1.16) min Calculated Conc: 38.9 µg/L Area Ratio: 12.0 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 46.8 µg/L Area Ratio: 15.3 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 48.6 µg/L Area Ratio: 6.54 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.91 (1.88) min Calculated Conc: 46.7 µg/L Area Ratio: 7.69 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 47.1 µg/L Area Ratio: 8.54 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 49.2 µg/L Area Ratio: 8.18 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 108. µg/L Area Ratio: 0.0397 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 105. µg/L Area Ratio: 0.129 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 115. µg/L Area Ratio: 0.124 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 116. µg/L Area Ratio: 0.0501 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 114. µg/L Area Ratio: 0.0839 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 79.3 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

DoD Projects - Internal Data Validation Checklist

Run date: 2016/02/18

Worksheet # (s): 4384677

Analysis: PFOSLOW-W

	Primary review by the analyst - 1st 100 % analysis review	1st 100% review yes	no	n/a	*2nd 100% review
1	Sample analyses meet hold time criteria	✓			✓
2	Analysis set-up meets method criteria	✓			✓
3	Tuning and correct calibration used - criteria meets method criteria	✓			✓
4	SQC/Control Charts updated, analysis in statistical/method control 2016/2/19	✓		✓	✓
5	Internal area counts checked (if applicable)	✓			✓
6	LCS, SRM are within acceptance criteria	✓			✓
7	Surrogate Recovery(s) is within acceptance criteria	✓			✓
8	Method Blank meets acceptance criteria	✓			✓
9	Matrix Spike recovery(s) meets acceptance criteria		✓		✓
10	Duplicate precision meets acceptance criteria	✓			✓
11	QC is documented on the run logs	✓			✓
12	Runs checked for carryover	✓			✓
13	Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts	✓			✓
14	Initial weights, splits, impringer volumes (where applicable) are documented	✓			✓
15	Standards and reagents traceable to Certificates of Analysis	✓			✓
16	Samples above calibration range diluted and reanalyzed	✓			✓
17	Dilution factors (where justified) have been checked for correctness and entered	✓			✓
18	Analytical observations/anomalies documented in LIMS	✓			✓
19	Random calculation checked and in correct units	✓			✓
20	If corrective actions were applied they are documented, initialed & dated			✓	✓
21	Manual integration – before & after data with a reason included, initialed & dated			✓	✓
22	Transferred data is validated in LIMS for correctness	✓			✓
23	Data package assembled (where required)	✓			✓

Reviewed by: CM Date: 2016/02/19

Comments:

	Secondary Supervisor/Qualified Data Review Staff - 2nd 100% verification review	yes	no	n/a
1	Repeats documented and referenced	✓		
2	Method and sample deviations noted, anomalies described (if applicable)	✓		
3	Data and QC validated in LIMS	✓		
4	Random calculation checked	✓		
5	Benchsheet (s) signed and dated	✓		
6	Data Package (if required) checked for completeness	✓		

Reviewed by: AM Date: 2016/02/22

Comments: Samples BVX814, BVX817, BVX818, BVX819 and BVX947 were re-marked due to high analyte concentration. The samples will be re-analyzed with an appropriate dilution. AM 2016/02/22

*Note: 2nd 100% verification review documented by secondary qualified data review
Primary and Secondary Internal Data Review Check must be performed by a different person

Worksheet Data Validation Checklist - Extractable Organics

Worksheet # 4384677 | Testcode: PFOSLOW-W

Sample Preparation		yes	no	n/a
1	Samples extracted within hold time	✓		
2	Client sample ID verified against Lab ID (waters & oils)	✓		
3	Parameter list and Client comments reviewed, (Spiking solutions matched to parameter list)	✓		
4	Height of sediment or if sample was decanted, recorded on worksheet	✓		
5	Method required QC processed with samples, maximum batch size = 20 client samples.	✓		
6	Sample, duplicate, matrix spike appear similar, initial sample as well as final extract	✓		
7	Sample weight or initial volume and extract final volume, aliquot factor clearly recorded.	✓		
8	If performed any additional dilution clearly recorded			✓
9	Matrix spike / Duplicate performed on IOL samples if present			✓
10	Spiking solutions valid (haven't expired), ID and volume used clearly identified on worksheet	✓		
11	Spiking process witnessed and signed off	✓		
12	Extraction type recorded (N3A2B = neutral, 3 x acidic, 2 x basic)			✓
13	Sample prep deviations documented within CompliantPro as a Policy Deviation			✓
14	Job Remarks reviewed on 2nd page of worksheet.	✓		
15	Worksheet and reagent tracking record completed and authorized.	✓		

Reviewed by: GSZ | Date: 2016/02/17

Comments:

Worksheet Approval		yes	no	n/a
1	Verified the position of the vials in autosampler against sequence list; signed off sequence list	✓		
2	Calibration and CCV standards valid (haven't expired)	✓		
3	Initial calibration curve and DFTPP tune (if applicable) acceptable	✓		
4	Continuing and Final CCV and DFTPP tune (if applicable) acceptable	✓		
5	System performance check acceptable (if applicable)	✓		
6	Internal standard responses acceptable	✓		
7	Method blank meets acceptance criteria	✓		
8	Lab Control Samples recoveries meets acceptance criteria	✓		
9	Duplicate RPD meets acceptance criteria	✓		
10	Matrix spike recoveries meets acceptance criteria	✓		
11	Surrogate recoveries meets acceptance criteria	✓		
12	Appropriate control charts updated			✓
13	Samples above calibration range diluted and reanalyzed	✓		
14	Dilutions clearly documented on tracking record, inst file and verified during data upload	✓		
15	Samples following high level samples checked for carryover.	✓		
16	Mass spectra ion ratios acceptable for positive results, hardcopy in file.			✓
17	Analytical observations / anomalies documented	✓		
18	DQW comments entered in LIMS, hardcopy in file			✓
19	Sample Prep section (above) reviewed and verified.	✓		
20	WS Approval performed in LIMS	✓		

Reviewed by: CM | Date: 2016/02/19

Comments:

Worksheet Validation		yes	no	n/a
1	Calibration, QC and sample results reviewed and determined acceptable	✓		
2	Manual integrations verified			✓
3	Random calculation checked	✓		
4	Data and QC validated in LIMS	✓		
5	Comments reviewed for appropriateness	✓		
6	Reworks / relogs documented in file	✓		
7	Worksheet signed and dated,	✓		
8	Worksheet approved and validated within LIMS	✓		

Reviewed by: JM | Date: 2016/02/22

Comments: Samples BVX814, BVX817, BVX818 and BVX819 were re-worked due to high analyte concentration. The samples will be re-analyzed with an appropriate dilution.
JM 2016/02/22

WS# : 4384677

Page #: 1/2

RUSH

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Wednesday, February 17, 2016

Assigned to : Geoffrey Sanchez

Test Code : PFOSLOW-W

Instrument Id:

Test Description : Low level PFOS and PFOA in water by LC-MS/MS

Job Number	Sample Number	D	Sample ID	F	% Moisture (Sediment (dw))	Wt or Vol (mL)	Final Vol (mL)	DF or AF	# Cont	Expiry Date	Test DeadLine	Criteria	Extract Date
	MTRX SPK	0	PFOSL BVX821-01		<0.1	125	0.3	1X					2016/02/17
	MTRX SPK	1	PFOSL BVX821-01		<0.1	125	0.3	1X					2016/02/17
	SPIKE		PFOSL		~~0~~	125	0.3	1X					2016/02/17
	BLANK				~~0~~	125	0.3	1X					2016/02/17
B630796*	*BVX813-01R		SW-6-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX814-01R		SW-5-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX815-01R		SW-4-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX816-01R		SW-2-2-9-2016		~~0~~	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX817-01R		DUP-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX818-01R		SW-3A-2-9-2016		<0.2	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX819-01R		SW-3B-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX820-01R		SW-1-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX821-01R		SW-9-2-9-2016		<0.1	125	0.3	1X	6	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX822-01R		SW-7-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX823-01R		SW-8-2-9-2016		<0.1	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX824-01R		EB1-2-9-2016		~~0~~	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630796*	*BVX825-01R		EB2-2-9-2016		~~0~~	125	0.3	1X	2	2016/02/23	2016/02/19 18:00		2016/02/17
B630803*	*BVX947-01R		OF-RW42B-0216		<0.1	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
B630803*	*BVX948-01R		OF-RW42A-0216		<0.1	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
B630803*	*BVX949-01R		OF-RW35-0216		~~0~~	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
B630803*	*BVX950-01R		OF-RW58-0216		~~0~~	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
B630803*	*BVX951-01R		OF-RW39-0216		~~0~~	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
B630803*	*BVX952-01R		OF-RW40-0216		~~0~~	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
B630803*	*BVX953-01R		OF-RW43-0216		<0.1	125	0.3	1X	1	2016/02/17	2016/02/23 17:00		2016/02/17
						652,	2016/02/17						

Remarks:

Samples extracted by: Geoffrey Sanchez, 652 2016/02/17

Instrumentation performed by: [signature] Date: 2016/02/18

Calculations performed by: [signature] Date: 2016/02/19

Validated by: [signature] Date: 2016/02/22

GSZ, 2016/02/17

Job No.	Rep / Client Name / Remarks	Contact	Client Tier	National
GB630796	MDG TestAmerica NREG PFOSLOW-W MS/MSD required on BVX821 Level IV required Project #: 480-95806	Judy Stone	Tier 1 (Air.)	Test America
GB630803	MDG TestAmerica NREG PFOSLOW-W Level IV required Project #: 320-17150	PFC Reporting Group	Tier 1 (Air.)	Test America

Surrogates/Spikes		PFC SpkC	PFC SpkA	PFC SpkA (2nd Source)		IS	Method Spike	Spikes	Samples
Calib	MeOH	SK-6104	I-4628	I-4629		SI-6010			
STD	mL	mL	mL	mL		mL			
1 -	2825 +	25			+	150			
2 -	2800 +	50			+	150			
3 -	2700 +	150			+	150			
4 -	2813 +		37.5		+	150			
5 -	2775 +		75		+	150			
6 -	2725 +		125		+	150			
ICV -	2788 +			62.5	+	150			

Sample	Preparation Remarks

Sample	Instrumentation Remarks

Worksheet Number: **4384677**

Low level PFOS and PFOA in water - Water

ng/L

Parameter Name	Units	MTRX SPK	DL	MTRX SPK Dup1	DL	SPIKE	DL
Perfluorobutanoic acid	ng/L	!! 150.320	2	!! 171.720	2	97.40000	2
Perfluorobutane Sulfonate (PFBS)	ng/L	!! 132.502	2	!! 142.302	2	111.00000	2
Perfluorodecane Sulfonate	ng/L	119.78800	2	!! 147.588	2	108.40000	2
Perfluoroheptanoic Acid (PFHpA)	ng/L	123.28600	2	!! 150.686	2	110.60000	2
Perfluoroheptane sulfonate	ng/L	!! 135.800	2	!! 160.200	2	110.60000	2
Perfluorohexanoic Acid (PFHxA)	ng/L	!! 133.664	2	!! 148.664	2	109.80000	2
Perfluorohexane Sulfonate (PFHxS)	ng/L	!! 131.910	2	!! 142.510	2	109.20000	2
Perfluorononanoic Acid (PFNA)	ng/L	119.39200	2	!! 136.992	2	107.40000	2
Perfluoropentanoic Acid (PFPeA)	ng/L	116.96800	2	!! 138.368	2	105.80000	2
Perfluorotetradecanoic Acid	ng/L	121.40000	2	!! 146.600	2	112.20000	2
Perfluorotridecanoic Acid	ng/L	122.00000	2	!! 145.000	2	106.80000	2
Perfluoroundecanoic Acid (PFUnA)	ng/L	116.40000	2	!! 148.000	2	102.00000	2
Perfluorodecanoic Acid (PFDA)	ng/L	126.51600	2	!! 156.916	2	111.60000	2
Perfluorododecanoic Acid (PFDoA)	ng/L	121.60000	2	!! 139.600	2	106.60000	2
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	128.34000	2	!! 143.540	2	107.40000	2
Perfluorooctane Sulfonate (PFOS)	ng/L	!! 130.700	2	!! 151.500	2	106.00000	2
13C2-perfluorotetradecanoic acid	ng/L	67.6		54.5		80.7	
13C4-Perfluorobutanoic acid	ng/L	60.1		!! 45.9		90.1	
13C5-Perfluorononanoic acid	ng/L	67.5		60.4		86.0	
13C2-Perfluorodecanoic acid	ng/L	71.6		57.4		83.9	
13C2-Perfluorododecanoic acid	ng/L	67.4		55.6		78.8	
13C2-Perfluorohexanoic acid	ng/L	57.5		50.9		83.8	
13C2-Perfluoroundecanoic acid	ng/L	74.7		57.3		82.7	
13C4-Perfluoroheptanoic acid	ng/L	64.7		54.5		85.6	
13C4-Perfluorooctanoic acid	ng/L	63.9		58.1		86.6	
13C4-Perfluorooctanesulfonate	ng/L	65.7		59.3		88.1	
13C5-Perfluoropentanoic acid	ng/L	62.0		53.1		86.9	
18O2-Perfluorohexanesulfonate	ng/L	65.4		62.4		85.4	

Parameter Name	BLANK	DL	B630796 BVX813	DL	B630796 BVX814	DL	B630796 BVX815
Perfluorobutanoic acid	0	2	0	2	3.74000	2	0.66600
Perfluorobutane Sulfonate (PFBS)	0	2	1.03000	2	3.58000	2	1.01000
Perfluorodecane Sulfonate	0	2	0	2	0.16400	2	0
Perfluoroheptanoic Acid (PFHpA)	0	2	1.19000	2	13.90000	2	1.03000
Perfluoroheptane sulfonate	0	2	0	2	0	2	0
Perfluorohexanoic Acid (PFHxA)	0	2	1.10000	2	19.90000	2	0.98800
Perfluorohexane Sulfonate (PFHxS)	0	2	1.03000	2	1.76000	2	0.91400
Perfluorononanoic Acid (PFNA)	0	2	0.69000	2	1.53000	2	0.67600
Perfluoropentanoic Acid (PFPeA)	0	2	1.09000	2	10.20000	2	0.97900
Perfluorotetradecanoic Acid	0	2	0.77500	2	0.65100	2	0.72200
Perfluorotridecanoic Acid	0	2	0.56000	2	0	2	0.64500
Perfluoroundecanoic Acid (PFUnA)	0	2	0	2	0	2	0
Perfluorodecanoic Acid (PFDA)	0	2	0.38400	2	0.76300	2	0
Perfluorododecanoic Acid (PFDoA)	0	2	0.60800	2	0.59000	2	0.62700
Perfluoro-n-Octanoic Acid (PFOA)	0	2	16.90000	2	353.00000	2	9.22000
Perfluorooctane Sulfonate (PFOS)	0	2	1.83000	2	4.40000	2	1.46000
13C2-perfluorotetradecanoic acid	85.5		68.9		!! 37.4		68.8
13C4-Perfluorobutanoic acid	83.7		57.2		!! 44.5		64.2
13C5-Perfluorononanoic acid	91.2		63.2		70.0		78.0
13C2-Perfluorodecanoic acid	85.8		74.3		74.6		80.5
13C2-Perfluorododecanoic acid	88.3		74.6		53.8		72.0
13C2-Perfluorohexanoic acid	82.6		53.7		55.7		62.2
13C2-Perfluoroundecanoic acid	89.9		76.5		68.7		78.3
13C4-Perfluoroheptanoic acid	88.4		57.9		56.6		71.0
13C4-Perfluorooctanoic acid	84.4		58.0		53.7		73.1
13C4-Perfluorooctanesulfonate	91.1		60.3		62.6		76.3
13C5-Perfluoropentanoic acid	92.2		64.1		51.9		61.3
18O2-Perfluorohexanesulfonate	88.6		60.6		59.8		75.0

Low level PFOS and PFOA in water - Water
ng/L

Parameter Name	DL	B630796 BVX816	DL	B630796 BVX817	DL	B630796 BVX818	DL
Perfluorobutanoic acid	2	0	2	4.48000	2	5.88000	2
Perfluorobutane Sulfonate (PFBS)	2	0.93000	2	3.25000	2	2.84000	2
Perfluorodecane Sulfonate	2	0	2	0.14500	2	0	2
Perfluoroheptanoic Acid (PFHpA)	2	1.02000	2	12.90000	2	32.40000	2
Perfluoroheptane sulfonate	2	0	2	0	2	0	2
Perfluorohexanoic Acid (PFHxA)	2	0.98700	2	21.20000	2	28.10000	2
Perfluorohexane Sulfonate (PFHxS)	2	1.06000	2	1.64000	2	3.82000	2
Perfluorononanoic Acid (PFNA)	2	0.65600	2	1.66000	2	5.55000	2
Perfluoropentanoic Acid (PFPeA)	2	0.95600	2	10.80000	2	6.87000	2
Perfluorotetradecanoic Acid	2	0.56500	2	0	2	0.62100	2
Perfluorotridecanoic Acid	2	0	2	0	2	0.63100	2
Perfluoroundecanoic Acid (PFUnA)	2	0	2	0.59300	2	1.14000	2
Perfluorodecanoic Acid (PFDA)	2	0.36600	2	0.93800	2	1.49000	2
Perfluorododecanoic Acid (PFDoA)	2	0	2	0	2	0.75900	2
Perfluoro-n-Octanoic Acid (PFOA)	2	9.78000	2	352.00000	2	974.00000	2
Perfluorooctane Sulfonate (PFOS)	2	2.35000	2	4.44000	2	15.90000	2
13C2-perfluorotetradecanoic acid		71.9		II 36.2		63.6	
13C4-Perfluorobutanoic acid		56.6		II 35.8		II 45.5	
13C5-Perfluorononanoic acid		71.7		64.3		65.7	
13C2-Perfluorodecanoic acid		80.1		74.6		73.4	
13C2-Perfluorododecanoic acid		72.0		53.2		62.1	
13C2-Perfluorohexanoic acid		62.1		II 47.2		II 49.0	
13C2-Perfluoroundecanoic acid		72.2		67.1		70.0	
13C4-Perfluoroheptanoic acid		67.4		55.0		55.5	
13C4-Perfluorooctanoic acid		68.9		50.5		II 39.5	
13C4-Perfluorooctanesulfonate		72.0		55.2		60.6	
13C5-Perfluoropentanoic acid		68.1		50.0		50.5	
18O2-Perfluorohexanesulfonate		75.9		63.8		66.5	

Parameter Name	B630796 BVX819	DL	B630796 BVX820	DL	B630796 BVX821	DL	B630796 BVX822
Perfluorobutanoic acid	4.85000	2	0	2	0.34000	2	0.85000
Perfluorobutane Sulfonate (PFBS)	2.06000	2	0.97800	2	0.94900	2	1.11000
Perfluorodecane Sulfonate	0.17000	2	0	2	0.10600	2	0.18600
Perfluoroheptanoic Acid (PFHpA)	21.80000	2	1.09000	2	0.85700	2	0.94900
Perfluoroheptane sulfonate	1.24000	2	0	2	0	2	0
Perfluorohexanoic Acid (PFHxA)	16.50000	2	0.92200	2	0.76800	2	0.92000
Perfluorohexane Sulfonate (PFHxS)	1.68000	2	0.91400	2	0.84500	2	0.94700
Perfluorononanoic Acid (PFNA)	2.20000	2	0.63200	2	0.60400	2	0.67600
Perfluoropentanoic Acid (PFPeA)	4.53000	2	0.92500	2	0.91600	2	0.87300
Perfluorotetradecanoic Acid	0	2	0.56200	2	0	2	0.59900
Perfluorotridecanoic Acid	0	2	0	2	0	2	0.59500
Perfluoroundecanoic Acid (PFUnA)	0.64300	2	0.55000	2	0	2	0.61400
Perfluorodecanoic Acid (PFDA)	0.72100	2	0	2	0.34200	2	0.41600
Perfluorododecanoic Acid (PFDoA)	0.64300	2	0.55000	2	0	2	0.60000
Perfluoro-n-Octanoic Acid (PFOA)	571.00000	2	10.70000	2	7.03000	2	9.42000
Perfluorooctane Sulfonate (PFOS)	5.05000	2	1.30000	2	1.55000	2	1.94000
13C2-perfluorotetradecanoic acid	II 43.6		70.7		68.6		73.7
13C4-Perfluorobutanoic acid	II 42.6		63.4		59.4		64.3
13C5-Perfluorononanoic acid	67.5		82.7		76.1		74.2
13C2-Perfluorodecanoic acid	67.2		75.1		73.2		78.9
13C2-Perfluorododecanoic acid	52.4		71.1		71.4		75.6
13C2-Perfluorohexanoic acid	II 49.2		68.0		66.8		64.5
13C2-Perfluoroundecanoic acid	65.7		77.7		73.2		79.0
13C4-Perfluoroheptanoic acid	52.3		72.9		72.0		68.8
13C4-Perfluorooctanoic acid	II 48.2		72.8		72.3		68.2
13C4-Perfluorooctanesulfonate	65.5		85.6		76.5		71.9
13C5-Perfluoropentanoic acid	55.4		71.1		68.9		66.7
18O2-Perfluorohexanesulfonate	65.6		80.2		77.9		69.0

Low level PFOS and PFOA in water - Water
ng/L

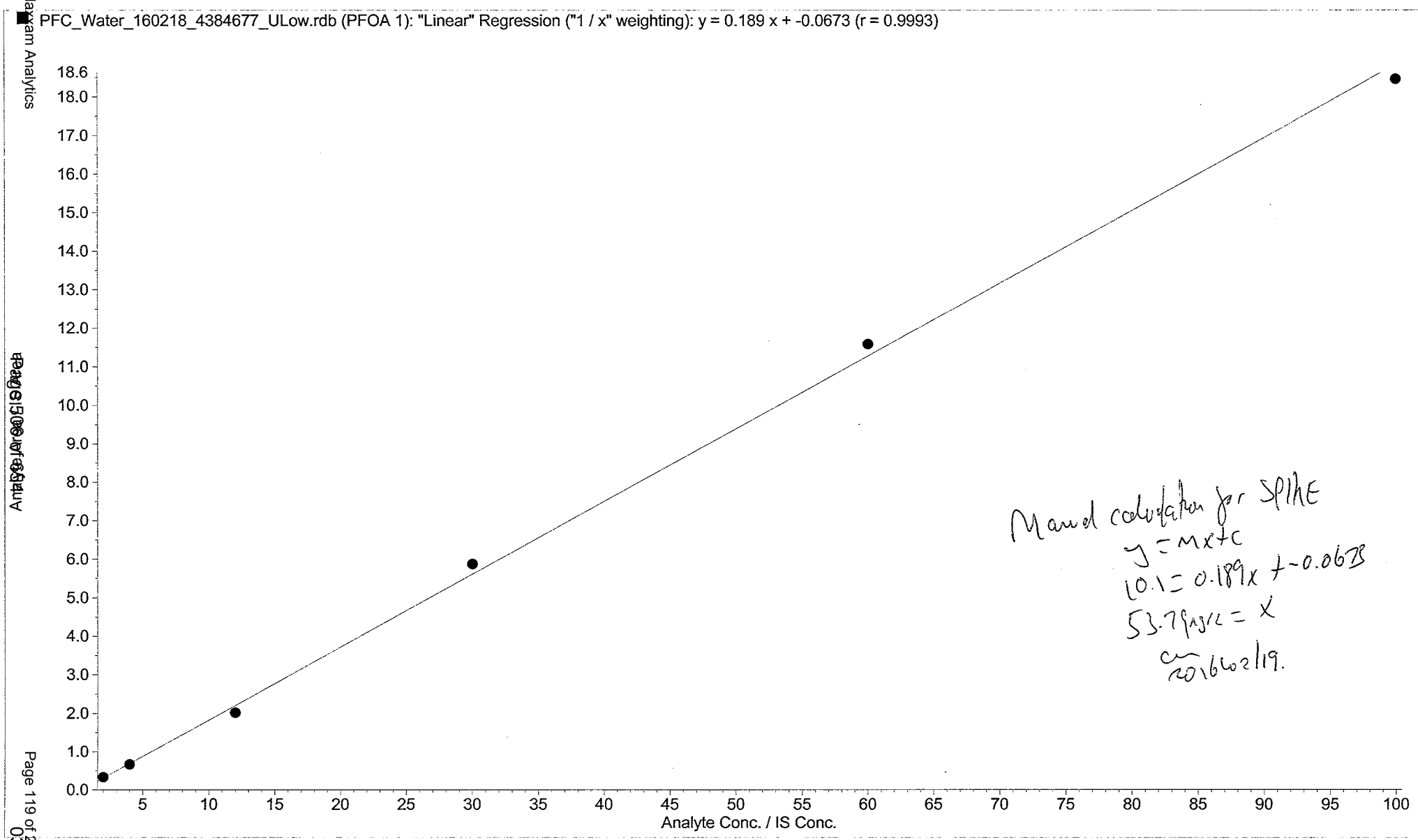
Parameter Name	DL	B630796 BVX823	DL	B630796 BVX824	DL	B630796 BVX825	DL
Perfluorobutanoic acid	2	0	2	0	2	0	2
Perfluorobutane Sulfonate (PFBS)	2	1.07000	2	0	2	0	2
Perfluorodecane Sulfonate	2	0.27200	2	0	2	0	2
Perfluoroheptanoic Acid (PFHpA)	2	0.95400	2	0	2	0	2
Perfluoroheptane sulfonate	2	0	2	0	2	0	2
Perfluorohexanoic Acid (PFHxA)	2	0.83000	2	0	2	0	2
Perfluorohexane Sulfonate (PFHxS)	2	0.96900	2	0	2	0	2
Perfluorononanoic Acid (PFNA)	2	0.65300	2	0	2	0.51800	2
Perfluoropentanoic Acid (PFPeA)	2	1.04000	2	0	2	0	2
Perfluorotetradecanoic Acid	2	0.94100	2	0.56900	2	0.55800	2
Perfluorotridecanoic Acid	2	0.79000	2	0	2	0	2
Perfluoroundecanoic Acid (PFUnA)	2	0.71300	2	0	2	0	2
Perfluorodecanoic Acid (PFDA)	2	0.42400	2	0	2	0	2
Perfluorododecanoic Acid (PFDoA)	2	0.80800	2	0.60200	2	0.57300	2
Perfluoro-n-Octanoic Acid (PFOA)	2	8.12000	2	0	2	0	2
Perfluorooctane Sulfonate (PFOS)	2	1.59000	2	0	2	0	2
13C2-perfluorotetradecanoic acid		65.0		66.3		67.3	
13C4-Perfluorobutanoic acid		53.2		64.7		71.7	
13C5-Perfluorononanoic acid		64.8		73.0		78.8	
13C2-Perfluorodecanoic acid		71.5		73.1		73.8	
13C2-Perfluorododecanoic acid		64.3		70.3		69.8	
13C2-Perfluorohexanoic acid		58.5		73.9		74.1	
13C2-Perfluoroundecanoic acid		73.6		73.2		75.3	
13C4-Perfluoroheptanoic acid		58.1		73.9		82.2	
13C4-Perfluorooctanoic acid		62.2		70.2		83.1	
13C4-Perfluorooctanesulfonate		67.0		73.0		82.9	
13C5-Perfluoropentanoic acid		61.2		67.0		74.9	
18O2-Perfluorohexanesulfonate		66.4		78.7		78.3	

Parameter Name	B630803 BVX947	DL	B630803 BVX948	DL	B630803 BVX949	DL	B630803 BVX950
Perfluorobutanoic acid	13.90000	2	0.00000	2	0.42200	2	0.48400
Perfluorobutane Sulfonate (PFBS)	62.10000	2	1.75000	2	0	2	0
Perfluorodecane Sulfonate	0.10400	2	0.00000	2	0.08520	2	0
Perfluoroheptanoic Acid (PFHpA)	16.10000	2	0.93500	2	0	2	0
Perfluoroheptane sulfonate	5.69000	2	0.00000	2	0	2	0
Perfluorohexanoic Acid (PFHxA)	117.00000	2	2.62000	2	0	2	0
Perfluorohexane Sulfonate (PFHxS)	498.00000	2	9.72000	2	0	2	0
Perfluorononanoic Acid (PFNA)	0.88100	2	0	2	0	2	0
Perfluoropentanoic Acid (PFPeA)	26.10000	2	1.35000	2	0.79500	2	0.78900
Perfluorotetradecanoic Acid	0.00000	2	0.61600	2	0.57900	2	0
Perfluorotridecanoic Acid	0.00000	2	0.00000	2	0	2	0
Perfluoroundecanoic Acid (PFUnA)	0.57900	2	0.00000	2	0	2	0
Perfluorodecanoic Acid (PFDA)	0.00000	2	0.00000	2	0	2	0
Perfluorododecanoic Acid (PFDoA)	0.60300	2	0.59200	2	0	2	0.59600
Perfluoro-n-Octanoic Acid (PFOA)	189.00000	2	5.04000	2	0	2	0
Perfluorooctane Sulfonate (PFOS)	15.90000	2	0	2	0	2	0
13C2-perfluorotetradecanoic acid	67.8		57.2		59.5		60.9
13C4-Perfluorobutanoic acid	II 44.9		II 45.3		II 41.2		II 41.3
13C5-Perfluorononanoic acid	70.6		62.2		66.9		66.3
13C2-Perfluorodecanoic acid	70.7		62.3		77.0		68.1
13C2-Perfluorododecanoic acid	67.7		55.4		63.7		62.8
13C2-Perfluorohexanoic acid	53.5		55.4		II 49.2		II 49.0
13C2-Perfluoroundecanoic acid	76.0		60.8		70.5		70.4
13C4-Perfluoroheptanoic acid	61.5		53.8		53.5		50.9
13C4-Perfluorooctanoic acid	60.9		59.8		59.9		57.1
13C4-Perfluorooctanesulfonate	64.3		59.4		55.6		59.0
13C5-Perfluoropentanoic acid	62.9		53.9		II 45.3		51.6
18O2-Perfluorohexanesulfonate	60.9		58.5		59.3		56.6

Low level PFOS and PFOA in water - Water
ng/L

Parameter Name	DL	B630803 BVX951	DL	B630803 BVX952	DL	B630803 BVX953	DL
Perfluorobutanoic acid	2	0.53500	2	0.47400	2	0	2
Perfluorobutane Sulfonate (PFBS)	2	0	2	0	2	1.19000	2
Perfluorodecane Sulfonate	2	0	2	0	2	0	2
Perfluoroheptanoic Acid (PFHpA)	2	0	2	0	2	0.80700	2
Perfluoroheptane sulfonate	2	0	2	0	2	0	2
Perfluorohexanoic Acid (PFHxA)	2	0	2	0	2	2.07000	2
Perfluorohexane Sulfonate (PFHxS)	2	0	2	0	2	10.30000	2
Perfluorononanoic Acid (PFNA)	2	0	2	0	2	0.56500	2
Perfluoropentanoic Acid (PFPeA)	2	0.94800	2	0.73600	2	0.94200	2
Perfluorotetradecanoic Acid	2	0.60800	2	0	2	0	2
Perfluorotridecanoic Acid	2	0.57100	2	0	2	0	2
Perfluoroundecanoic Acid (PFUnA)	2	0	2	0.54400	2	0	2
Perfluorodecanoic Acid (PFDA)	2	0	2	0	2	0	2
Perfluorododecanoic Acid (PFDoA)	2	0.58400	2	0	2	0.60000	2
Perfluoro-n-Octanoic Acid (PFOA)	2	0	2	0	2	7.92000	2
Perfluorooctane Sulfonate (PFOS)	2	1.83000	2	0	2	11.40000	2
13C2-perfluorotetradecanoic acid		63.7		71.9		58.1	
13C4-Perfluorobutanoic acid		II 44.0		53.6		55.0	
13C5-Perfluorononanoic acid		61.4		67.5		66.0	
13C2-Perfluorodecanoic acid		68.8		78.4		70.5	
13C2-Perfluorododecanoic acid		62.5		65.1		62.4	
13C2-Perfluorohexanoic acid		53.6		51.8		57.7	
13C2-Perfluoroundecanoic acid		71.1		75.9		61.4	
13C4-Perfluoroheptanoic acid		50.6		55.6		58.6	
13C4-Perfluorooctanoic acid		59.5		60.1		59.0	
13C4-Perfluorooctanesulfonate		63.3		62.6		63.4	
13C5-Perfluoropentanoic acid		56.3		52.8		57.5	
18O2-Perfluorohexanesulfonate		58.0		59.3		56.3	

Parameter Name	RDL	MDL	IDL
Perfluorobutanoic acid	2	0.41	0
Perfluorobutane Sulfonate (PFBS)	2	0.27	0
Perfluorodecane Sulfonate	2	0.38	0
Perfluoroheptanoic Acid (PFHpA)	2	0.39	0
Perfluoroheptane sulfonate	2	0.4	0
Perfluorohexanoic Acid (PFHxA)	2	0.42	0
Perfluorohexane Sulfonate (PFHxS)	2	0.4	0
Perfluorononanoic Acid (PFNA)	2	0.33	0
Perfluoropentanoic Acid (PFPeA)	2	0.46	0
Perfluorotetradecanoic Acid	2	0.61	0
Perfluorotridecanoic Acid	2	0.6	0
Perfluoroundecanoic Acid (PFUnA)	2	0.5	0
Perfluorodecanoic Acid (PFDA)	2	0.24	0
Perfluorododecanoic Acid (PFDoA)	2	0.63	0
Perfluoro-n-Octanoic Acid (PFOA)	2	0.39	0
Perfluorooctane Sulfonate (PFOS)	2	0.3	0
13C2-perfluorotetradecanoic acid			
13C4-Perfluorobutanoic acid			
13C5-Perfluorononanoic acid			
13C2-Perfluorodecanoic acid			
13C2-Perfluorododecanoic acid			
13C2-Perfluorohexanoic acid			
13C2-Perfluoroundecanoic acid			
13C4-Perfluoroheptanoic acid			
13C4-Perfluorooctanoic acid			
13C4-Perfluorooctanesulfonate			
13C5-Perfluoropentanoic acid			
18O2-Perfluorohexanesulfonate			



Manual calculation for SPIKE

$y = mx + c$

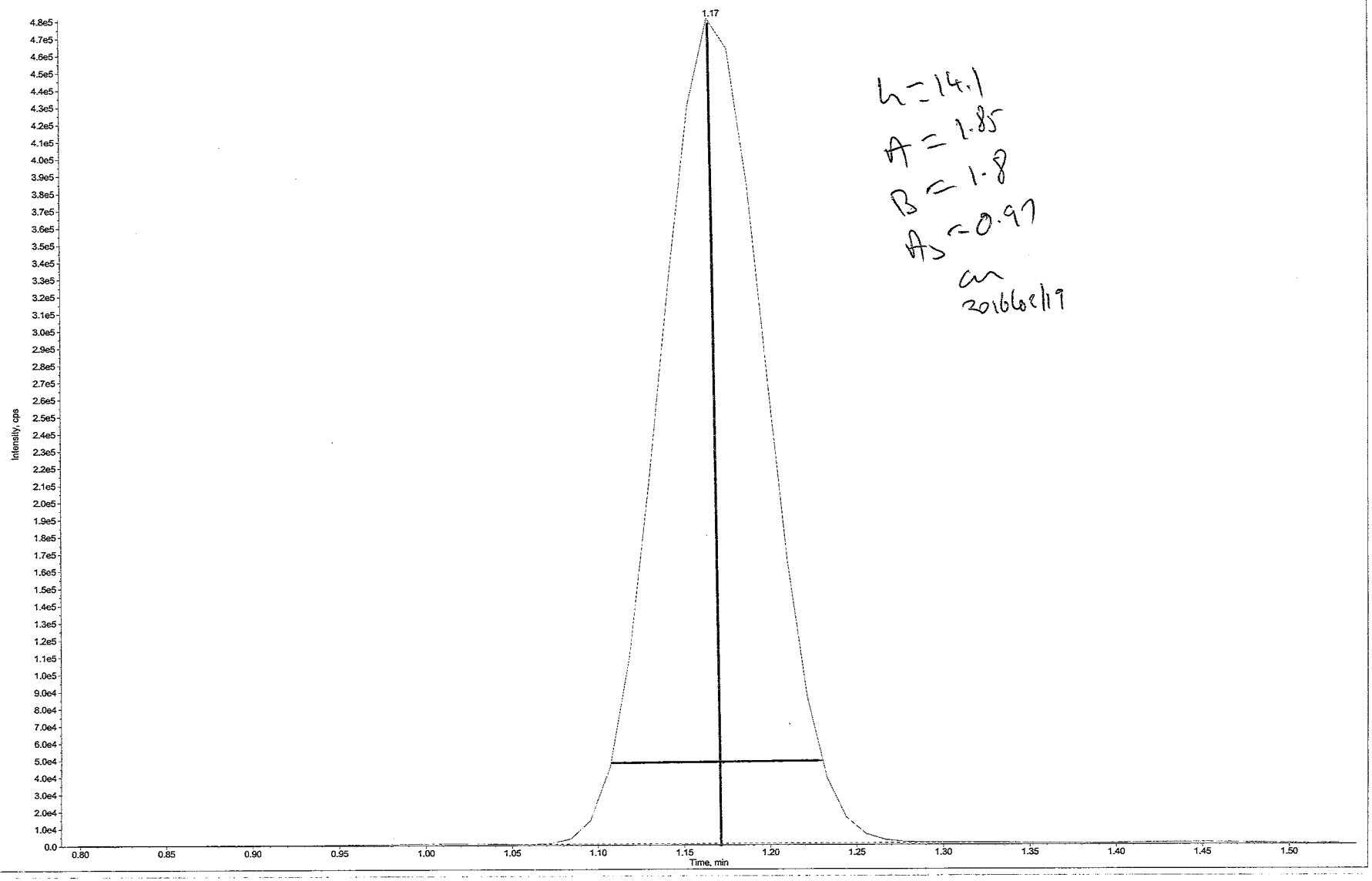
$10.1 = 0.189x + -0.0673$

$53.7\ ng/L = x$

CM 2016/02/19.

Sample Name: "STD 4" Sample ID: "" File: "WS#4384677.wiff"
Peak Name: "PFBS 1" Mass(es): "298.900/79.900 Da"
Comment: "" Annotation: ""

Sample Index:	8
Sample Type:	Standard
Concentration:	30.0 ng/L
Calculated Conc:	29.5 ng/L
Acq. Date:	2016/02/18
Acq. Time:	1:02:05 PM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	1
Noise Threshold:	300.00 cps
Area Threshold:	2000.00 cps
Num. Smooths:	5
Sep. Width:	0.00
Sep. Height:	0.00
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	10.0 sec
Expected RT:	1.16 min
Use Relative RT:	No
Int. Type:	Base To Base
Retention Time:	1.17 min
Area:	2090000. counts
Height:	4.82e+005 cps
Start Time:	1.06 min
End Time:	1.34 min



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B = 1.8
As = 0.97
ar
20160218

Sample Name: "STD 4" Sample ID: "" File: "WS#4384677.wiff"
Peak Name: "PFHxS 1" Mass(es): "398.900/79.900 Da"
Comment: "" Annotation: ""

Sample Index:	8
Sample Type:	Standard
Concentration:	30.0 ng/L
Calculated Conc:	30.1 ng/L
Acq. Date:	2016/02/18
Acq. Time:	1:02:05 PM
Modified:	No
Proc. Algorithm:	Analyst Classic
Bunching Factor:	1
Noise Threshold:	200.00 cps
Area Threshold:	3000.00 cps
,Num. Smooths:	4
Sep. Width:	0.00
Sep. Height:	0.00
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	10.0 sec
Expected RT:	1.68 min
Use Relative RT:	No
Int. Type:	Base To Base
Retention Time:	1.71 min
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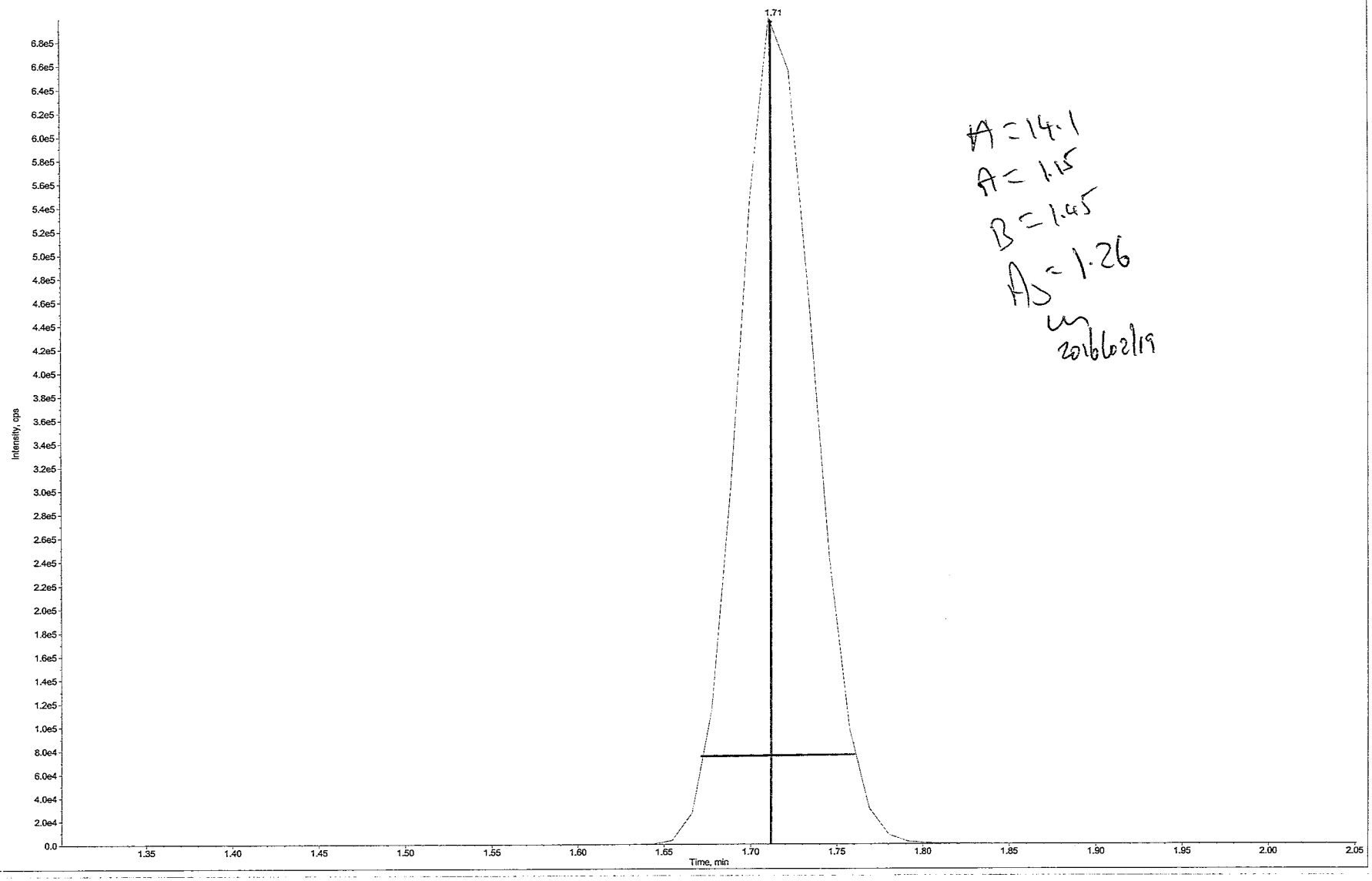
End Time:	1.85 min



A = 14.1
A = 1.15
B = 1.45
AS = 1.26
LM
2016/02/19

Report Name: Worksheet - Parameter Lists

Report Date: 2016/02/17

Test Code: **PFOSLOW-W**

Worksheet Number: **4384677**

Sample Number	Parameter
BVX813-01	Perfluorobutanoic acid
BVX814-01	Perfluorobutane Sulfonate (PFBS)
BVX815-01	Perfluorodecanoic Acid (PFDA)
BVX816-01	Perfluorododecanoic Acid (PFDoA)
BVX817-01	Perfluorodecane Sulfonate
BVX818-01	Perfluoroheptanoic Acid (PFHpA)
BVX819-01	Perfluoroheptane sulfonate
BVX820-01	Perfluorohexanoic Acid (PFHxA)
BVX821-01	Perfluorohexane Sulfonate (PFHxS)
BVX822-01	Perfluorononanoic Acid (PFNA)
BVX823-01	Perfluoro-n-Octanoic Acid (PFOA)
BVX824-01	Perfluorooctane Sulfonate (PFOS)
BVX825-01	Perfluoropentanoic Acid (PFPeA)
	Perfluorotetradecanoic Acid
	Perfluorotridecanoic Acid
	Perfluoroundecanoic Acid (PFUnA)
BVX947-01	Perfluorobutane Sulfonate (PFBS)
BVX948-01	Perfluoroheptanoic Acid (PFHpA)
BVX949-01	Perfluorohexane Sulfonate (PFHxS)
BVX950-01	Perfluorononanoic Acid (PFNA)
BVX951-01	Perfluoro-n-Octanoic Acid (PFOA)
BVX952-01	Perfluorooctane Sulfonate (PFOS)
BVX953-01	

1.	4384677:MTRX SPK	MTRX SPK
2.	4384677:MTRX SPK:D1	MTRX SPK :D1
3.	4384677:SPIKE	SPIKE
4.	4384677:BLANK	BLANK
5.	4384677:BVX813-01	SW-6-2-9-2016
6.	4384677:BVX814-01	SW-5-2-9-2016
7.	4384677:BVX815-01	SW-4-2-9-2016
8.	4384677:BVX816-01	SW-2-2-9-2016
9.	4384677:BVX817-01	DUP-2-9-2016
10.	4384677:BVX818-01	SW-3A-2-9-2016
11.	4384677:BVX819-01	SW-3B-2-9-2016
12.	4384677:BVX820-01	SW-1-2-9-2016
13.	4384677:BVX821-01	SW-9-2-9-2016
14.	4384677:BVX822-01	SW-7-2-9-2016
15.	4384677:BVX823-01	SW-8-2-9-2016
16.	4384677:BVX824-01	EB1-2-9-2016
17.	4384677:BVX825-01	EB2-2-9-2016
18.	4384677:BVX947-01	OF-RW42B-0216
19.	4384677:BVX948-01	OF-RW42A-0216
20.	4384677:BVX949-01	OF-RW35-0216
21.	4384677:BVX950-01	OF-RW58-0216
22.	4384677:BVX951-01	OF-RW39-0216
23.	4384677:BVX952-01	OF-RW40-0216
24.	4384677:BVX953-01	OF-RW43-0216

Worksheet Reagent Tracking Record Worksheet # 4384677

Surrogate/Spike solutions	√	Solution ID #	Conc.	Volume (µL) Blk-Spk Solid	Blk-Spk Liquid	MS Solid	MS Liquid	Samples Solid	Samples Liquid
DGT Spike			100 ug/mL	60	30	60	30	NA	NA
Diquat Dibromide			50 ug/mL	NA	350	NA	350	NA	NA
Explosives Spiking solution A			20 ug/mL	250	100	250	100	NA	NA
Explosives Spiking solution B			20/80 ug/mL	250	100	250	100	NA	NA
Formaldehyde Spike			100 ug/mL	25	25	25	25	NA	NA
Glyphosate Spike			25 ug/mL	500	20	500	20	NA	NA
Nonylphenol Ethoxylate Spike			100 ug/mL	100	100	100	100	NA	NA
Nonylphenol Spike			10 ug/mL	100	100	100	100	NA	NA
Paraquat Cl Tetrahydrate			20 ug/mL	NA	125	NA	125	NA	NA
Perchlorate Standard Spike			10 ng/mL	NA	100	NA	100	NA	NA
Perchlorate Standard Spike			500 ng/mL	40	NA	40	NA	NA	NA
Perchlorate O-18 Internal Standard			0.10 ng/uL	20	20	20	20	20	20
Morpholine Intermediate Std.			5 ug/mL	NA	50	NA	20	NA	NA
Morpholine-D8 Internal Standard			10 ug/mL	NA	100	NA	100	NA	100
Comp. PFC Spiking Solution A			1ug/mL	62.5	NA	62.5	NA	NA	NA
Comp. PFC Spiking Solution B			250 ng/mL	NA	40 75	NA	40 75	NA	NA
Comp. PFC Spiking Solution C	✓	SK-6212	100 ng/mL	125	62.5 NA	125	62.5 NA	NA	NA
Internal Standard Solution A	✓	SI-6010	50 ng/mL	50	15 100	50	15 100	50	15 100
Internal Standard Solution B			250ng/mL	50	NA	50	NA	50	NA
ICV/CCV PFC	✓	I-4629	1ug/mL		62.5				

Solvent/Reagent	Supplier	√	Lot No.	Date Opened	Solvent/Reagent	√	Lot No.	Date Opened/ Prepared
DCM	Fisher				50% NaOH			
Hexane	Fisher				20mM TBAS			
Acetone	Fisher				o-Phosphoric Acid			
Ottawa Sand	Fisher				Borax			
Methanol	Fisher (Caledon)	✓	SHBG6076V	2016/02/17	Calcium Chloride			
2-Propanol (IPA)	Fisher				EDTA			
Acetonitrile	Fisher				Phosphate Buffer			
MTBE	Fisher				Sodium Thiosulphate			
Sodium Sulfate	Fisher				DNPH			
60:40 H_2O:MeOH Recon Solution		✓	87-190	2016/02/12	5M Acetate Buffer			
DCM:Ethyl Ether (75:25)					FMOC			
Hexane:IPA (98:2)					0.25M Na_2CO_3			
2% Formic Acid		✓	87-131	2016/01/13	0.5M TBAS			
0.2% Formic Acid		✓	87-114	2015/12/31	1% NH_4OH 0.2%	✓	87-197	2016/02/17
0.05M KOH					Leachate Fluid			
0.05M HCl					Reagent Water	✓	SHBG5572V	2016/02/15

*Spiked by: GSZ

Spike Date: 2016/02/17

Spike Syringe ID# Pipettor M23487B

Int. Std Syringe ID# Pipettor M23487B

*Spiking Witnessed by: SSV

Final pH

Equipment	ID#	√	Equipment	ID#	√	Equipment	Lot #
Pipettor	M15944C M23487B K19609D	✓	SPE Cartridge	0026365315A	✓	10 mL Serological Pipet	
	P297460	✓	Filter			QC Balance ID	
Dispenser		✓	Centrifuge			Thermometer ID SN 140614017 &Temp 45°C	
Syringe			Sonicator				

Bottle Tracking: Bottle# 14991; Cap# 14443; Systems plus Lot# 16-01-06

Comments: 125ml Ref Bottle (HDPE)
Inj. IS - SI-6017 - 2016/01/19
HPLC Evaporator

* - SPIKING OF SAMPLES BY ANALYSIS MUST BE WITNESSED AT ALL TIMES.

Project: D:\Analyst Data\Projects\Enviro\PFOS Batch:PFC_160218 Tab:Sample Set:SET1 AcqMethod:PFC_Water_Low.dam
Sample

	Sample Name	Rack Code	Rack Position	Plate Code	Plate Position	Vial Position	Data File	Inj.Volume (µl)
1	Rinse	2 Well Plates	1	*54VialPlate*	2	1	PFC_160218\WS#4384677	3.000
2	4384677~BLANK	2 Well Plates	1	*54VialPlate*	2	2	PFC_160218\WS#4384677	3.000
3	STD 1	2 Well Plates	1	*54VialPlate*	2	3	PFC_160218\WS#4384677	3.000
4	STD 2	2 Well Plates	1	*54VialPlate*	2	4	PFC_160218\WS#4384677	3.000
5	STD 3	2 Well Plates	1	*54VialPlate*	2	5	PFC_160218\WS#4384677	3.000
6	STD 4	2 Well Plates	1	*54VialPlate*	2	6	PFC_160218\WS#4384677	3.000
7	STD 5	2 Well Plates	1	*54VialPlate*	2	7	PFC_160218\WS#4384677	3.000
8	STD 6	2 Well Plates	1	*54VialPlate*	2	8	PFC_160218\WS#4384677	3.000
9	ICV	2 Well Plates	1	*54VialPlate*	2	9	PFC_160218\WS#4384677	3.000
10	CCV	2 Well Plates	1	*54VialPlate*	2	6	PFC_160218\WS#4384677	3.000
11	4384677~MTRX SPK	2 Well Plates	1	*54VialPlate*	2	10	PFC_160218\WS#4384677	3.000
12	4384677~MTRX SPK:D1	2 Well Plates	1	*54VialPlate*	2	11	PFC_160218\WS#4384677	3.000
13	4384677~SPIKE	2 Well Plates	1	*54VialPlate*	2	12	PFC_160218\WS#4384677	3.000
14	4384677~BVX813-01	2 Well Plates	1	*54VialPlate*	2	13	PFC_160218\WS#4384677	3.000
15	4384677~BVX814-01	2 Well Plates	1	*54VialPlate*	2	14	PFC_160218\WS#4384677	3.000
16	4384677~BVX815-01	2 Well Plates	1	*54VialPlate*	2	15	PFC_160218\WS#4384677	3.000
17	4384677~BVX816-01	2 Well Plates	1	*54VialPlate*	2	16	PFC_160218\WS#4384677	3.000
18	4384677~BVX817-01	2 Well Plates	1	*54VialPlate*	2	17	PFC_160218\WS#4384677	3.000
19	4384677~BVX818-01	2 Well Plates	1	*54VialPlate*	2	18	PFC_160218\WS#4384677	3.000
20	4384677~BVX819-01	2 Well Plates	1	*54VialPlate*	2	19	PFC_160218\WS#4384677	3.000
21	4384677~BVX820-01	2 Well Plates	1	*54VialPlate*	2	20	PFC_160218\WS#4384677	3.000
22	4384677~BVX821-01	2 Well Plates	1	*54VialPlate*	2	21	PFC_160218\WS#4384677	3.000
23	4384677~BVX822-01	2 Well Plates	1	*54VialPlate*	2	22	PFC_160218\WS#4384677	3.000
24	CCV	2 Well Plates	1	*54VialPlate*	2	6	PFC_160218\WS#4384677	3.000
25	4384677~BVX823-01	2 Well Plates	1	*54VialPlate*	2	23	PFC_160218\WS#4384677	3.000
26	4384677~BVX824-01	2 Well Plates	1	*54VialPlate*	2	24	PFC_160218\WS#4384677	3.000
27	4384677~BVX825-01	2 Well Plates	1	*54VialPlate*	2	25	PFC_160218\WS#4384677	3.000
28	4384677~BVX947-01	2 Well Plates	1	*54VialPlate*	2	26	PFC_160218\WS#4384677	3.000
29	4384677~BVX948-01	2 Well Plates	1	*54VialPlate*	2	27	PFC_160218\WS#4384677	3.000
30	4384677~BVX949-01	2 Well Plates	1	*54VialPlate*	2	28	PFC_160218\WS#4384677	3.000
31	4384677~BVX950-01	2 Well Plates	1	*54VialPlate*	2	29	PFC_160218\WS#4384677	3.000
32	4384677~BVX951-01	2 Well Plates	1	*54VialPlate*	2	30	PFC_160218\WS#4384677	3.000
33	4384677~BVX952-01	2 Well Plates	1	*54VialPlate*	2	31	PFC_160218\WS#4384677	3.000
34	4384677~BVX953-01	2 Well Plates	1	*54VialPlate*	2	32	PFC_160218\WS#4384677	3.000
35	CCV	2 Well Plates	1	*54VialPlate*	2	6	PFC_160218\WS#4384677	3.000

Column #123
MPA = Soln # 506, PSREI7
MPB = MeOH, Fisher 6/A#152613
LW
2016/02/18

	Sample ID	Acquisition Date	Acquisition Method	File Name	Rack Type	Rack Position	Vial Position	Plate Type	Plate Position
1	4384677~BLANK	2016/02/18 12:41:41 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	2	*54VialPlate*	2
2	STD 1	2016/02/18 12:46:47 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	3	*54VialPlate*	2
3	STD 2	2016/02/18 12:51:53 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	4	*54VialPlate*	2
4	STD 3	2016/02/18 12:56:59 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	5	*54VialPlate*	2
5	STD 4	2016/02/18 1:02:05 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2
6	STD 5	2016/02/18 1:07:10 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	7	*54VialPlate*	2
7	STD 6	2016/02/18 1:12:17 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	8	*54VialPlate*	2
8	ICV	2016/02/18 1:17:23 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	9	*54VialPlate*	2
9	CCV	2016/02/18 1:22:29 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2
10	4384677~MTRX SPK (BVX821)	2016/02/18 1:27:34 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	10	*54VialPlate*	2
11	4384677~MTRX SPK:D1 (BVX821)	2016/02/18 1:32:40 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	11	*54VialPlate*	2
12	4384677~SPIKE	2016/02/18 1:37:46 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	12	*54VialPlate*	2
13	4384677~BVX813-01	2016/02/18 1:42:52 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	13	*54VialPlate*	2
14	4384677~BVX814-01	2016/02/18 1:47:58 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	14	*54VialPlate*	2
15	4384677~BVX815-01	2016/02/18 1:53:03 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	15	*54VialPlate*	2
16	4384677~BVX816-01	2016/02/18 1:58:10 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	16	*54VialPlate*	2
17	4384677~BVX817-01	2016/02/18 2:03:16 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	17	*54VialPlate*	2
18	4384677~BVX818-01	2016/02/18 2:08:22 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	18	*54VialPlate*	2
19	4384677~BVX819-01	2016/02/18 2:13:28 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	19	*54VialPlate*	2
20	4384677~BVX820-01	2016/02/18 2:18:34 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	20	*54VialPlate*	2
21	4384677~BVX821-01	2016/02/18 2:23:40 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	21	*54VialPlate*	2
22	4384677~BVX822-01	2016/02/18 2:28:46 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	22	*54VialPlate*	2
23	CCV	2016/02/18 2:33:53 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2
24	4384677~BVX823-01	2016/02/18 2:38:58 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	23	*54VialPlate*	2
25	4384677~BVX824-01	2016/02/18 2:44:04 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	24	*54VialPlate*	2
26	4384677~BVX825-01	2016/02/18 2:49:10 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	25	*54VialPlate*	2
27	4384677~BVX947-01	2016/02/18 2:54:16 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	26	*54VialPlate*	2
28	4384677~BVX948-01	2016/02/18 2:59:22 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	27	*54VialPlate*	2
29	4384677~BVX949-01	2016/02/18 3:04:28 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	28	*54VialPlate*	2
30	4384677~BVX950-01	2016/02/18 3:09:34 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	29	*54VialPlate*	2
31	4384677~BVX951-01	2016/02/18 3:14:40 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	30	*54VialPlate*	2
32	4384677~BVX952-01	2016/02/18 3:19:46 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	31	*54VialPlate*	2
33	4384677~BVX953-01	2016/02/18 3:24:52 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	32	*54VialPlate*	2
34	CCV	2016/02/18 3:29:58 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2
35	4384677~MTRX SPK (BVX821)	2016/02/18 4:15:53 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	10	*54VialPlate*	2
36	4384677~MTRX SPK:D1 (BVX821)	2016/02/18 4:20:59 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	11	*54VialPlate*	2
37	4384677~BVX815-01	2016/02/18 4:26:04 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	15	*54VialPlate*	2
38	4384677~BVX820-01	2016/02/18 4:31:10 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	20	*54VialPlate*	2
39	4384677~BVX948-01	2016/02/18 4:36:16 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	27	*54VialPlate*	2
40	4384677~BVX814-01	2016/02/18 4:41:22 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	14	*54VialPlate*	2
41	4384677~BVX817-01	2016/02/18 4:46:28 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	17	*54VialPlate*	2
42	4384677~BVX818-01	2016/02/18 4:51:34 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	18	*54VialPlate*	2
43	4384677~BVX819-01	2016/02/18 4:56:40 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	19	*54VialPlate*	2
44	4384677~BVX947-01	2016/02/18 5:01:46 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	26	*54VialPlate*	2
45	CCV	2016/02/18 5:06:52 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2
46	CCV	2016/02/18 5:18:58 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2
47	CCV	2016/02/18 5:24:04 PM	PFC_Water_Low.dam	PFC_160218\WS#4384677.wiff	2 Well Plates	1	6	*54VialPlate*	2

DoD Projects - Internal Data Validation Checklist

Run date: 2016/02/19

Worksheet # (s): 4385924

Analysis: PFOS LOW -W

	Primary review by the analyst - 1st 100 % analysis review	1st 100% review yes	no	n/a	*2nd 100% review
1	Sample analyses meet hold time criteria		✓		✓
2	Analysis set-up meets method criteria	✓			✓
3	Tuning and correct calibration used - criteria meets method criteria	✓			✓
4	SQC/Control Charts updated, analysis in statistical/method control			✓	✓
5	Internal area counts checked (if applicable)	✓			✓
6	LCS, SRM are within acceptance criteria	✓			✓
7	Surrogate Recovery(s) is within acceptance criteria	✓			✓
8	Method Blank meets acceptance criteria	✓			✓
9	Matrix Spike recovery(s) meets acceptance criteria	✓			✓
10	Duplicate precision meets acceptance criteria	✓			✓
11	QC is documented on the run logs	✓			✓
12	Runs checked for carryover	✓			✓
13	Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts	✓			✓
14	Initial weights, splits, impringer volumes (where applicable) are documented	✓			✓
15	Standards and reagents traceable to Certificates of Analysis	✓			✓
16	Samples above calibration range diluted and reanalyzed			✓	✓
17	Dilution factors (where justified) have been checked for correctness and entered	✓			✓
18.	Analytical observations/anomalies documented in LIMS			✓	✓
19	Random calculation checked and in correct units	✓			✓
20	If corrective actions were applied they are documented, initialed & dated			✓	✓
21	Manual integration – before & after data with a reason included, initialed & dated			✓	✓
22	Transferred data is validated in LIMS for correctness	✓			✓
23	Data package assembled (where required)	✓			✓

Reviewed by: [signature] Date: 2016/02/22

Comments: Sample BVX947 extracted past hold time

	Secondary Supervisor/Qualified Data Review Staff - 2nd 100% verification review	yes	no	n/a
1	Repeats documented and referenced			✓
2	Method and sample deviations noted, anomalies described (if applicable)	✓		
3	Data and QC validated in LIMS	✓		
4	Random calculation checked	✓		
5	Benchsheet (s) signed and dated	✓		
6	Data Package (if required) checked for completeness	✓		

Reviewed by: [signature] Date: 2016/02/22

Comments:

*Note: 2nd 100% verification review documented by secondary qualified data review
Primary and Secondary Internal Data Review Check must be performed by a different person

Worksheet Data Validation Checklist - Extractable Organics

Worksheet # 4385924 Testcode: PFOSLOW-W

Sample Preparation		yes	no	n/a
1	Samples extracted within hold time		$	
2	Client sample ID verified against Lab ID (waters & oils)	✓		
3	Parameter list and Client comments reviewed, (Spiking solutions matched to parameter list)	✓		
4	Height of sediment or if sample was decanted, recorded on worksheet	✓		
5	Method required QC processed with samples, maximum batch size = 20 client samples.	✓		
6	Sample, duplicate, matrix spike appear similar, initial sample as well as final extract	✓		
7	Sample weight or initial volume and extract final volume, aliquot factor clearly recorded.	✓		
8	If performed any additional dilution clearly recorded	✓		
9	Matrix spike / Duplicate performed on IOL samples if present			✓
10	Spiking solutions valid (haven't expired), ID and volume used clearly identified on worksheet	✓		
11	Spiking process witnessed and signed off	✓		
12	Extraction type recorded (N3A2B = neutral, 3 x acidic, 2 x basic)			✓
13	Sample prep deviations documented within CompliantPro as a Policy Deviation			✓
14	Job Remarks reviewed on 2nd page of worksheet.	✓		
15	Worksheet and reagent tracking record completed and authorized.	✓		

Reviewed by: [signature] Date: 2016/02/18

Comments:
$ Reworked sample BVX947-01R re-extracted past hold time. required 10x dilution.

Worksheet Approval		yes	no	n/a
1	Verified the position of the vials in autosampler against sequence list; signed off sequence list	✓		
2	Calibration and CCV standards valid (haven't expired)	✓		
3	Initial calibration curve and DFTPP tune (if applicable) acceptable	✓		
4	Continuing and Final CCV and DFTPP tune (if applicable) acceptable	✓		
5	System performance check acceptable (if applicable)	✓		
6	Internal standard responses acceptable	✓		
7	Method blank meets acceptance criteria	✓		
8	Lab Control Samples recoveries meets acceptance criteria	✓		
9	Duplicate RPD meets acceptance criteria	✓		
10	Matrix spike recoveries meets acceptance criteria	✓		
11	Surrogate recoveries meets acceptance criteria	✓		
12	Appropriate control charts updated			✓
13	Samples above calibration range diluted and reanalyzed			✓
14	Dilutions clearly documented on tracking record, inst file and verified during data upload	✓		
15	Samples following high level samples checked for carryover.			✓
16	Mass spectra ion ratios acceptable for positive results, hardcopy in file.			✓
17	Analytical observations / anomalies documented			✓
18	DQW comments entered in LIMS, hardcopy in file			✓
19	Sample Prep section (above) reviewed and verified.			✓
20	WS Approval performed in LIMS	✓		

Reviewed by: [signature] Date: 2016/02/22

Comments:

Worksheet Validation		yes	no	n/a
1	Calibration, QC and sample results reviewed and determined acceptable	✓		
2	Manual integrations verified			✓
3	Random calculation checked	✓		
4	Data and QC validated in LIMS	✓		
5	Comments reviewed for appropriateness	✓		
6	Reworks / relogs documented in file			✓
7	Worksheet signed and dated,	✓		
8	Worksheet approved and validated within LIMS	✓		

Reviewed by: [signature] Date: 2016/02/22

Comments:

WS# : 4385924

Page #: 1/2

RUSH

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Thursday, February 18, 2016

Assigned to : Melinda Molina

Test Code : PFOSLOW-W

Instrument Id:

Test Description : Low level PFOS and PFOA in water by LC-MS/MS

Job Number	Sample Number	D	Sample ID	F	% Moisture (sediment)	Wt or Vol	Final Vol (mL)	DF or AF	# Cont	Expiry Date	Test DeadLine	Criteria	Extract Date
	MTRX SPK	0	PFOSL BVX793-01		0	10	0.3	1X					2016/02/18
	MTRX SPK	1	PFOSL BVX793-01		0	10	0.3	1X					2016/02/18
	SPIKE		PFOSL		0	10	0.3	1X					2016/02/18
	BLANK				0	10	0.3	1X					2016/02/18
B630793*	*BVX792-01R		OF-RW20-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX793-01R		OF-FB20-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX794-01R		OF-RW55-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX795-01R		OF-FB55-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX796-01R		OF-RW54-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX797-01R		OF-FB54-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX798-01R		OF-RW68-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX799-01R		OF-FB68-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX800-01R		OF-RW30-0216	✓	0.1	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX801-01R		OF-FB30-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX802-01R		OF-FB69-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX803-01R		OF-RW69-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX804-01R		OF-FB26-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630793*	*BVX805-01R		OF-RW26-0216	✓	0	10	0.3	1X	1	2016/02/18	2016/02/23 17:00		2016/02/18
B630803	BVX947-01R				0.1	10	0.3	1X		2016/02/17	2016/02/23		

Melinda B Molina 2016/02/18

Remarks: B630803 (Sample BVX947-01R): Reworked Sample, upfront 10x dilution required (Initial volume: 12.5mL)

Samples extracted by: Melinda Molina 2016/02/18

Instrumentation performed by: CM Date: 2016/02/22

Calculations performed by: CM 2016/02/22 Date: 2016/02/22

Validated by: Date: 2016/02/22

Job No.	Rep / Client Name / Remarks	Contact	Client Tier	National
GB630793	MDG TestAmerica NREG PFOSLOW-W Level IV required Project #: 320-17184	PFC Reporting Group	Tier 1 (Air.)	Test America

Surrogates/Spikes	Method Spike	Spikes	Samples

Sample	Preparation Remarks
	Vol (uL) — Amt. Spiked (uL) — Conc. — Init's ID #
SJ	2875 — 25
SL2	2850 — 50 — 100 ng/mL — SK6220
SL3	2700 — 150
SL4	2813 — 37.5
SL5	2775 — 75 — 1 ng/mL — E4675
SL6	2775 — 125
ICV	2788 — 62.5 — 1 ng/mL — E4676

Sample	Instrumentation Remarks

MM 2016/07/18

Worksheet Number: **4385924**

Low level PFOS and PFOA in water - Water
ng/L

Parameter Name	Units	MTRX SPK	DL	MTRX SPK Dup1	DL	SPIKE	DL
Perfluorobutanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorobutane Sulfonate (PFBS)	ng/L	71.20000	2	88.00000	2	77.80000	2
Perfluorodecane Sulfonate	ng/L	N/A*******		N/A*******		N/A*******	
Perfluoroheptanoic Acid (PFHpA)	ng/L	98.60000	2	111.00000	2	97.20000	2
Perfluoroheptane sulfonate	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorohexanoic Acid (PFHxA)	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorohexane Sulfonate (PFHxS)	ng/L	92.60000	2	105.40000	2	93.60000	2
Perfluorononanoic Acid (PFNA)	ng/L	98.00000	2	110.20000	2	98.40000	2
Perfluoropentanoic Acid (PFPeA)	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorotetradecanoic Acid	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorotridecanoic Acid	ng/L	N/A*******		N/A*******		N/A*******	
Perfluoroundecanoic Acid (PFUnA)	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorodecanoic Acid (PFDA)	ng/L	N/A*******		N/A*******		N/A*******	
Perfluorododecanoic Acid (PFDoA)	ng/L	N/A*******		N/A*******		N/A*******	
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	92.00000	2	110.00000	2	93.40000	2
Perfluorooctane Sulfonate (PFOS)	ng/L	88.80000	2	110.40000	2	94.20000	2
13C2-perfluorotetradecanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
13C4-Perfluorobutanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
13C5-Perfluorononanoic acid	ng/L	115.		103.		114.	
13C2-Perfluorodecanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
13C2-Perfluorododecanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
13C2-Perfluorohexanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
13C2-Perfluoroundecanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
13C4-Perfluoroheptanoic acid	ng/L	105.		96.3		105.	
13C4-Perfluorooctanoic acid	ng/L	118.		100.		115.	
13C4-Perfluorooctanesulfonate	ng/L	117.		105.		116.	
13C5-Perfluoropentanoic acid	ng/L	N/A*******		N/A*******		N/A*******	
18O2-Perfluorohexanesulfonate	ng/L	113.		97.5		108.	

Parameter Name	BLANK	DL	B630793 BVX792	DL	B630793 BVX793	DL	B630793 BVX794
Perfluorobutanoic acid	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorobutane Sulfonate (PFBS)	0	2	0	2	0	2	0
Perfluorodecane Sulfonate	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluoroheptanoic Acid (PFHpA)	0	2	0	2	0	2	0
Perfluoroheptane sulfonate	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorohexanoic Acid (PFHxA)	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorohexane Sulfonate (PFHxS)	0	2	0	2	0	2	0
Perfluorononanoic Acid (PFNA)	0	2	0	2	0	2	0.26500
Perfluoropentanoic Acid (PFPeA)	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorotetradecanoic Acid	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorotridecanoic Acid	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluoroundecanoic Acid (PFUnA)	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorodecanoic Acid (PFDA)	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluorododecanoic Acid (PFDoA)	N/A*******		N/A*******	2	N/A*******	2	N/A*******
Perfluoro-n-Octanoic Acid (PFOA)	0	2	0	2	0	2	0
Perfluorooctane Sulfonate (PFOS)	0	2	0	2	0	2	0
13C2-perfluorotetradecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C4-Perfluorobutanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C5-Perfluorononanoic acid	112.		79.2		115.		82.2
13C2-Perfluorodecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C2-Perfluorododecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C2-Perfluorohexanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C2-Perfluoroundecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C4-Perfluoroheptanoic acid	107.		66.6		92.7		61.3
13C4-Perfluorooctanoic acid	108.		69.8		104.		73.4
13C4-Perfluorooctanesulfonate	107.		72.2		102.		70.4
13C5-Perfluoropentanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
18O2-Perfluorohexanesulfonate	98.5		78.9		98.4		74.7

Low level PFOS and PFOA in water - Water
ng/L

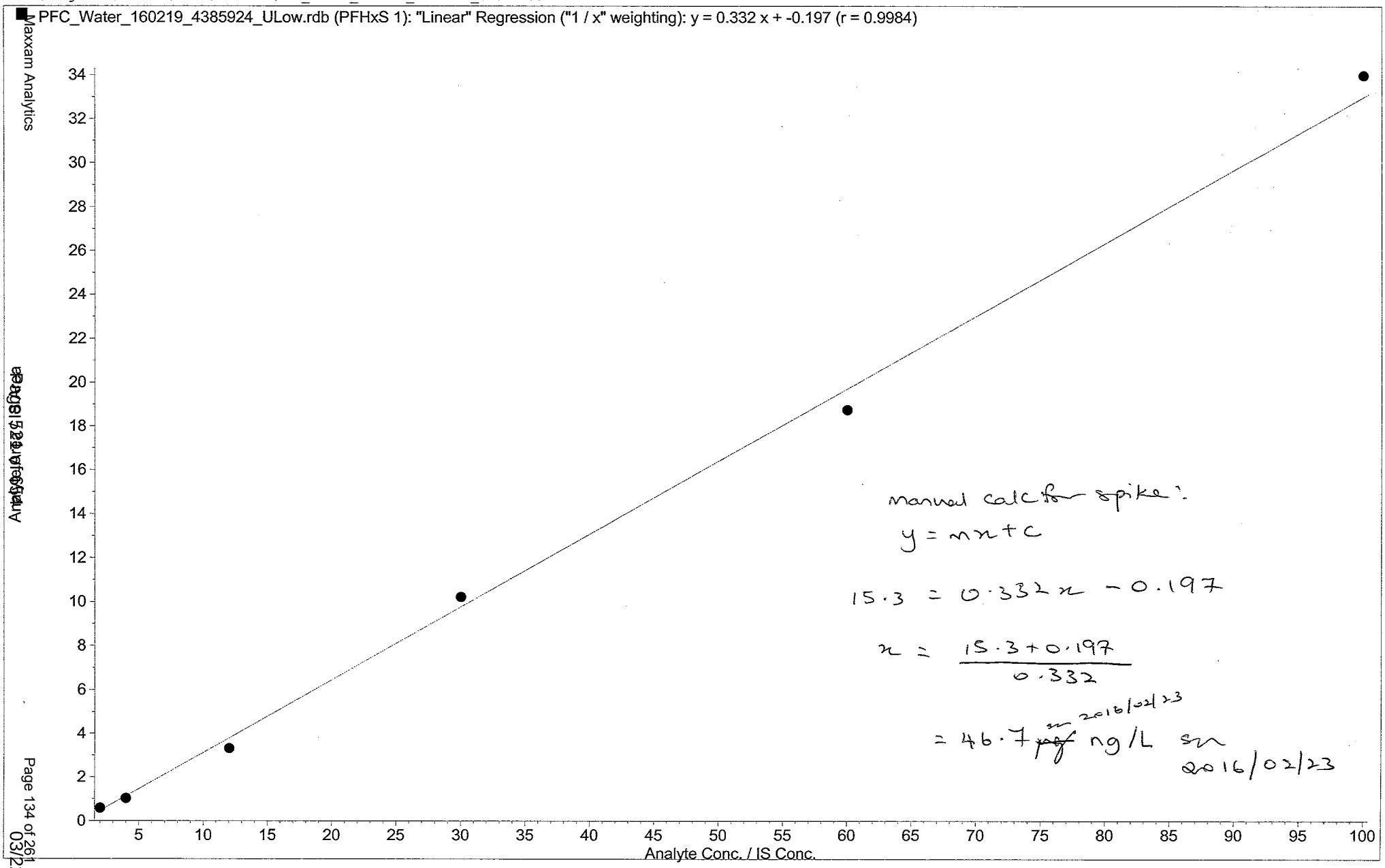
Parameter Name	DL	B630793 BVX795	DL	B630793 BVX796	DL	B630793 BVX797	DL
Perfluorobutanoic acid	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorobutane Sulfonate (PFBS)	2	0	2	0	2	0	2
Perfluorodecane Sulfonate	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluoroheptanoic Acid (PFHpA)	2	0	2	0	2	0	2
Perfluoroheptane sulfonate	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorohexanoic Acid (PFHxA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorohexane Sulfonate (PFHxS)	2	0	2	0	2	0	2
Perfluorononanoic Acid (PFNA)	2	0	2	0.23700	2	0	2
Perfluoropentanoic Acid (PFPeA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorotetradecanoic Acid	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorotridecanoic Acid	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluoroundecanoic Acid (PFUnA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorodecanoic Acid (PFDA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorododecanoic Acid (PFDoA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluoro-n-Octanoic Acid (PFOA)	2	0	2	0	2	0	2
Perfluorooctane Sulfonate (PFOS)	2	0	2	0	2	0	2
13C2-perfluorotetradecanoic acid		N/A*******		N/A*******		N/A*******	
13C4-Perfluorobutanoic acid		N/A*******		N/A*******		N/A*******	
13C5-Perfluorononanoic acid		116.		83.1		116.	
13C2-Perfluorodecanoic acid		N/A*******		N/A*******		N/A*******	
13C2-Perfluorododecanoic acid		N/A*******		N/A*******		N/A*******	
13C2-Perfluorohexanoic acid		N/A*******		N/A*******		N/A*******	
13C2-Perfluoroundecanoic acid		N/A*******		N/A*******		N/A*******	
13C4-Perfluoroheptanoic acid		100.		71.8		95.9	
13C4-Perfluorooctanoic acid		104.		80.9		99.9	
13C4-Perfluorooctanesulfonate		111.		78.5		108.	
13C5-Perfluoropentanoic acid		N/A*******		N/A*******		N/A*******	
18O2-Perfluorohexanesulfonate		90.1		74.4		94.3	

Parameter Name	B630793 BVX798	DL	B630793 BVX799	DL	B630793 BVX800	DL	B630793 BVX801
Perfluorobutanoic acid	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorobutane Sulfonate (PFBS)	0	2	0	2	0	2	0
Perfluorodecane Sulfonate	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluoroheptanoic Acid (PFHpA)	0	2	0	2	0	2	0
Perfluoroheptane sulfonate	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorohexanoic Acid (PFHxA)	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorohexane Sulfonate (PFHxS)	0	2	0	2	0	2	0
Perfluorononanoic Acid (PFNA)	0.24800	2	0	2	0	2	0.26000
Perfluoropentanoic Acid (PFPeA)	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorotetradecanoic Acid	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorotridecanoic Acid	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluoroundecanoic Acid (PFUnA)	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorodecanoic Acid (PFDA)	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluorododecanoic Acid (PFDoA)	N/A*******	2	N/A*******	2	N/A*******	2	N/A*******
Perfluoro-n-Octanoic Acid (PFOA)	0.40700	2	0	2	0	2	0.29700
Perfluorooctane Sulfonate (PFOS)	0	2	0	2	0	2	0
13C2-perfluorotetradecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C4-Perfluorobutanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C5-Perfluorononanoic acid	82.9		106.		80.7		115.
13C2-Perfluorodecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C2-Perfluorododecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C2-Perfluorohexanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C2-Perfluoroundecanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
13C4-Perfluoroheptanoic acid	69.6		87.1		73.7		95.5
13C4-Perfluorooctanoic acid	72.9		102.		77.2		106.
13C4-Perfluorooctanesulfonate	67.3		102.		74.0		113.
13C5-Perfluoropentanoic acid	N/A*******		N/A*******		N/A*******		N/A*******
18O2-Perfluorohexanesulfonate	70.7		96.8		81.8		95.7

Low level PFOS and PFOA in water - Water
ng/L

Parameter Name	DL	B630793 BVX802	DL	B630793 BVX803	DL	B630793 BVX804	DL
Perfluorobutanoic acid	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorobutane Sulfonate (PFBS)	2	0	2	0	2	0	2
Perfluorodecane Sulfonate	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluoroheptanoic Acid (PFHpA)	2	0	2	0	2	0	2
Perfluoroheptane sulfonate	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorohexanoic Acid (PFHxA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorohexane Sulfonate (PFHxS)	2	0	2	0	2	0	2
Perfluorononanoic Acid (PFNA)	2	0	2	0	2	0	2
Perfluoropentanoic Acid (PFPeA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorotetradecanoic Acid	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorotridecanoic Acid	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluoroundecanoic Acid (PFUnA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorodecanoic Acid (PFDA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluorododecanoic Acid (PFDoA)	2	N/A*******	2	N/A*******	2	N/A*******	2
Perfluoro-n-Octanoic Acid (PFOA)	2	0	2	0	2	0	2
Perfluorooctane Sulfonate (PFOS)	2	0	2	0	2	0	2
13C2-perfluorotetradecanoic acid		N/A*******		N/A*******		N/A*******	
13C4-Perfluorobutanoic acid		N/A*******		N/A*******		N/A*******	
13C5-Perfluorononanoic acid		111.		80.7		112.	
13C2-Perfluorodecanoic acid		N/A*******		N/A*******		N/A*******	
13C2-Perfluorododecanoic acid		N/A*******		N/A*******		N/A*******	
13C2-Perfluorohexanoic acid		N/A*******		N/A*******		N/A*******	
13C2-Perfluoroundecanoic acid		N/A*******		N/A*******		N/A*******	
13C4-Perfluoroheptanoic acid		97.1		73.7		92.7	
13C4-Perfluorooctanoic acid		112.		76.4		103.	
13C4-Perfluorooctanesulfonate		100.		70.5		106.	
13C5-Perfluoropentanoic acid		N/A*******		N/A*******		N/A*******	
18O2-Perfluorohexanesulfonate		103.		82.1		95.1	

Parameter Name	B630793 BVX805	DL	B630803 BVX947 ReWork	DL	RDL	MDL	IDL
Perfluorobutanoic acid	N/A*******	2	N/A*******	20	2	0.41	0
Perfluorobutane Sulfonate (PFBS)	0	2	59.30000	20	2	0.27	0
Perfluorodecane Sulfonate	N/A*******	2	N/A*******	20	2	0.38	0
Perfluoroheptanoic Acid (PFHpA)	0	2	22.50000	20	2	0.39	0
Perfluoroheptane sulfonate	N/A*******	2	N/A*******	20	2	0.4	0
Perfluorohexanoic Acid (PFHxA)	N/A*******	2	N/A*******	20	2	0.42	0
Perfluorohexane Sulfonate (PFHxS)	0	2	697.00000	20	2	0.4	0
Perfluorononanoic Acid (PFNA)	0	2	2.84000	20	2	0.33	0
Perfluoropentanoic Acid (PFPeA)	N/A*******	2	N/A*******	20	2	0.46	0
Perfluorotetradecanoic Acid	N/A*******	2	N/A*******	20	2	0.61	0
Perfluorotridecanoic Acid	N/A*******	2	N/A*******	20	2	0.6	0
Perfluoroundecanoic Acid (PFUnA)	N/A*******	2	N/A*******	20	2	0.5	0
Perfluorodecanoic Acid (PFDA)	N/A*******	2	N/A*******	20	2	0.24	0
Perfluorododecanoic Acid (PFDoA)	N/A*******	2	N/A*******	20	2	0.63	0
Perfluoro-n-Octanoic Acid (PFOA)	0.30000	2	242.00000	20	2	0.39	0
Perfluorooctane Sulfonate (PFOS)	0	2	22.90000	20	2	0.3	0
13C2-perfluorotetradecanoic acid	N/A*******		N/A*******				
13C4-Perfluorobutanoic acid	N/A*******		N/A*******				
13C5-Perfluorononanoic acid	107.		64.1				
13C2-Perfluorodecanoic acid	N/A*******		N/A*******				
13C2-Perfluorododecanoic acid	N/A*******		N/A*******				
13C2-Perfluorohexanoic acid	N/A*******		N/A*******				
13C2-Perfluoroundecanoic acid	N/A*******		N/A*******				
13C4-Perfluoroheptanoic acid	95.3		II 48.8				
13C4-Perfluorooctanoic acid	95.3		60.0				
13C4-Perfluorooctanesulfonate	104.		78.2				
13C5-Perfluoropentanoic acid	N/A*******		N/A*******				
18O2-Perfluorohexanesulfonate	103.		70.4				



manual calc for spike:

$y = mx + c$

$15.3 = 0.332x - 0.197$

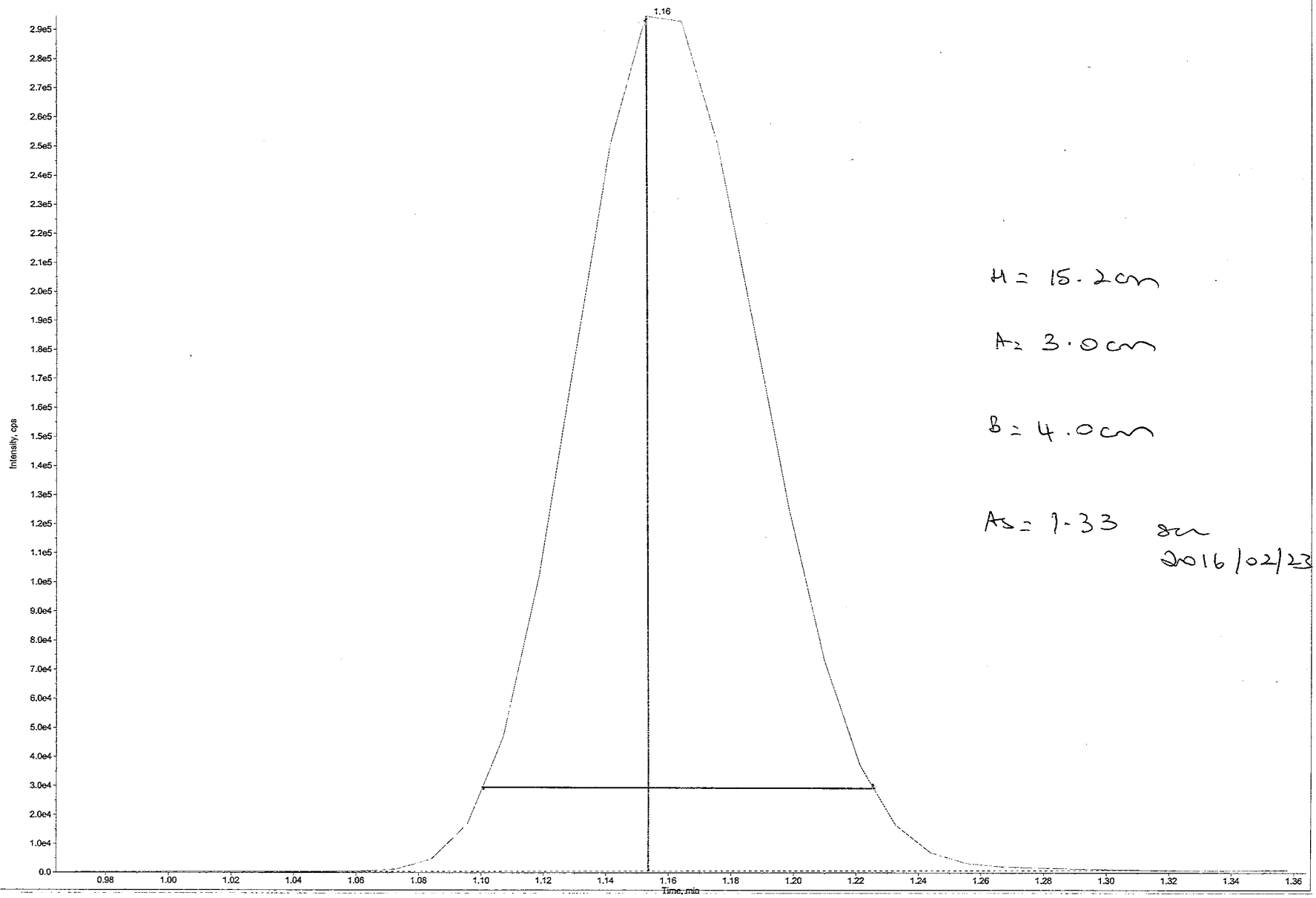
$x = \frac{15.3 + 0.197}{0.332}$

$= 46.7$ ~~ng~~ ng/L sm 2016/02/23

sm 2016/02/23

Sample Name: "STD 4" Sample ID: "" File: "WS#4386408.wiff"
Peak Name: "PFBS 1" Mass(es): "298.900/79.900 Da"
Comment: "" Annotation: ""

Sample Index:	5
Sample Type:	Standard
Concentration:	30.0 ng/L
Calculated Conc:	29.3 ng/L
Acq. Date:	2016/02/19
Acq. Time:	8:00:24 AM
Modified:	No
Peak Algorithm:	Analyst Classic
Bunching Factor:	1
Noise Threshold:	300.00 cps
Area Threshold:	2000.00 cps
,Num. Smooths:	5
Sep. Width:	0.00
Sep. Height:	0.00
Exp. Peak Ratio:	5.00
Exp. Adj. Ratio:	4.00
Exp. Val. Ratio:	3.00
RT Window:	10.0 sec
Expected RT:	1.16 min
Use Relative RT:	No
Int. Type:	Base To Base
Retention Time:	1.16 min
Area:	1290000. counts
Height:	2.99e+005 cps
Start Time:	1.04 min
End Time:	1.31 min



H = 15.2cm

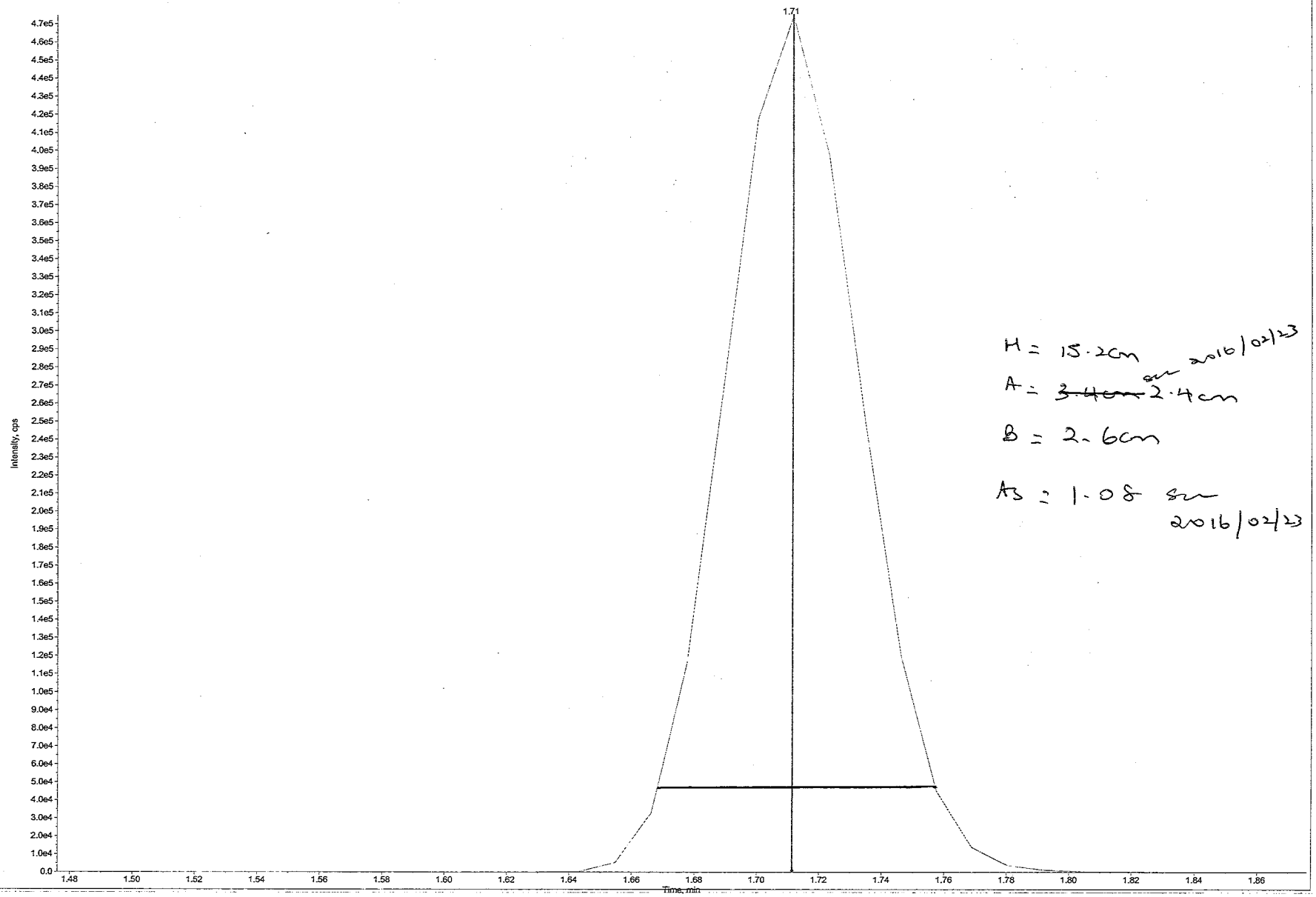
A = 3.0cm

B = 4.0cm

As = 1.33 sm
2016/02/23

Sample Name: "STD 4" Sample ID: "" File: "WS#4386408.wiff"
Peak Name: "PFHxS 1" Mass(es): "398.900/79.900 Da"
Comment: "" Annotation: ""

Sample Index:	5	
Sample Type:	Standard	
Concentration:	30.0	ng/L
Calculated Conc:	31.4	ng/L
Acq. Date:	2016/02/19	
Acq. Time:	8:00:24 AM	
Modified:	No	
Proc. Algorithm:	Analyst Classic	
Bunching Factor:	1	
Noise Threshold:	200.00	cps
Area Threshold:	3000.00	cps
,Num. Smooths:	4	
Sep. Width:	0.00	
Sep. Height:	0.00	
Exp. Peak Ratio:	5.00	
Exp. Adj. Ratio:	4.00	
Exp. Val. Ratio:	3.00	
RT Window:	10.0	sec
Expected RT:	1.68	min
Use Relative RT:	No	
Int. Type:	Base To Base	
Retention Time:	1.71	min
Area:	1470000.	counts
Height:	4.75e+005	cps
Start Time:	1.57	min
End Time:	1.84	min



H = 15.2cm 2016/02/23
A = ~~3.4cm~~ 2.4cm
B = 2.6cm
As = 1.08 2016/02/23

Report Name: Worksheet - Parameter Lists

Report Date: 2016/02/18

Test Code: **PFOSLOW-W**

Worksheet Number: **4385924**

Sample Number	Parameter
BVX792-01	Perfluorobutane Sulfonate (PFBS)
BVX793-01	Perfluoroheptanoic Acid (PFHpA)
BVX794-01	Perfluorohexane Sulfonate (PFHxS)
BVX795-01	Perfluorononanoic Acid (PFNA)
BVX796-01	Perfluoro-n-Octanoic Acid (PFOA)
BVX797-01	Perfluorooctane Sulfonate (PFOS)
BVX798-01	
BVX799-01	
BVX800-01	
BVX801-01	
BVX802-01	
BVX803-01	
BVX804-01	
BVX805-01	

1.	4385924:MTRX SPK	MTRX SPK
2.	4385924:MTRX SPK:D1	MTRX SPK :D1
3.	4385924:SPIKE	SPIKE
4.	4385924:BLANK	BLANK
5.	4385924:BVX792-01	OF-RW20-0216
6.	4385924:BVX793-01	OF-FB20-0216
7.	4385924:BVX794-01	OF-RW55-0216
8.	4385924:BVX795-01	OF-FB55-0216
9.	4385924:BVX796-01	OF-RW54-0216
10.	4385924:BVX797-01	OF-FB54-0216
11.	4385924:BVX798-01	OF-RW68-0216
12.	4385924:BVX799-01	OF-FB68-0216
13.	4385924:BVX800-01	OF-RW30-0216
14.	4385924:BVX801-01	OF-FB30-0216
15.	4385924:BVX802-01	OF-FB69-0216
16.	4385924:BVX803-01	OF-RW69-0216
17.	4385924:BVX804-01	OF-FB26-0216
18.	4385924:BVX805-01	OF-RW26-0216

Worksheet Reagent Tracking Record Worksheet # 4385924

Volume (µL)

Surrogate/Spike solutions	√	Solution ID #	Conc.	Blk-Spk		MS		Samples	
				Solid	Liquid	Solid	Liquid	Solid	Liquid
DGT Spike			100 ug/mL	60	30	60	30	NA	NA
Diquat Dibromide			50 ug/mL	NA	350	NA	350	NA	NA
Explosives Spiking solution A			20 ug/mL	250	100	250	100	NA	NA
Explosives Spiking solution B			20/80 ug/mL	250	100	250	100	NA	NA
Formaldehyde Spike			100 ug/mL	25	25	25	25	NA	NA
Glyphosate Spike			25 ug/mL	500	20	500	20	NA	NA
Nonylphenol Ethoxylate Spike			100 ug/mL	100	100	100	100	NA	NA
Nonylphenol Spike			10 ug/mL	100	100	100	100	NA	NA
Paraquat Cl Tetrahydrate			20 ug/mL	NA	125	NA	125	NA	NA
Perchlorate Standard Spike			10 ng/mL	NA	100	NA	100	NA	NA
Perchlorate Standard Spike			500 ng/mL	40	NA	40	NA	NA	NA
Perchlorate O-18 Internal Standard			0.10 ng/uL	20	20	20	20	20	20
Morpholine Intermediate Std.			5 ug/mL	NA	50	NA	20	NA	NA
Morpholine-D8 Internal Standard			10 ug/mL	NA	100	NA	100	NA	100
Comp. PFC Spiking Solution A			1ug/mL	62.5	NA	62.5	NA	NA	NA
Comp. PFC Spiking Solution B			250 ng/mL	NA	40 75	NA	40 75	NA	NA
Comp. PFC Spiking Solution C	✓	JK 6229	100 ng/mL	125	NA 62.5	125	NA 62.5	NA	NA
Internal Standard Solution A	✓	JZ C0010 (4/4)	50 ng/mL	50	100 15	50	100 15	50	100 15
Internal Standard Solution B			250ng/mL	50	NA	50	NA	50	NA
ICV/CCV	✓	I 4676	1ug/mL		62.5				

Solvent/Reagent	Supplier	√	Lot No.	Date Opened	Solvent/Reagent	√	Lot No.	Date Opened/ Prepared
DCM	Fisher				50% NaOH			
Hexane	Fisher				20mM TBAS			
Acetone	Fisher				o-Phosphoric Acid			
Ottawa Sand	Fisher				Borax			
Methanol	Fisher	✓	SHBG6070V	2016/02/18	Calcium Chloride			
2-Propanol (IPA)	Fisher				EDTA			
Acetonitrile	Fisher				Phosphate Buffer			
MTBE	Fisher				Sodium Thiosulphate			
Sodium Sulfate	Fisher				DNPH			
Recon Solution					5M Acetate Buffer			
DCM:Ethyl Ether (75:25)					FMOC			
Hexane:IPA (98:2)					0.25M Na_2CO_3			
2% Formic Acid		✓	BLLE87-131		0.5M TBAS			
0.2% Formic Acid		✓	BLLE87-114		1% NH_4OH 0.2% MeOH		BLLE87-198	
0.05M KOH					Leachate Fluid			
0.05M HCl					Reagent Water	✓	SHBG5572V	2016/02/15

*Spiked by: mma

Spike Date 2016/02/18

Spike Syringe ID# M23487B

Int. Std Syringe ID# M23487B

*Spiking Witnessed by: GSZ

Final pH

Equipment	ID#	√	Equipment	ID#	√	Equipment	Lot #
Pipettor	E16295B (1mL)	✓	SPE Cartridge	0026352255A	✓	10 mL Serological Pipet	
(200mL)	K19L0910	✓	Filter			QC Balance ID	
Dispenser			Centrifuge			Thermometer ID &Temp	
Syringe			Sonicator		mma 2016/02/18		

Bottle Tracking: Bottle# 14991; Cap# 14443

Systems plus Lot# 16-01-06

Comments: C60:40 (H2O: MeOH) BLLE87 C0017-190
Inj. I.S (20mL) JZ-C0017

Worksheet: 4385-924

Dilution and Column Cleanup Worksheet

Job Number	Sample ID	Sample: Initial Final Volume	Dilution Required	Sample added mL	Solvent Added mL	Int Stan Added uL	New Effective Final Volume	INITIAL DATE	Column Clean Up
B630803	BVX947-01K	1X	10X	12.5 mL	112.5	25	125 mL	mm 2016/02/18	-
pipette used: I162955B									
H20 used: SHBG 1572V									

Project: D:\Analyst Data\Projects\Enviro\PFOS Batch:PFC_160219 Tab:Sample Set:SET1 AcqMethod:PFC_Water_Low.dam
Sample

	Sample Name	Rack Code	Rack Position	Plate Code	Plate Position	Vial Position	Data File	Inj.Volume (µl)
1	Rinse	2 Well Plates	1	*54VialPlate*	1	1	PFC_160219\WS#4386408	3.000
2	4386408~BLANK	2 Well Plates	1	*54VialPlate*	1	2	PFC_160219\WS#4386408	3.000
3	STD 1	2 Well Plates	1	*54VialPlate*	1	3	PFC_160219\WS#4386408	3.000
4	STD 2	2 Well Plates	1	*54VialPlate*	1	4	PFC_160219\WS#4386408	3.000
5	STD 3	2 Well Plates	1	*54VialPlate*	1	5	PFC_160219\WS#4386408	3.000
6	STD 4	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4386408	3.000
7	STD 5	2 Well Plates	1	*54VialPlate*	1	7	PFC_160219\WS#4386408	3.000
8	STD 6	2 Well Plates	1	*54VialPlate*	1	8	PFC_160219\WS#4386408	3.000
9	ICV	2 Well Plates	1	*54VialPlate*	1	9	PFC_160219\WS#4386408	3.000
10	CCV	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4386408	3.000
11	4386408~MTRX SPK	2 Well Plates	1	*54VialPlate*	1	10	PFC_160219\WS#4386408	3.000
12	4386408~MTRX SPK:D1	2 Well Plates	1	*54VialPlate*	1	11	PFC_160219\WS#4386408	3.000
13	4386408~SPIKE	2 Well Plates	1	*54VialPlate*	1	12	PFC_160219\WS#4386408	3.000
14	4386408~BVX814-01 (10x)	2 Well Plates	1	*54VialPlate*	1	13	PFC_160219\WS#4386408	3.000
15	4386408~BVX817-01 (10x)	2 Well Plates	1	*54VialPlate*	1	14	PFC_160219\WS#4386408	3.000
16	4386408~BVX818-01 (20x)	2 Well Plates	1	*54VialPlate*	1	15	PFC_160219\WS#4386408	3.000
17	4386408~BVX819-01 (10x)	2 Well Plates	1	*54VialPlate*	1	16	PFC_160219\WS#4386408	3.000
18	4386408~BVX769-01	2 Well Plates	1	*54VialPlate*	1	17	PFC_160219\WS#4386408	3.000
19	4386408~BVX770-01	2 Well Plates	1	*54VialPlate*	1	18	PFC_160219\WS#4386408	3.000
20	4386408~BVX771-01	2 Well Plates	1	*54VialPlate*	1	19	PFC_160219\WS#4386408	3.000
21	4386408~BVX772-01	2 Well Plates	1	*54VialPlate*	1	20	PFC_160219\WS#4386408	3.000
22	4386408~BVX773-01	2 Well Plates	1	*54VialPlate*	1	21	PFC_160219\WS#4386408	3.000
23	4386408~BVX774-01	2 Well Plates	1	*54VialPlate*	1	22	PFC_160219\WS#4386408	3.000
24	CCV	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4386408	3.000
25	4386408~BVX775-01	2 Well Plates	1	*54VialPlate*	1	23	PFC_160219\WS#4386408	3.000
26	4386408~BVX776-01	2 Well Plates	1	*54VialPlate*	1	24	PFC_160219\WS#4386408	3.000
27	4386408~BVX779-01	2 Well Plates	1	*54VialPlate*	1	25	PFC_160219\WS#4386408	3.000
28	4386408~BVX780-01	2 Well Plates	1	*54VialPlate*	1	26	PFC_160219\WS#4386408	3.000
29	4386408~BVX781-01	2 Well Plates	1	*54VialPlate*	1	27	PFC_160219\WS#4386408	3.000
30	4386408~BVX826-01	2 Well Plates	1	*54VialPlate*	1	28	PFC_160219\WS#4386408	3.000
31	4386408~BVX827-01	2 Well Plates	1	*54VialPlate*	1	29	PFC_160219\WS#4386408	3.000
32	4386408~BVX828-01	2 Well Plates	1	*54VialPlate*	1	30	PFC_160219\WS#4386408	3.000
33	4386408~BVX829-01	2 Well Plates	1	*54VialPlate*	1	31	PFC_160219\WS#4386408	3.000
34	4386408~BVX830-01	2 Well Plates	1	*54VialPlate*	1	32	PFC_160219\WS#4386408	3.000
35	CCV	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4386408	3.000
36	4385924~BLANK	2 Well Plates	1	*54VialPlate*	1	33	PFC_160219\WS#4385924	3.000
37	4385924~MTRX SPK	2 Well Plates	1	*54VialPlate*	1	34	PFC_160219\WS#4385924	3.000
38	4385924~MTRX SPK:D1	2 Well Plates	1	*54VialPlate*	1	35	PFC_160219\WS#4385924	3.000
39	4385924~SPIKE	2 Well Plates	1	*54VialPlate*	1	36	PFC_160219\WS#4385924	3.000
40	4385924~BVX947-01 (10x)	2 Well Plates	1	*54VialPlate*	1	37	PFC_160219\WS#4385924	3.000
41	4385924~BVX792-01	2 Well Plates	1	*54VialPlate*	1	38	PFC_160219\WS#4385924	3.000
42	4385924~BVX793-01	2 Well Plates	1	*54VialPlate*	1	39	PFC_160219\WS#4385924	3.000
43	4385924~BVX794-01	2 Well Plates	1	*54VialPlate*	1	40	PFC_160219\WS#4385924	3.000
44	4385924~BVX795-01	2 Well Plates	1	*54VialPlate*	1	41	PFC_160219\WS#4385924	3.000
45	4385924~BVX796-01	2 Well Plates	1	*54VialPlate*	1	42	PFC_160219\WS#4385924	3.000
46	4385924~BVX797-01	2 Well Plates	1	*54VialPlate*	1	43	PFC_160219\WS#4385924	3.000
47	4385924~BVX798-01	2 Well Plates	1	*54VialPlate*	1	44	PFC_160219\WS#4385924	3.000
48	4385924~BVX799-01	2 Well Plates	1	*54VialPlate*	1	45	PFC_160219\WS#4385924	3.000
49	4385924~BVX800-01	2 Well Plates	1	*54VialPlate*	1	46	PFC_160219\WS#4385924	3.000
50	CCV	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4385924	3.000
51	4385924~BVX801-01	2 Well Plates	1	*54VialPlate*	1	47	PFC_160219\WS#4385924	3.000
52	4385924~BVX802-01	2 Well Plates	1	*54VialPlate*	1	48	PFC_160219\WS#4385924	3.000
53	4385924~BVX803-01	2 Well Plates	1	*54VialPlate*	1	49	PFC_160219\WS#4385924	3.000
54	4385924~BVX804-01	2 Well Plates	1	*54VialPlate*	1	50	PFC_160219\WS#4385924	3.000
55	4385924~BVX805-01	2 Well Plates	1	*54VialPlate*	1	51	PFC_160219\WS#4385924	3.000
56	CCV	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4385924	3.000
57	4385888~BLANK	2 Well Plates	1	*54VialPlate*	2	1	PFC_160219\WS#4385888	3.000
58	4385888~MTRX SPK	2 Well Plates	1	*54VialPlate*	2	2	PFC_160219\WS#4385888	3.000
59	4385888~MTRX SPK:D1	2 Well Plates	1	*54VialPlate*	2	3	PFC_160219\WS#4385888	3.000
60	4385888~SPIKE	2 Well Plates	1	*54VialPlate*	2	4	PFC_160219\WS#4385888	3.000
61	4385888~BVX782-01	2 Well Plates	1	*54VialPlate*	2	5	PFC_160219\WS#4385888	3.000
62	4385888~BVX783-01	2 Well Plates	1	*54VialPlate*	2	6	PFC_160219\WS#4385888	3.000
63	4385888~BVX784-01	2 Well Plates	1	*54VialPlate*	2	7	PFC_160219\WS#4385888	3.000
64	4385888~BVX785-01	2 Well Plates	1	*54VialPlate*	2	8	PFC_160219\WS#4385888	3.000
65	4385888~BVX786-01	2 Well Plates	1	*54VialPlate*	2	9	PFC_160219\WS#4385888	3.000
66	4385888~BVX787-01	2 Well Plates	1	*54VialPlate*	2	10	PFC_160219\WS#4385888	3.000
67	4385888~BVX788-01	2 Well Plates	1	*54VialPlate*	2	11	PFC_160219\WS#4385888	3.000
68	4385888~BVX789-01	2 Well Plates	1	*54VialPlate*	2	12	PFC_160219\WS#4385888	3.000
69	4385888~BVX790-01	2 Well Plates	1	*54VialPlate*	2	13	PFC_160219\WS#4385888	3.000
70	4385888~BVX791-01	2 Well Plates	1	*54VialPlate*	2	14	PFC_160219\WS#4385888	3.000
71	CCV	2 Well Plates	1	*54VialPlate*	1	6	PFC_160219\WS#4385888	3.000

Column #123
MPA = Soln # 506, FJQE17
MPB = MeOH, Fisher-Lot #153763
on 20160219

Maxxam Analytics	Sample ID	Acquisition Date	Acquisition Method	File Name	Rack Type	Rack Position	Vial Position	Plate Type	Plate Position
1	STD 1	2/19/2016 7:45:04 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	3	*54VialPlate*	1
2	STD 2	2/19/2016 7:50:14 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	4	*54VialPlate*	1
3	STD 3	2/19/2016 7:55:19 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	5	*54VialPlate*	1
4	STD 4	2/19/2016 8:00:24 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	6	*54VialPlate*	1
5	STD 5	2/19/2016 8:05:30 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	7	*54VialPlate*	1
6	STD 6	2/19/2016 8:10:36 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	8	*54VialPlate*	1
7	ICV	2/19/2016 8:15:41 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	9	*54VialPlate*	1
8	CCV	2/19/2016 10:43:32 AM	PFC_Water_Low.dam	PFC_160219\WS#4386408.wiff	2 Well Plates	1	6	*54VialPlate*	1
9	4385924~BLANK	2/19/2016 11:09:00 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	33	*54VialPlate*	1
10	4385924~MTRX SPK (BVX793)	2/19/2016 11:14:05 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	34	*54VialPlate*	1
11	4385924~MTRX SPK:D1 (BVX793)	2/19/2016 11:19:11 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	35	*54VialPlate*	1
12	4385924~SPIKE	2/19/2016 11:24:17 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	36	*54VialPlate*	1
13	4385924~BVX947-01 (10x)	2/19/2016 11:29:22 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	37	*54VialPlate*	1
14	4385924~BVX792-01	2/19/2016 11:34:28 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	38	*54VialPlate*	1
15	4385924~BVX793-01	2/19/2016 11:39:35 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	39	*54VialPlate*	1
16	4385924~BVX794-01	2/19/2016 11:44:41 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	40	*54VialPlate*	1
17	4385924~BVX795-01	2/19/2016 11:49:47 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	41	*54VialPlate*	1
18	4385924~BVX796-01	2/19/2016 11:54:52 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	42	*54VialPlate*	1
19	4385924~BVX797-01	2/19/2016 11:59:57 AM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	43	*54VialPlate*	1
20	4385924~BVX798-01	2/19/2016 12:05:05 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	44	*54VialPlate*	1
21	4385924~BVX799-01	2/19/2016 12:10:11 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	45	*54VialPlate*	1
22	4385924~BVX800-01	2/19/2016 12:15:18 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	46	*54VialPlate*	1
23	CCV	2/19/2016 12:20:24 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	6	*54VialPlate*	1
24	4385924~BVX801-01	2/19/2016 12:25:28 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	47	*54VialPlate*	1
25	4385924~BVX802-01	2/19/2016 12:30:34 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	48	*54VialPlate*	1
26	4385924~BVX803-01	2/19/2016 12:35:39 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	49	*54VialPlate*	1
27	4385924~BVX804-01	2/19/2016 12:40:44 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	50	*54VialPlate*	1
28	4385924~BVX805-01	2/19/2016 12:45:48 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	51	*54VialPlate*	1
29	4385924~BVX947-01 (10x)	2/19/2016 12:50:55 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	37	*54VialPlate*	1
30	CCV	2/19/2016 12:56:01 PM	PFC_Water_Low.dam	PFC_160219\WS#4385924.wiff	2 Well Plates	1	6	*54VialPlate*	1

5. Initial Calibration

Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

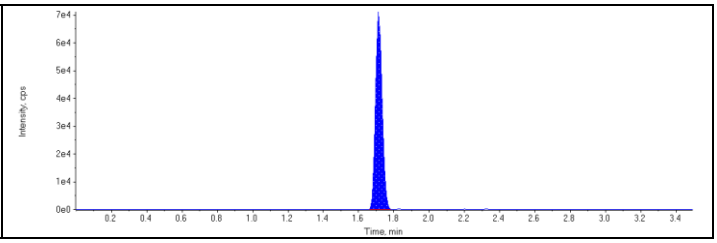
Sample Name	**STD 1**	**Injection Vial**	3
Sample ID	STD 1	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 12:46:47 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	184000.	1.71	1.00	-
MPFHpA	568000.	1.75	1.00	-
MPFOA	501000.	1.93	1.00	-
MPFOS	203000.	2.00	1.00	-
MPFNA	333000.	2.07	1.00	-
13C6-PFHxA IS	3960000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	115000	1.16	2.00	2.36	118.0
PFHxS 1	118000	1.71	2.00	2.27	114.0
PFHpA 1	152000	1.75	2.00	2.18	109.0
PFOA 1	167000	1.93	2.00	2.12	106.0
PFOS 1	81100	2.00	2.00	2.32	116.0
PFNA 1	112000	2.07	2.00	2.19	110.0
18O2-PFHxS	184000	1.71	100.	92.2	92.2
13C4-PFHpA	568000	1.75	100.	98.4	98.4
13C4-PFOA	501000	1.93	100.	97.9	97.9
13C4-PFOS	203000	2.00	100.	92.6	92.6
13C5-PFNA	333000	2.07	100.	98.7	98.7
13C6-PFHxA	3960000	1.49	100.	106.	106.0

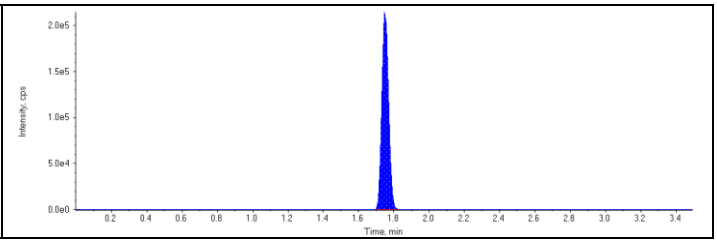
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



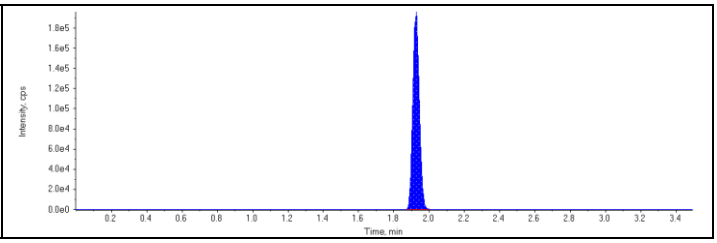
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



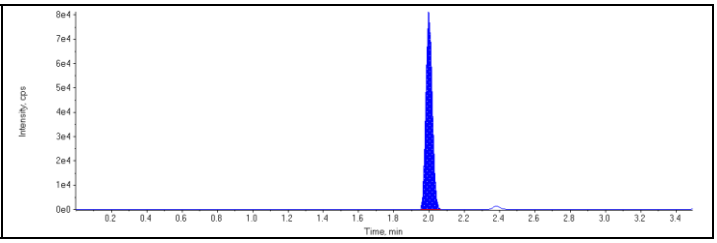
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



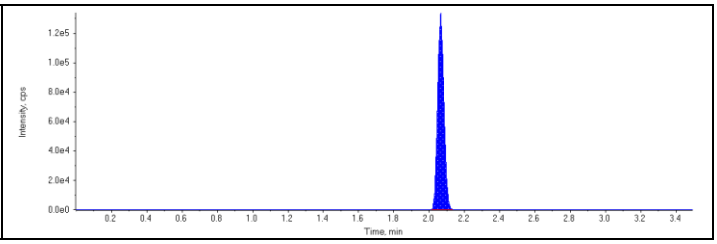
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



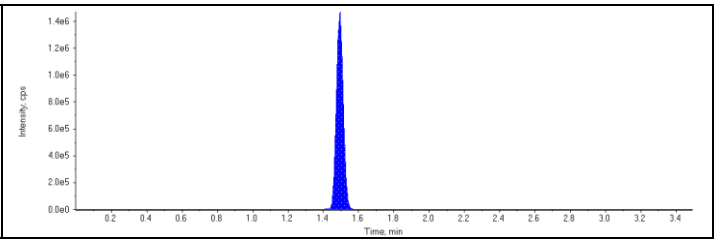
MPFNA (Internal Standard)

RT (Exp. RT): 2.07(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

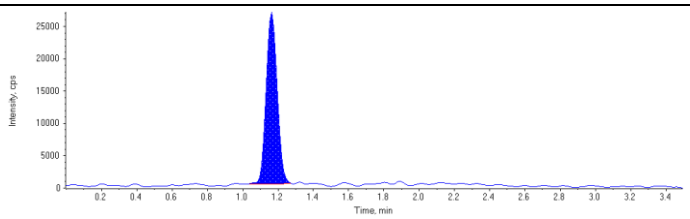
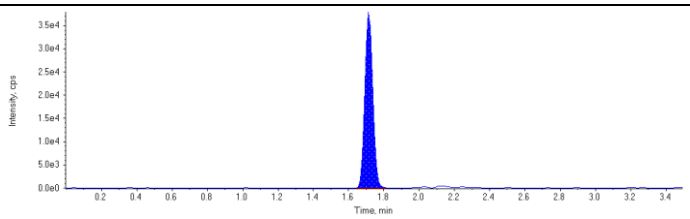
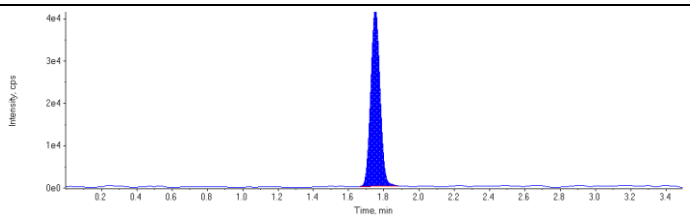
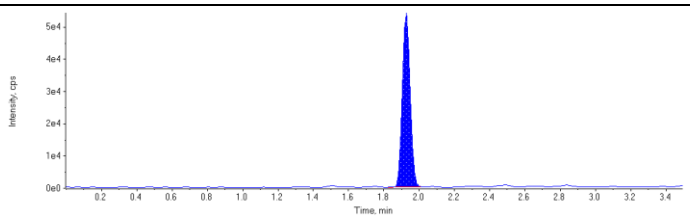
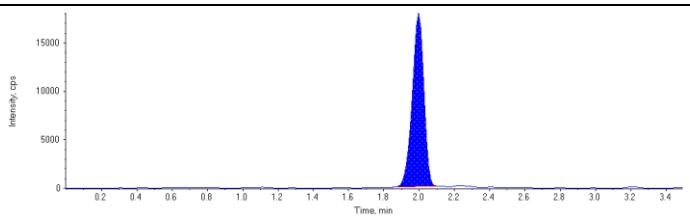
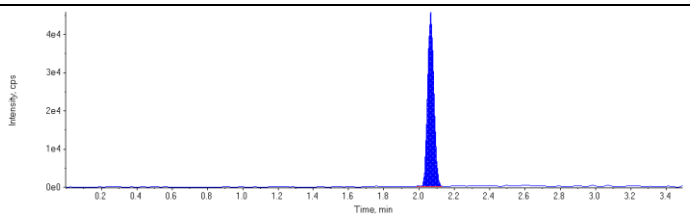
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

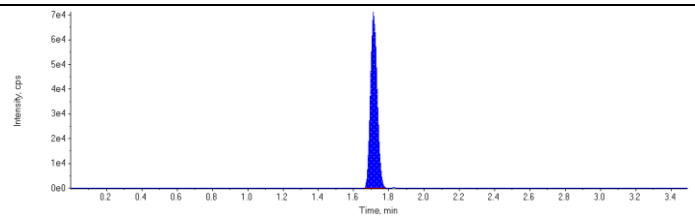
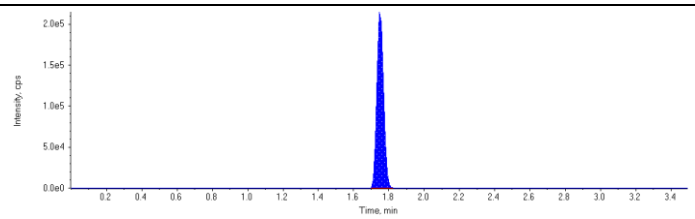
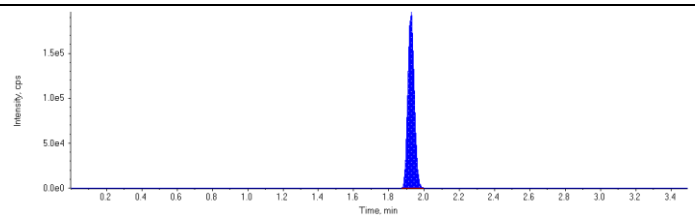
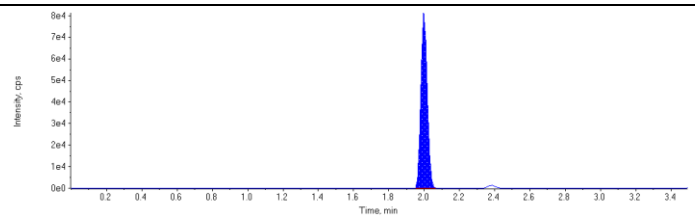
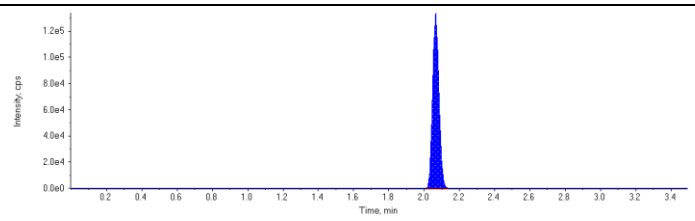
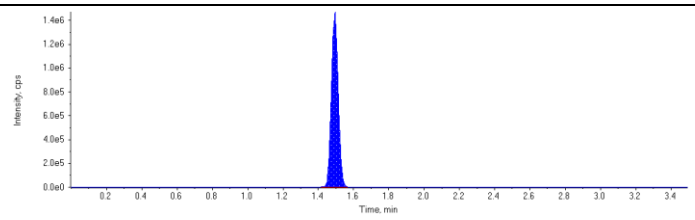


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 2.36 µg/L Area Ratio: 0.626 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 2.27 µg/L Area Ratio: 0.641 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 2.18 µg/L Area Ratio: 0.268 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 2.12 µg/L Area Ratio: 0.333 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 2.32 µg/L Area Ratio: 0.400 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 2.19 µg/L Area Ratio: 0.336 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 92.2 µg/L Area Ratio: 0.0464 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 98.4 µg/L Area Ratio: 0.144 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 97.9 µg/L Area Ratio: 0.127 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 92.6 µg/L Area Ratio: 0.0513 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 98.7 µg/L Area Ratio: 0.0843 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 106. µg/L Area Ratio: 0.00 Sample Type: (Standard)	

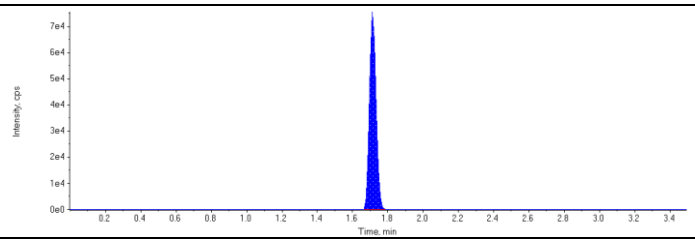
Sample Name	**STD 2**	**Injection Vial**	4
Sample ID	STD 2	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 12:51:53 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	194000.	1.71	1.00	-
MPFHpA	556000.	1.75	1.00	-
MPFOA	501000.	1.93	1.00	-
MPFOS	203000.	2.00	1.00	-
MPFNA	326000.	2.07	1.00	-
13C6-PFHxA IS	3720000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	230000	1.17	4.00	3.81	95.3
PFHxS 1	230000	1.71	4.00	3.65	91.3
PFHpA 1	288000	1.75	4.00	3.77	94.3
PFOA 1	334000	1.93	4.00	3.88	97.1
PFOS 1	151000	2.00	4.00	3.87	96.8
PFNA 1	215000	2.07	4.00	3.84	96.1
18O2-PFHxS	194000	1.71	100.	104.	104.0
13C4-PFHpA	556000	1.75	100.	102.	102.0
13C4-PFOA	501000	1.93	100.	104.	104.0
13C4-PFOS	203000	2.00	100.	98.5	98.5
13C5-PFNA	326000	2.07	100.	103.	103.0
13C6-PFHxA	3720000	1.49	100.	100.	100.0

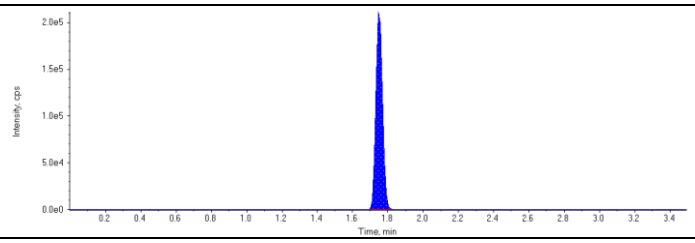
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



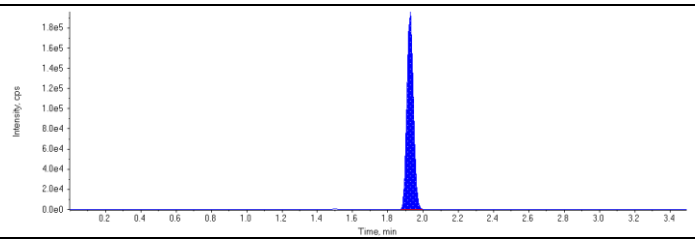
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



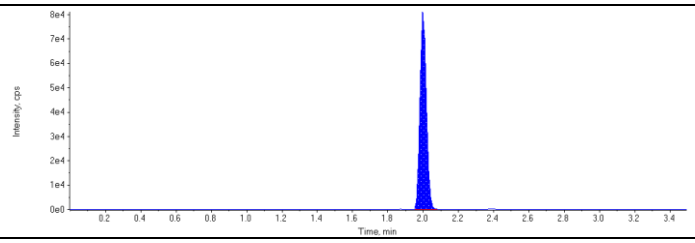
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



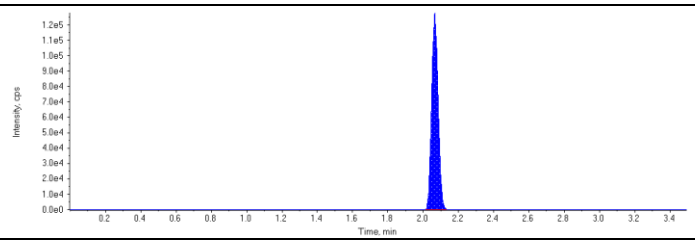
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



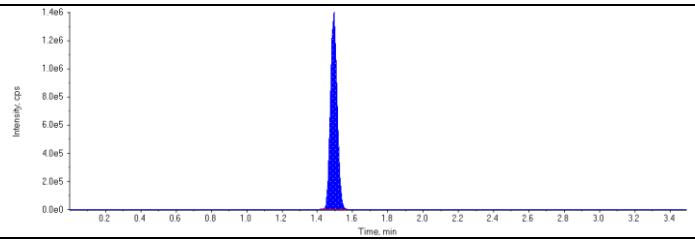
MPFNA (Internal Standard)

RT (Exp. RT): 2.07(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

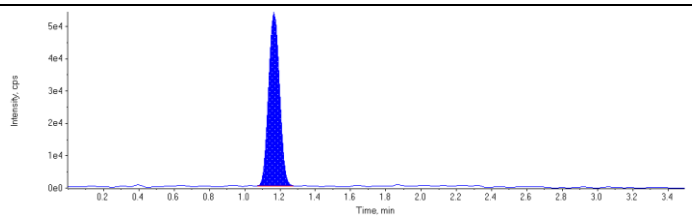
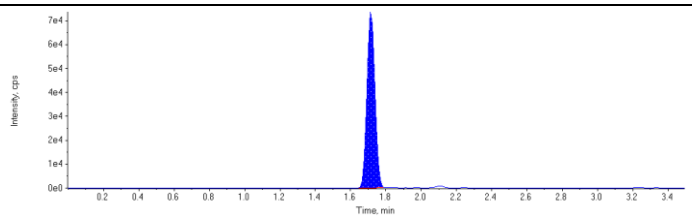
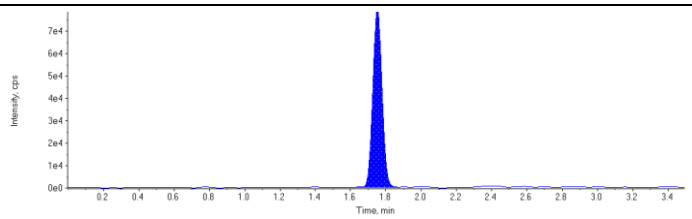
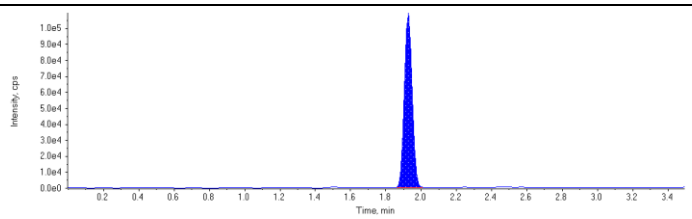
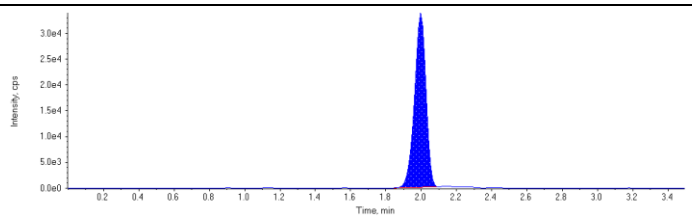
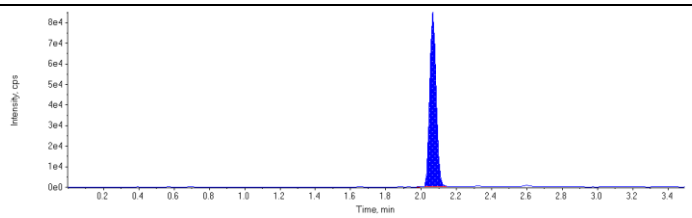
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

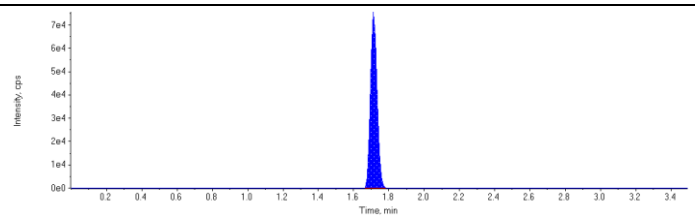
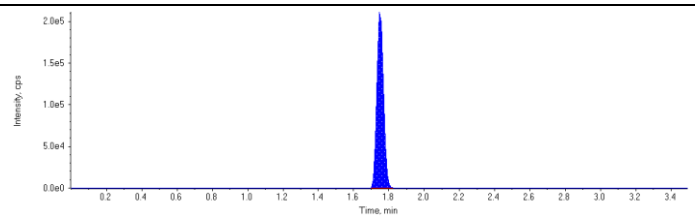
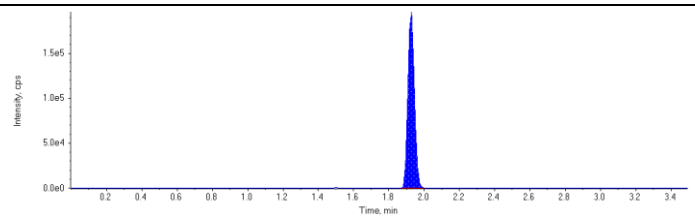
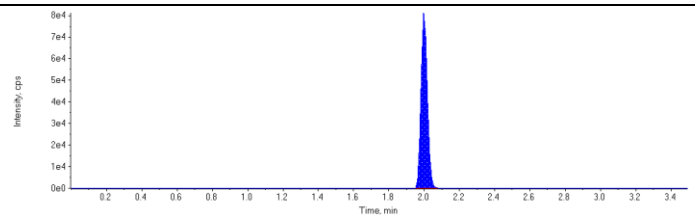
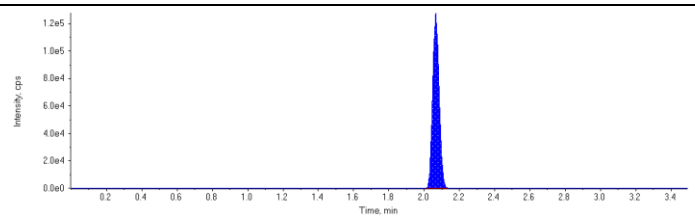
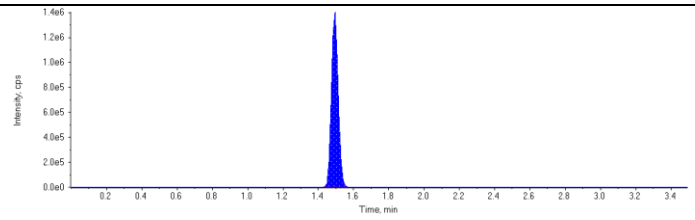


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 3.81 µg/L Area Ratio: 1.19 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 3.65 µg/L Area Ratio: 1.19 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 3.77 µg/L Area Ratio: 0.518 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 3.88 µg/L Area Ratio: 0.667 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 3.87 µg/L Area Ratio: 0.746 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 3.84 µg/L Area Ratio: 0.659 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 104. µg/L Area Ratio: 0.0522 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 102. µg/L Area Ratio: 0.150 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 104. µg/L Area Ratio: 0.135 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 98.5 µg/L Area Ratio: 0.0546 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 103. µg/L Area Ratio: 0.0876 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 100. µg/L Area Ratio: 0.00 Sample Type: (Standard)	

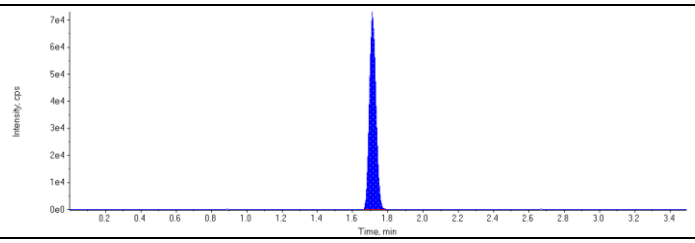
Sample Name	**STD 3**	**Injection Vial**	5
Sample ID	STD 3	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 12:56:59 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	183000.	1.71	1.00	-
MPFHpA	545000.	1.75	1.00	-
MPFOA	467000.	1.93	1.00	-
MPFOS	218000.	2.00	1.00	-
MPFNA	322000.	2.07	1.00	-
13C6-PFHxA IS	3820000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	694000	1.16	12.0	10.6	88.1
PFHxS 1	773000	1.71	12.0	11.4	94.8
PFHpA 1	903000	1.75	12.0	11.0	91.9
PFOA 1	941000	1.93	12.0	11.0	91.7
PFOS 1	476000	2.00	12.0	10.3	86.1
PFNA 1	656000	2.07	12.0	10.9	90.8
18O2-PFHxS	183000	1.71	100.	95.0	95.0
13C4-PFHpA	545000	1.75	100.	97.5	97.5
13C4-PFOA	467000	1.93	100.	94.5	94.5
13C4-PFOS	218000	2.00	100.	103.	103.0
13C5-PFNA	322000	2.07	100.	98.5	98.5
13C6-PFHxA	3820000	1.49	100.	103.	103.0

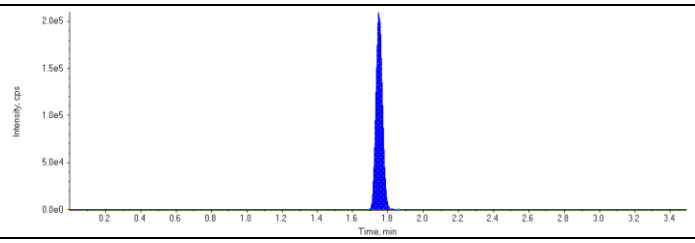
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



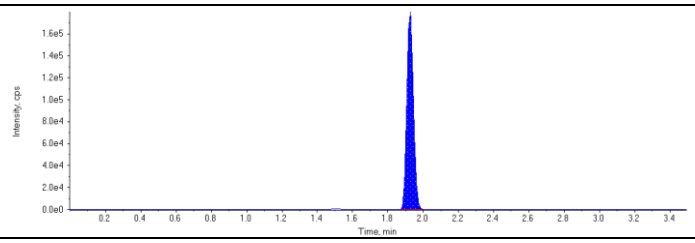
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



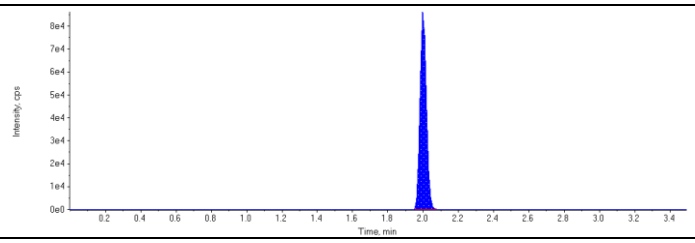
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



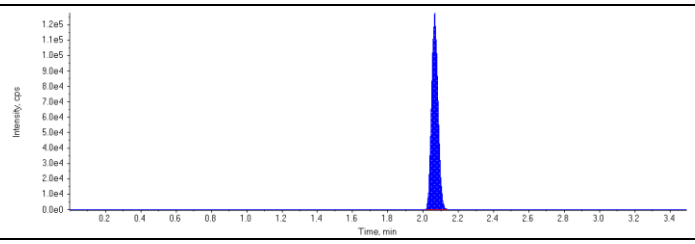
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



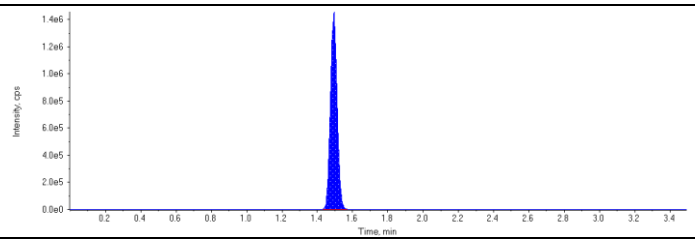
MPFNA (Internal Standard)

RT (Exp. RT): 2.07(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

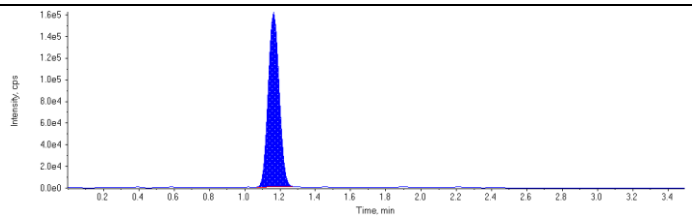
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 10.6 µg/L

Area Ratio: 3.79

Sample Type: (Standard)



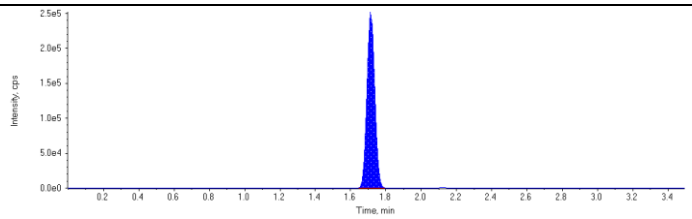
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 11.4 µg/L

Area Ratio: 4.23

Sample Type: (Standard)



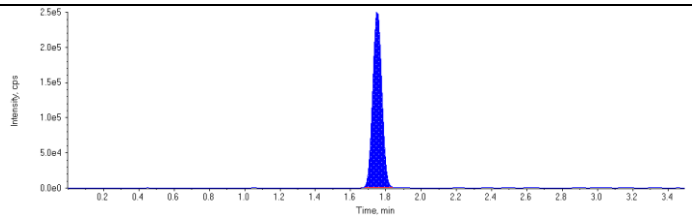
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.75 (1.75) min

Calculated Conc: 11.0 µg/L

Area Ratio: 1.66

Sample Type: (Standard)



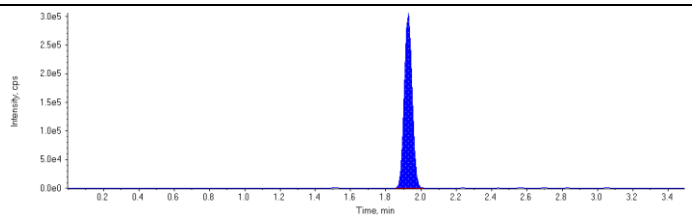
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.93 (1.88) min

Calculated Conc: 11.0 µg/L

Area Ratio: 2.02

Sample Type: (Standard)



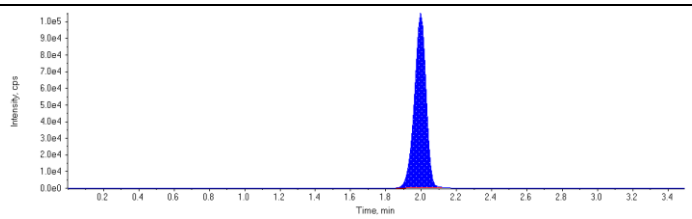
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 2.00 (2.00) min

Calculated Conc: 10.3 µg/L

Area Ratio: 2.19

Sample Type: (Standard)



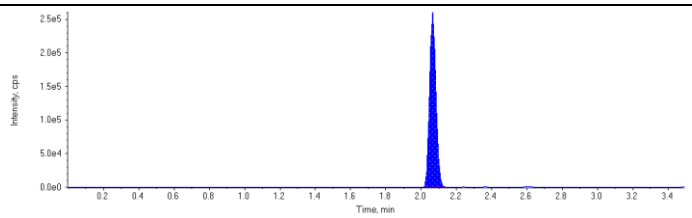
PFNA 1 (462.900/419.000 Da)

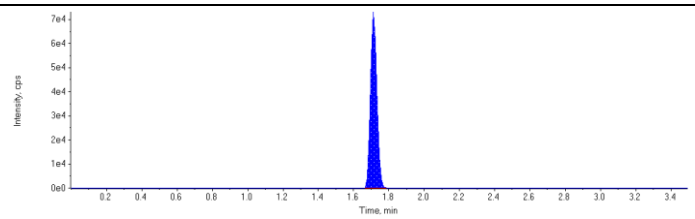
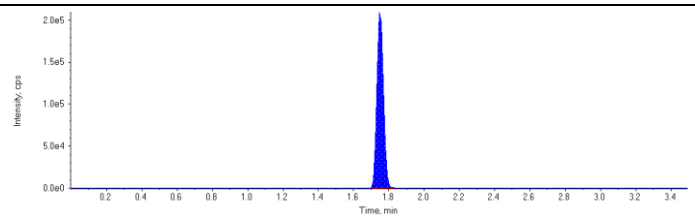
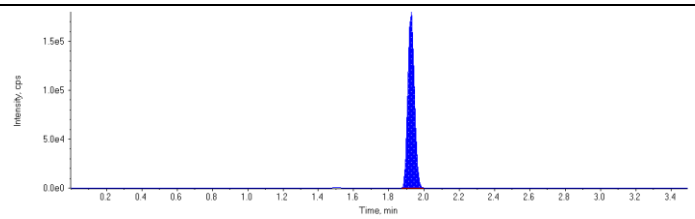
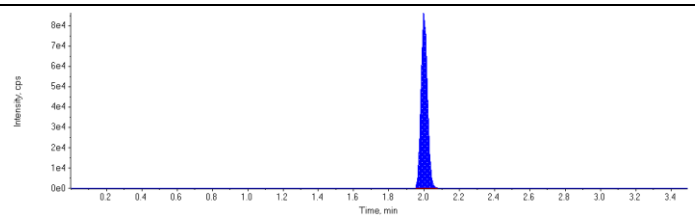
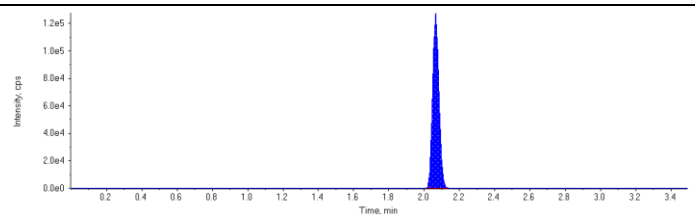
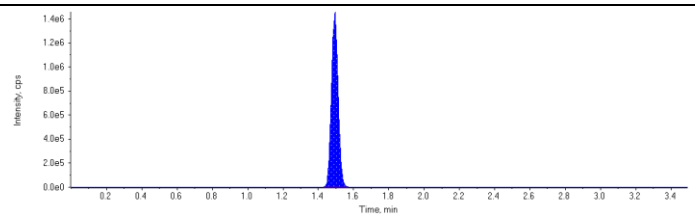
RT (Exp. RT): 2.07 (2.02) min

Calculated Conc: 10.9 µg/L

Area Ratio: 2.04

Sample Type: (Standard)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 95.0 µg/L Area Ratio: 0.0478 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 97.5 µg/L Area Ratio: 0.142 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 94.5 µg/L Area Ratio: 0.122 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 103. µg/L Area Ratio: 0.0570 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 98.5 µg/L Area Ratio: 0.0842 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 103. µg/L Area Ratio: 0.00 Sample Type: (Standard)	

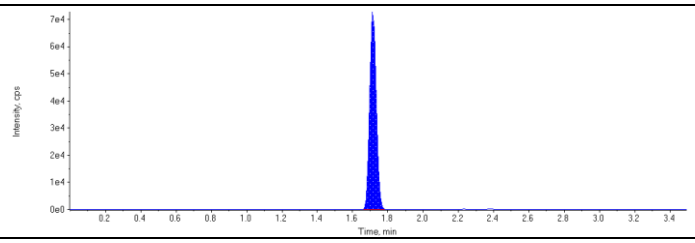
Sample Name	**STD 4**	**Injection Vial**	6
Sample ID	STD 4	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:02:05 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	188000.	1.72	1.00	-
MPFHpA	546000.	1.75	1.00	-
MPFOA	488000.	1.93	1.00	-
MPFOS	217000.	2.00	1.00	-
MPFNA	328000.	2.07	1.00	-
13C6-PFHxA IS	3570000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	2090000	1.17	30.0	29.5	98.5
PFHxS 1	2180000	1.71	30.0	30.1	100.0
PFHpA 1	2710000	1.75	30.0	32.1	107.0
PFOA 1	2870000	1.93	30.0	31.4	105.0
PFOS 1	1430000	2.00	30.0	29.9	99.7
PFNA 1	1880000	2.07	30.0	29.8	99.5
18O2-PFHxS	188000	1.72	100.	105.	105.0
13C4-PFHpA	546000	1.75	100.	105.	105.0
13C4-PFOA	488000	1.93	100.	106.	106.0
13C4-PFOS	217000	2.00	100.	110.	110.0
13C5-PFNA	328000	2.07	100.	107.	107.0
13C6-PFHxA	3570000	1.49	100.	96.1	96.1

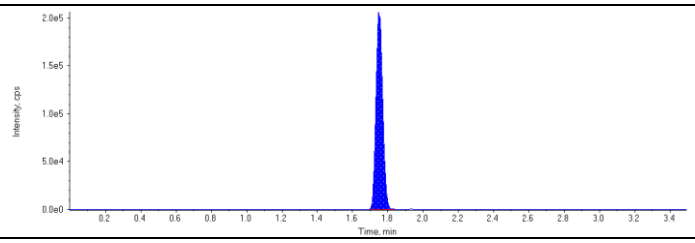
MPFHxS (Internal Standard)

RT (Exp. RT): 1.72(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



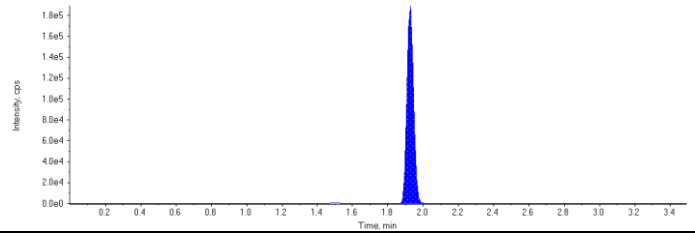
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



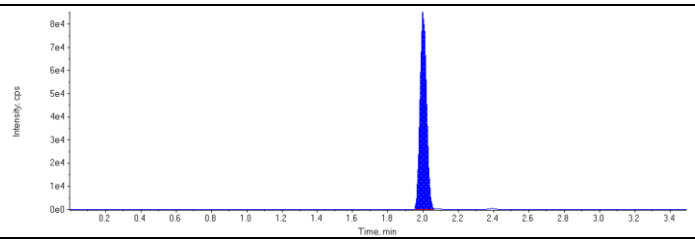
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



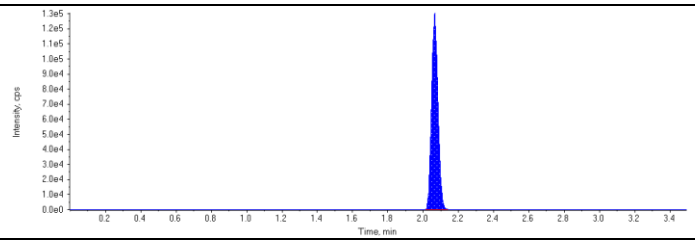
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



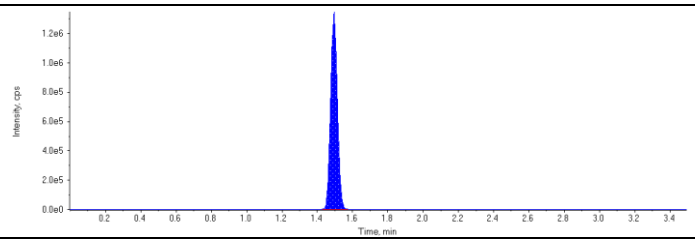
MPFNA (Internal Standard)

RT (Exp. RT): 2.07(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

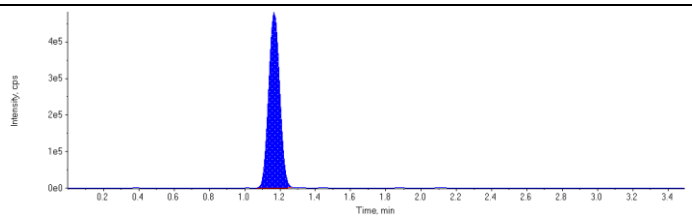
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.17 (1.16) min

Calculated Conc: 29.5 µg/L

Area Ratio: 11.1

Sample Type: (Standard)



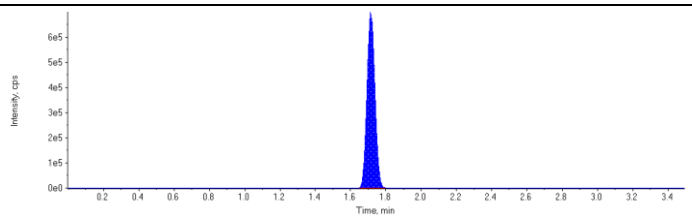
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 30.1 µg/L

Area Ratio: 11.6

Sample Type: (Standard)



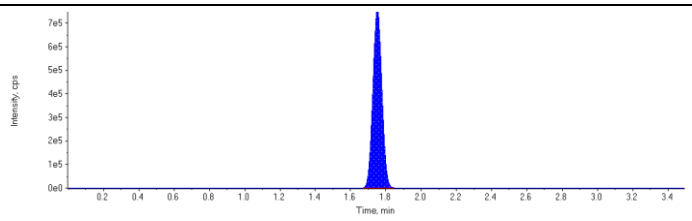
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.75 (1.75) min

Calculated Conc: 32.1 µg/L

Area Ratio: 4.97

Sample Type: (Standard)



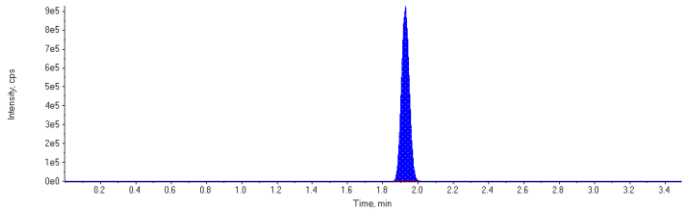
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.93 (1.88) min

Calculated Conc: 31.4 µg/L

Area Ratio: 5.87

Sample Type: (Standard)



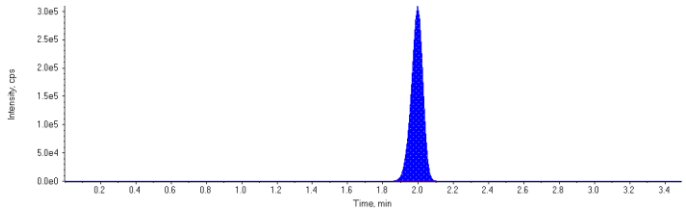
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 2.00 (2.00) min

Calculated Conc: 29.9 µg/L

Area Ratio: 6.56

Sample Type: (Standard)



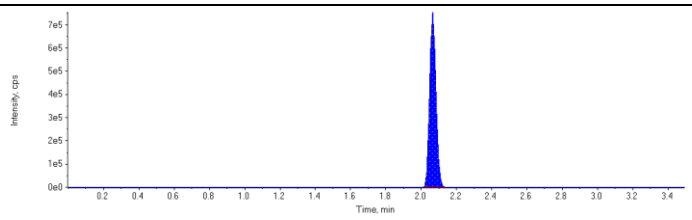
PFNA 1 (462.900/419.000 Da)

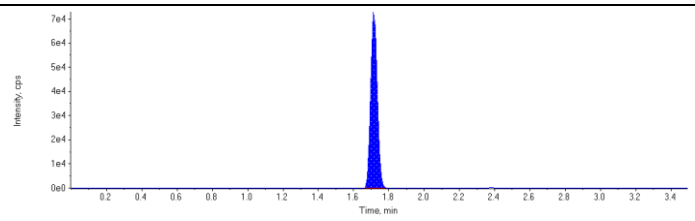
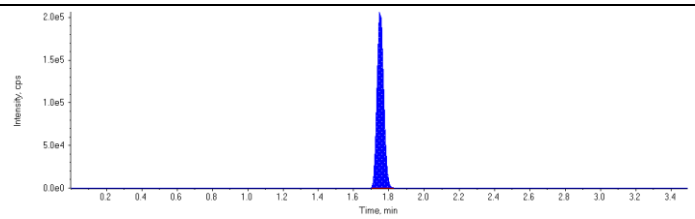
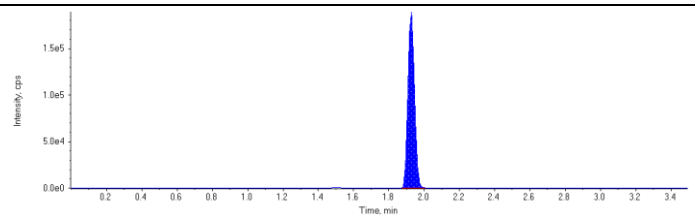
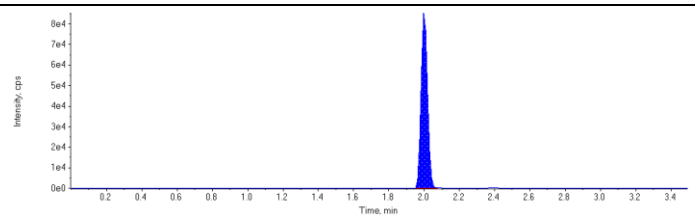
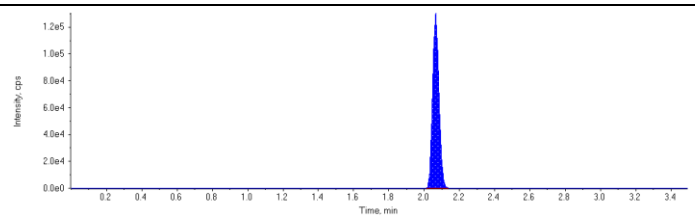
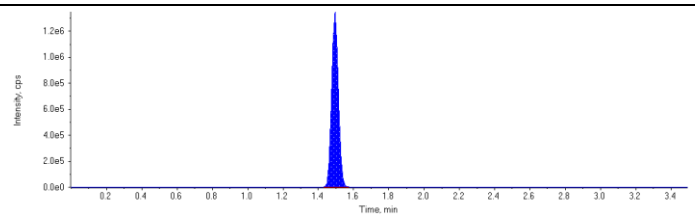
RT (Exp. RT): 2.07 (2.02) min

Calculated Conc: 29.8 µg/L

Area Ratio: 5.74

Sample Type: (Standard)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.72 (1.68) min Calculated Conc: 105. µg/L Area Ratio: 0.0526 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 105. µg/L Area Ratio: 0.153 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 106. µg/L Area Ratio: 0.137 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 110. µg/L Area Ratio: 0.0609 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 107. µg/L Area Ratio: 0.0917 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 96.1 µg/L Area Ratio: 0.00 Sample Type: (Standard)	

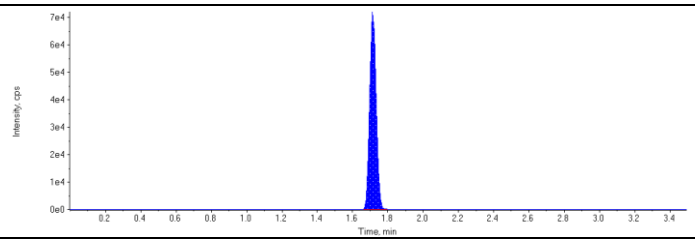
Sample Name	**STD 5**	**Injection Vial**	7
Sample ID	STD 5	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:07:10 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	184000.	1.71	1.00	-
MPFHpA	538000.	1.75	1.00	-
MPFOA	464000.	1.93	1.00	-
MPFOS	198000.	2.00	1.00	-
MPFNA	284000.	2.06	1.00	-
13C6-PFHxA IS	3620000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	4040000	1.16	60.0	57.6	96.0
PFHxS 1	4260000	1.71	60.0	59.2	98.7
PFHpA 1	4880000	1.75	60.0	58.2	97.0
PFOA 1	5380000	1.93	60.0	61.6	103.0
PFOS 1	2620000	2.00	60.0	59.7	99.6
PFNA 1	3530000	2.06	60.0	64.1	107.0
18O2-PFHxS	184000	1.71	100.	101.	101.0
13C4-PFHpA	538000	1.75	100.	102.	102.0
13C4-PFOA	464000	1.93	100.	99.1	99.1
13C4-PFOS	198000	2.00	100.	98.8	98.8
13C5-PFNA	284000	2.06	100.	91.7	91.7
13C6-PFHxA	3620000	1.49	100.	97.5	97.5

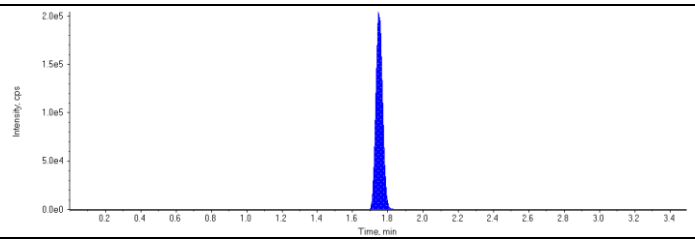
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



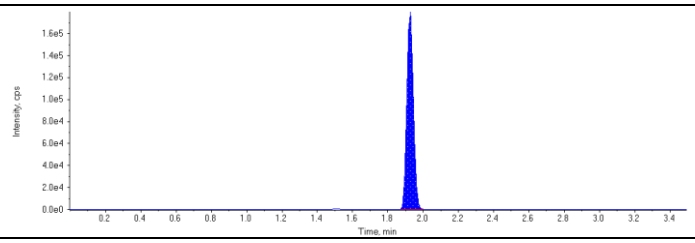
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



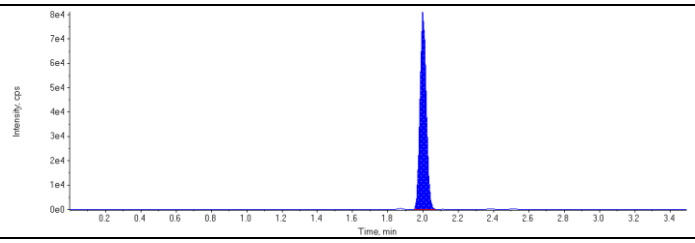
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



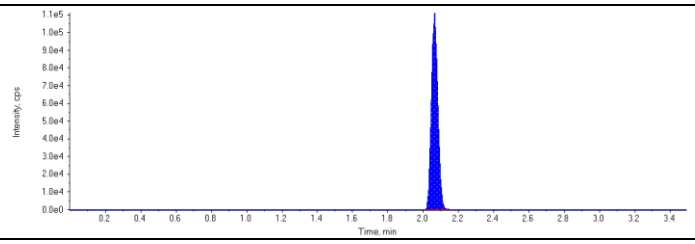
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



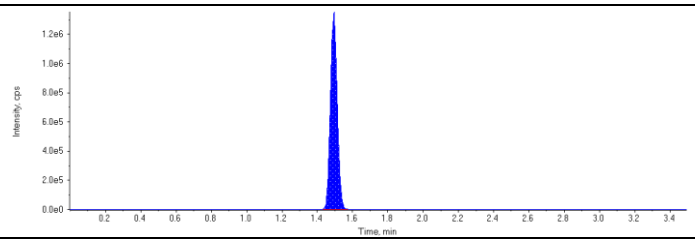
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

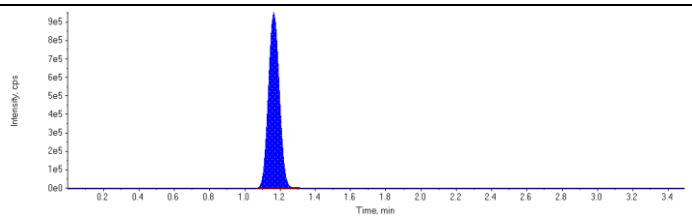
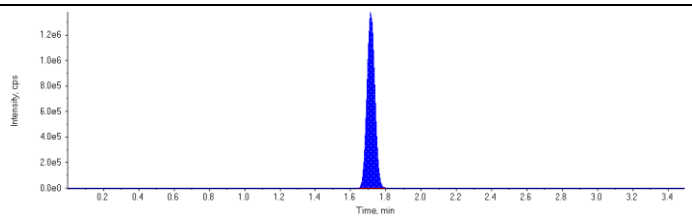
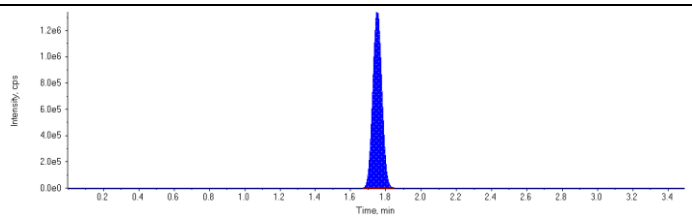
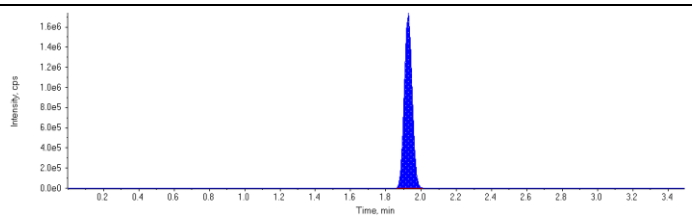
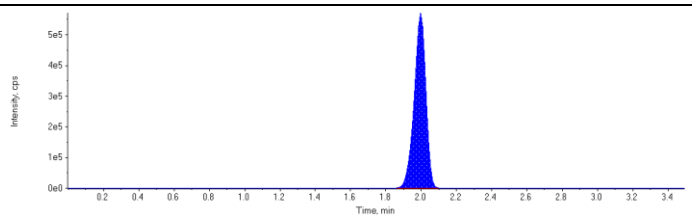
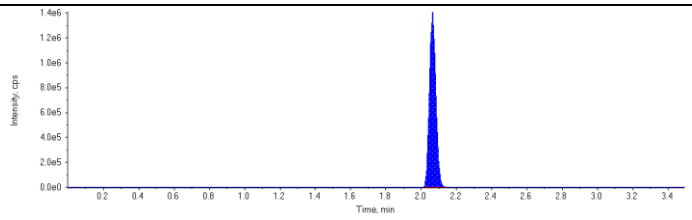
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

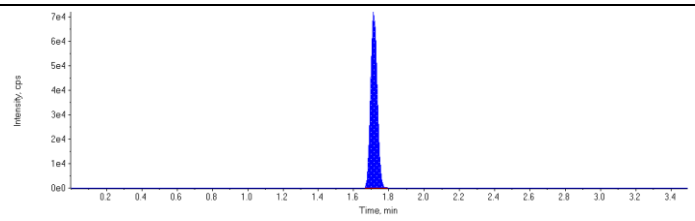
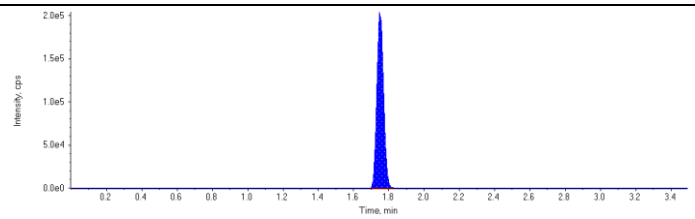
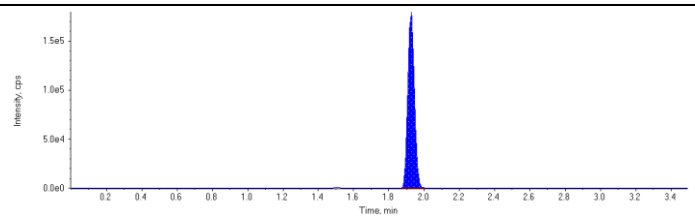
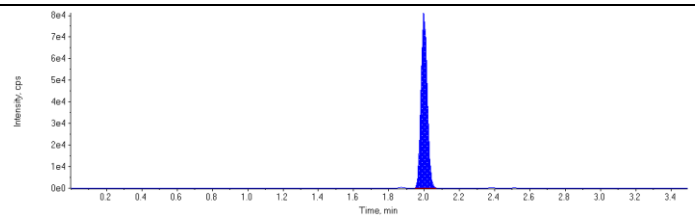
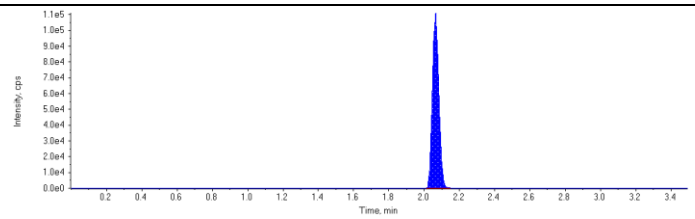
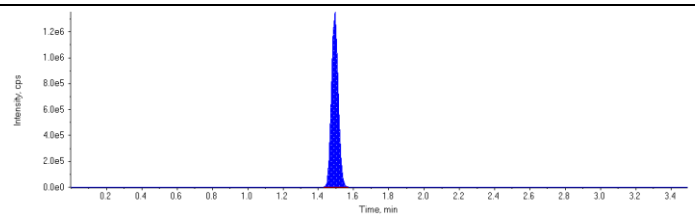


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 57.6 µg/L Area Ratio: 21.9 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 59.2 µg/L Area Ratio: 23.1 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 58.2 µg/L Area Ratio: 9.07 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 61.6 µg/L Area Ratio: 11.6 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 59.7 µg/L Area Ratio: 13.2 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 64.1 µg/L Area Ratio: 12.4 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 101. µg/L Area Ratio: 0.0509 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 102. µg/L Area Ratio: 0.148 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 99.1 µg/L Area Ratio: 0.128 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 98.8 µg/L Area Ratio: 0.0547 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 91.7 µg/L Area Ratio: 0.0783 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 97.5 µg/L Area Ratio: 0.00 Sample Type: (Standard)	

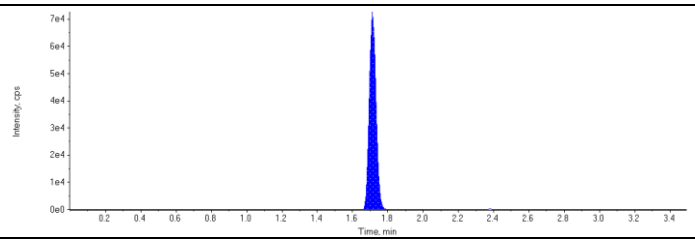
Sample Name	**STD 6**	**Injection Vial**	8
Sample ID	STD 6	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:12:17 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	189000.	1.71	1.00	-
MPFHpA	504000.	1.75	1.00	-
MPFOA	460000.	1.92	1.00	-
MPFOS	195000.	2.00	1.00	-
MPFNA	312000.	2.06	1.00	-
13C6-PFHxA IS	3610000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	7520000	1.16	100.	104.	104.0
PFHxS 1	7490000	1.71	100.	101.	101.0
PFHpA 1	7940000	1.75	100.	101.	101.0
PFOA 1	8500000	1.93	100.	98.0	98.0
PFOS 1	4410000	2.00	100.	102.	102.0
PFNA 1	5900000	2.06	100.	97.1	97.1
18O2-PFHxS	189000	1.71	100.	104.	104.0
13C4-PFHpA	504000	1.75	100.	95.5	95.5
13C4-PFOA	460000	1.92	100.	98.6	98.6
13C4-PFOS	195000	2.00	100.	97.4	97.4
13C5-PFNA	312000	2.06	100.	101.	101.0
13C6-PFHxA	3610000	1.49	100.	97.2	97.2

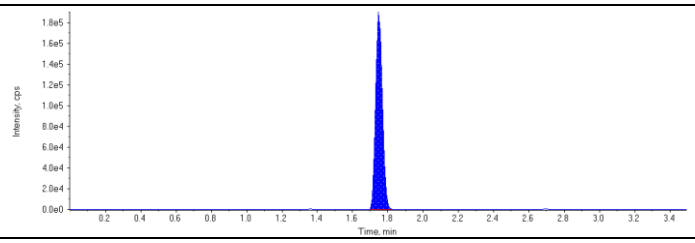
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



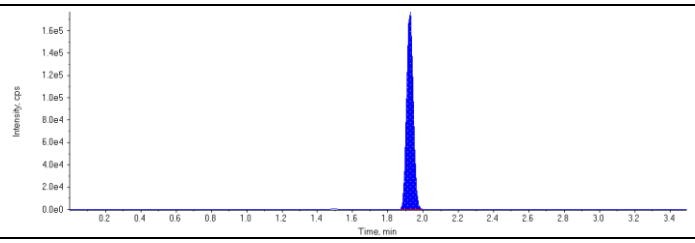
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



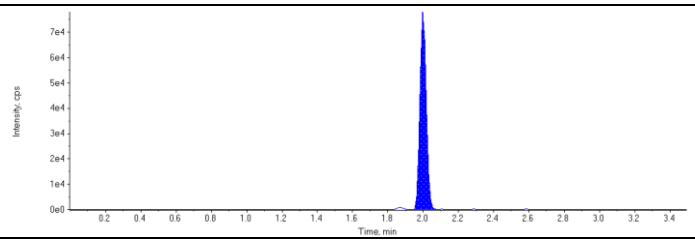
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



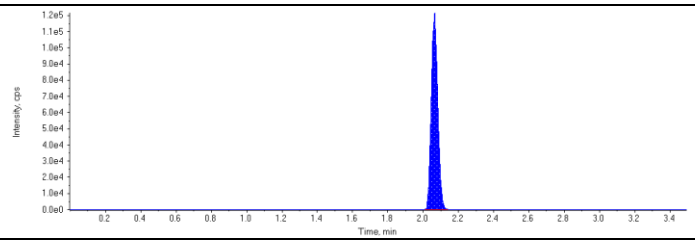
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



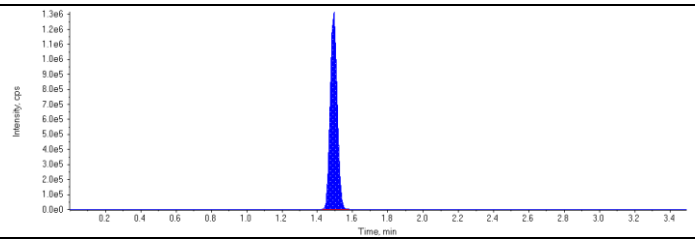
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

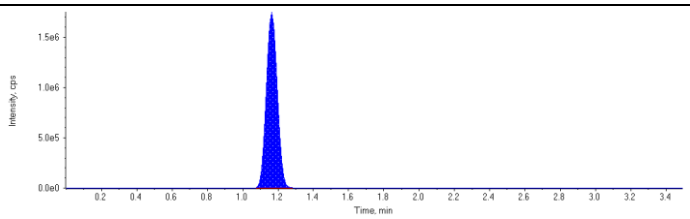
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 104. µg/L

Area Ratio: 39.9

Sample Type: (Standard)



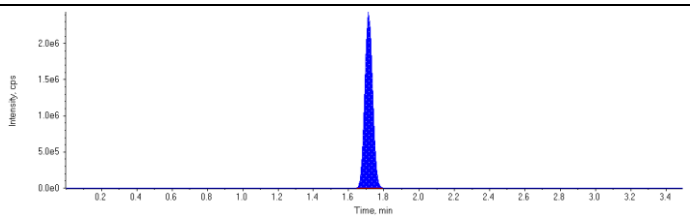
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 101. µg/L

Area Ratio: 39.7

Sample Type: (Standard)



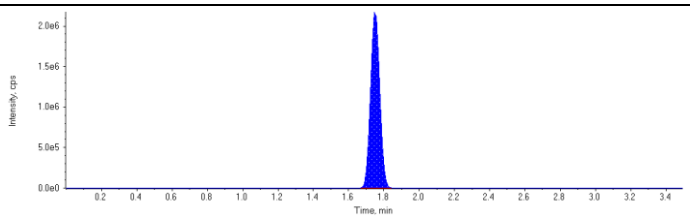
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.75 (1.75) min

Calculated Conc: 101. µg/L

Area Ratio: 15.8

Sample Type: (Standard)



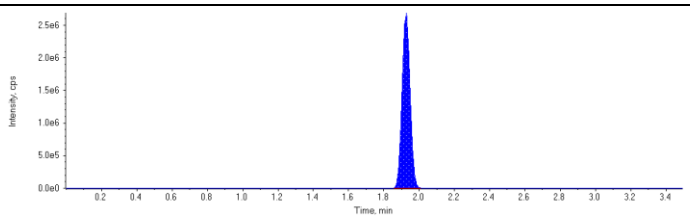
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.93 (1.88) min

Calculated Conc: 98.0 µg/L

Area Ratio: 18.5

Sample Type: (Standard)



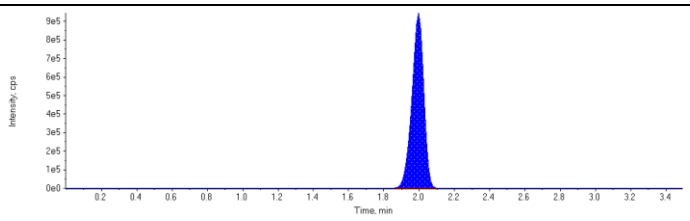
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 2.00 (2.00) min

Calculated Conc: 102. µg/L

Area Ratio: 22.6

Sample Type: (Standard)



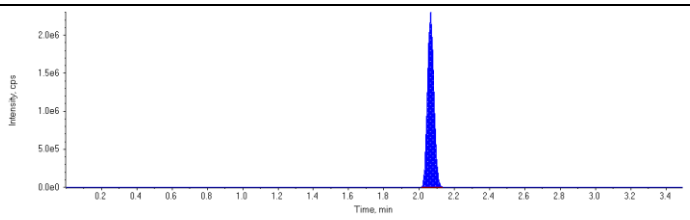
PFNA 1 (462.900/419.000 Da)

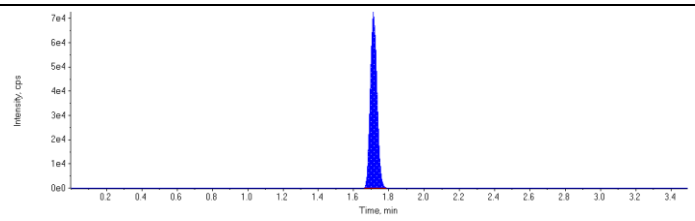
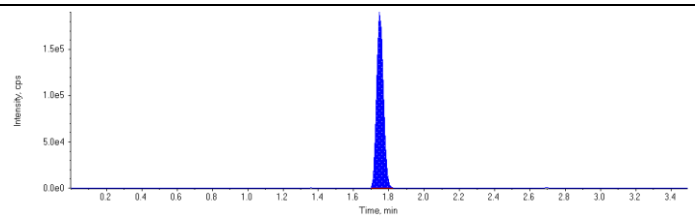
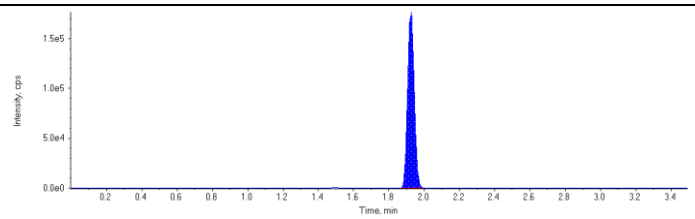
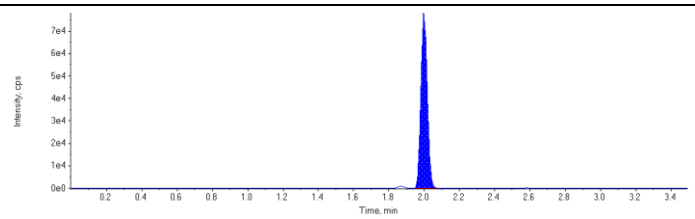
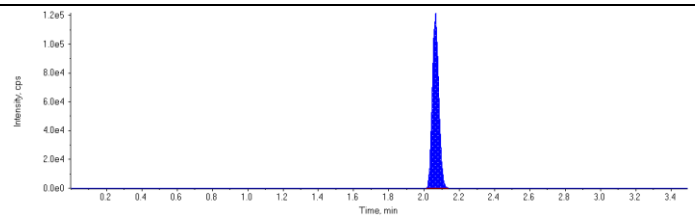
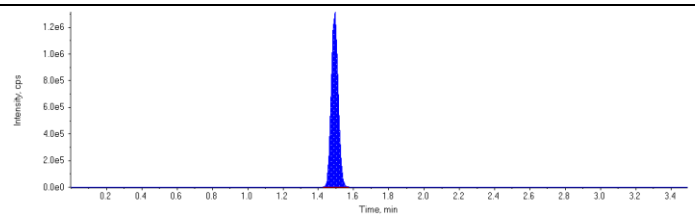
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 97.1 µg/L

Area Ratio: 18.9

Sample Type: (Standard)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 104. µg/L Area Ratio: 0.0522 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 95.5 µg/L Area Ratio: 0.139 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 98.6 µg/L Area Ratio: 0.127 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 97.4 µg/L Area Ratio: 0.0539 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 101. µg/L Area Ratio: 0.0864 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 97.2 µg/L Area Ratio: 0.00 Sample Type: (Standard)	

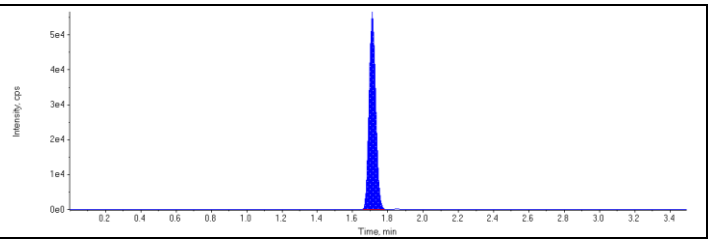
Sample Name	**STD 1**	**Injection Vial**	3
Sample ID	STD 1	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 7:45:04 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	146000.	1.71	1.00	-
MPFHpA	517000.	1.74	1.00	-
MPFOA	413000.	1.92	1.00	-
MPFOS	179000.	2.00	1.00	-
MPFNA	291000.	2.06	1.00	-
13C6-PFHxA IS	4050000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	83700	1.17	2.00	2.41	120.0
PFHxS 1	84900	1.71	2.00	2.35	117.0
PFHpA 1	142000	1.74	2.00	2.11	106.0
PFOA 1	138000	1.92	2.00	2.20	110.0
PFOS 1	69100	1.99	2.00	2.31	116.0
PFNA 1	100000	2.06	2.00	2.23	112.0
18O2-PFHxS	146000	1.71	100.	97.9	97.9
13C4-PFHpA	517000	1.74	100.	103.	103.0
13C4-PFOA	413000	1.92	100.	94.5	94.5
13C4-PFOS	179000	2.00	100.	102.	102.0
13C5-PFNA	291000	2.06	100.	97.6	97.6
13C6-PFHxA	4050000	1.49	100.	101.	101.0

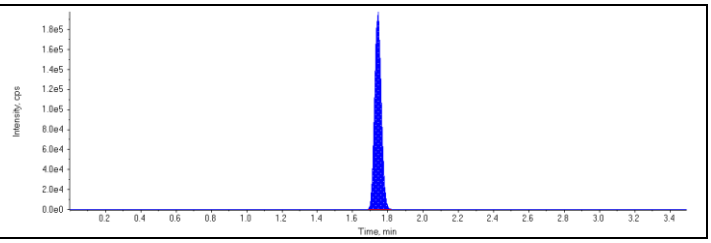
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



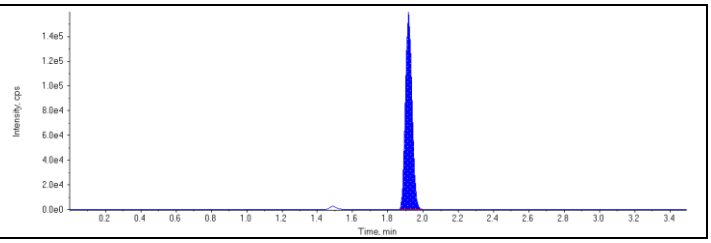
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



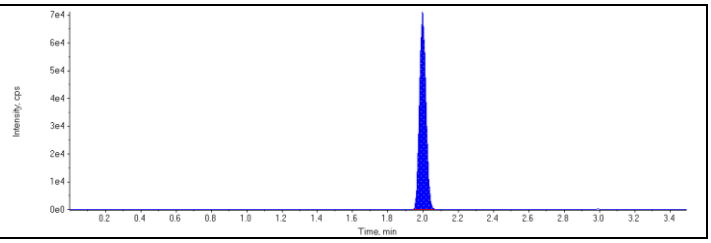
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



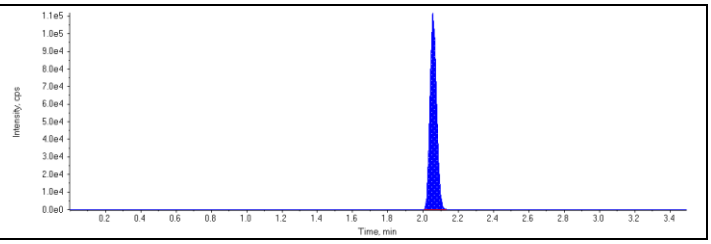
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



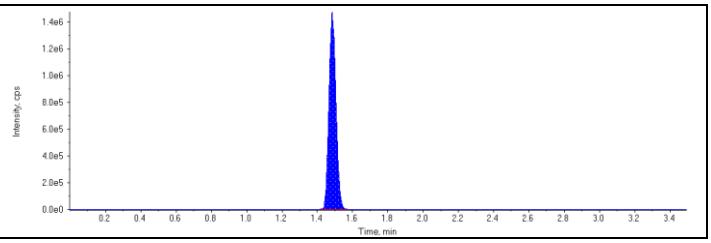
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

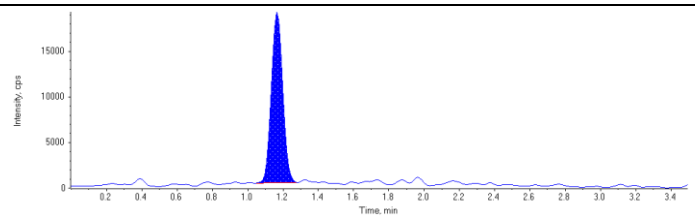
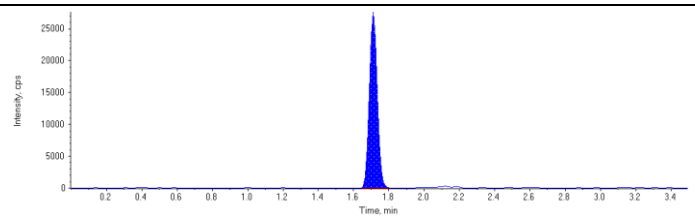
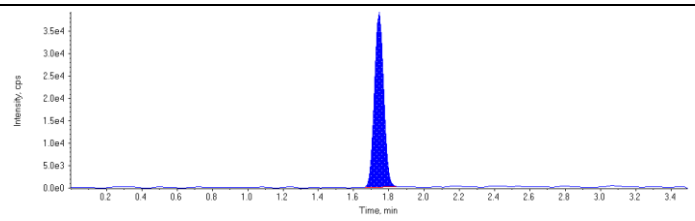
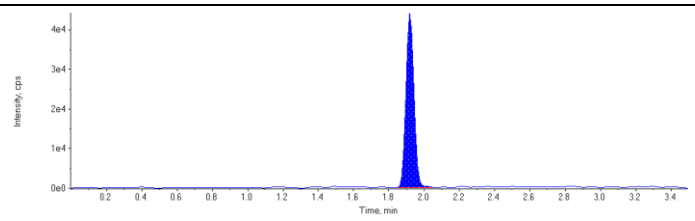
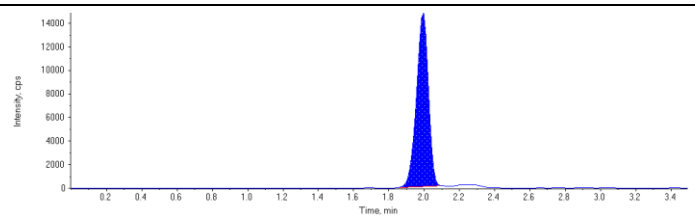
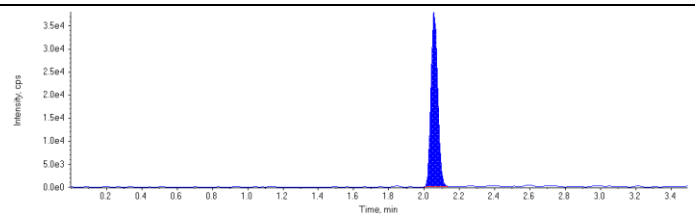
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

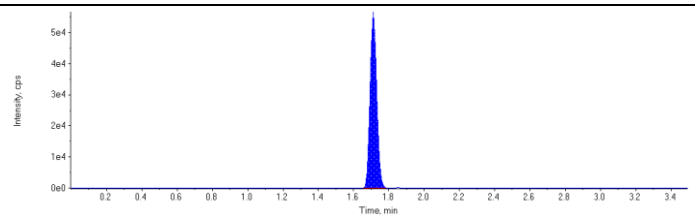
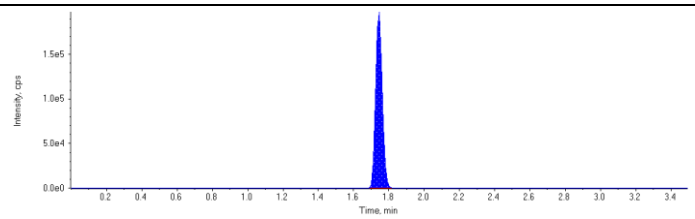
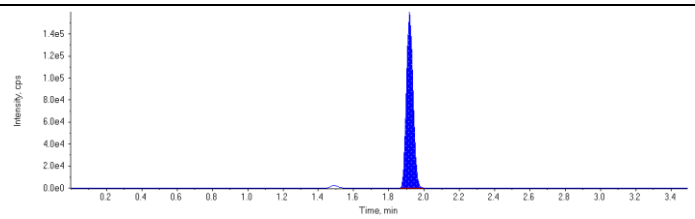
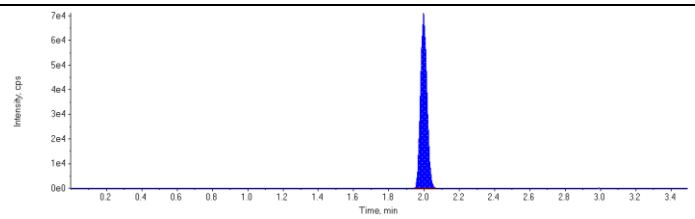
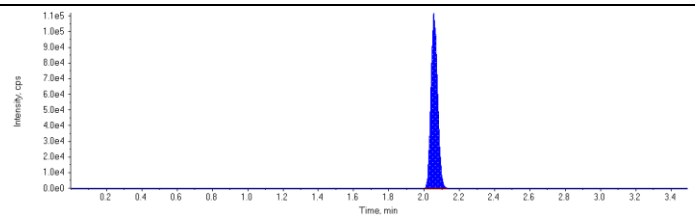
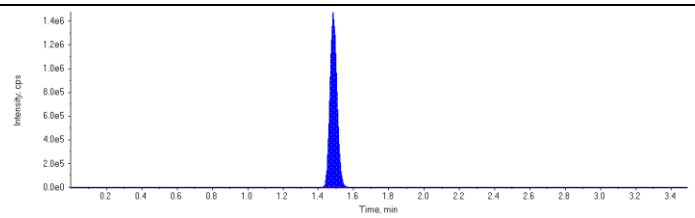


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 2.41 µg/L Area Ratio: 0.573 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 2.35 µg/L Area Ratio: 0.582 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 2.11 µg/L Area Ratio: 0.274 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 2.20 µg/L Area Ratio: 0.336 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 2.31 µg/L Area Ratio: 0.386 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 2.23 µg/L Area Ratio: 0.344 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 97.9 µg/L Area Ratio: 0.0361 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 103. µg/L Area Ratio: 0.128 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 94.5 µg/L Area Ratio: 0.102 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 102. µg/L Area Ratio: 0.0443 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 97.6 µg/L Area Ratio: 0.0719 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.48) min Calculated Conc: 101. µg/L Area Ratio: 0.00 Sample Type: (Standard)	

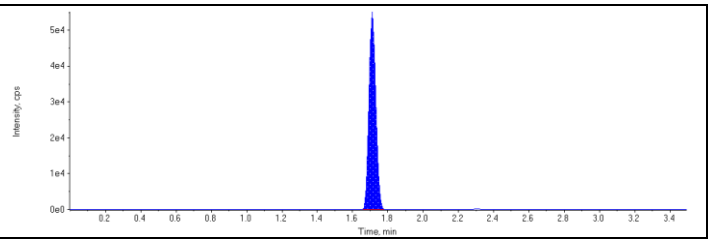
Sample Name	**STD 2**	**Injection Vial**	4
Sample ID	STD 2	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 7:50:14 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	147000.	1.71	1.00	-
MPFHpA	503000.	1.74	1.00	-
MPFOA	442000.	1.92	1.00	-
MPFOS	177000.	2.00	1.00	-
MPFNA	296000.	2.06	1.00	-
13C6-PFHxA IS	3880000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	150000	1.16	4.00	3.84	96.1
PFHxS 1	150000	1.71	4.00	3.68	92.1
PFHpA 1	247000	1.74	4.00	3.72	93.0
PFOA 1	260000	1.92	4.00	3.74	93.4
PFOS 1	111000	1.99	4.00	3.63	90.7
PFNA 1	177000	2.06	4.00	3.76	93.9
18O2-PFHxS	147000	1.71	100.	103.	103.0
13C4-PFHpA	503000	1.74	100.	105.	105.0
13C4-PFOA	442000	1.92	100.	105.	105.0
13C4-PFOS	177000	2.00	100.	105.	105.0
13C5-PFNA	296000	2.06	100.	104.	104.0
13C6-PFHxA	3880000	1.49	100.	97.3	97.3

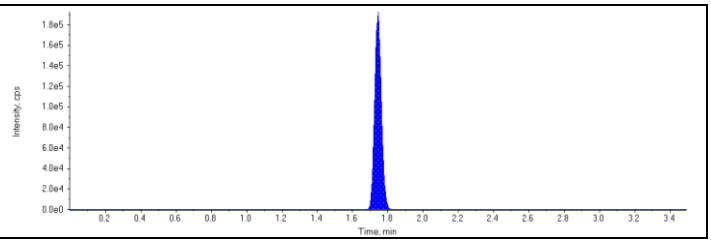
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



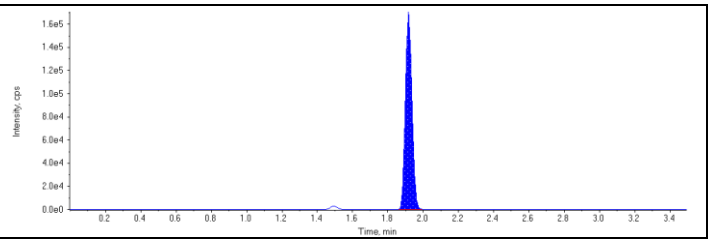
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



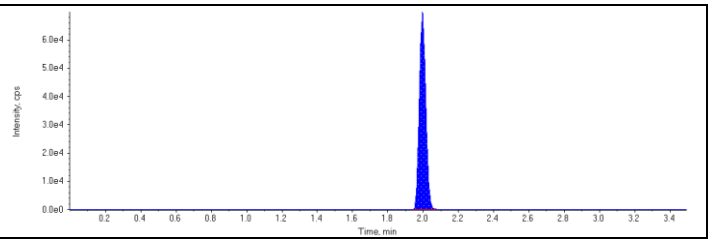
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



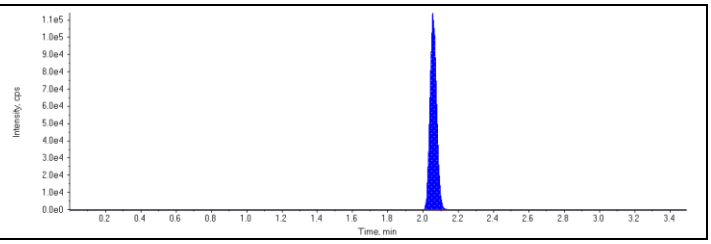
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



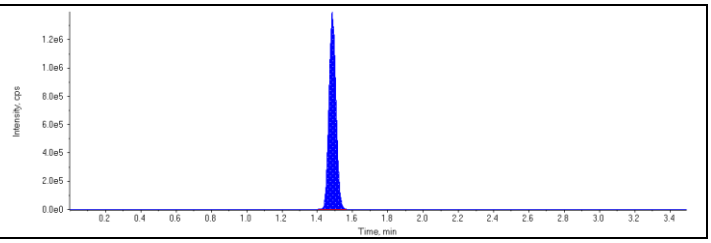
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

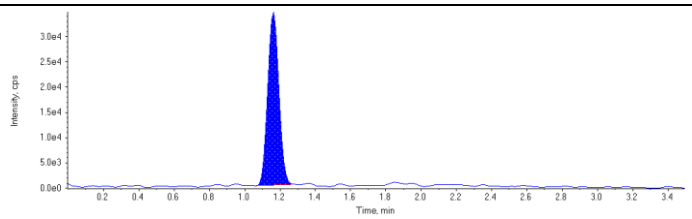
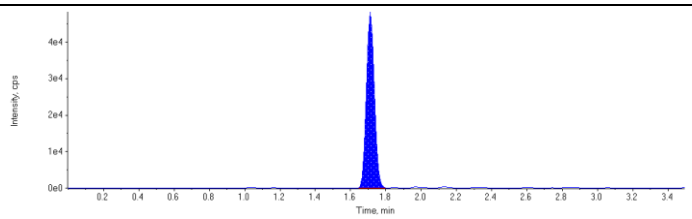
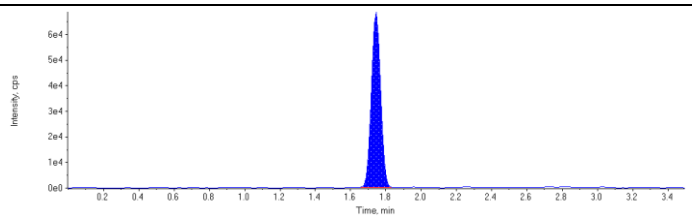
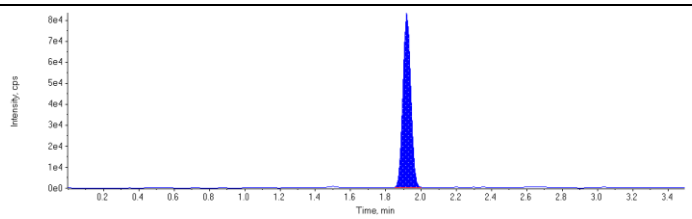
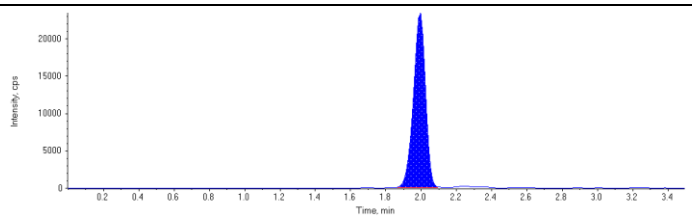
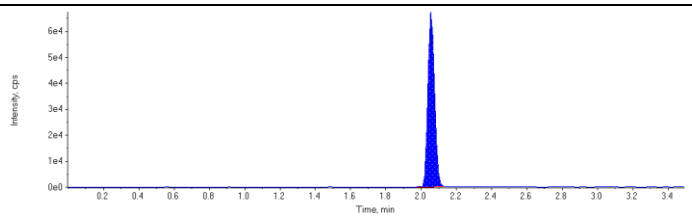
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

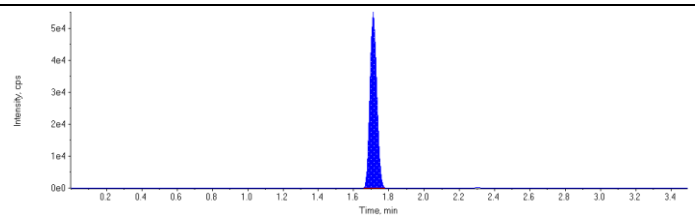
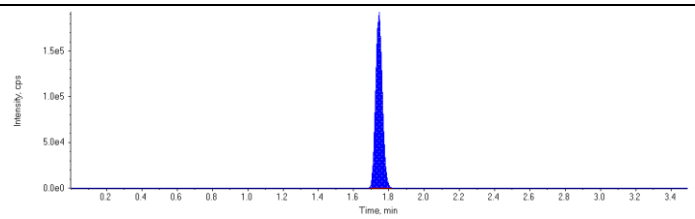
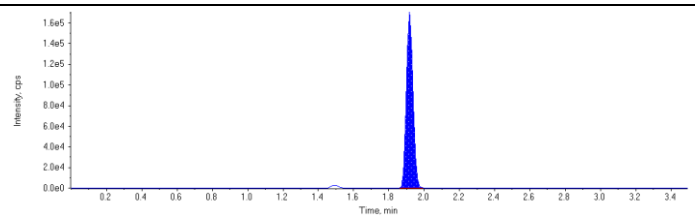
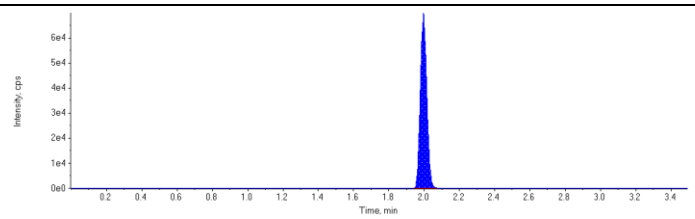
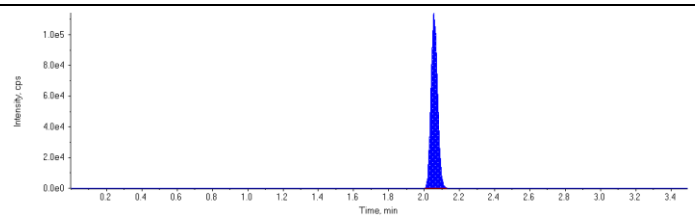
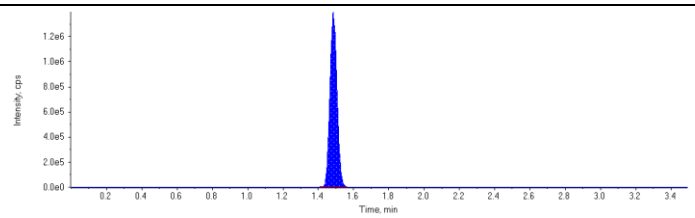


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 3.84 µg/L Area Ratio: 1.02 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 3.68 µg/L Area Ratio: 1.03 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 3.72 µg/L Area Ratio: 0.491 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 3.74 µg/L Area Ratio: 0.590 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 3.63 µg/L Area Ratio: 0.626 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 3.76 µg/L Area Ratio: 0.598 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 103. µg/L Area Ratio: 0.0378 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 105. µg/L Area Ratio: 0.129 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 105. µg/L Area Ratio: 0.114 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 105. µg/L Area Ratio: 0.0456 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 104. µg/L Area Ratio: 0.0763 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.48) min Calculated Conc: 97.3 µg/L Area Ratio: 0.00 Sample Type: (Standard)	

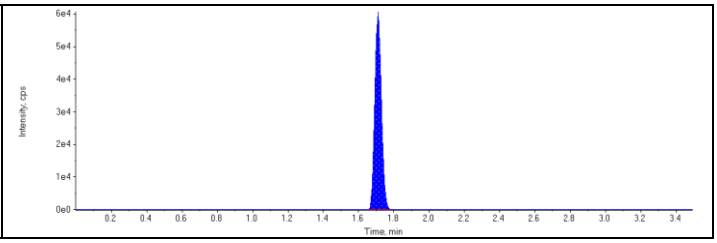
Sample Name	**STD 3**	**Injection Vial**	5
Sample ID	STD 3	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 7:55:19 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	156000.	1.71	1.00	-
MPFHpA	498000.	1.74	1.00	-
MPFOA	435000.	1.92	1.00	-
MPFOS	167000.	2.00	1.00	-
MPFNA	307000.	2.06	1.00	-
13C6-PFHxA IS	3890000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	482000	1.16	12.0	10.5	87.2
PFHxS 1	517000	1.71	12.0	10.6	88.1
PFHpA 1	764000	1.74	12.0	11.5	95.5
PFOA 1	836000	1.92	12.0	11.8	98.2
PFOS 1	356000	1.99	12.0	11.9	99.2
PFNA 1	570000	2.06	12.0	11.3	94.2
18O2-PFHxS	156000	1.71	100.	109.	109.0
13C4-PFHpA	498000	1.74	100.	104.	104.0
13C4-PFOA	435000	1.92	100.	104.	104.0
13C4-PFOS	167000	2.00	100.	99.4	99.4
13C5-PFNA	307000	2.06	100.	107.	107.0
13C6-PFHxA	3890000	1.48	100.	97.4	97.4

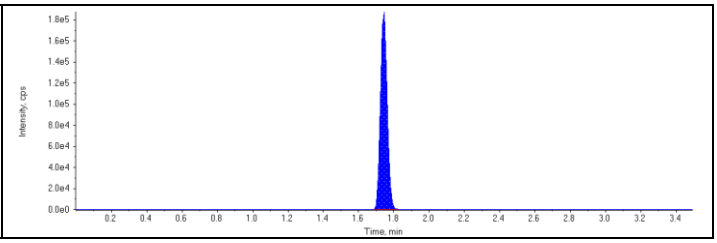
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



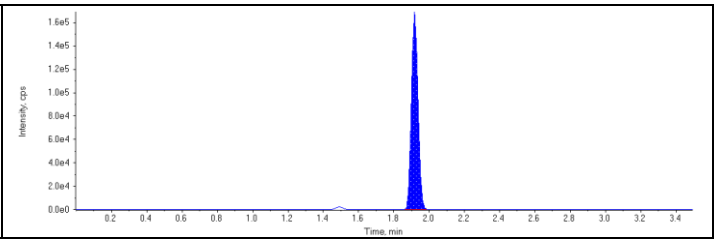
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



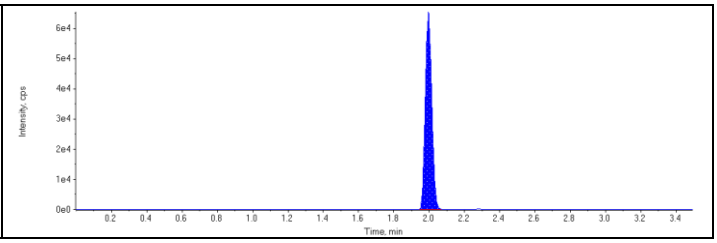
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



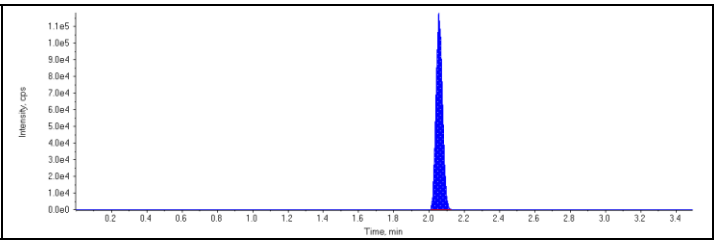
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



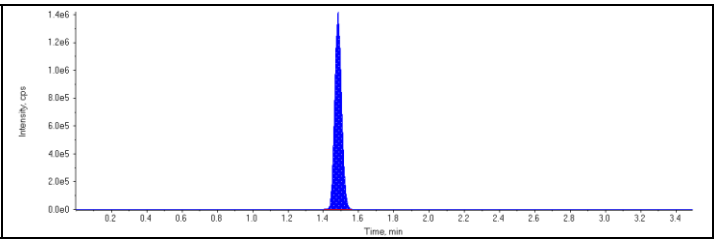
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

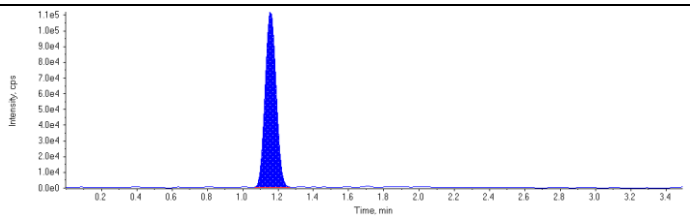
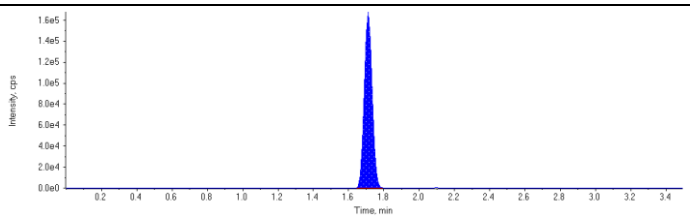
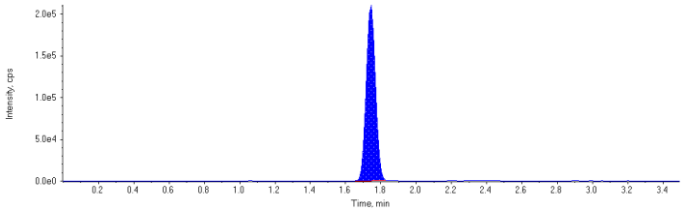
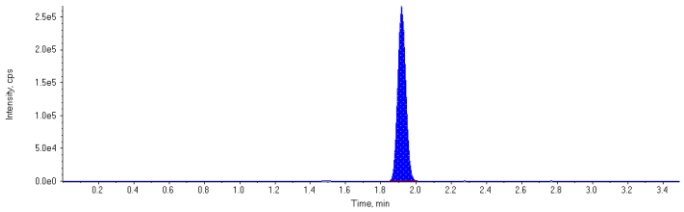
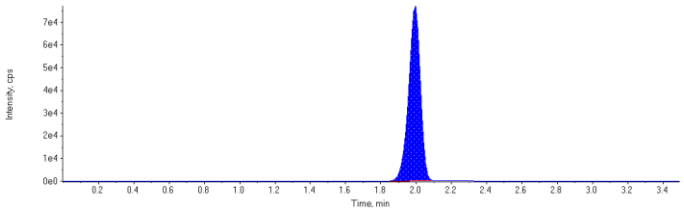
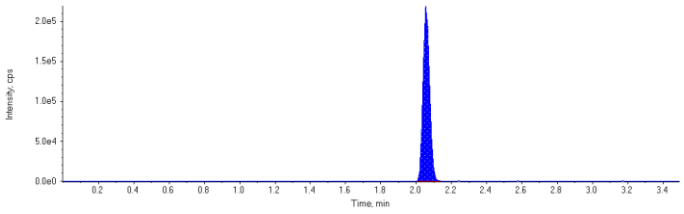
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

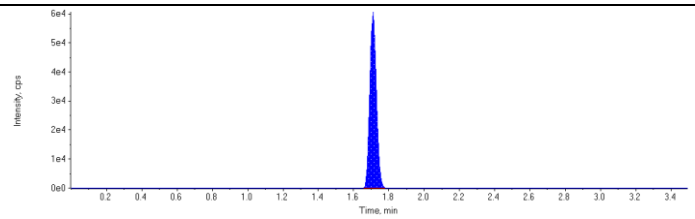
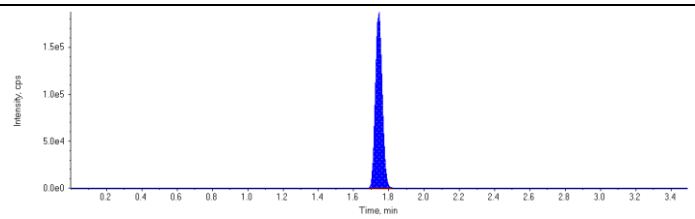
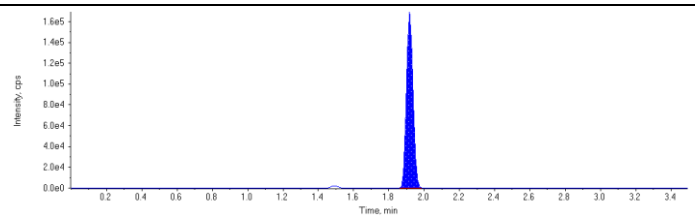
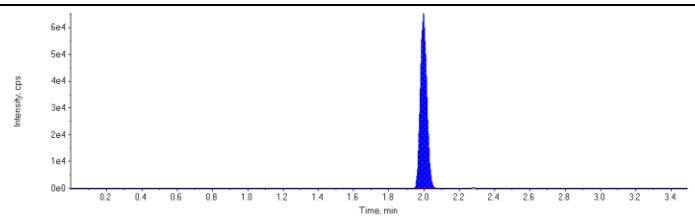
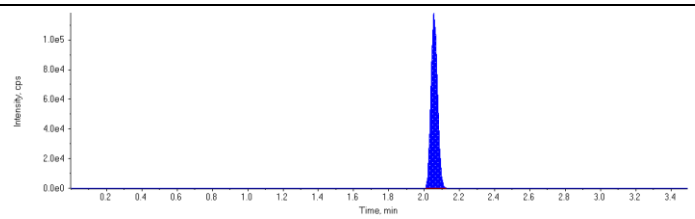
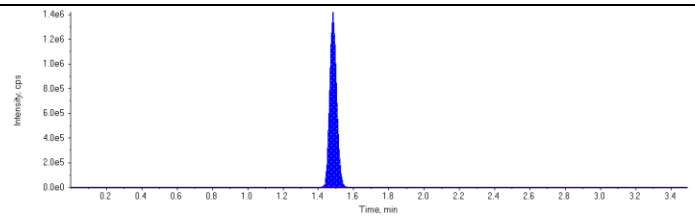


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 10.5 µg/L Area Ratio: 3.09 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 10.6 µg/L Area Ratio: 3.31 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 11.5 µg/L Area Ratio: 1.53 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 11.8 µg/L Area Ratio: 1.92 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 11.9 µg/L Area Ratio: 2.13 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 11.3 µg/L Area Ratio: 1.86 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 109. µg/L Area Ratio: 0.0401 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 104. µg/L Area Ratio: 0.128 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 104. µg/L Area Ratio: 0.112 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 99.4 µg/L Area Ratio: 0.0429 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 107. µg/L Area Ratio: 0.0791 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 97.4 µg/L Area Ratio: 0.00 Sample Type: (Standard)	

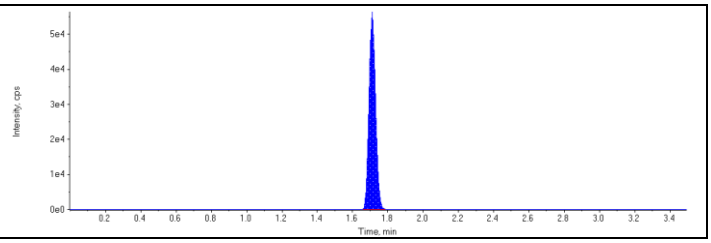
Sample Name	**STD 4**	**Injection Vial**	6
Sample ID	STD 4	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 8:00:24 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	144000.	1.71	1.00	-
MPFHpA	467000.	1.74	1.00	-
MPFOA	447000.	1.92	1.00	-
MPFOS	172000.	2.00	1.00	-
MPFNA	296000.	2.06	1.00	-
13C6-PFHxA IS	4090000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1290000	1.16	30.0	29.3	97.6
PFHxS 1	1470000	1.71	30.0	31.4	105.0
PFHpA 1	2080000	1.74	30.0	33.2	111.0
PFOA 1	2230000	1.92	30.0	30.3	101.0
PFOS 1	944000	1.99	30.0	30.3	101.0
PFNA 1	1500000	2.06	30.0	30.6	102.0
18O2-PFHxS	144000	1.71	100.	95.4	95.4
13C4-PFHpA	467000	1.74	100.	92.3	92.3
13C4-PFOA	447000	1.92	100.	101.	101.0
13C4-PFOS	172000	2.00	100.	97.3	97.3
13C5-PFNA	296000	2.06	100.	98.3	98.3
13C6-PFHxA	4090000	1.48	100.	102.	102.0

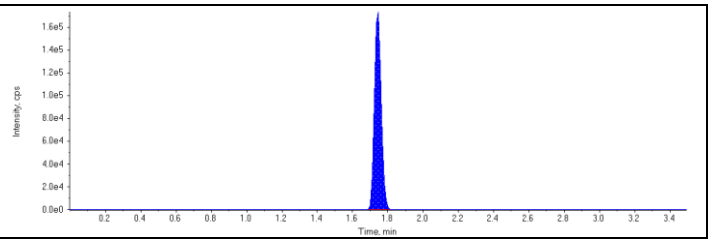
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



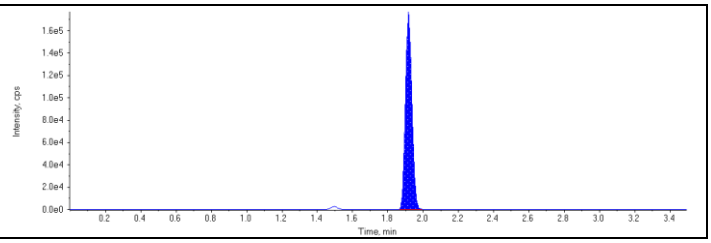
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



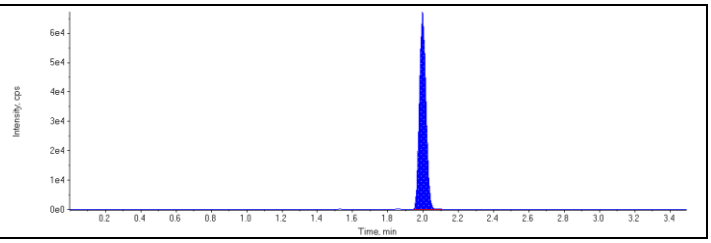
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



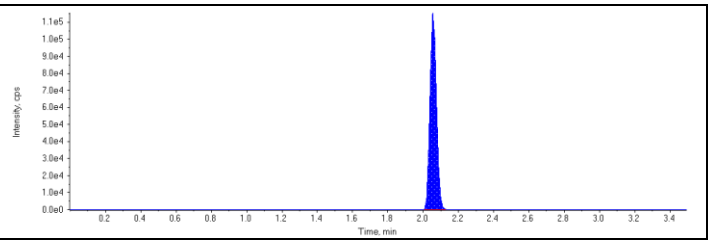
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



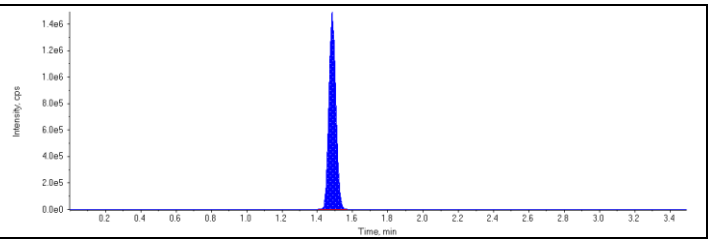
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

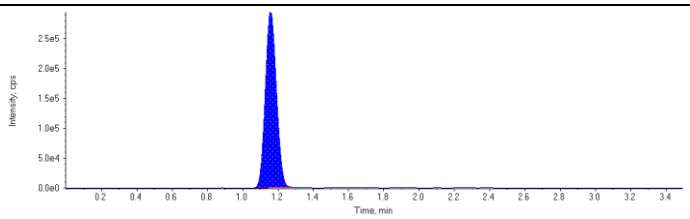
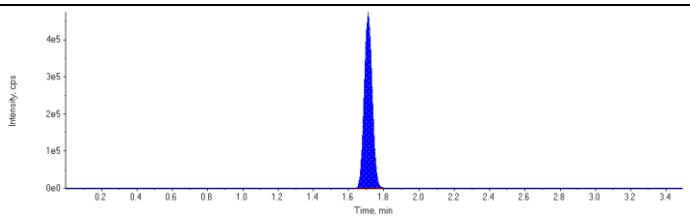
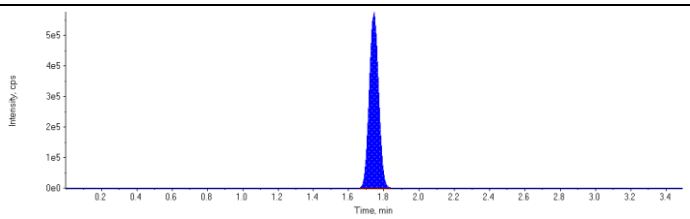
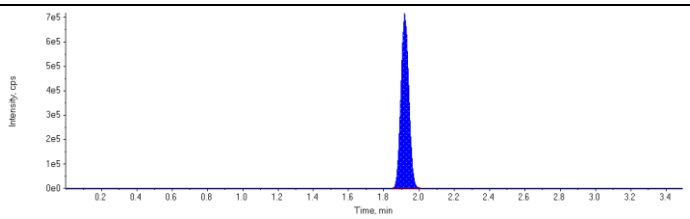
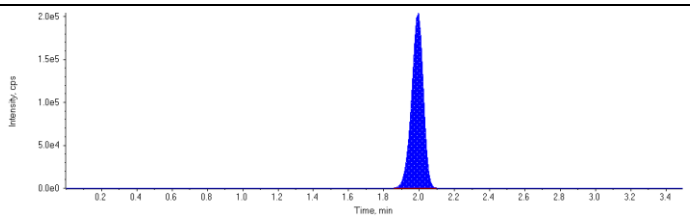
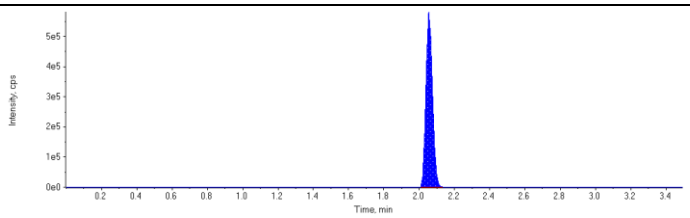
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)

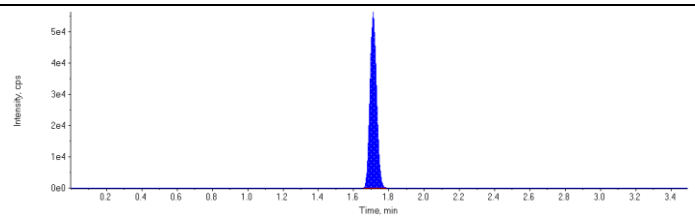
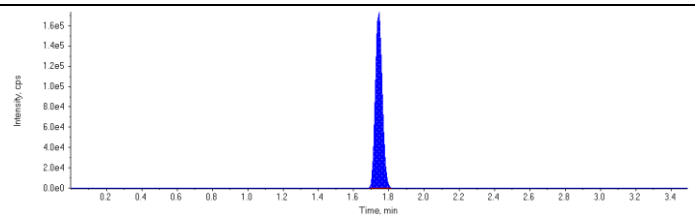
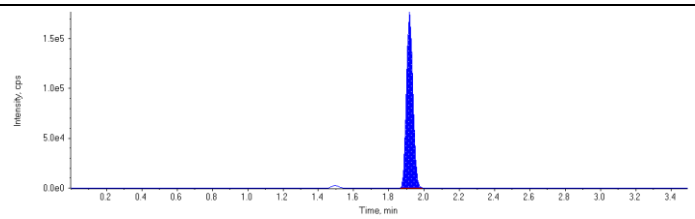
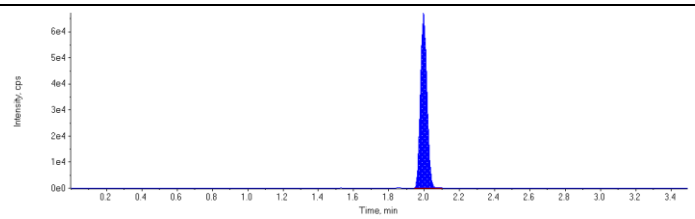
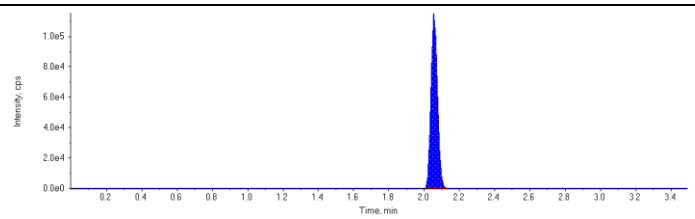
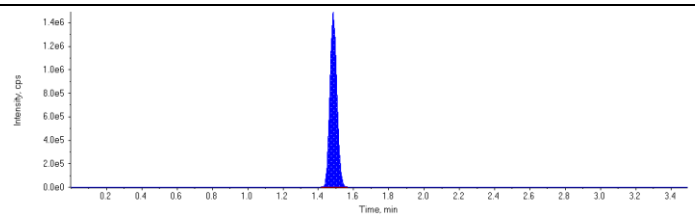


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 29.3 µg/L Area Ratio: 8.97 Sample Type: (Standard)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 31.4 µg/L Area Ratio: 10.2 Sample Type: (Standard)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 33.2 µg/L Area Ratio: 4.46 Sample Type: (Standard)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 30.3 µg/L Area Ratio: 4.98 Sample Type: (Standard)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 30.3 µg/L Area Ratio: 5.49 Sample Type: (Standard)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 30.6 µg/L Area Ratio: 5.07 Sample Type: (Standard)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 95.4 µg/L Area Ratio: 0.0351 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 92.3 µg/L Area Ratio: 0.114 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 101. µg/L Area Ratio: 0.109 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 97.3 µg/L Area Ratio: 0.0420 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 98.3 µg/L Area Ratio: 0.0723 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 102. µg/L Area Ratio: 0.00 Sample Type: (Standard)	

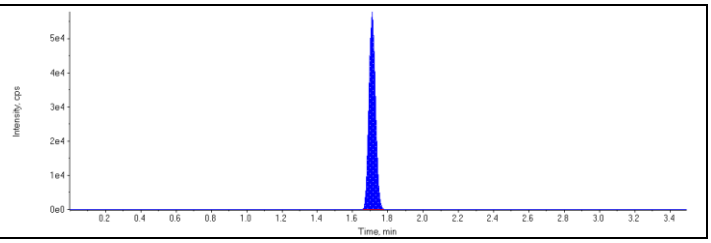
Sample Name	**STD 5**	**Injection Vial**	7
Sample ID	STD 5	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 8:05:30 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	147000.	1.71	1.00	-
MPFHpA	499000.	1.74	1.00	-
MPFOA	448000.	1.92	1.00	-
MPFOS	186000.	2.00	1.00	-
MPFNA	296000.	2.06	1.00	-
13C6-PFHxA IS	4060000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	2510000	1.16	60.0	55.3	92.1
PFHxS 1	2760000	1.71	60.0	57.1	95.1
PFHpA 1	3790000	1.74	60.0	56.5	94.2
PFOA 1	4140000	1.92	60.0	56.1	93.4
PFOS 1	1700000	1.99	60.0	50.5	84.1
PFNA 1	2820000	2.06	60.0	57.2	95.4
18O2-PFHxS	147000	1.71	100.	98.3	98.3
13C4-PFHpA	499000	1.74	100.	99.2	99.2
13C4-PFOA	448000	1.92	100.	102.	102.0
13C4-PFOS	186000	2.00	100.	106.	106.0
13C5-PFNA	296000	2.06	100.	99.1	99.1
13C6-PFHxA	4060000	1.48	100.	102.	102.0

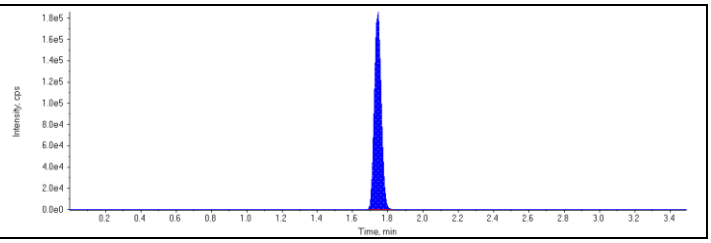
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



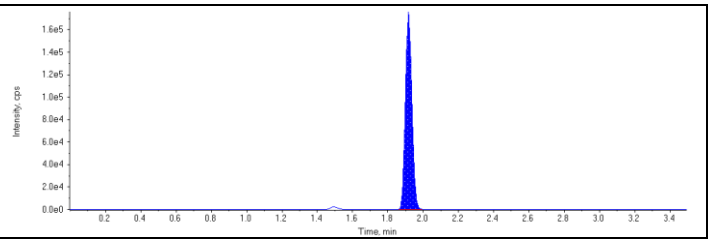
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



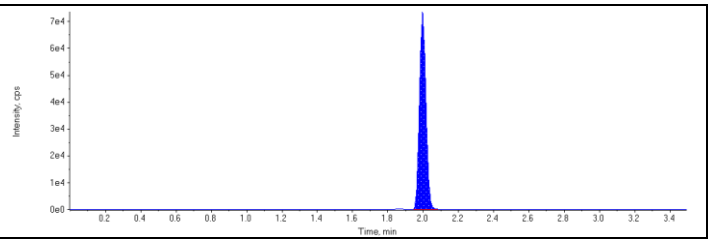
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



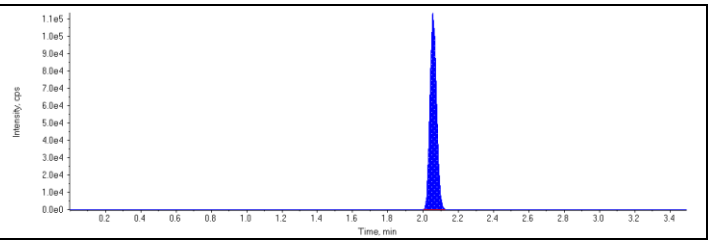
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



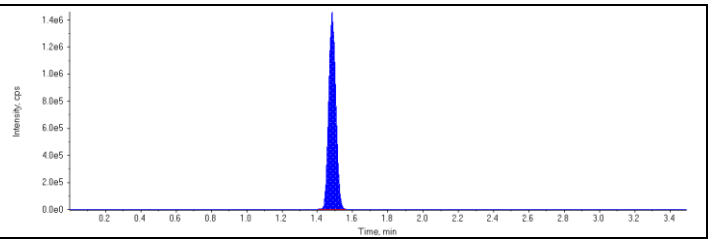
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

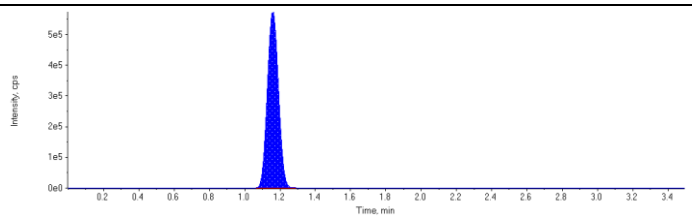
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 55.3 µg/L

Area Ratio: 17.1

Sample Type: (Standard)



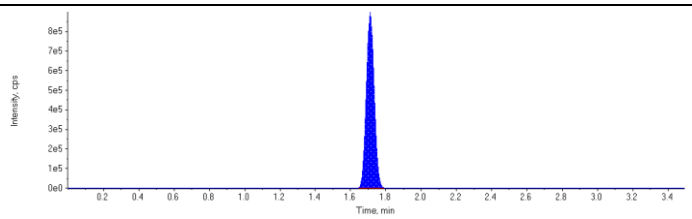
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 57.1 µg/L

Area Ratio: 18.8

Sample Type: (Standard)



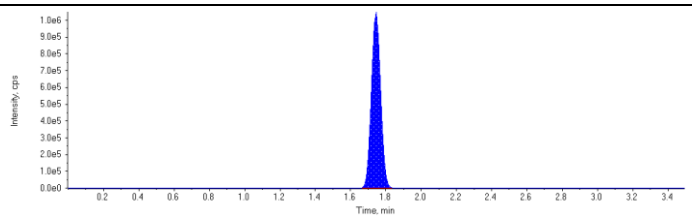
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 56.5 µg/L

Area Ratio: 7.60

Sample Type: (Standard)



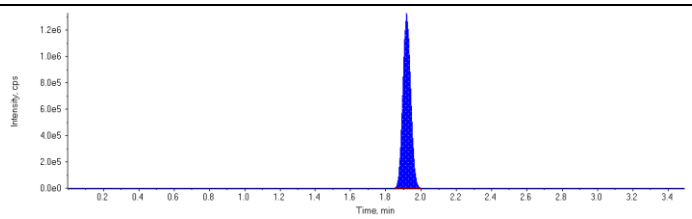
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 56.1 µg/L

Area Ratio: 9.24

Sample Type: (Standard)



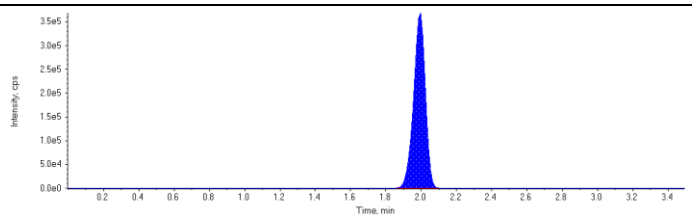
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 50.5 µg/L

Area Ratio: 9.16

Sample Type: (Standard)



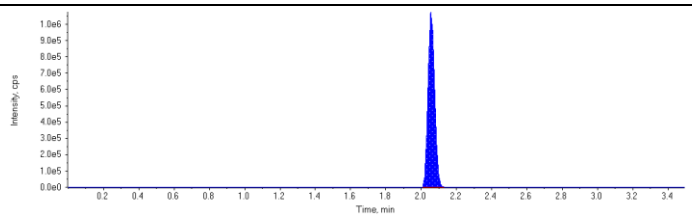
PFNA 1 (462.900/419.000 Da)

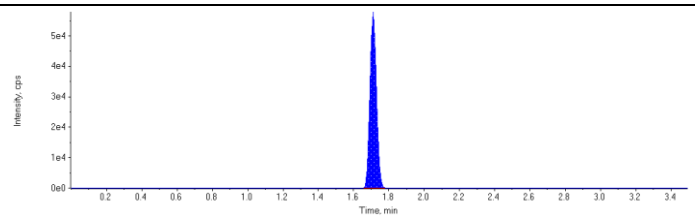
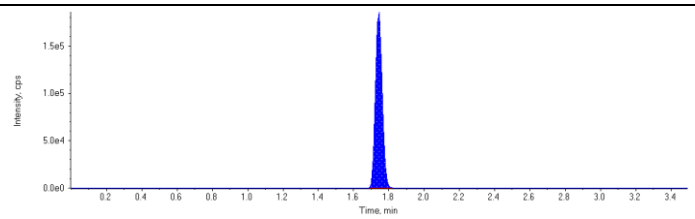
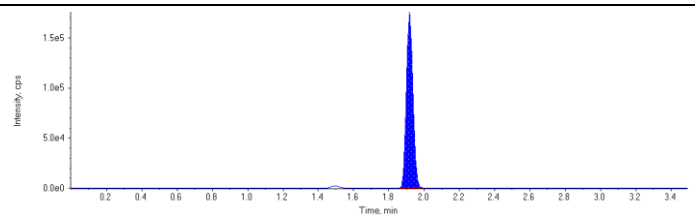
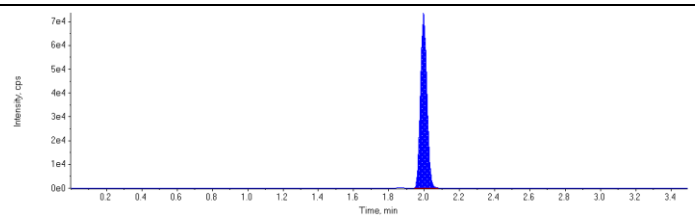
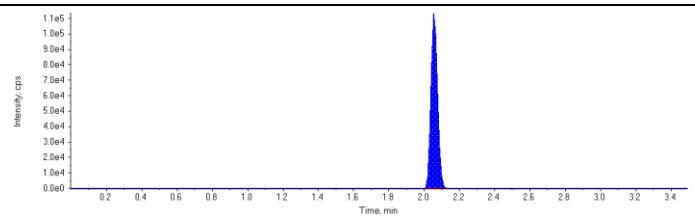
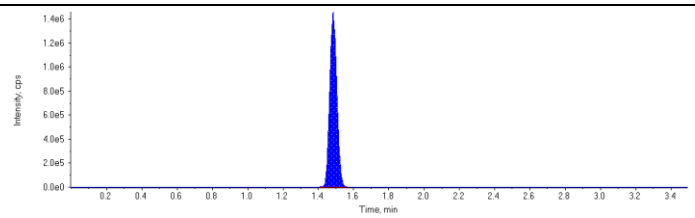
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 57.2 µg/L

Area Ratio: 9.50

Sample Type: (Standard)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 98.3 µg/L Area Ratio: 0.0362 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 99.2 µg/L Area Ratio: 0.123 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 102. µg/L Area Ratio: 0.110 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 106. µg/L Area Ratio: 0.0458 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 99.1 µg/L Area Ratio: 0.0729 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 102. µg/L Area Ratio: 0.00 Sample Type: (Standard)	

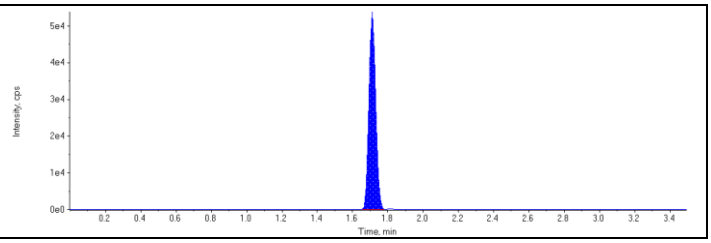
Sample Name	**STD 6**	**Injection Vial**	8
Sample ID	STD 6	**Injection Volume (µL)**	3
Sample Type	Standard	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 8:10:36 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	142000.	1.71	1.00	-
MPFHpA	477000.	1.74	1.00	-
MPFOA	398000.	1.92	1.00	-
MPFOS	154000.	2.00	1.00	-
MPFNA	275000.	2.06	1.00	-
13C6-PFHxA IS	3980000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	4700000	1.16	100.	107.	107.0
PFHxS 1	4820000	1.71	100.	103.	103.0
PFHpA 1	6480000	1.74	100.	101.	101.0
PFOA 1	6820000	1.92	100.	104.	104.0
PFOS 1	3050000	1.99	100.	109.	109.0
PFNA 1	4710000	2.06	100.	103.	103.0
18O2-PFHxS	142000	1.71	100.	96.8	96.8
13C4-PFHpA	477000	1.74	100.	96.9	96.9
13C4-PFOA	398000	1.92	100.	92.7	92.7
13C4-PFOS	154000	2.00	100.	89.4	89.4
13C5-PFNA	275000	2.06	100.	94.0	94.0
13C6-PFHxA	3980000	1.48	100.	99.7	99.7

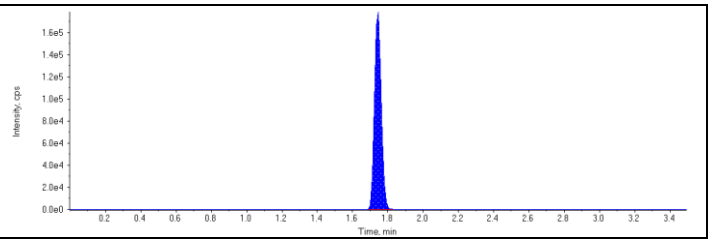
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



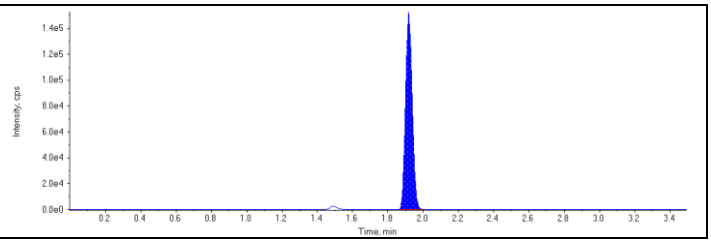
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



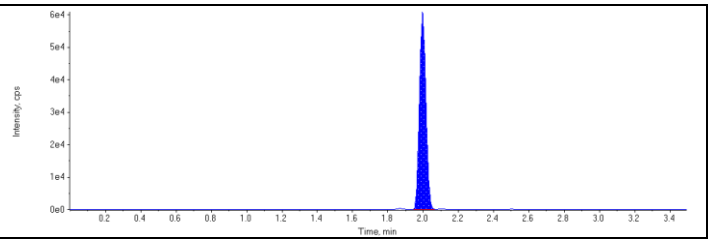
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



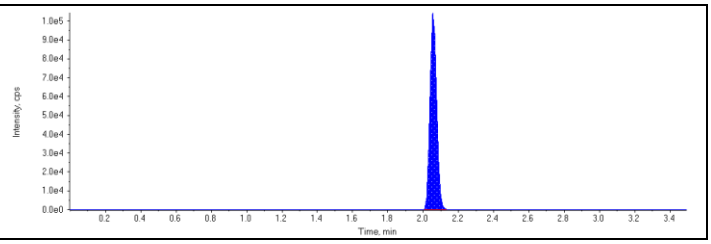
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



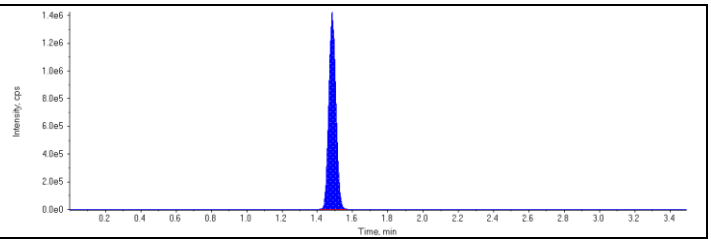
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Standard)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Standard)

This image is not available

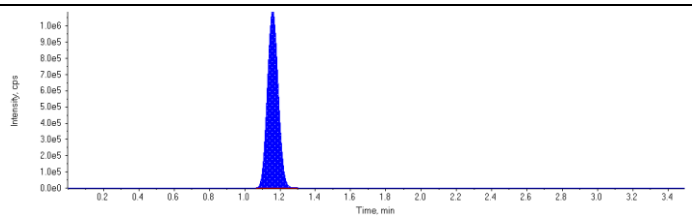
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 107. µg/L

Area Ratio: 33.2

Sample Type: (Standard)



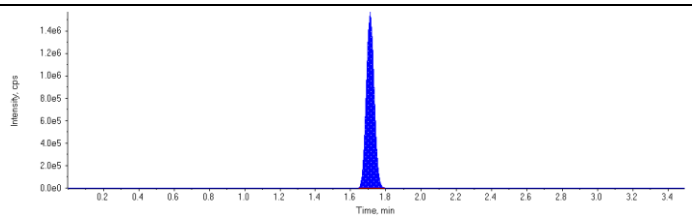
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 103. µg/L

Area Ratio: 34.0

Sample Type: (Standard)



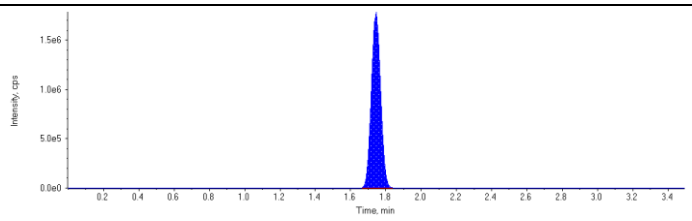
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 101. µg/L

Area Ratio: 13.6

Sample Type: (Standard)



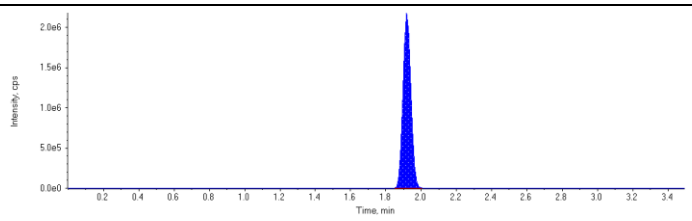
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 104. µg/L

Area Ratio: 17.1

Sample Type: (Standard)



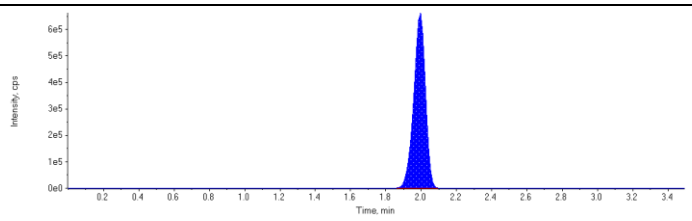
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 109. µg/L

Area Ratio: 19.9

Sample Type: (Standard)



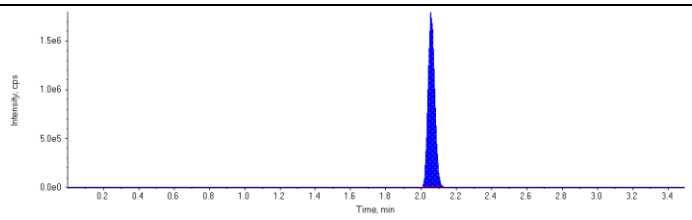
PFNA 1 (462.900/419.000 Da)

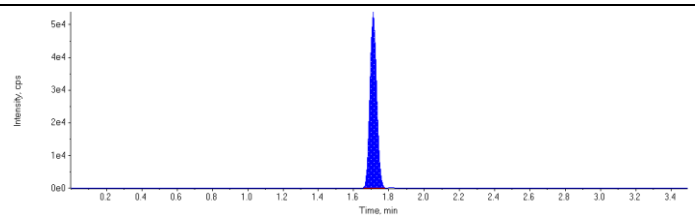
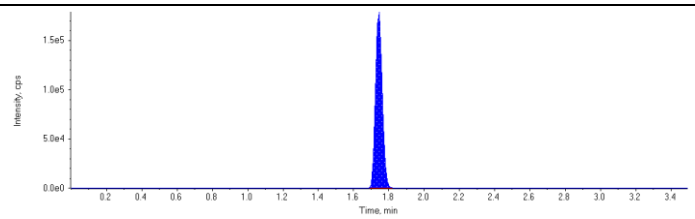
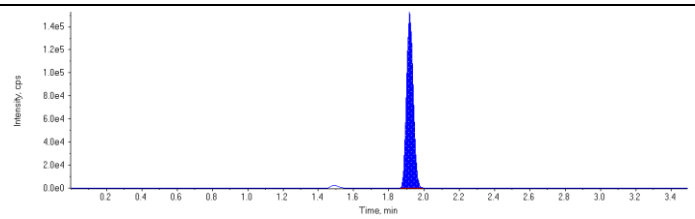
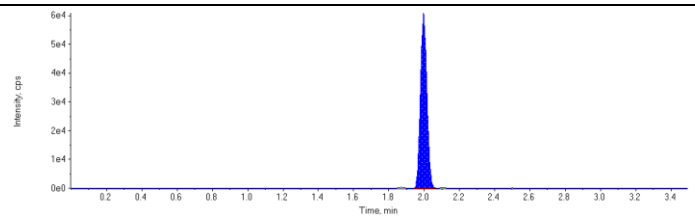
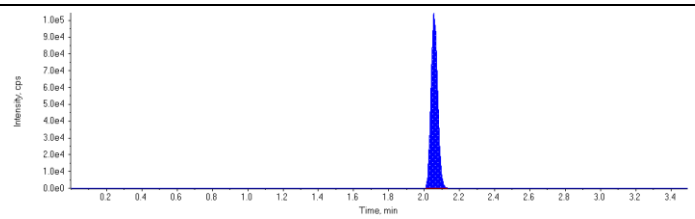
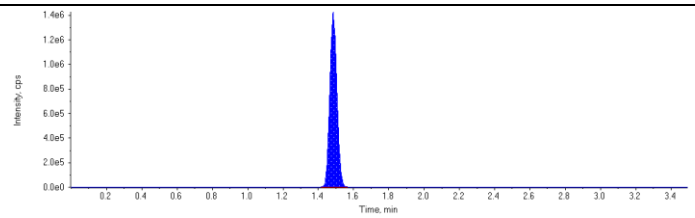
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 103. µg/L

Area Ratio: 17.1

Sample Type: (Standard)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 96.8 µg/L Area Ratio: 0.0356 Sample Type: (Standard)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 96.9 µg/L Area Ratio: 0.120 Sample Type: (Standard)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 92.7 µg/L Area Ratio: 0.100 Sample Type: (Standard)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 89.4 µg/L Area Ratio: 0.0386 Sample Type: (Standard)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 94.0 µg/L Area Ratio: 0.0692 Sample Type: (Standard)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 99.7 µg/L Area Ratio: 0.00 Sample Type: (Standard)	

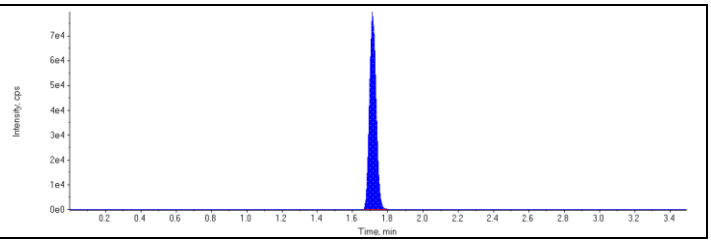
Sample Name	**ICV**	**Injection Vial**	9
Sample ID	ICV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:17:23 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	204000.	1.71	1.00	-
MPFHpA	562000.	1.75	1.00	-
MPFOA	446000.	1.93	1.00	-
MPFOS	215000.	2.00	1.00	-
MPFNA	333000.	2.07	1.00	-
13C6-PFHxA IS	3520000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	3900000	1.17	50.0	50.3	101.0
PFHxS 1	3830000	1.71	50.0	48.3	96.7
PFHpA 1	4680000	1.75	50.0	53.5	107.0
PFOA 1	4710000	1.93	50.0	56.2	112.0
PFOS 1	2400000	2.00	50.0	50.6	101.0
PFNA 1	3070000	2.07	50.0	47.6	95.2
18O2-PFHxS	204000	1.71	100.	115.	115.0
13C4-PFHpA	562000	1.75	100.	109.	109.0
13C4-PFOA	446000	1.93	100.	98.2	98.2
13C4-PFOS	215000	2.00	100.	110.	110.0
13C5-PFNA	333000	2.07	100.	111.	111.0
13C6-PFHxA	3520000	1.49	100.	94.6	94.6

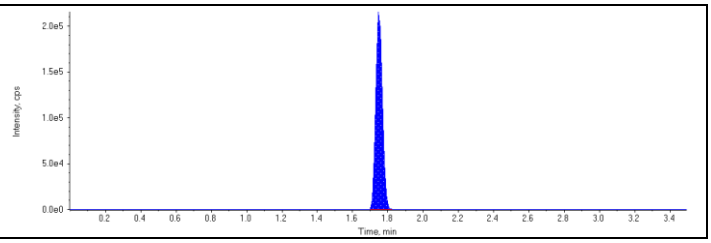
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



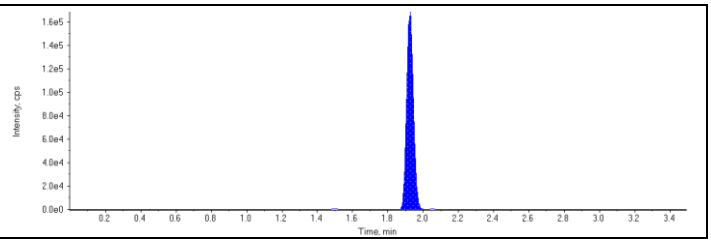
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



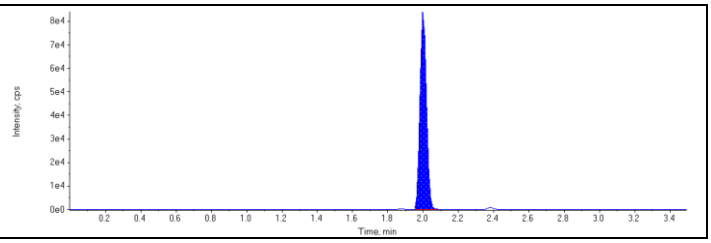
MPFOA (Internal Standard)

RT (Exp. RT): 1.93(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



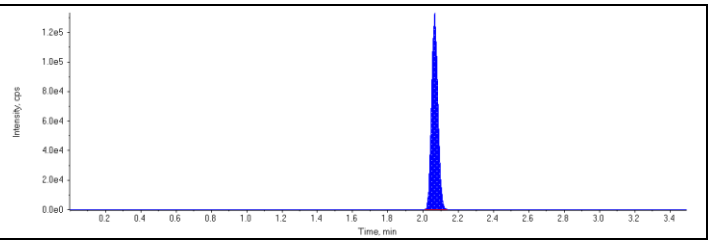
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



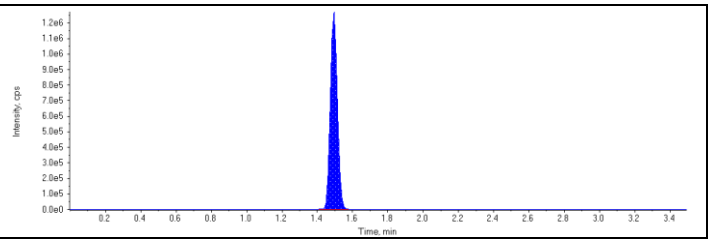
MPFNA (Internal Standard)

RT (Exp. RT): 2.07(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

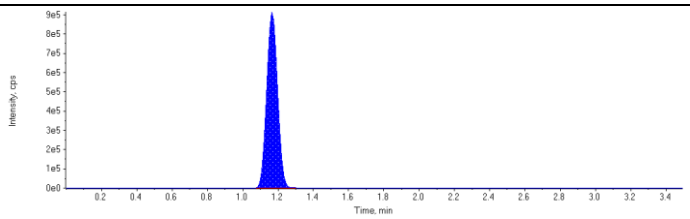
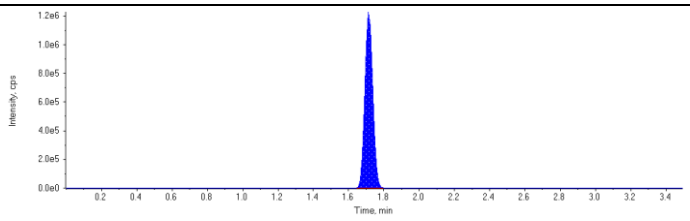
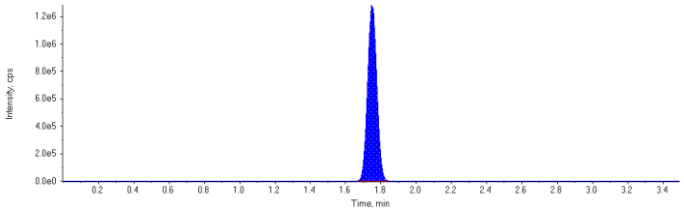
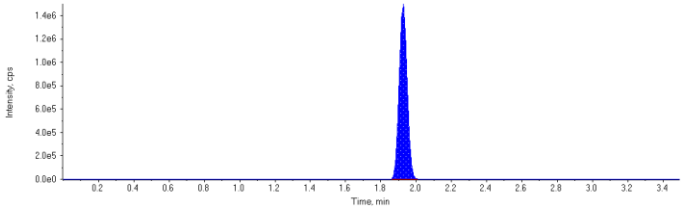
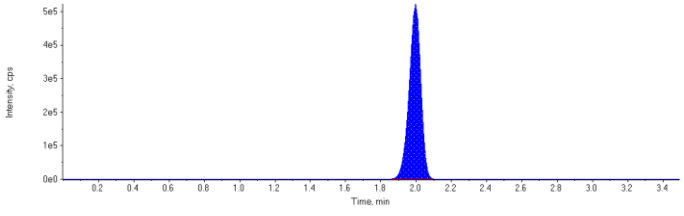
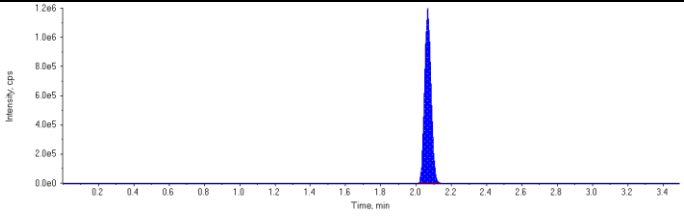
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

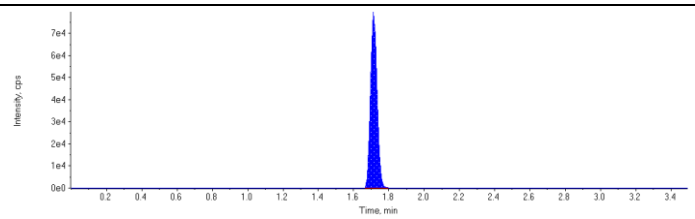
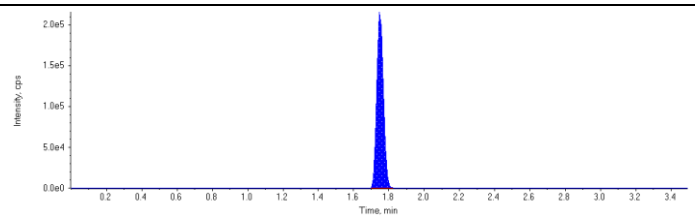
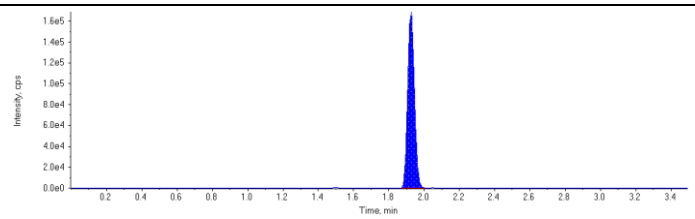
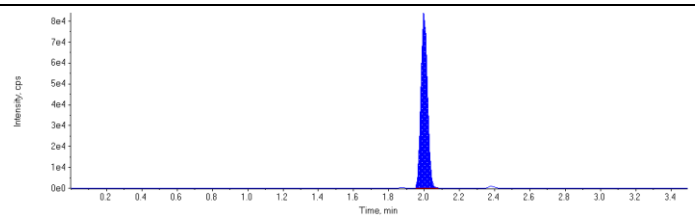
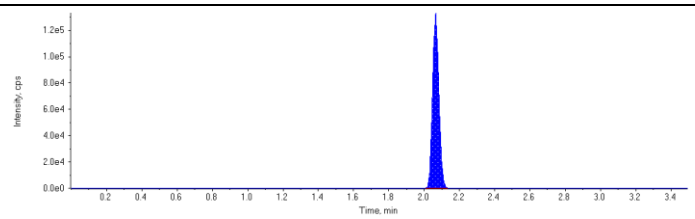
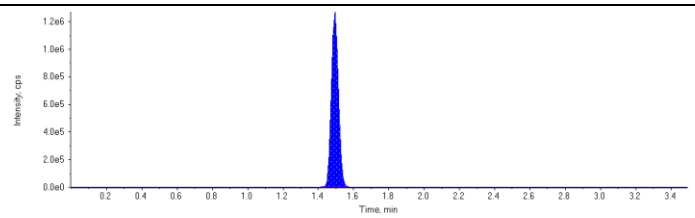


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.17 (1.16) min Calculated Conc: 50.3 µg/L Area Ratio: 19.1 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 48.3 µg/L Area Ratio: 18.8 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 53.5 µg/L Area Ratio: 8.33 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 56.2 µg/L Area Ratio: 10.6 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 50.6 µg/L Area Ratio: 11.2 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 47.6 µg/L Area Ratio: 9.22 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 115. µg/L Area Ratio: 0.0579 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 109. µg/L Area Ratio: 0.160 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.93 (1.93) min Calculated Conc: 98.2 µg/L Area Ratio: 0.127 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 110. µg/L Area Ratio: 0.0610 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.07 (2.02) min Calculated Conc: 111. µg/L Area Ratio: 0.0948 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 94.6 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

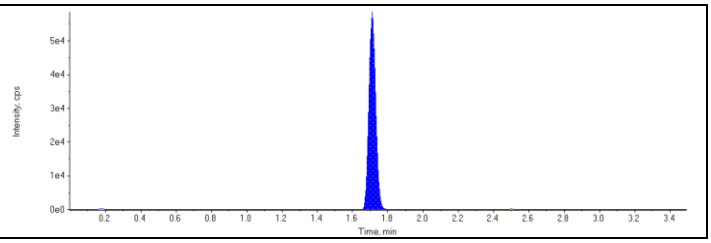
Sample Name	**ICV**	**Injection Vial**	9
Sample ID	ICV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 8:15:41 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	152000.	1.71	1.00	-
MPFHpA	517000.	1.74	1.00	-
MPFOA	437000.	1.92	1.00	-
MPFOS	163000.	2.00	1.00	-
MPFNA	297000.	2.06	1.00	-
13C6-PFHxA IS	4130000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	2240000	1.16	50.0	47.7	95.4
PFHxS 1	2450000	1.71	50.0	49.2	98.5
PFHpA 1	3460000	1.74	50.0	49.7	99.5
PFOA 1	3460000	1.92	50.0	48.1	96.3
PFOS 1	1520000	1.99	50.0	51.5	103.0
PFNA 1	2340000	2.06	50.0	47.6	95.1
18O2-PFHxS	152000	1.71	100.	99.7	99.7
13C4-PFHpA	517000	1.74	100.	101.	101.0
13C4-PFOA	437000	1.92	100.	98.0	98.0
13C4-PFOS	163000	2.00	100.	91.5	91.5
13C5-PFNA	297000	2.06	100.	97.6	97.6
13C6-PFHxA	4130000	1.48	100.	104.	104.0

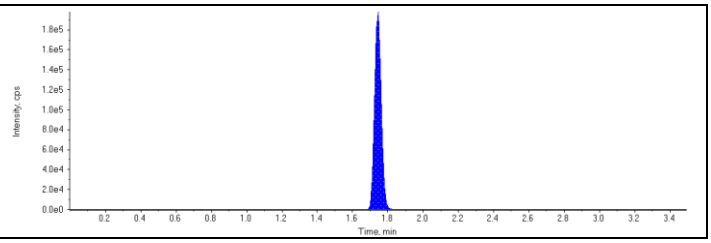
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



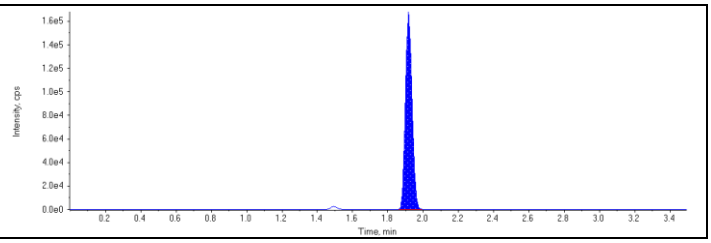
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



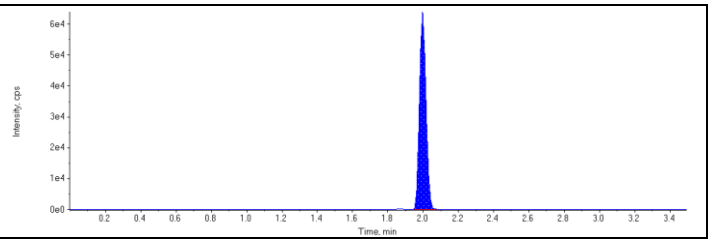
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



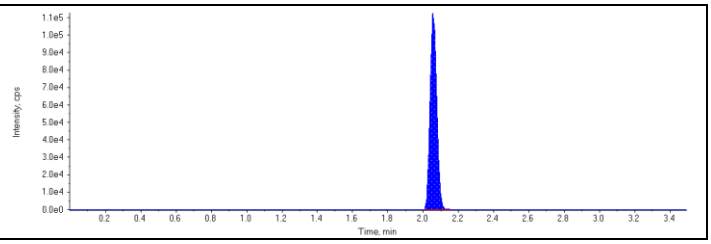
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



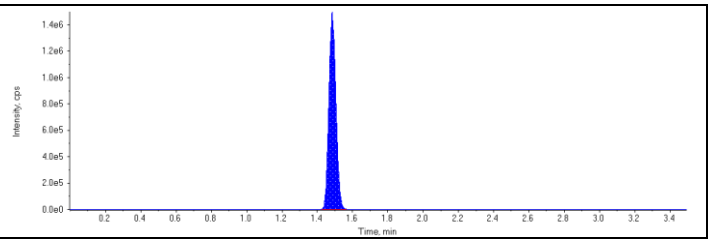
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

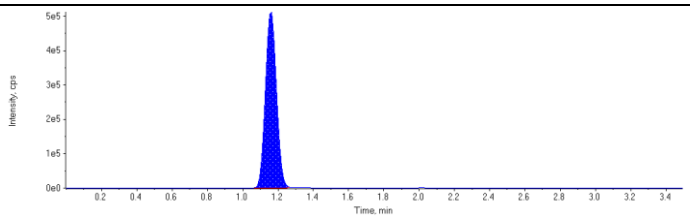
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 47.7 µg/L

Area Ratio: 14.7

Sample Type: (Quality Control)



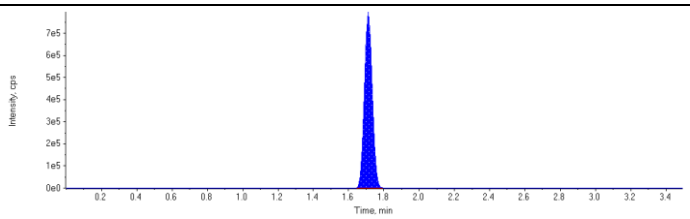
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 49.2 µg/L

Area Ratio: 16.2

Sample Type: (Quality Control)



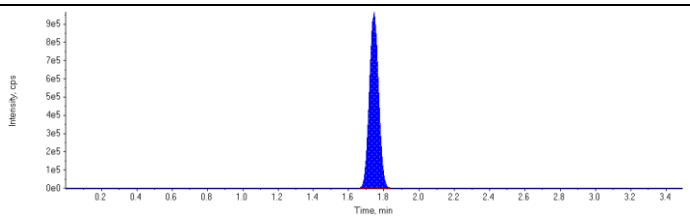
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 49.7 µg/L

Area Ratio: 6.69

Sample Type: (Quality Control)



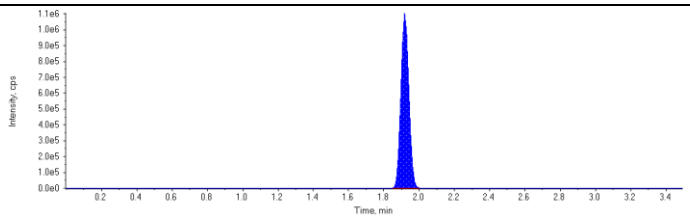
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 48.1 µg/L

Area Ratio: 7.93

Sample Type: (Quality Control)



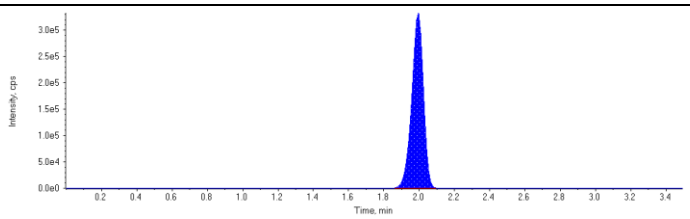
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 51.5 µg/L

Area Ratio: 9.34

Sample Type: (Quality Control)



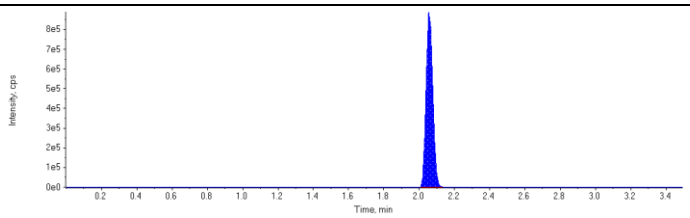
PFNA 1 (462.900/419.000 Da)

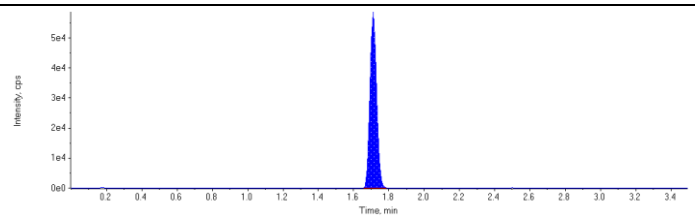
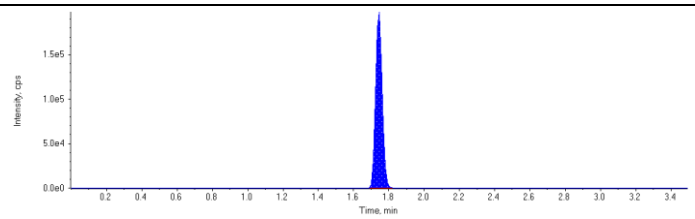
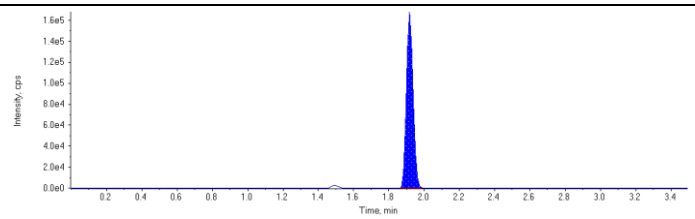
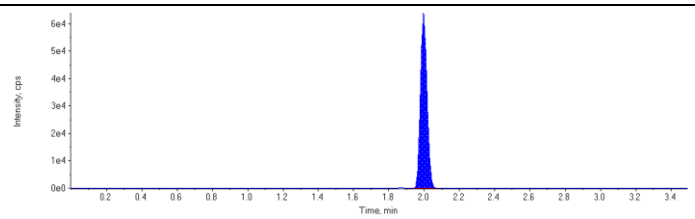
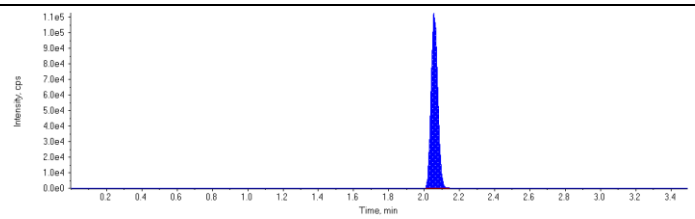
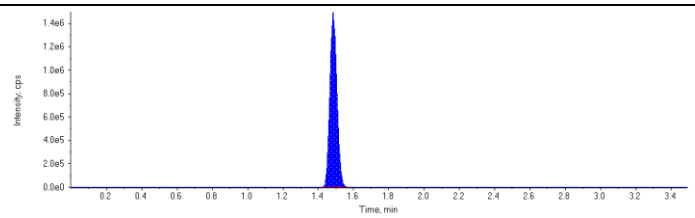
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 47.6 µg/L

Area Ratio: 7.89

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 99.7 µg/L Area Ratio: 0.0367 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 101. µg/L Area Ratio: 0.125 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 98.0 µg/L Area Ratio: 0.106 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 91.5 µg/L Area Ratio: 0.0395 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 97.6 µg/L Area Ratio: 0.0719 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 104. µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

Perfluorinated Compound Internal Standard (IS) Evaluation

Sample Name	Analyte	PFBS		PFHxS		PFHpA		PFOA		PFOS		PFNA	
	Mass labeled IS	MPFHxS		MPFHxS		MPFHpA		MPFOA		MPFOS		MPFNA	
	Average IS Area in ICAL	187000		187000		542833		480167		205667		317500	
		IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)
4384677~BLANK		176000	94	176000	94	510000	94	431000	90	199000	97	308000	97
STD 1		184000	98	184000	98	568000	105	501000	104	203000	99	333000	105
STD 2		194000	104	194000	104	556000	102	501000	104	203000	99	326000	103
STD 3		183000	98	183000	98	545000	100	467000	97	218000	106	322000	101
STD 4		188000	101	188000	101	546000	101	488000	102	217000	106	328000	103
STD 5		184000	98	184000	98	538000	99	464000	97	198000	96	284000	89
STD 6		189000	101	189000	101	504000	93	460000	96	195000	95	312000	98
ICV		204000	109	204000	109	562000	104	446000	93	215000	105	333000	105
CCV		193000	103	193000	103	557000	103	472000	98	205000	100	311000	98
4384677~MTRX SPK		142000	76	142000	76	370000	68	351000	73	149000	72	240000	76
4384677~MTRX SPK:D1		119000	64	119000	64	335000	62	280000	58	132000	64	195000	61
4384677~SPIKE		163000	87	163000	87	475000	88	425000	89	185000	90	279000	88
4384677~BVX813-01		138000	74	138000	74	384000	71	340000	71	151000	73	245000	77
4384677~BVX814-01		138000	74	138000	74	346000	64	287000	60	133000	65	236000	74
4384677~BVX815-01		152000	81	152000	81	369000	68	345000	72	159000	77	250000	79
4384677~BVX816-01		154000	82	154000	82	397000	73	359000	75	161000	78	247000	78
4384677~BVX817-01		137000	73	137000	73	336000	62	287000	60	139000	68	241000	76
4384677~BVX818-01		124000	66	124000	66	315000	58	206000	43	134000	65	223000	70
4384677~BVX819-01		131000	70	131000	70	342000	63	251000	52	158000	77	246000	77
4384677~BVX820-01		149000	80	149000	80	383000	71	350000	73	167000	81	249000	78
4384677~BVX821-01		142000	76	142000	76	381000	70	339000	71	154000	75	236000	74
4384677~BVX822-01		140000	75	140000	75	406000	75	356000	74	161000	78	256000	81
CCV		192000	103	192000	103	494000	91	465000	97	201000	98	316000	100
4384677~BVX823-01		136000	73	136000	73	345000	64	327000	68	151000	73	225000	71
4384677~BVX824-01		144000	77	144000	77	393000	72	330000	69	147000	71	227000	71
4384677~BVX825-01		144000	77	144000	77	439000	81	392000	82	168000	82	246000	77
4384677~BVX947-01		108000	58	108000	58	357000	66	296000	62	140000	68	218000	69
4384677~BVX948-01		121000	65	121000	65	353000	65	319000	66	135000	66	210000	66
4384677~BVX949-01		132000	71	132000	71	346000	64	343000	71	136000	66	253000	80
4384677~BVX950-01		124000	66	124000	66	323000	60	320000	67	142000	69	246000	77
4384677~BVX951-01		116000	62	116000	62	293000	54	305000	64	139000	68	208000	66
4384677~BVX952-01		125000	67	125000	67	340000	63	326000	68	145000	71	242000	76
4384677~BVX953-01		108000	58	108000	58	326000	60	291000	61	134000	65	215000	68
CCV		173000	93	173000	93	524000	97	468000	97	210000	102	314000	99
4384677~MTRX SPK		130000	70	130000	70	373000	69	326000	68	144000	70	228000	72
4384677~MTRX SPK:D1		122000	65	122000	65	309000	57	292000	61	128000	62	200000	63
4384677~BVX815-01		141000	75	141000	75	387000	71	353000	74	158000	77	249000	78
4384677~BVX820-01		150000	80	150000	80	397000	73	350000	73	176000	86	263000	83
4384677~BVX948-01		122000	65	122000	65	325000	60	320000	67	136000	66	220000	69
4384677~BVX814-01		124000	66	124000	66	341000	63	286000	60	143000	70	247000	78
4384677~BVX817-01		140000	75	140000	75	349000	64	283000	59	133000	65	238000	75
4384677~BVX818-01		135000	72	135000	72	327000	60	206000	43	136000	66	226000	71
4384677~BVX819-01		137000	73	137000	73	316000	58	258000	54	150000	73	239000	75
4384677~BVX947-01		114000	61	114000	61	334000	62	293000	61	132000	64	224000	71
CCV		165000	88	165000	88	454000	84	430000	90	194000	94	319000	100
CCV		168000	90	168000	90	524000	97	435000	91	193000	94	314000	99
CCV		174000	93	174000	93	506000	93	455000	95	204000	99	318000	100

Perfluorinated Compound Internal Standard (IS) Evaluation

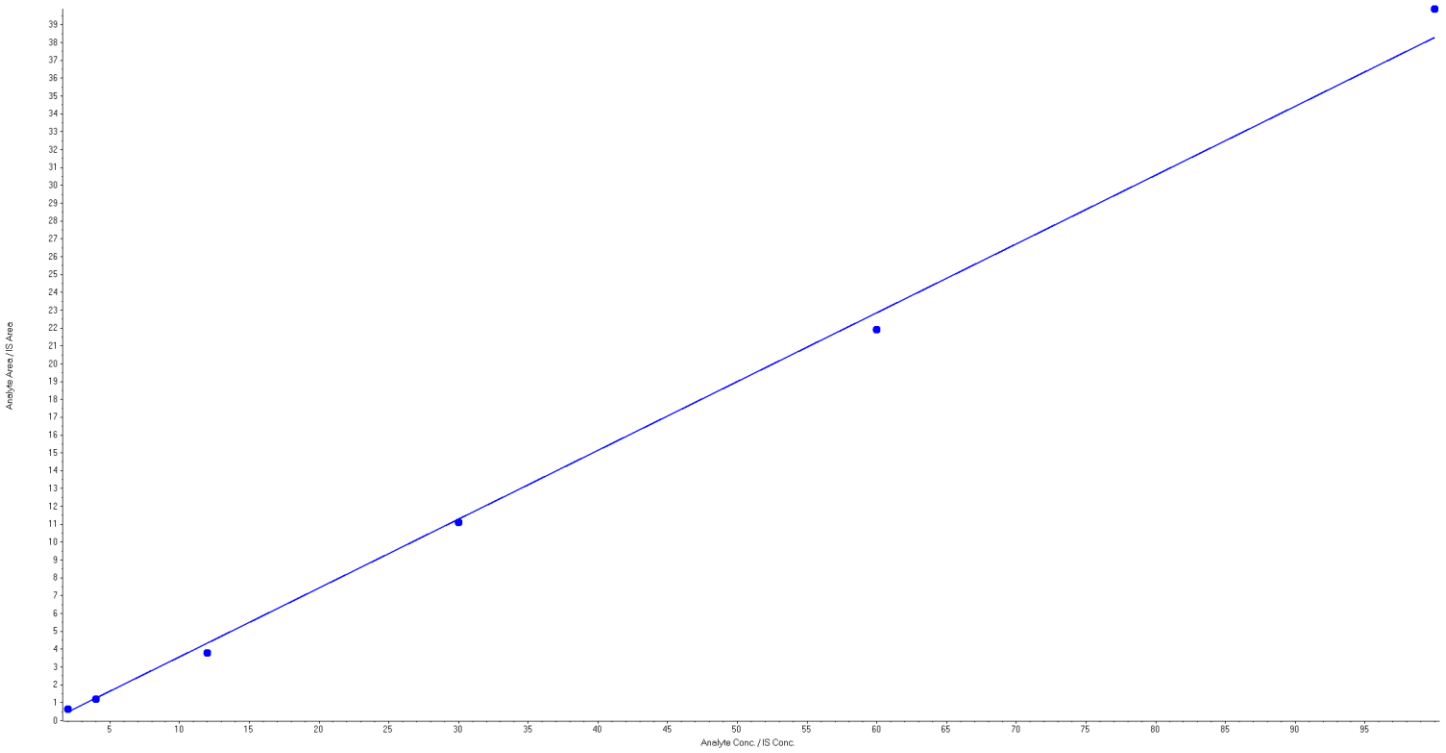
Sample Name	Analyte	PFBS		PFHxS		PFHpA		PFOA		PFOS		PFNA	
	Mass labeled IS	MPFHxS		MPFHxS		MPFHpA		MPFOA		MPFOS		MPFNA	
	Average IS Area in ICAL	147000		147000		493500		430500		172500		293500	
		IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)	IS Peak Area	IS %R (ICAL)
STD 1		146000	99	146000	99	517000	105	413000	96	179000	104	291000	99
STD 2		147000	100	147000	100	503000	102	442000	103	177000	103	296000	101
STD 3		156000	106	156000	106	498000	101	435000	101	167000	97	307000	105
STD 4		144000	98	144000	98	467000	95	447000	104	172000	100	296000	101
STD 5		147000	100	147000	100	499000	101	448000	104	186000	108	296000	101
STD 6		142000	97	142000	97	477000	97	398000	92	154000	89	275000	94
ICV		152000	103	152000	103	517000	105	437000	102	163000	94	297000	101
CCV		122000	83	122000	83	400000	81	381000	89	150000	87	266000	91
4385924~BLANK		127000	86	127000	86	462000	94	407000	95	161000	93	288000	98
4385924~MTRX SPK		135000	92	135000	92	421000	85	413000	96	163000	94	276000	94
4385924~MTRX SPK:D1		113000	77	113000	77	374000	76	340000	79	142000	82	238000	81
4385924~SPIKE		126000	86	126000	86	409000	83	393000	91	158000	92	266000	91
4385924~BVX947-01 (10x)		105000	71	105000	71	247000	50	245000	57	125000	72	188000	64
4385924~BVX792-01		125000	85	125000	85	356000	72	325000	75	135000	78	252000	86
4385924~BVX793-01		117000	80	117000	80	371000	75	363000	84	142000	82	274000	93
4385924~BVX794-01		112000	76	112000	76	308000	62	321000	75	123000	71	245000	83
4385924~BVX795-01		102000	69	102000	69	383000	78	345000	80	148000	86	263000	90
4385924~BVX796-01		113000	77	113000	77	366000	74	359000	83	140000	81	252000	86
4385924~BVX797-01		107000	73	107000	73	365000	74	331000	77	143000	83	263000	90
4385924~BVX798-01		113000	77	113000	77	375000	76	342000	79	126000	73	266000	91
4385924~BVX799-01		106000	72	106000	72	320000	65	326000	76	131000	76	231000	79
4385924~BVX800-01		124000	84	124000	84	374000	76	342000	79	131000	76	244000	83
CCV		115000	78	115000	78	404000	82	349000	81	157000	91	290000	99
4385924~BVX801-01		103000	70	103000	70	345000	70	333000	77	143000	83	247000	84
4385924~BVX802-01		114000	78	114000	78	361000	73	363000	84	130000	75	246000	84
4385924~BVX803-01		119000	81	119000	81	358000	73	323000	75	119000	69	233000	79
4385924~BVX804-01		114000	78	114000	78	375000	76	364000	85	149000	86	270000	92
4385924~BVX805-01		129000	88	129000	88	401000	81	350000	81	153000	89	267000	91
4385924~BVX947-01 (10x)		94000	64	94000	64	219000	44	235000	55	123000	71	171000	58
CCV		115000	78	115000	78	409000	83	374000	87	145000	84	280000	95

Analyte Name: PFBS 1
Internal Standard: MPFHxS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.386 x + -0.284 (r = 0.9985)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.36	118.0
4	1	3.81	95.3
12	1	10.57	88.1
30	1	29.55	98.5
60	1	57.58	96.0
100	1	104.13	104.1

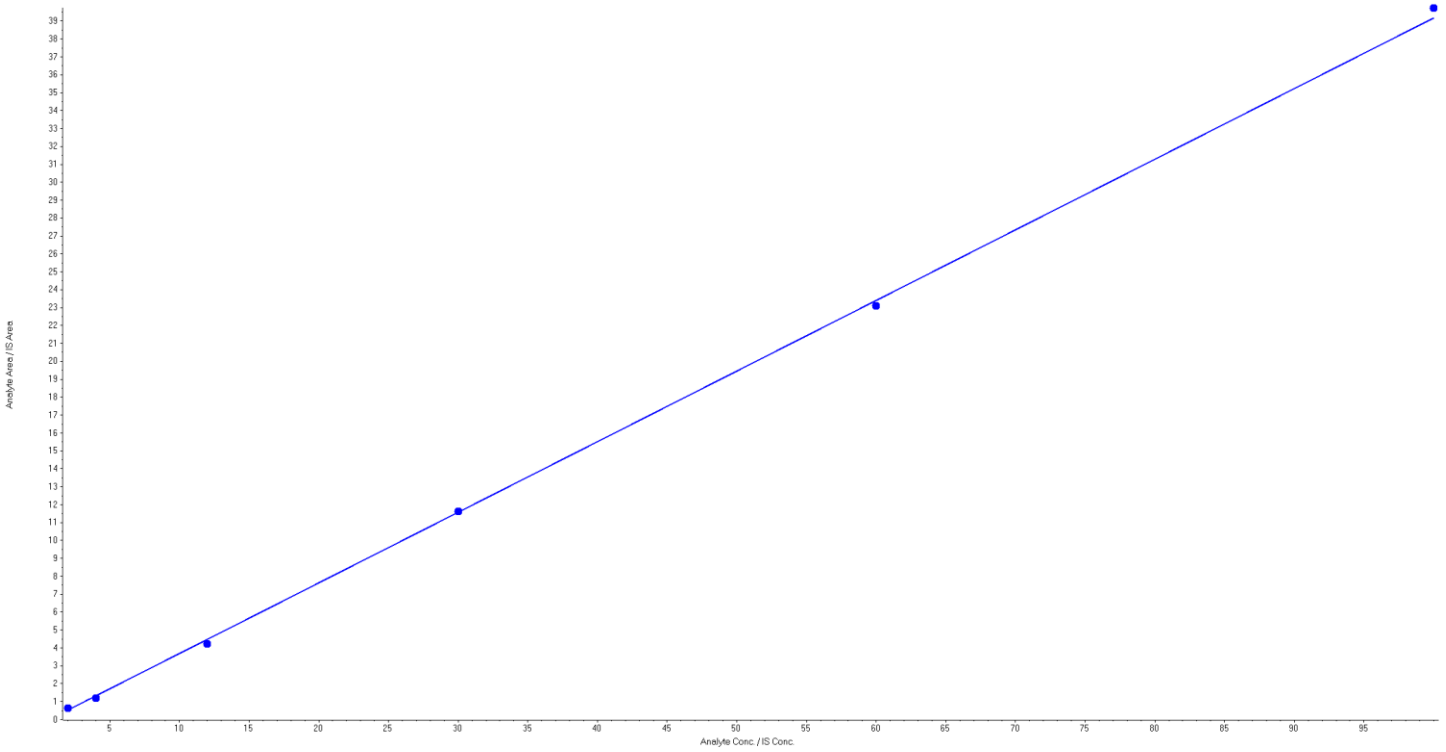


Analyte Name: PFHxS 1
Internal Standard: MPFHxS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.394 x + -0.255 (r = 0.9996)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.27	113.5
4	1	3.65	91.3
12	1	11.38	94.8
30	1	30.08	100.3
60	1	59.21	98.7
100	1	101.41	101.4

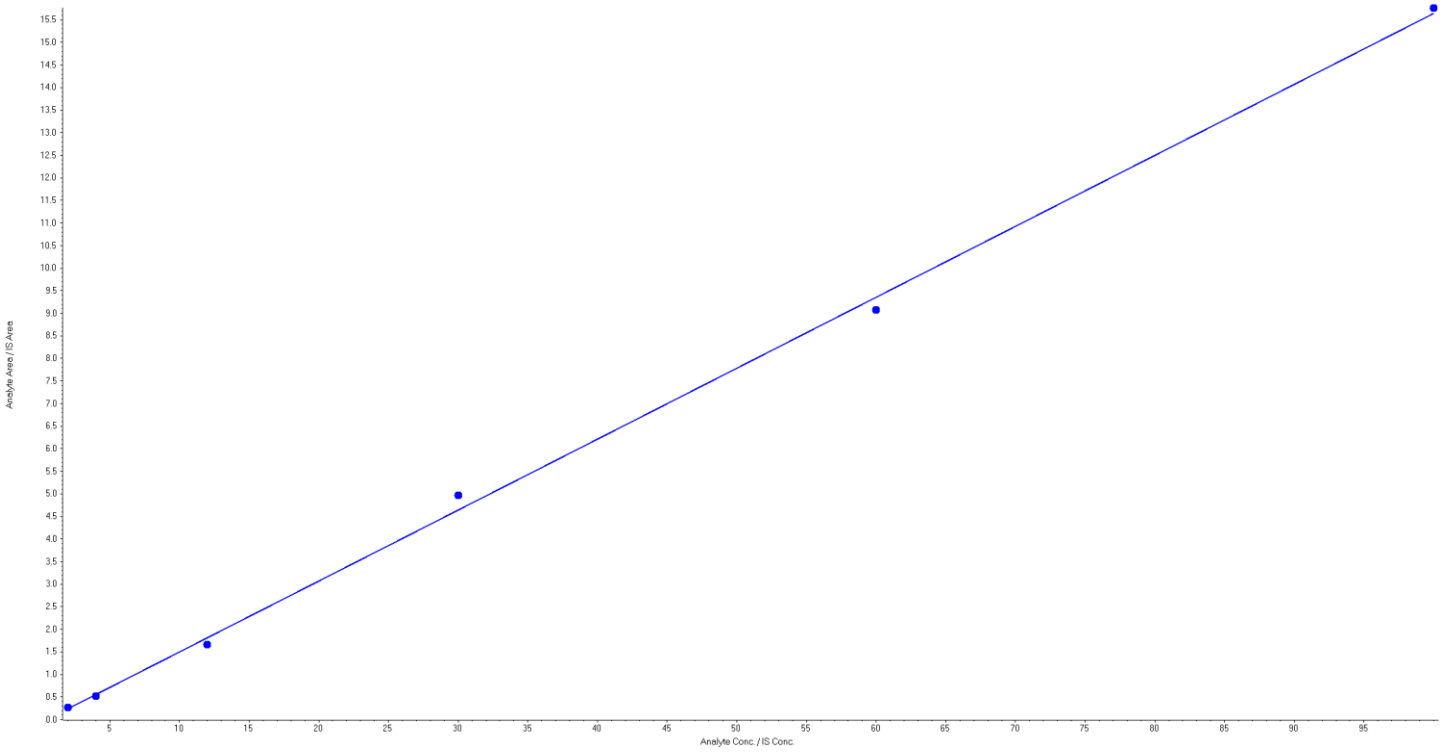


Analyte Name: PFHpA 1
Internal Standard: MPFHpA

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.157 x + -0.0753 (r = 0.9991)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.18	109.2
4	1	3.77	94.3
12	1	11.02	91.9
30	1	32.07	106.9
60	1	58.19	97.0
100	1	100.76	100.8

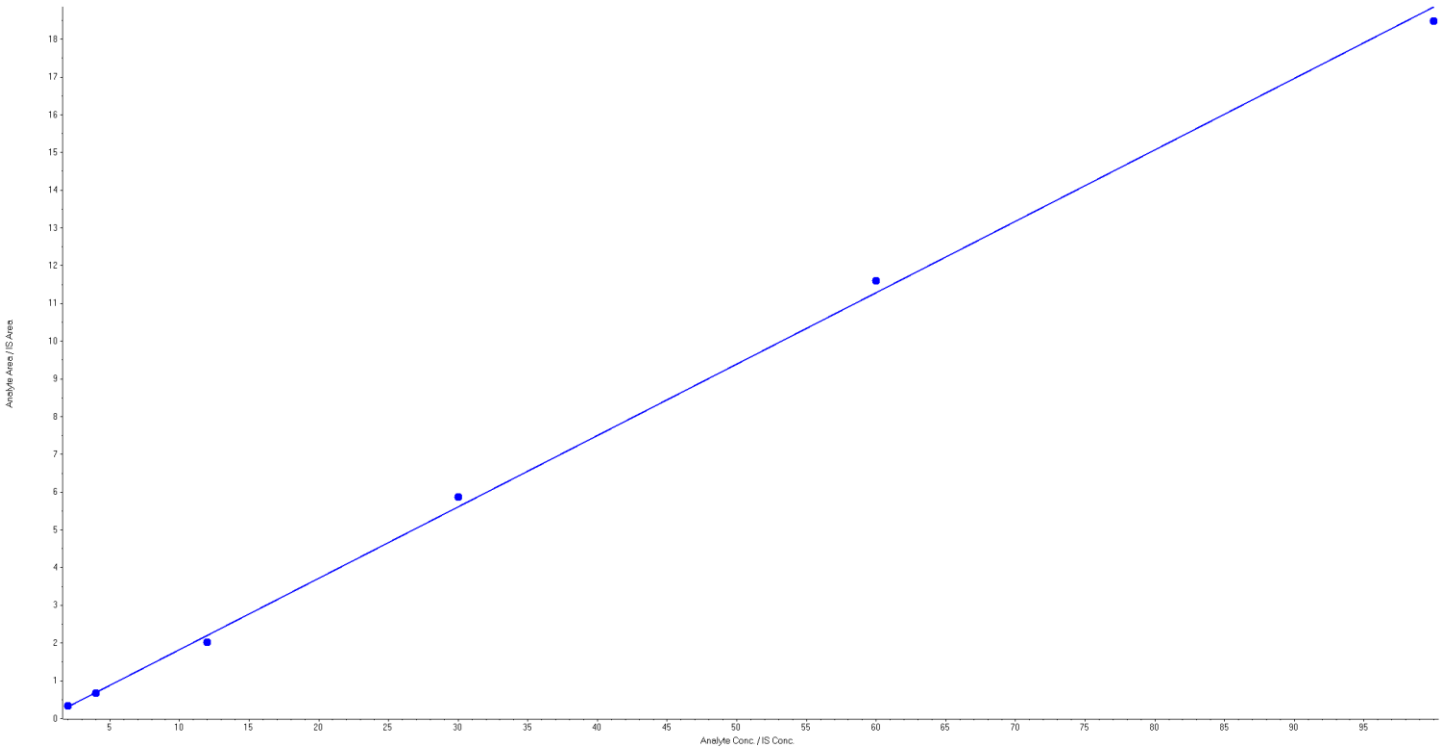


Analyte Name: PFOA 1
Internal Standard: MPFOA

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.189 x + -0.0673 (r = 0.9993)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.12	105.9
4	1	3.88	97.1
12	1	11.01	91.7
30	1	31.38	104.6
60	1	61.62	102.7
100	1	97.99	98.0

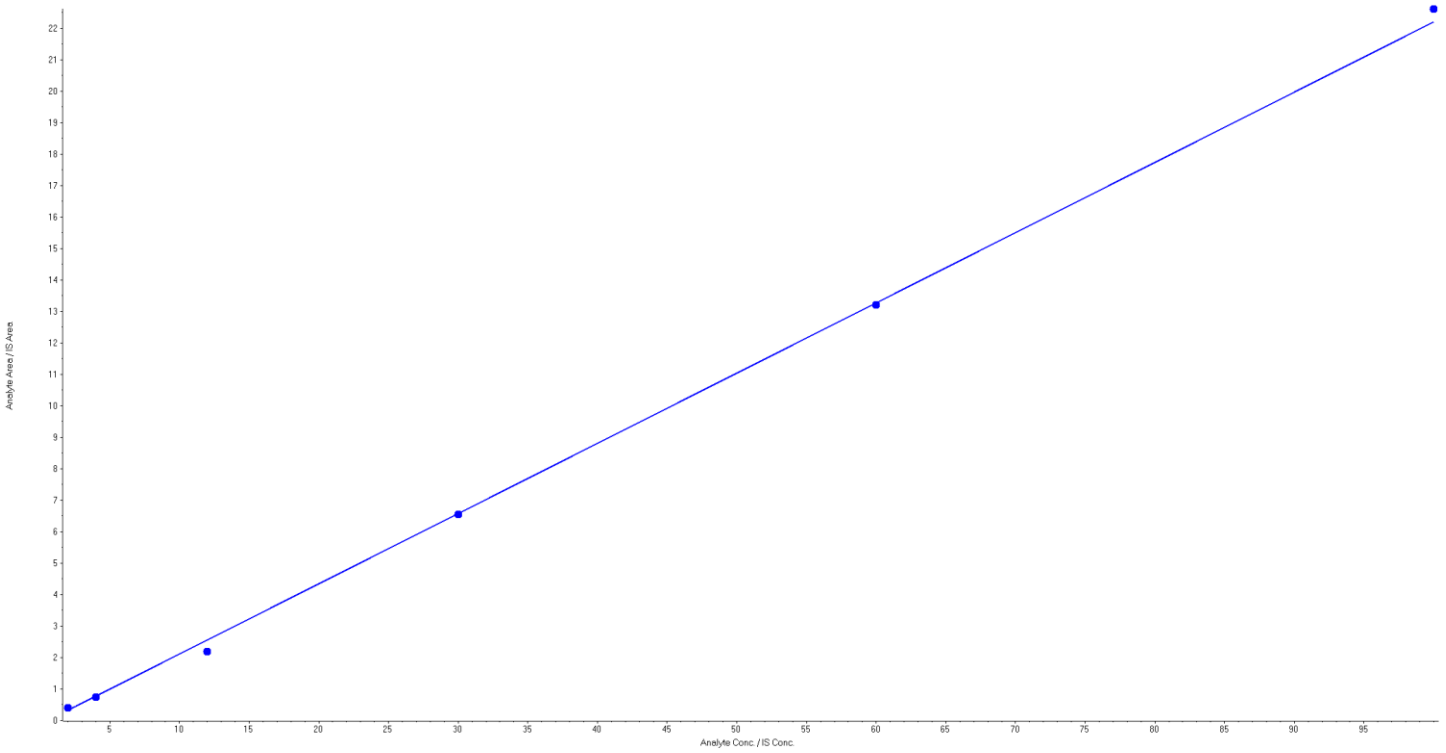


Analyte Name: PFOS 1
Internal Standard: MPFOS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.223 x + -0.118 (r = 0.9990)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.32	116.1
4	1	3.87	96.8
12	1	10.33	86.1
30	1	29.90	99.7
60	1	59.74	99.6
100	1	101.84	101.8

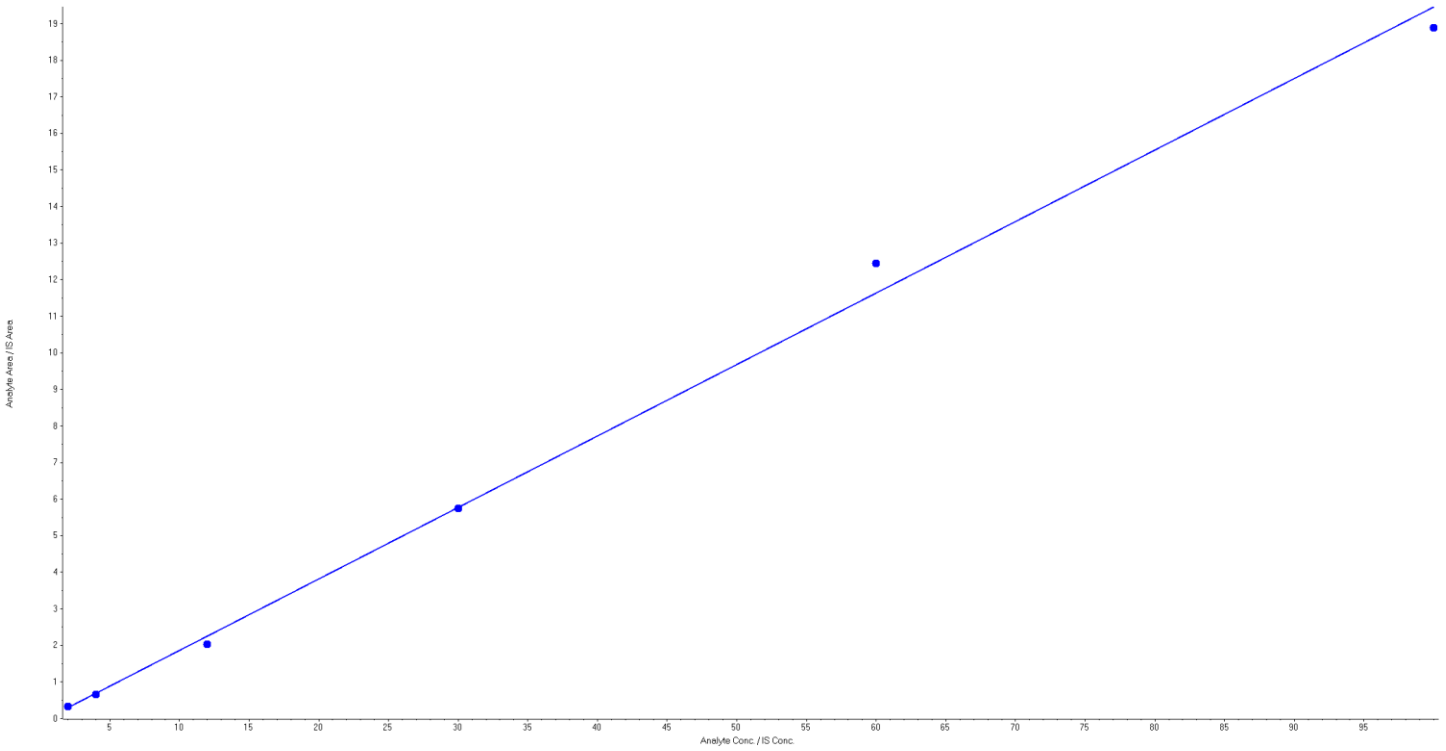


Analyte Name: PFNA 1
Internal Standard: MPFNA

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.195 x + -0.0922 (r = 0.9985)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.19	109.6
4	1	3.84	96.1
12	1	10.90	90.8
30	1	29.85	99.5
60	1	64.14	106.9
100	1	97.07	97.1

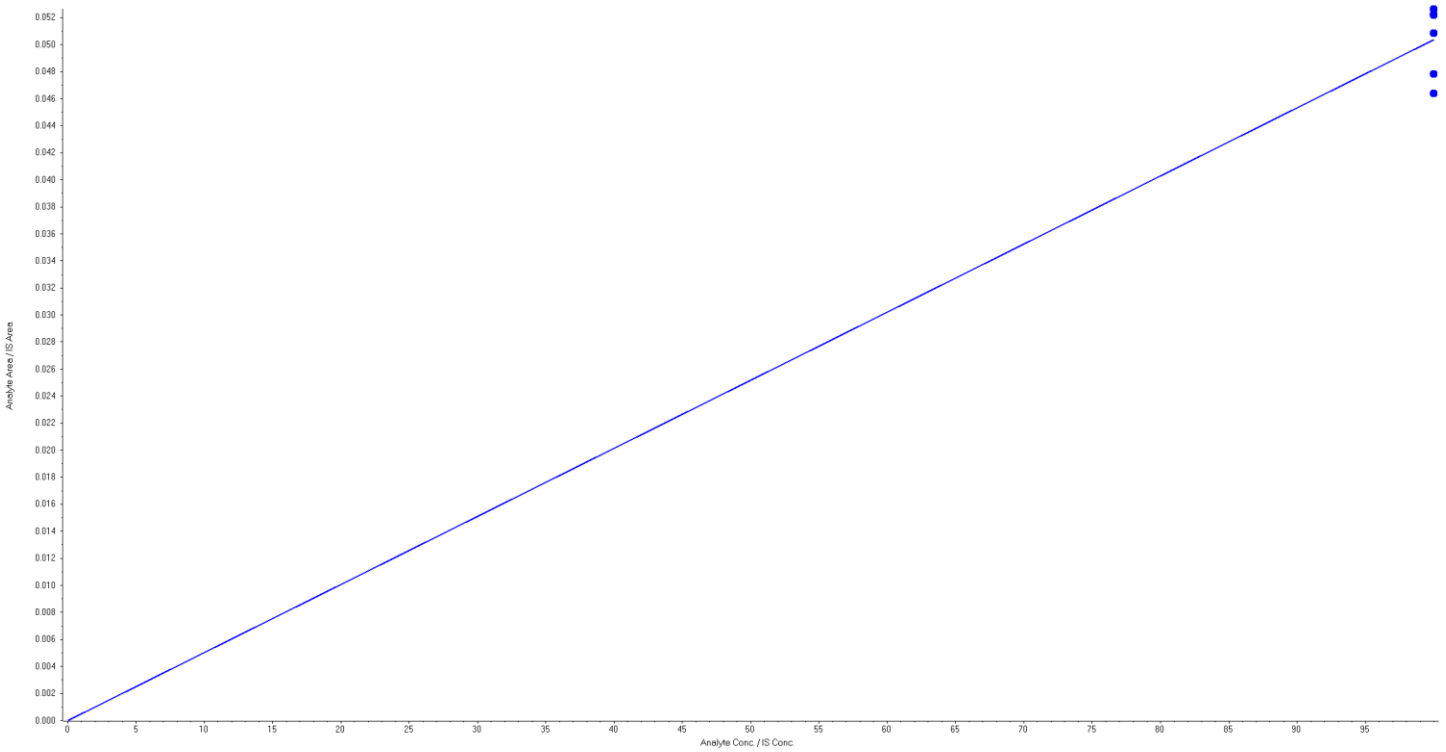


Analyte Name: 18O2-PFHxS
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.000504 x (r = 0.9989)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

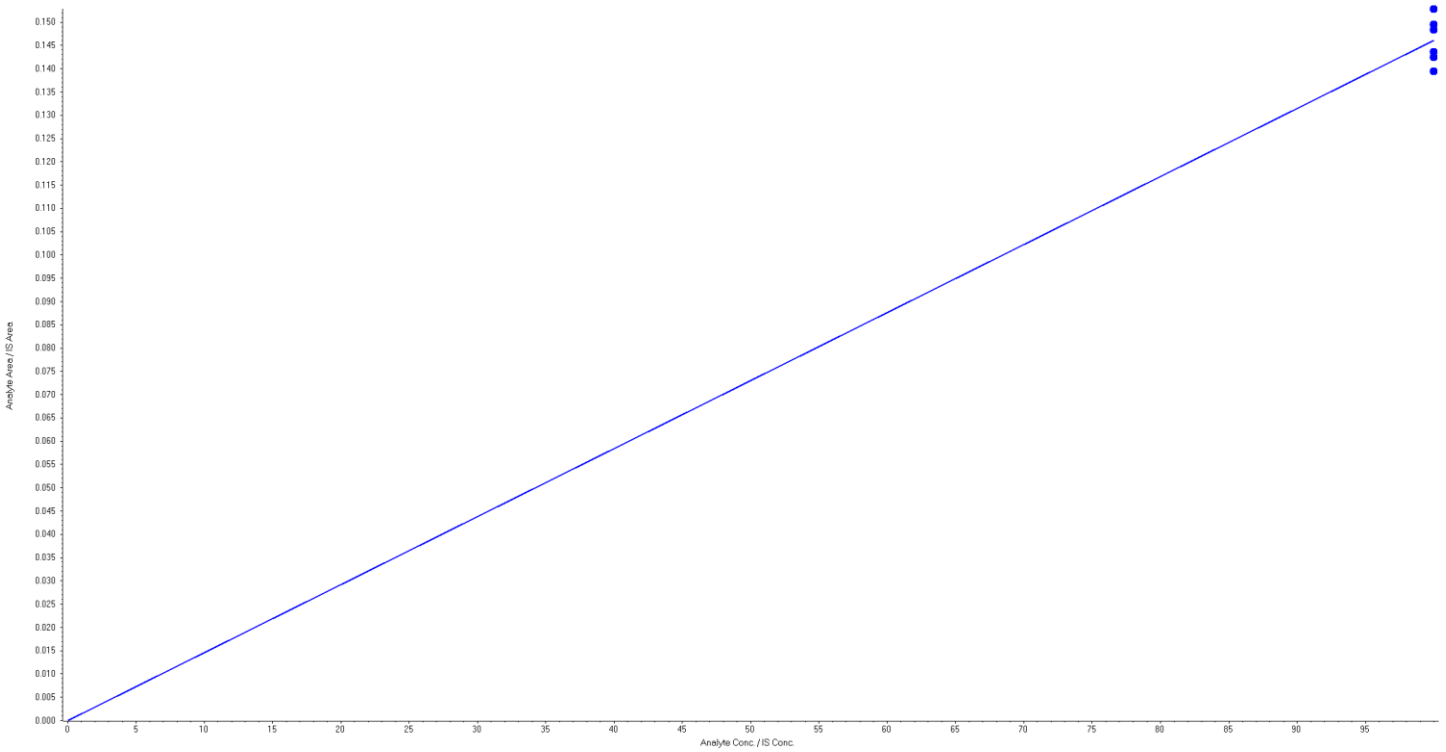


Analyte Name: 13C4-PFHpA
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.00146 x (r = 0.9995)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

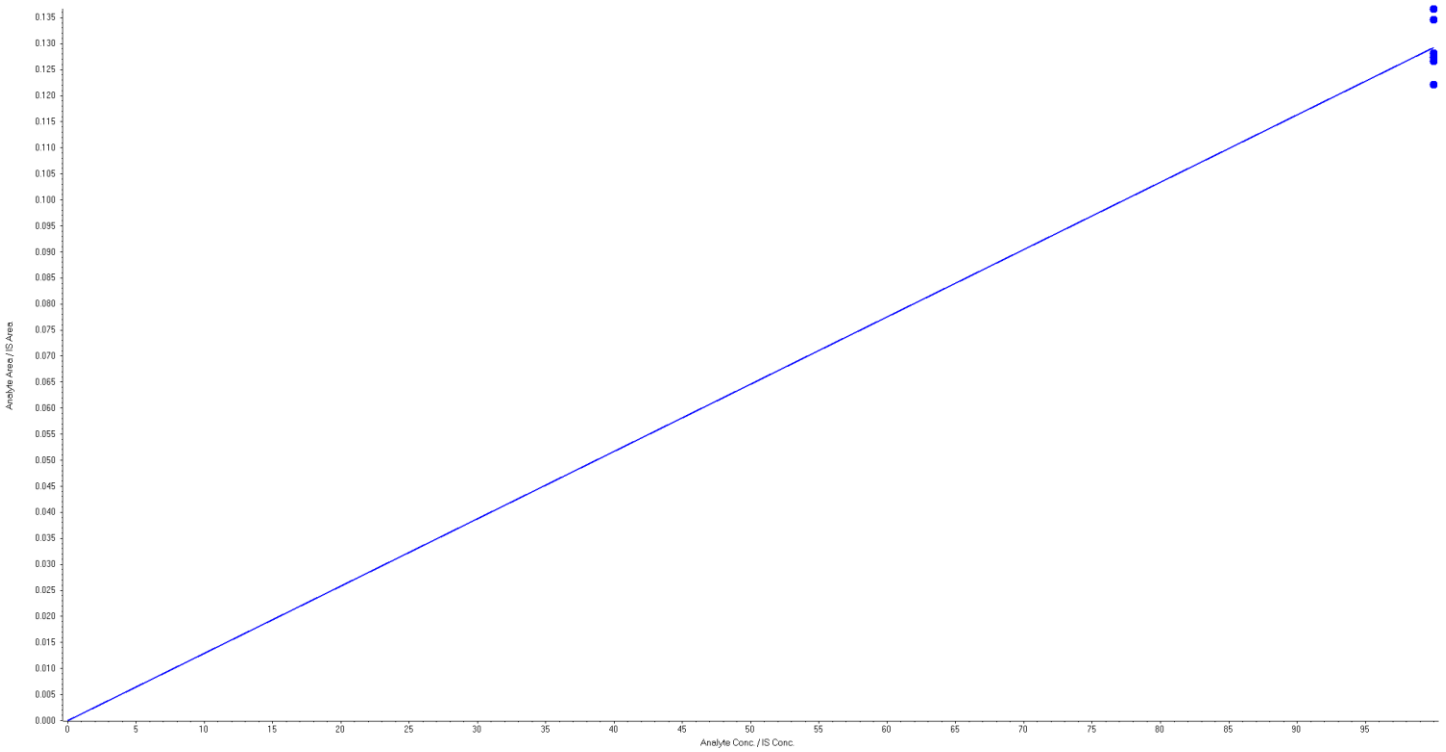


Analyte Name: 13C4-PFOA
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.00129 x (r = 0.9993)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

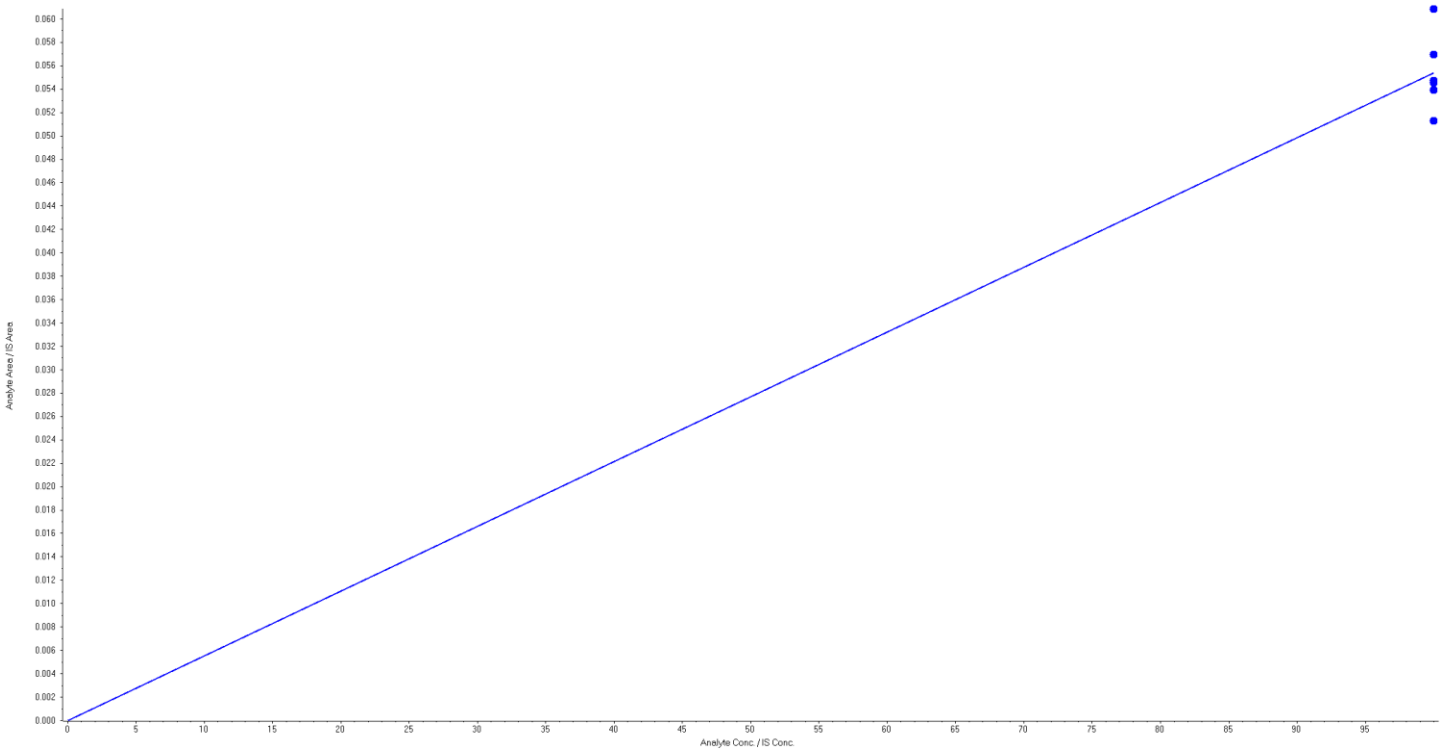


Analyte Name: 13C4-PFOS
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.000554 x (r = 0.9986)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

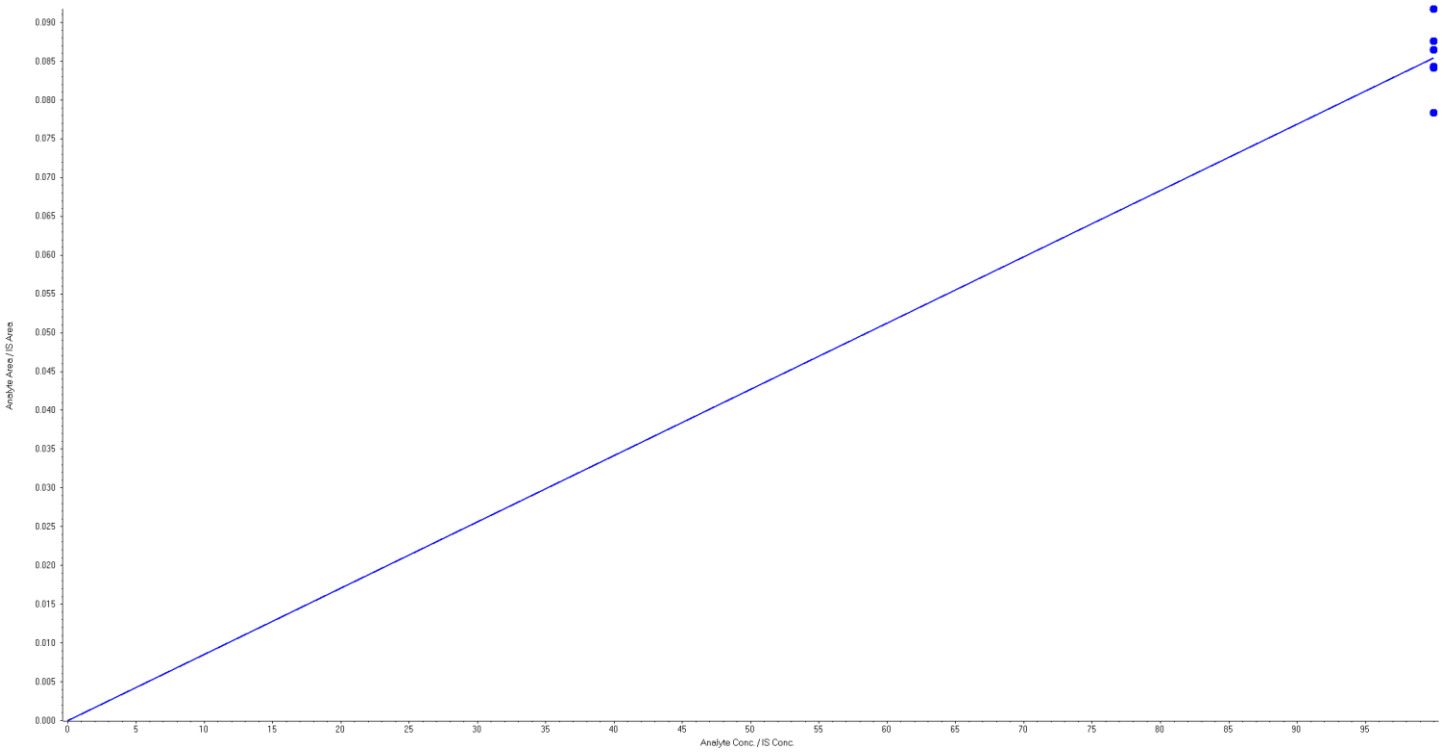


Analyte Name: 13C5-PFNA
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160218\WS#4384677.wiff	**Result Table**	PFC_Water_160218_4384677_ULow_6.rdb
Acquisition Date	2016/02/18 12:41:41 PM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.000854 x (r = 0.9989)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

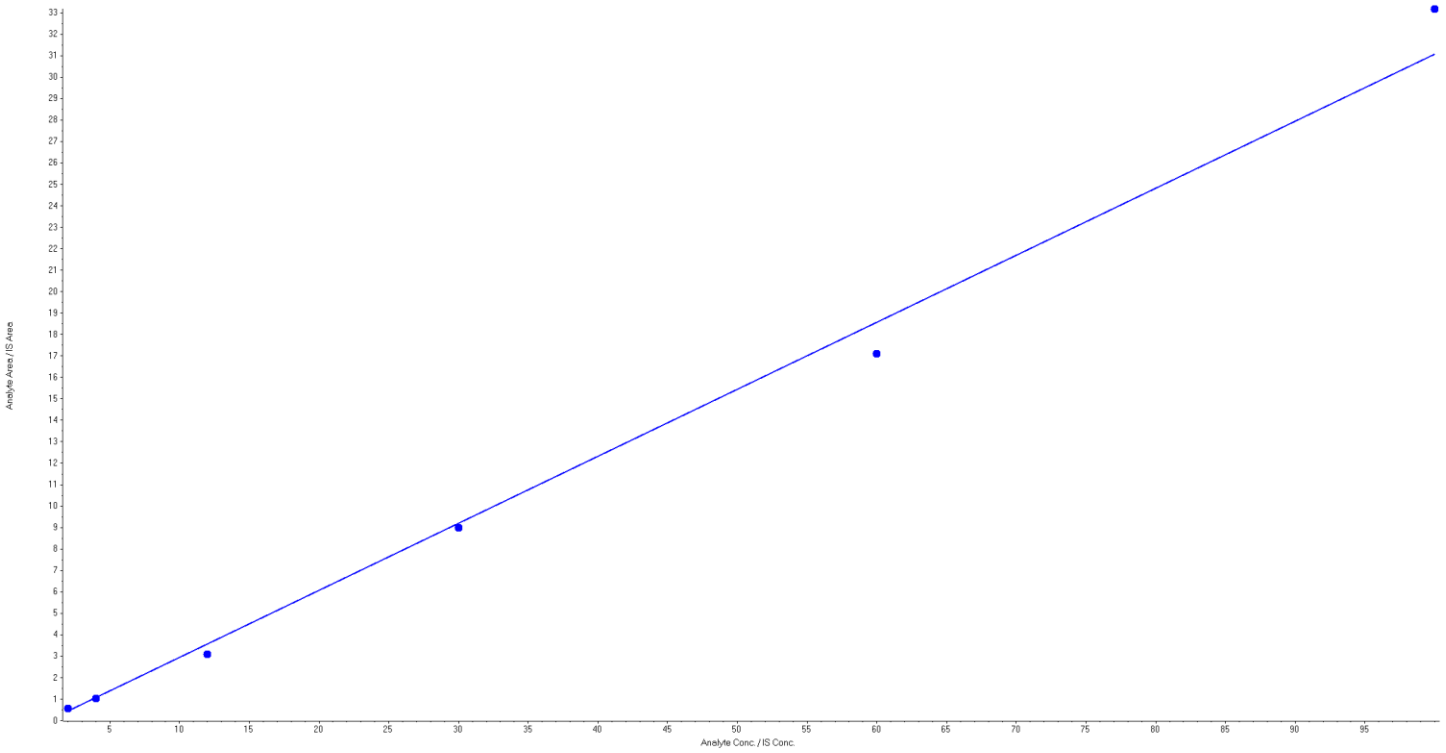


Analyte Name: PFBS 1
Internal Standard: MPFHxS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.312 x + -0.178 (r = 0.9966)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.41	120.3
4	1	3.84	96.1
12	1	10.46	87.2
30	1	29.29	97.6
60	1	55.27	92.1
100	1	106.73	106.7

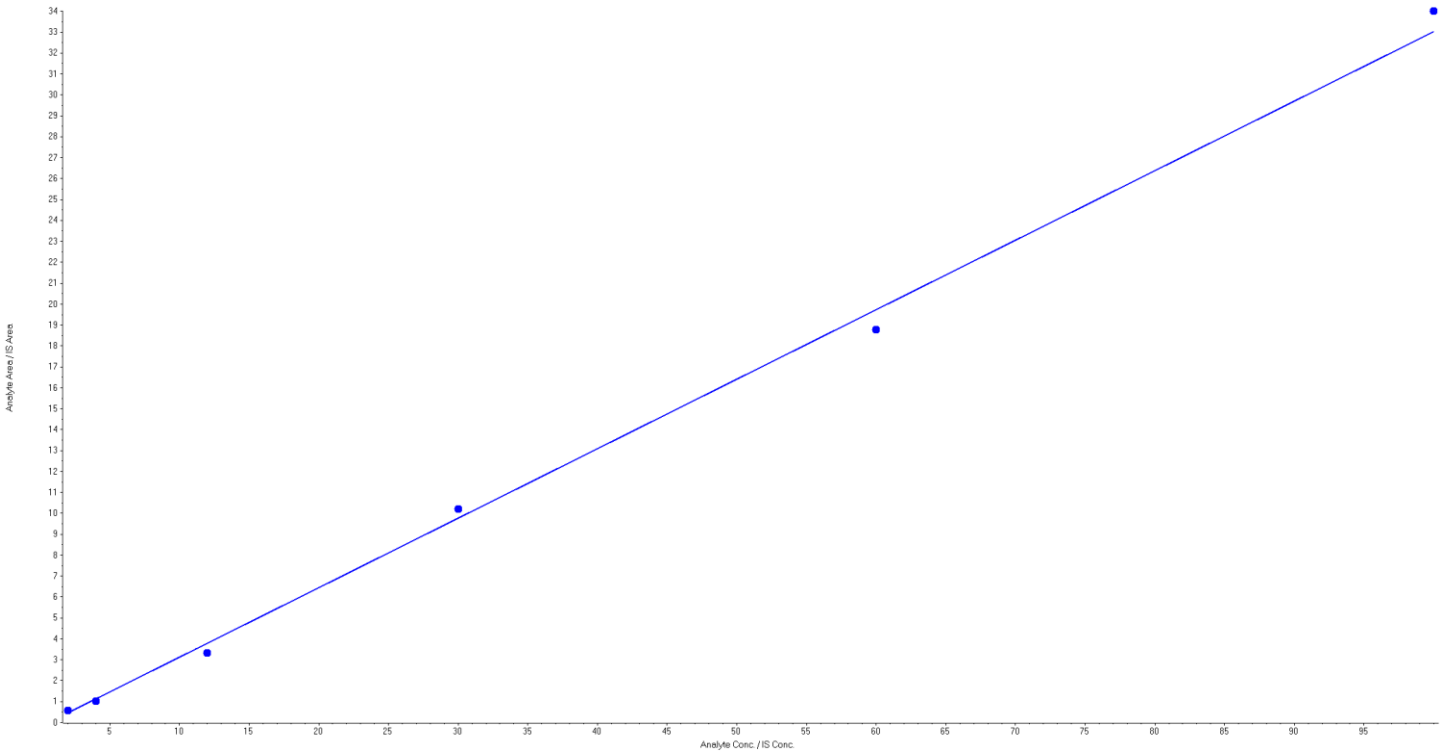


Analyte Name: PFHxS 1
Internal Standard: MPFHxS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.332 x + -0.197 (r = 0.9984)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.35	117.3
4	1	3.68	92.1
12	1	10.57	88.1
30	1	31.35	104.5
60	1	57.09	95.1
100	1	102.97	103.0

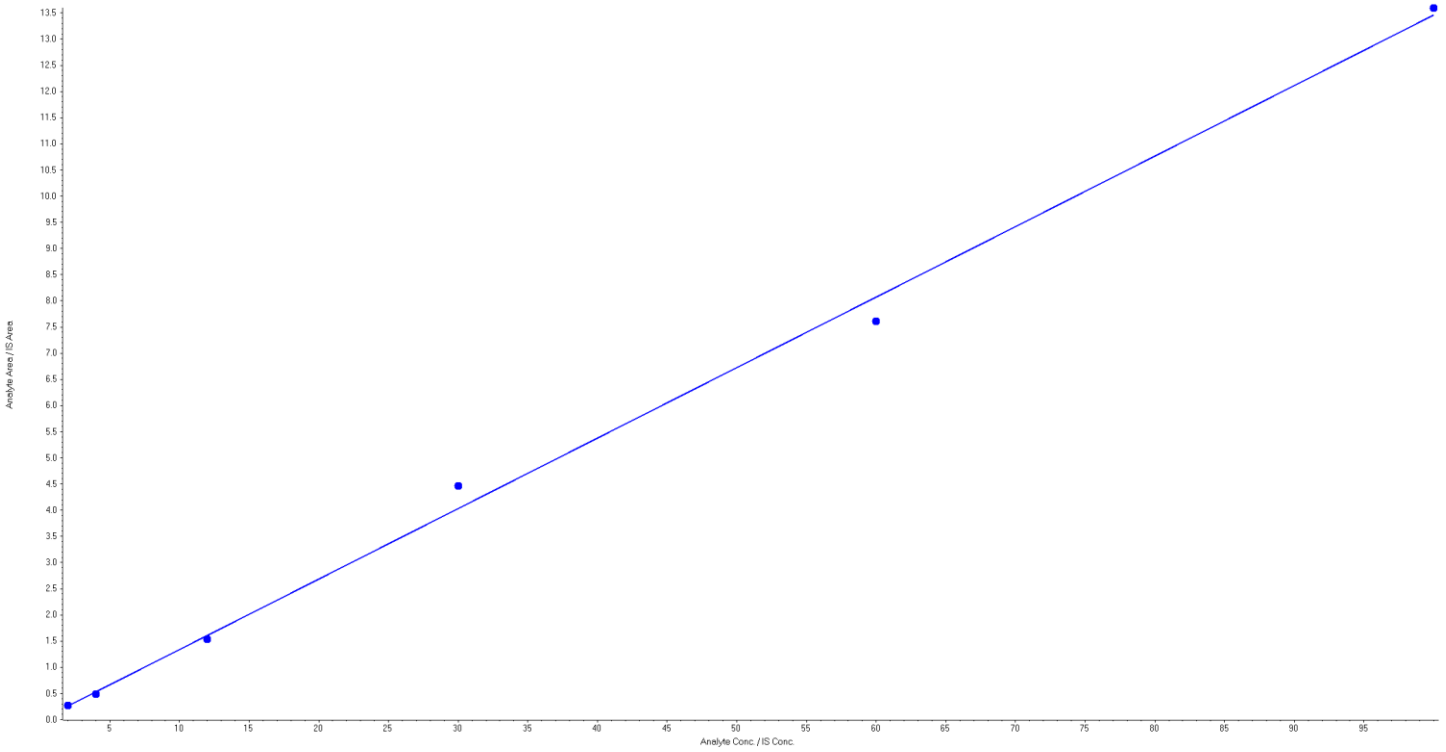


Analyte Name: PFHpA 1
Internal Standard: MPFHpA

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.135 x + -0.0103 (r = 0.9982)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.11	105.7
4	1	3.72	93.0
12	1	11.46	95.5
30	1	33.18	110.6
60	1	56.53	94.2
100	1	101.00	101.0

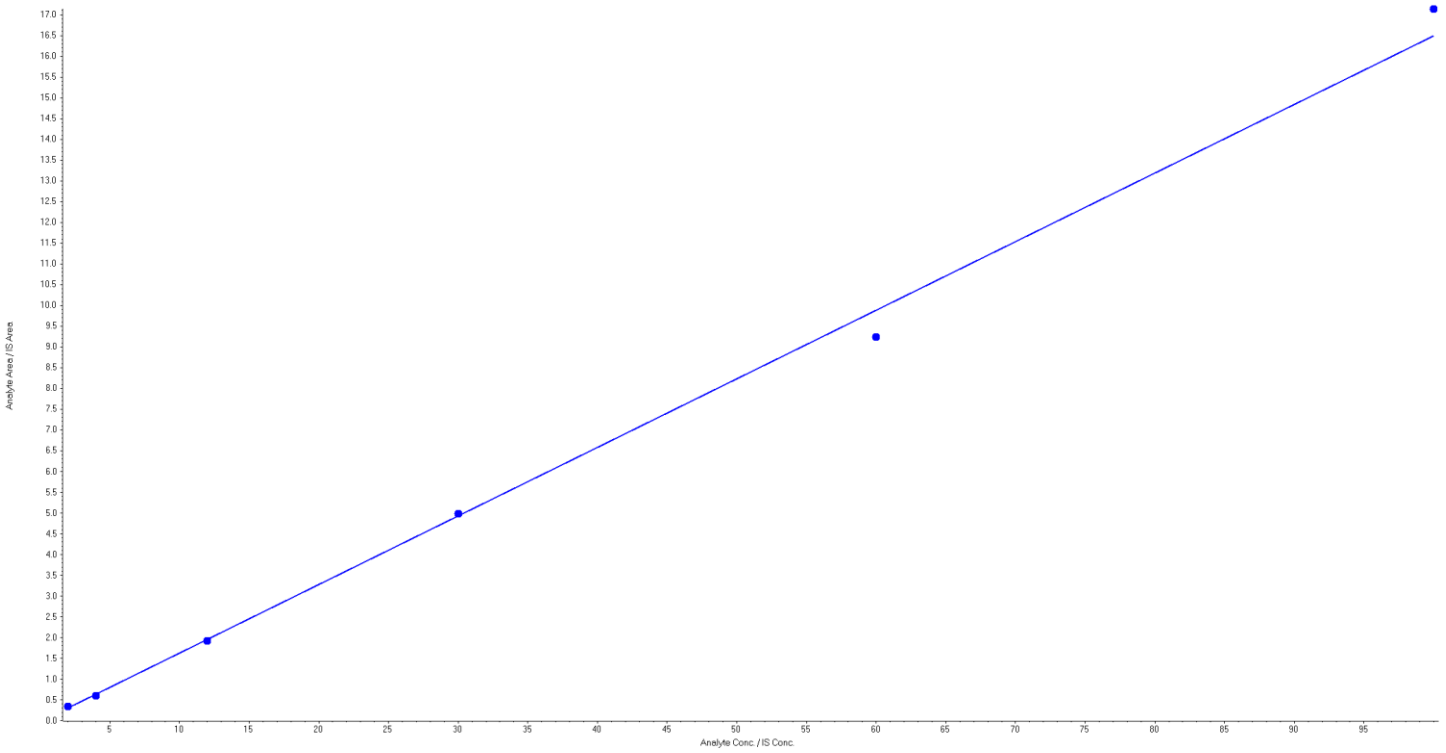


Analyte Name: PFOA 1
Internal Standard: MPFOA

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.165 x + -0.0279 (r = 0.9986)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.20	110.0
4	1	3.74	93.4
12	1	11.79	98.2
30	1	30.30	101.0
60	1	56.07	93.4
100	1	103.91	103.9

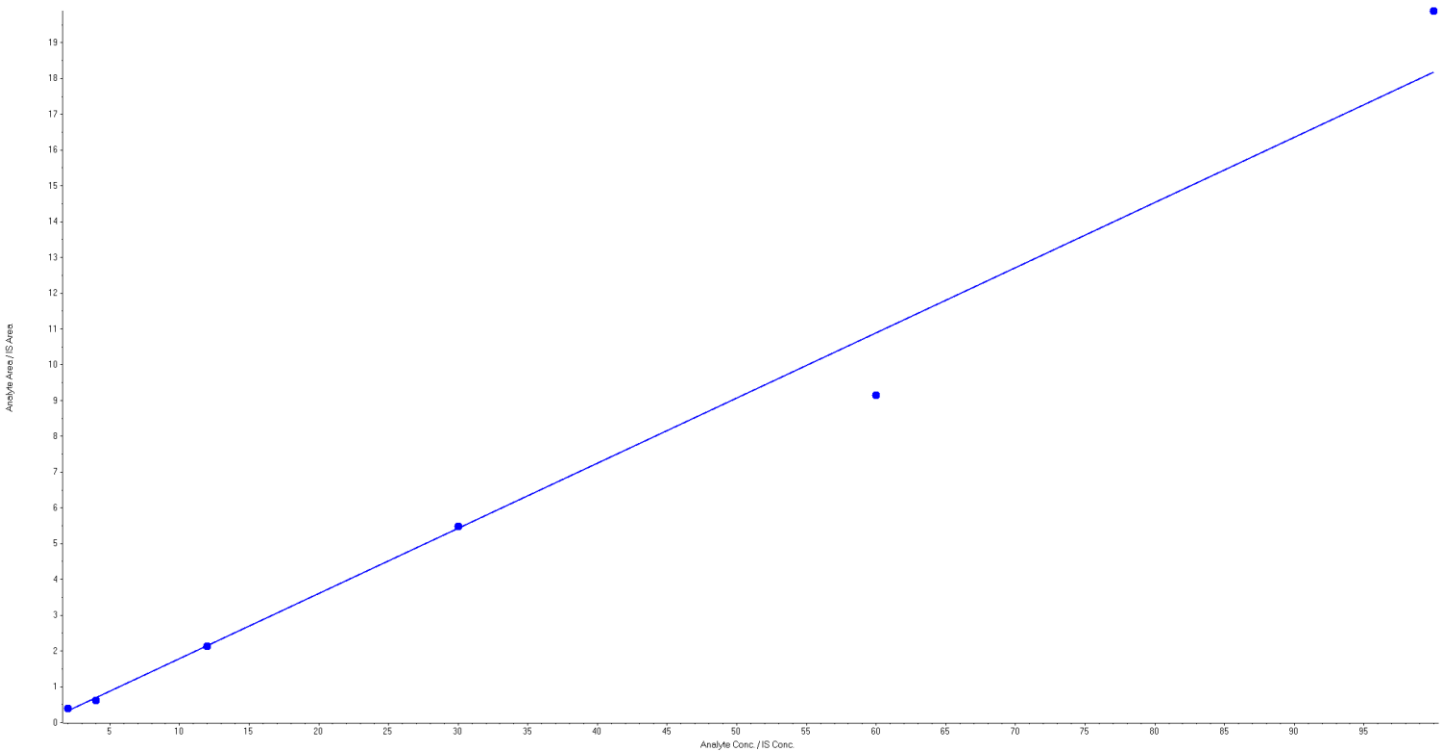


Analyte Name: PFOS 1
Internal Standard: MPFOS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.182 x + -0.0353 (r = 0.9927)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.31	115.6
4	1	3.63	90.7
12	1	11.90	99.2
30	1	30.32	101.1
60	1	50.47	84.1
100	1	109.37	109.4

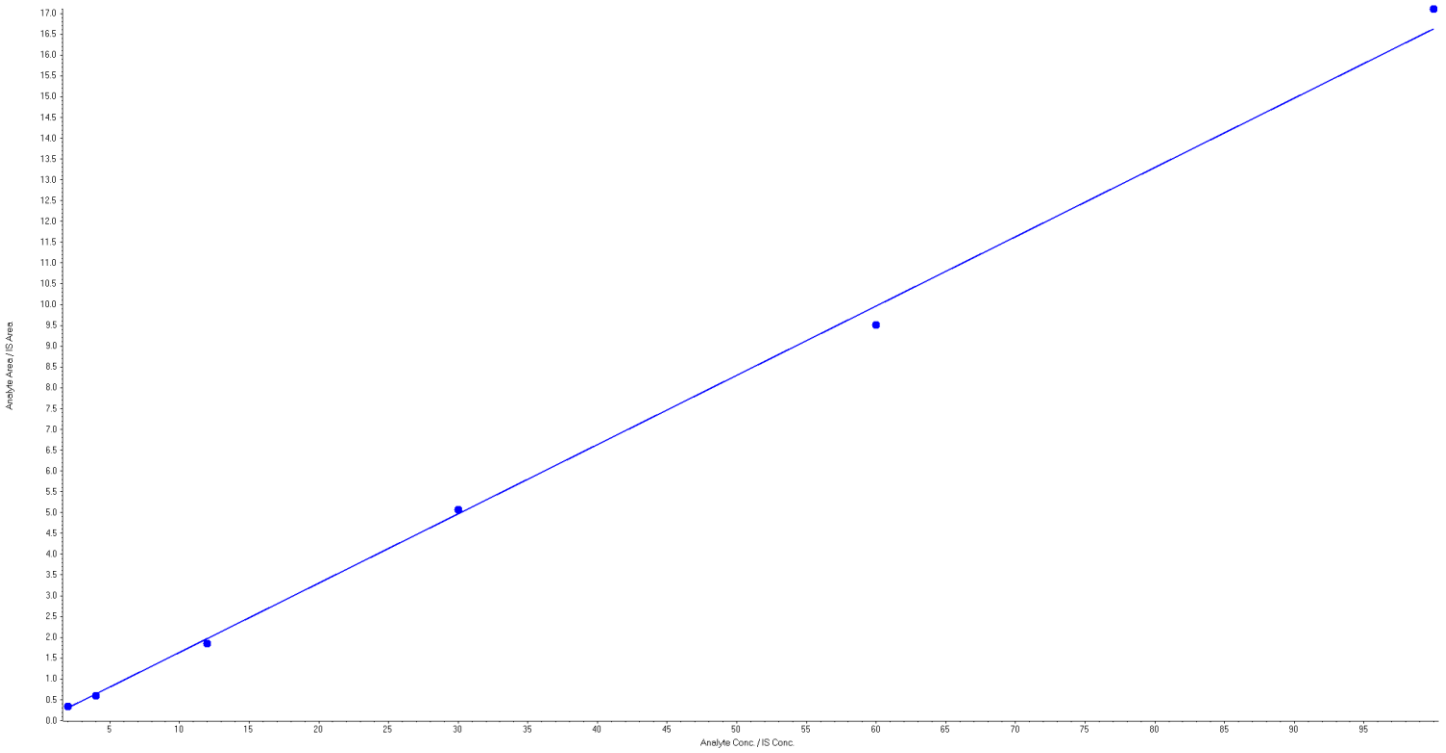


Analyte Name: PFNA 1
Internal Standard: MPFNA

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.167 x + -0.0273 (r = 0.9991)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
2	1	2.23	111.6
4	1	3.76	93.9
12	1	11.30	94.2
30	1	30.63	102.1
60	1	57.22	95.4
100	1	102.86	102.9

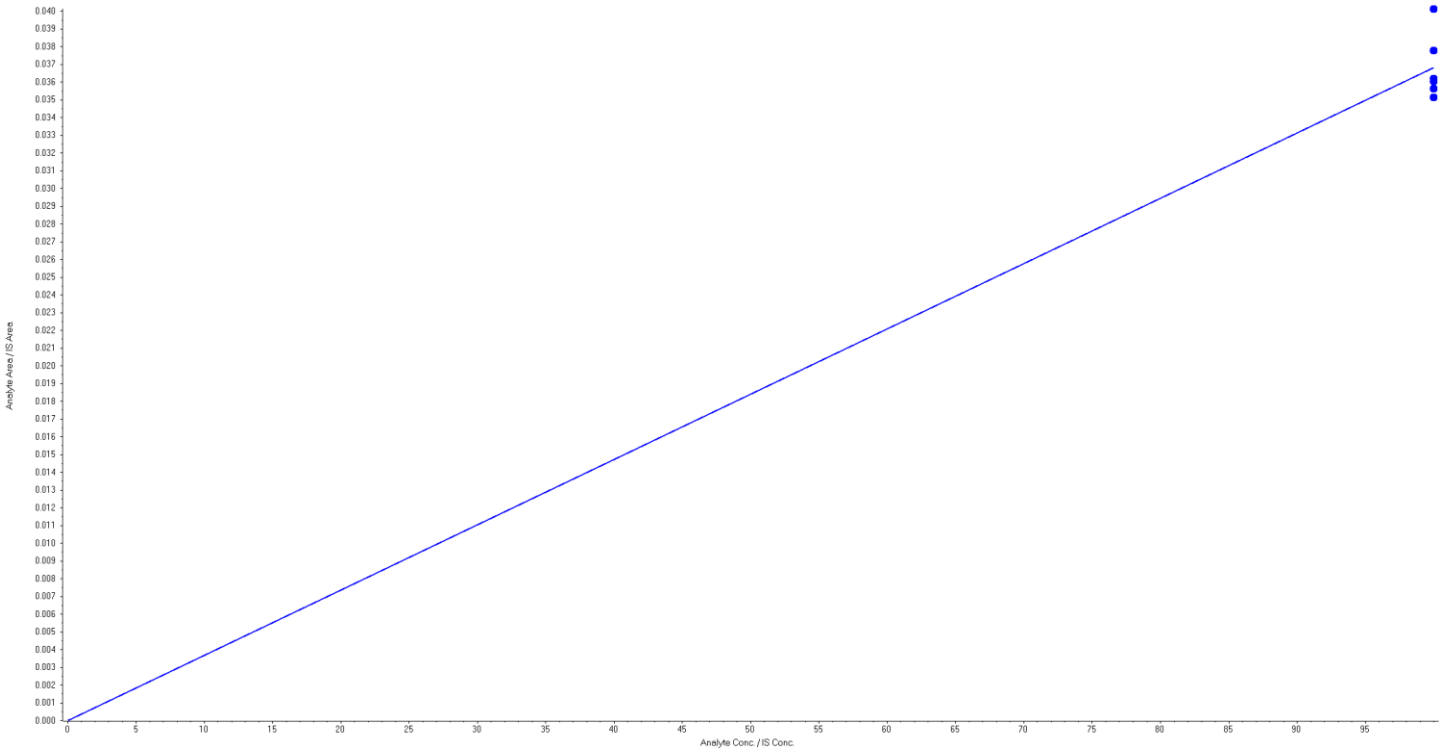


Analyte Name: 18O2-PFHxS
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.000368 x (r = 0.9990)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

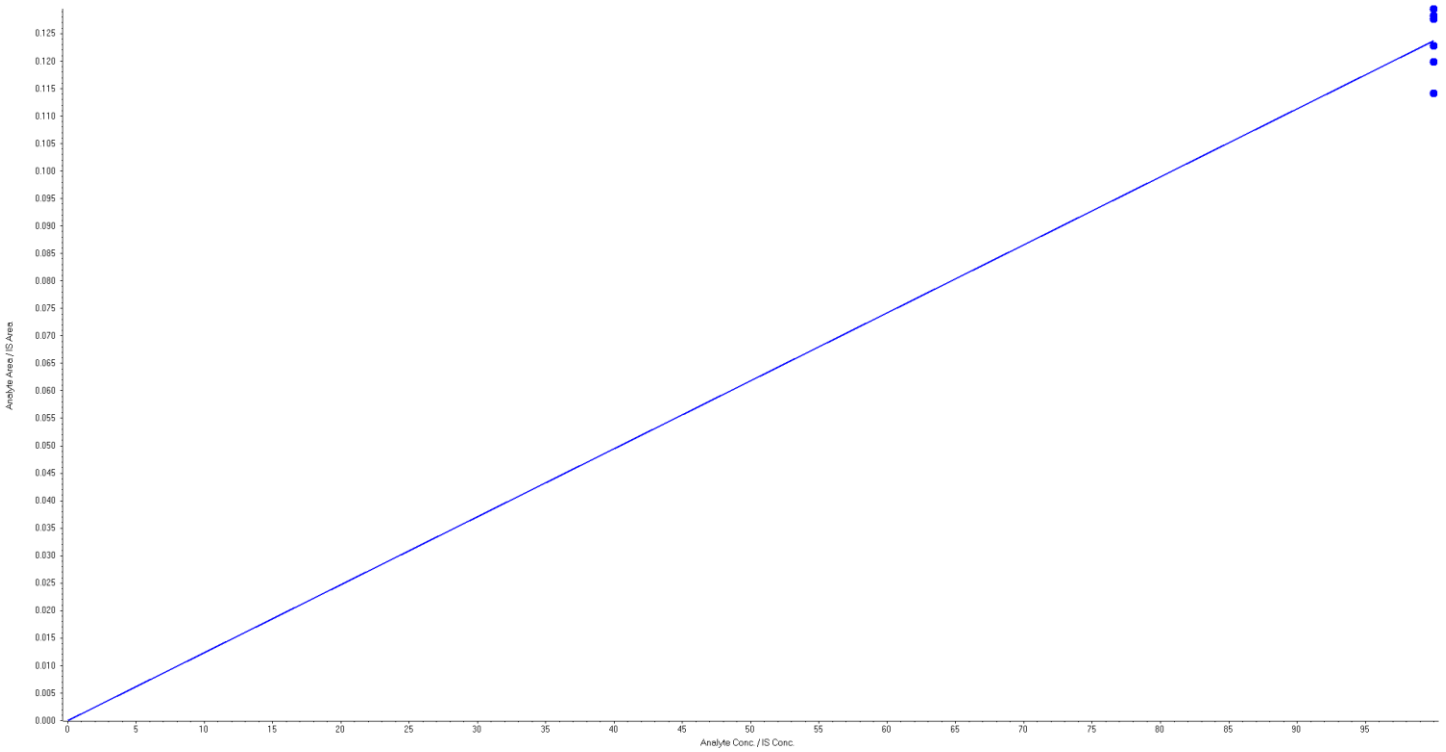


Analyte Name: 13C4-PFHpA
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.00124 x (r = 0.9990)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

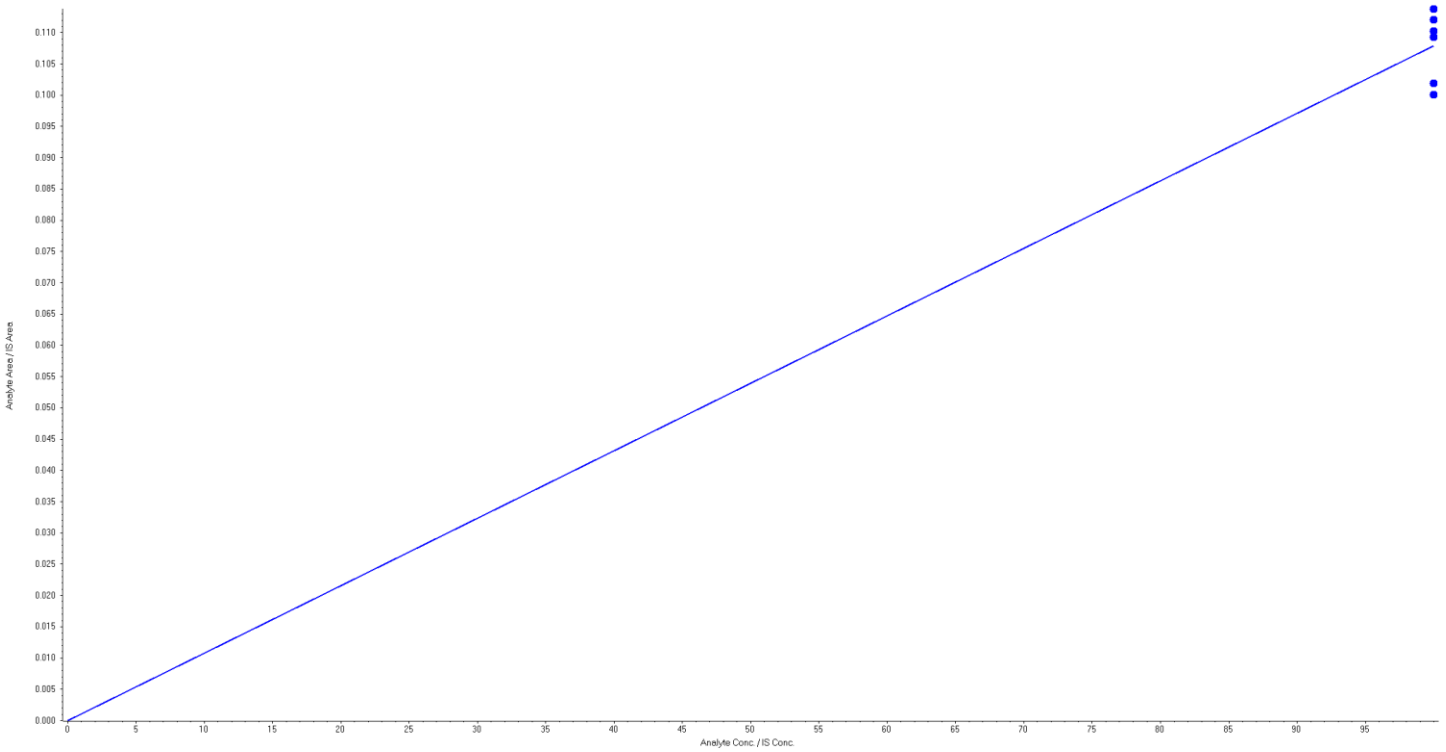


Analyte Name: 13C4-PFOA
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.00108 x (r = 0.9989)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

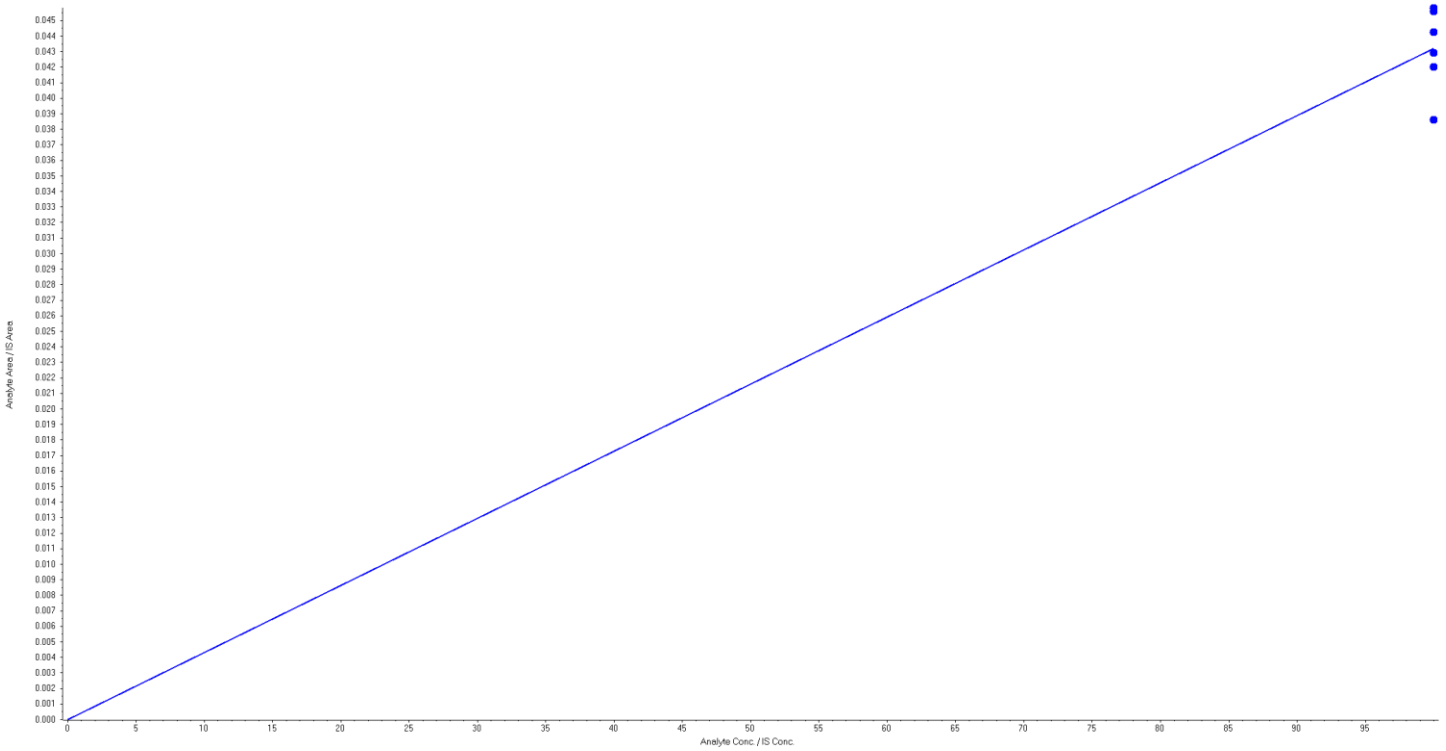


Analyte Name: 13C4-PFOS
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.000432 x (r = 0.9984)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0

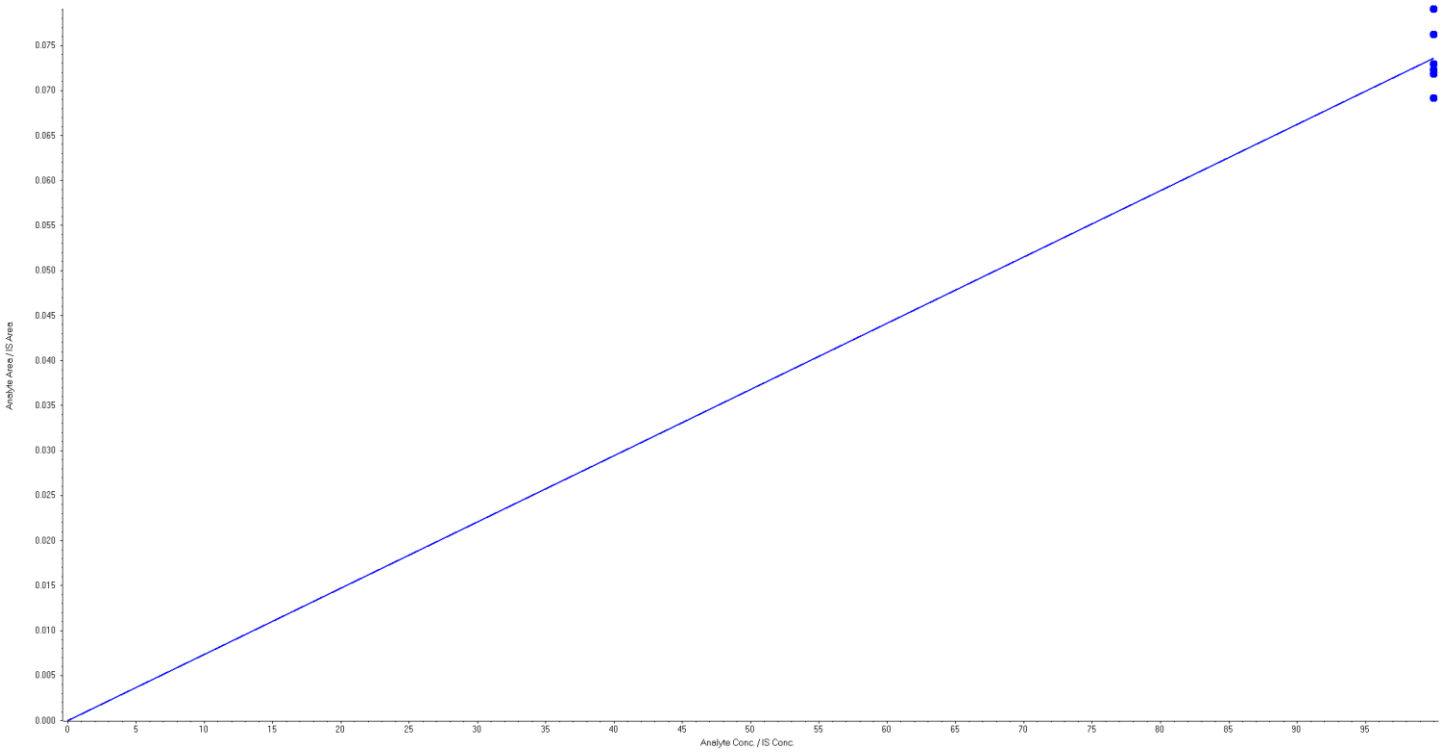


Analyte Name: 13C5-PFNA
Internal Standard: 13C6-PFHxA IS

Data File	PFC_160219\WS#4386408.wiff	**Result Table**	PFC_Water_160219_4385924_ULow.rdb
Acquisition Date	2016/02/19 7:45:04 AM	**Project**	Enviro\PFOS
Acquisition Method	PFC_Water_Low.dam	**Instrument Name**	LCMS03

Regression Equation: y = 0.000736 x (r = 0.9991)

Expected Concentration (µg/L)	Number of Values	Calculated Concentration (µg/L)	% Accuracy
100	6	100.00	100.0



6. Continuing Calibration

Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

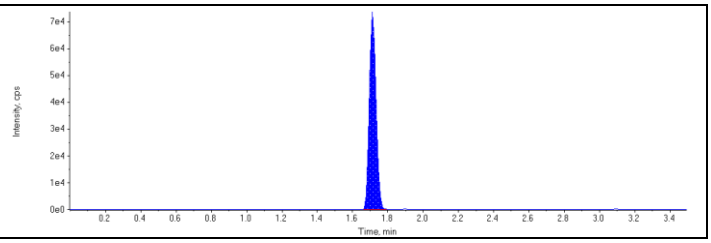
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 1:22:29 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	193000.	1.71	1.00	-
MPFHpA	557000.	1.75	1.00	-
MPFOA	472000.	1.92	1.00	-
MPFOS	205000.	2.00	1.00	-
MPFNA	311000.	2.06	1.00	-
13C6-PFHxA IS	3470000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	2180000	1.16	30.0	30.0	100.0
PFHxS 1	2320000	1.71	30.0	31.0	103.0
PFHpA 1	2730000	1.75	30.0	31.7	106.0
PFOA 1	2860000	1.93	30.0	32.3	108.0
PFOS 1	1410000	2.00	30.0	31.4	105.0
PFNA 1	1920000	2.06	30.0	32.0	107.0
18O2-PFHxS	193000	1.71	100.	111.	111.0
13C4-PFHpA	557000	1.75	100.	110.	110.0
13C4-PFOA	472000	1.92	100.	105.	105.0
13C4-PFOS	205000	2.00	100.	107.	107.0
13C5-PFNA	311000	2.06	100.	105.	105.0
13C6-PFHxA	3470000	1.49	100.	93.2	93.2

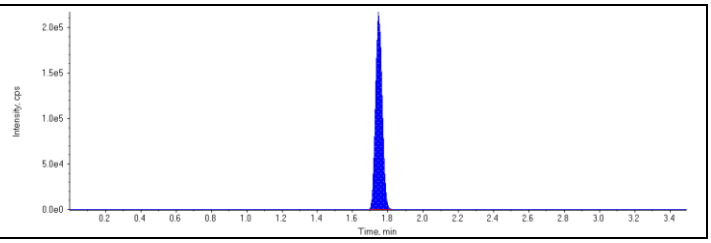
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



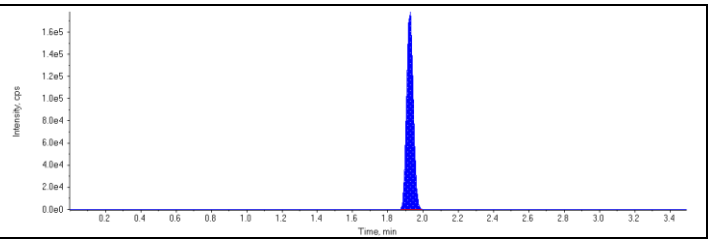
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



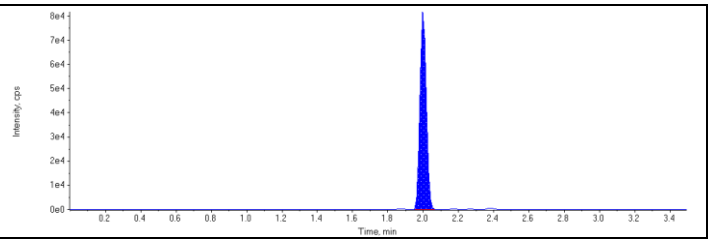
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



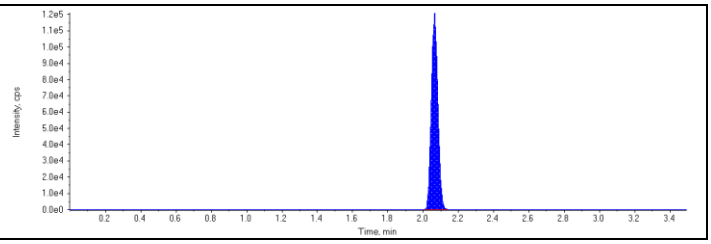
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



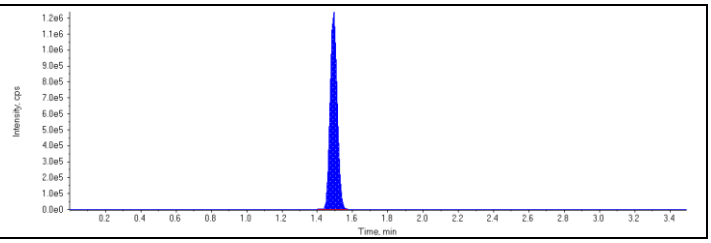
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

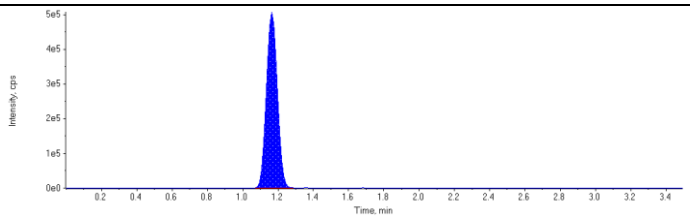
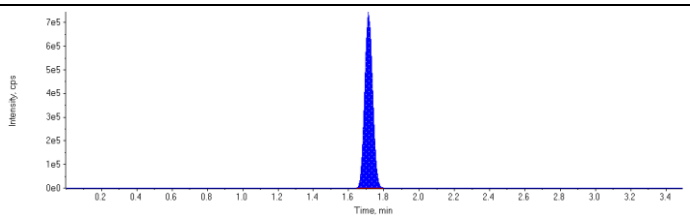
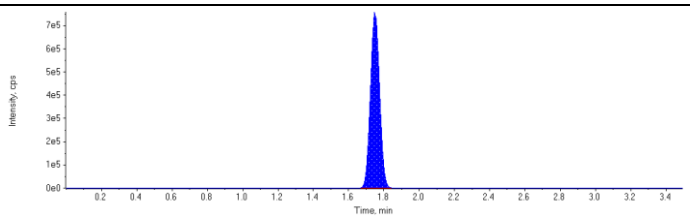
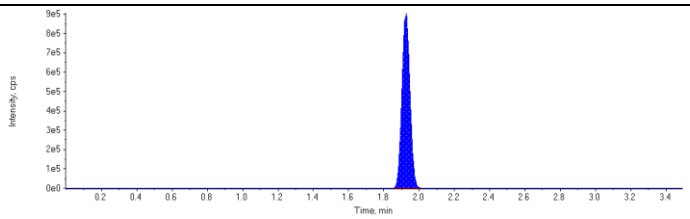
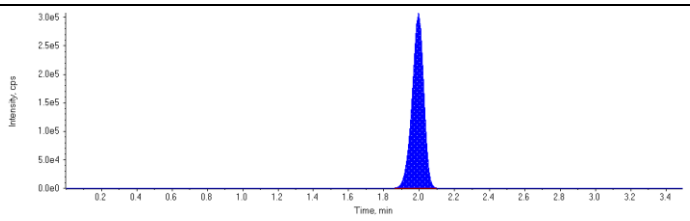
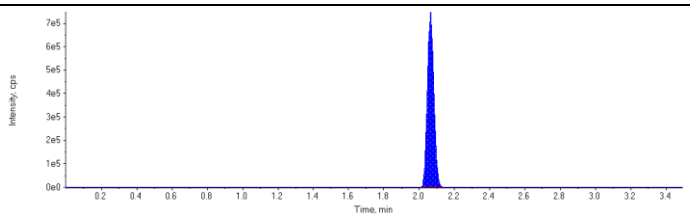
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

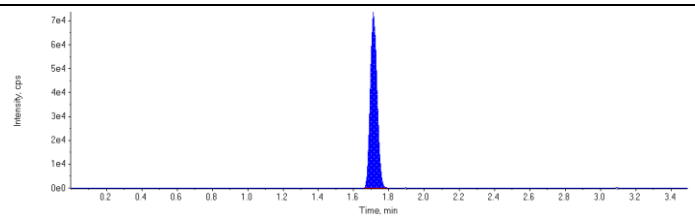
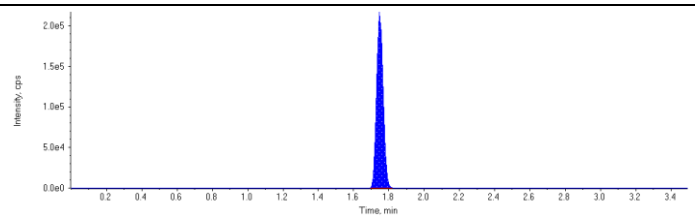
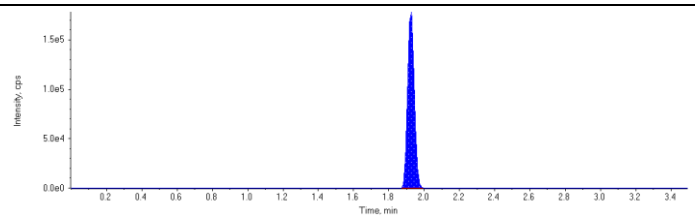
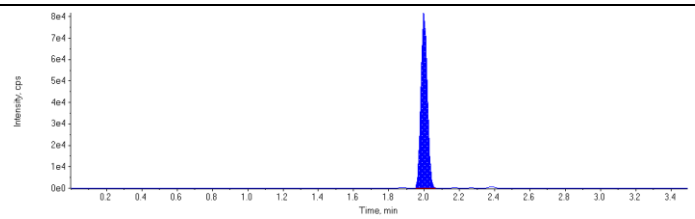
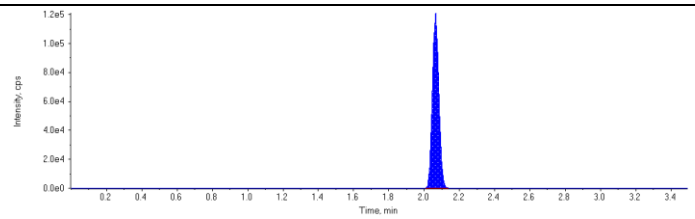
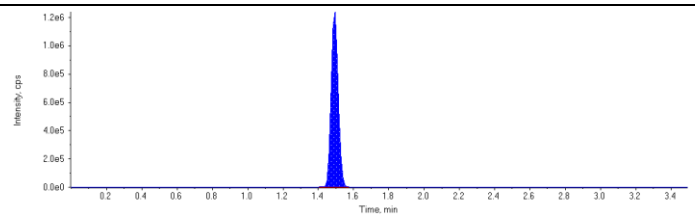


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 30.0 µg/L Area Ratio: 11.3 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 31.0 µg/L Area Ratio: 12.0 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 31.7 µg/L Area Ratio: 4.91 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.93 (1.88) min Calculated Conc: 32.3 µg/L Area Ratio: 6.05 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 2.00 (2.00) min Calculated Conc: 31.4 µg/L Area Ratio: 6.90 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 32.0 µg/L Area Ratio: 6.16 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 111. µg/L Area Ratio: 0.0558 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 110. µg/L Area Ratio: 0.161 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 105. µg/L Area Ratio: 0.136 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 107. µg/L Area Ratio: 0.0590 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 105. µg/L Area Ratio: 0.0896 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.49 (1.42) min Calculated Conc: 93.2 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

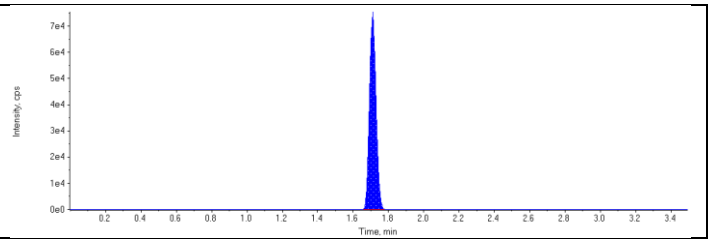
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 2:33:53 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	192000.	1.71	1.00	-
MPFHpA	494000.	1.75	1.00	-
MPFOA	465000.	1.92	1.00	-
MPFOS	201000.	2.00	1.00	-
MPFNA	316000.	2.06	1.00	-
13C6-PFHxA IS	3180000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1800000	1.16	30.0	25.0	83.2
PFHxS 1	2200000	1.71	30.0	29.7	98.9
PFHpA 1	2550000	1.75	30.0	33.3	111.0
PFOA 1	2700000	1.92	30.0	31.1	104.0
PFOS 1	1400000	2.00	30.0	31.6	105.0
PFNA 1	1890000	2.06	30.0	31.1	104.0
18O2-PFHxS	192000	1.71	100.	120.	120.0
13C4-PFHpA	494000	1.75	100.	106.	106.0
13C4-PFOA	465000	1.92	100.	113.	113.0
13C4-PFOS	201000	2.00	100.	114.	114.0
13C5-PFNA	316000	2.06	100.	116.	116.0
13C6-PFHxA	3180000	1.49	100.	85.6	85.6

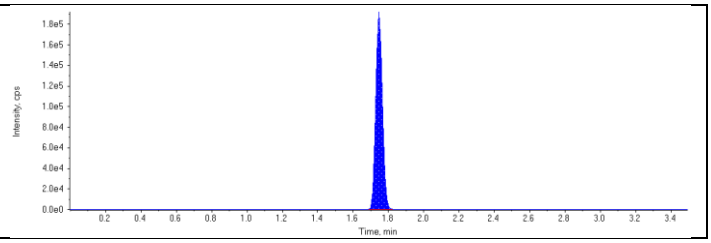
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



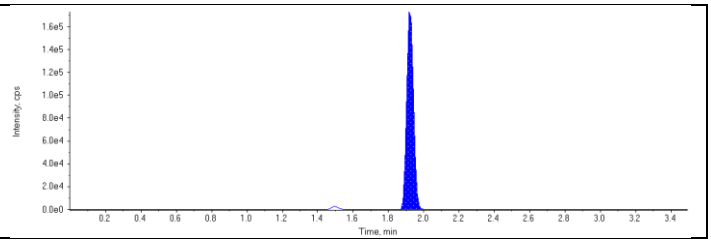
MPFHpA (Internal Standard)

RT (Exp. RT): 1.75(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



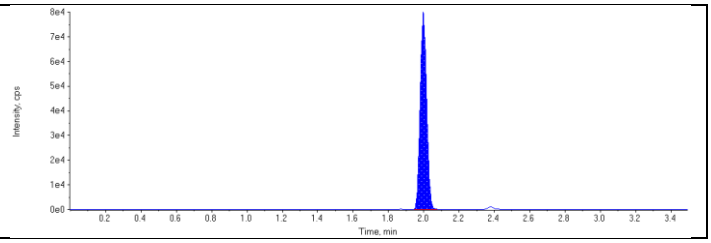
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



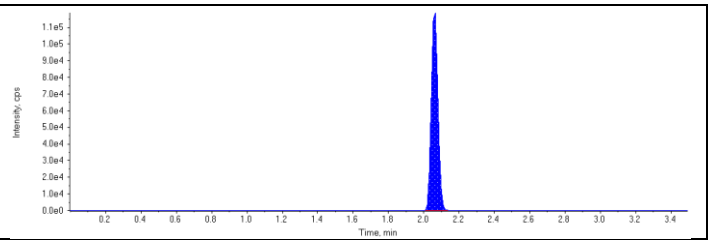
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



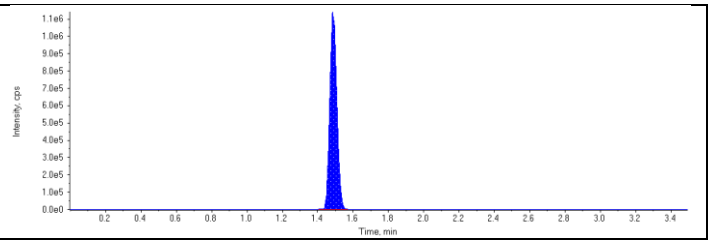
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

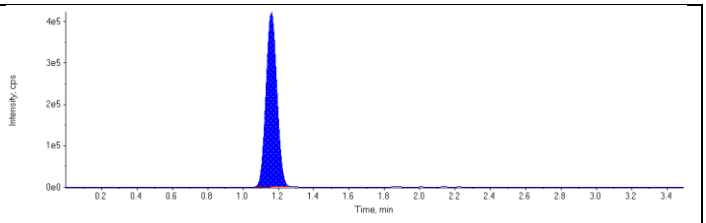
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 25.0 µg/L

Area Ratio: 9.35

Sample Type: (Quality Control)



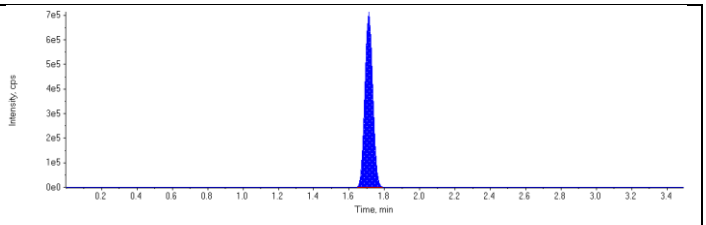
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 29.7 µg/L

Area Ratio: 11.4

Sample Type: (Quality Control)



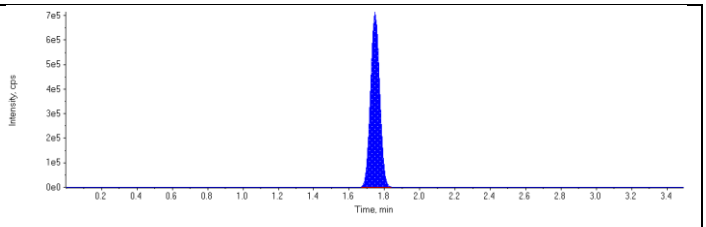
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.75 (1.75) min

Calculated Conc: 33.3 µg/L

Area Ratio: 5.15

Sample Type: (Quality Control)



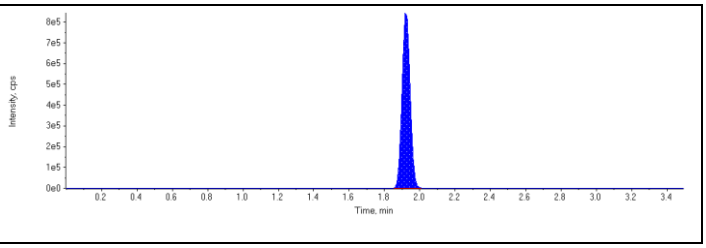
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 31.1 µg/L

Area Ratio: 5.82

Sample Type: (Quality Control)



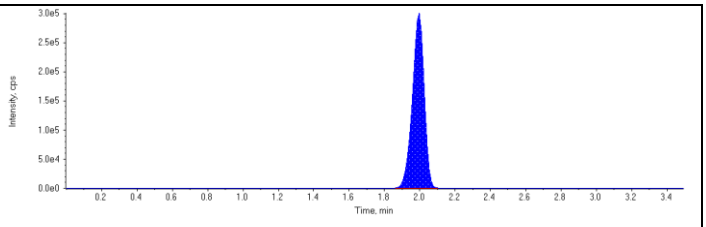
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 2.00 (2.00) min

Calculated Conc: 31.6 µg/L

Area Ratio: 6.94

Sample Type: (Quality Control)



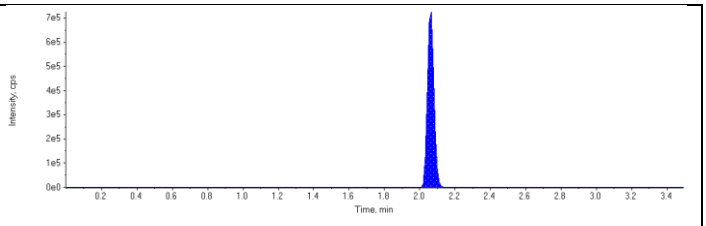
PFNA 1 (462.900/419.000 Da)

RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 31.1 µg/L

Area Ratio: 5.98

Sample Type: (Quality Control)



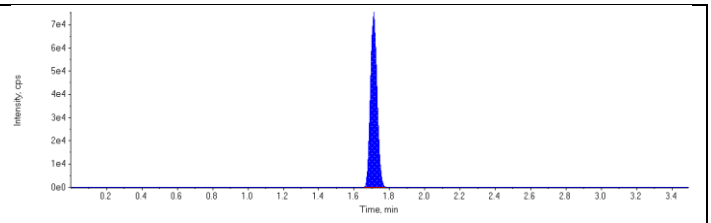
18O2-PFHxS (402.900/84.000 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 120. µg/L

Area Ratio: 0.0604

Sample Type: (Quality Control)



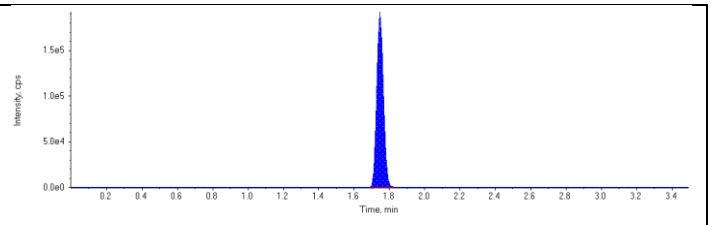
13C4-PFHpA (366.900/322.000 Da)

RT (Exp. RT): 1.75 (1.75) min

Calculated Conc: 106. µg/L

Area Ratio: 0.155

Sample Type: (Quality Control)



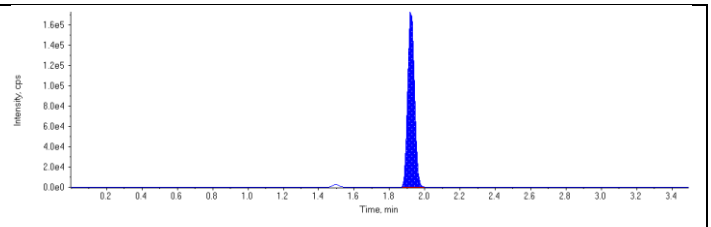
13C4-PFOA (416.900/372.000 Da)

RT (Exp. RT): 1.92 (1.93) min

Calculated Conc: 113. µg/L

Area Ratio: 0.146

Sample Type: (Quality Control)



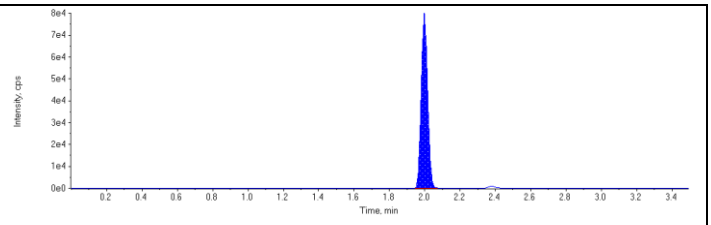
13C4-PFOS (502.900/79.900 Da)

RT (Exp. RT): 2.00 (1.97) min

Calculated Conc: 114. µg/L

Area Ratio: 0.0632

Sample Type: (Quality Control)



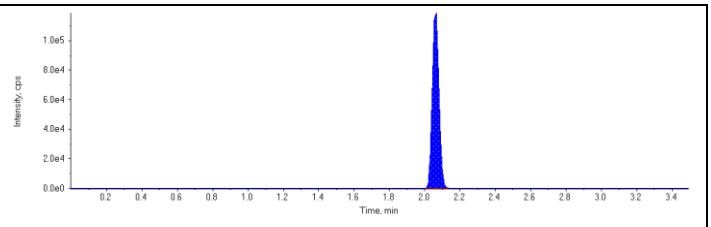
13C5-PFNA (467.900/423.000 Da)

RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 116. µg/L

Area Ratio: 0.0993

Sample Type: (Quality Control)



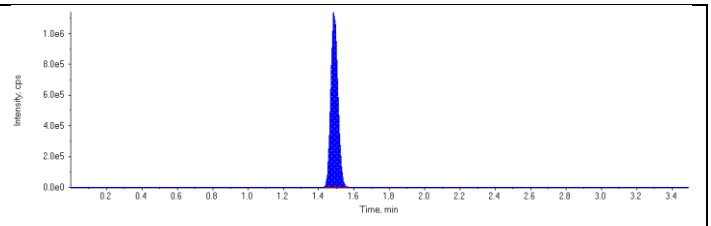
13C6-PFHxA (318.900/274.000 Da)

RT (Exp. RT): 1.49 (1.42) min

Calculated Conc: 85.6 µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



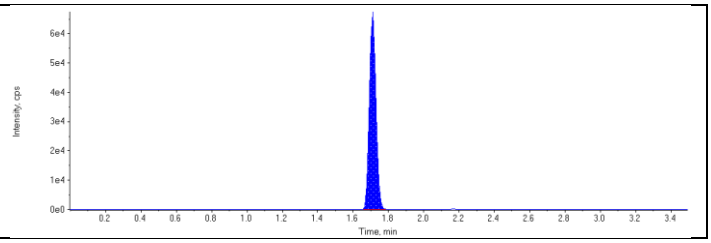
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 3:29:58 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	173000.	1.71	1.00	-
MPFHpA	524000.	1.74	1.00	-
MPFOA	468000.	1.92	1.00	-
MPFOS	210000.	2.00	1.00	-
MPFNA	314000.	2.06	1.00	-
13C6-PFHxA IS	3220000.	1.49	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1700000	1.16	30.0	26.1	87.1
PFHxS 1	2120000	1.71	30.0	31.7	106.0
PFHpA 1	2380000	1.75	30.0	29.4	97.9
PFOA 1	2690000	1.92	30.0	30.8	103.0
PFOS 1	1370000	1.99	30.0	29.7	98.9
PFNA 1	1850000	2.06	30.0	30.6	102.0
18O2-PFHxS	173000	1.71	100.	107.	107.0
13C4-PFHpA	524000	1.74	100.	111.	111.0
13C4-PFOA	468000	1.92	100.	112.	112.0
13C4-PFOS	210000	2.00	100.	118.	118.0
13C5-PFNA	314000	2.06	100.	114.	114.0
13C6-PFHxA	3220000	1.49	100.	86.7	86.7

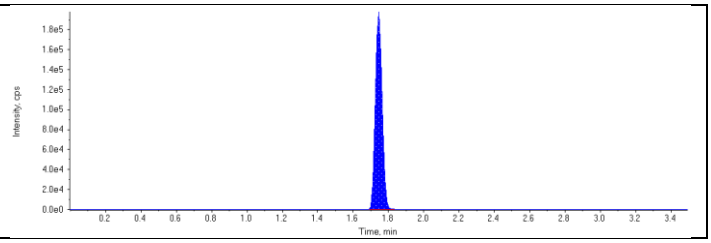
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



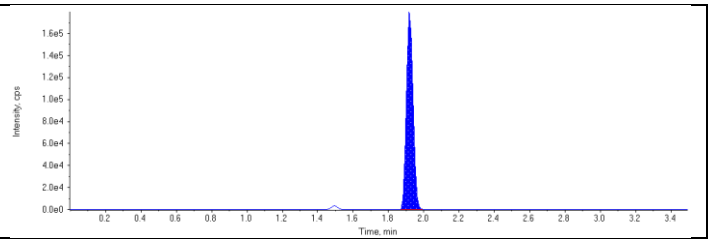
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



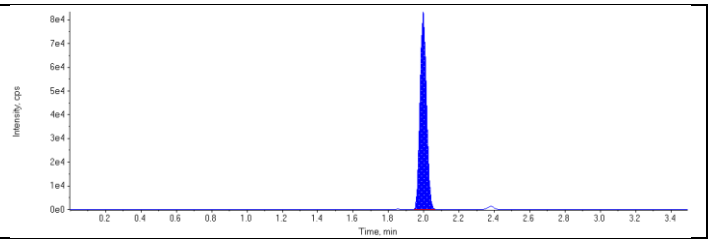
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



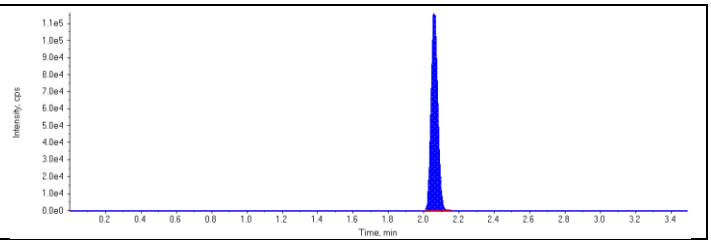
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



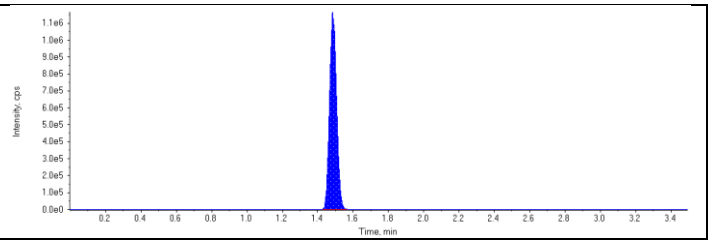
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

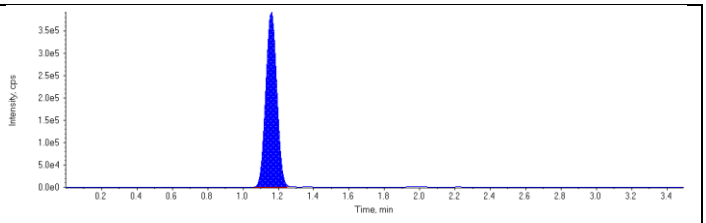
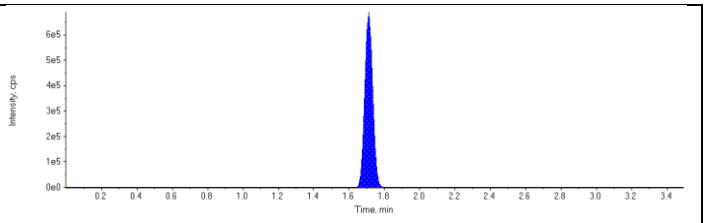
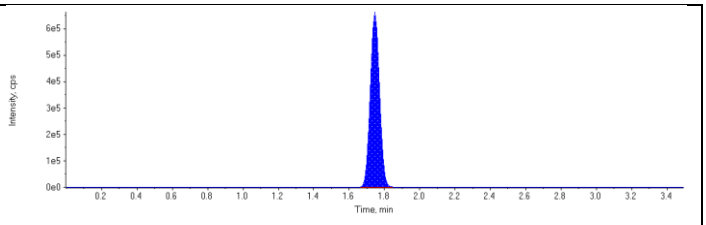
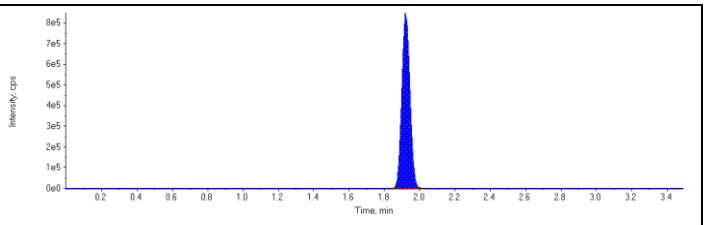
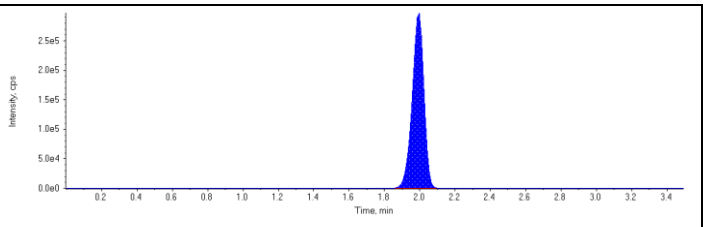
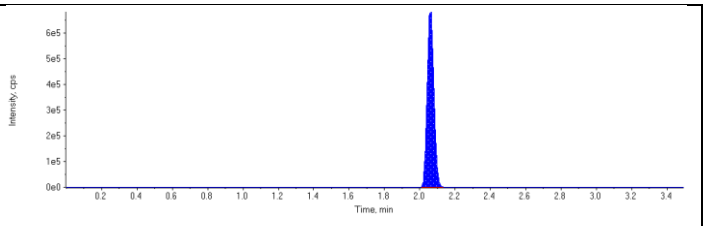
RT (Exp. RT): 1.49(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 26.1 µg/L Area Ratio: 9.79 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 31.7 µg/L Area Ratio: 12.3 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.75 (1.75) min Calculated Conc: 29.4 µg/L Area Ratio: 4.54 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 30.8 µg/L Area Ratio: 5.75 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 29.7 µg/L Area Ratio: 6.50 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 30.6 µg/L Area Ratio: 5.88 Sample Type: (Quality Control)	

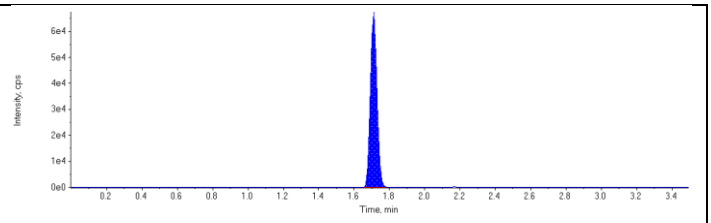
18O2-PFHxS (402.900/84.000 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 107. µg/L

Area Ratio: 0.0537

Sample Type: (Quality Control)



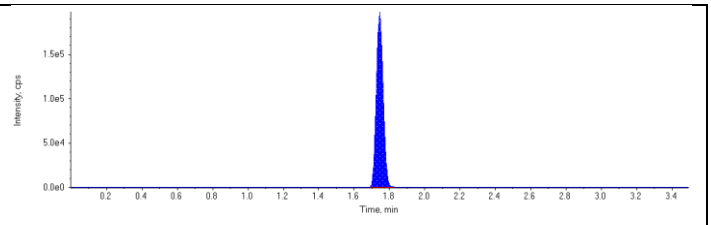
13C4-PFHpA (366.900/322.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 111. µg/L

Area Ratio: 0.163

Sample Type: (Quality Control)



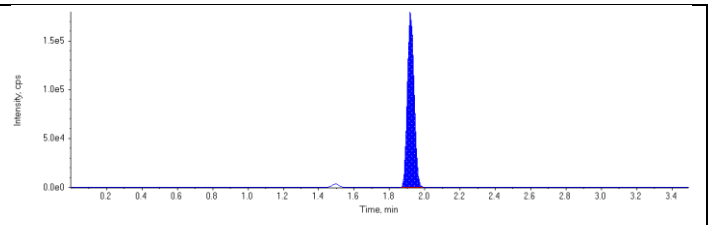
13C4-PFOA (416.900/372.000 Da)

RT (Exp. RT): 1.92 (1.93) min

Calculated Conc: 112. µg/L

Area Ratio: 0.145

Sample Type: (Quality Control)



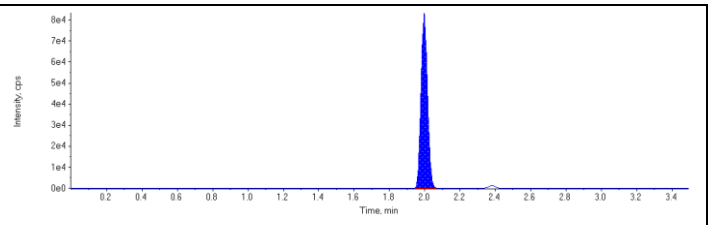
13C4-PFOS (502.900/79.900 Da)

RT (Exp. RT): 2.00 (1.97) min

Calculated Conc: 118. µg/L

Area Ratio: 0.0651

Sample Type: (Quality Control)



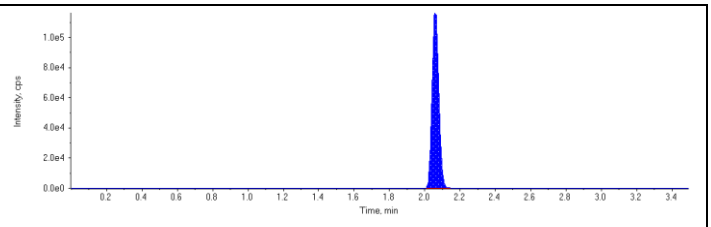
13C5-PFNA (467.900/423.000 Da)

RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 114. µg/L

Area Ratio: 0.0975

Sample Type: (Quality Control)



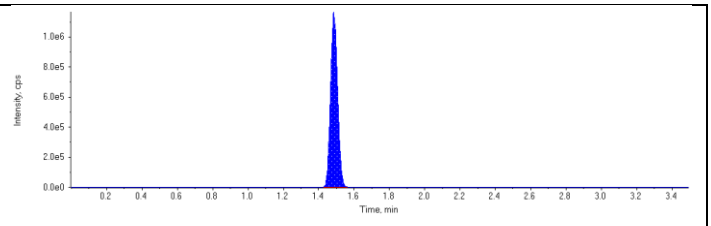
13C6-PFHxA (318.900/274.000 Da)

RT (Exp. RT): 1.49 (1.42) min

Calculated Conc: 86.7 µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



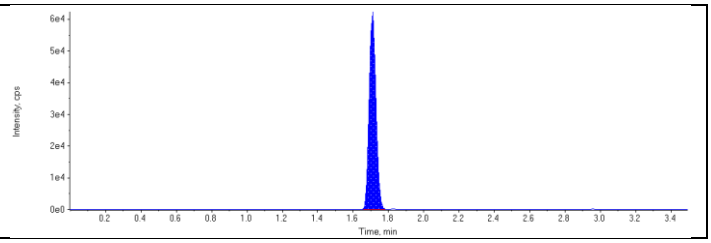
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 5:06:52 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	165000.	1.71	1.00	-
MPFHpA	454000.	1.74	1.00	-
MPFOA	430000.	1.92	1.00	-
MPFOS	194000.	2.00	1.00	-
MPFNA	319000.	2.06	1.00	-
13C6-PFHxA IS	2720000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1490000	1.16	30.0	24.2	80.7
PFHxS 1	1930000	1.71	30.0	30.4	101.0
PFHpA 1	2210000	1.74	30.0	31.5	105.0
PFOA 1	2490000	1.92	30.0	31.0	103.0
PFOS 1	1300000	1.99	30.0	30.6	102.0
PFNA 1	1830000	2.06	30.0	29.9	99.6
18O2-PFHxS	165000	1.71	100.	120.	120.0
13C4-PFHpA	454000	1.74	100.	114.	114.0
13C4-PFOA	430000	1.92	100.	123.	123.0
13C4-PFOS	194000	2.00	100.	129.	129.0
13C5-PFNA	319000	2.06	100.	138.	138.0
13C6-PFHxA	2720000	1.48	100.	73.1	73.1

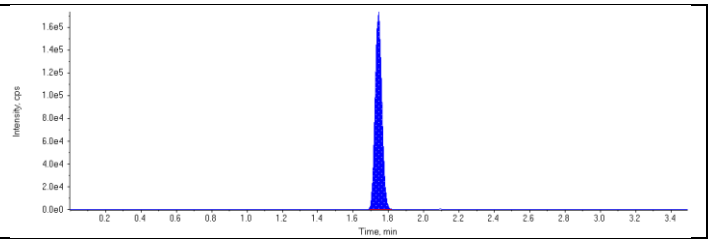
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



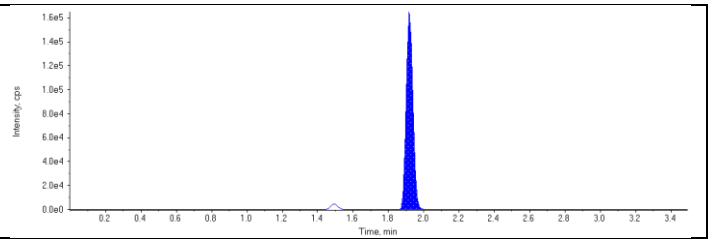
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



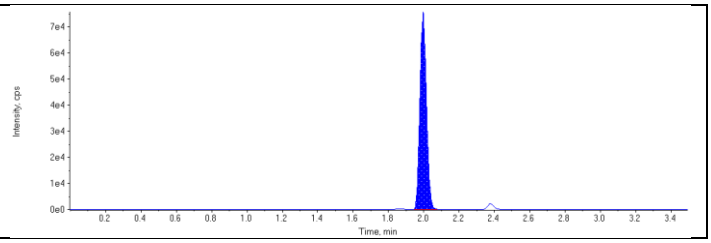
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



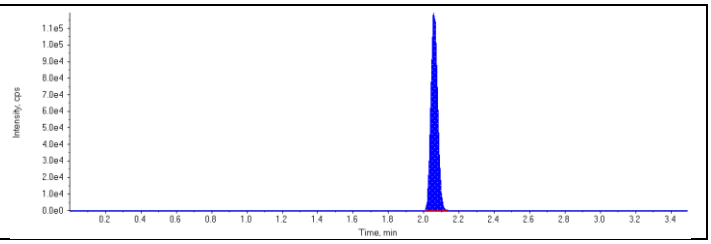
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



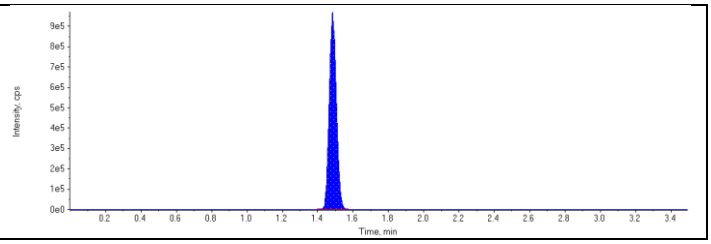
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

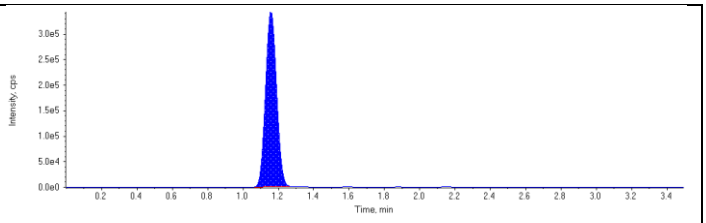
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 24.2 µg/L

Area Ratio: 9.06

Sample Type: (Quality Control)



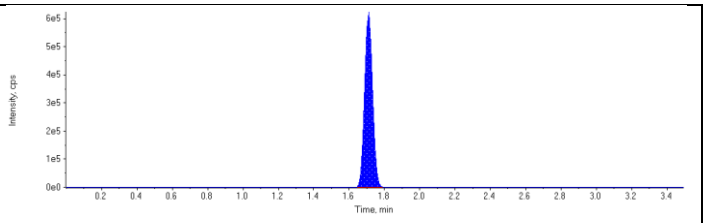
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 30.4 µg/L

Area Ratio: 11.7

Sample Type: (Quality Control)



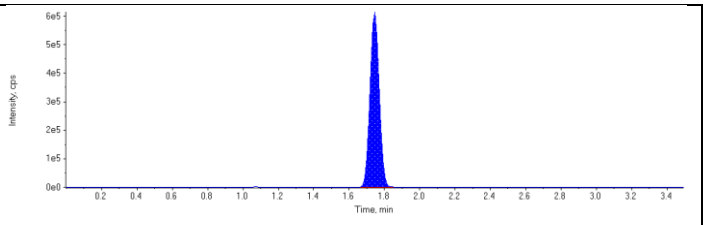
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 31.5 µg/L

Area Ratio: 4.88

Sample Type: (Quality Control)



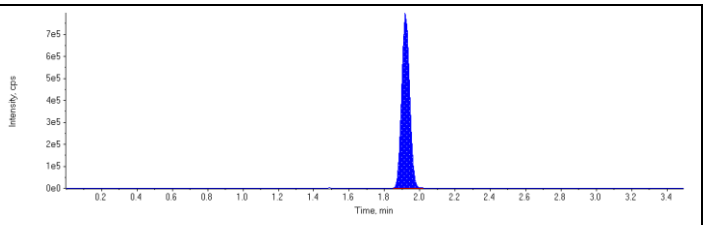
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 31.0 µg/L

Area Ratio: 5.79

Sample Type: (Quality Control)



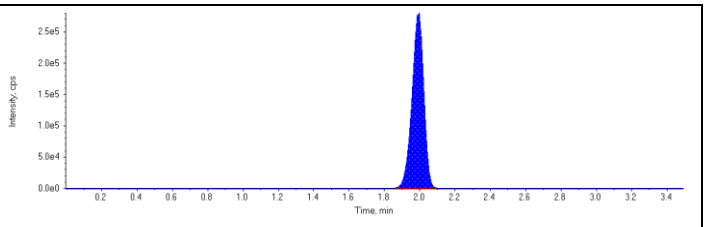
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 30.6 µg/L

Area Ratio: 6.71

Sample Type: (Quality Control)



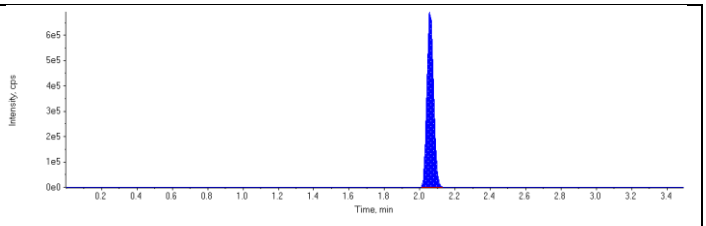
PFNA 1 (462.900/419.000 Da)

RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 29.9 µg/L

Area Ratio: 5.75

Sample Type: (Quality Control)



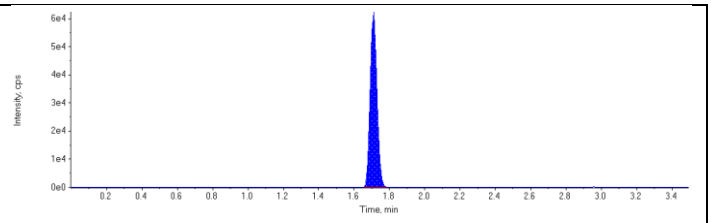
18O2-PFHxS (402.900/84.000 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 120. µg/L

Area Ratio: 0.0606

Sample Type: (Quality Control)



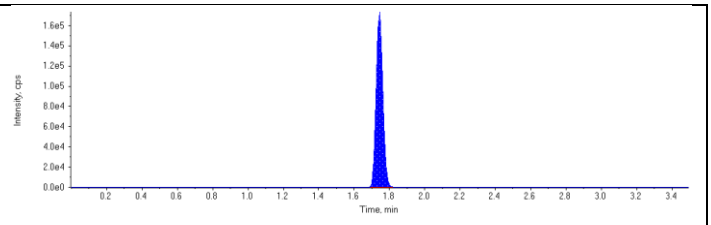
13C4-PFHpA (366.900/322.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 114. µg/L

Area Ratio: 0.167

Sample Type: (Quality Control)



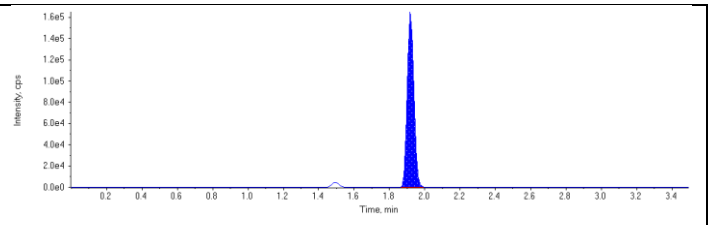
13C4-PFOA (416.900/372.000 Da)

RT (Exp. RT): 1.92 (1.93) min

Calculated Conc: 123. µg/L

Area Ratio: 0.158

Sample Type: (Quality Control)



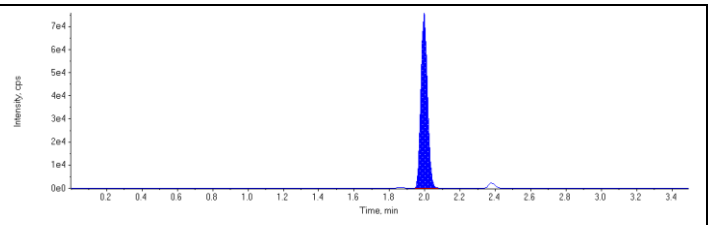
13C4-PFOS (502.900/79.900 Da)

RT (Exp. RT): 2.00 (1.97) min

Calculated Conc: 129. µg/L

Area Ratio: 0.0714

Sample Type: (Quality Control)



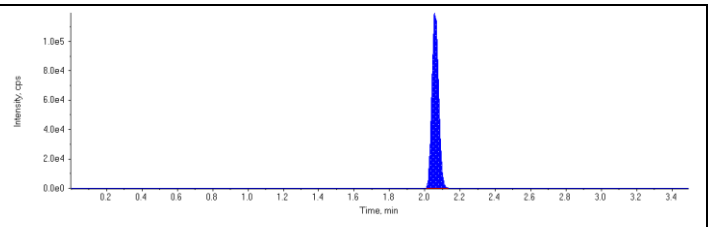
13C5-PFNA (467.900/423.000 Da)

RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 138. µg/L

Area Ratio: 0.117

Sample Type: (Quality Control)



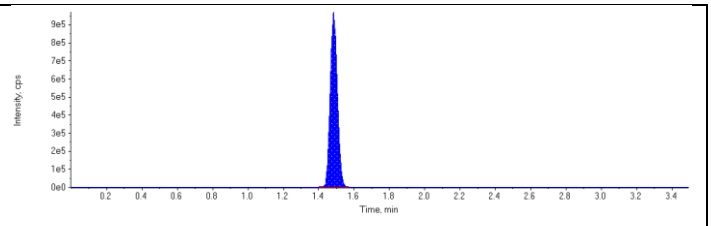
13C6-PFHxA (318.900/274.000 Da)

RT (Exp. RT): 1.48 (1.42) min

Calculated Conc: 73.1 µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



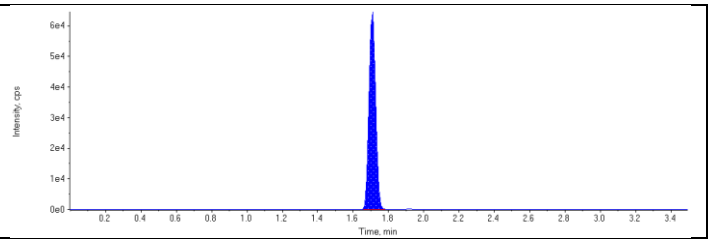
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 5:18:58 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	168000.	1.71	1.00	-
MPFHpA	524000.	1.74	1.00	-
MPFOA	435000.	1.92	1.00	-
MPFOS	193000.	1.99	1.00	-
MPFNA	314000.	2.06	1.00	-
13C6-PFHxA IS	2980000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1650000	1.16	30.0	26.2	87.5
PFHxS 1	1990000	1.71	30.0	30.7	102.0
PFHpA 1	2350000	1.74	30.0	29.0	96.7
PFOA 1	2550000	1.92	30.0	31.3	104.0
PFOS 1	1340000	1.99	30.0	31.6	105.0
PFNA 1	1880000	2.06	30.0	31.0	103.0
18O2-PFHxS	168000	1.71	100.	112.	112.0
13C4-PFHpA	524000	1.74	100.	121.	121.0
13C4-PFOA	435000	1.92	100.	113.	113.0
13C4-PFOS	193000	1.99	100.	117.	117.0
13C5-PFNA	314000	2.06	100.	124.	124.0
13C6-PFHxA	2980000	1.48	100.	80.1	80.1

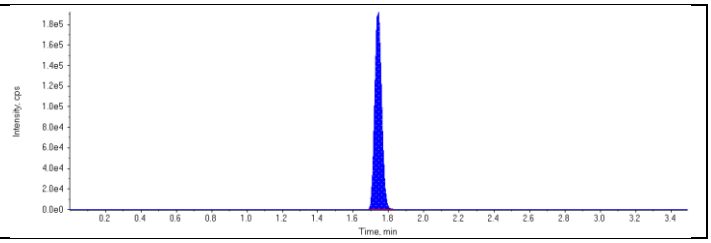
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



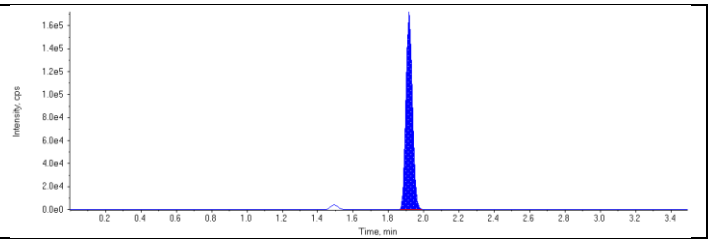
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



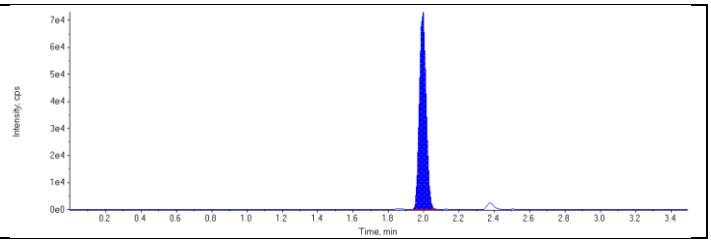
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



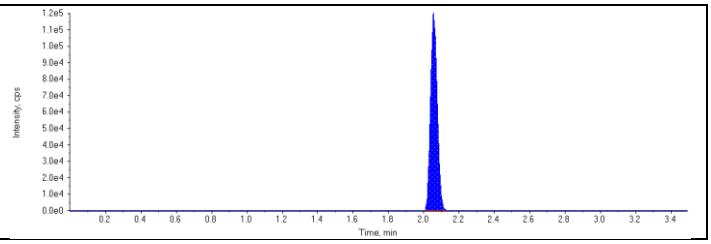
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



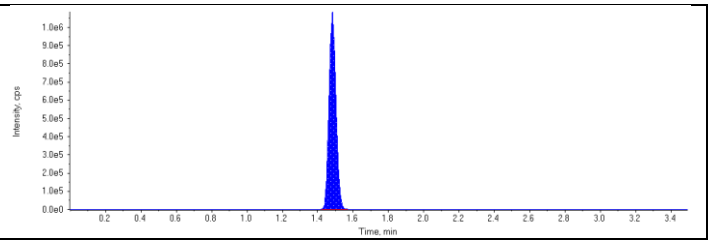
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

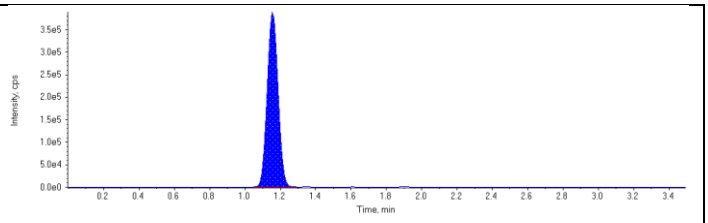
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.16 (1.16) min

Calculated Conc: 26.2 µg/L

Area Ratio: 9.84

Sample Type: (Quality Control)



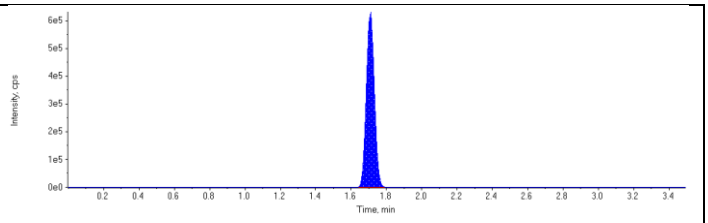
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 30.7 µg/L

Area Ratio: 11.8

Sample Type: (Quality Control)



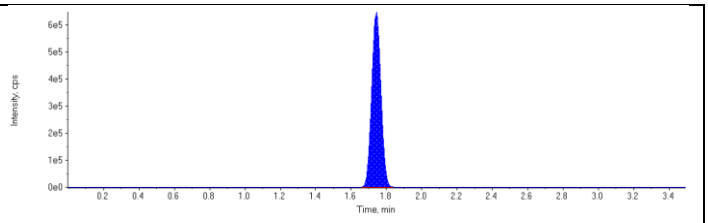
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 29.0 µg/L

Area Ratio: 4.48

Sample Type: (Quality Control)



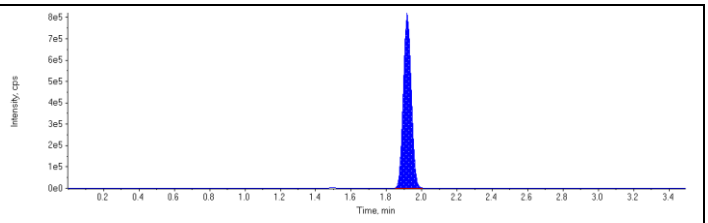
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 31.3 µg/L

Area Ratio: 5.86

Sample Type: (Quality Control)



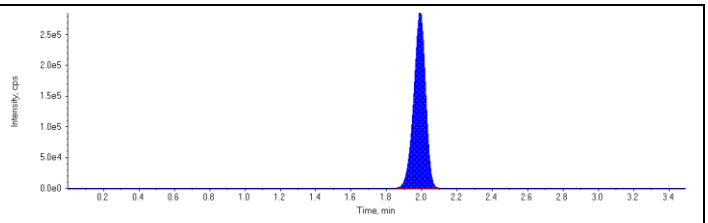
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 31.6 µg/L

Area Ratio: 6.93

Sample Type: (Quality Control)



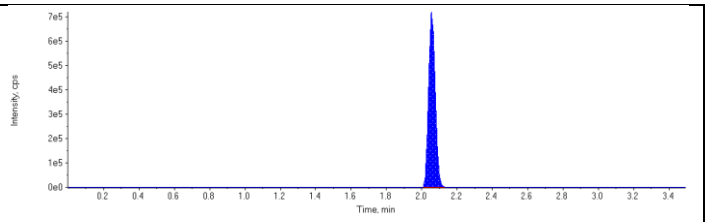
PFNA 1 (462.900/419.000 Da)

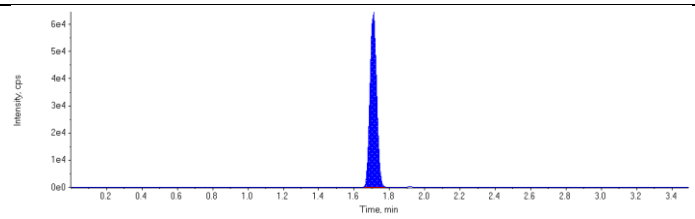
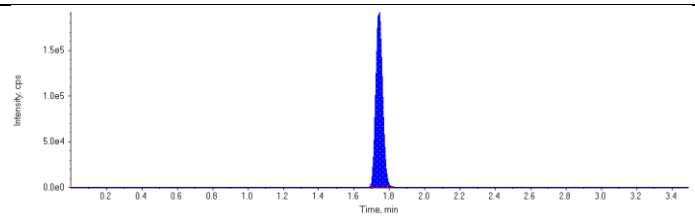
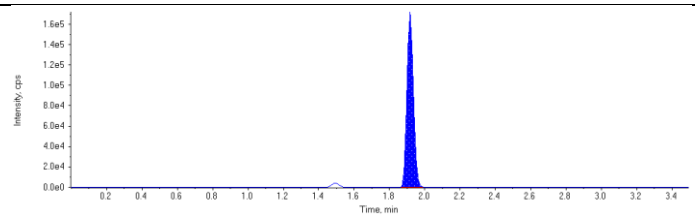
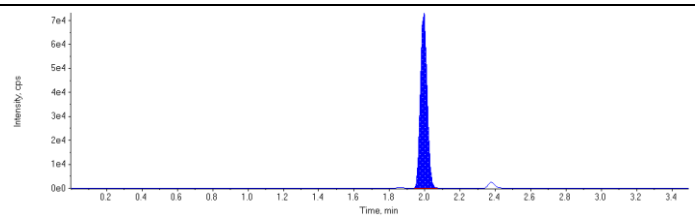
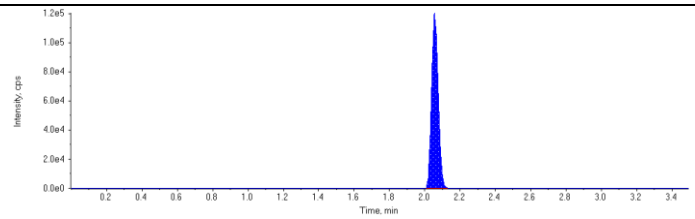
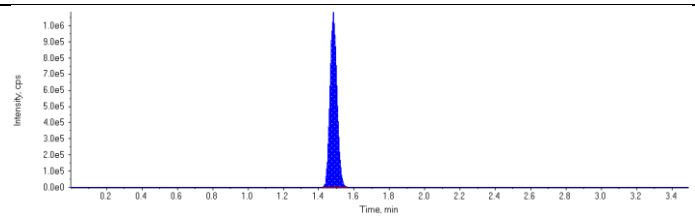
RT (Exp. RT): 2.06 (2.02) min

Calculated Conc: 31.0 µg/L

Area Ratio: 5.97

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 112. µg/L Area Ratio: 0.0564 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 121. µg/L Area Ratio: 0.176 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 113. µg/L Area Ratio: 0.146 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 117. µg/L Area Ratio: 0.0648 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 124. µg/L Area Ratio: 0.106 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.42) min Calculated Conc: 80.1 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

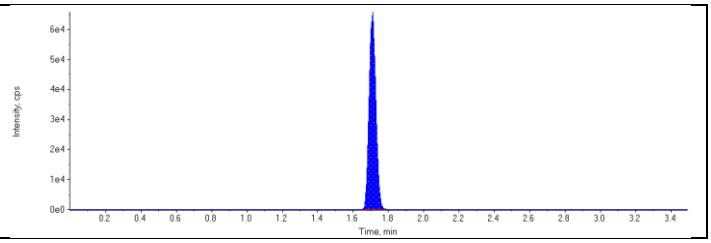
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2016/02/18 5:24:04 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160218\WS#4384677.wiff		
Result Table	PFC_Water_160218_4384677_ULow_6.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	174000.	1.71	1.00	-
MPFHpA	506000.	1.74	1.00	-
MPFOA	455000.	1.92	1.00	-
MPFOS	204000.	2.00	1.00	-
MPFNA	318000.	2.06	1.00	-
13C6-PFHxA IS	3030000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	1680000	1.16	30.0	25.8	85.8
PFHxS 1	2190000	1.71	30.0	32.6	109.0
PFHpA 1	2390000	1.74	30.0	30.5	102.0
PFOA 1	2610000	1.92	30.0	30.6	102.0
PFOS 1	1350000	1.99	30.0	30.3	101.0
PFNA 1	1790000	2.06	30.0	29.2	97.4
18O2-PFHxS	174000	1.71	100.	114.	114.0
13C4-PFHpA	506000	1.74	100.	114.	114.0
13C4-PFOA	455000	1.92	100.	116.	116.0
13C4-PFOS	204000	2.00	100.	121.	121.0
13C5-PFNA	318000	2.06	100.	123.	123.0
13C6-PFHxA	3030000	1.48	100.	81.4	81.4

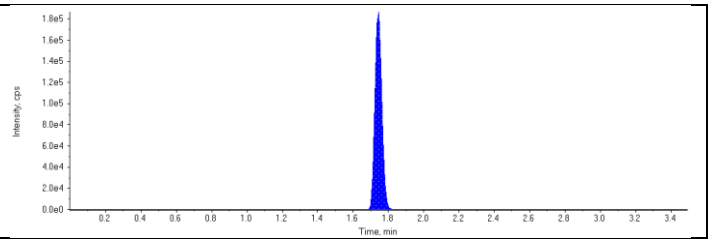
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



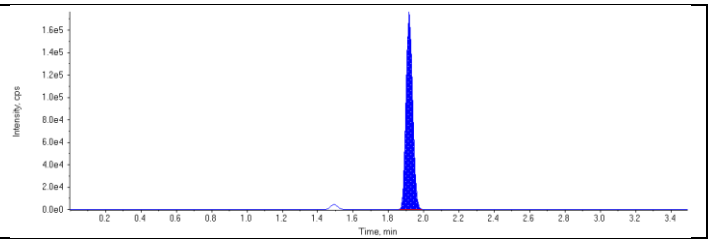
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



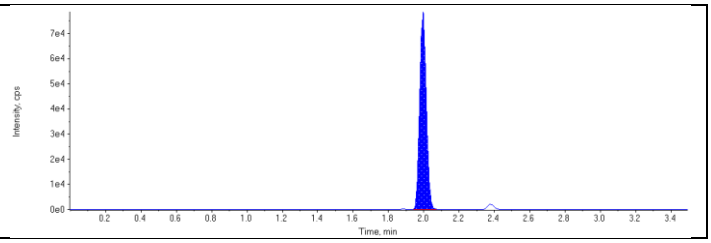
MPFOA (Internal Standard)

RT (Exp. RT): 1.92(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



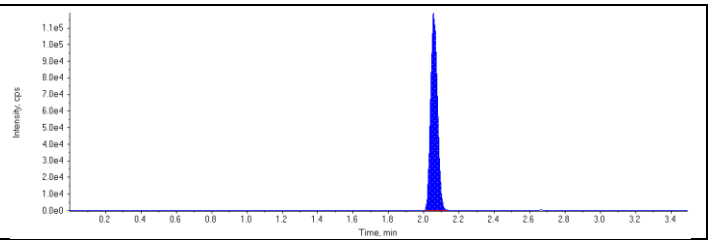
MPFOS (Internal Standard)

RT (Exp. RT): 2.00(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



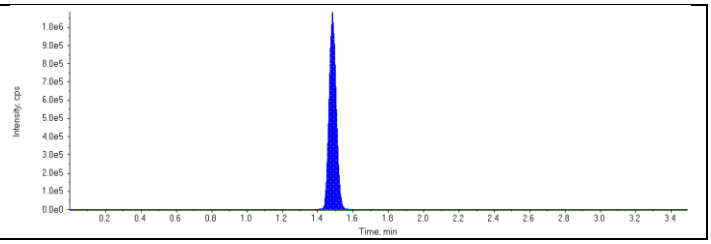
MPFNA (Internal Standard)

RT (Exp. RT): 2.06(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

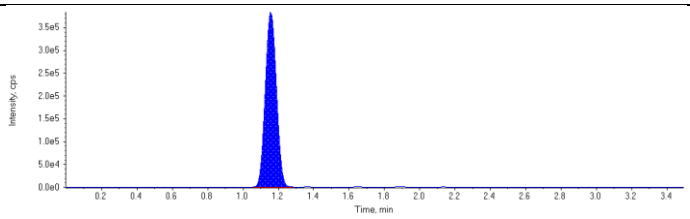
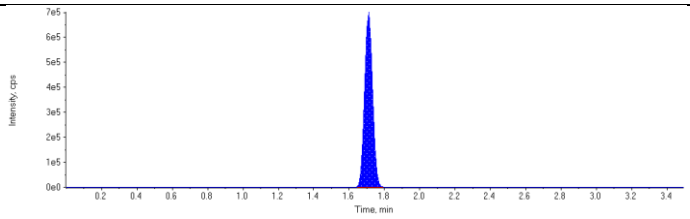
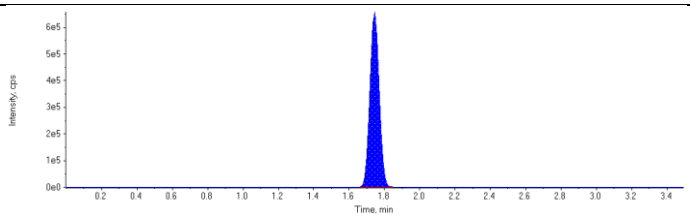
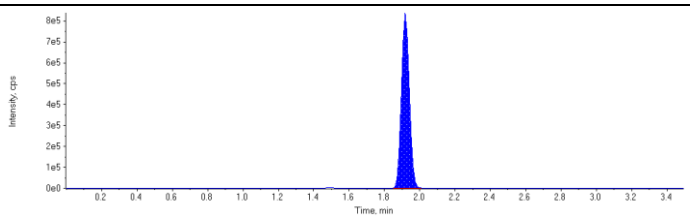
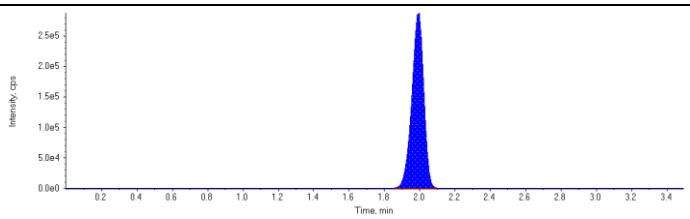
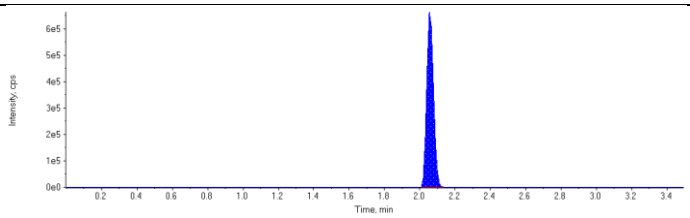
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

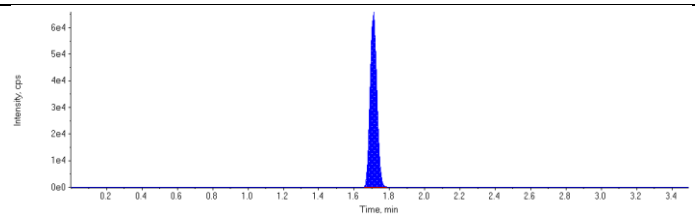
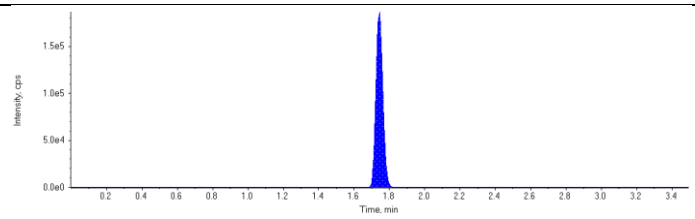
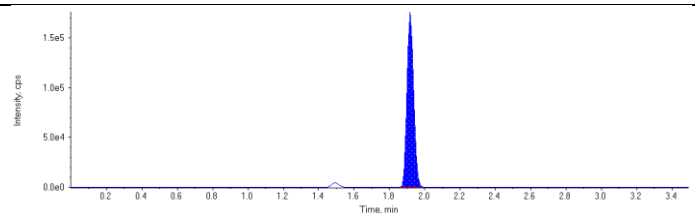
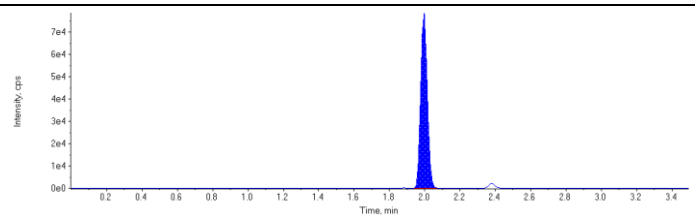
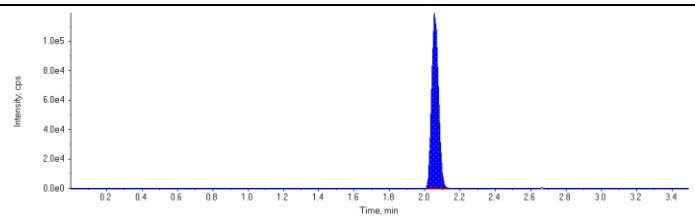
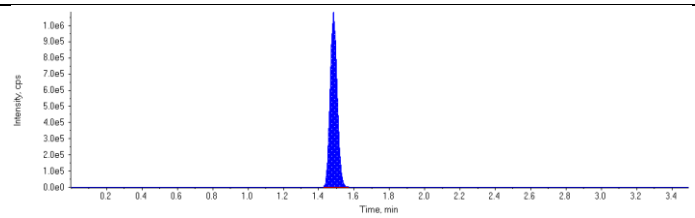


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.16 (1.16) min Calculated Conc: 25.8 µg/L Area Ratio: 9.65 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 32.6 µg/L Area Ratio: 12.6 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 30.5 µg/L Area Ratio: 4.72 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.92 (1.88) min Calculated Conc: 30.6 µg/L Area Ratio: 5.73 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 30.3 µg/L Area Ratio: 6.64 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 29.2 µg/L Area Ratio: 5.62 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 114. µg/L Area Ratio: 0.0574 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 114. µg/L Area Ratio: 0.167 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.92 (1.93) min Calculated Conc: 116. µg/L Area Ratio: 0.151 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 2.00 (1.97) min Calculated Conc: 121. µg/L Area Ratio: 0.0673 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.06 (2.02) min Calculated Conc: 123. µg/L Area Ratio: 0.105 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.42) min Calculated Conc: 81.4 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

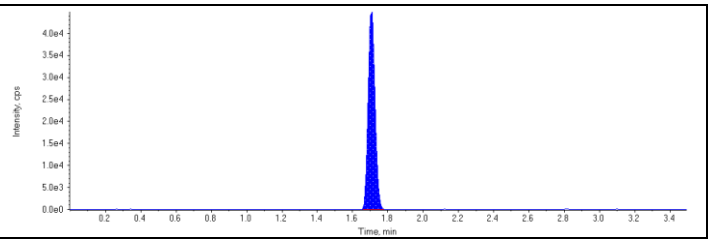
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 10:43:32 AM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4386408.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	122000.	1.71	1.00	-
MPFHpA	400000.	1.74	1.00	-
MPFOA	381000.	1.91	1.00	-
MPFOS	150000.	1.99	1.00	-
MPFNA	266000.	2.05	1.00	-
13C6-PFHxA IS	3360000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	975000	1.15	30.0	26.1	86.8
PFHxS 1	1160000	1.71	30.0	29.2	97.4
PFHpA 1	1680000	1.74	30.0	31.2	104.0
PFOA 1	1910000	1.92	30.0	30.5	102.0
PFOS 1	851000	1.99	30.0	31.3	104.0
PFNA 1	1330000	2.05	30.0	30.3	101.0
18O2-PFHxS	122000	1.71	100.	99.0	99.0
13C4-PFHpA	400000	1.74	100.	96.4	96.4
13C4-PFOA	381000	1.91	100.	105.	105.0
13C4-PFOS	150000	1.99	100.	103.	103.0
13C5-PFNA	266000	2.05	100.	108.	108.0
13C6-PFHxA	3360000	1.48	100.	84.1	84.1

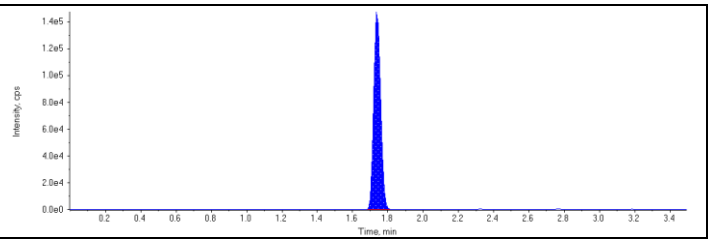
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



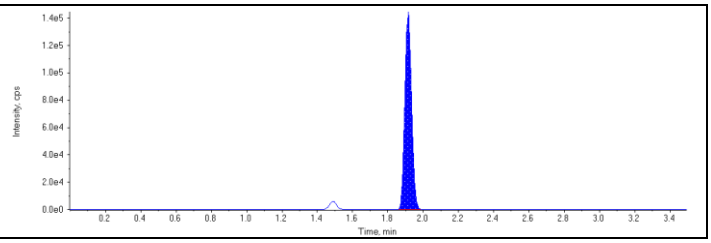
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



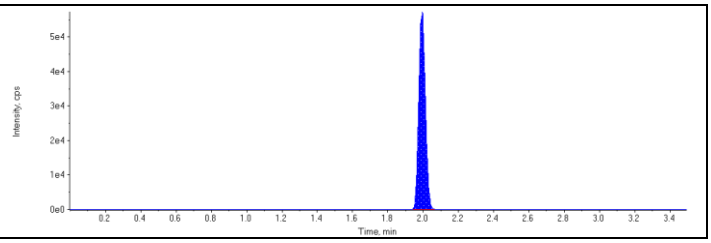
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



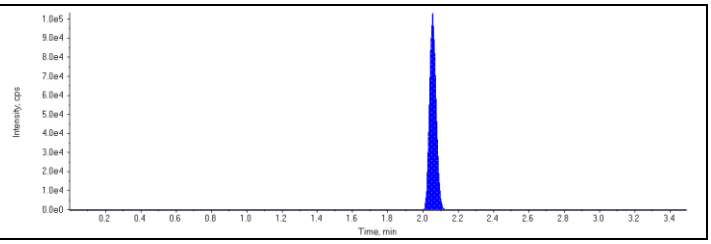
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



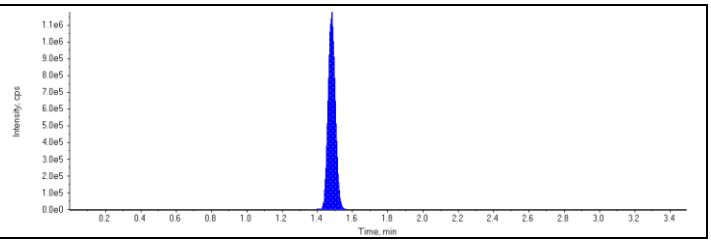
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

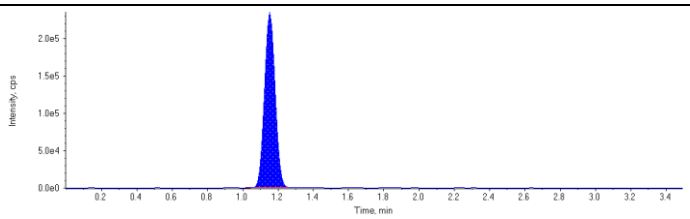
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.15 (1.16) min

Calculated Conc: 26.1 µg/L

Area Ratio: 7.96

Sample Type: (Quality Control)



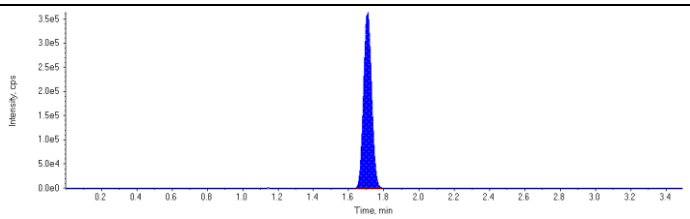
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 29.2 µg/L

Area Ratio: 9.51

Sample Type: (Quality Control)



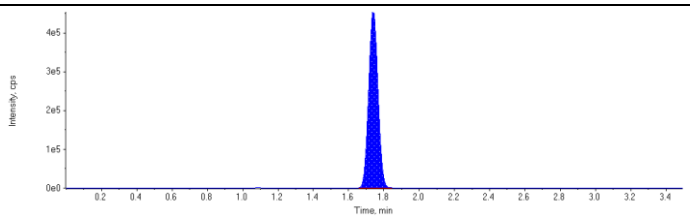
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 31.2 µg/L

Area Ratio: 4.20

Sample Type: (Quality Control)



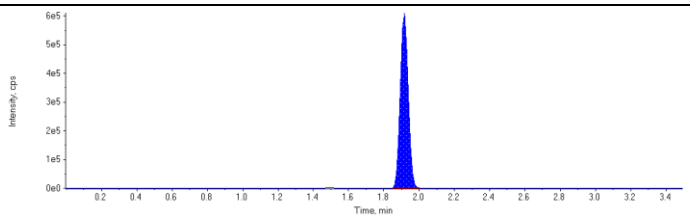
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.92 (1.88) min

Calculated Conc: 30.5 µg/L

Area Ratio: 5.01

Sample Type: (Quality Control)



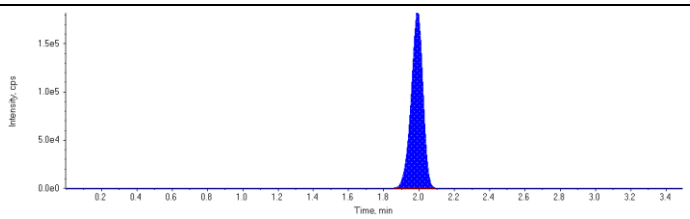
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 31.3 µg/L

Area Ratio: 5.67

Sample Type: (Quality Control)



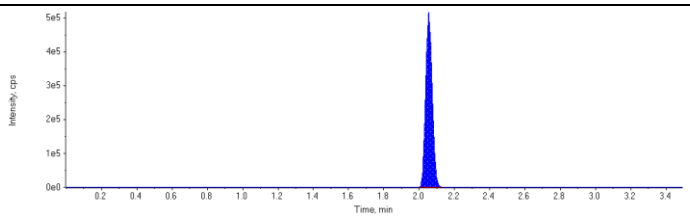
PFNA 1 (462.900/419.000 Da)

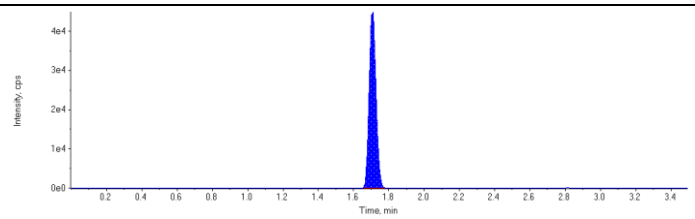
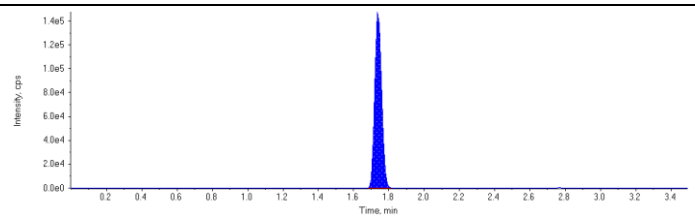
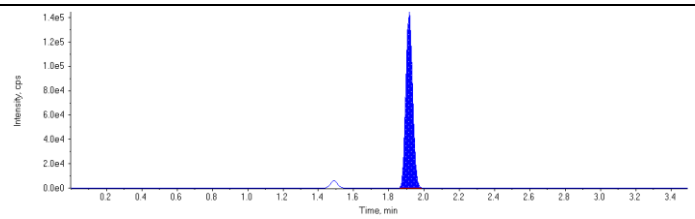
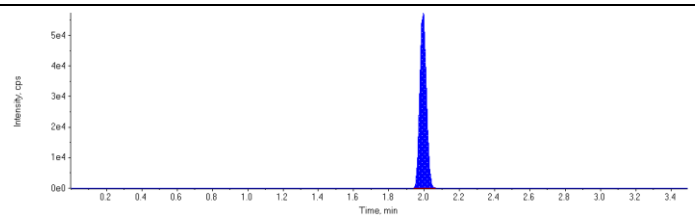
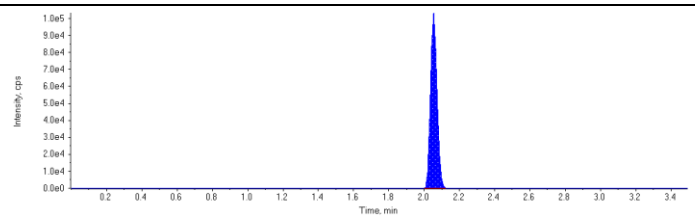
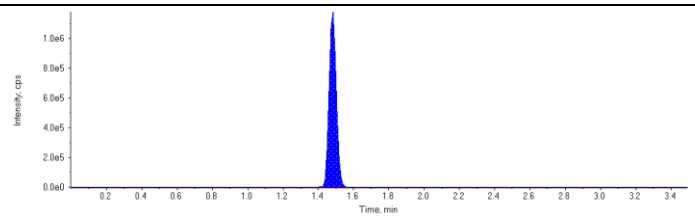
RT (Exp. RT): 2.05 (2.02) min

Calculated Conc: 30.3 µg/L

Area Ratio: 5.01

Sample Type: (Quality Control)



18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 99.0 µg/L Area Ratio: 0.0365 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 96.4 µg/L Area Ratio: 0.119 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 105. µg/L Area Ratio: 0.114 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 103. µg/L Area Ratio: 0.0447 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 108. µg/L Area Ratio: 0.0793 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 84.1 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

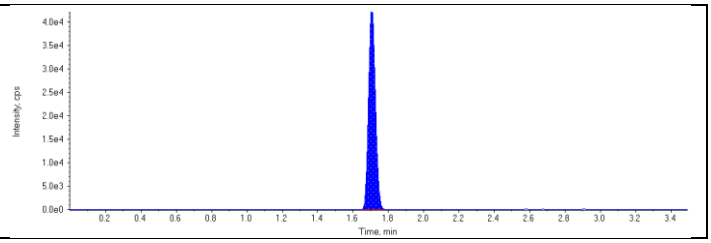
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 12:20:24 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	115000.	1.71	1.00	-
MPFHpA	404000.	1.74	1.00	-
MPFOA	349000.	1.91	1.00	-
MPFOS	157000.	1.99	1.00	-
MPFNA	290000.	2.05	1.00	-
13C6-PFHxA IS	3170000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	911000	1.15	30.0	25.8	86.1
PFHxS 1	1100000	1.71	30.0	29.3	97.6
PFHpA 1	1580000	1.74	30.0	29.2	97.2
PFOA 1	1670000	1.91	30.0	29.2	97.4
PFOS 1	829000	1.99	30.0	29.3	97.6
PFNA 1	1370000	2.05	30.0	28.5	94.9
18O2-PFHxS	115000	1.71	100.	98.9	98.9
13C4-PFHpA	404000	1.74	100.	103.	103.0
13C4-PFOA	349000	1.91	100.	102.	102.0
13C4-PFOS	157000	1.99	100.	114.	114.0
13C5-PFNA	290000	2.05	100.	124.	124.0
13C6-PFHxA	3170000	1.48	100.	79.5	79.5

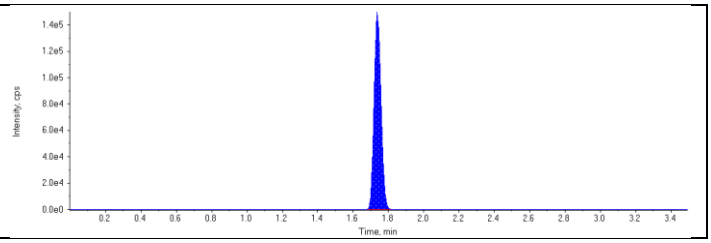
MPFHxS (Internal Standard)

RT (Exp. RT): 1.71(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



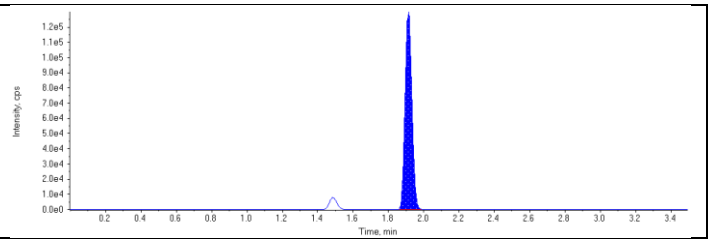
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



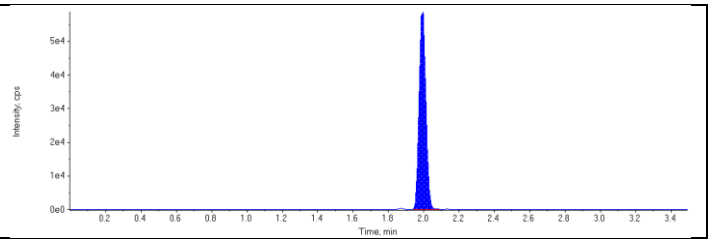
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



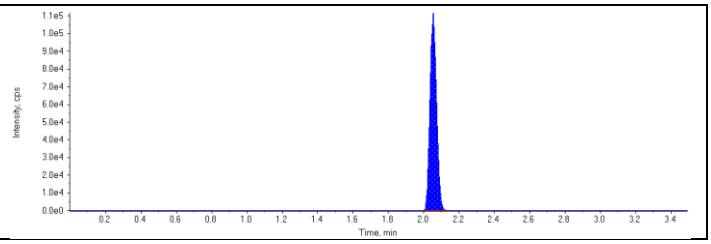
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



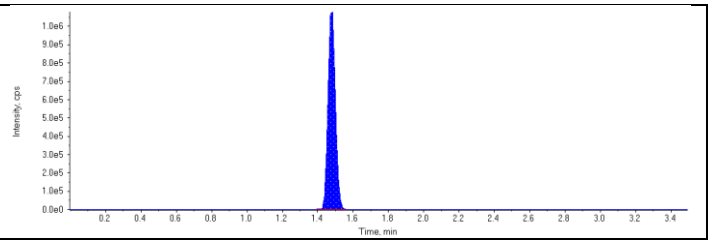
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

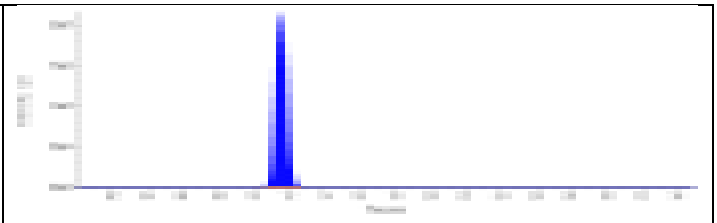
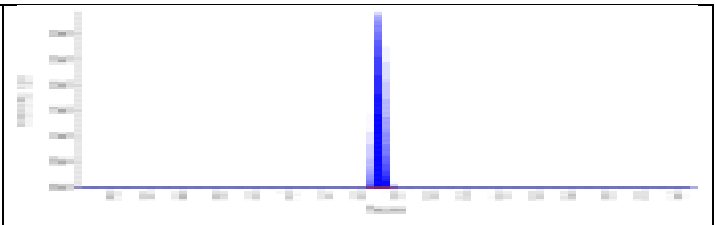
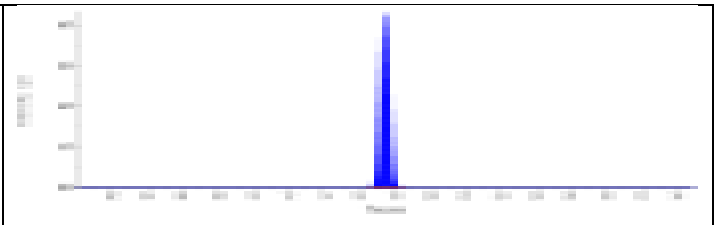
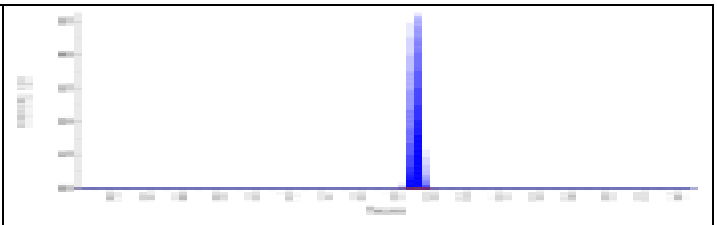
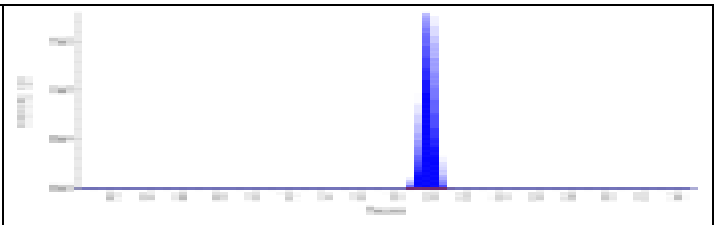
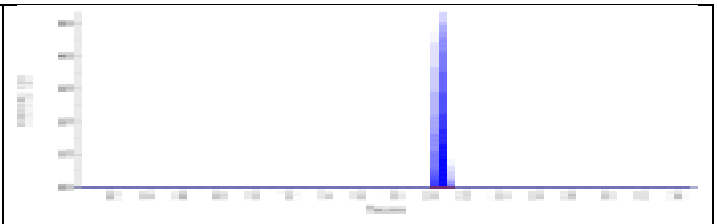
RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)

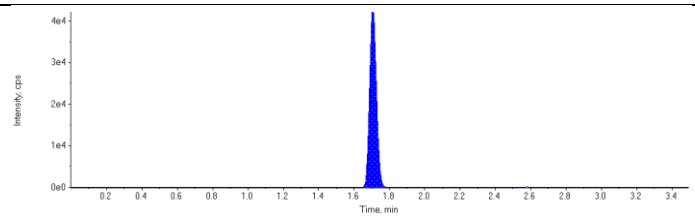
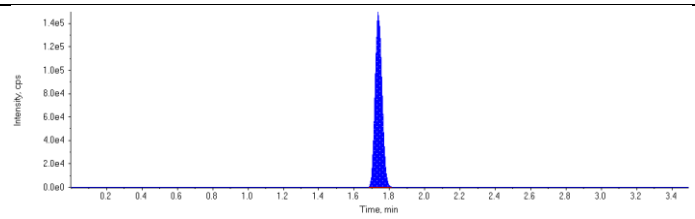
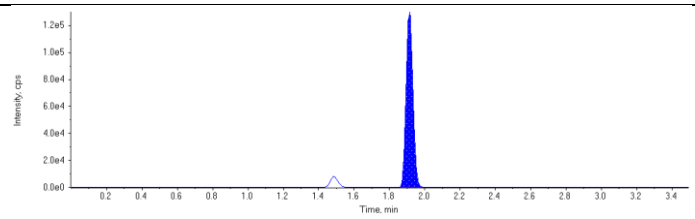
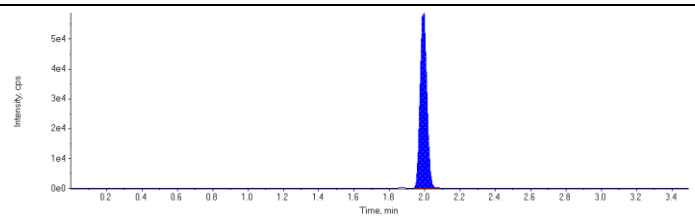
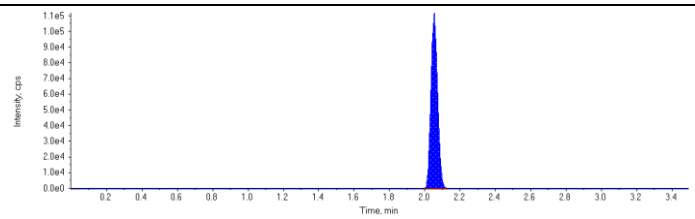
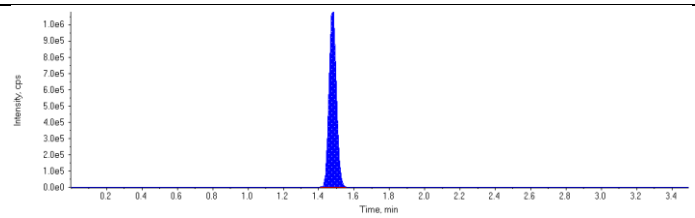


N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

PFBS 1 (298.900/79.900 Da) RT (Exp. RT): 1.15 (1.16) min Calculated Conc: 25.8 µg/L Area Ratio: 7.89 Sample Type: (Quality Control)	
PFHxS 1 (398.900/79.900 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 29.3 µg/L Area Ratio: 9.53 Sample Type: (Quality Control)	
PFHpA 1 (363.000/319.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 29.2 µg/L Area Ratio: 3.92 Sample Type: (Quality Control)	
PFOA 1 (413.100/369.000 Da) RT (Exp. RT): 1.91 (1.88) min Calculated Conc: 29.2 µg/L Area Ratio: 4.80 Sample Type: (Quality Control)	
PFOS 1 (498.900/79.900 Da) RT (Exp. RT): 1.99 (2.00) min Calculated Conc: 29.3 µg/L Area Ratio: 5.30 Sample Type: (Quality Control)	
PFNA 1 (462.900/419.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 28.5 µg/L Area Ratio: 4.72 Sample Type: (Quality Control)	

18O2-PFHxS (402.900/84.000 Da) RT (Exp. RT): 1.71 (1.68) min Calculated Conc: 98.9 µg/L Area Ratio: 0.0364 Sample Type: (Quality Control)	
13C4-PFHpA (366.900/322.000 Da) RT (Exp. RT): 1.74 (1.75) min Calculated Conc: 103. µg/L Area Ratio: 0.128 Sample Type: (Quality Control)	
13C4-PFOA (416.900/372.000 Da) RT (Exp. RT): 1.91 (1.93) min Calculated Conc: 102. µg/L Area Ratio: 0.110 Sample Type: (Quality Control)	
13C4-PFOS (502.900/79.900 Da) RT (Exp. RT): 1.99 (1.97) min Calculated Conc: 114. µg/L Area Ratio: 0.0494 Sample Type: (Quality Control)	
13C5-PFNA (467.900/423.000 Da) RT (Exp. RT): 2.05 (2.02) min Calculated Conc: 124. µg/L Area Ratio: 0.0914 Sample Type: (Quality Control)	
13C6-PFHxA (318.900/274.000 Da) RT (Exp. RT): 1.48 (1.48) min Calculated Conc: 79.5 µg/L Area Ratio: 0.00 Sample Type: (Quality Control)	

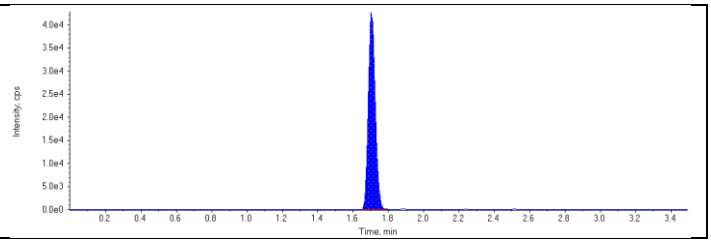
Sample Name	**CCV**	**Injection Vial**	6
Sample ID	CCV	**Injection Volume (µL)**	3
Sample Type	Quality Control	**Algorithm Used**	Analyst Classic
Acquisition Date	2/19/2016 12:56:01 PM	**Dilution Factor**	1.00
Acquisition Method	PFC_Water_Low.dam	**Sample Annotation**	-
Project	Enviro\PFOS	**Instrument Name**	LCMS03
Data File	PFC_160219\WS#4385924.wiff		
Result Table	PFC_Water_160219_4385924_ULow.rdb		

Internal Standard	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)
MPFHxS	115000.	1.70	1.00	-
MPFHpA	409000.	1.74	1.00	-
MPFOA	374000.	1.91	1.00	-
MPFOS	145000.	1.99	1.00	-
MPFNA	280000.	2.05	1.00	-
13C6-PFHxA IS	3320000.	1.48	1.00	-
N/A	N/A	N/A	N/A	-

Target Analyte	Area (cps)	RT (min)	Target Conc. (ng/L)	Calc. Conc. (ng/L)	Accuracy (%)
PFBS 1	909000	1.15	30.0	25.8	86.0
PFHxS 1	1100000	1.71	30.0	29.4	97.9
PFHpA 1	1660000	1.74	30.0	30.2	101.0
PFOA 1	1810000	1.91	30.0	29.4	98.0
PFOS 1	800000	1.99	30.0	30.5	102.0
PFNA 1	1340000	2.05	30.0	28.9	96.4
18O2-PFHxS	115000	1.70	100.	94.3	94.3
13C4-PFHpA	409000	1.74	100.	99.4	99.4
13C4-PFOA	374000	1.91	100.	104.	104.0
13C4-PFOS	145000	1.99	100.	101.	101.0
13C5-PFNA	280000	2.05	100.	115.	115.0
13C6-PFHxA	3320000	1.48	100.	83.2	83.2

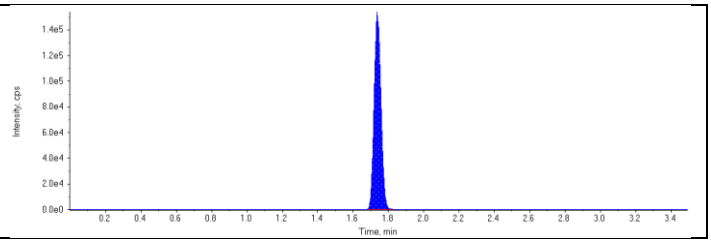
MPFHxS (Internal Standard)

RT (Exp. RT): 1.70(1.68) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



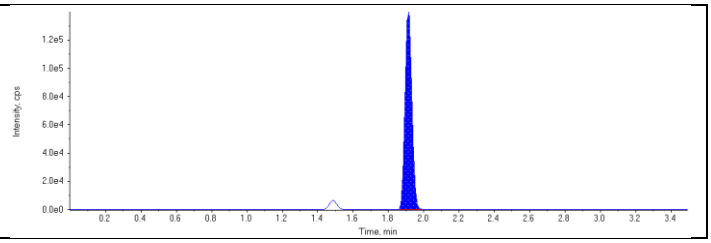
MPFHpA (Internal Standard)

RT (Exp. RT): 1.74(1.75) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



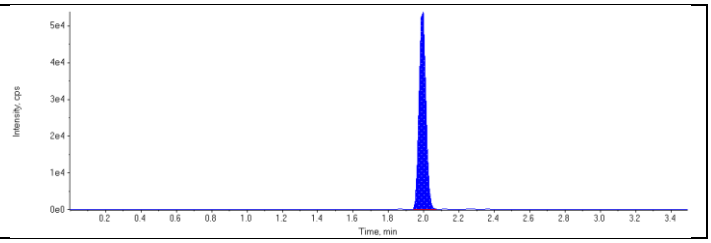
MPFOA (Internal Standard)

RT (Exp. RT): 1.91(1.93) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



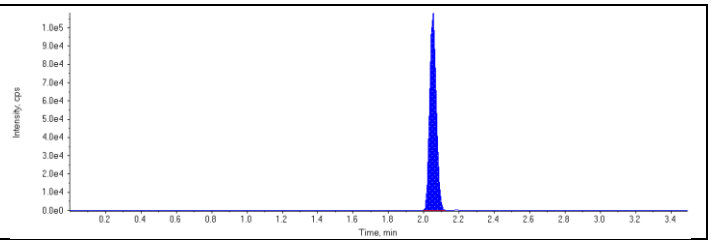
MPFOS (Internal Standard)

RT (Exp. RT): 1.99(1.97) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



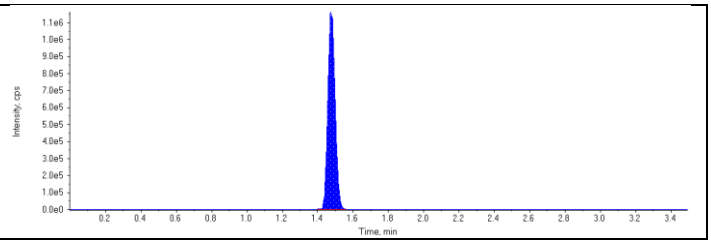
MPFNA (Internal Standard)

RT (Exp. RT): 2.05(2.02) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



13C6-PFHxA IS (Internal Standard)

RT (Exp. RT): 1.48(1.50) min
Concentration: 1.00 ng/L
Sample Type: (Quality Control)



N/A (Internal Standard)

RT (Exp. RT): N/A(N/A) min
Concentration: N/A N/A
Sample Type: (Quality Control)

This image is not available

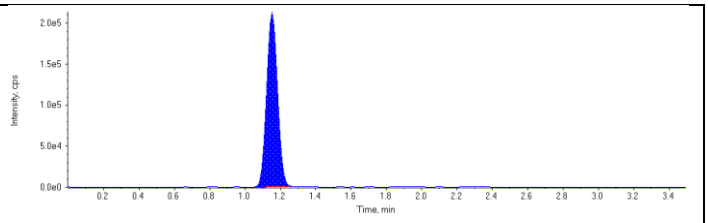
PFBS 1 (298.900/79.900 Da)

RT (Exp. RT): 1.15 (1.16) min

Calculated Conc: 25.8 µg/L

Area Ratio: 7.89

Sample Type: (Quality Control)



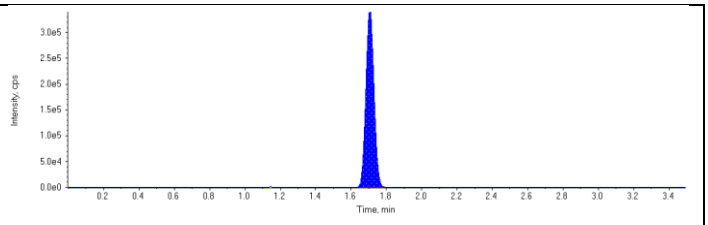
PFHxS 1 (398.900/79.900 Da)

RT (Exp. RT): 1.71 (1.68) min

Calculated Conc: 29.4 µg/L

Area Ratio: 9.56

Sample Type: (Quality Control)



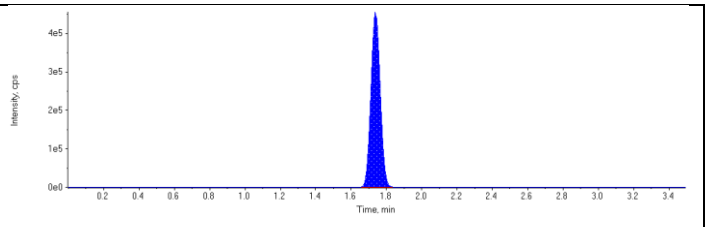
PFHpA 1 (363.000/319.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 30.2 µg/L

Area Ratio: 4.06

Sample Type: (Quality Control)



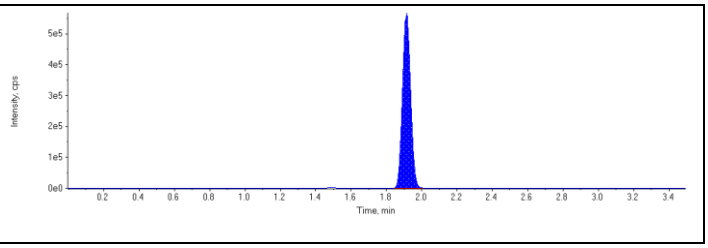
PFOA 1 (413.100/369.000 Da)

RT (Exp. RT): 1.91 (1.88) min

Calculated Conc: 29.4 µg/L

Area Ratio: 4.83

Sample Type: (Quality Control)



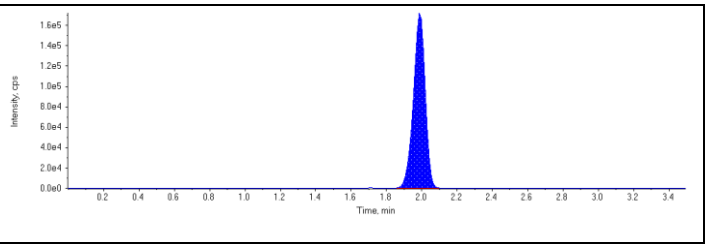
PFOS 1 (498.900/79.900 Da)

RT (Exp. RT): 1.99 (2.00) min

Calculated Conc: 30.5 µg/L

Area Ratio: 5.52

Sample Type: (Quality Control)



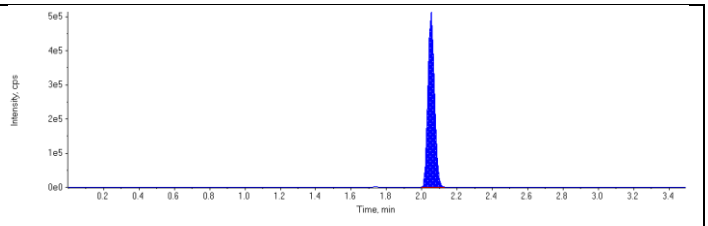
PFNA 1 (462.900/419.000 Da)

RT (Exp. RT): 2.05 (2.02) min

Calculated Conc: 28.9 µg/L

Area Ratio: 4.79

Sample Type: (Quality Control)



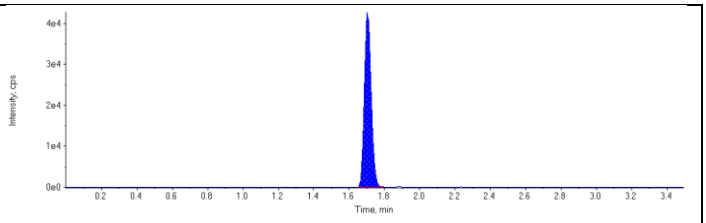
18O2-PFHxS (402.900/84.000 Da)

RT (Exp. RT): 1.70 (1.68) min

Calculated Conc: 94.3 µg/L

Area Ratio: 0.0347

Sample Type: (Quality Control)



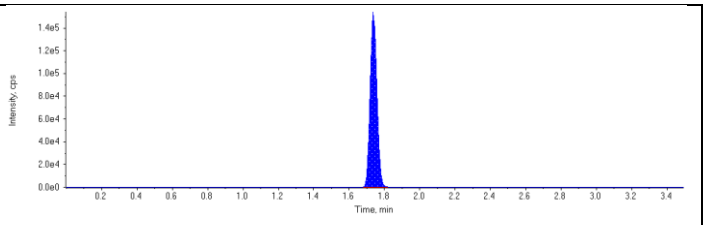
13C4-PFHpA (366.900/322.000 Da)

RT (Exp. RT): 1.74 (1.75) min

Calculated Conc: 99.4 µg/L

Area Ratio: 0.123

Sample Type: (Quality Control)



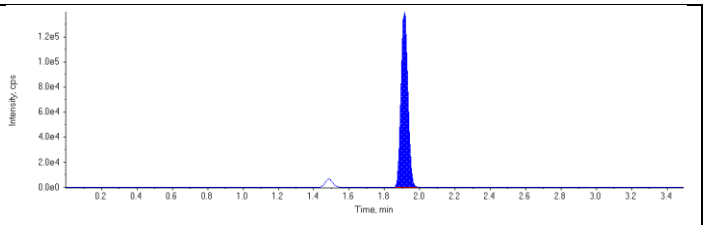
13C4-PFOA (416.900/372.000 Da)

RT (Exp. RT): 1.91 (1.93) min

Calculated Conc: 104. µg/L

Area Ratio: 0.113

Sample Type: (Quality Control)



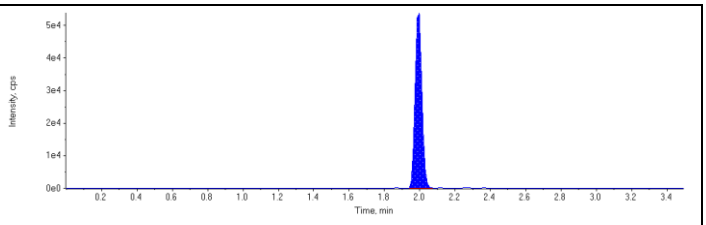
13C4-PFOS (502.900/79.900 Da)

RT (Exp. RT): 1.99 (1.97) min

Calculated Conc: 101. µg/L

Area Ratio: 0.0436

Sample Type: (Quality Control)



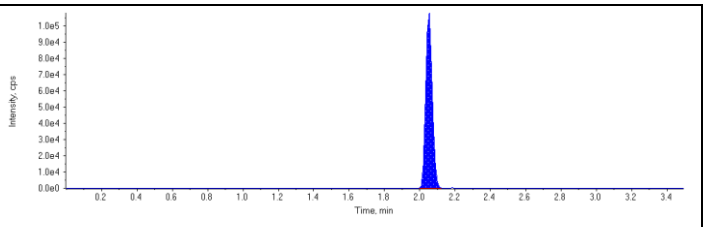
13C5-PFNA (467.900/423.000 Da)

RT (Exp. RT): 2.05 (2.02) min

Calculated Conc: 115. µg/L

Area Ratio: 0.0844

Sample Type: (Quality Control)



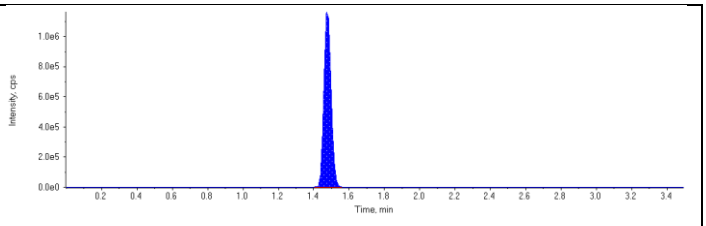
13C6-PFHxA (318.900/274.000 Da)

RT (Exp. RT): 1.48 (1.48) min

Calculated Conc: 83.2 µg/L

Area Ratio: 0.00

Sample Type: (Quality Control)



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Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt 1.0°C

Drinking Water? Yes ☒ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
CH2M Hill	Bill Friedmann	02/03/16	283600
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 2**
5701 Cleveland St, Suite 200	757-671-6223		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Virginia Beach / VA / 23462			
Project Name and Location (State)	**Carrier/Waybill Number**		
CTO WE7G PFC Sampling	FedEx		
Contract/Purchase Order/Quote No.			
PO#938652			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): Select PFCs	Special Instructions/ Conditions of Receipt
OF-RW42B-0216	02/03/16	0938		X			X						2	
OF-FB42B-0216		0942											1	
OF-RW42A-0216		0950											2	
OF-FB42A-0216		0954											1	
OF-RW35-0216		1035											2	
OF-FB35-0216		1040											1	
OF-RW58-0216		1110											2	
OF-FB58-0216		1112											1	
OF-FB39-0216		1150											1	
OF-RW39-0216		1200											2	
OF-FB40-0216		1215											1	
OF-~~FB~~RW40-0216	↓	1220		↓			↓						2	

320-17150 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kathryn Smith	02/03/16	19:30	1. Received By:	2/4/16	945
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report, CANARY - Stays with the Sample; PINK - Field Copy

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03/22/2016

Chain of Custody Record

Temperature on Receipt 1.0°

Drinking Water? Yes [X] No [ ]

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
CH2M Hill	Bill Friedmann		283601
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 2 of 2
5701 Cleveland St, Suite 200	757-671-6223		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Virginia Beach / VA / 23462			
Project Name and Location (State)	**Carrier/Waybill Number**		
CTO WE7G PFC Sampling	FedEx		
Contract/Purchase Order/Quote No.			
PO # 938652			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): Select PFCs	Special Instructions/ Conditions of Receipt
OF-FB43-0216	02/03/16	1605		X			X						1	
OF-RW43-0216	↓	1610		X			X						2	

Possible Hazard Identification: [ ] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [ ] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kathryn Smith	02/03/16	19:30	1. Received By:	2/4/16	945
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report, CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

Due 2/22

Temperature on Receipt 1.0 °C

Drinking Water? Yes ☒ No ☐

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

[redacted]

Telephone Number (Area Code)/Fax Number [redacted]

Date 02/03/16 | Chain of Custody Number 283600 | Lab Number | Page 1 of 2

Site Contact | Lab Contact

Carrier/Waybill Number: FedEx

Analysis (Attach list if more space is needed): Select PFCs

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Select PFCs
OF-RW42B-0216	02/03/16	0938		X			X						2
~~OF-FB42B-0216~~		~~0944~~											1
OF-RW42A-0216		0950											2
~~OF-FB42A-0216~~		~~0957~~											1
OF-RW35-0216		1035											2
~~OF-FB35-0216~~		~~1040~~											1
OF-RW58-0216		1110											2
~~OF-FB58-0216~~		~~1112~~											1
~~OF-FB39-0216~~		~~1150~~											1
OF-RW39-0216		1200											2
~~OF-FB10-0216~~		~~1215~~											1
OF-FB20-RW40-0216	↓	1220	↓				↓						2

13-Feb-16 13:40
Hongmei Zhao (Grace)
B630803
RGN ENV-734

320-17150 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Kathryn Smith	02/03/16	19:30	1. Received By	2/4/16	945
2. Relinquished By			2. Received By: PCHILLIN GRAHAM	2016/02/13	13:40
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

REFER TO ACTR

...ustody Record

Due 2/22

Temperature on Receipt 1.0

Drinking Water? Yes [X] No [ ]

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CTO WE7G

Project Manager [redacted]		Date	Chain of Custody Number 283601
Telephone Number (Area Code)/Fax Number [redacted]		Lab Number	Page 2 of 2
Site Contact	Lab Contact	Analysis (Attach list if more space is needed)	
Carrier/Waybill Number FedEx			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Select PFCs	Special Instructions/ Conditions of Receipt
OF-EB43-0216	02/03/16	1605		X			X						1	
OF-RW43-0216	↓	1610		X			X						2	

Possible Hazard Identification
[ ] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal
[ ] Return To Client [ ] Disposal By Lab [ ] Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
[ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other _____

QC Requirements (Specify)

1. Relinquished By [redacted]	Date 02/03/16	Time 19:30	1. Received By	Date 2/4/16	Time 945
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-17150-1
SDG Number: CTO WE7G PFC Sampling

Login Number: 17150
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

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

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	DateTime_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.019	0.019	UG_L			PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.007	0.007	UG_L			PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	10	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.36	0.36	UG_L	D	D	PR	TRG					00000000				5.0	0.004	0.01	0.02	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.00080	0.00080	UG_L	J	J	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	10	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.580	0.580	UG_L	D	D	PR	TRG					00000000				5.0	0.003	0.01	0.02	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.087	0.087	UG_L			PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.00075	0.00075	UG_L	J	J	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.0015	0.0015	UG_L	J	J	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.0065	0.0065	UG_L			PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0058	0.0058	UG_L			PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.022	0.022	UG_L			PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.0011	0.0011	UG_L	J	J	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.044	0.044	UG_L			PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.03	0.03	UG_L			PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			13C4 PFOA	13C4 PFOA	104	104	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			13C4 PFOA	13C4 PFOA	86	86	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			13C4 PFOA	13C4 PFOA	107	107	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			13C4 PFOA	13C4 PFOA	81	81	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			13C4 PFOA	13C4 PFOA	107	107	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			13C4 PFOA	13C4 PFOA	96	96	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			13C4 PFOA	13C4 PFOA	125	125	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			13C4 PFOA	13C4 PFOA	68	68	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			13C4 PFOA	13C4 PFOA	113	113	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			13C4 PFOA	13C4 PFOA	91	91	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			13C4 PFOA	13C4 PFOA	130	130	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			13C4 PFOA	13C4 PFOA	79	79	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			13C4 PFOA	13C4 PFOA	114	114	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			13C4 PFOA	13C4 PFOA	140	140	PCT_REC	C	C	PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			13C4 PFOA	13C4 PFOA	75	75	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			13C4 PFOA	13C4 PFOA	83	83	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			13C4 PFOS	13C4 PFOS	110	110	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			13C4 PFOS	13C4 PFOS	71	71	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			13C4 PFOS	13C4 PFOS	103	103	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			13C4 PFOS	13C4 PFOS	72	72	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			13C4 PFOS	13C4 PFOS	105	105	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			13C4 PFOS	13C4 PFOS	105	105	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			13C4 PFOS	13C4 PFOS	102	102	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			13C4 PFOS	13C4 PFOS	53	53	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			13C4 PFOS	13C4 PFOS	107	107	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			13C4 PFOS	13C4 PFOS	81	81	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			13C4 PFOS	13C4 PFOS	136	136	PCT_REC	C	C	PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			13C4 PFOS	13C4 PFOS	75	75	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			13C4 PFOS	13C4 PFOS	107	107	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			13C4 PFOS	13C4 PFOS	132	132	PCT_REC	C	C	PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			13C4 PFOS	13C4 PFOS	66	66	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			13C4 PFOS	13C4 PFOS	71	71	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			13C4-PFHPA	13C4-PFHPA	116	116	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			13C4-PFHPA	13C4-PFHPA	84	84	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			13C4-PFHPA	13C4-PFHPA	105	105	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			13C4-PFHPA	13C4-PFHPA	76	76	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			13C4-PFHPA	13C4-PFHPA	108	108	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			13C4-PFHPA	13C4-PFHPA	83	83	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			13C4-PFHPA	13C4-PFHPA	104	104	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			13C4-PFHPA	13C4-PFHPA	68	68	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			13C4-PFHPA	13C4-PFHPA	105	105	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			13C4-PFHPA	13C4-PFHPA	86	86	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			13C4-PFHPA	13C4-PFHPA	120	120	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			13C4-PFHPA	13C4-PFHPA	79	79	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			13C4-PFHPA	13C4-PFHPA	102	102	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			13C4-PFHPA	13C4-PFHPA	137	137	PCT_REC	C	C	PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			13C4-PFHPA	13C4-PFHPA	69	69	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			13C4-PFHPA	13C4-PFHPA	81	81	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			13C5 PFNA	13C5 PFNA	104	104	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			13C5 PFNA	13C5 PFNA	79	79	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			13C5 PFNA	13C5 PFNA	94	94	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			13C5 PFNA	13C5 PFNA	75	75	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			13C5 PFNA	13C5 PFNA	106	106	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			13C5 PFNA	13C5 PFNA	91	91	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			13C5 PFNA	13C5 PFNA	119	119	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			13C5 PFNA	13C5 PFNA	68	68	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			13C5 PFNA	13C5 PFNA	105	105	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			13C5 PFNA	13C5 PFNA	81	81	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			13C5 PFNA	13C5 PFNA	121	121	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			13C5 PFNA	13C5 PFNA	80	80	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			13C5 PFNA	13C5 PFNA	103	103	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			13C5 PFNA	13C5 PFNA	136	136	PCT_REC	C	C	PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			13C5 PFNA	13C5 PFNA	69	69	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			13C5 PFNA	13C5 PFNA	82	82	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			18O2 PFHXS	18O2 PFHXS	103	103	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:20	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-2	1	1			18O2 PFHXS	18O2 PFHXS	85	85	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			18O2 PFHXS	18O2 PFHXS	101	101	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:50	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-4	1	1			18O2 PFHXS	18O2 PFHXS	74	74	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			18O2 PFHXS	18O2 PFHXS	95	95	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-6	1	1			18O2 PFHXS	18O2 PFHXS	105	105	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			18O2 PFHXS	18O2 PFHXS	101	101	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:42	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-8	1	1			18O2 PFHXS	18O2 PFHXS	67	67	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			18O2 PFHXS	18O2 PFHXS	106	106	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:47	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-10	1	1			18O2 PFHXS	18O2 PFHXS	88	88	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			18O2 PFHXS	18O2 PFHXS	117	117	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:16	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-12	1	1			18O2 PFHXS	18O2 PFHXS	79	79	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			18O2 PFHXS	18O2 PFHXS	99	99	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			18O2 PFHXS	18O2 PFHXS	137	137	PCT_REC	C	C	PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			18O2 PFHXS	18O2 PFHXS	77	77	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			18O2 PFHXS	18O2 PFHXS	84	84	PCT_REC			PR	SURR		SLSA	130	50	00000000				5.0				320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	91	91	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	146	146	PCT_REC	C	C	PR	TRG		MSA	130	70	00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5	147	147	PCT_REC	C	C	PR	TRG		MSP	130	70	00000000				5.0	0.00027	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	92	92	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	118	118	PCT_REC			PR	TRG		MSA	130	70	00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			Perfluoroheptanoic acid (PFHpA)	375-85-9	111	111	PCT_REC			PR	TRG		MSP	130	70	00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	96	96	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	122	122	PCT_REC			PR	TRG		MSA	130	70	00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			Perfluorohexanesulfonic acid (PFHxS)	355-46-4	133	133	PCT_REC	C	C	PR	TRG		MSP	130	70	00000000				5.0	0.0004	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			Perfluorononanoic acid (PFNA)	375-95-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			Perfluorononanoic acid (PFNA)	375-95-1	101	101	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			Perfluorononanoic acid (PFNA)	375-95-1	127	127	PCT_REC			PR	TRG		MSA	130	70	00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			Perfluorononanoic acid (PFNA)	375-95-1	119	119	PCT_REC			PR	TRG		MSP	130	70	00000000				5.0	0.00033	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	102	102	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	NC	NC	PCT_REC	U	U	PR	TRG		MSA	130	70	00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1	NC	NC	PCT_REC	C	C	PR	TRG		MSP	130	70	00000000				5.0	0.0003	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB34-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 10:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-9	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB38-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:10	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-11	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB50-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 17:35	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-7	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB59-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 14:30	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-5	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB62-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:15	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-FB63-0216	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	REG	W	4	02/09/2016 09:40	02/10/2016			20160225	00:00:00	20160229	00:00:00	320-17241-3	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-BLK	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	LB1	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-BLK	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	0.001	0.001	UG_L	U	U	PR	TRG					00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	4394551-LCS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	BS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-LCS	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	93	93	PCT_REC			PR	TRG		LSA	130	70	00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MS	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MS	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	NC	NC	PCT_REC	U	U	PR	TRG		MSA	130	70	00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		
N6247011D8012	WE7G		OCEANA_NAS	OF-RW63-0216 MSD	NONS	SVOA	537_MOD	ORG	MA	MAXXAM ANALYTICAL	NONE	NA	METHOD	000	MSD	W	4	02/25/2016 00:00	02/25/2016			20160225	00:00:00	20160229	00:00:00	4394551-MS Dup	1	1			Perfluorooctanoic acid (PFOA)	335-67-1	NC	NC	PCT_REC	C	C	PR	TRG		MSP	130	70	00000000				5.0	0.00039	0.001	0.002	320-17241	100272-4394551		

Data Validation Summary

Oceana CTO-WE44, NALF Fentress

TO: Juliana Dean/VBO

Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: March 18, 2016

Introduction

The following data validation report discusses the data validation process and findings for TestAmerica Laboratories and Maxxam Laboratories in the Sample Delivery Groups (SDGs) listed in the table below.

Samples were analyzed using the following analytical methods:

- WS-LC-0025 & 537 MOD Perfluorinated Hydrocarbons

The samples included in these SDGs are listed in the table below.

SDG	Sample Name	Matrix
320-17150	OF-RW42B-0216	Water
320-17150	OF-RW39-0216	Water
320-17150	OF-FB40-0216	Water
320-17150	OF-RW40-0216	Water
320-17150	OF-FB43-0216	Water
320-17150	OF-RW43-0216	Water
320-17150	OF-FB42B-0216	Water
320-17150	OF-RW42A-0216	Water
320-17150	OF-FB42A-0216	Water
320-17150	OF-RW35-0216	Water
320-17150	OF-FB35-0216	Water

SDG	Sample Name	Matrix
320-17150	OF-RW58-0216	Water
320-17150	OF-FB58-0216	Water
320-17150	OF-FB39-0216	Water
320-17154	OF-FB09-0216	Water
320-17154	OF-FB67-0216	Water
320-17154	OF-RW09-0216	Water
320-17154	OF-FB37-0216	Water
320-17154	OF-RW37-0216	Water
320-17154	OF-RW11-0216	Water
320-17154	OF-FB11-0216	Water
320-17154	OF-RW28-0216	Water
320-17154	OF-FB28-0216	Water
320-17154	OF-RW67-0216	Water
320-17183	OF-RW66-0216	Water
320-17183	OF-FB27-0216	Water
320-17183	OF-FB66-0216	Water
320-17183	OF-RW49-0216	Water
320-17183	OF-FB49-0216	Water
320-17183	OF-RW36A-0216	Water
320-17183	OF-FB36A-0216	Water
320-17183	OF-RW51A-0216	Water
320-17183	OF-FB51A-0216	Water
320-17183	OF-RW27-0216	Water
320-17184	OF-RW20-0216	Water
320-17184	OF-FB30-0216	Water
320-17184	OF-FB69-0216	Water
320-17184	OF-RW69-0216	Water
320-17184	OF-FB26-0216	Water
320-17184	OF-RW26-0216	Water
320-17184	OF-FB20-0216	Water
320-17184	OF-RW55-0216	Water
320-17184	OF-FB55-0216	Water
320-17184	OF-RW54-0216	Water
320-17184	OF-FB54-0216	Water
320-17184	OF-RW68-0216	Water
320-17184	OF-FB68-0216	Water
320-17184	OF-RW30-0216	Water
320-17185	OF-FB08-0216	Water
320-17185	OF-RW51-0216	Water
320-17185	OF-RW51P-0216	Water

SDG	Sample Name	Matrix
320-17185	OF-RW08-0216	Water
320-17185	OF-RW08P-0216	Water
320-17185	OF-FB41-0216	Water
320-17185	OF-RW41-0216	Water
320-17185	OF-RW41P-0216	Water
320-17185	OF-FB56-0216	Water
320-17185	OF-RW56-0216	Water
320-17185	OF-FB51-0216	Water
320-17190	OF-FB12-0216	Water
320-17190	OF-RW12-0216	Water
320-17190	OF-FB57-0216	Water
320-17190	OF-RW57-0216	Water
320-17190	OF-RW57P-0216	Water
320-17190	OF-FB25-0216	Water
320-17190	OF-RW25-0216	Water
320-17190	OF-FB16-0216	Water
320-17190	OF-RW16-0216	Water
320-17219	OF-FB47-0216	Water
320-17219	OF-RW47-0216	Water
320-17219	OF-FB47A-0216	Water
320-17219	OF-RW47A-0216	Water
320-17219	OF-FB48-0216	Water
320-17219	OF-RW48-0216	Water
320-17236	OF-FB70-0216	Water
320-17236	OF-RW70-0216	Water
320-17236	OF-FB44-0216	Water
320-17236	OF-RW44-0216	Water
320-17236	OF-RW44P-0216	Water
320-17236	OF-FB65-0216	Water
320-17236	OF-RW65-0216	Water
320-17236	OF-FB21-0216	Water
320-17236	OF-RW21-0216	Water
320-17241	OF-FB62-0216	Water
320-17241	OF-RW34-0216	Water
320-17241	OF-FB38-0216	Water
320-17241	OF-RW38-0216	Water
320-17241	OF-RW62-0216	Water
320-17241	OF-FB63-0216	Water
320-17241	OF-RW63-0216	Water
320-17241	OF-FB59-0216	Water

SDG	Sample Name	Matrix
320-17241	OF-RW59-0216	Water
320-17241	OF-FB50-0216	Water
320-17241	OF-RW50-0216	Water
320-17241	OF-FB34-0216	Water
320-17278	OF-FB24-0216	Water
320-17278	OF-RW24-0216	Water
320-17278	OF-FB31-0216	Water
320-17278	OF-RW31-0216	Water
320-17278	OF-FB60-0216	Water
320-17278	OF-RW60-0216	Water
320-17278	OF-RW60P-0216	Water
320-17278	OF-FB46-0216	Water
320-17278	OF-RW46-0216	Water
320-17321	OF-FB02-0216	Water
320-17321	OF-RW02-0216	Water
320-17321	OF-FB15-0216	Water
320-17321	OF-RW15-0216	Water
320-17321	OF-FB18-0216	Water
320-17321	OF-RW18-0216	Water
320-17859	OF-FB07-0316	Water
320-17859	OF-RW07-0316	Water
320-17859	OF-HPFB01-0316	Water
320-17859	OF-HP01-0316	Water

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Sampling and Analysis Plan Perfluorinated Compound Investigation, Naval Auxiliary Landing Field Fentress, Chesapeake, Virginia Contract Task Order WE44 (December 2015) and National Functional Guidelines for Organic Data Review (August 2014) with Region 3 Modification (Use of 'B' qualifier) as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Tuning Instrument
- Initial/Continuing Calibrations
- Blanks

- Internal Standards
- Laboratory Control Samples
- Isotope Dilution Analyte
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

Overall Evaluation of Data/Potential Usability Issues

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDG was received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on 2/3/16 through 2/16/16. Samples were received at the laboratory 2/4/16 through 2/17/16. All sample preparation and analyses were performed within holding time requirements with the exception of the samples listed below. Affected data are summarized in **Attachment 1**.

Sample Name	SDG
OF-RW42B-0216	320-17150
OF-RW08-0216	320-17185
OF-RW08P-0216	320-17185
OF-FB62-0216	320-17241
OF-RW34-0216	320-17241
OF-FB38-0216	320-17241
OF-RW38-0216	320-17241
OF-RW62-0216	320-17241
OF-FB63-0216	320-17241
OF-RW63-0216	320-17241
OF-FB59-0216	320-17241

Sample Name	SDG
OF-RW59-0216	320-17241
OF-FB50-0216	320-17241
OF-RW50-0216	320-17241
OF-FB34-0216	320-17241

Blanks

Several compounds were detected in the field blanks and method blanks as listed below. Affected data are summarized in **Attachment 1**.

SDG	Blank ID	Compound	Conc.	Units
320-17183	OF-FB49-0216	Perfluorohexanesulfonic acid (PFHxS)	0.00068	UG_L
320-17183	OF-FB36A-0216	Perfluorooctane Sulfonate (PFOS)	0.00042	UG_L
320-17185	OF-FB51-0216	Perfluorobutanesulfonic acid (PFBS)	0.00063	UG_L
320-17190	OF-FB12-0216	Perfluorohexanesulfonic acid (PFHxS)	0.00079	UG_L
320-17190	OF-FB57-0216	Perfluorohexanesulfonic acid (PFHxS)	0.00083	UG_L
320-17190	OF-FB25-0216	Perfluorobutanesulfonic acid (PFBS)	0.00092	UG_L
320-17190	OF-FB16-0216	Perfluorobutanesulfonic acid (PFBS)	0.0011	UG_L
320-17190	MB 320-100277/1-A	Perfluorobutanesulfonic acid (PFBS)	0.00103	UG_L
320-17190	MB 320-100277/1-A	Perfluorohexanesulfonic acid (PFHxS)	0.00102	UG_L
320-17190	MB 320-100277/1-A	Perfluorooctane Sulfonate (PFOS)	0.00144	UG_L
320-17859	MB 320-104553/1-A	Perfluorooctanoic acid (PFOA)	0.00217	UG_L

Field Duplicate Precision

Perfluoroheptanoic acid (PFHpA) did not meet required precision criteria in native sample OF-RW51-0216 and field duplicate OF-RW51P-0216. Affected data are summarized in **Attachment 1**.

Matrix Spike/Spike Duplicate

For spiked sample OF-RW56-0216 in SDG 320-17185, perfluorobutanesulfonic acid (PFBS) exhibited high recoveries in the MS/MSD. Affected data are summarized in **Attachment 1**.

Surrogates

Surrogates for the samples listed below exhibited low recoveries. Affected data are summarized in **Attachment 1**.

Sample Name	SDG
OF-RW67-0216	320-17154
OF-RW47-0216	320-17219
OF-RW70-0216	320-17236

Sample Name	SDG
OF-RW24-0216	320-17278

Internal Standards

Internal standards exhibited low recoveries for the samples listed below. Affected data are summarized in **Attachment 1**.

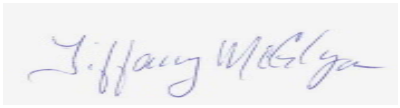
Sample Name	SDG
OF-RW37-0216	320-17154
OF-FB56-0216	320-17185

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

Qualification Flags

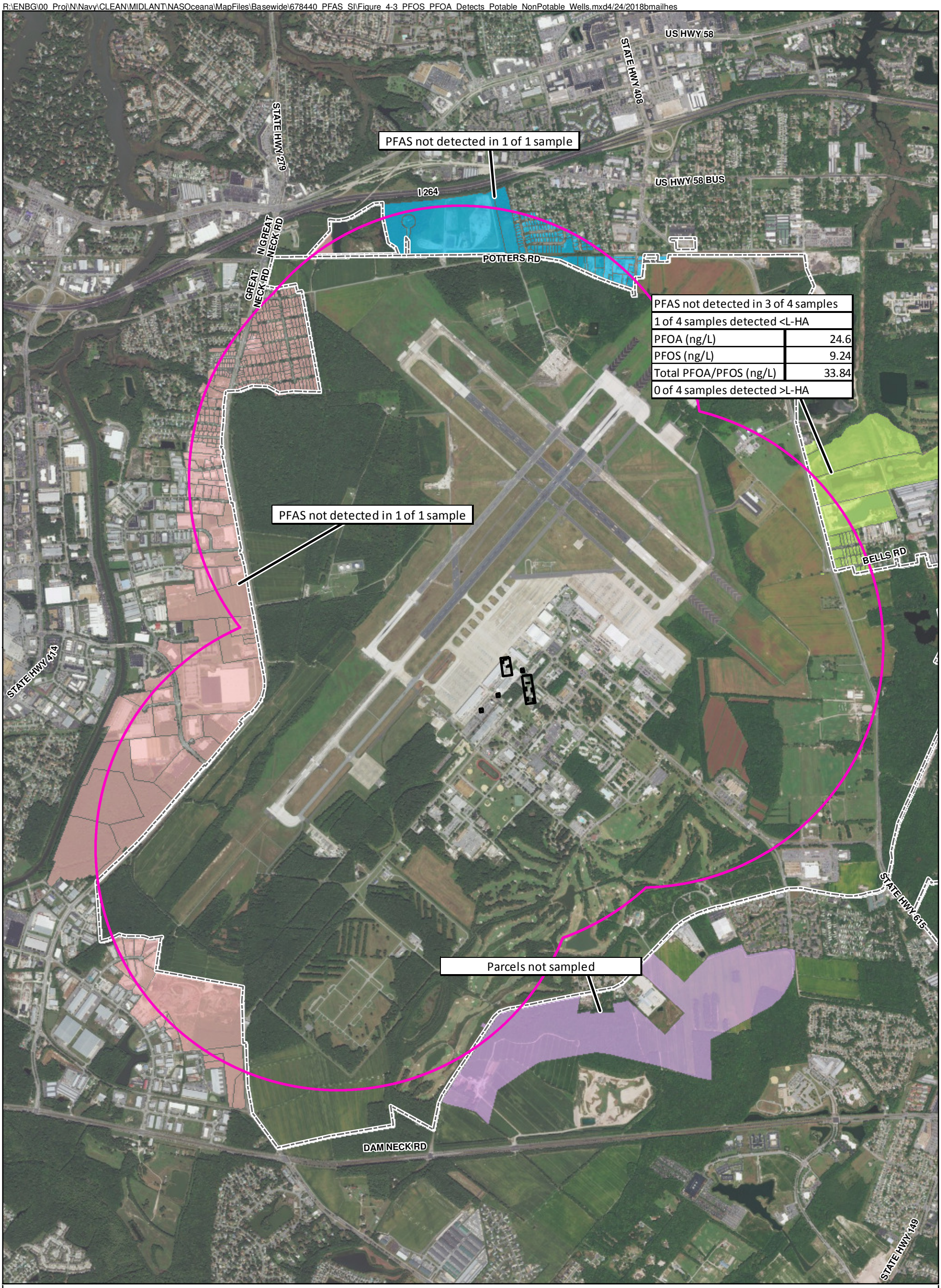
Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

Value	Description
MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

R:\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\Basewide\678440_PFAS_SI\Figure_4-3_PFOS_PFOA_Detects_Potable_NonPotable_Wells.mxd4/24/2018bmailhes



Legend

- Non-Core Target Treatment Area (2004)
- Core Target Treatment Area (2004) (Core)
- Sampling Area
- Installation Boundary

Off-Base Parcels

- East
- North
- South
- West

N
W E
S

0 1,000 2,000 4,000 Feet

Imagery Source: ©2017 Esri

Figure 4-3
COCs Detections in Potable Wells Sampled from Parcels Located Off-Base
Basewide Per- and Polyfluoroalkyl Substances Site Inspection Report
NAS Oceana, Virginia Beach, Virginia

ch2m