NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 1700877

Naval Air Warfare Center Trenton
Trenton, New Jersey

August 2019

N62376.SF.001177
NAWC TRENTON
5090.3c

LABORATORY DATA PACKAGE, 1700877, NAWC TRENTON, NJ
07/20/2017
VISTA ANALYTICAL LABORATORY

July 20, 2017

Vista Work Order No. 1700877

Ms. Mary Mang
Tetra Tech
661 Andersen Drive, Foster Plaza 7
Pittsburgh, PA 15220

Dear Ms. Mang,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on July 14, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'NAWC Trenton'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Karen J. Volpenhein for

Martha Maier
Laboratory Director

Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1700877
Case Narrative

Sample Condition on Receipt:

Two drinking samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 537

The drinking water samples were extracted and analyzed for the UCMR list of six PFAS using EPA Method 537.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Laboratory Fortified Blank (LFB) and Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the LRB above 1/2 the LOQ. The LFB recoveries were within the method acceptance criteria

The surrogate recoveries for all QC and field samples were within the acceptance criteria.

In addition, the laboratory QC officer must read and sign a copy of the Quality Assurance Review Form displayed on the next page of this Attachment. Electronic deliverables are not considered to be complete without the accompanying Quality Assurance Review Form.

I Anna Helak, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (916) 673 1520 If there are any questions or problems with the enclosed electronic deliverables.

Signature: JhA Title: QA Manager Date: 7/20/2017

Revision 9
ISG
08/18/16

TABLE OF CONTENTS

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1700877-01	RW-19-20170713	13-Jul-17 13:15	14-Jul-17 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1700877-02	FRB-19-20170713	13-Jul-17 13:05	14-Jul-17 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

Correspondence

Karen Volpendesta

From: Ritchie, Megan <Megan.Ritchie@tetratech.com>
Sent: Wednesday, July 12, 2017 8:28 AM
To: Karen Volpendesta
Cc: Mang, Mary
Subject: Trenton - One DW sample for delivery Friday

Hi Karen,

Just a heads up that we will be collecting the last residential well sample for PFAS on Thursday for the Trenton project. The sample will arrive at Vista on Friday and has a 7-day TAT. There will be no QC other than the FRB. The method needs to be the drinking water 537 and the analyte list is the UCMR 3 list of 6 PFAS analytes.

Thanks,
Megan

Megan Ritchie | **Environmental Scientist**
Direct: 610.382.1527 | Main: 610.491.9688 | Fax: 610.491.9645
Office Hours: Mon-Wed 7:30-3 megan.ritchie@tetratech.com

Tetra Tech | Complex World, Clear Solutions™
234 Mall Boulevard, Suite 260 | King of Prussia, PA 19406 | www.tetratech.com

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Matrix: Drinking Water
Sample Size: 0.250 L

QC Batch: B7G0069
Date Extracted: 17-Jul-2017 8:27

Lab Sample: B7G0069-BLK1
Date Analyzed: 19-Jul-17 20:27 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	0.443	5.00	10.0	
PFHpA	ND	0.533	5.00	10.0	
PFHxS	ND	0.415	5.00	10.0	
PFOA	ND	1.08	5.00	10.0	
PFNA	ND	1.44	5.00	10.0	
PFOS	ND	1.04	5.00	10.0	

Labeled Standard		%R	LCL-UCL	Qualifiers
SUR	13C2-PFHxA	95.8	70 - 130	
SUR	13C2-PFDA	89.2	70 - 130	

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: LFB

EPA Method 537

Matrix:	Drinking Water	QC Batch:	B7G0069	Lab Sample:	B7G0069-BS1
Sample Size:	0.250 L	Date Extracted:	17-Jul-2017 8:27	Date Analyzed:	19-Jul-17 19:50 Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits
PFBS	37.1	35.4	105	70 - 130
PFHpA	40.9	40.0	102	70 - 130
PFHxS	39.3	36.4	108	70 - 130
PFOA	37.4	40.0	93.4	70 - 130
PFNA	37.8	40.0	94.5	70 - 130
PFOS	37.6	37.0	102	70 - 130

	Labeled Standard	%R	LCL-UCL
SUR	13C2-PFHxA	93.4	70 - 130
SUR	13C2-PFDA	94.6	70 - 130

LCL-UCL - Lower control limit - upper control limit

Sample ID: RW-19-20170713

EPA Method 537

Client Data

Name:	Tetra Tech
Project:	NAWC Trenton
Date Collected:	13-Jul-2017 13:15
Location:	Trenton

Sample Data

Matrix:	Drinking Water
Sample Size:	0.281 L

Laboratory Data

Lab Sample:	1700877-01	Date Received:	14-Jul-2017 9:33
QC Batch:	B7G0069	Date Extracted:	17-Jul-2017 8:27
Date Analyzed:	19-Jul-17 20:52 Column: BEH C18		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	0.872	0.394	4.45	8.90	J
PFHpA	2.12	0.475	4.45	8.90	J
PFHxS	2.23	0.369	4.45	8.90	J
PFOA	5.93	0.962	4.45	8.90	J
PFNA	ND	1.28	4.45	8.90	
PFOS	5.90	0.926	4.45	8.90	J

Labeled Standard	%R	LCL-UCL	Qualifiers
SUR 13C2-PFHxA	106	70 - 130	
SUR 13C2-PFDA	92.8	70 - 130	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: FRB-19-20170713

EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 13-Jul-2017 13:05
Location: Trenton

Sample Data

Matrix: Drinking Water
Sample Size: 0.270 L

Laboratory Data

Lab Sample: 1700877-02 Date Received: 14-Jul-2017 9:33
QC Batch: B7G0069 Date Extracted: 17-Jul-2017 8:27
Date Analyzed: 19-Jul-17 21:04 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	0.411	4.64	9.27	
PFHpA	ND	0.494	4.64	9.27	
PFHxS	ND	0.385	4.64	9.27	
PFOA	ND	1.00	4.64	9.27	
PFNA	ND	1.34	4.64	9.27	
PFOS	ND	0.964	4.64	9.27	

Labeled Standard	%R	LCL-UCL	Qualifiers
SUR 13C2-PFHxA	104	70 - 130	
SUR 13C2-PFDA	109	70 - 130	

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	**This compound was also detected in the method blank.**
D	**Dilution**
E	**The associated compound concentration exceeded the calibration range of the instrument.**
H	**Recovery and/or RPD was outside laboratory acceptance limits.**
I	**Chemical Interference**
J	**The amount detected is below the Reporting Limit/LOQ.**
M	**Estimated Maximum Possible Concentration. (CA Region 2 projects only)**
*****	**See Cover Letter**
Conc.	**Concentration**
NA	**Not applicable**
ND	**Not Detected**
TEQ	**Toxic Equivalency**

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1175673
Nevada Division of Environmental Protection	CA004132017-1
New Hampshire Environmental Accreditation Program	207716
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	013
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	8621
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	**Method**
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23

MATRIX: Biological Tissue	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	**Method**
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537

MATRIX: Non-Potable Water	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	**Method**
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B

Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

Submit by Email*

Vista

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project ID: 1700877 Temp 2.3 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

TAT: (Check One)
Standard ◉ 21 days
Rush (surcharge may apply)
◯ 14 days ◯ 7 days Specify:

Project I.D.: **NAWC Trenton** P.O. #: **1135710** Sampler: **Chuck Myer** (Name)

Invoice to: Name	Company	Address	City	State	Zip	Ph#	Fax #
Tetra Tech	**Foster Plaza VII**	**661 Anderson Drive**	**Pittsburgh**	**PA**	**15220**	**412-921-7090**	**412-921-4040**

Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Chuck Myer	**7/13/2017**	**18:00**	Beth Benedict B. Benedict	07/14/17	1000
Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

See "Sample Log-in Checklist" for additional sample information

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 • Fax (916) 673-0106

Method of Shipment: **FedEx**

Tracking No.:

ATTN: **Sample Custodian**

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Container(s) Type	Matrix	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA1613 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 TOTALS	EPA1668 COPLANAR PCBs	EPA1668 209 CONGENERS	EPA1668 PBDE	EPA1614 PAH	CARB429 WHO-29	CARB429 UCMR 3 LIST
RW-19-20170713	7/13/17	13:15	Trenton	2	PJ	AQ															x	
FRB-19-20170713	7/13/17	13:05	Trenton	2	PJ	AQ															x	

Special Instructions/Comments:
FedEx 6612 1992 7014

SEND DOCUMENTATION AND RESULTS TO:

Name: **Mary Mang**
Company: **Tetra Tech**
Address: **234 Mall Blvd Suite 260**
City: **King of Prussia** State: **PA** Zip: **19406**
Phone: **610-382-1174** Fax: **610-491-9645**
Email: **mary.mang@tetratech.com**

Container Types: A = 1 Liter Amber, G = Glass Jar
P = PUF, T = MM5 Train, O = Other **PJ**

***Bottle Preservative Type:** ☐ T = Thiosulfate,
☐ O = Other

Matrix Types: DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B=Blood/Serum
O = Other AQ

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1700877 **TAT** Std per email 7 TAT

Samples Arrival:	**Date/Time** 07/14/17 0933	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 07/14/17 1304	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** A5

Delivered By:	FedEx	UPS	On Trac	GSO	DHL	Hand Delivered	Other
Preservation:	Ice		Blue Ice		Dry Ice		None

Temp °C: JBB 07/14/17 0.4 3.0 (uncorrected)	**Time:** 1004	**Thermometer ID:** DT-3
Temp °C: 2.3 (corrected)	**Probe used:** Yes ☑ No ☐	

		YES	NO	NA
Adequate Sample Volume Received? A/B		✓		
Holding Time Acceptable?		✓		
Shipping Container(s) Intact?		✓		
Shipping Custody Seals Intact?		✓		
Shipping Documentation Present?		✓		
Airbill	Trk # 4612 1992 7014	✓		
Sample Container Intact?		✓		
Sample Custody Seals Intact?		✓		✓
Chain of Custody / Sample Documentation Present?		✓		
COC Anomaly/Sample Acceptance Form completed?			✓	✓

If Chlorinated or Drinking Water Samples, Acceptable Preservation?						✓	
Preservation Documented:	$Na_2S_2O_3$	Trizma	Lab	None		Yes	No	NA
Shipping Container	Vista	Client	Retain	Return		Dispose	

Comments:

EXTRACTION INFORMATION

RUSH

Process Sheet

Workorder: 1700877

Prep Expiration: 2017-Jul-27

Client: Tetra Tech

Workorder Due: 21-Jul-17 00:00

TAT: 7

Method: **537 PFAS DW DoD Unmodified**

Matrix: **Drinking Water**

Prep Batch: B760069

Prep Data Entered: HB 7/18/17

Date and Initials

Version: UCMR 3 (6 Analyte)

Initial Sequence: _____

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1700877-01	☑	RW-19-20170713	14-Jul-17 09:33	WR-2 A-5	
1700877-02	☒	FRB-19-20170713	14-Jul-17 09:33	WR-2 A-5	

WO Comments: **Attach balance check doc.**

Vista PM:Martha Maier

Vial Box ID: Collection

Sample Reconciled By: _____ 7/17/17

Page 1 of 1

Batch: B7G0069

Matrix: Drinking Water

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1700877-01	0.28079 ✓	NA	NA	1000	17-Jul-17 08:27	HAC			Drinking Water	537 PFAS DW DoD Unmo
1700877-02	0.26959 ✓	↓	↓	1000	17-Jul-17 08:27	HAC			Drinking Water	537 PFAS DW DoD Unmo
B7G0069-BLK1	0.25 ✓	↓	↓	1000	17-Jul-17 08:27	HAC				QC
B7G0069-BS1	0.25 ✓	↓	↓	1000	17-Jul-17 08:27	HAC	17D2705 ✓	10 ✓		QC

HB 7/18/17

Matrix: Drinking Water

Method: 537 PFAS DW DoD Unmodifie

PREPARATION BENCH SHEET

B7G0069

Chemist: JTC

Prep Date/Time: 17-Jul-17 08:27

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE C7G0062	IS CHEM/WIT DATE
☐	B7G0069-BLK1 (A)	NA	NA	(0.250) ✓	JTC SK 7/17/17	BD JTC 7.17.17	JTC SK JTC 7.17.17
☐	B7G0069-BS1 (A)	↓	↓	↓ ✓	↓	↓	↓
☐	1700877-01	307.66	26.87	0.28079 ✓	↓	↓	↓
☐	1700877-02	297.86	29.17	0.26959 ✓	↓	↓	↓

(A) 1.15g trizma added JTC 7/17/17

SS Name	NS Name	IS Name		
17F1415, 50µl (V4)	17D1705, 10µL (V1)	17F1416, 50µL (V4)	SPE Chem: Strata X 33µm 500mg/6mL Lot#: 517-001874 Ele SOLV: MeOH Lot#: DR972 Final Volume(s): 1mL	Check Out: Chemist/Date: JTC 7/17/17 Check In: Chemist/Date: LA Balance ID: HMS-8

Comments: Assume 1 g = 1 mL

HRMS - 8

Vista Analytical Laboratory

BALANCE CALIBRATION CHECK

Weights # 22370 and 7718

Date	☑ for Weight # verification	Weight 1 1 g (0.9900 – 1.0100)	Weight 2 100 g (99.00 – 101.00)	Weight 3 2000 g (1980 – 2020)	Initials	Acceptable? (Y/N)
6/20/17	✓	1.00	100.00	2000.00	OBF	Y
6/21/17	✓	1.01	100.01	2000.03	HB	Y
6/22/17	✓	1.00	99.99	2000.01	KBF	Y
6/23/17	✓	0.99	100.00	2000.00	HB	Y
6/26/17	✓	1.00	100.00	2000.00	HB	Y
6/27/17	✓	1.01	100.00	2000.04	HB	Y
6/28/17	✓	1.00	~~101.00~~ Negative 100.01	2000.01	HB	Y
6/29/17	✓	1.00	100.01	1999.98	JK	Y
6/30/17	✓	1.00	99.99	1999.98	HB	Y
7/3/17	✓	1.01	100.00	1999.99	KBF	Y
7/5/17	✓	1.00	100.00	2000.01	JK	Y
7/6/17	✓	1.00	100.00	1999.99	EL	Y
7/7/17	✓	1.00	100.00	1999.99	KBF	Y
7.8.17	✓	0.99	100.00	2000.00	BP	Y
7/10/17	✓	1.00	100.00	2000.02	HB	Y
7/11/17	✓	1.00	100.00	2000.04	TM	Y
7/12/17	✓	~~0.99~~ 1.00 KBF 7/12/17	99.99	1999.99	KBF	Y
7.13.17	✓	1.01	99.99	1999.99 ~~1999.97~~ BP 7.13.17	BP	Y
7/14/17	✓	1.00	100.00	2000.02	HB	Y
7/17/17	✓	0.99	100.01	2000.05	JK	Y
7/18/17	✓	1.00	100.00	2000.01	HB	Y

Comments:

SAMPLE DATA –EPA METHOD 537

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-17.qld

Last Altered: Thursday, July 20, 2017 10:46:17 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:46:42 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: B7G0069-BLK1, Description: LRB, Name: 170719L1_17.wiff, Date: 19-Jul-2017, Time: 20:27:44

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90		1.083e4		0.250			
2	3	PFHpA	318.90	2.889e1	1.363e4		0.250	4.30	0.116	
3	4	PFHxS	79.91		1.083e4		0.250			
4	5	PFOA	368.90		1.363e4		0.250			
5	6	PFNA	419.00		1.363e4		0.250			
6	7	PFOS	79.92	3.064e0	1.083e4		0.250	5.05	0.0274	
7	15	13C2-PFHxA	269.90	9.015e3	1.363e4	0.690	0.250	3.81	38.3	95.8
8	16	13C2-PFDA	470.00	8.266e3	1.363e4	0.680	0.250	5.27	35.7	89.2
9	18	13C2-PFOA	369.90	1.363e4	1.363e4	1.000	0.250	4.68	40.0	100
10	19	13C4-PFOS	79.93	1.083e4	1.083e4	1.000	0.250	5.05	115	100

GM 7/20/17

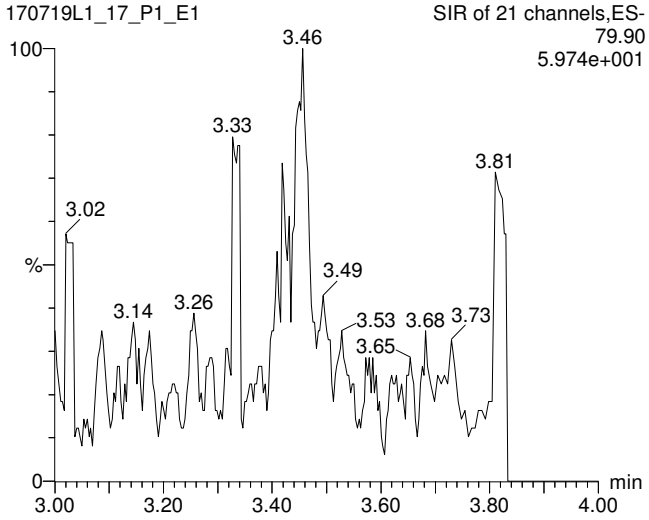
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-17.qld

Last Altered: Thursday, July 20, 2017 10:46:17 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:46:42 Pacific Daylight Time

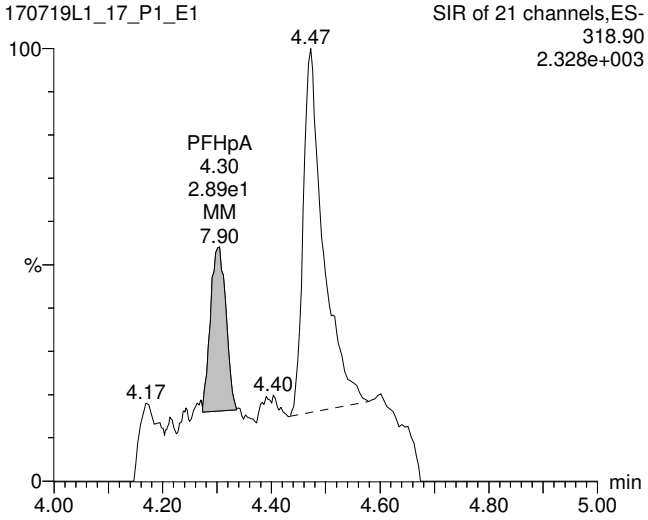
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: B7G0069-BLK1, Description: LRB, Name: 170719L1_17.wiff, Date: 19-Jul-2017, Time: 20:27:44, Instrument: , Lab: ©PE-SCIEX, User: sciex

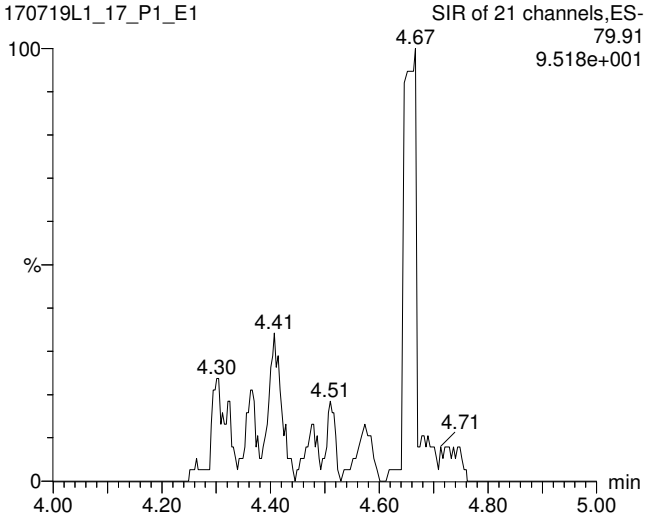
PFBS



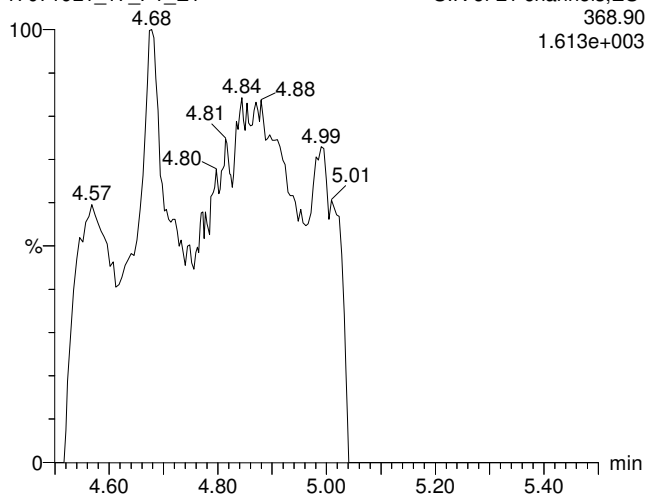
PFHpA



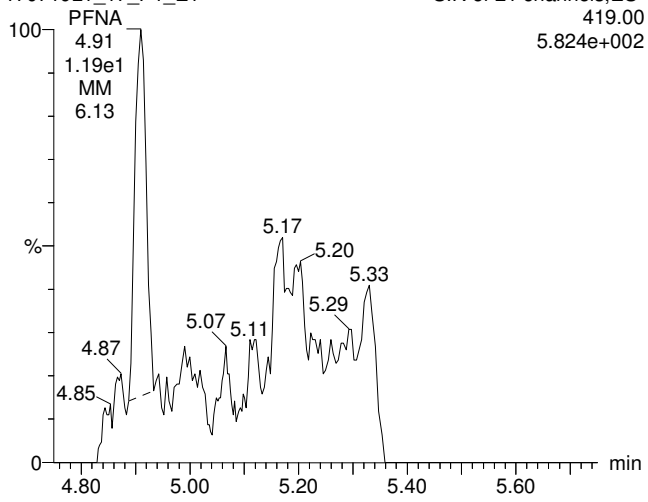
PFHxS



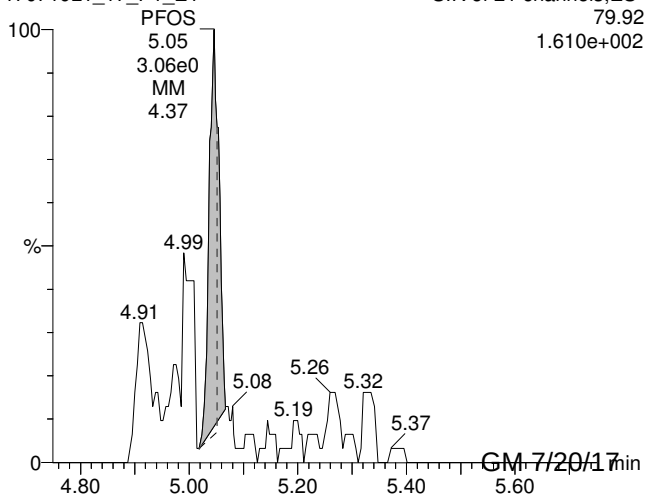
PFOA



PFNA



PFOS



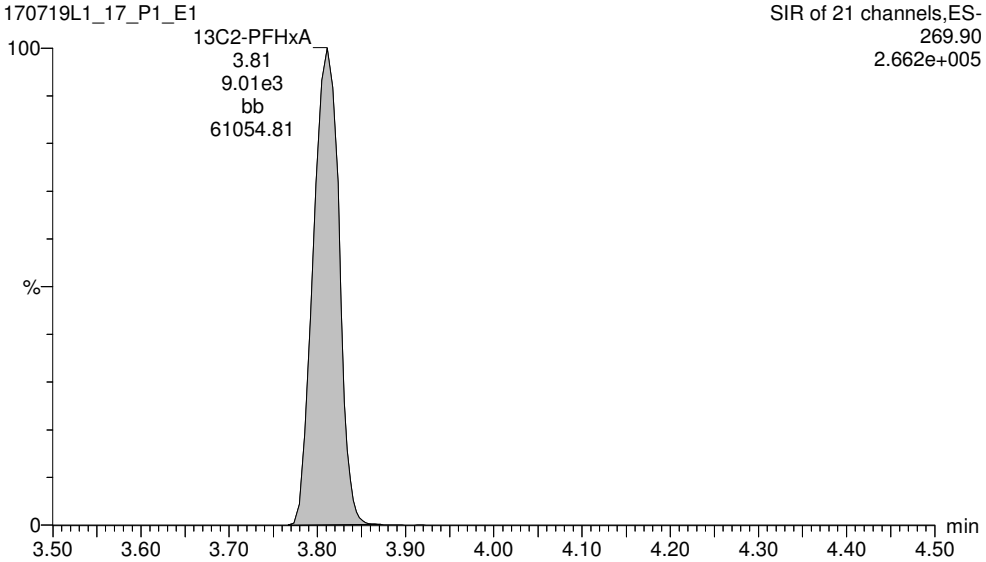
GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-17.qld

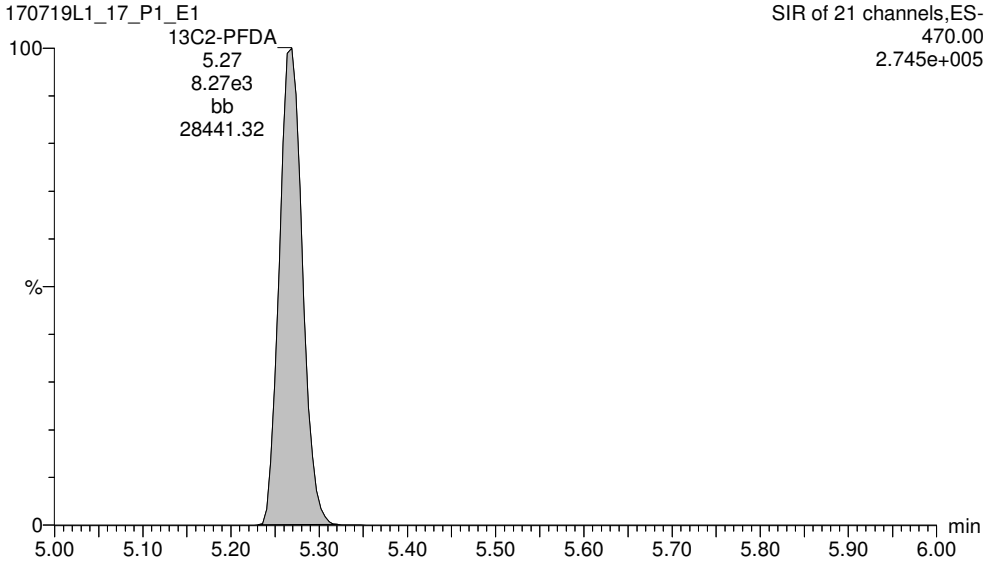
Last Altered: Thursday, July 20, 2017 10:46:17 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:46:42 Pacific Daylight Time

ID: B7G0069-BLK1, Description: LRB, Name: 170719L1_17.wiff, Date: 19-Jul-2017, Time: 20:27:44, Instrument: , Lab: ©PE-SCIEX, User: sciex

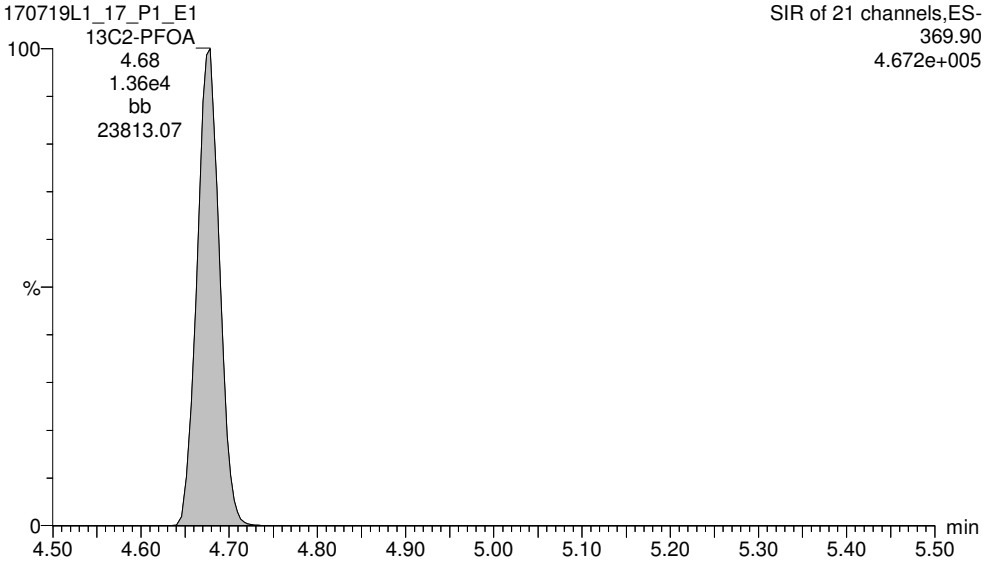
13C2-PFHxA



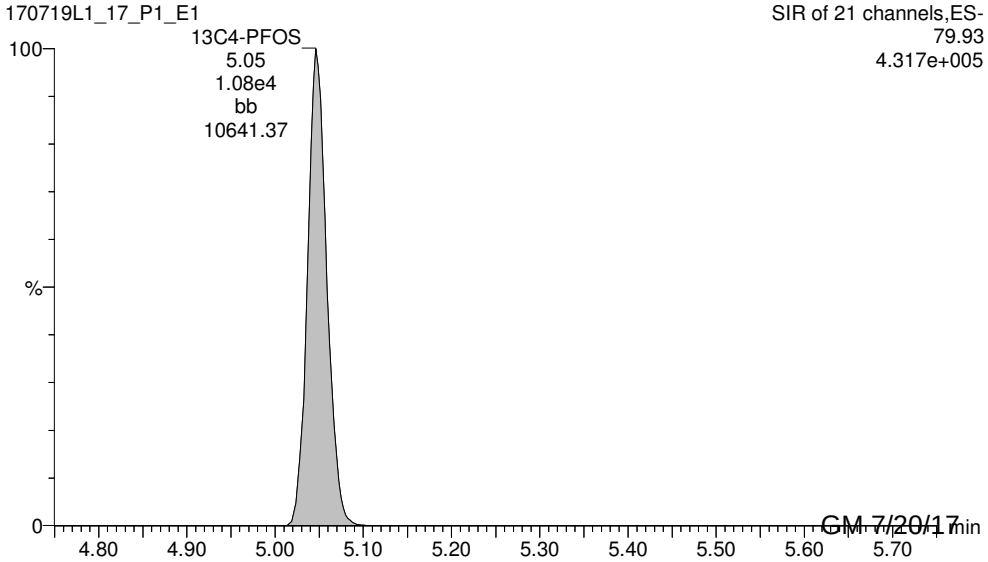
13C2-PFDA



13C2-PFOA



13C4-PFOS



GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-14.qld

Last Altered: Thursday, July 20, 2017 10:43:29 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:43:52 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: B7G0069-BS1, Description: LFB, Name: 170719L1_14.wiff, Date: 19-Jul-2017, Time: 19:50:58

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90	4.707e3	9.420e3		0.250	3.45	37.1	105
2	3	PFHpA	318.90	9.454e3	1.262e4		0.250	4.30	40.9	102
3	4	PFHxS	79.91	3.793e3	9.420e3		0.250	4.40	39.3	108
4	5	PFOA	368.90	1.056e4	1.262e4		0.250	4.67	37.4	93.4
5	6	PFNA	419.00	1.017e4	1.262e4		0.250	4.99	37.8	94.5
6	7	PFOS	79.92	3.661e3	9.420e3		0.250	5.04	37.6	102
7	15	13C2-PFHxA	269.90	8.137e3	1.262e4	0.690	0.250	3.81	37.4	93.4
8	16	13C2-PFDA	470.00	8.114e3	1.262e4	0.680	0.250	5.26	37.8	94.6
9	18	13C2-PFOA	369.90	1.262e4	1.262e4	1.000	0.250	4.67	40.0	100
10	19	13C4-PFOS	79.93	9.420e3	9.420e3	1.000	0.250	5.04	115	100

GM 7/20/17

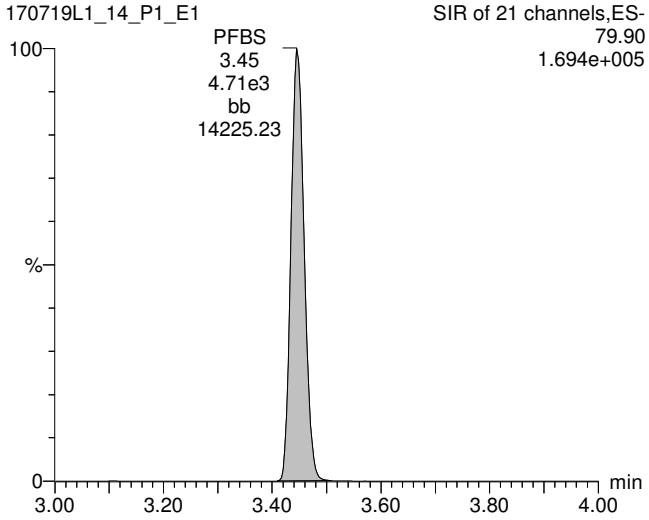
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-14.qld

Last Altered: Thursday, July 20, 2017 10:43:29 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:43:52 Pacific Daylight Time

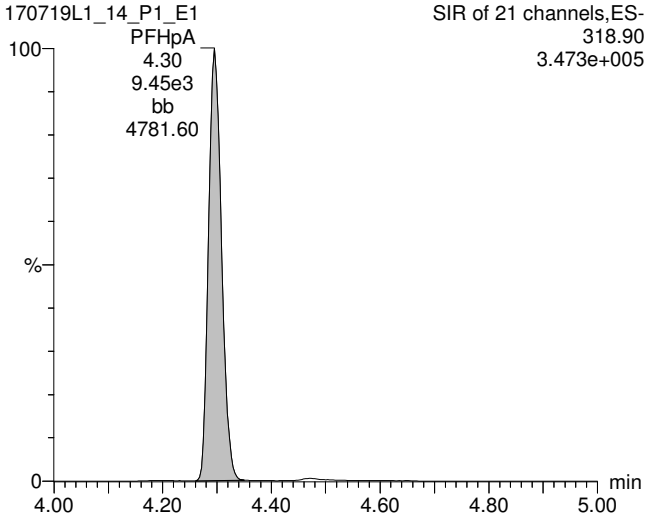
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: B7G0069-BS1, Description: LFB, Name: 170719L1_14.wiff, Date: 19-Jul-2017, Time: 19:50:58, Instrument: , Lab: ©PE-SCIEX, User: sciex

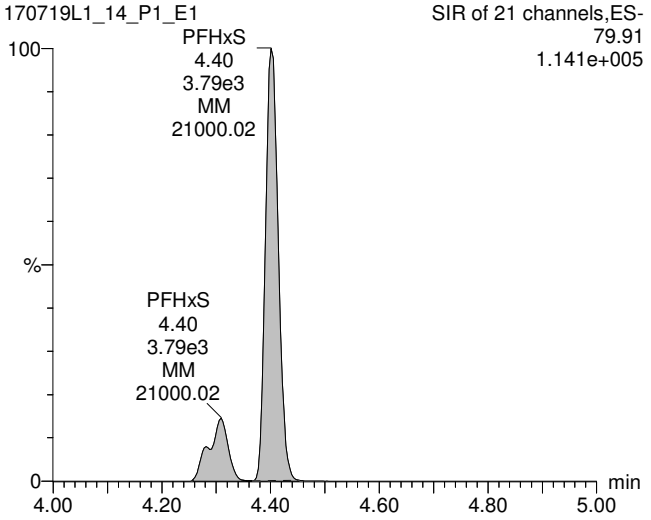
PFBS



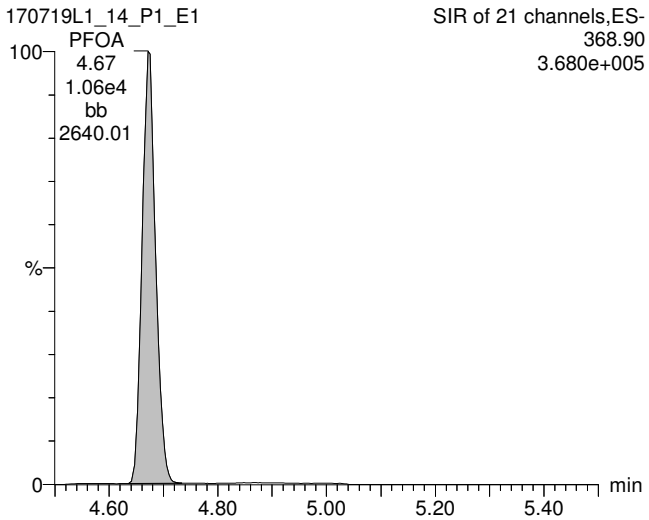
PFHpA



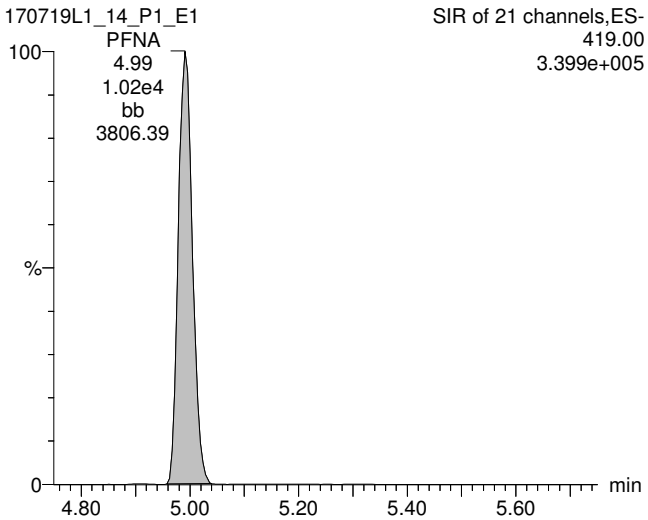
PFHxS



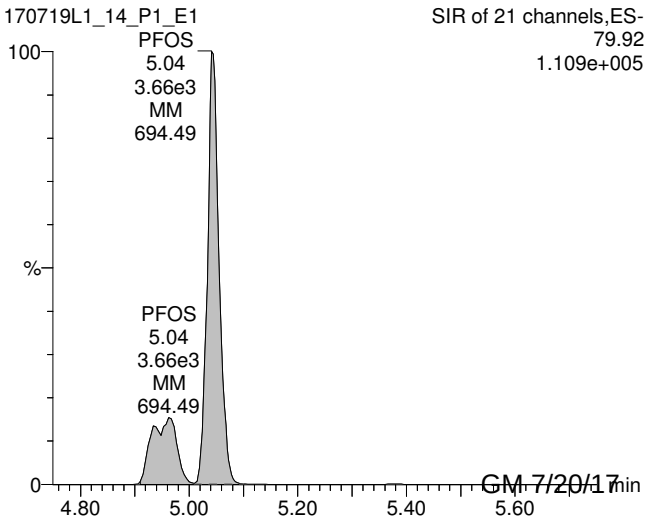
PFOA



PFNA



PFOS



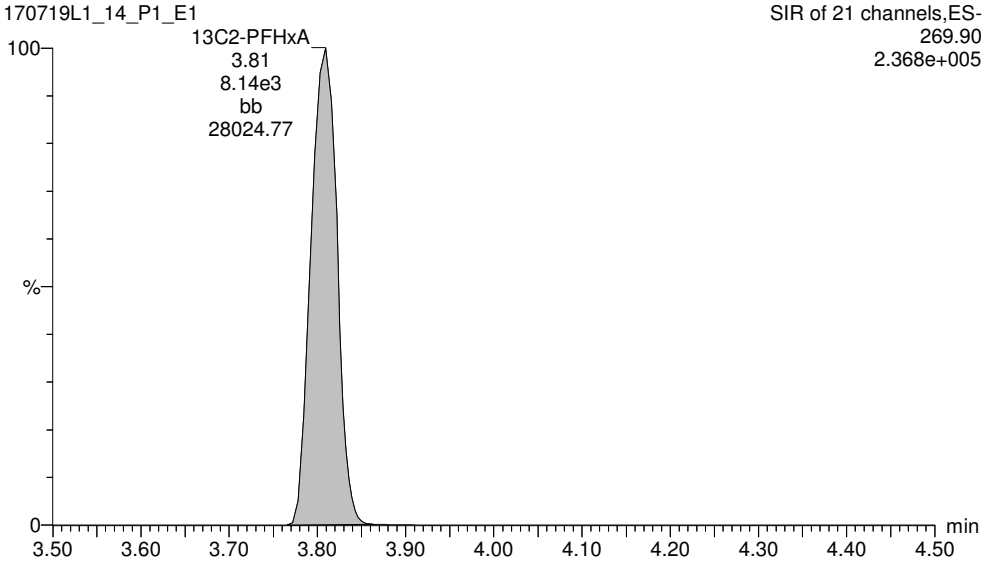
GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-14.qld

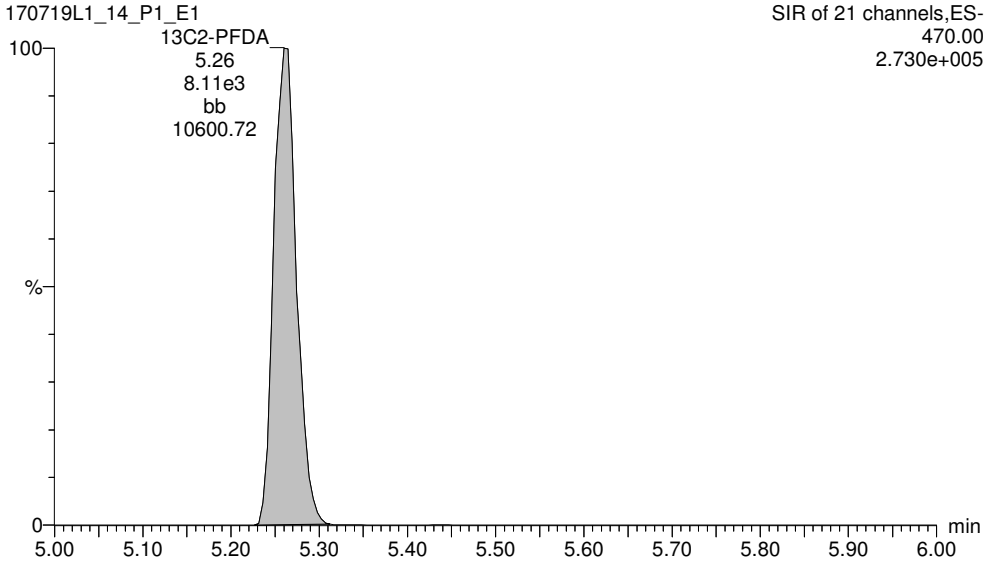
Last Altered: Thursday, July 20, 2017 10:43:29 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:43:52 Pacific Daylight Time

ID: B7G0069-BS1, Description: LFB, Name: 170719L1_14.wiff, Date: 19-Jul-2017, Time: 19:50:58, Instrument: , Lab: ©PE-SCIEX, User: sciex

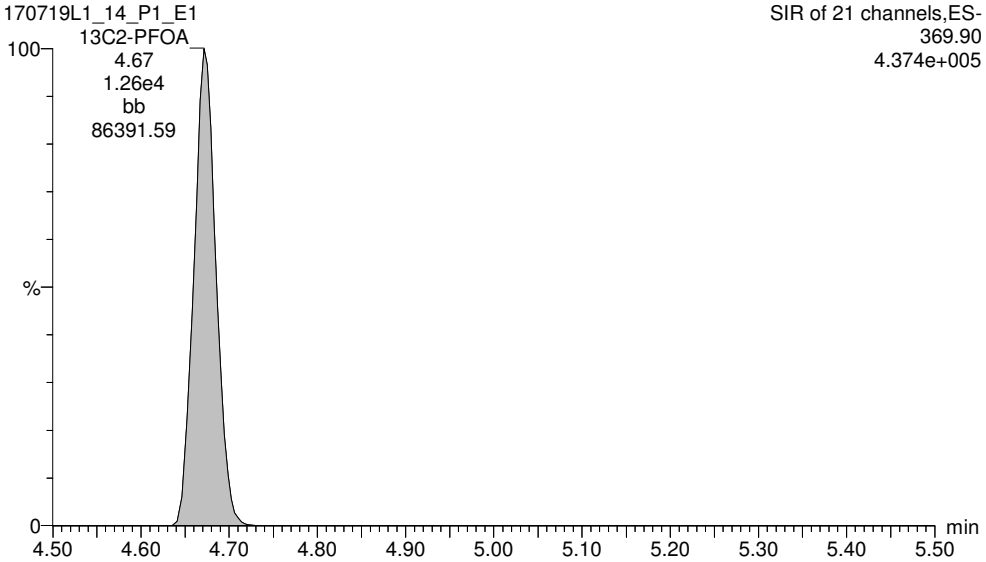
13C2-PFHxA



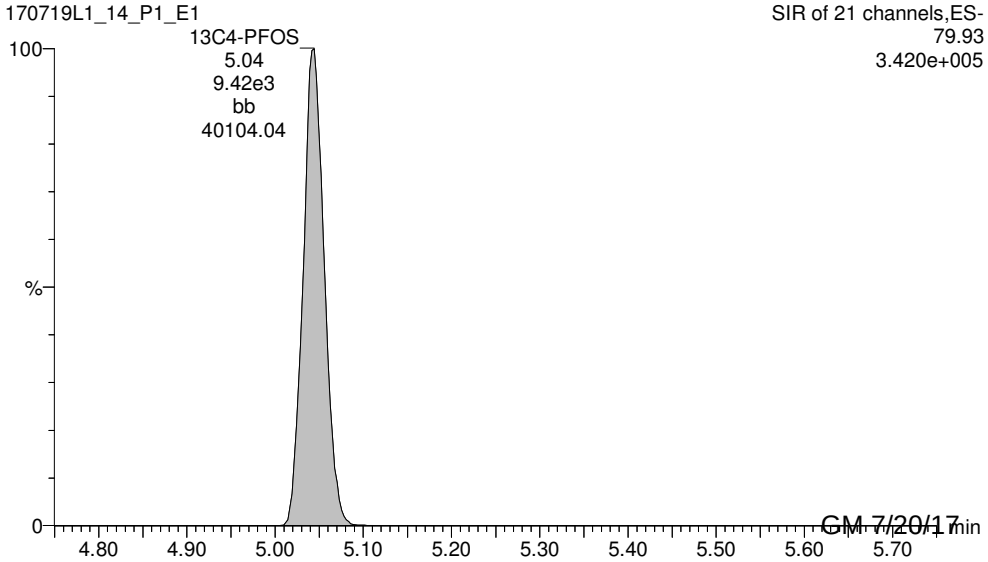
13C2-PFDA



13C2-PFOA



13C4-PFOS



GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-19.qld

Last Altered: Thursday, July 20, 2017 10:48:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:50:21 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: 1700877-01, Description: RW-19-20170713, Name: 170719L1_19.wiff, Date: 19-Jul-2017, Time: 20:52:16

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90	1.110e2	8.406e3		0.281	3.46	0.872	
2	3	PFHpA	318.90	4.516e2	1.034e4		0.281	4.30	2.12	
3	4	PFHxS	79.91	2.159e2	8.406e3		0.281	4.40	2.23	
4	5	PFOA	368.90	1.594e3	1.034e4		0.281	4.68	5.93	
5	6	PFNA	419.00	2.000e2	1.034e4		0.281	5.00	0.767	
6	7	PFOS	79.92	5.761e2	8.406e3		0.281	5.05	5.90	
7	15	13C2-PFHxA	269.90	7.575e3	1.034e4	0.690	0.281	3.82	37.8	106
8	16	13C2-PFDA	470.00	6.522e3	1.034e4	0.680	0.281	5.27	33.0	92.8
9	18	13C2-PFOA	369.90	1.034e4	1.034e4	1.000	0.281	4.67	35.6	100
10	19	13C4-PFOS	79.93	8.406e3	8.406e3	1.000	0.281	5.04	102	100

GM 7/20/17

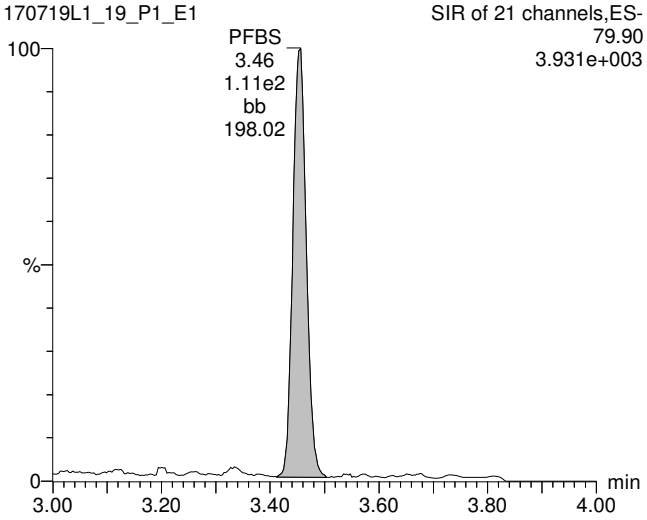
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-19.qld

Last Altered: Thursday, July 20, 2017 10:48:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:50:21 Pacific Daylight Time

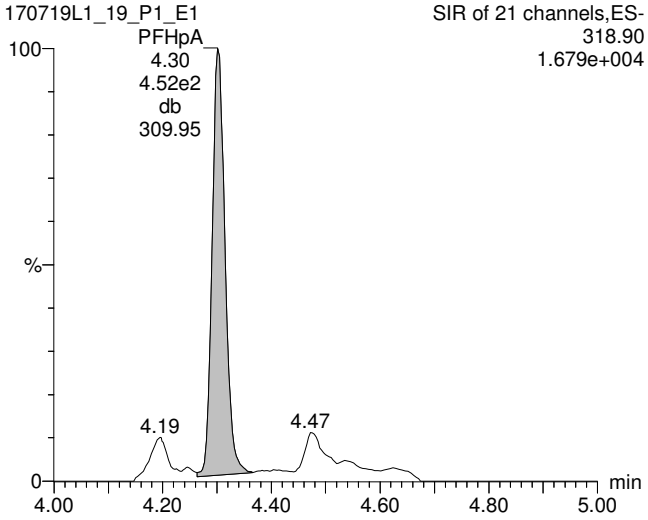
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: 1700877-01, Description: RW-19-20170713, Name: 170719L1_19.wiff, Date: 19-Jul-2017, Time: 20:52:16, Instrument: , Lab: ©PE-SCIEX, User: sciex

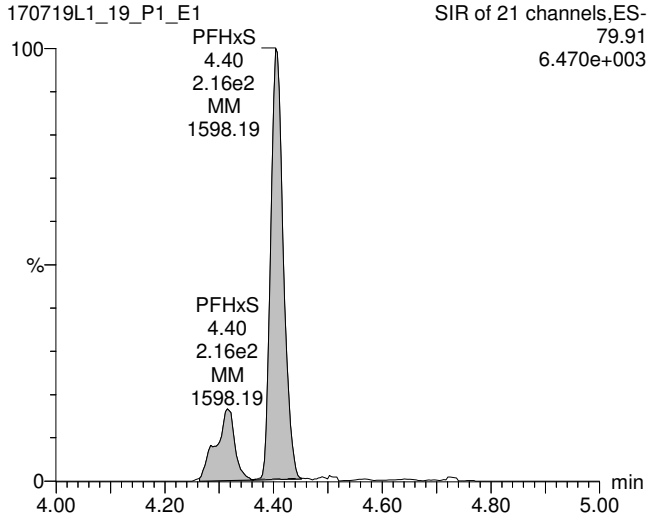
PFBS



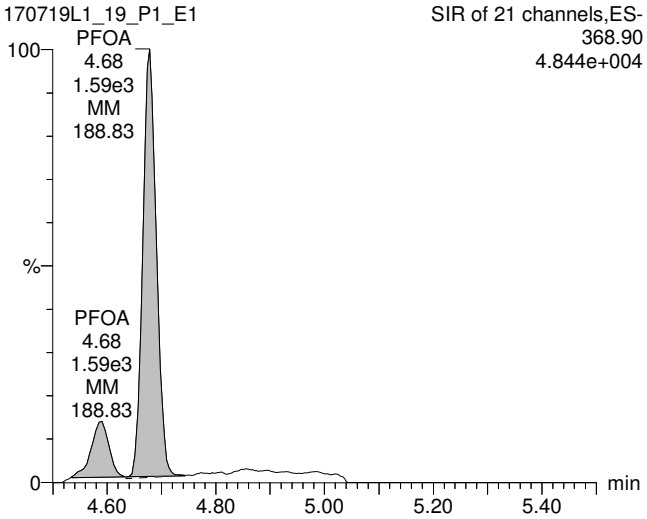
PFHpA



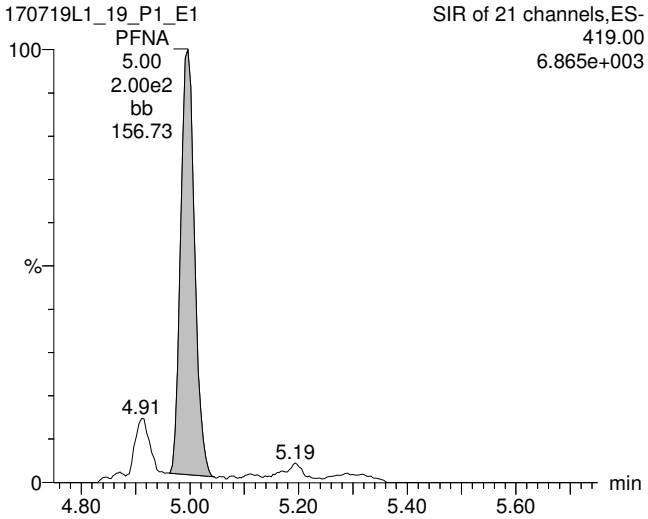
PFHxS



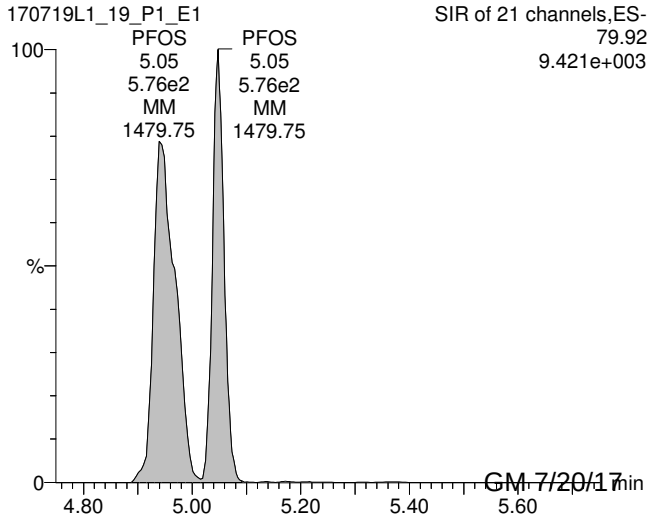
PFOA



PFNA



PFOS



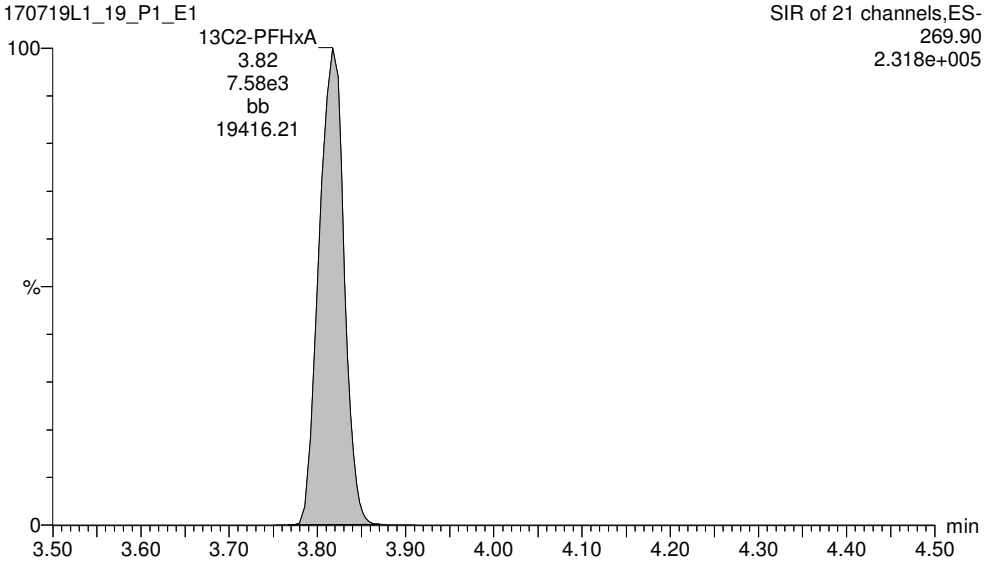
GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-19.qld

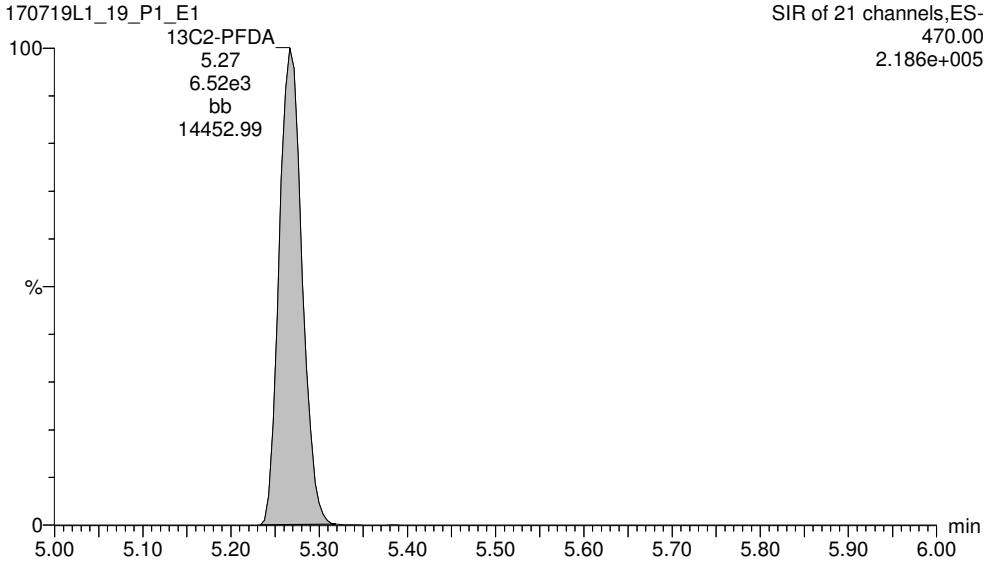
Last Altered: Thursday, July 20, 2017 10:48:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:50:21 Pacific Daylight Time

ID: 1700877-01, Description: RW-19-20170713, Name: 170719L1_19.wiff, Date: 19-Jul-2017, Time: 20:52:16, Instrument: , Lab: ©PE-SCIEX, User: sciex

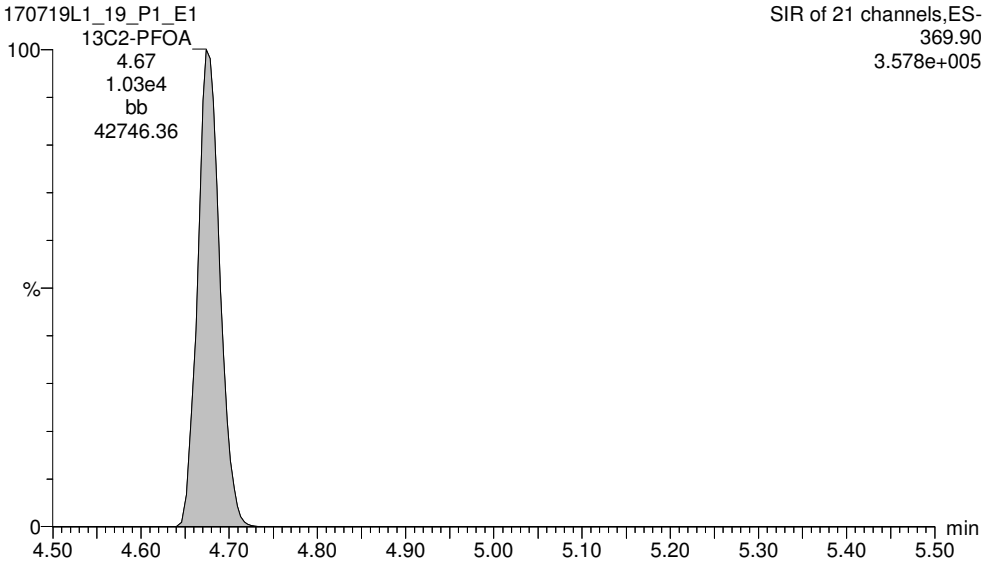
13C2-PFHxA



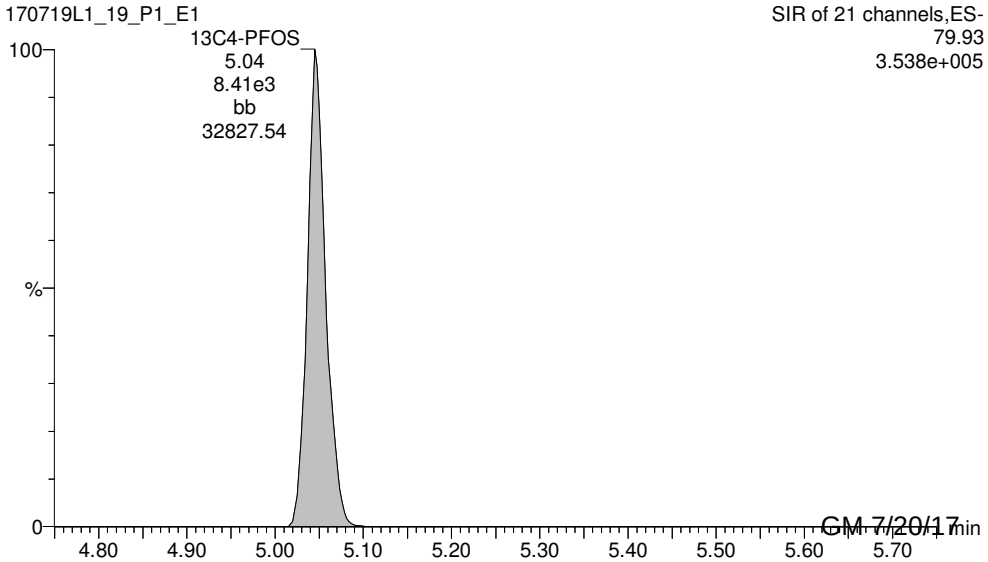
13C2-PFDA



13C2-PFOA



13C4-PFOS



GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-20.qld

Last Altered: Thursday, July 20, 2017 10:52:41 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:52:55 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: 1700877-02, Description: FRB-19-20170713, Name: 170719L1_20.wiff, Date: 19-Jul-2017, Time: 21:04:32

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90		9.529e3		0.270			
2	3	PFHpA	318.90		1.132e4		0.270			
3	4	PFHxS	79.91		9.529e3		0.270			
4	5	PFOA	368.90		1.132e4		0.270			
5	6	PFNA	419.00		1.132e4		0.270			
6	7	PFOS	79.92		9.529e3		0.270			
7	15	13C2-PFHxA	269.90	8.119e3	1.132e4	0.690	0.270	3.82	38.5	104
8	16	13C2-PFDA	470.00	8.345e3	1.132e4	0.680	0.270	5.27	40.2	108
9	18	13C2-PFOA	369.90	1.132e4	1.132e4	1.000	0.270	4.68	37.1	100
10	19	13C4-PFOS	79.93	9.529e3	9.529e3	1.000	0.270	5.05	106	100

GM 7/20/17

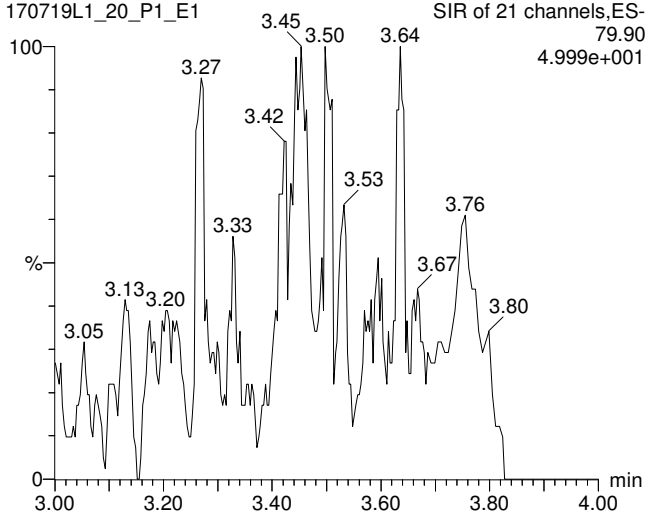
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-20.qld

Last Altered: Thursday, July 20, 2017 10:52:41 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:52:55 Pacific Daylight Time

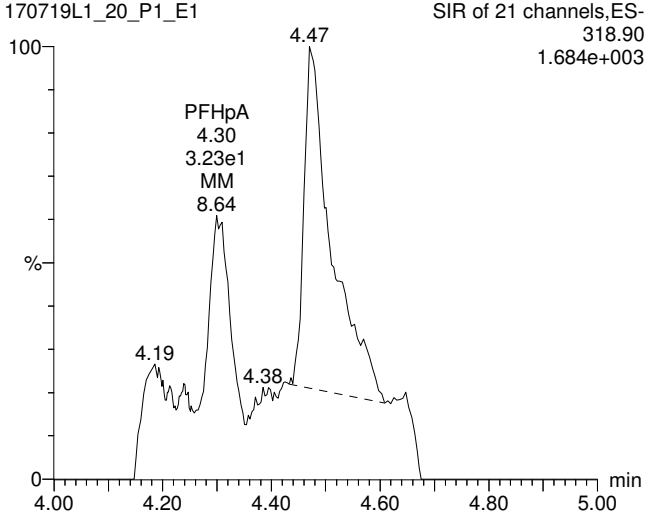
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: 1700877-02, Description: FRB-19-20170713, Name: 170719L1_20.wiff, Date: 19-Jul-2017, Time: 21:04:32, Instrument: , Lab: ©PE-SCIEX, User: sciex

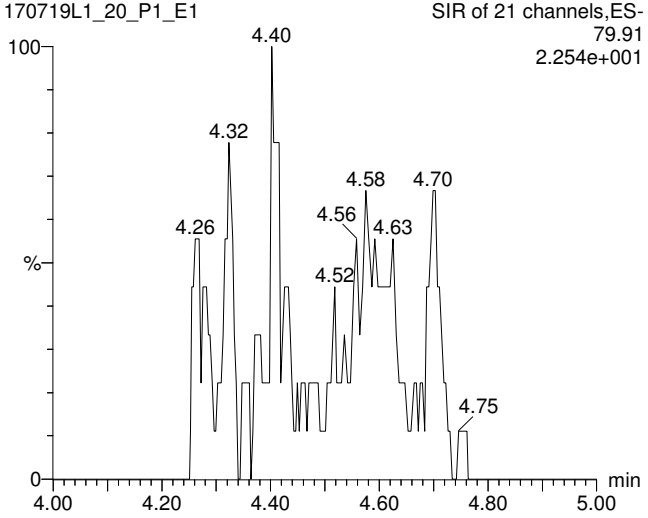
PFBS



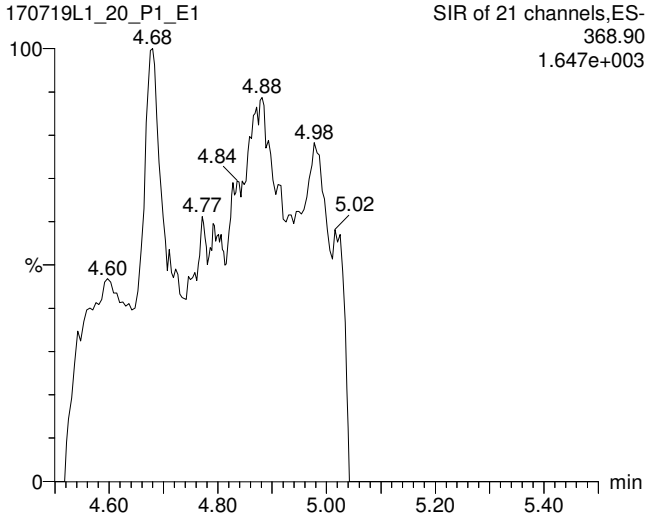
PFHpA



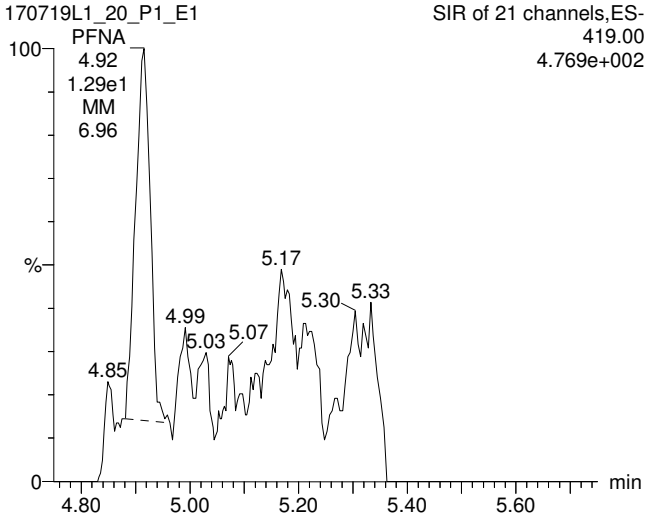
PFHxS



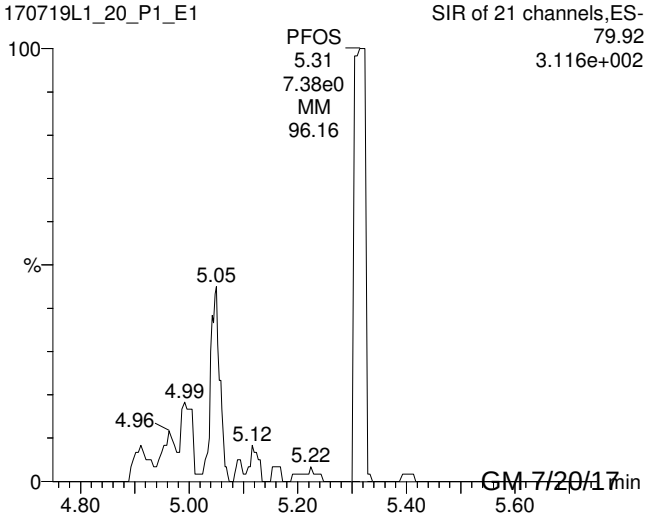
PFOA



PFNA



PFOS



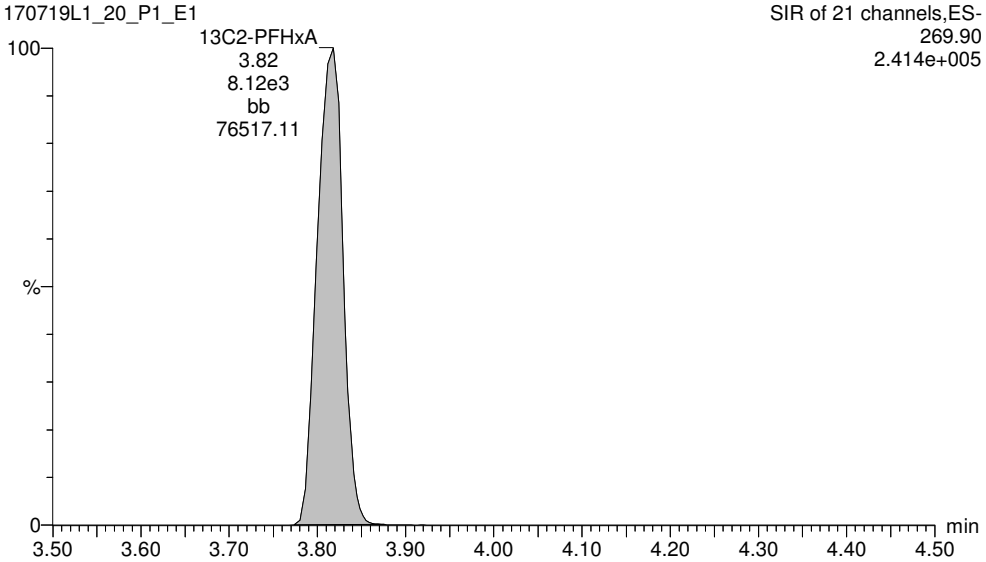
GM 7/20/17

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-20.qld

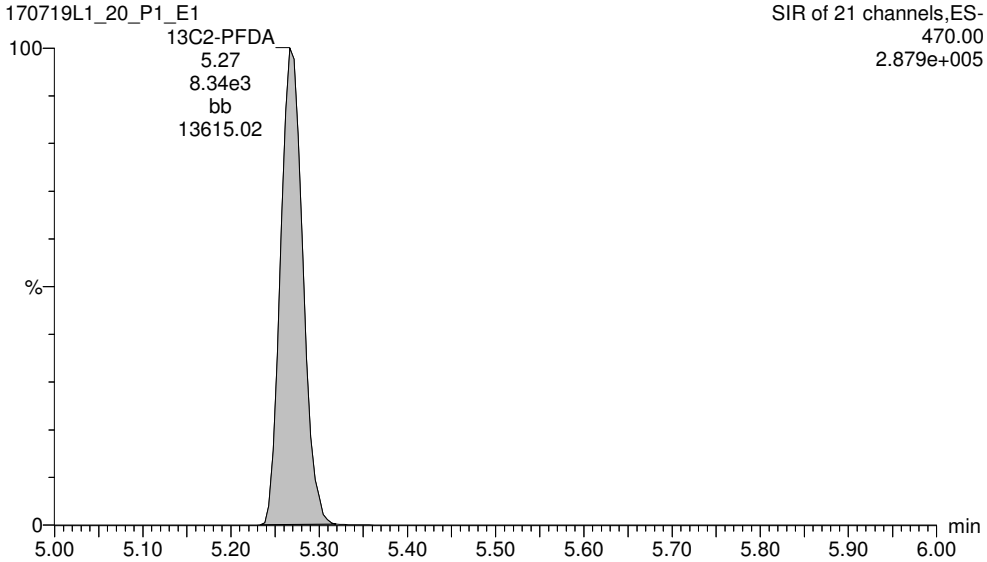
Last Altered: Thursday, July 20, 2017 10:52:41 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:52:55 Pacific Daylight Time

ID: 1700877-02, Description: FRB-19-20170713, Name: 170719L1_20.wiff, Date: 19-Jul-2017, Time: 21:04:32, Instrument: , Lab: ©PE-SCIEX, User: sciex

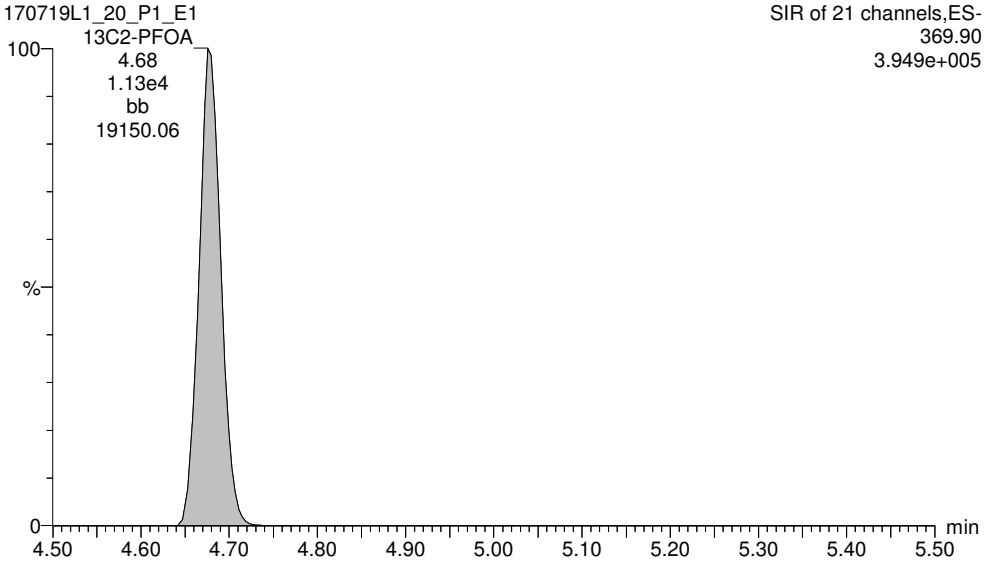
13C2-PFHxA



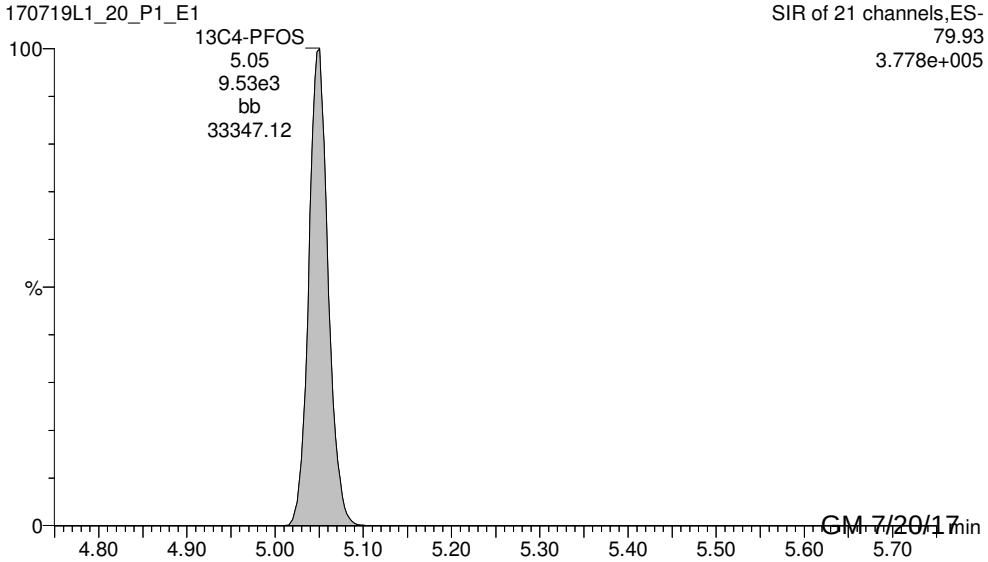
13C2-PFDA



13C2-PFOA



13C4-PFOS



GM 7/20/17

CONTINUING CALIBRATION

Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-35.qld

Last Altered: Thursday, July 20, 2017 10:53:59 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:54:18 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: ST170719L1-10 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919, Name: 170719L1_35.wiff, Date: 20-Jul-2017, Time: 00:08:18

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90	8.666e3	1.168e4		1.00	3.45	13.8	104
2	3	PFHpA	318.90	1.767e4	1.552e4		1.00	4.30	15.5	103
3	4	PFHxS	79.91	6.681e3	1.168e4		1.00	4.40	13.9	102
4	5	PFOA	368.90	1.916e4	1.552e4		1.00	4.68	14.1	93.8
5	6	PFNA	419.00	1.806e4	1.552e4		1.00	4.99	14.0	93.4
6	7	PFOS	79.92	6.841e3	1.168e4		1.00	5.04	14.2	102
7	15	13C2-PFHxA	269.90	1.051e4	1.552e4	0.690	1.00	3.81	9.81	98.1
8	16	13C2-PFDA	470.00	9.405e3	1.552e4	0.680	1.00	5.26	8.91	89.1
9	18	13C2-PFOA	369.90	1.552e4	1.552e4	1.000	1.00	4.67	10.0	100
10	19	13C4-PFOS	79.93	1.168e4	1.168e4	1.000	1.00	5.04	28.7	100

70-130

7/20/17

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170719L1_01_P...	IPA	19-Jul-17	17:11:50
2	170719L1_02_P...	ST170719L1-1 537 DW CS(-3) 17G1913	19-Jul-17	17:24:05
3	170719L1_03_P...	ST170719L1-2 537 DW CS(-2) 17G1915	19-Jul-17	17:36:20
4	170719L1_04_P...	ST170719L1-3 537 DW CS(-1) 17G1916	19-Jul-17	17:48:34
5	170719L1_05_P...	ST170719L1-4 537 DW CS(0) 17G1917	19-Jul-17	18:00:46
6	170719L1_06_P...	ST170719L1-5 537 DW CS1 17G1918	19-Jul-17	18:13:02
7	170719L1_07_P...	ST170719L1-6 537 DW CS2 17G1919	19-Jul-17	18:25:12
8	170719L1_08_P...	ST170719L1-7 537 DW CS3 17G1920	19-Jul-17	18:37:29
9	170719L1_09_P...	ST170719L1-8 537 DW CS4 17G1921	19-Jul-17	18:49:44
10	170719L1_10_P...	ST170719L1-9 537 DW CS5 17G1922	19-Jul-17	19:01:58
11	170719L1_11_P...	IPA	19-Jul-17	19:14:13
12	170719L1_12_P...	SS170719L1-1 537 DW SSS 17G1923	19-Jul-17	19:26:29
13	170719L1_13_P...	IPA	19-Jul-17	19:38:43
14	170719L1_14_P...	B7G0069-BS1	19-Jul-17	19:50:58
15	170719L1_15_P...	IPA	19-Jul-17	20:03:13
16	170719L1_16_P...	B7F0065-BLK1	19-Jul-17	20:15:29
17	170719L1_17_P...	B7G0069-BLK1	19-Jul-17	20:27:44
18	170719L1_18_P...	B7F0104-BLK1	19-Jul-17	20:40:00
19	170719L1_19_P...	1700877-01	19-Jul-17	20:52:16
20	170719L1_20_P...	1700877-02	19-Jul-17	21:04:32
21	170719L1_21_P...	B7F0104-BS1	19-Jul-17	21:16:47
22	170719L1_22_P...	B7F0104-BS2	19-Jul-17	21:29:02
23	170719L1_23_P...	B7F0104-BS3	19-Jul-17	21:41:18
24	170719L1_24_P...	B7F0104-BS4	19-Jul-17	21:53:33
25	170719L1_25_P...	B7F0065-BS1	19-Jul-17	22:05:47
26	170719L1_26_P...	B7F0065-BS2	19-Jul-17	22:18:02
27	170719L1_27_P...	B7F0065-BS3	19-Jul-17	22:30:16
28	170719L1_28_P...	B7F0065-BS4	19-Jul-17	22:42:32
29	170719L1_29_P...	IPA	19-Jul-17	22:54:47
30	170719L1_30_P...	B7G0025-BLK1	19-Jul-17	23:07:03
31	170719L1_31_P...	B7G0025-BS2	19-Jul-17	23:19:18

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
32	170719L1_32_P...	B7G0025-BS3	19-Jul-17	23:31:31
33	170719L1_33_P...	B7G0025-BS4	19-Jul-17	23:43:46
34	170719L1_34_P...	B7G0025-BS5	19-Jul-17	23:56:02
35	170719L1_35_P...	ST170719L1-10 537 DW CS2 17G1919	20-Jul-17	00:08:18

LC Calibration Standards Review Checklist Q3

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	ST170719L1-10	L (M) H	NA	☑	☑	☑	☑	☑	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 2/21/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: YCa 7/20/17
Initials/Date

Comments:
LG-DW

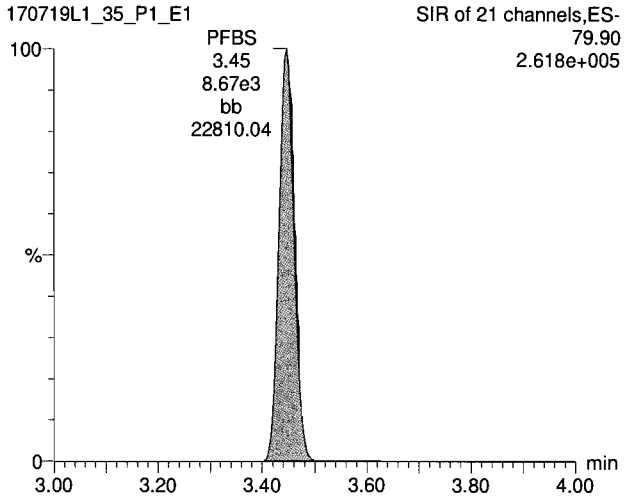
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-35.qld

Last Altered: Thursday, July 20, 2017 10:53:59 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:54:18 Pacific Daylight Time

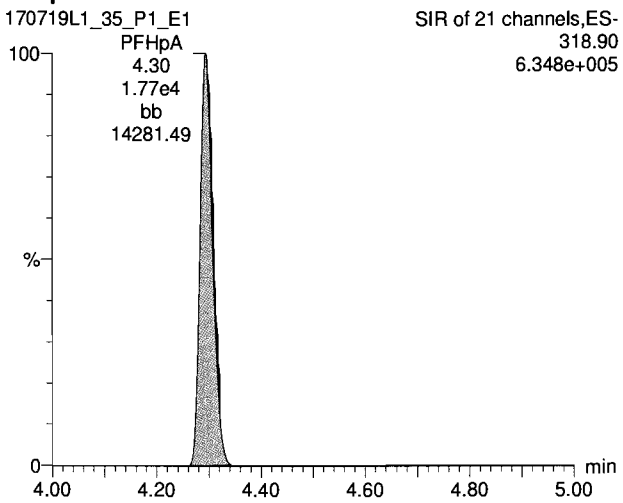
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: ST170719L1-10 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919, Name: 170719L1_35.wiff, Date: 20-Jul-2017, Time: 00:08:18, Instrument: , Lab: ©PE-SCIEX, User: sciex

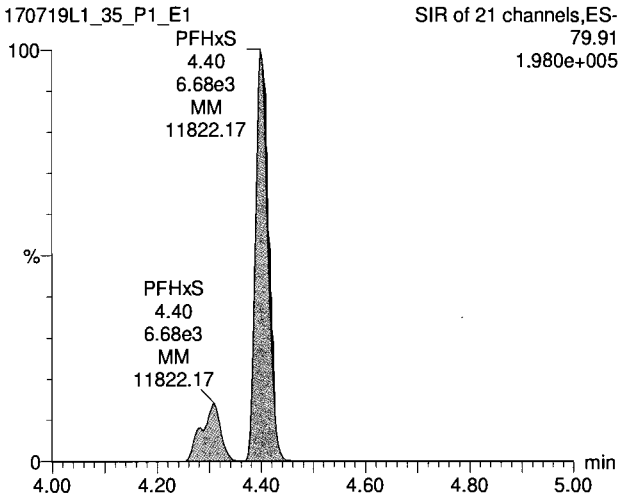
PFBS



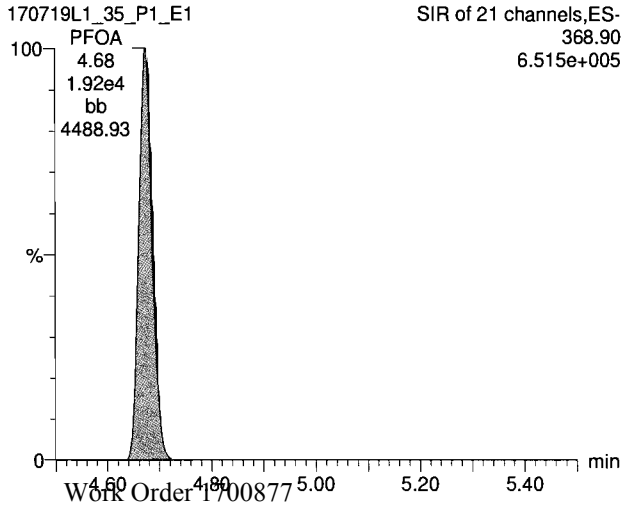
PFHpA



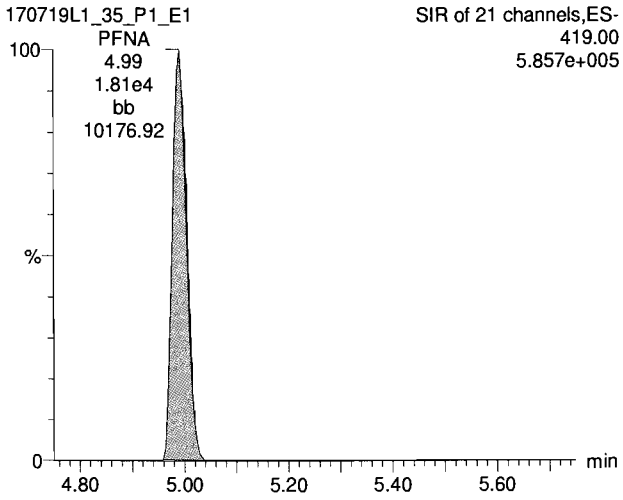
PFHxS



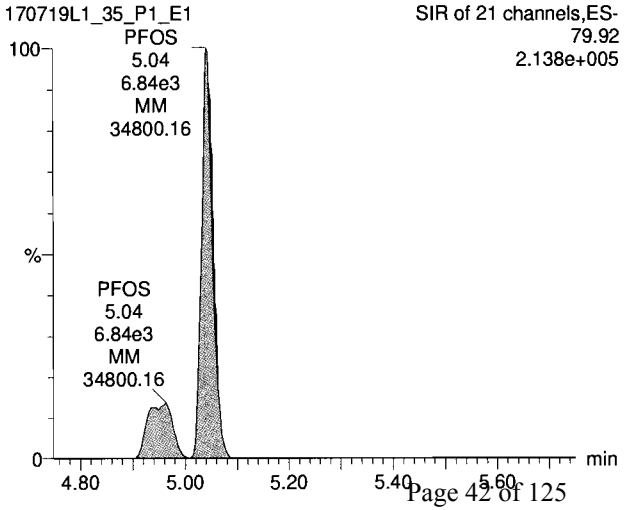
PFOA



PFNA



PFOS

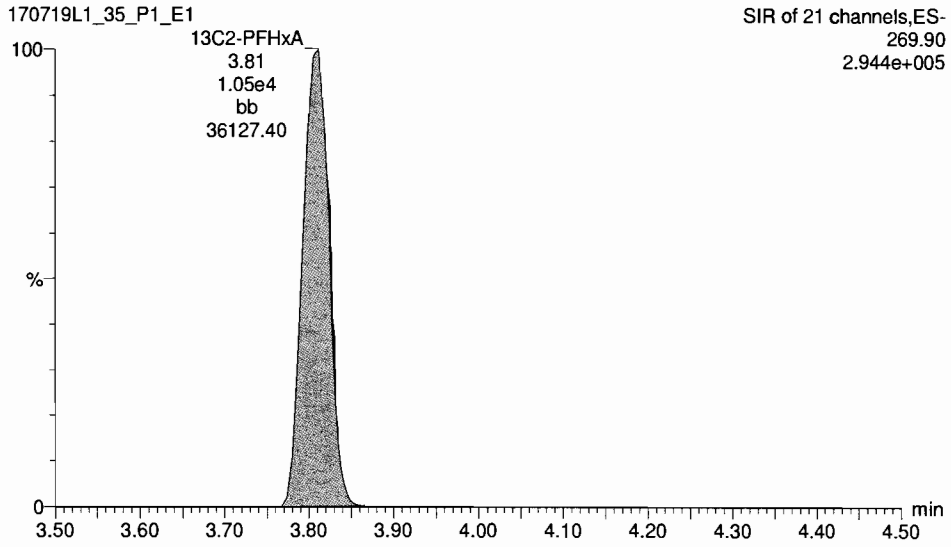


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-35.qld

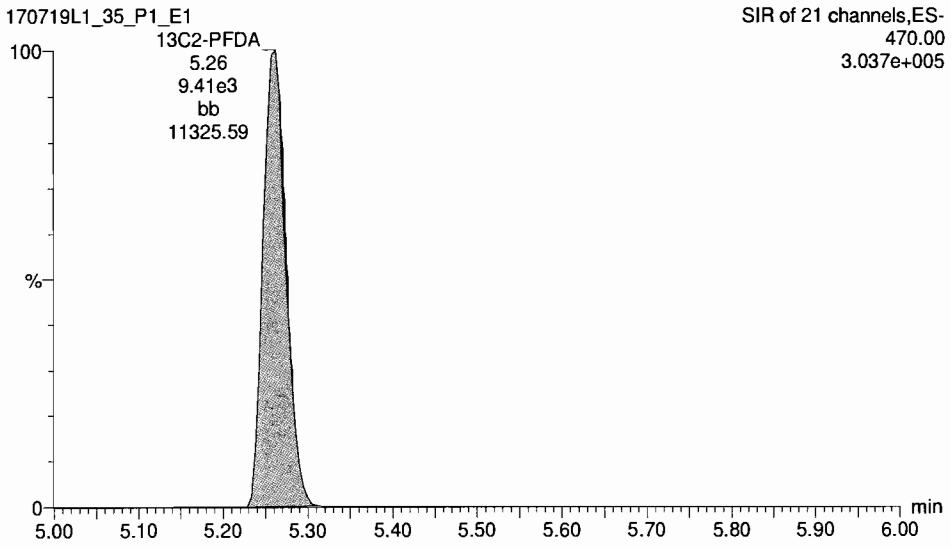
Last Altered: Thursday, July 20, 2017 10:53:59 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:54:18 Pacific Daylight Time

ID: ST170719L1-10 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919, Name: 170719L1_35.wiff, Date: 20-Jul-2017, Time: 00:08:18, Instrument: , Lab: ©PE-SCIEX, User: sciex

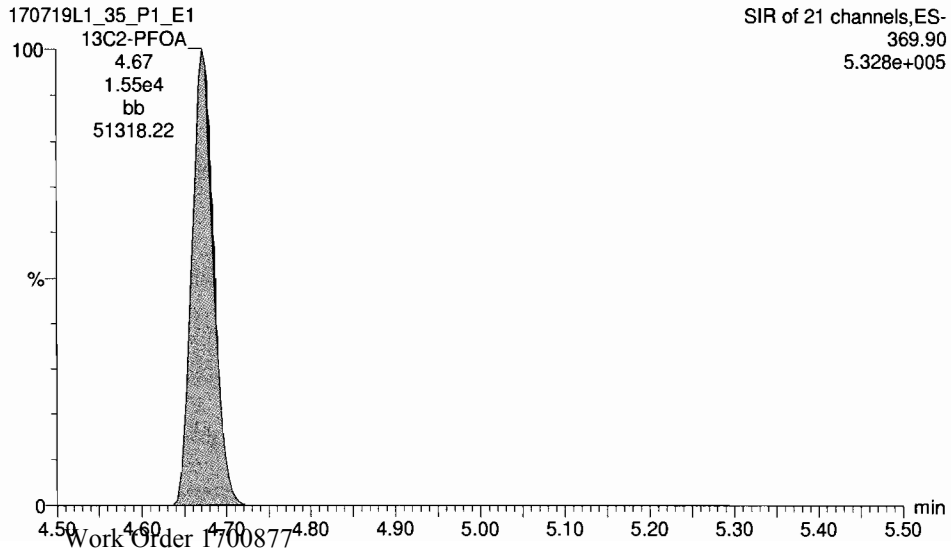
13C2-PFHxA



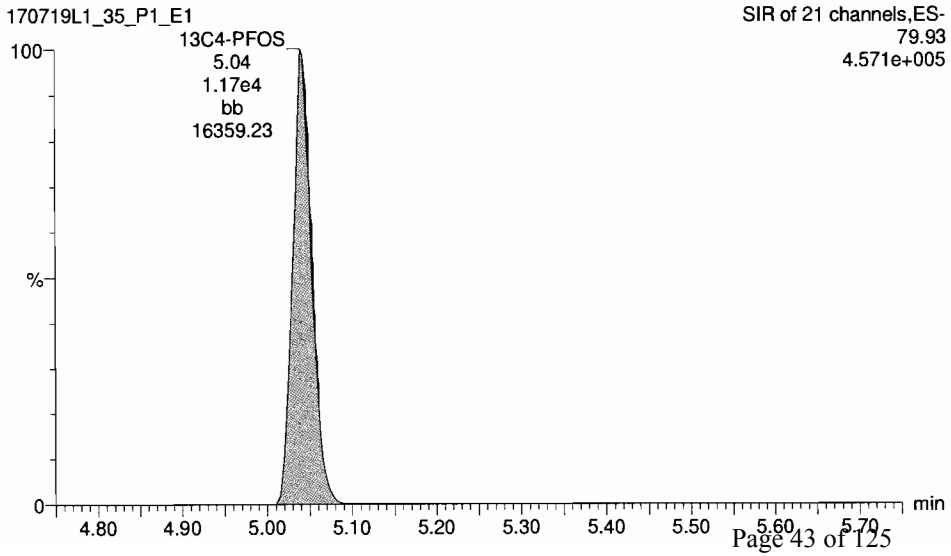
13C2-PFDA



13C2-PFOA



13C4-PFOS



INITIAL CALIBRATION

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:06:40 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

Compound name: PFBS
Coefficient of Determination: R^2 = 0.994915
Calibration curve: 1.54739 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	0.885	3.45	6.57e2	1.10e4	1.10	24.7	1.93
2	2	170719L1_04_P1_...	1.77	3.45	1.17e3	1.12e4	1.94	9.8	1.70
3	3	170719L1_05_P1_...	4.42	3.45	2.98e3	1.15e4	4.82	9.0	1.69
4	4	170719L1_06_P1_...	8.85	3.45	5.72e3	1.10e4	9.63	8.8	1.68
5	5	170719L1_07_P1_...	13.3	3.44	8.18e3	1.17e4	13.0	-1.9	1.52
6	6	170719L1_08_P1_...	17.7	3.45	1.09e4	1.12e4	18.0	1.9	1.58
7	7	170719L1_09_P1_...	22.1	3.45	1.39e4	1.11e4	23.2	5.0	1.62
8	8	170719L1_10_P1_...	44.2	3.45	2.50e4	1.12e4	41.4	-6.2	1.45

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Compound name: PFHpA
Coefficient of Determination: R^2 = 0.993511
Calibration curve: 0.733581 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	1.00	4.30	1.34e3	1.41e4	1.30	30.3	0.956
2	2	170719L1_04_P1_...	2.00	4.30	2.45e3	1.38e4	2.42	21.2	0.889
3	3	170719L1_05_P1_...	5.00	4.30	6.15e3	1.40e4	5.98	19.7	0.878
4	4	170719L1_06_P1_...	10.0	4.30	1.11e4	1.48e4	10.2	2.4	0.751
5	5	170719L1_07_P1_...	15.0	4.29	1.61e4	1.41e4	15.6	4.2	0.764
6	6	170719L1_08_P1_...	20.0	4.30	2.03e4	1.39e4	19.9	-0.5	0.730
7	7	170719L1_09_P1_...	25.0	4.30	2.59e4	1.39e4	25.4	1.7	0.746
8	8	170719L1_10_P1_...	50.0	4.30	4.61e4	1.33e4	47.1	-5.8	0.691

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:18 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.996283
Calibration curve: 1.1771 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	0.910	4.40	4.97e2	1.10e4	1.10	20.7	1.42
2	2	170719L1_04_P1_...	1.82	4.40	9.27e2	1.12e4	2.02	11.2	1.31
3	3	170719L1_05_P1_...	4.56	4.40	2.30e3	1.15e4	4.90	7.5	1.26
4	4	170719L1_06_P1_...	9.12	4.40	4.33e3	1.10e4	9.58	5.0	1.24
5	5	170719L1_07_P1_...	13.7	4.40	6.48e3	1.17e4	13.5	-1.0	1.17
6	6	170719L1_08_P1_...	18.2	4.41	8.44e3	1.12e4	18.3	0.6	1.18
7	7	170719L1_09_P1_...	22.8	4.40	1.09e4	1.11e4	24.1	5.6	1.24
8	8	170719L1_10_P1_...	45.6	4.41	1.98e4	1.12e4	43.2	-5.3	1.11

Compound name: PFOA
Coefficient of Determination: R^2 = 0.997935
Calibration curve: -0.00384959 * x^2 + 0.931647 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	1.00	4.68	1.43e3	1.41e4	1.10	9.8	1.02
2	2	170719L1_04_P1_...	2.00	4.68	2.78e3	1.38e4	2.19	9.5	1.01
3	3	170719L1_05_P1_...	5.00	4.68	6.05e3	1.40e4	4.73	-5.4	0.864
4	4	170719L1_06_P1_...	10.0	4.68	1.20e4	1.48e4	9.06	-9.4	0.813
5	5	170719L1_07_P1_...	15.0	4.68	1.90e4	1.41e4	15.5	3.4	0.902
6	6	170719L1_08_P1_...	20.0	4.68	2.45e4	1.39e4	20.7	3.3	0.880
7	7	170719L1_09_P1_...	25.0	4.67	2.90e4	1.39e4	25.0	0.1	0.836
8	8	170719L1_10_P1_...	50.0	4.68	4.91e4	1.33e4	49.7	-0.6	0.736

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:18 Pacific Daylight Time

Compound name: PFNA
Coefficient of Determination: R^2 = 0.995887
Calibration curve: -0.00490978 * x^2 + 0.898989 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	1.00	5.00	1.34e3	1.41e4	1.07	7.0 (A)	0.956
2	2	170719L1_04_P1_...	2.00	5.00	2.80e3	1.38e4	2.29	14.6	1.02
3	3	170719L1_05_P1_...	5.00	4.99	6.03e3	1.40e4	4.92	-1.6	0.861
4	4	170719L1_06_P1_...	10.0	5.00	1.21e4	1.48e4	9.60	-4.0	0.818
5	5	170719L1_07_P1_...	15.0	4.99	1.60e4	1.41e4	13.7	-8.8	0.758
6	6	170719L1_08_P1_...	20.0	4.99	2.32e4	1.39e4	20.9	4.6	0.833
7	7	170719L1_09_P1_...	25.0	4.99	2.80e4	1.39e4	26.2	4.8	0.807
8	8	170719L1_10_P1_...	50.0	5.00	4.32e4	1.33e4	49.3	-1.4	0.648

(A) point was excluded.
DM 7/20/17

Compound name: PFOS
Coefficient of Determination: R^2 = 0.996748
Calibration curve: 1.18715 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	0.924	5.05	4.92e2	1.10e4	1.08	16.5	1.38
2	2	170719L1_04_P1_...	1.85	5.05	8.59e2	1.12e4	1.86	0.5	1.19
3	3	170719L1_05_P1_...	4.62	5.05	2.32e3	1.15e4	4.89	5.8	1.26
4	4	170719L1_06_P1_...	9.24	5.04	4.36e3	1.10e4	9.57	3.5	1.23
5	5	170719L1_07_P1_...	13.9	5.05	6.27e3	1.17e4	13.0	-6.5	1.11
6	6	170719L1_08_P1_...	18.5	5.04	8.53e3	1.12e4	18.4	-0.6	1.18
7	7	170719L1_09_P1_...	23.1	5.05	1.14e4	1.11e4	24.8	7.4	1.27
8	8	170719L1_10_P1_...	46.2	5.05	2.07e4	1.12e4	44.7	-3.2	1.15

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:06:40 Pacific Daylight Time

Compound name: 13C2-PFHxA
Response Factor: 0.690499
RRF SD: 0.0268534, Relative SD: 3.88898
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	10.0	3.81	9.33e3	1.41e4	9.62	-3.8	0.664
2	2	170719L1_04_P1_...	10.0	3.81	9.75e3	1.38e4	10.3	2.7	0.709
3	3	170719L1_05_P1_...	10.0	3.81	9.69e3	1.40e4	10.0	0.2	0.692
4	4	170719L1_06_P1_...	10.0	3.81	9.47e3	1.48e4	9.26	-7.4	0.640
5	5	170719L1_07_P1_...	10.0	3.80	9.65e3	1.41e4	9.95	-0.5	0.687
6	6	170719L1_08_P1_...	10.0	3.81	9.99e3	1.39e4	10.4	4.0	0.718
7	7	170719L1_09_P1_...	10.0	3.81	9.72e3	1.39e4	10.2	1.6	0.701
8	8	170719L1_10_P1_...	10.0	3.82	9.52e3	1.33e4	10.3	3.3	0.713

Compound name: 13C2-PFDA
Response Factor: 0.679755
RRF SD: 0.0249008, Relative SD: 3.66321
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	10.0	5.27	9.38e3	1.41e4	9.82	-1.8	0.668
2	2	170719L1_04_P1_...	10.0	5.26	8.85e3	1.38e4	9.47	-5.3	0.644
3	3	170719L1_05_P1_...	10.0	5.27	9.33e3	1.40e4	9.80	-2.0	0.666
4	4	170719L1_06_P1_...	10.0	5.26	9.71e3	1.48e4	9.66	-3.4	0.656
5	5	170719L1_07_P1_...	10.0	5.27	9.86e3	1.41e4	10.3	3.2	0.702
6	6	170719L1_08_P1_...	10.0	5.27	9.95e3	1.39e4	10.5	5.3	0.716
7	7	170719L1_09_P1_...	10.0	5.26	9.65e3	1.39e4	10.2	2.4	0.696
8	8	170719L1_10_P1_...	10.0	5.27	9.21e3	1.33e4	10.2	1.6	0.690

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:06:40 Pacific Daylight Time

Compound name: 13C2-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	10.0	4.68	1.41e4	1.41e4	10.0	0.0	1.00
2	2	170719L1_04_P1_...	10.0	4.68	1.38e4	1.38e4	10.0	0.0	1.00
3	3	170719L1_05_P1_...	10.0	4.67	1.40e4	1.40e4	10.0	0.0	1.00
4	4	170719L1_06_P1_...	10.0	4.67	1.48e4	1.48e4	10.0	0.0	1.00
5	5	170719L1_07_P1_...	10.0	4.67	1.41e4	1.41e4	10.0	0.0	1.00
6	6	170719L1_08_P1_...	10.0	4.68	1.39e4	1.39e4	10.0	0.0	1.00
7	7	170719L1_09_P1_...	10.0	4.67	1.39e4	1.39e4	10.0	0.0	1.00
8	8	170719L1_10_P1_...	10.0	4.68	1.33e4	1.33e4	10.0	0.0	1.00

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	28.7	5.05	1.10e4	1.10e4	28.7	0.0	1.00
2	2	170719L1_04_P1_...	28.7	5.05	1.12e4	1.12e4	28.7	0.0	1.00
3	3	170719L1_05_P1_...	28.7	5.04	1.15e4	1.15e4	28.7	0.0	1.00
4	4	170719L1_06_P1_...	28.7	5.04	1.10e4	1.10e4	28.7	0.0	1.00
5	5	170719L1_07_P1_...	28.7	5.05	1.17e4	1.17e4	28.7	0.0	1.00
6	6	170719L1_08_P1_...	28.7	5.04	1.12e4	1.12e4	28.7	0.0	1.00
7	7	170719L1_09_P1_...	28.7	5.04	1.11e4	1.11e4	28.7	0.0	1.00
8	8	170719L1_10_P1_...	28.7	5.05	1.12e4	1.12e4	28.7	0.0	1.00

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170719L1_01_P...	IPA	19-Jul-17	17:11:50
2	170719L1_02_P...	ST170719L1-1 537 DW CS(-3) 17G1913	19-Jul-17	17:24:05
3	170719L1_03_P...	ST170719L1-2 537 DW CS(-2) 17G1915	19-Jul-17	17:36:20
4	170719L1_04_P...	ST170719L1-3 537 DW CS(-1) 17G1916	19-Jul-17	17:48:34
5	170719L1_05_P...	ST170719L1-4 537 DW CS(0) 17G1917	19-Jul-17	18:00:46
6	170719L1_06_P...	ST170719L1-5 537 DW CS1 17G1918	19-Jul-17	18:13:02
7	170719L1_07_P...	ST170719L1-6 537 DW CS2 17G1919	19-Jul-17	18:25:12
8	170719L1_08_P...	ST170719L1-7 537 DW CS3 17G1920	19-Jul-17	18:37:29
9	170719L1_09_P...	ST170719L1-8 537 DW CS4 17G1921	19-Jul-17	18:49:44
10	170719L1_10_P...	ST170719L1-9 537 DW CS5 17G1922	19-Jul-17	19:01:58
11	170719L1_11_P...	IPA	19-Jul-17	19:14:13
12	170719L1_12_P...	SS170719L1-1 537 DW SSS 17G1923 (A)	19-Jul-17	19:26:29
13	170719L1_13_P...	IPA	19-Jul-17	19:38:43
14	170719L1_14_P...	B7G0069-BS1	19-Jul-17	19:50:58
15	170719L1_15_P...	IPA	19-Jul-17	20:03:13
16	170719L1_16_P...	B7F0065-BLK1	19-Jul-17	20:15:29
17	170719L1_17_P...	B7G0069-BLK1	19-Jul-17	20:27:44
18	170719L1_18_P...	B7F0104-BLK1	19-Jul-17	20:40:00
19	170719L1_19_P...	1700877-01	19-Jul-17	20:52:16
20	170719L1_20_P...	1700877-02	19-Jul-17	21:04:32
21	170719L1_21_P...	B7F0104-BS1	19-Jul-17	21:16:47
22	170719L1_22_P...	B7F0104-BS2	19-Jul-17	21:29:02
23	170719L1_23_P...	B7F0104-BS3	19-Jul-17	21:41:18
24	170719L1_24_P...	B7F0104-BS4	19-Jul-17	21:53:33
25	170719L1_25_P...	B7F0065-BS1	19-Jul-17	22:05:47
26	170719L1_26_P...	B7F0065-BS2	19-Jul-17	22:18:02
27	170719L1_27_P...	B7F0065-BS3	19-Jul-17	22:30:16
28	170719L1_28_P...	B7F0065-BS4	19-Jul-17	22:42:32
29	170719L1_29_P...	IPA	19-Jul-17	22:54:47
30	170719L1_30_P...	B7G0025-BLK1	19-Jul-17	23:07:03
31	170719L1_31_P...	B7G0025-BS2	19-Jul-17	23:19:18

(A) Second source standard already run for this quarter, see 537_Q2_07-05-17_L6_SS.
elh
7/20/17

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Compound name: PFBS

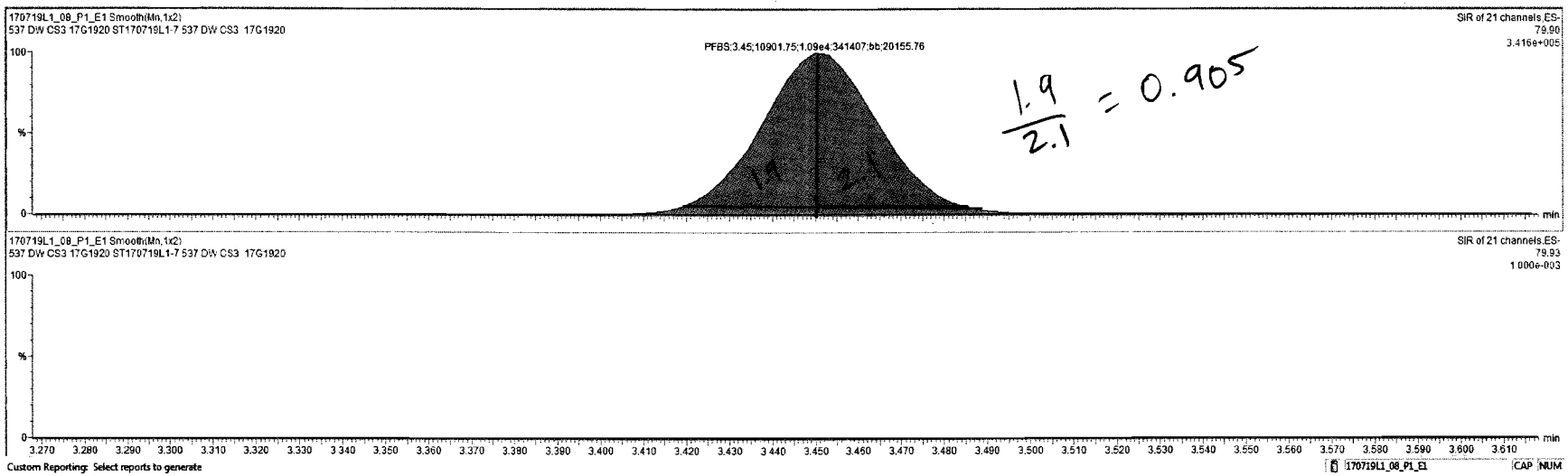
	Name	ID	Acq.Date	Acq.Time
32	170719L1_32_P...	B7G0025-BS3	19-Jul-17	23:31:31
33	170719L1_33_P...	B7G0025-BS4	19-Jul-17	23:43:46
34	170719L1_34_P...	B7G0025-BS5	19-Jul-17	23:56:02
35	170719L1_35_P...	ST170719L1-10 537 DW CS2 17G1919	20-Jul-17	00:08:18

TargetLynx - 170719L1-CRV.qld - [Chromatogram]

File Edit View Display Processing Window Help

170719L1_08_P1_E1 - ST170719L1-7 537 DW CS3 17G1920 - 537 DW CS3 17G1920

	Name	Resp	ISTD	wt/vol	RT	RA	My	Conc	%Rec	DL	EMPC
1	PFBS	1.39e4		1.000	3.45			18.0	102	0.00172	
2	PFHxA	1.65e4		1.000	3.82			20.5	103	0.00650	
3	PFHpA	2.03e4		1.000	4.30			19.9	99.5	0.00558	
4	PFHxS	8.44e3		1.000	4.41			18.3	101	0.00757	
5	PFOA	2.45e4		1.000	4.68			21.6	108	0.00965	
6	PFNA	2.32e4		1.000	4.99			22.2	111	0.00427	
7	PFOS	8.53e3		1.000	5.04			18.4	99.4	0.000904	
8	PFDA	1.44e4		1.000	5.27			21.1	105	0.00218	
9	N-MeFOSAA	8.43e3		1.000	5.39			18.3	91.3	0.00940	
10	N-EtFOSAA	6.52e3		1.000	5.50			16.3	81.4	0.00290	
11	PFUnA	1.56e4		1.000	5.50			19.8	98.9	0.00184	
12	PFDoA	1.83e4		1.000	5.71			18.4	91.9	0.00328	
13	PFTrDA	1.82e4		1.000	5.89			19.0	95.0	0.00193	
14	PFTeDA	1.63e4		1.000	6.06			19.6	98.2	0.00179	
15	13C2-PFHxA	9.99e3	0.69	1.000	3.81			10.4	104	0.00210	
16	13C2-PFDA	9.95e3	0.68	1.000	5.27			10.5	105	0.000606	
17	d5-N-EtFOSAA	2.31e2	0.17	1.000	5.49			36.1	87.8	1.92	
18	13C2-PFOA	1.39e4	1.00	1.000	4.68			10.0	100	0.00131	
19	13C4-PFOS	1.12e4	1.00	1.000	5.04			26.7	100	0.000993	
20	d3-N-MeFOSAA	1.56e3	1.00	1.000	5.38			40.0	100	0.0109	



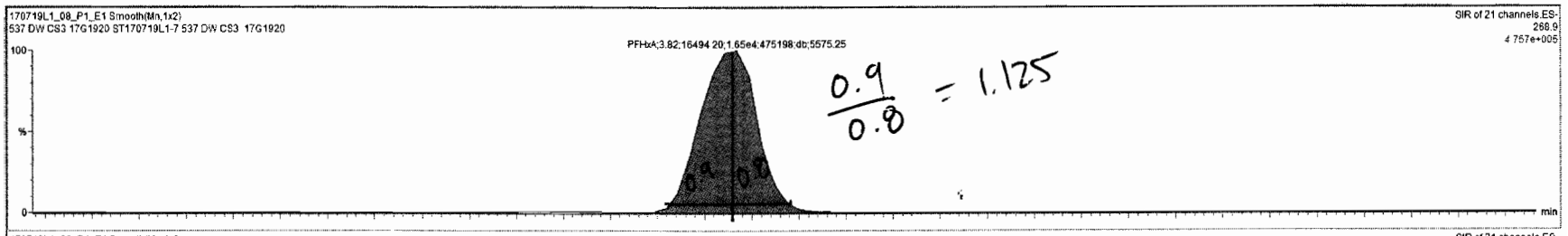
$$\frac{1.9}{2.1} = 0.905$$

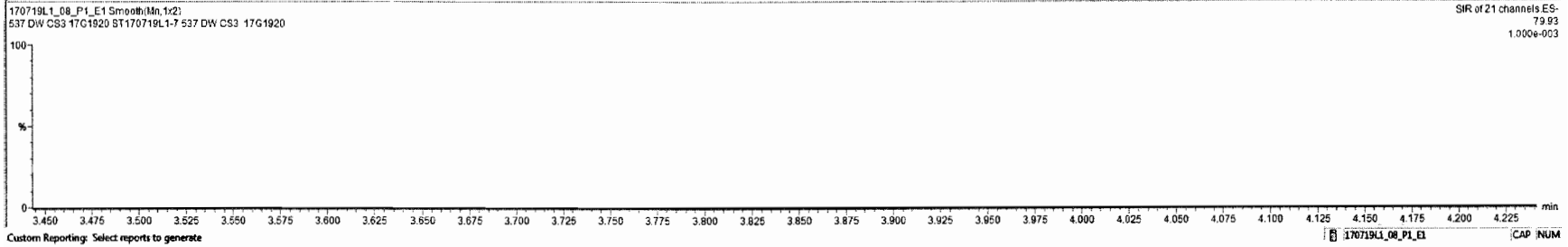
TargetLynx - 170719L1-CRV.qld - [Chromatogram]

File Edit View Display Processing Window Help

170719L1_08_P1_E1 - ST170719L1-7 537 DW CS3 17G1920 - 537 DW CS3 17G1920

	Name	Resp	RRF	wtVol	RT	RA	sty	Conc	%Rec	DL	EMPC
1	PFBS	1.09e4		1.000	3.45			18.0	102	0.00172	
2	PFHxA	1.65e4		1.000	3.82			20.5	103	0.00650	
3	PFHpA	2.03e4		1.000	4.30			19.9	99.5	0.00558	
4	PFHxS	8.44e3		1.000	4.41			18.3	101	0.00757	
5	PFOA	2.45e4		1.000	4.68			21.6	108	0.00965	
6	PFNA	2.32e4		1.000	4.99			22.2	111	0.00427	
7	PFOS	8.53e3		1.000	5.04			18.4	99.4	0.000904	
8	PFDA	1.44e4		1.000	5.27			21.1	105	0.00218	
9	N-MeFOSAA	8.43e3		1.000	5.39			18.3	91.3	0.00948	
10	N-EtFOSAA	6.52e3		1.000	5.50			16.3	81.4	0.00290	
11	PFUnA	1.50e4		1.000	5.50			19.8	98.9	0.00184	
12	PFDoA	1.83e4		1.000	5.71			18.4	91.9	0.00328	
13	PFTrDA	1.82e4		1.000	5.89			19.0	95.0	0.00193	
14	PFTeDA	1.63e4		1.000	6.06			19.6	98.2	0.00179	
15	13C2-PFHxA	9.99e3	0.69	1.000	3.81			10.4	104	0.00210	
16	13C2-PFDA	9.95e3	0.68	1.000	5.27			10.5	105	0.000606	
17	d5-N-EtFOSAA	2.31e2	0.17	1.000	5.49			35.1	87.8	1.92	
18	13C2-PFOA	1.39e4	1.00	1.000	4.68			10.0	100	0.00131	
19	13C4-PFOS	1.12e4	1.00	1.000	5.04			28.7	100	0.000993	
20	d3-N-MeFOSAA	1.58e3	1.00	1.000	5.38			40.0	100	0.0105	





Custom Reporting: Select reports to generate

170719L1_08_P1_E1 CAP NUM

Quantify Compound Summary Report

Printed Thu Jul 20 09:13:19 2017

Compound 19: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Fl
1	ST170719L1-2 537 DW CS(-2) 17G1915	170719L1_03_P1_E1	Standard	28.7	5.05	11043.28	11043.28	28.7	bb
2	ST170719L1-3 537 DW CS(-1) 17G1916	170719L1_04_P1_E1	Standard	28.7	5.04	11168.012	11168.012	28.7	bb
3	ST170719L1-4 537 DW CS(0) 17G1917	170719L1_05_P1_E1	Standard	28.7	5.04	11466.354	11466.354	28.7	bb
4	ST170719L1-5 537 DW CS1 17G1918	170719L1_06_P1_E1	Standard	28.7	5.04	11011.62	11011.62	28.7	bb
5	ST170719L1-6 537 DW CS2 17G1919	170719L1_07_P1_E1	Standard	28.7	5.05	11660.281	11660.281	28.7	bb
6	ST170719L1-7 537 DW CS3 17G1920	170719L1_08_P1_E1	Standard	28.7	5.04	11210.401	11210.401	28.7	bb
7	ST170719L1-8 537 DW CS4 17G1921	170719L1_09_P1_E1	Standard	28.7	5.04	11078.607	11078.607	28.7	bb
8	ST170719L1-9 537 DW CS5 17G1922	170719L1_10_P1_E1	Standard	28.7	5.05	11174.181	11174.181	28.7	bb

RPD

HIGH AREA	11660.281
LOW AREA	11011.62
RPD %	5.7

INSTRUCTIONS: IN TARGETLYNX, VERIFY YOU ARE USING THE LIST14 DW LAYOUT. RIGHT CLICK ON THE SUMMARY BOX AND SELECT "LIST BY COMPOUND". SELECT 13C2-PFOA, 13C4-PFOS OR D3-NMEFOSAA. CLICK ON EDIT. SELECT

Quantify Compound Summary Report

Printed Thu Jul 20 09:16:54 2017

Compound 18: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Fl	Conc.
1	ST170719L1-2 537 DW CS(-2) 17G1915	170719L1_03_P1_E1	Standard	10	4.68	14051.525	14051.525	10	bb	10
2	ST170719L1-3 537 DW CS(-1) 17G1916	170719L1_04_P1_E1	Standard	10	4.68	13755.888	13755.888	10	bb	10
3	ST170719L1-4 537 DW CS(0) 17G1917	170719L1_05_P1_E1	Standard	10	4.67	14010.383	14010.383	10	bb	10
4	ST170719L1-5 537 DW CS1 17G1918	170719L1_06_P1_E1	Standard	10	4.67	14797.67	14797.67	10	bb	10
5	ST170719L1-6 537 DW CS2 17G1919	170719L1_07_P1_E1	Standard	10	4.67	14057.743	14057.743	10	bb	10
6	ST170719L1-7 537 DW CS3 17G1920	170719L1_08_P1_E1	Standard	10	4.68	13901.337	13901.337	10	bb	10
7	ST170719L1-8 537 DW CS4 17G1921	170719L1_09_P1_E1	Standard	10	4.67	13866.152	13866.152	10	bb	10
8	ST170719L1-9 537 DW CS5 17G1922	170719L1_10_P1_E1	Standard	10	4.68	13343.445	13343.445	10	bb	10

RPD

HIGH AREA	14797.67
LOW AREA	13343.445
RPD %	10.3

INSTRUCTIONS: IN TARGETLYNX, VERIFY YOU ARE USING THE LIST14 DW LAYOUT. RIGHT CLICK ON THE SUMMARY BOX AND SELECT "LIST BY COMPOUND". SELECT 13C2-PFOA, 13C4-PFOS OR D3-NMEFOSAA. CLICK ON EDIT. SELECT COP

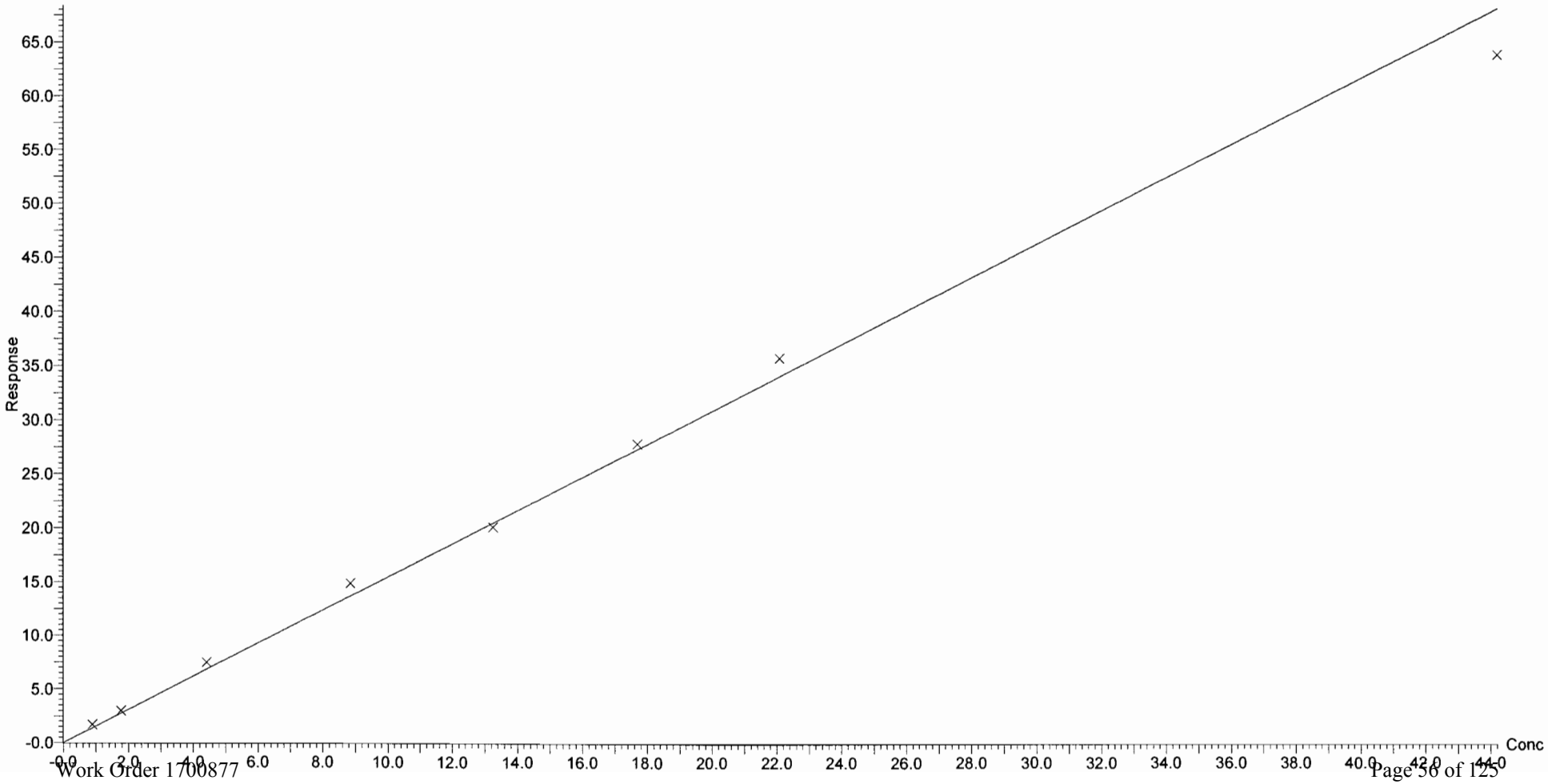
Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

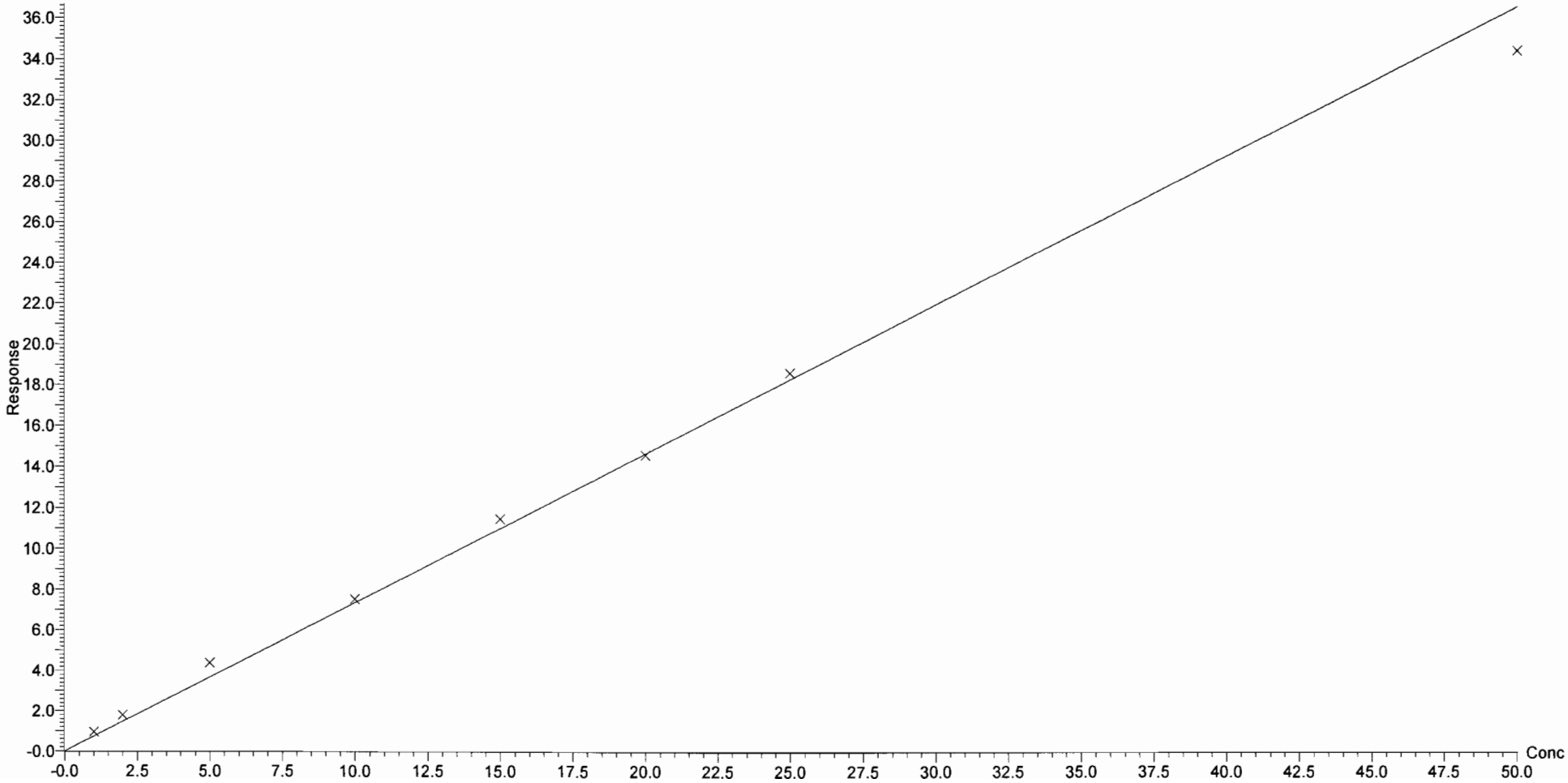
Compound name: PFBS
Coefficient of Determination: R^2 = 0.994915
Calibration curve: 1.54739 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

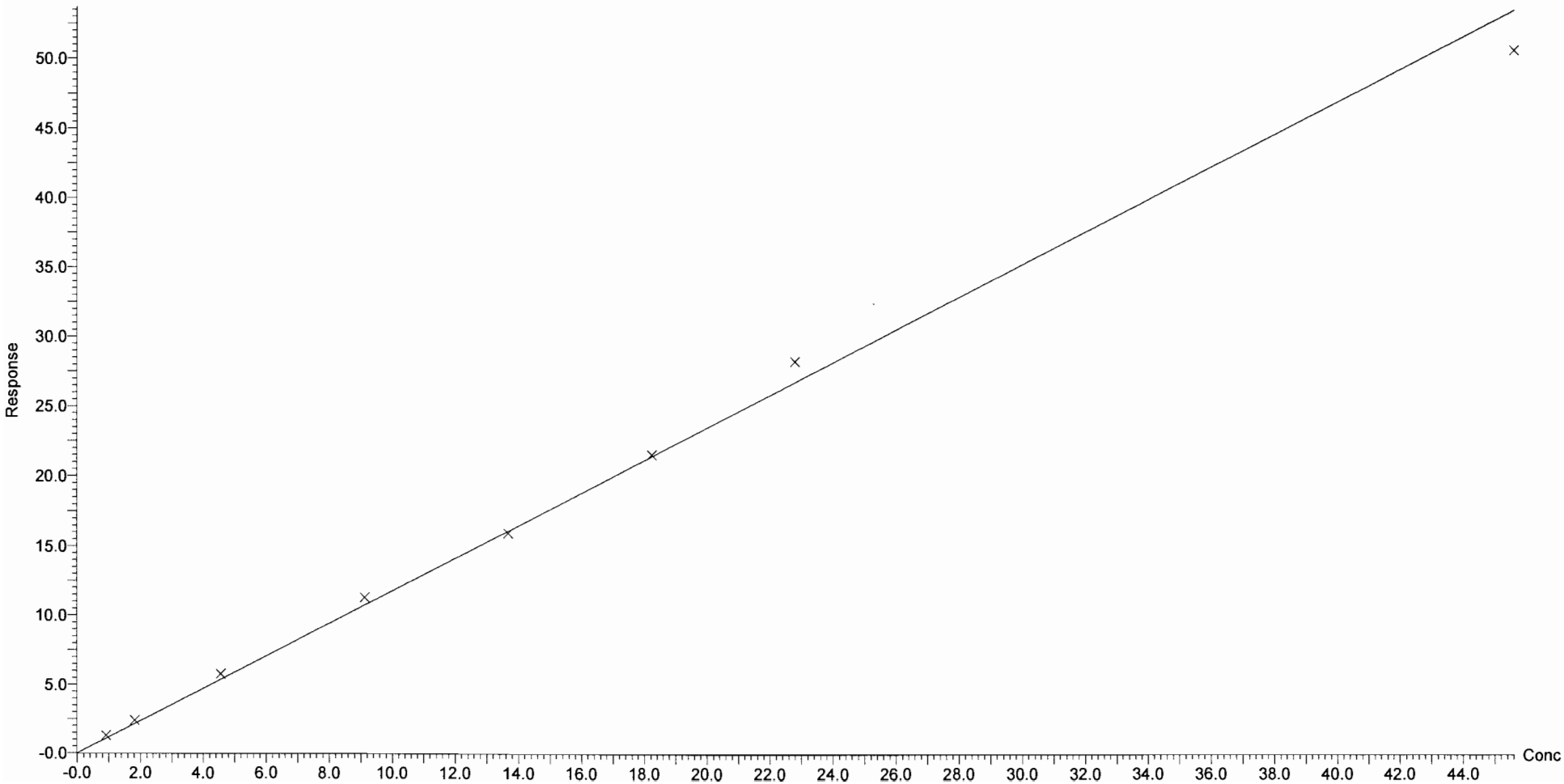
Compound name: PFHpA
Coefficient of Determination: R^2 = 0.993511
Calibration curve: 0.733581 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.996283
Calibration curve: 1.1771 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



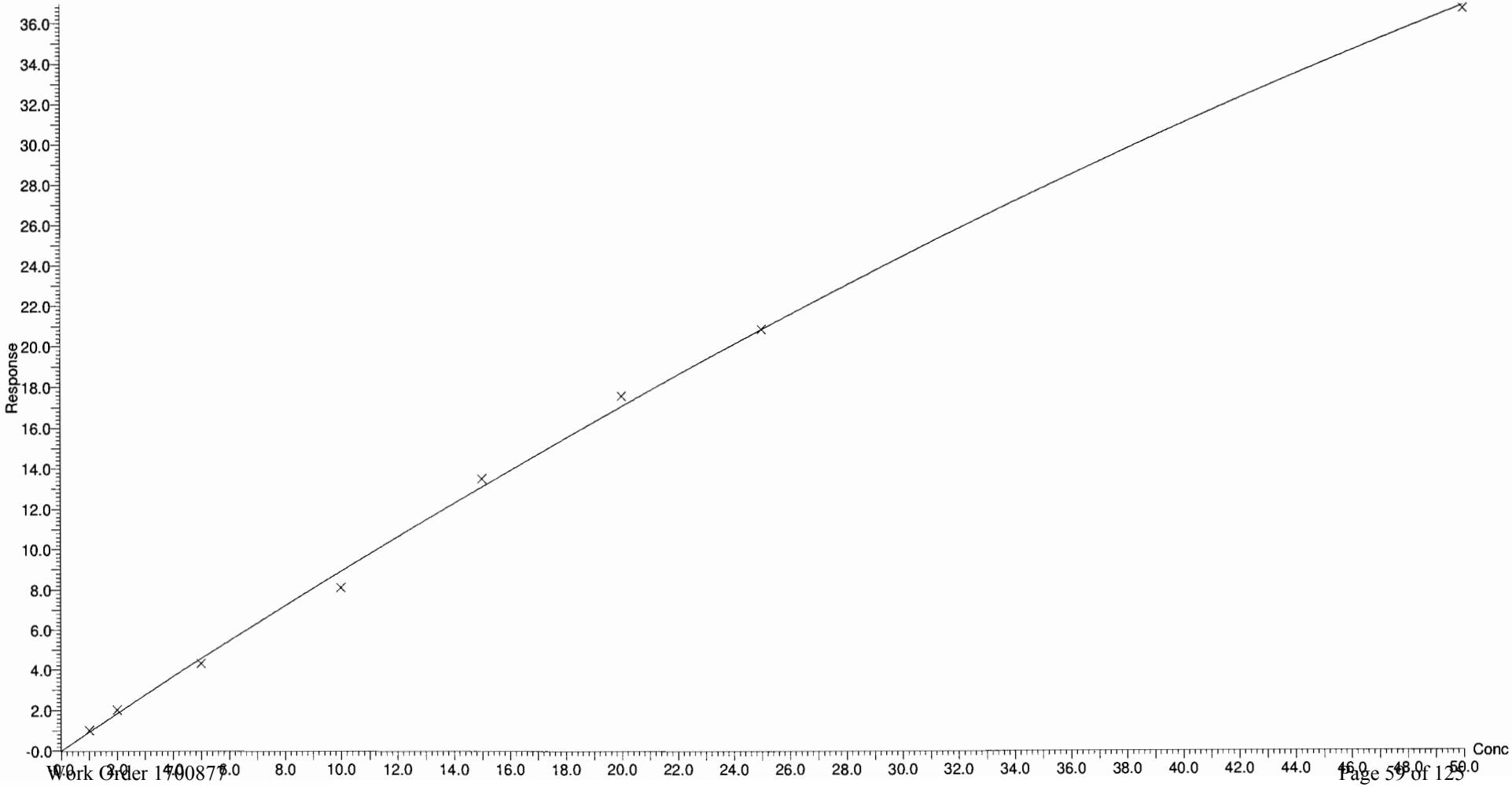
Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:45 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

Compound name: PFOA
Coefficient of Determination: R^2 = 0.997935
Calibration curve: -0.00384959 * x^2 + 0.931647 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

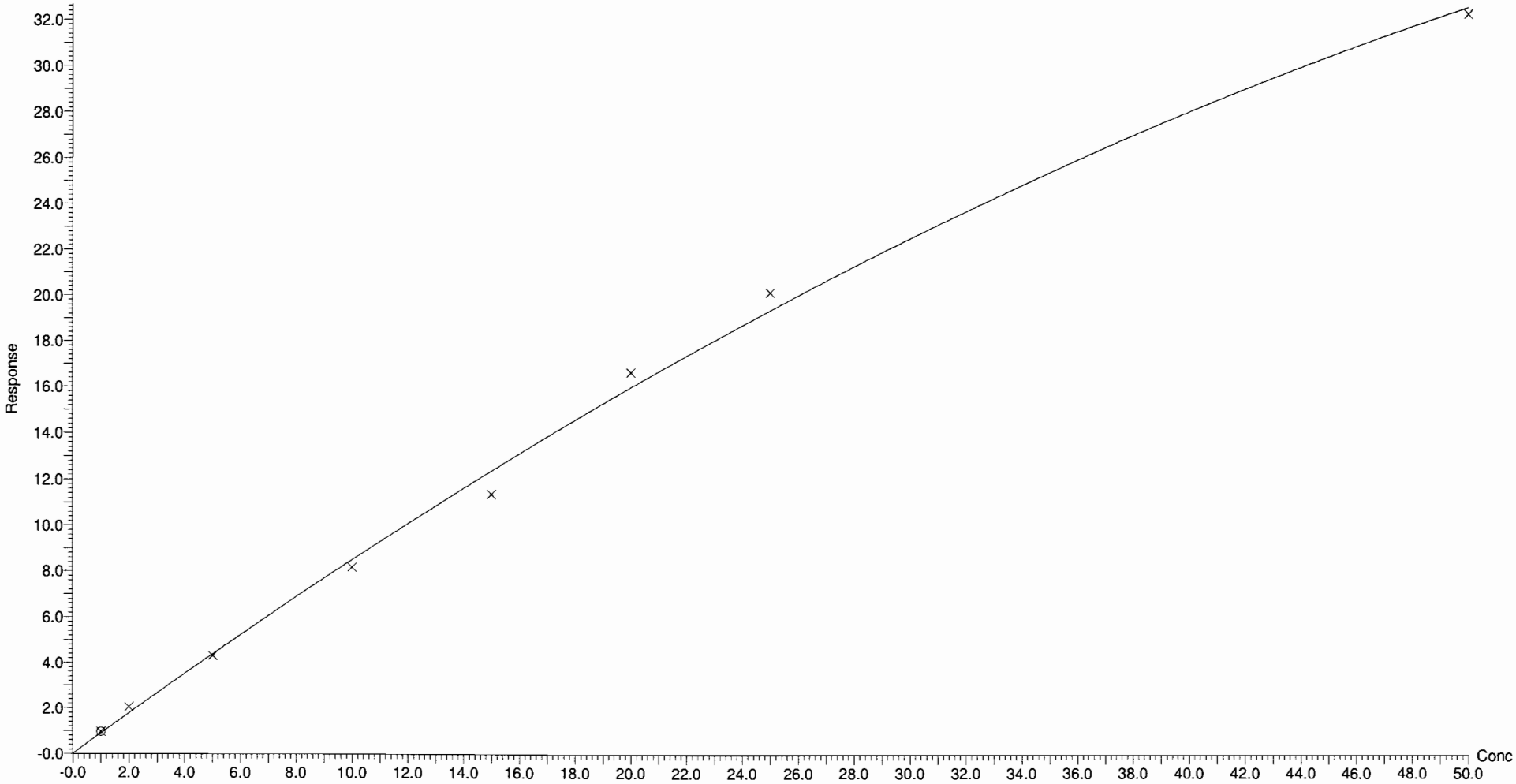


Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:45 Pacific Daylight Time

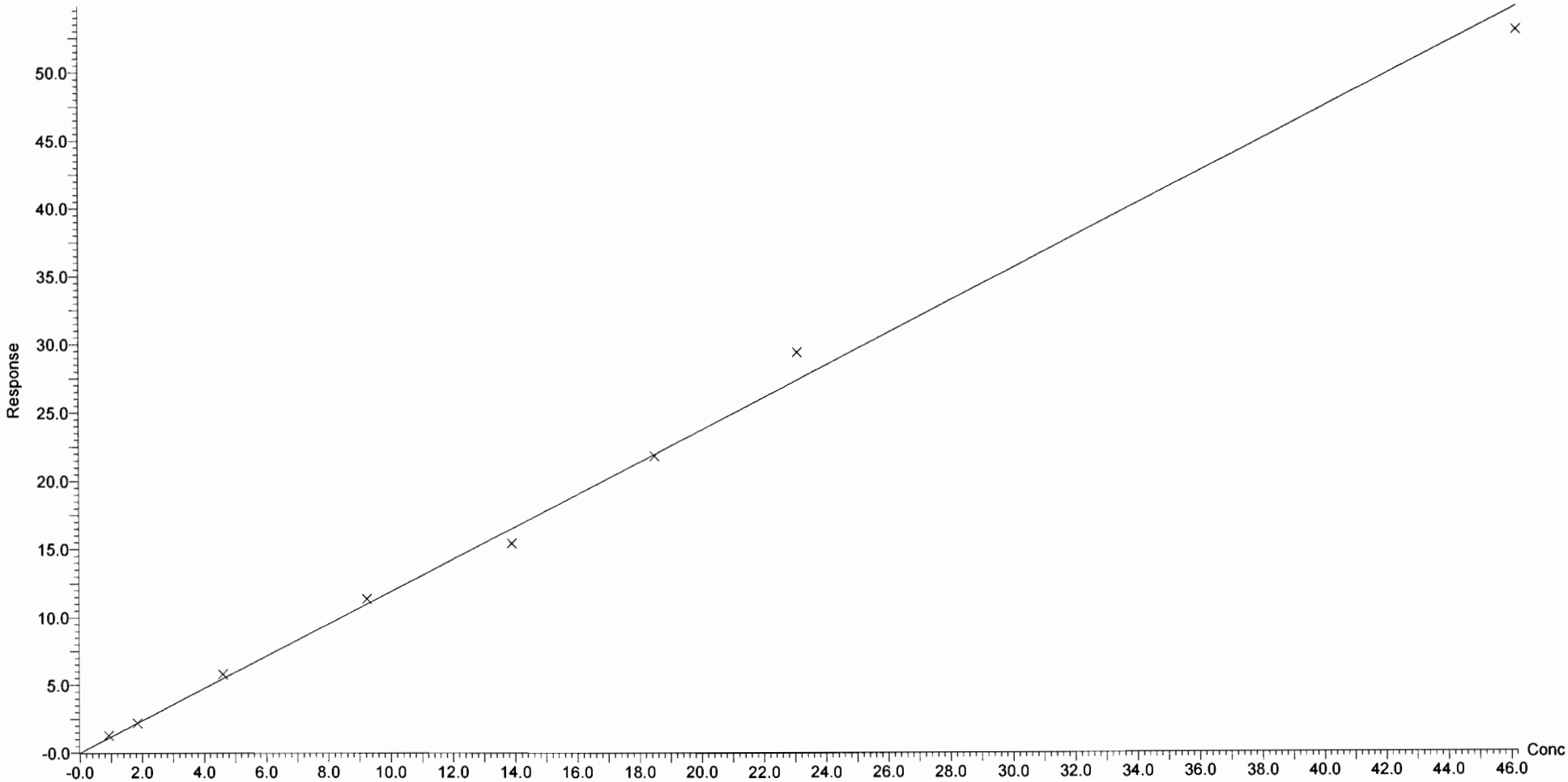
Compound name: PFNA
Coefficient of Determination: R^2 = 0.995887
Calibration curve: -0.00490978 * x^2 + 0.898989 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.996748
Calibration curve: 1.18715 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q2

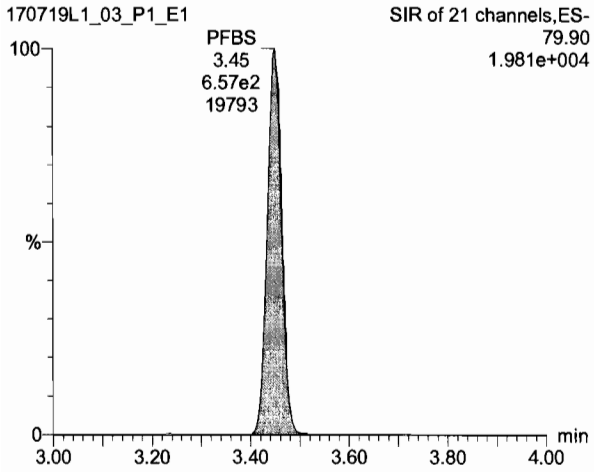
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:14:18 Pacific Daylight Time

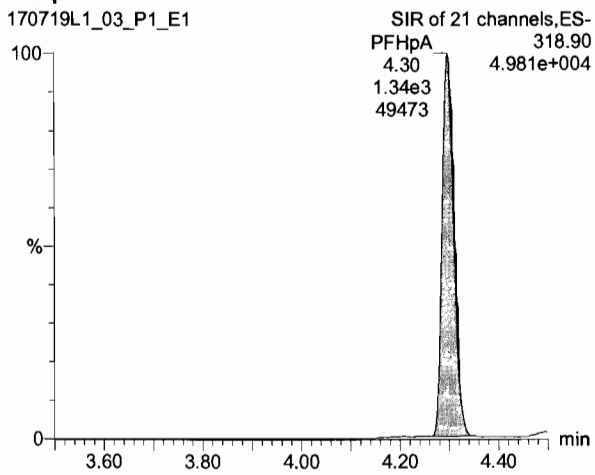
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: 20 Jul 2017 09:27:40

Name: 170719L1_03.wiff, Date: 19-Jul-2017, Time: 17:36:20, ID: ST170719L1-2 537 DW CS(-2) 17G1915, Description: 537 DW CS(-2) 17G1915

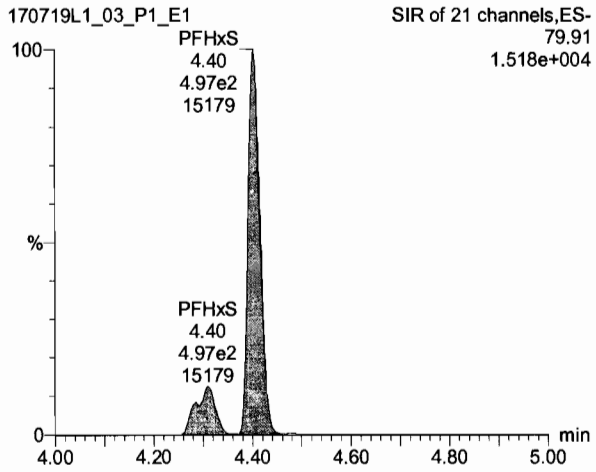
PFBS



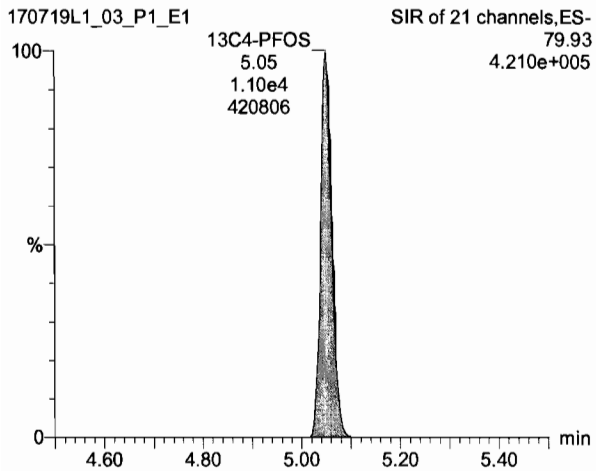
PFHpA



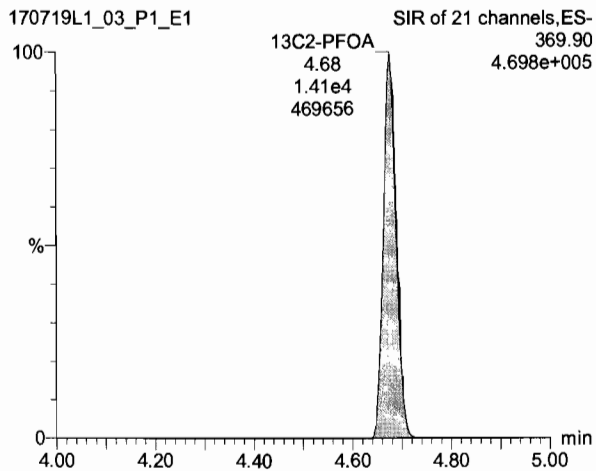
PFHxS



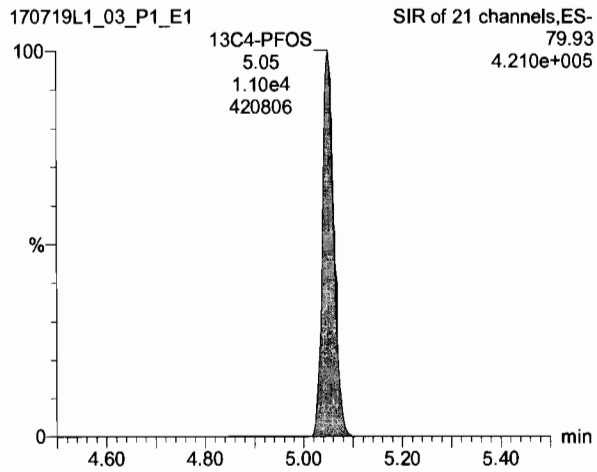
13C4-PFOS



13C2-PFOA



13C4-PFOS



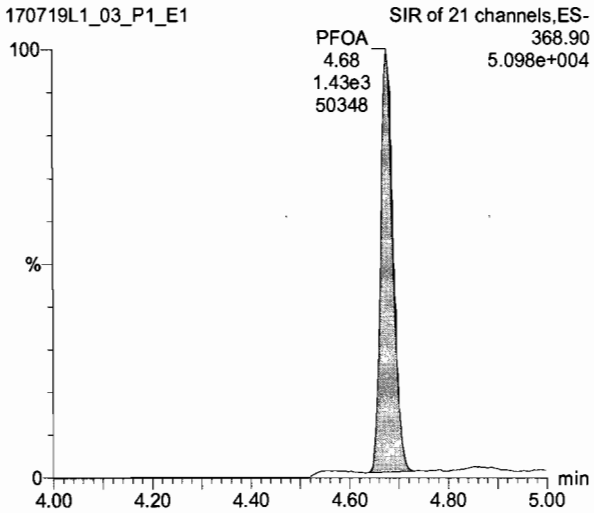
Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

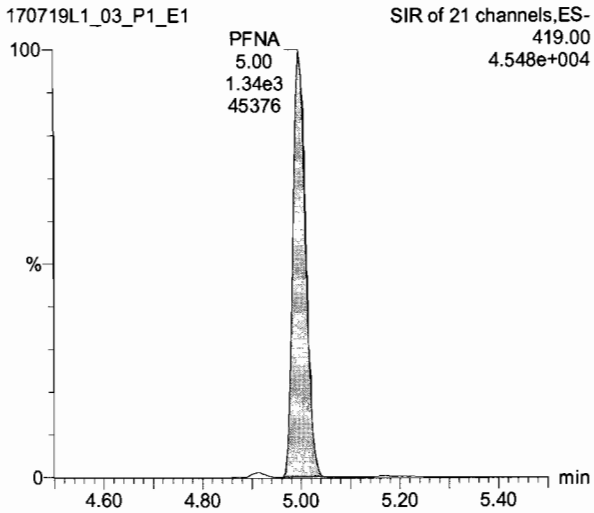
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:14:18 Pacific Daylight Time

Name: 170719L1_03.wiff, Date: 19-Jul-2017, Time: 17:36:20, ID: ST170719L1-2 537 DW CS(-2) 17G1915, Description: 537 DW CS(-2) 17G1915

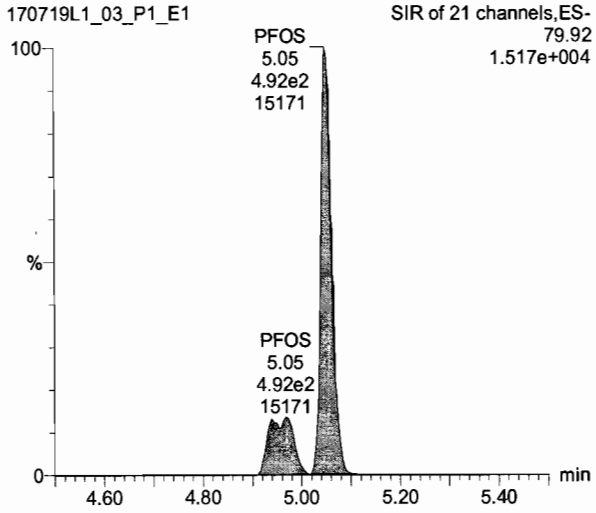
PFOA



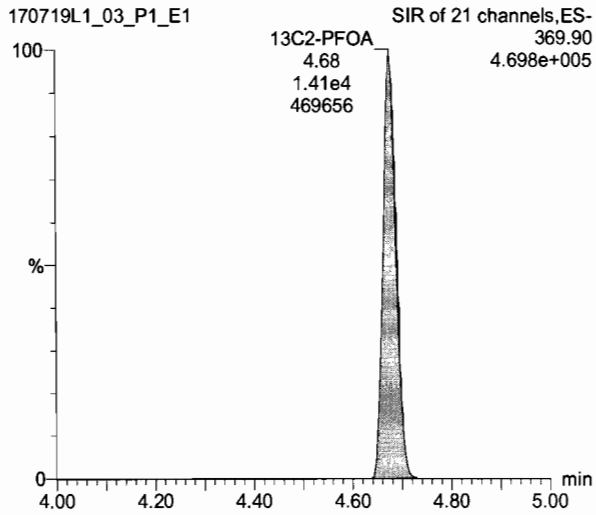
PFNA



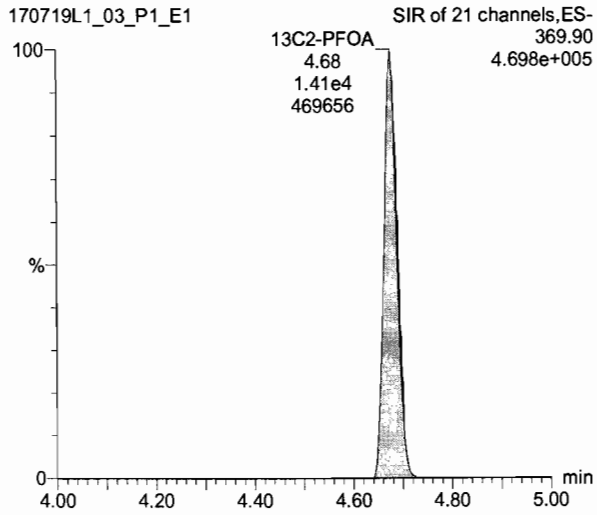
PFOS



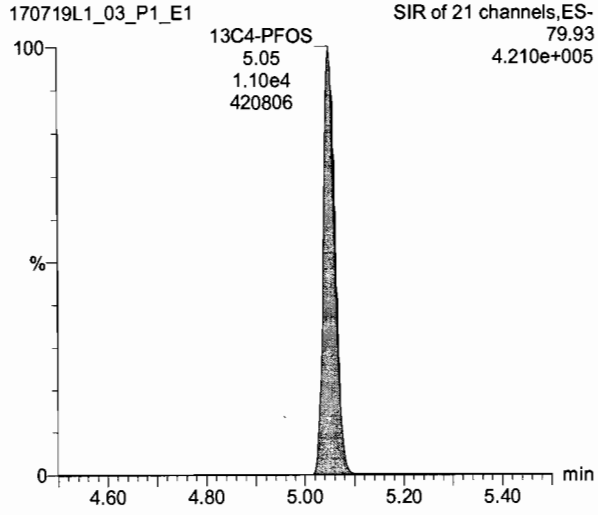
13C2-PFOA



13C2-PFOA



13C4-PFOS

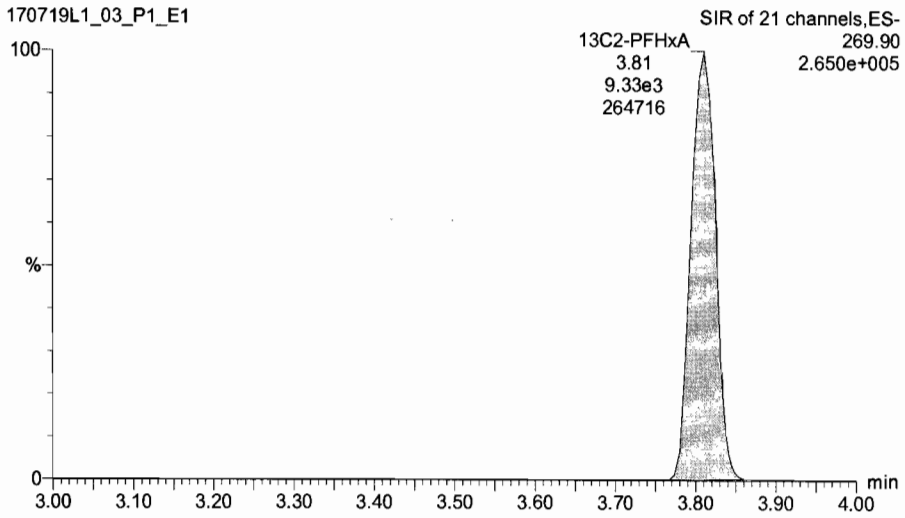


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

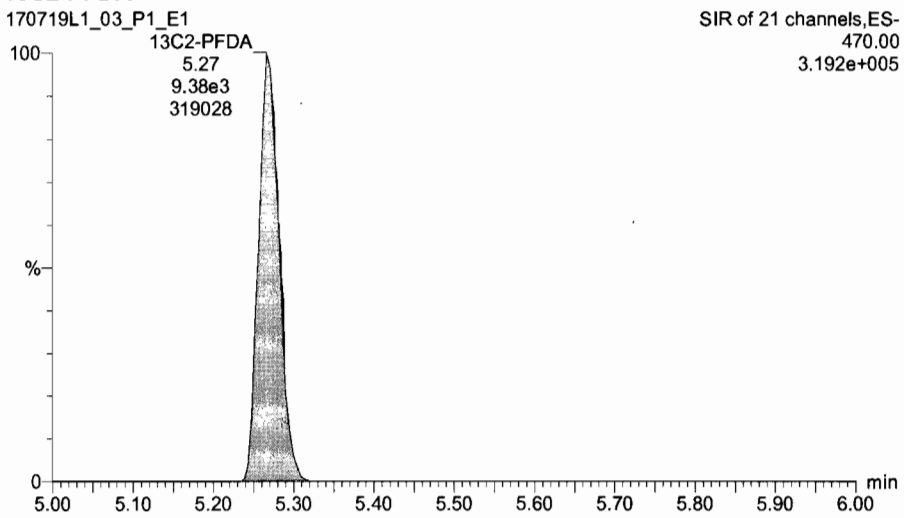
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:14:18 Pacific Daylight Time

Name: 170719L1_03.wiff, Date: 19-Jul-2017, Time: 17:36:20, ID: ST170719L1-2 537 DW CS(-2) 17G1915, Description: 537 DW CS(-2) 17G1915

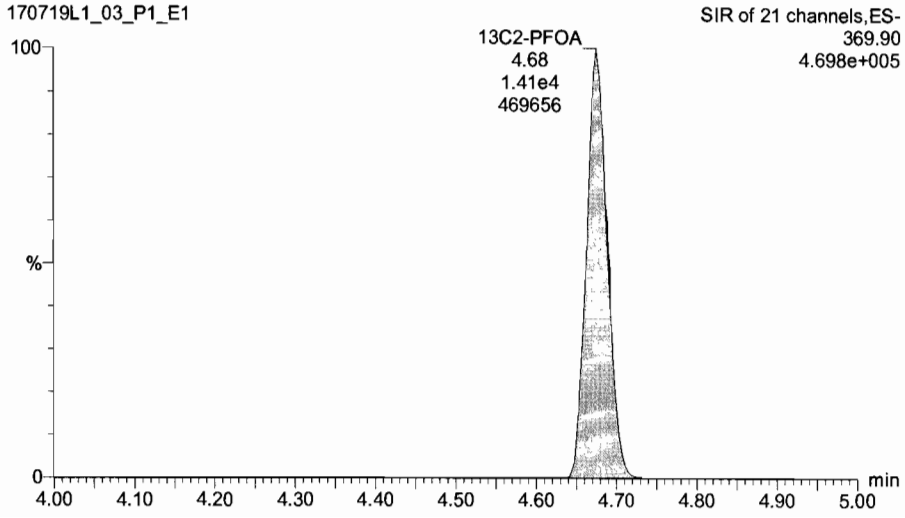
13C2-PFHxA



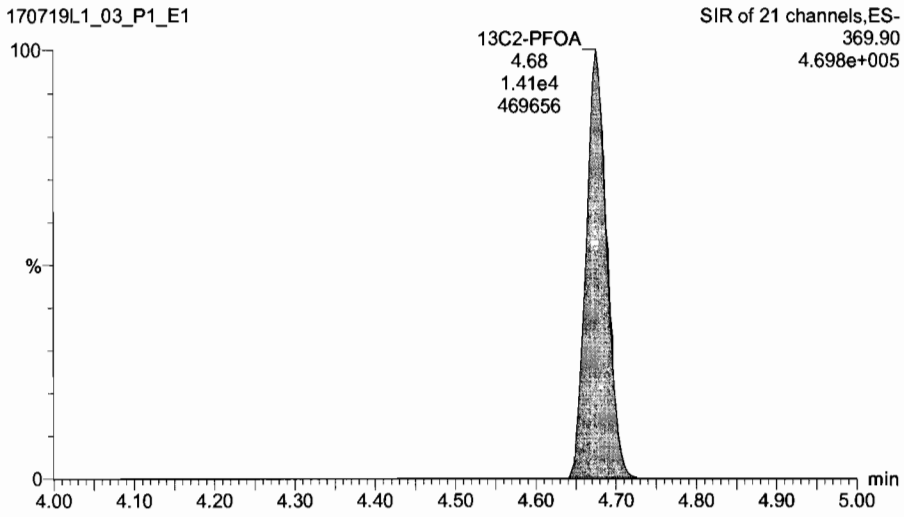
13C2-PFDA



13C2-PFOA



13C2-PFOA



Vista Analytical Laboratory Q2

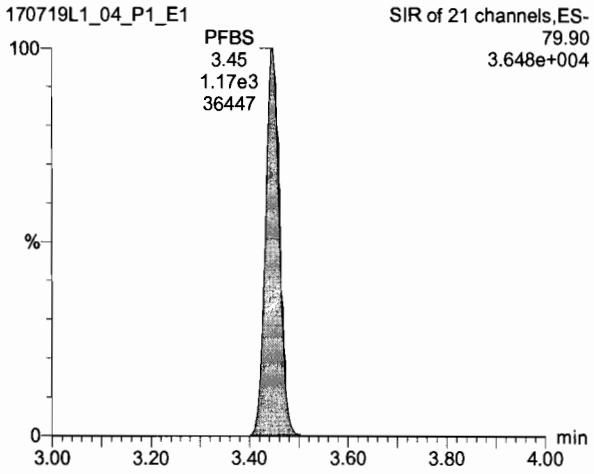
Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

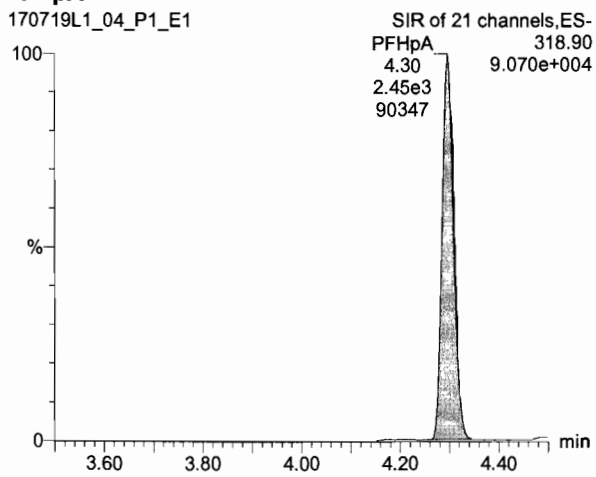
Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: 20 Jul 2017 09:27:40

Name: 170719L1_04.wiff, Date: 19-Jul-2017, Time: 17:48:34, ID: ST170719L1-3 537 DW CS(-1) 17G1916, Description: 537 DW CS(-1) 17G1916

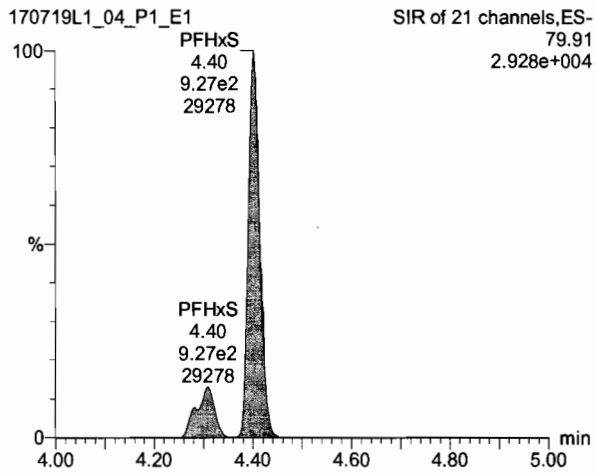
PFBS



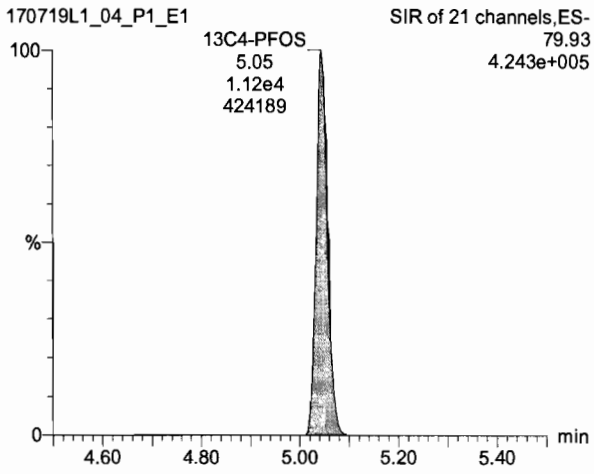
PFHpA



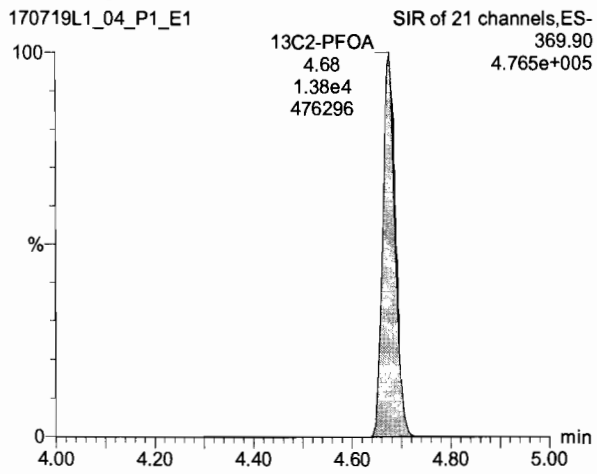
PFHxS



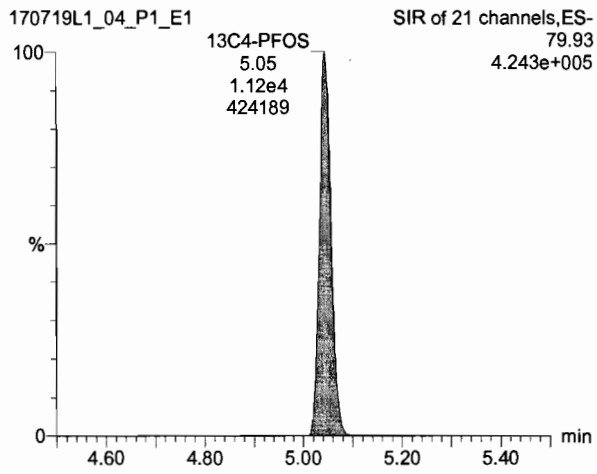
13C4-PFOS



13C2-PFOA



13C4-PFOS

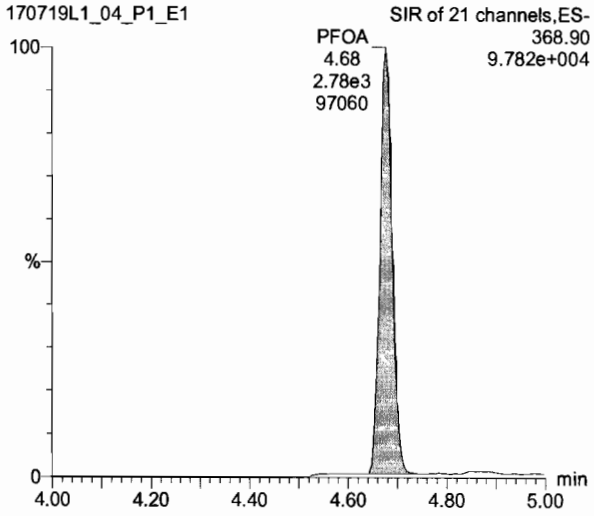


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

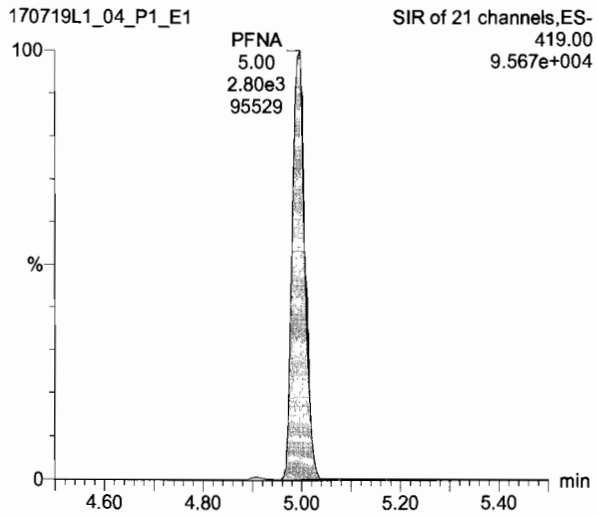
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_04.wiff, Date: 19-Jul-2017, Time: 17:48:34, ID: ST170719L1-3 537 DW CS(-1) 17G1916, Description: 537 DW CS(-1) 17G1916

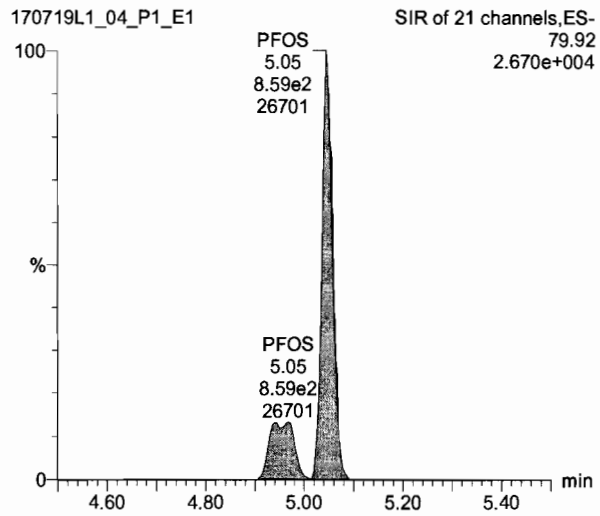
PFOA



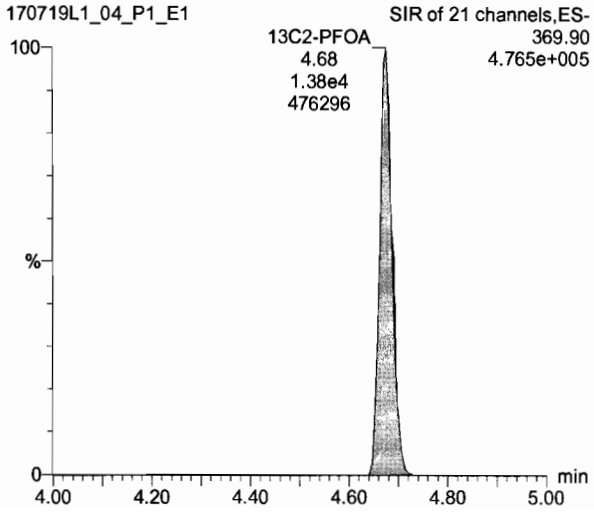
PFNA



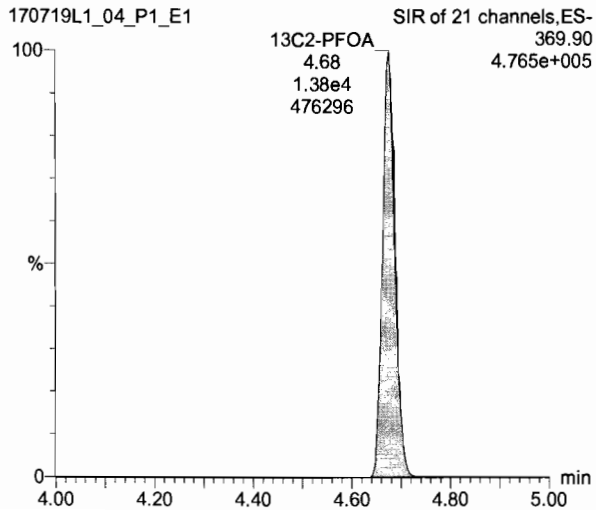
PFOS



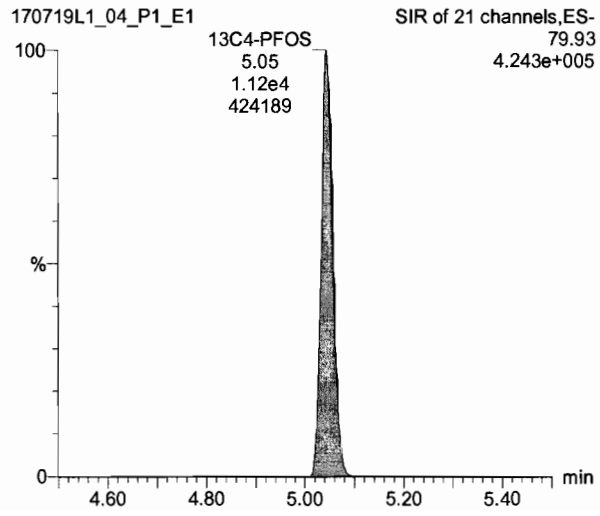
13C2-PFOA



13C2-PFOA



13C4-PFOS

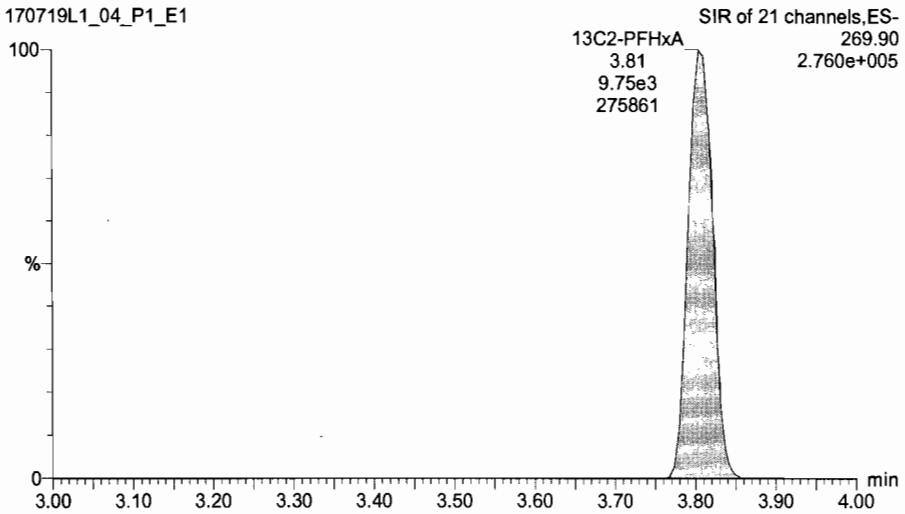


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

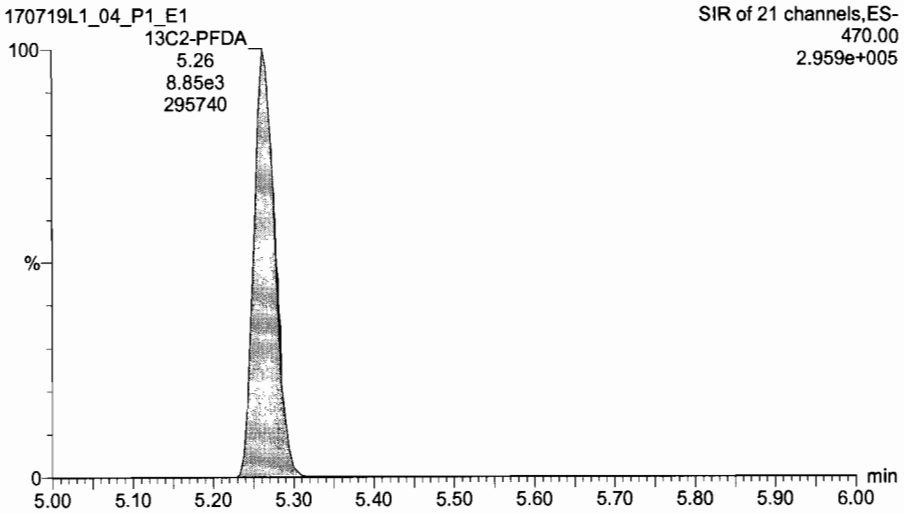
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_04.wiff, Date: 19-Jul-2017, Time: 17:48:34, ID: ST170719L1-3 537 DW CS(-1) 17G1916, Description: 537 DW CS(-1) 17G1916

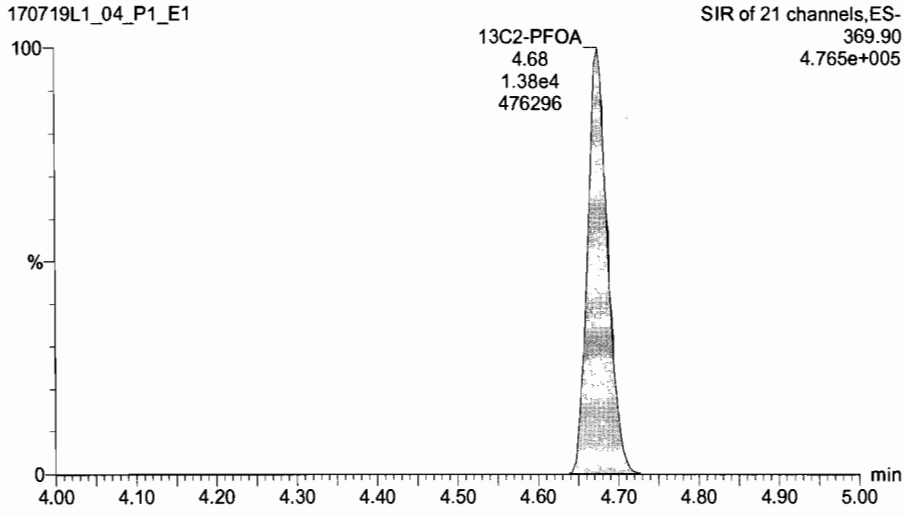
13C2-PFHxA



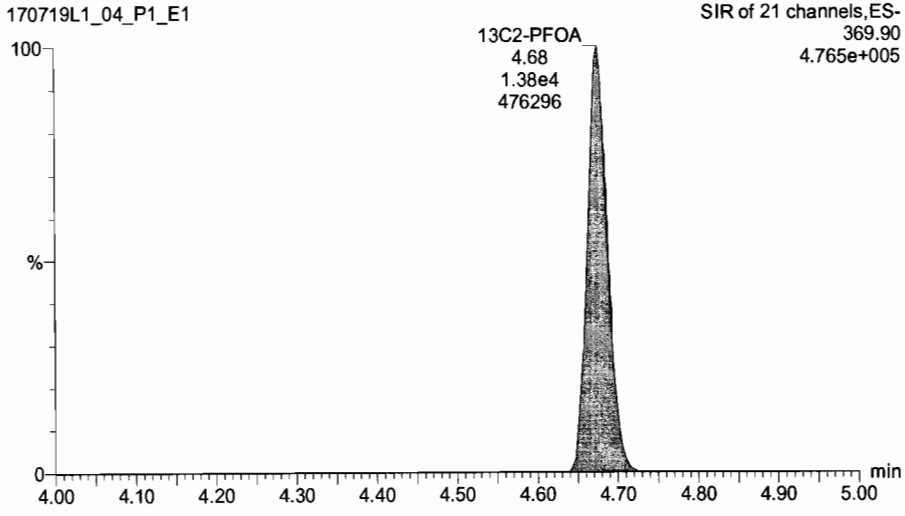
13C2-PFDA



13C2-PFOA



13C2-PFOA

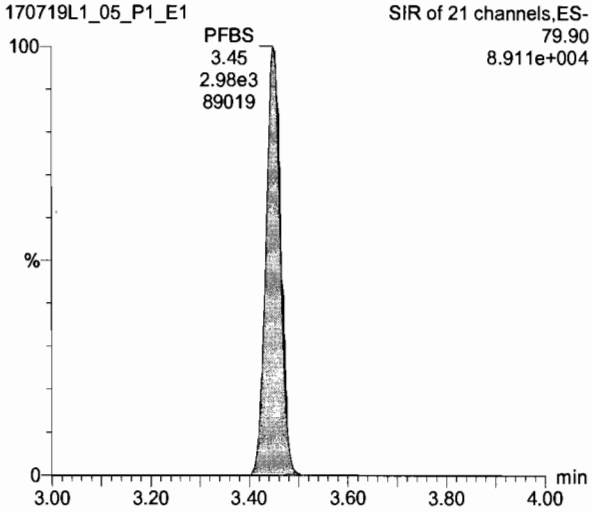


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

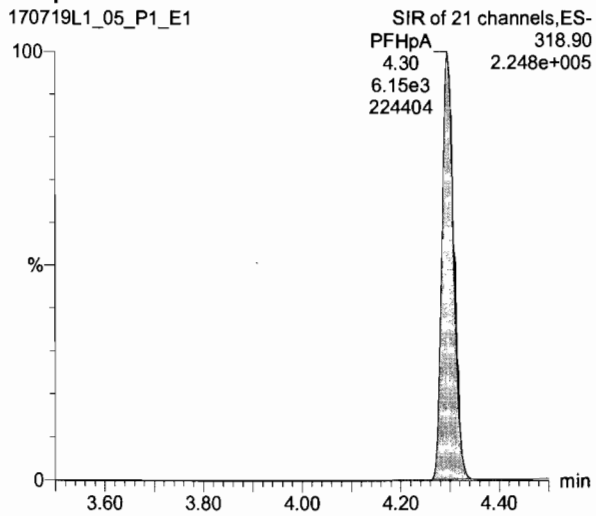
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_05.wiff, Date: 19-Jul-2017, Time: 18:00:46, ID: ST170719L1-4 537 DW CS(0) 17G1917, Description: 537 DW CS0 17G1917

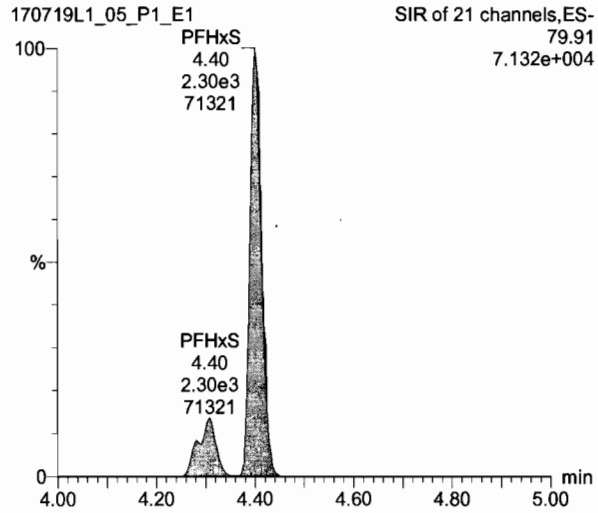
PFBS



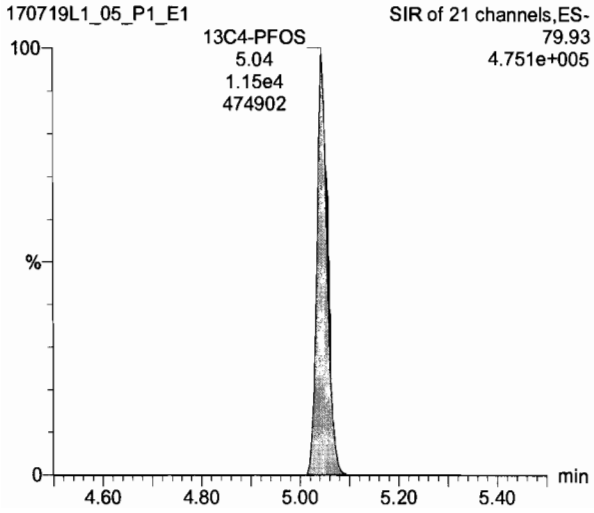
PFHpA



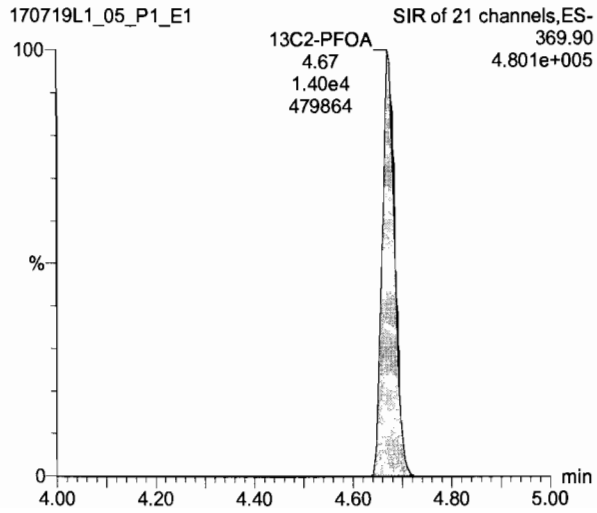
PFHxS



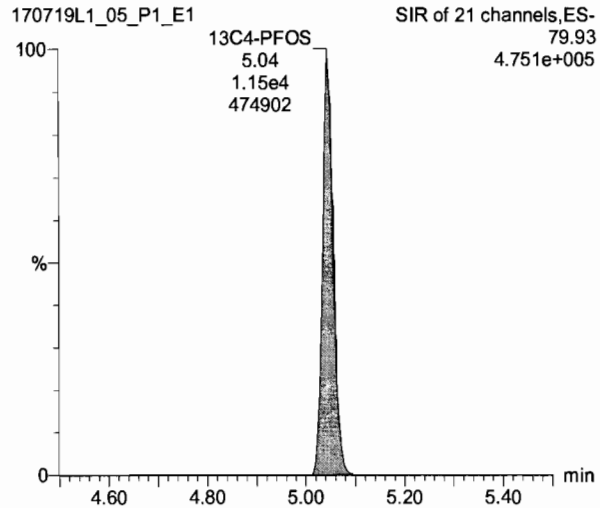
13C4-PFOS



13C2-PFOA



13C4-PFOS

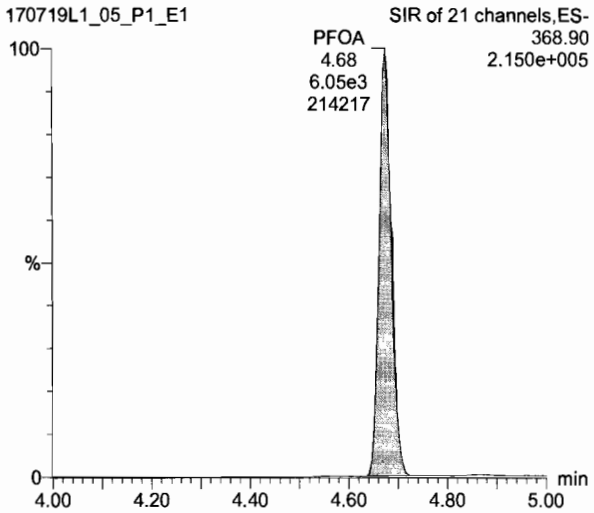


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

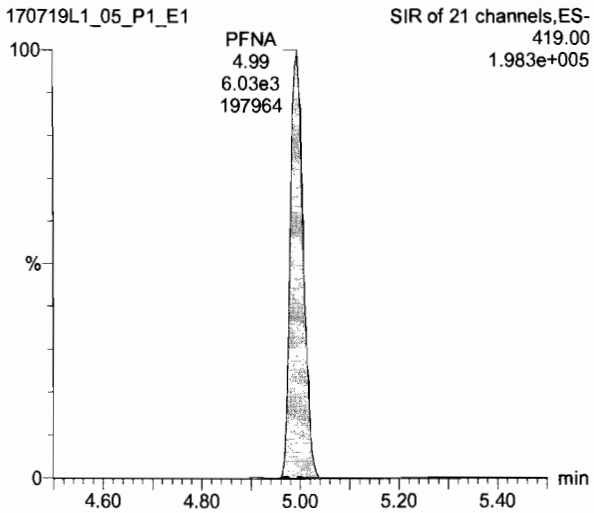
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_05.wiff, Date: 19-Jul-2017, Time: 18:00:46, ID: ST170719L1-4 537 DW CS(0) 17G1917, Description: 537 DW CS0 17G1917

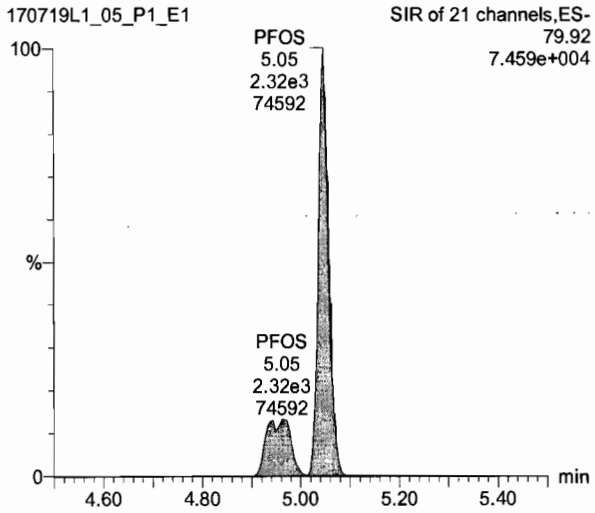
PFOA



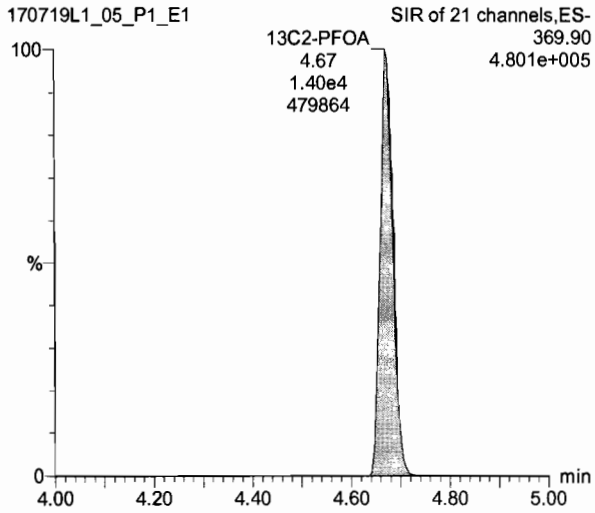
PFNA



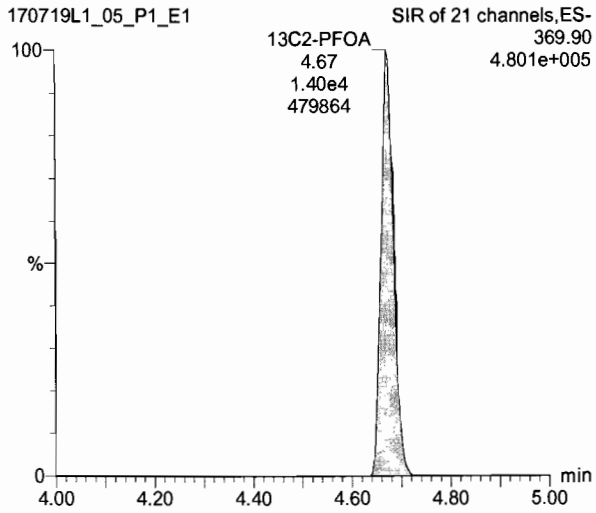
PFOS



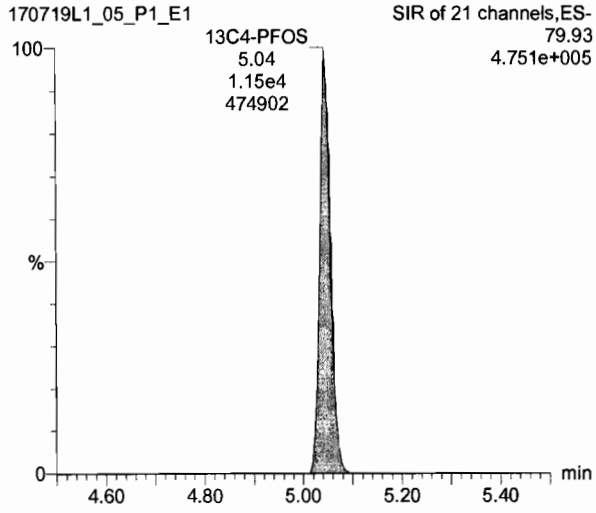
13C2-PFOA



13C2-PFOA



13C4-PFOS

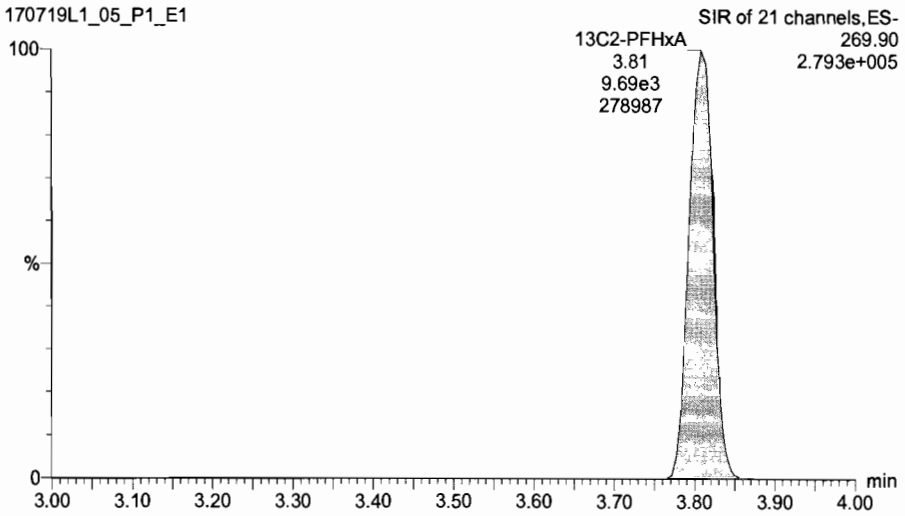


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

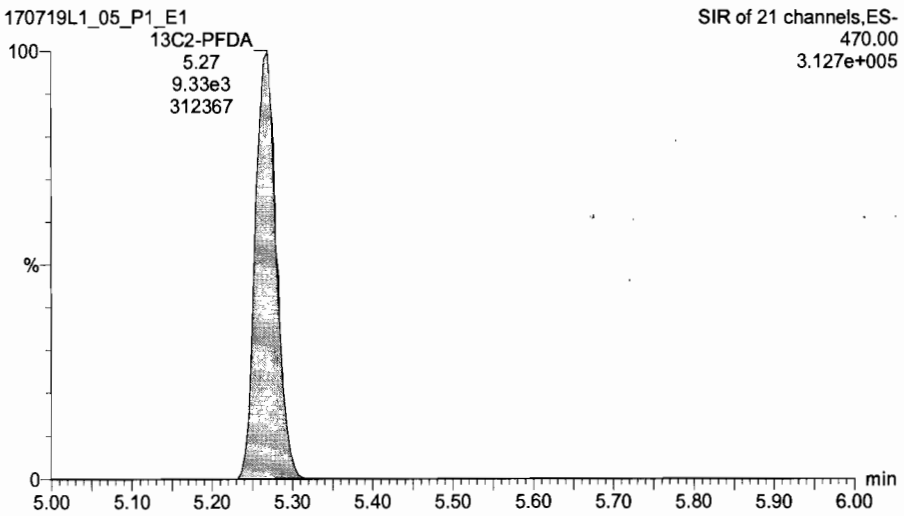
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_05.wiff, Date: 19-Jul-2017, Time: 18:00:46, ID: ST170719L1-4 537 DW CS(0) 17G1917, Description: 537 DW CS0 17G1917

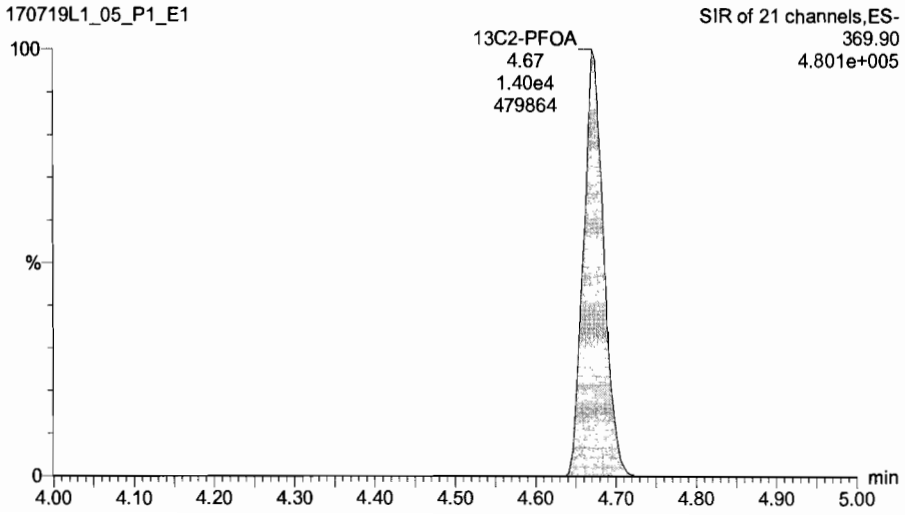
13C2-PFHxA



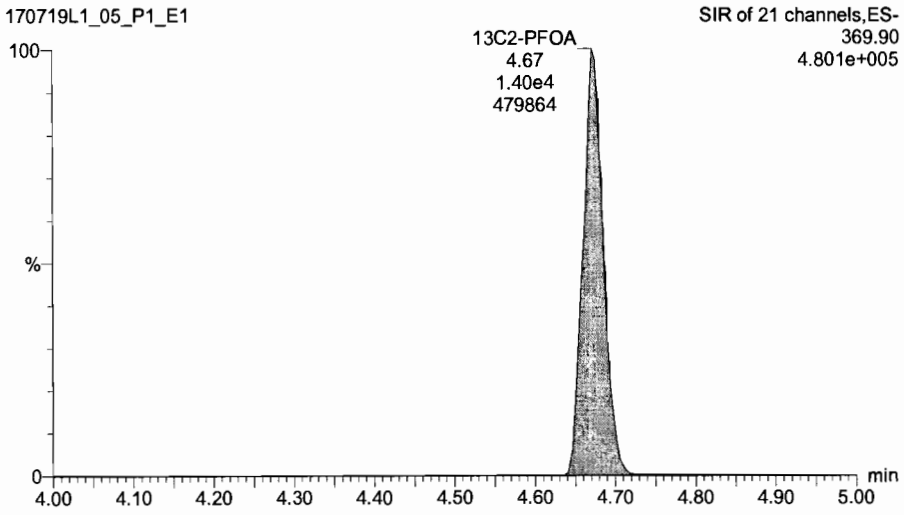
13C2-PFDA



13C2-PFOA



13C2-PFOA



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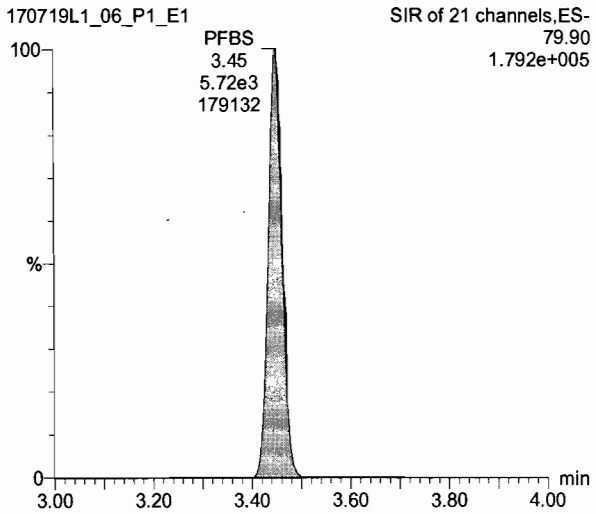
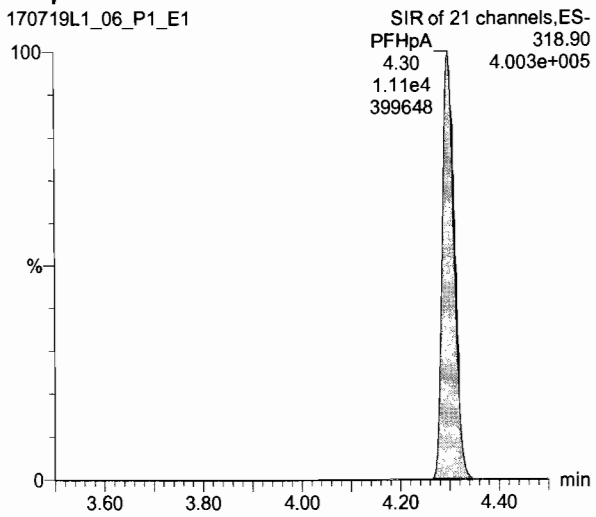
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_06.wiff, Date: 19-Jul-2017, Time: 18:13:02, ID: ST170719L1-5 537 DW CS1 17G1918, Description: 537 DW CS1 17G1918

PFBS



PFHpA



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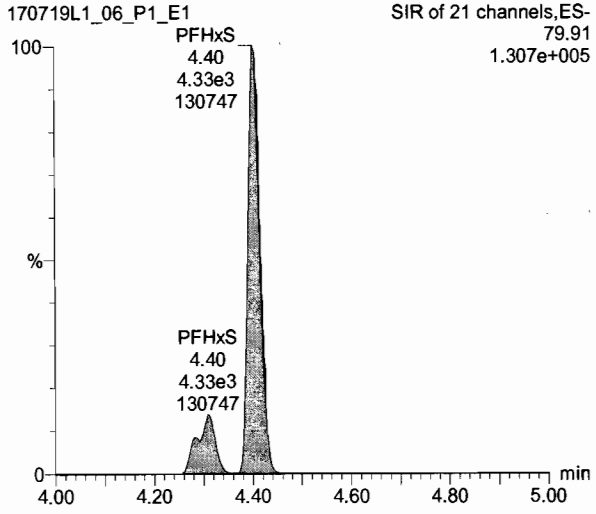
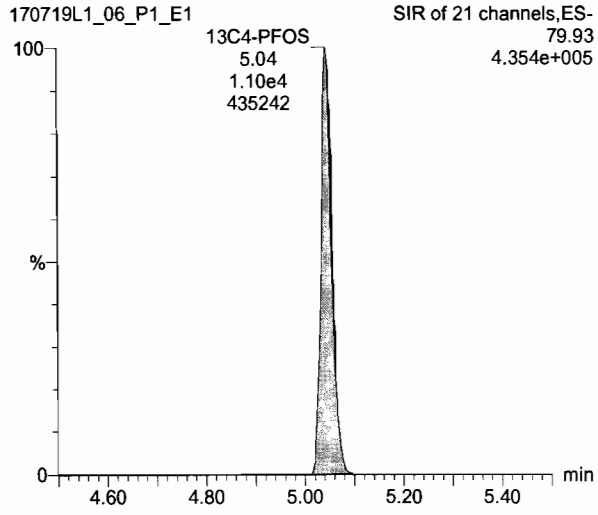


13C4-PFOS



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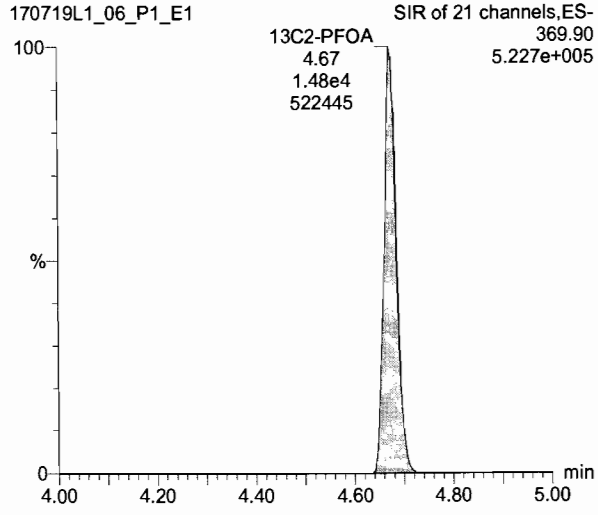

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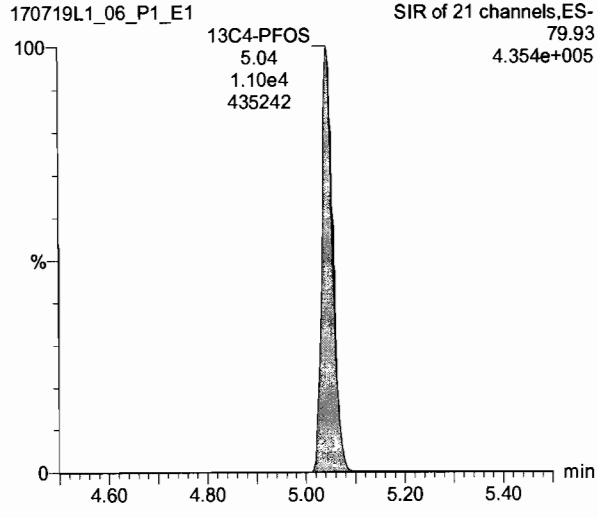

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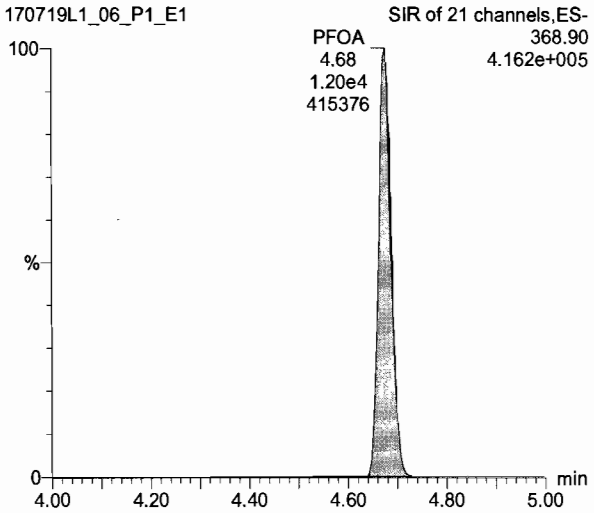
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_06.wiff, Date: 19-Jul-2017, Time: 18:13:02, ID: ST170719L1-5 537 DW CS1 17G1918, Description: 537 DW CS1 17G1918

PFOA



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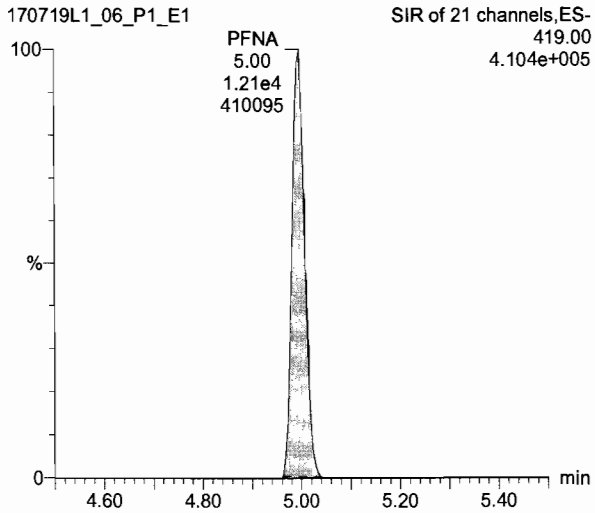
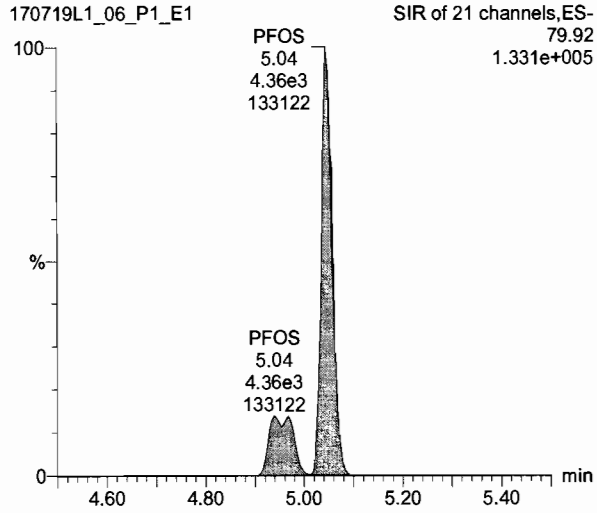


PFOS



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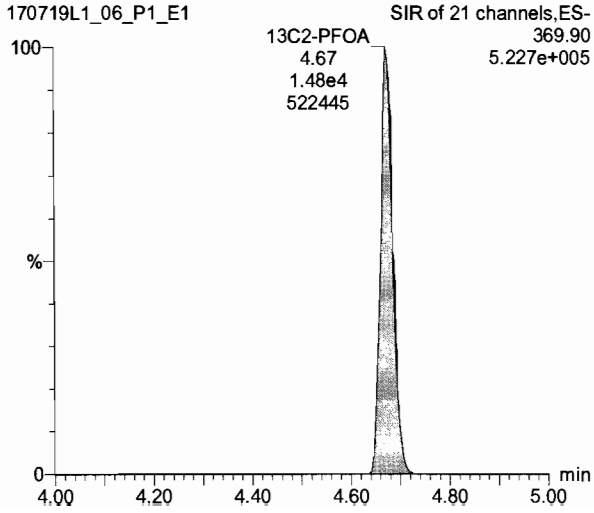

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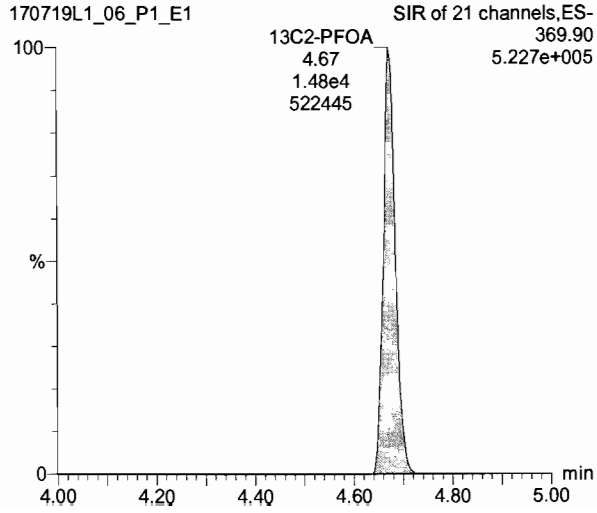
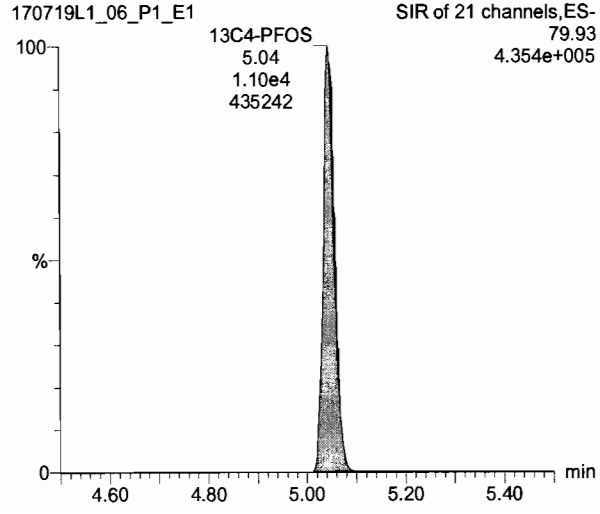


13C4-PFOS



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

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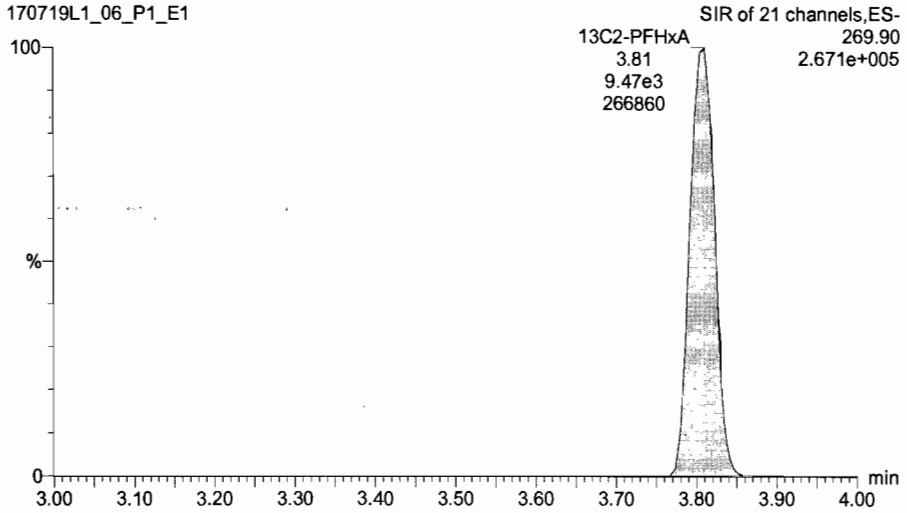
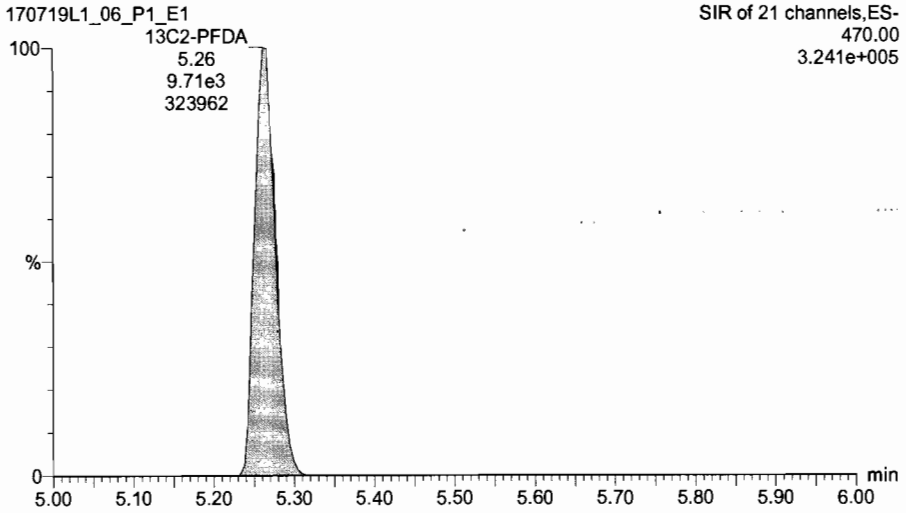
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_06.wiff, Date: 19-Jul-2017, Time: 18:13:02, ID: ST170719L1-5 537 DW CS1 17G1918, Description: 537 DW CS1 17G1918

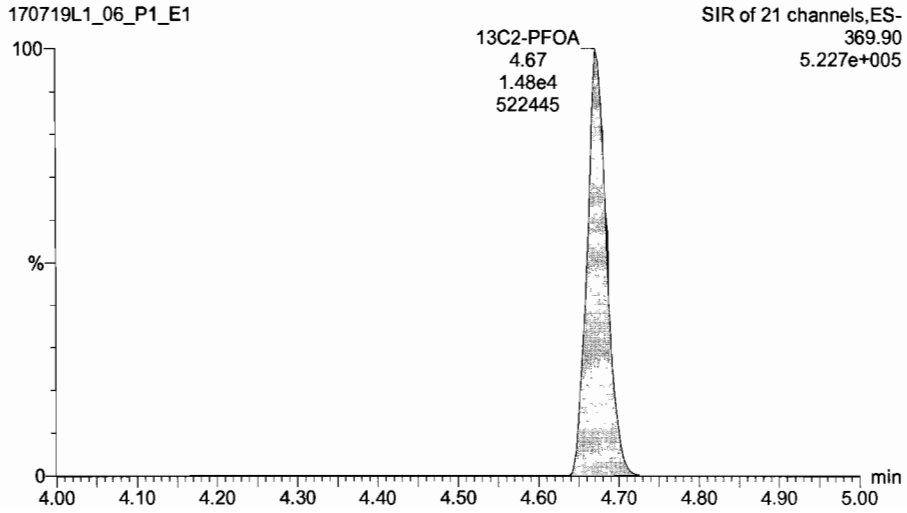
13C2-PFHxA



13C2-PFDA



13C2-PFOA



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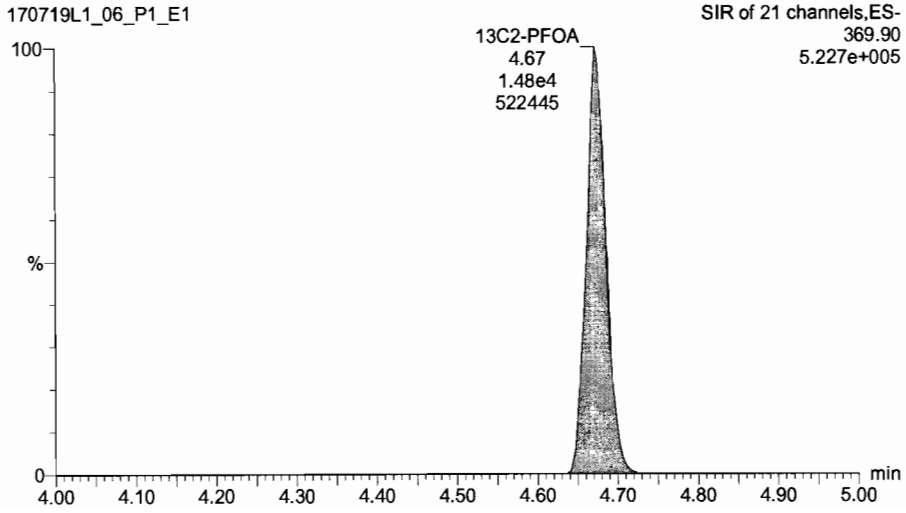

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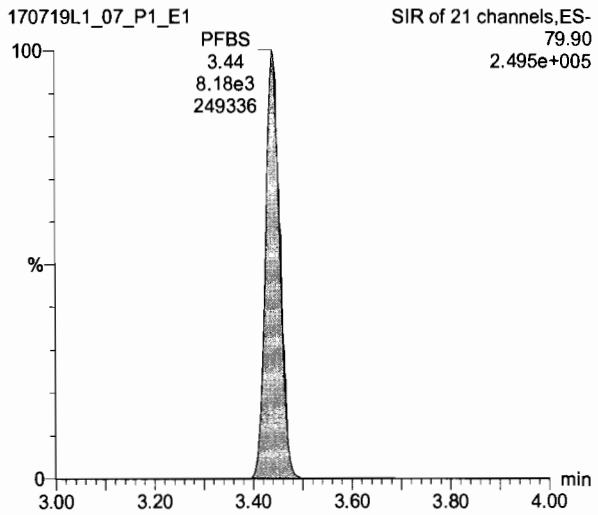
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_07.wiff, Date: 19-Jul-2017, Time: 18:25:12, ID: ST170719L1-6 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919

PFBS



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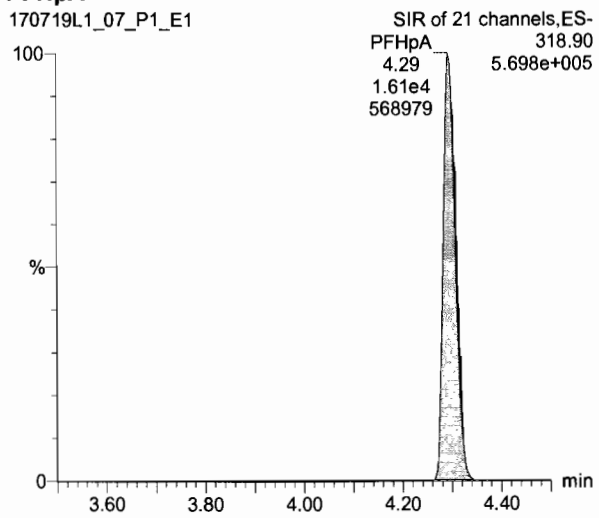

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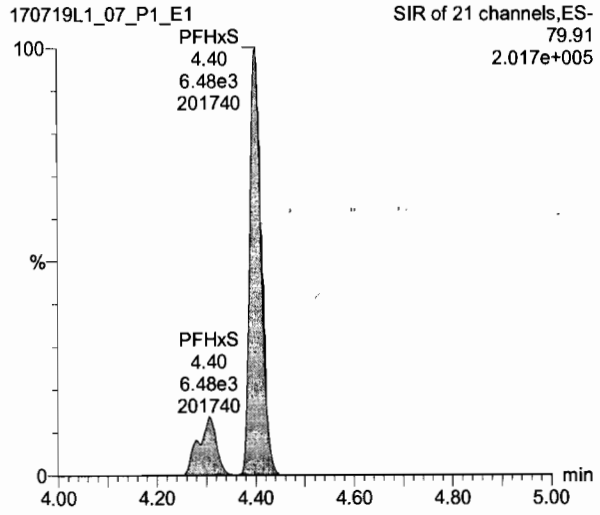

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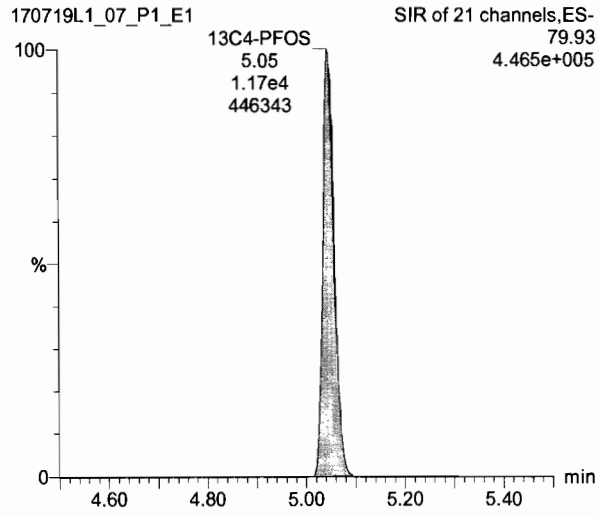

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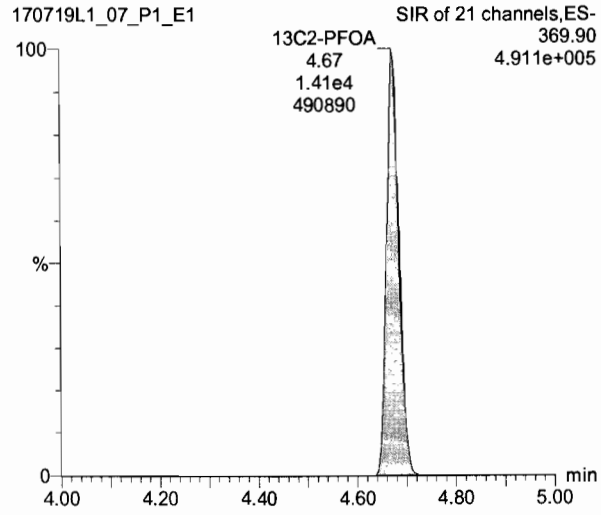

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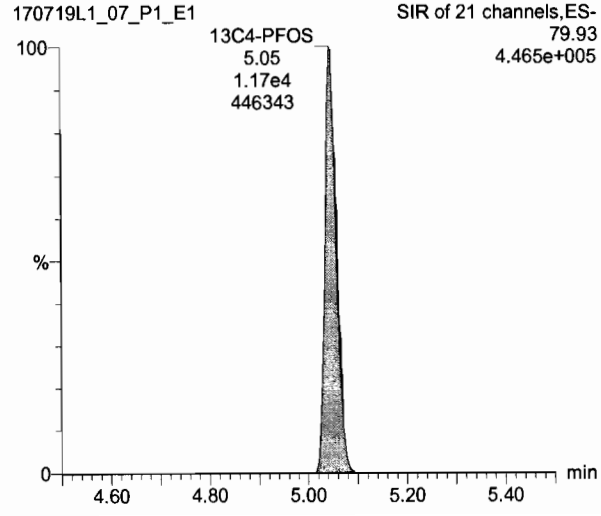


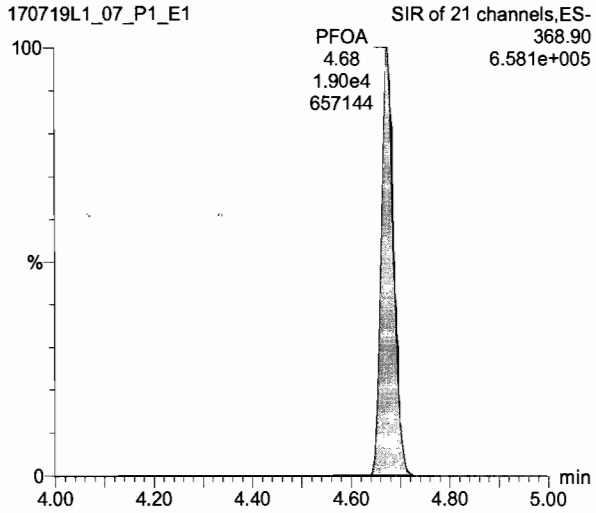
Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_07.wiff, Date: 19-Jul-2017, Time: 18:25:12, ID: ST170719L1-6 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919

PFOA



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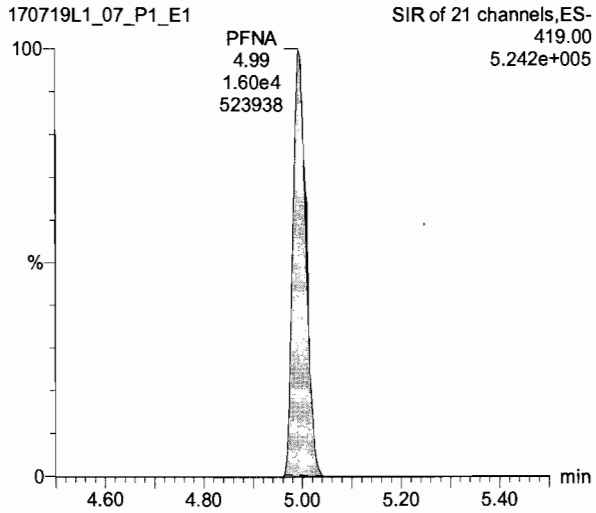
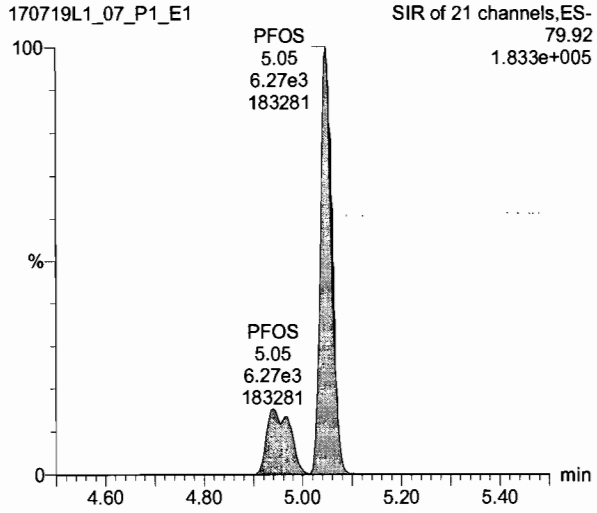


PFOS



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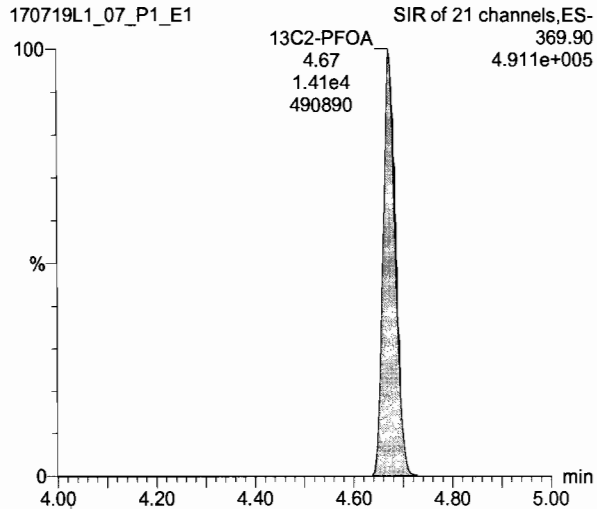

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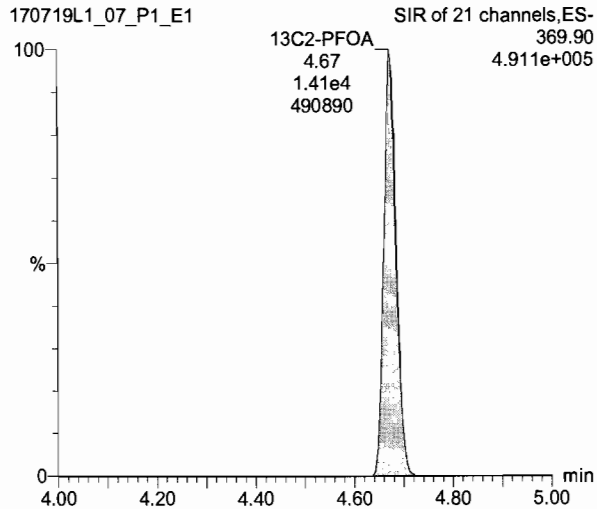

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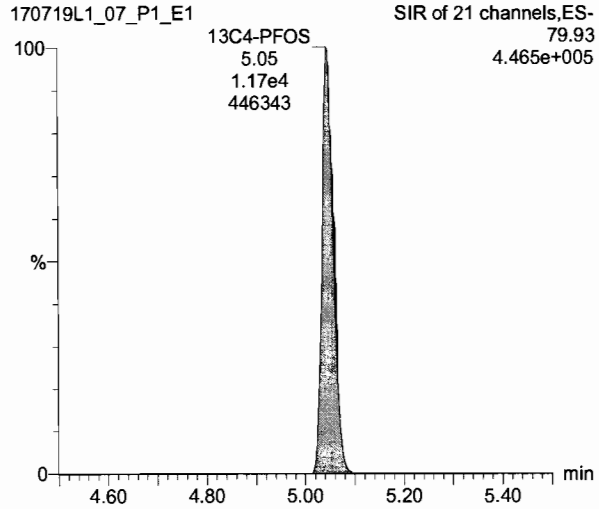

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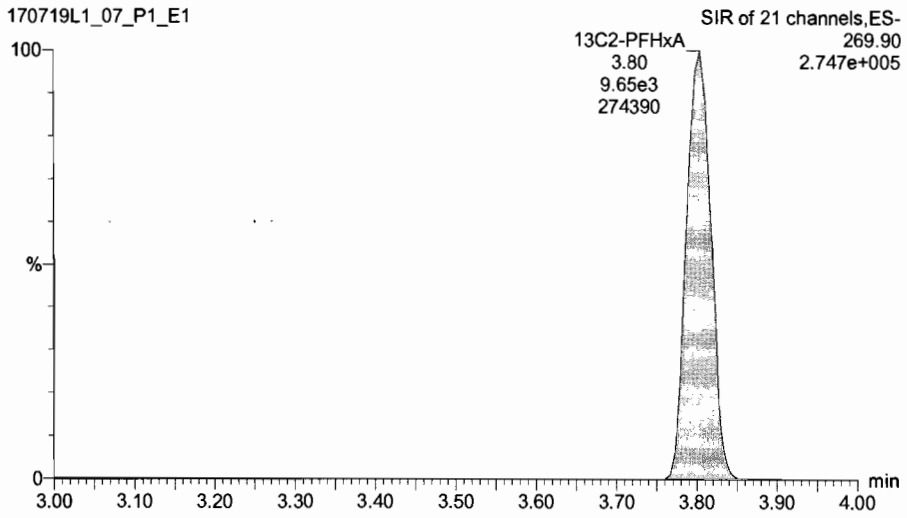
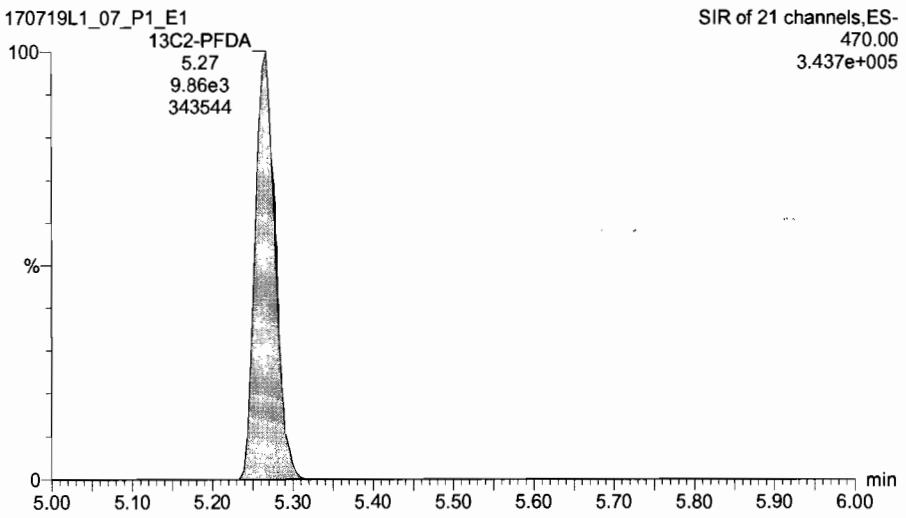
Name: 170719L1_07.wiff, Date: 19-Jul-2017, Time: 18:25:12, ID: ST170719L1-6 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919

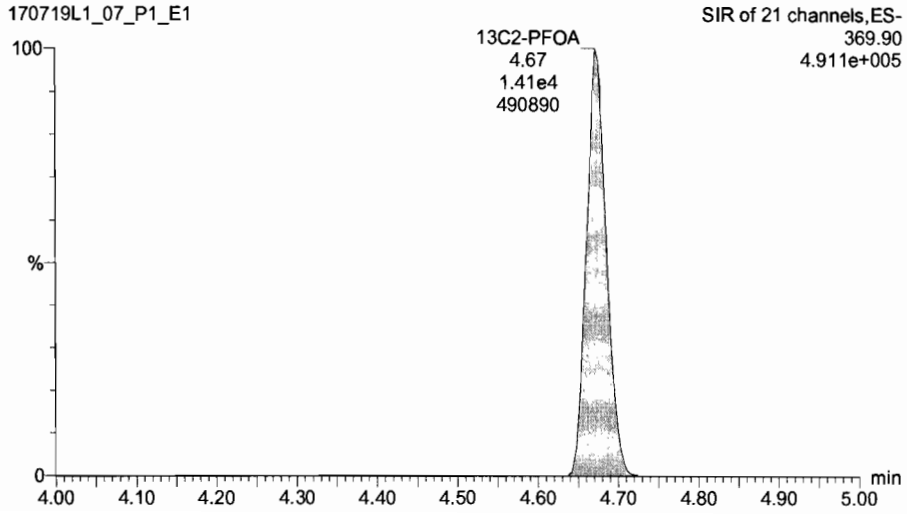
13C2-PFHxA



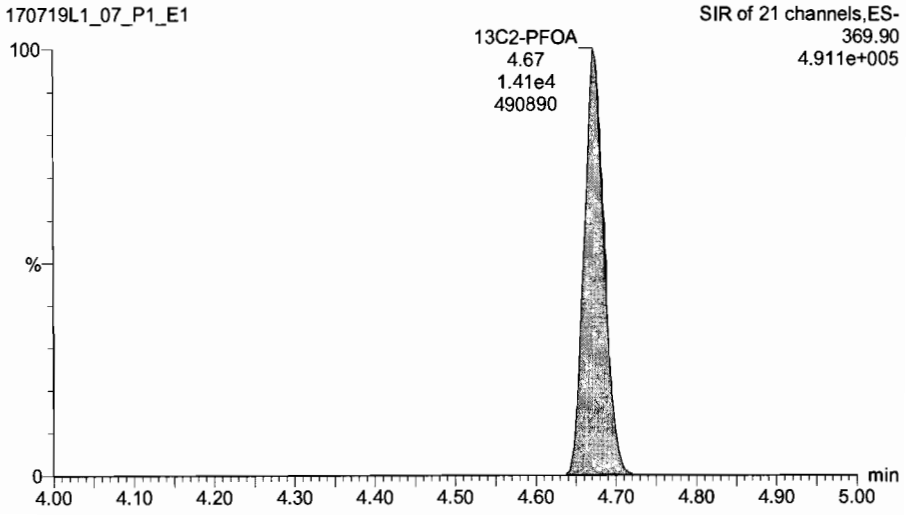
13C2-PFDA



13C2-PFOA



13C2-PFOA



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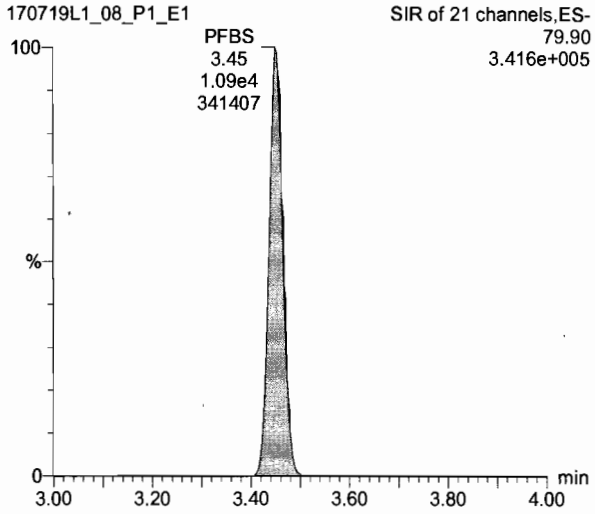
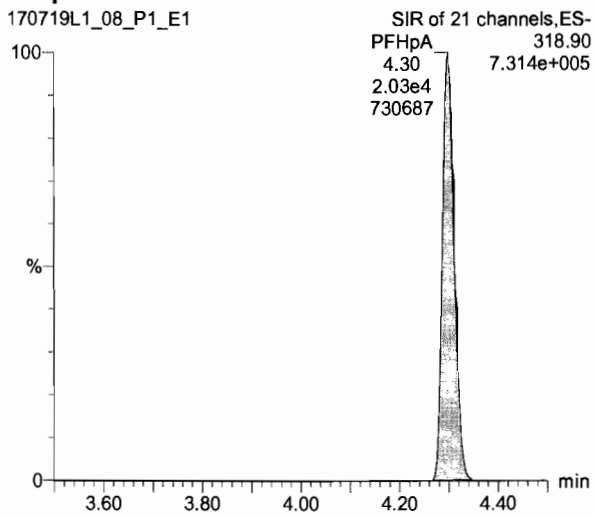
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_08.wiff, Date: 19-Jul-2017, Time: 18:37:29, ID: ST170719L1-7 537 DW CS3 17G1920, Description: 537 DW CS3 17G1920

PFBS



PFHpA



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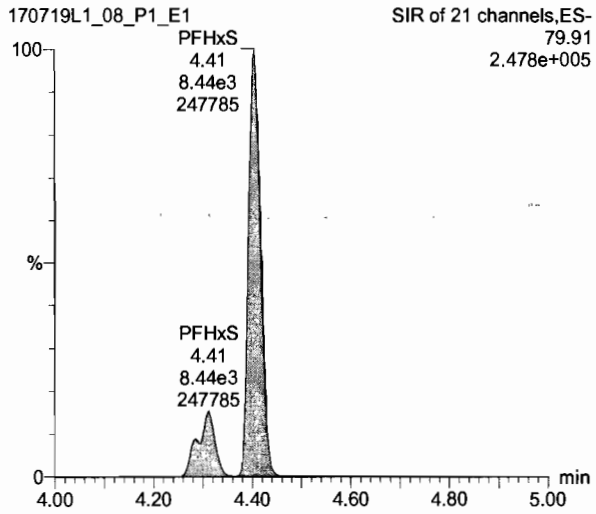

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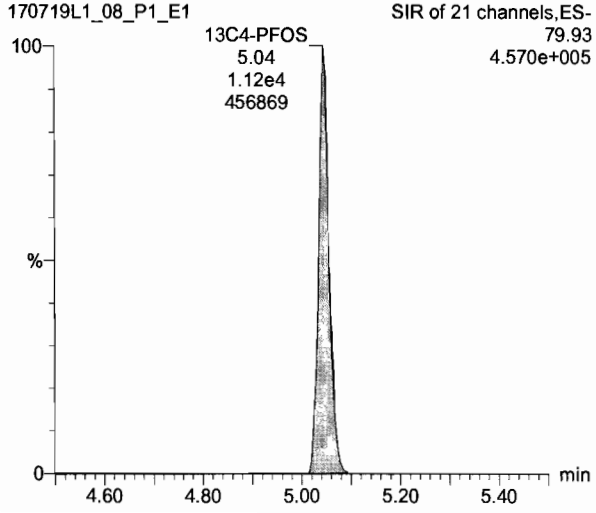

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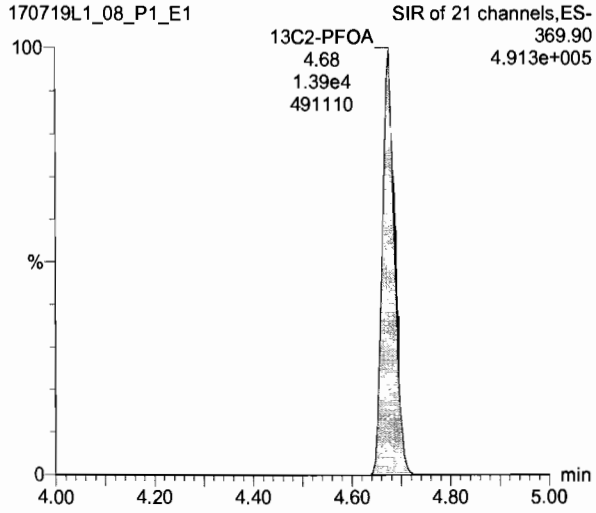

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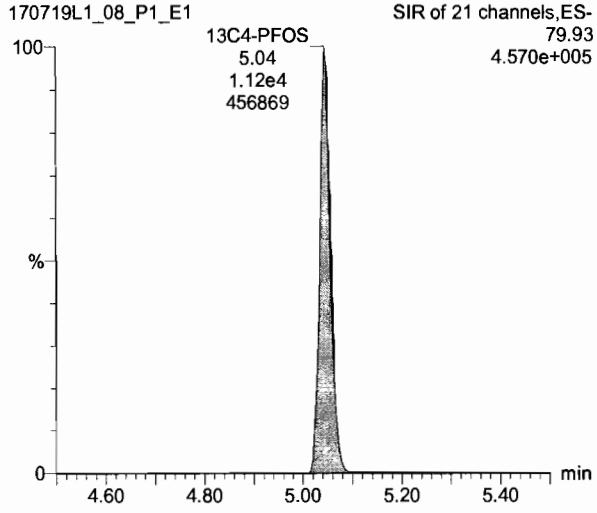

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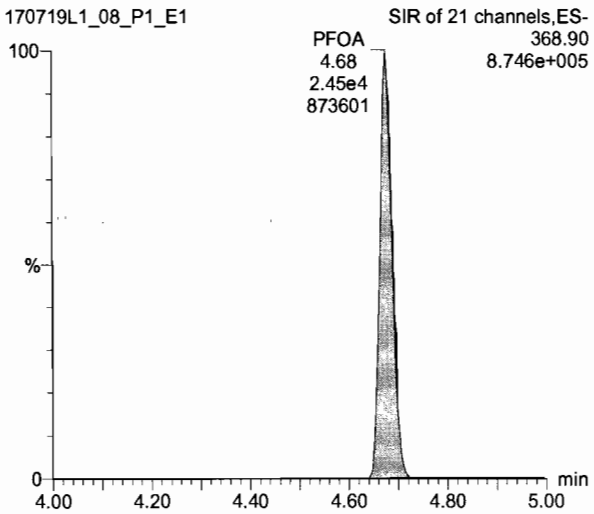
Name: 170719L1_08.wiff, Date: 19-Jul-2017, Time: 18:37:29, ID: ST170719L1-7 537 DW CS3 17G1920, Description: 537 DW CS3 17G1920

PFOA



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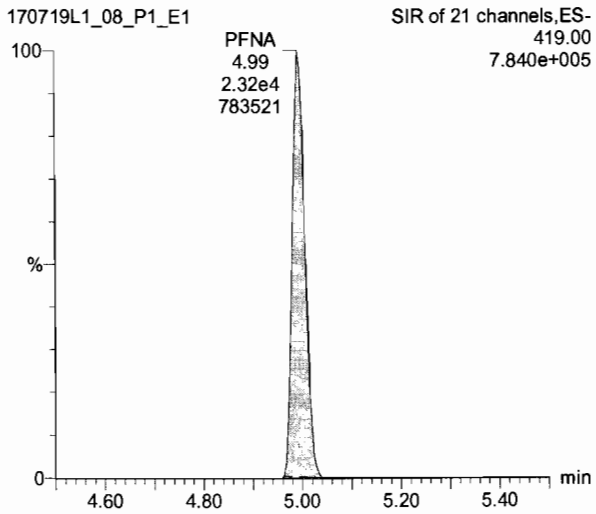

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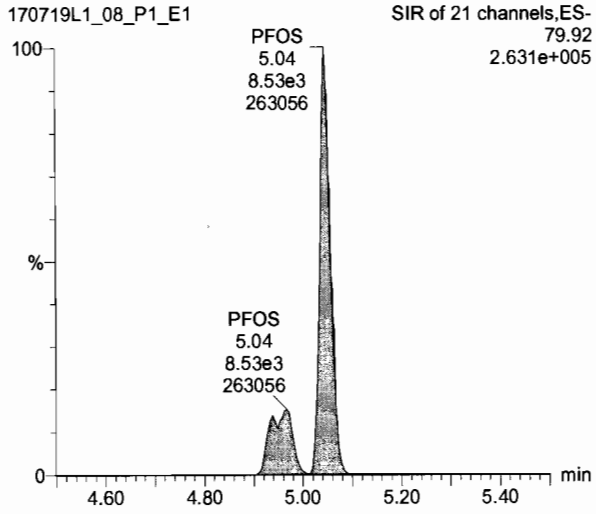

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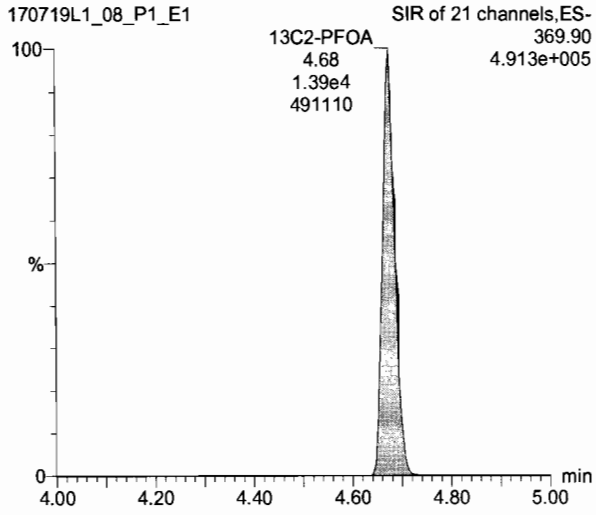

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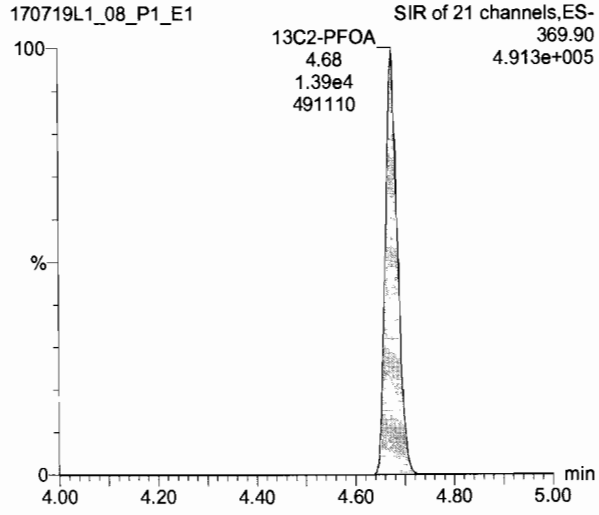

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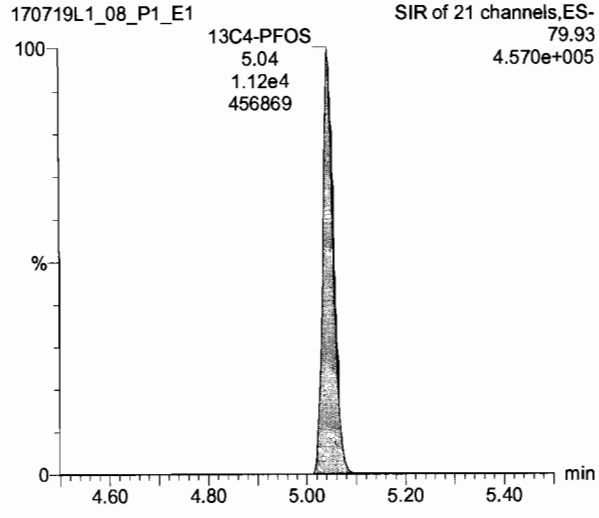

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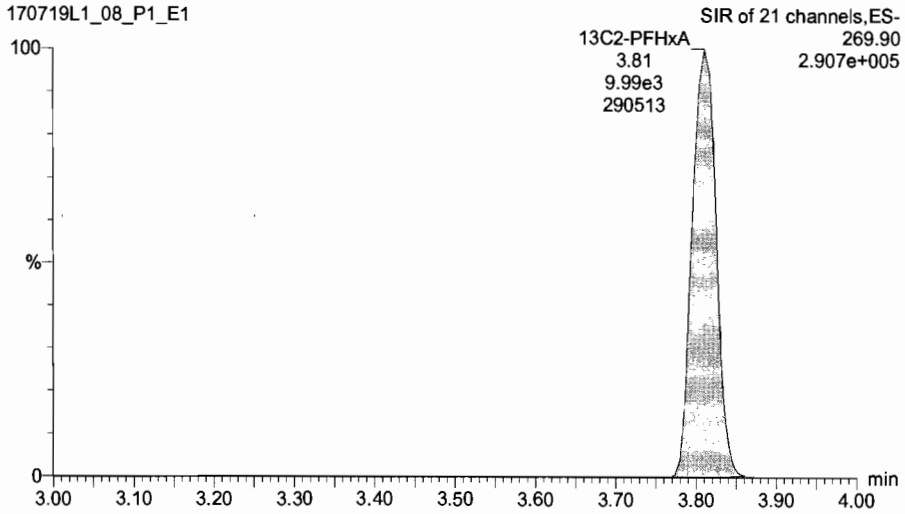
Name: 170719L1_08.wiff, Date: 19-Jul-2017, Time: 18:37:29, ID: ST170719L1-7 537 DW CS3 17G1920, Description: 537 DW CS3 17G1920

13C2-PFHxA



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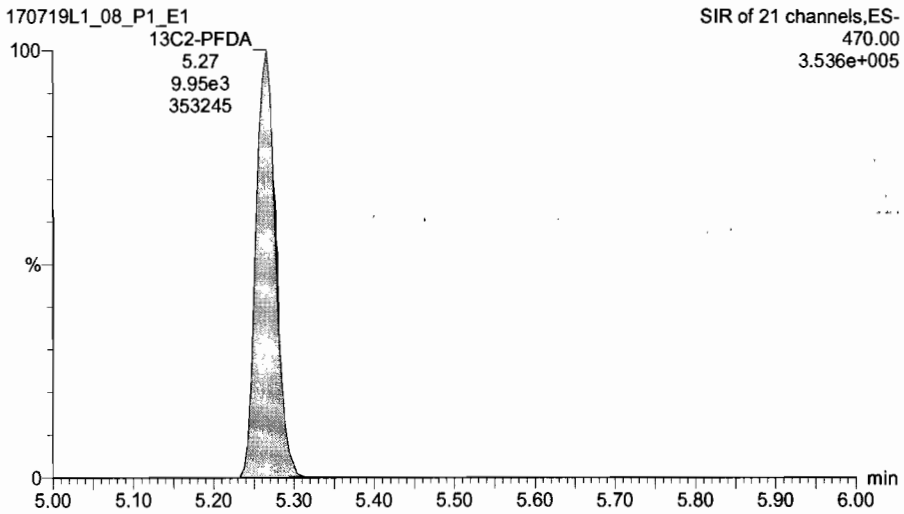
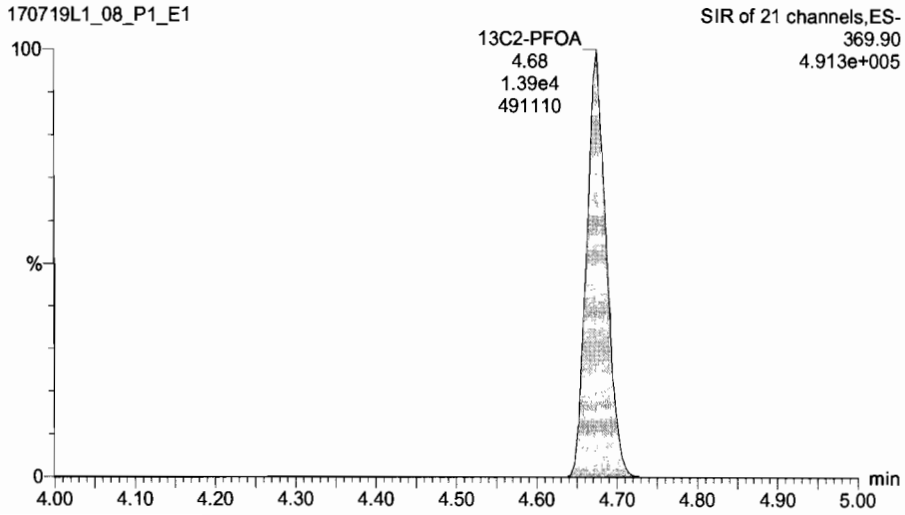


13C2-PFOA



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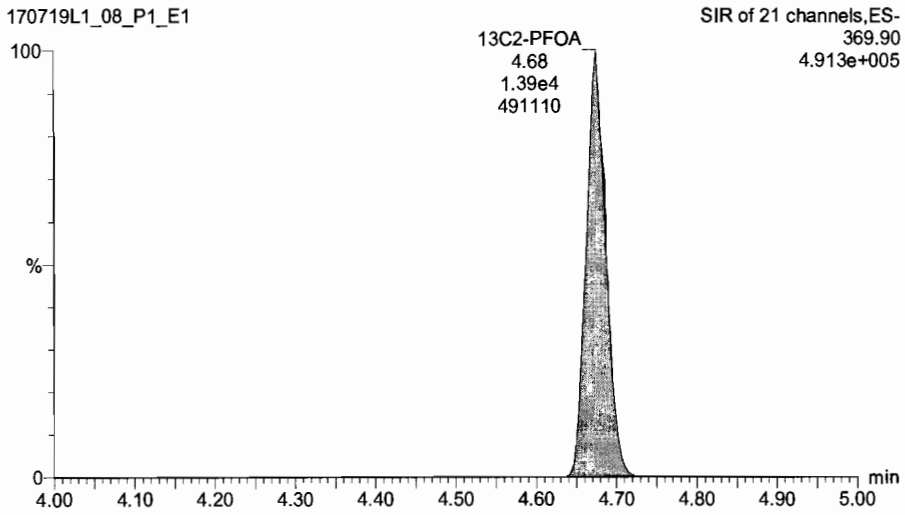
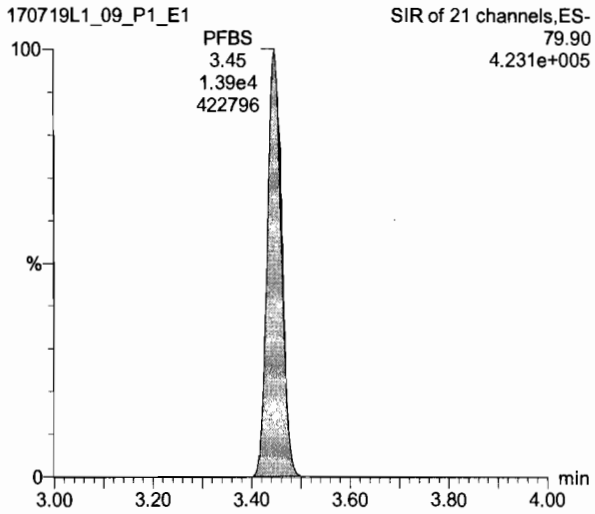


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_09.wiff, Date: 19-Jul-2017, Time: 18:49:44, ID: ST170719L1-8 537 DW CS4 17G1921, Description: 537 DW CS4 17G1921

PFBS



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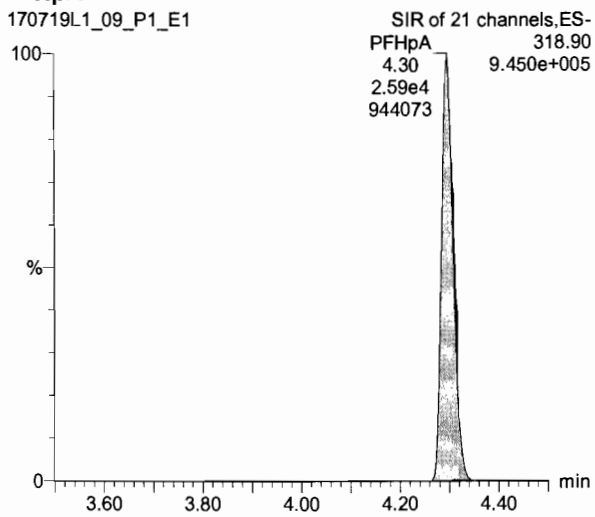

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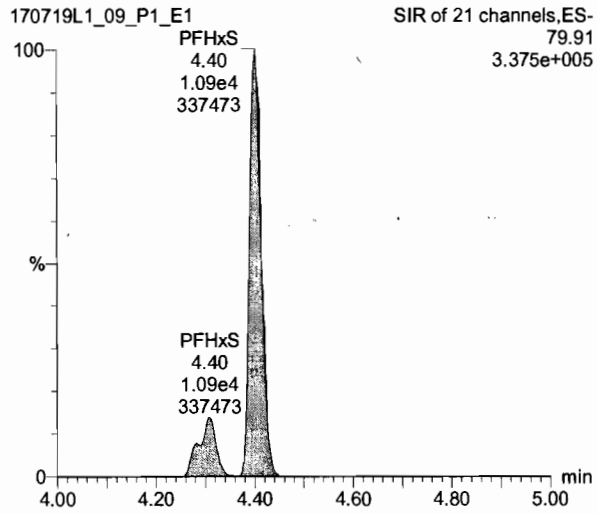

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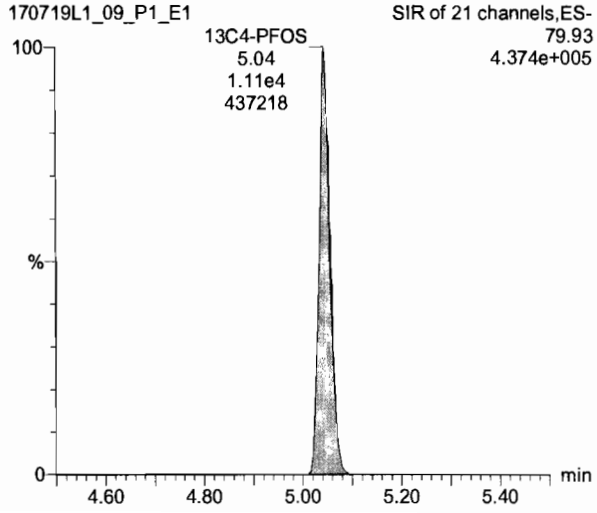

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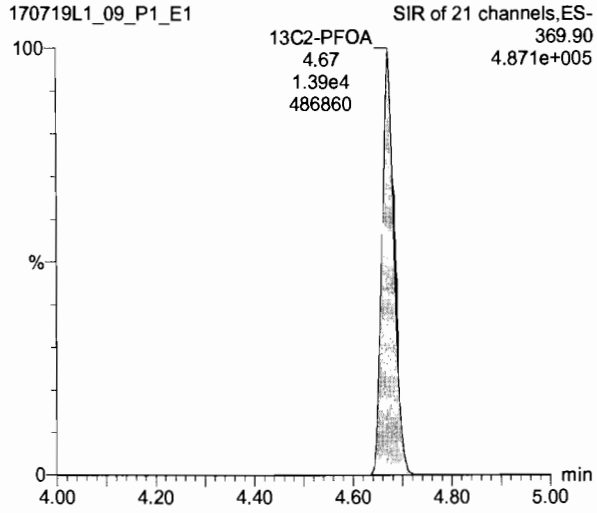

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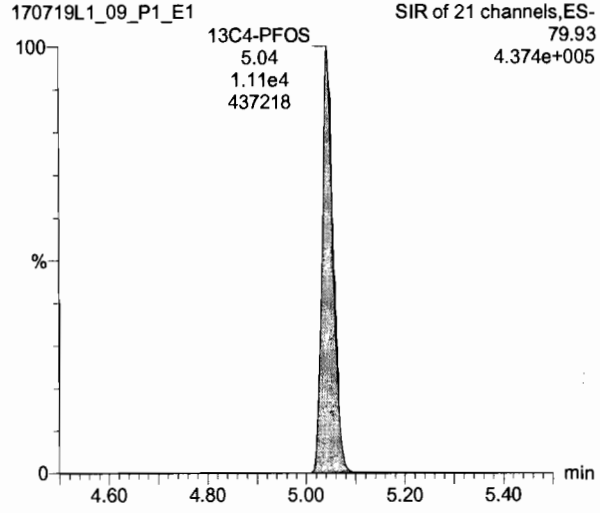

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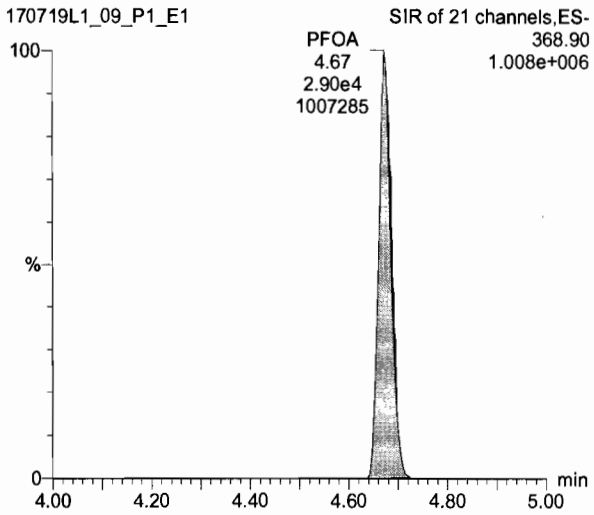
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_09.wiff, Date: 19-Jul-2017, Time: 18:49:44, ID: ST170719L1-8 537 DW CS4 17G1921, Description: 537 DW CS4 17G1921

PFOA



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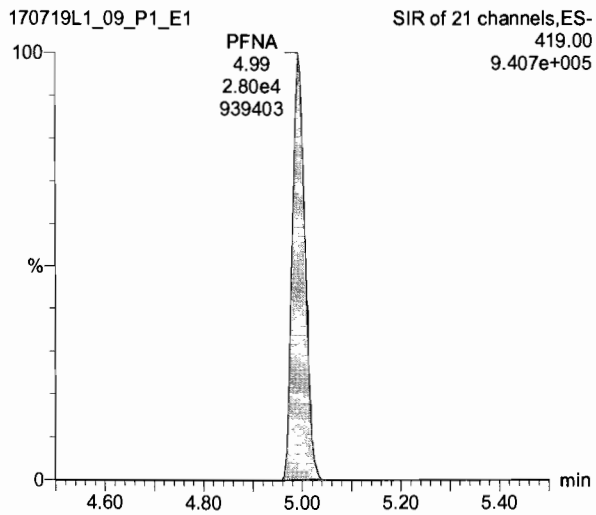

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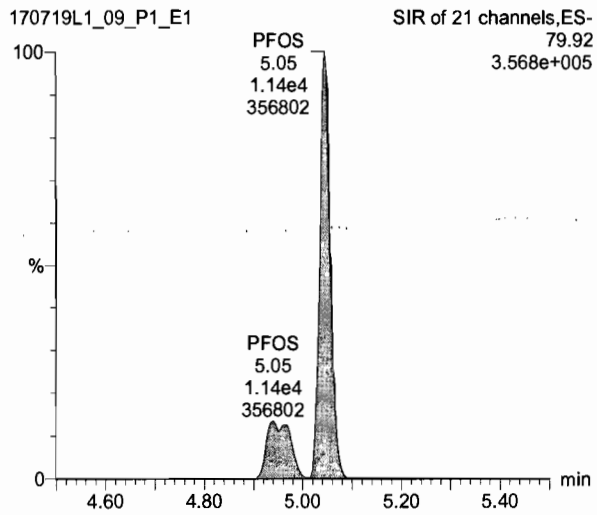

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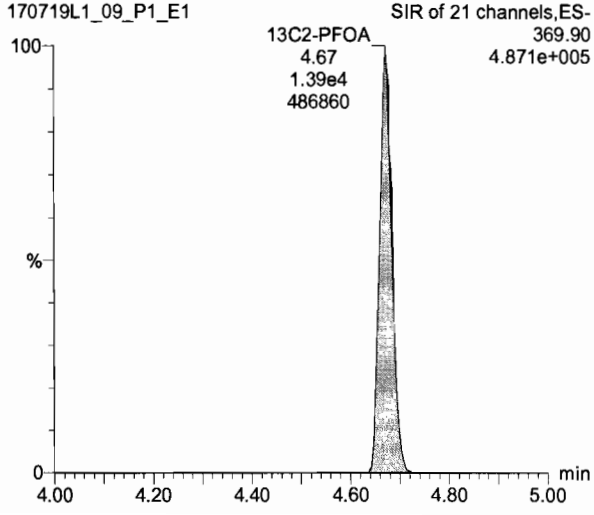

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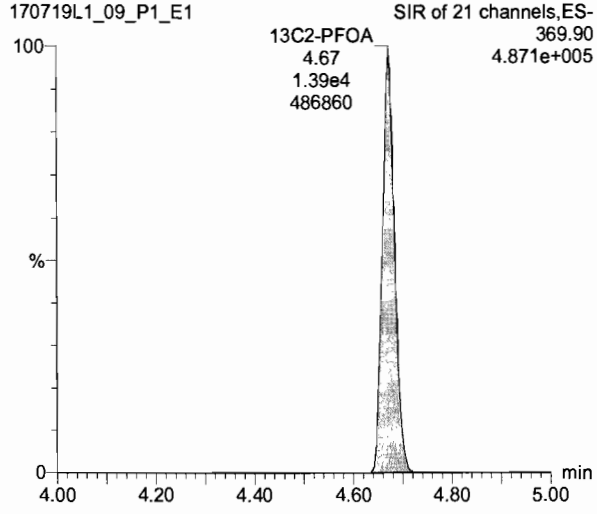

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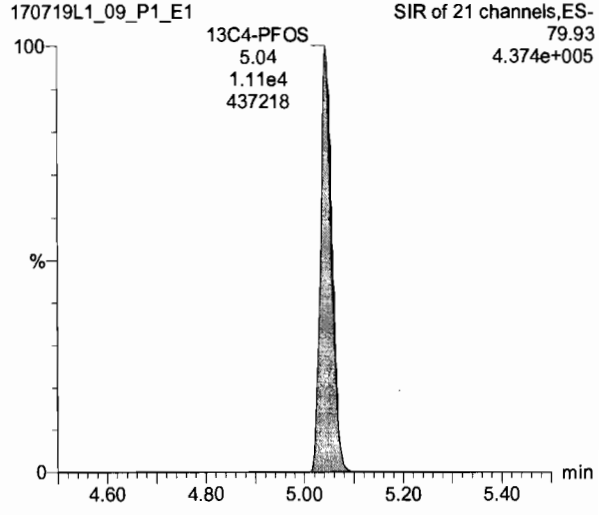

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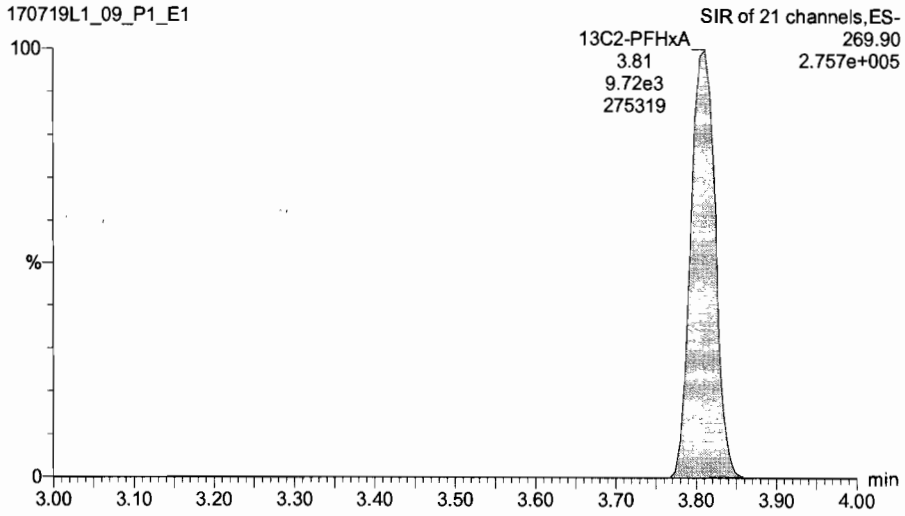
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_09.wiff, Date: 19-Jul-2017, Time: 18:49:44, ID: ST170719L1-8 537 DW CS4 17G1921, Description: 537 DW CS4 17G1921

13C2-PFHxA



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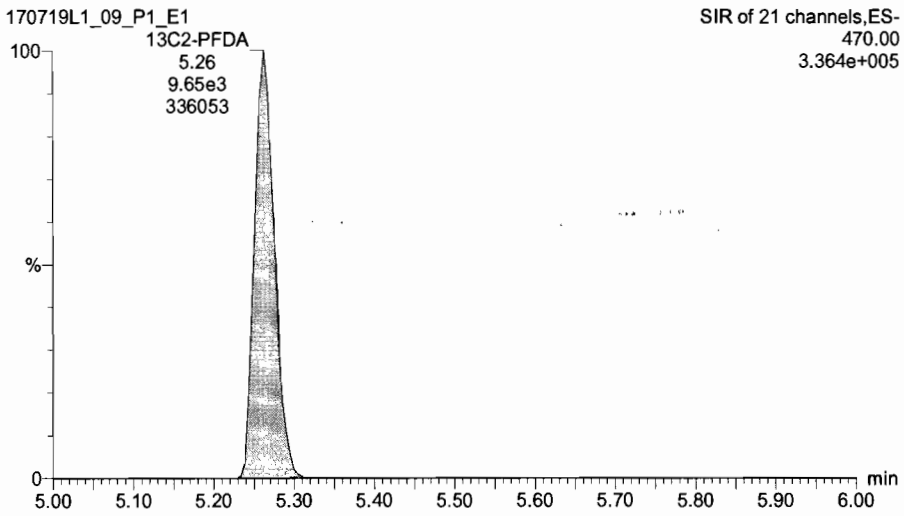

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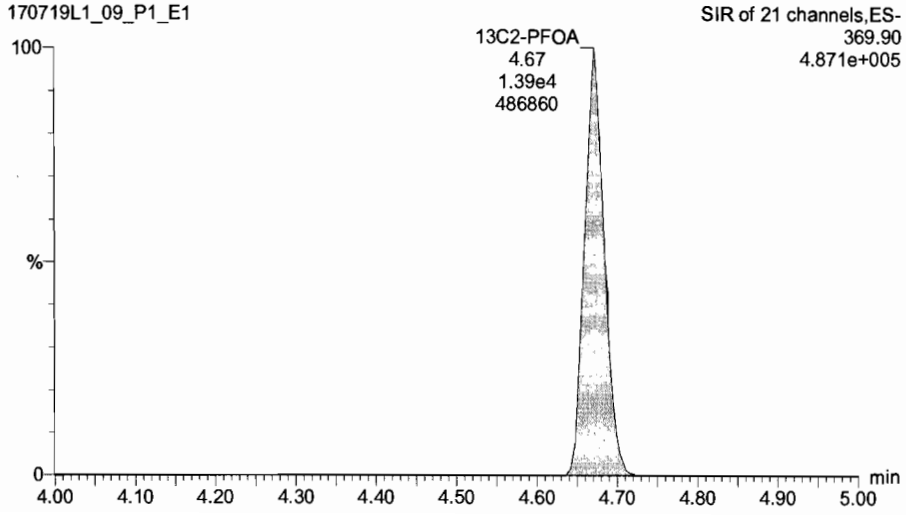

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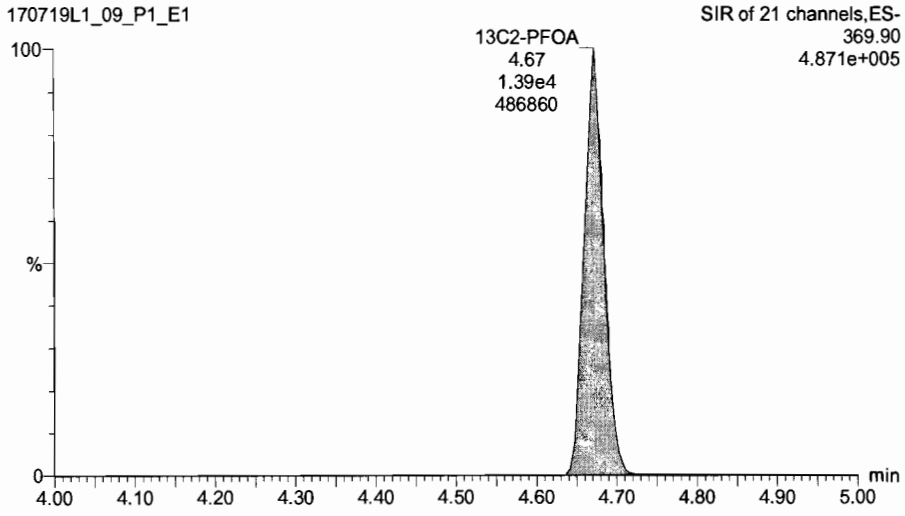

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Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
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Name: 170719L1_10.wiff, Date: 19-Jul-2017, Time: 19:01:58, ID: ST170719L1-9 537 DW CS5 17G1922, Description: 537 DW CS5 17G1922

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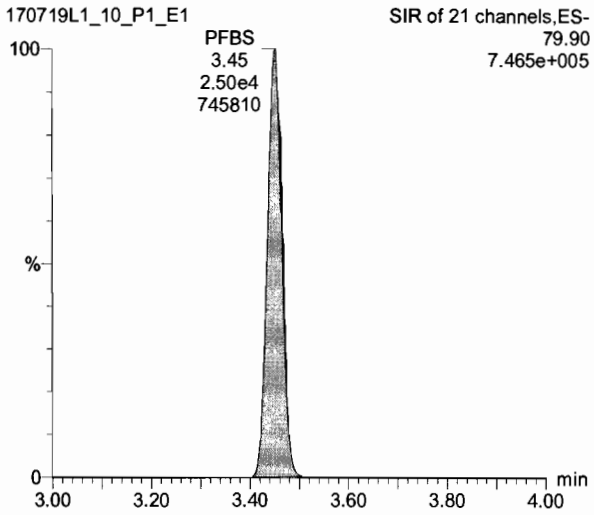

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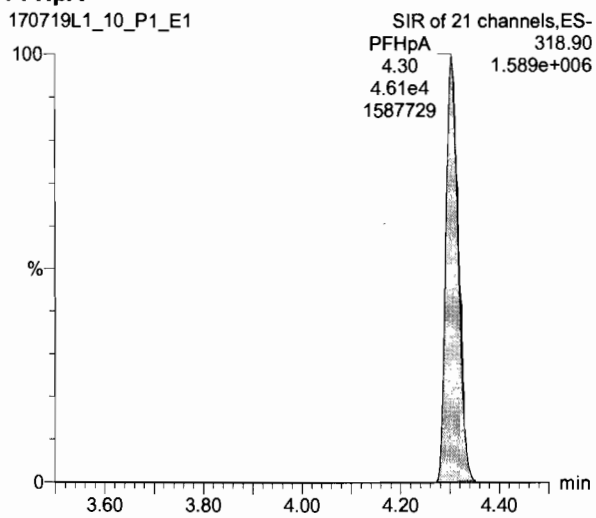

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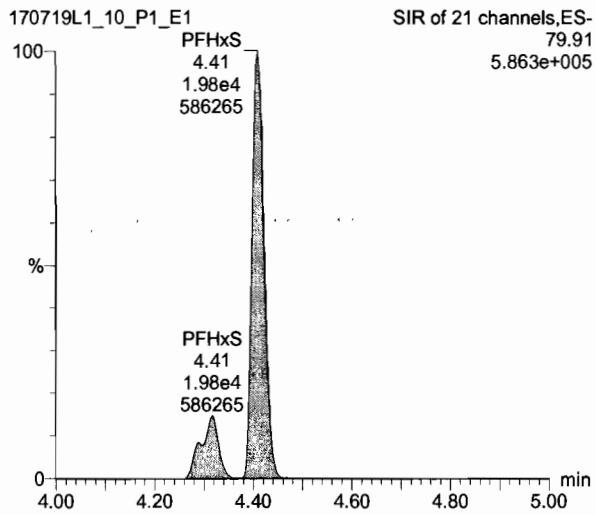

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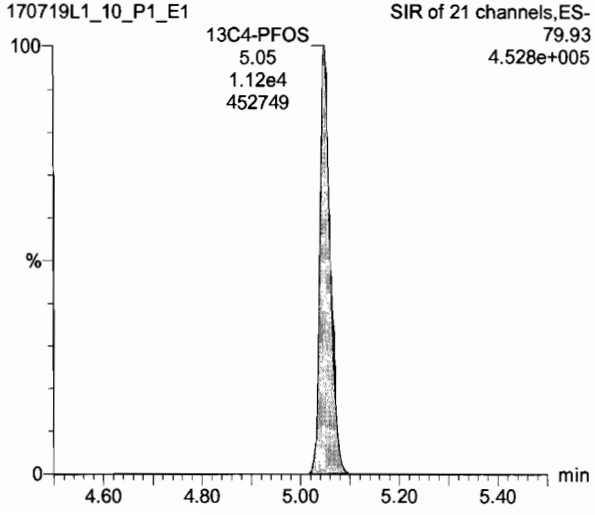

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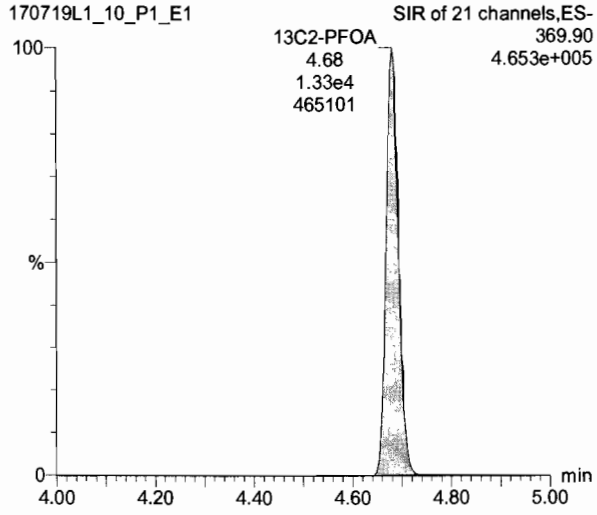

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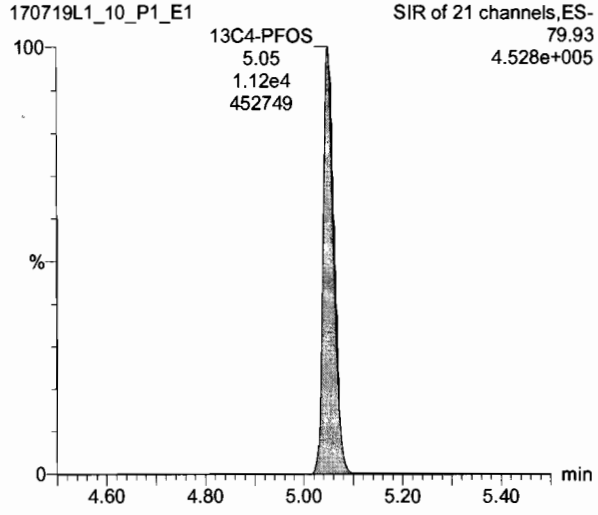

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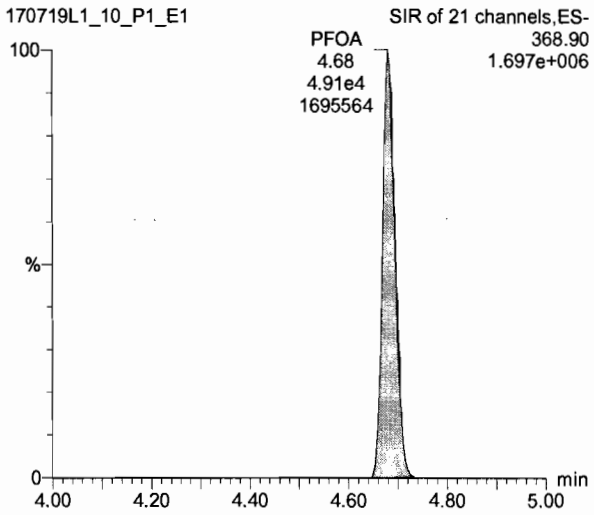
Name: 170719L1_10.wiff, Date: 19-Jul-2017, Time: 19:01:58, ID: ST170719L1-9 537 DW CS5 17G1922, Description: 537 DW CS5 17G1922

PFOA



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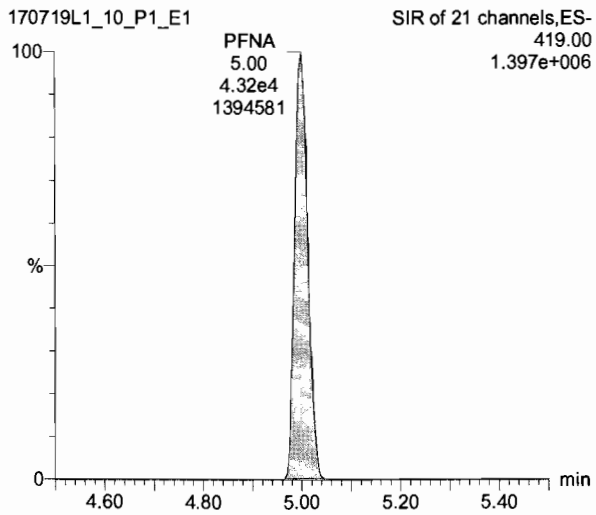

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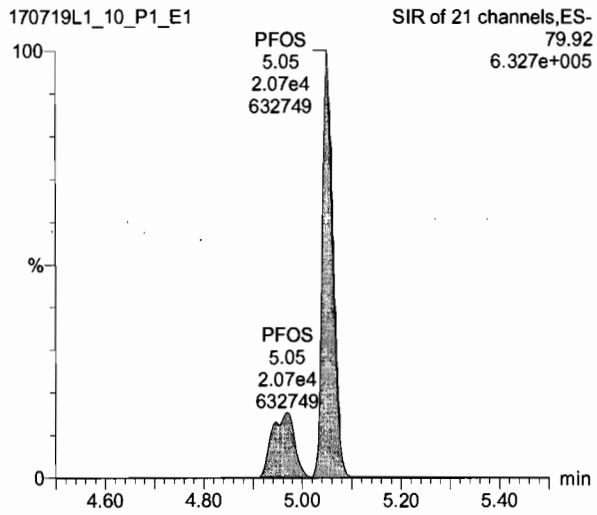

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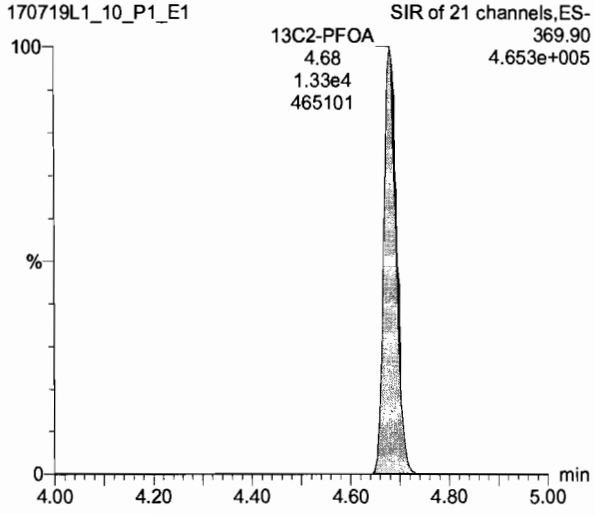

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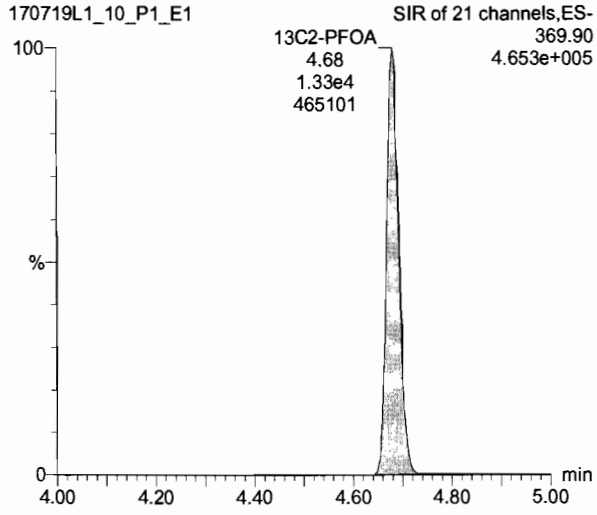

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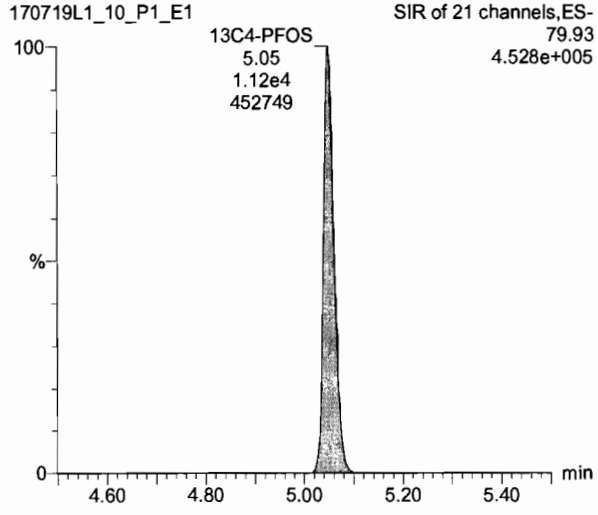

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

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Name: 170719L1_10.wiff, Date: 19-Jul-2017, Time: 19:01:58, ID: ST170719L1-9 537 DW CS5 17G1922, Description: 537 DW CS5 17G1922

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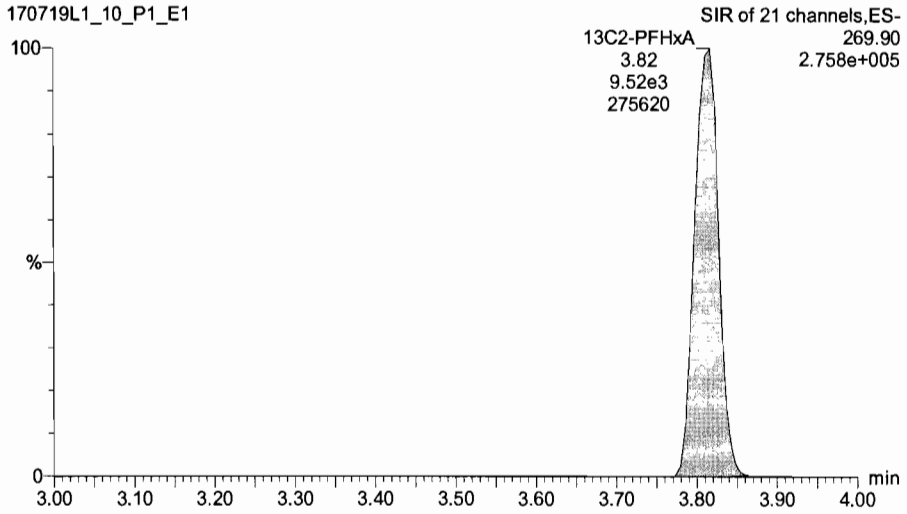

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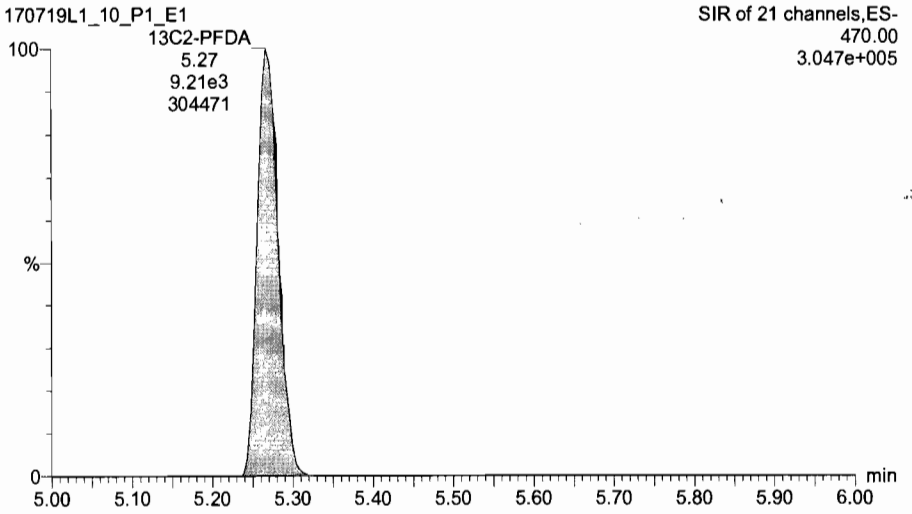

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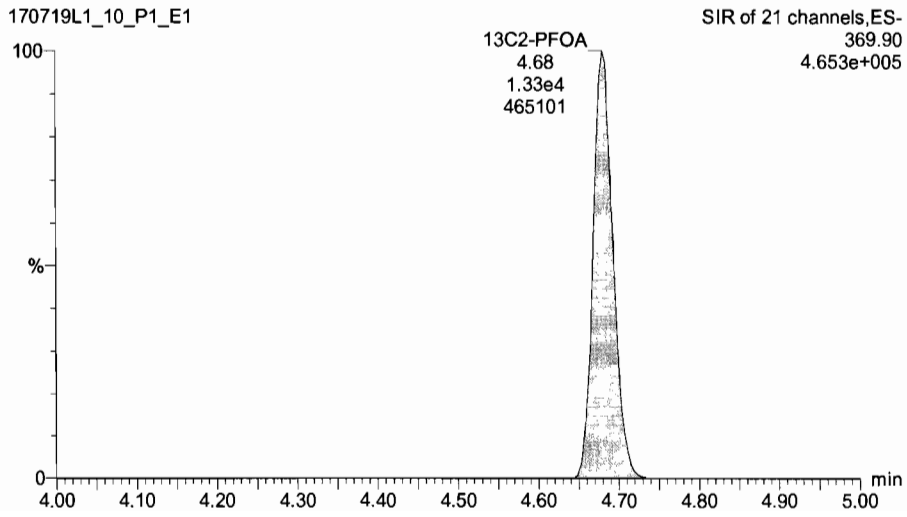

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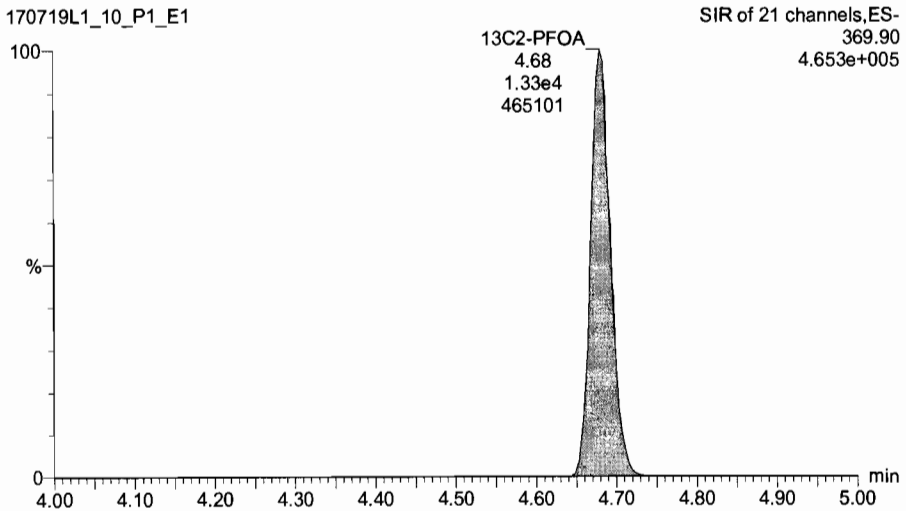

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

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Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: 20 Jul 2017 09:27:40

Name: 170719L1_04.wiff, Date: 19-Jul-2017, Time: 17:48:34, ID: ST170719L1-3 537 DW CS(-1) 17G1916, Description: 537 DW CS(-1) 17G1916

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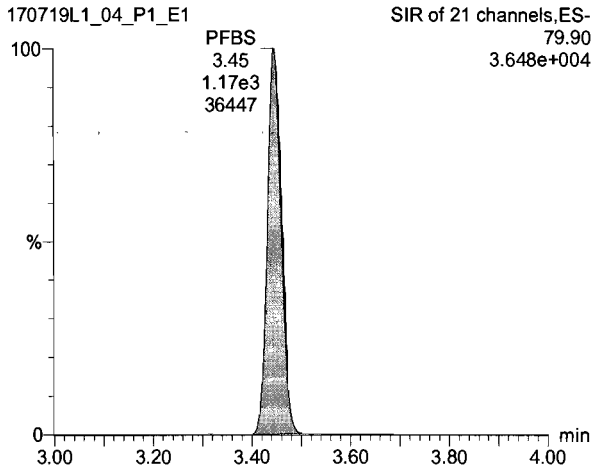
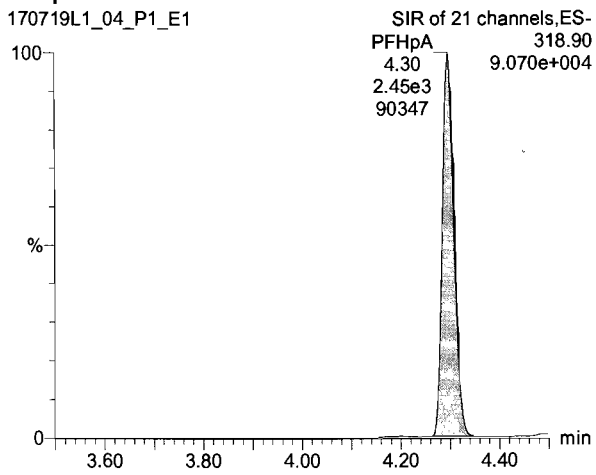


PFHpA



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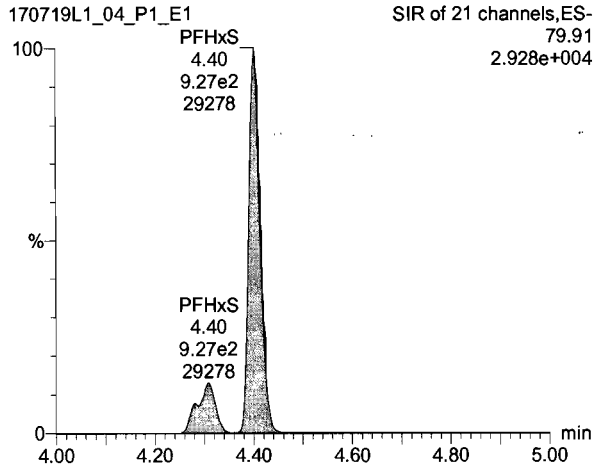

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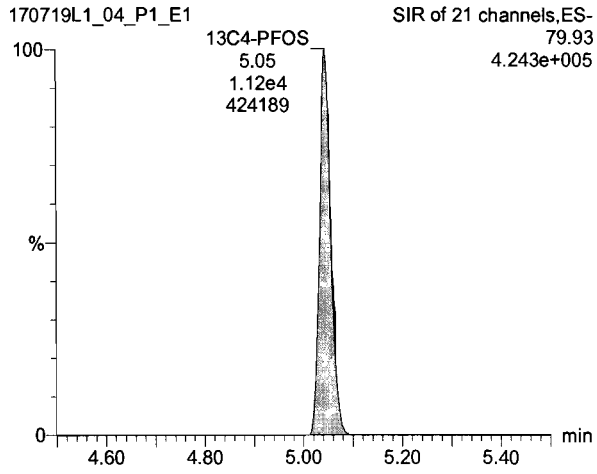

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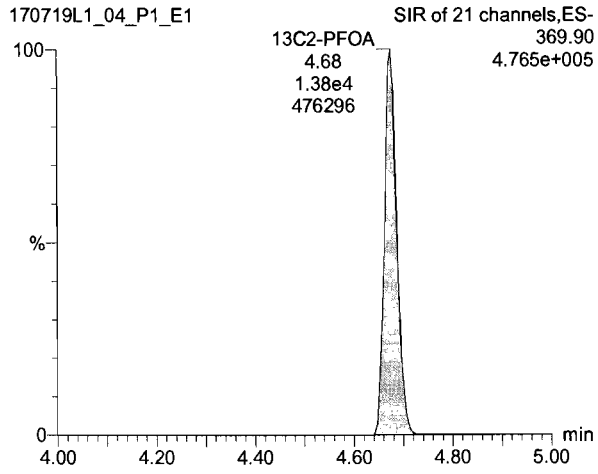

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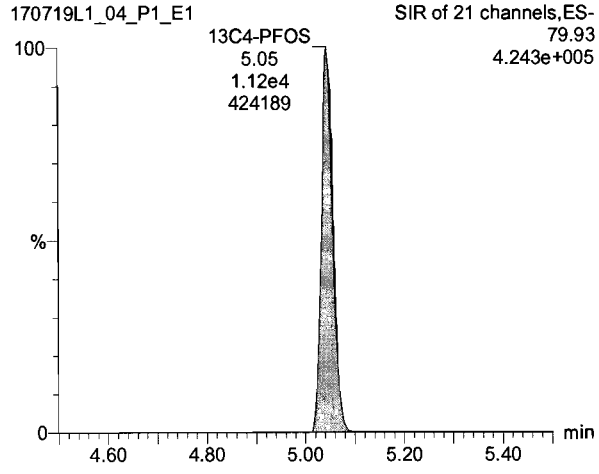

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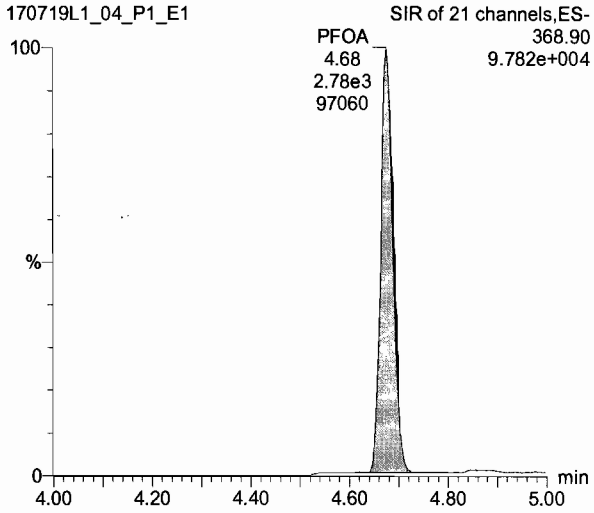
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_04.wiff, Date: 19-Jul-2017, Time: 17:48:34, ID: ST170719L1-3 537 DW CS(-1) 17G1916, Description: 537 DW CS(-1) 17G1916

PFOA



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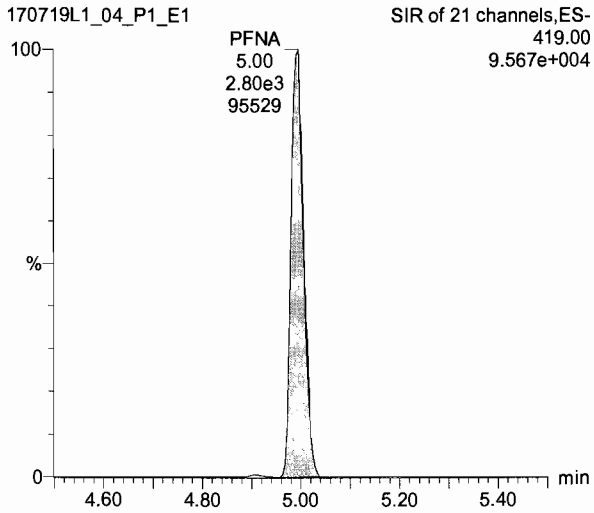

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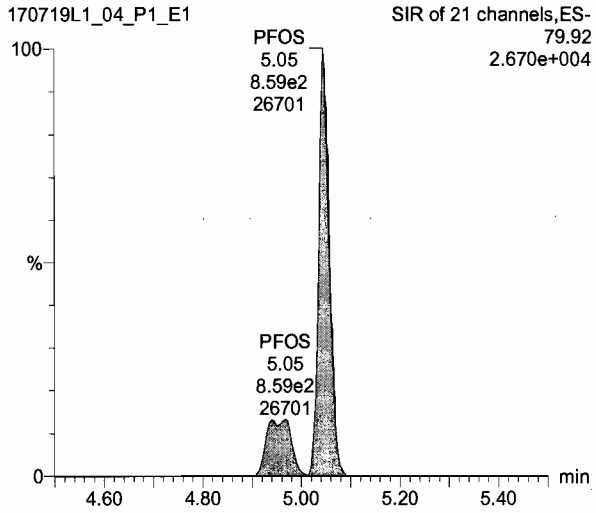

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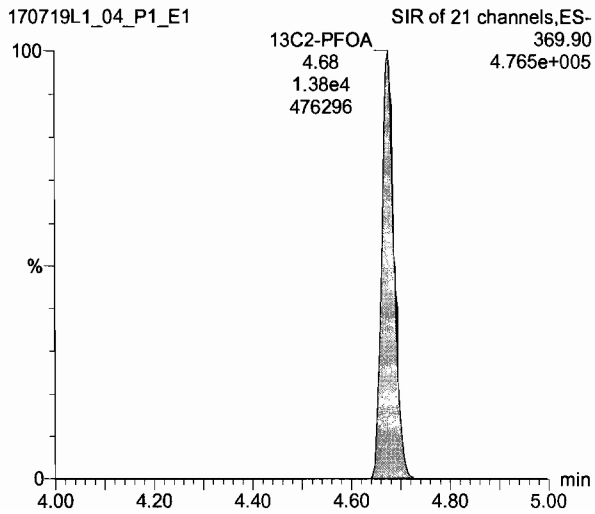

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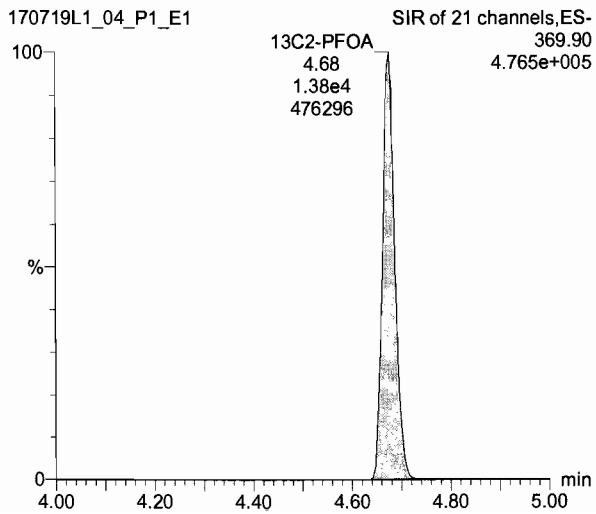

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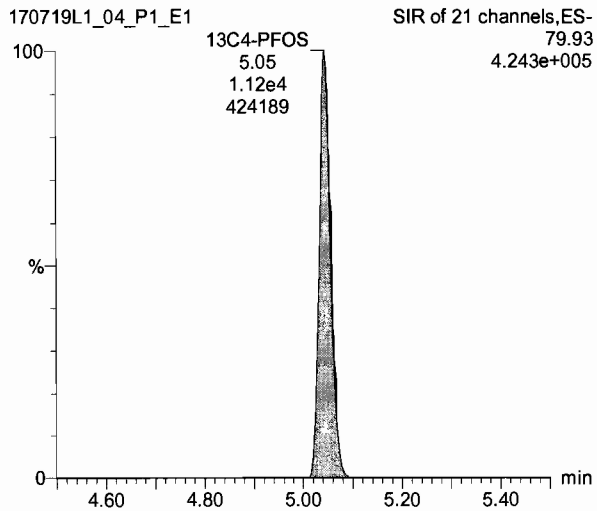

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Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
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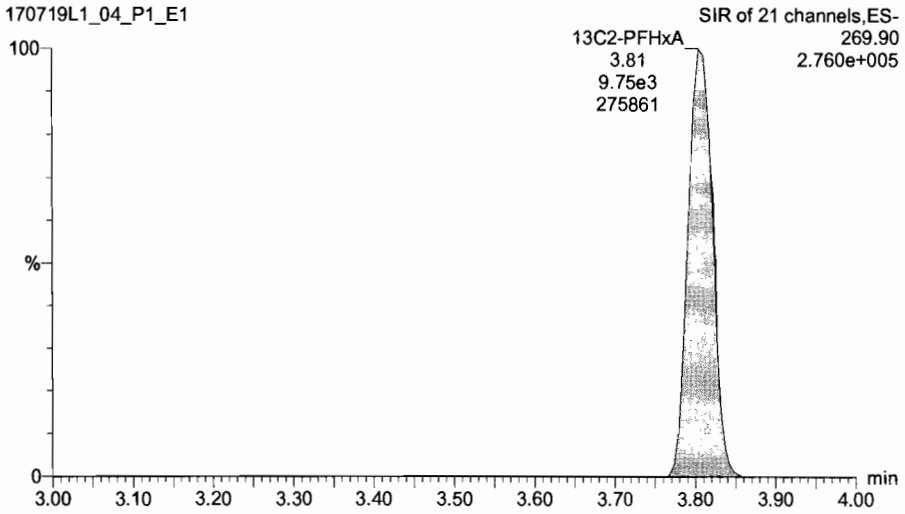
Name: 170719L1_04.wiff, Date: 19-Jul-2017, Time: 17:48:34, ID: ST170719L1-3 537 DW CS(-1) 17G1916, Description: 537 DW CS(-1) 17G1916

13C2-PFHxA



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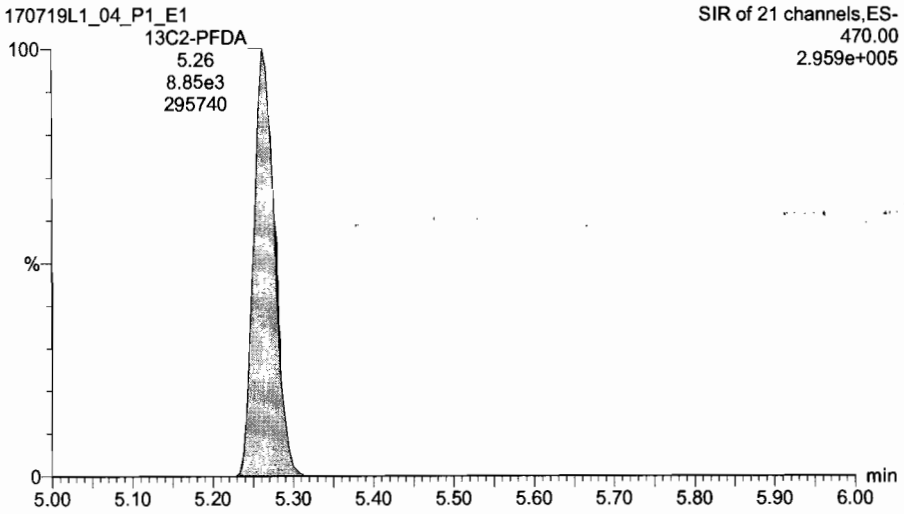

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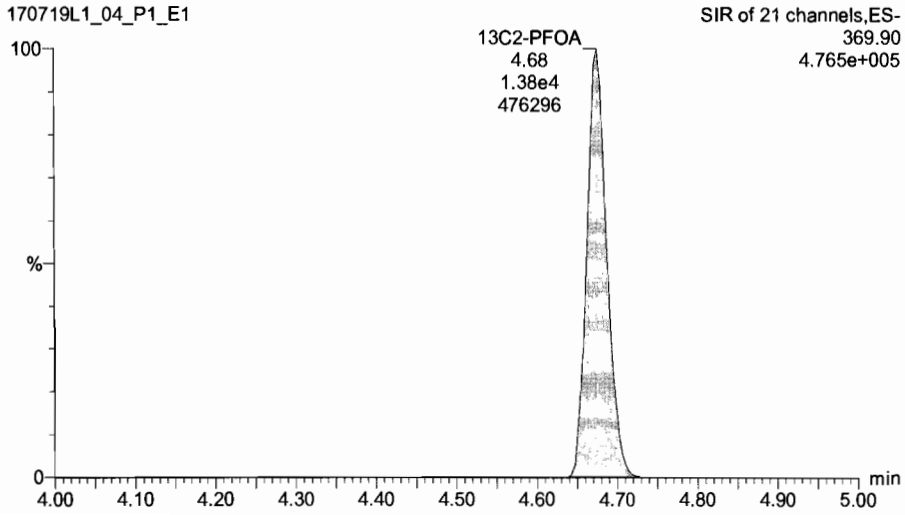

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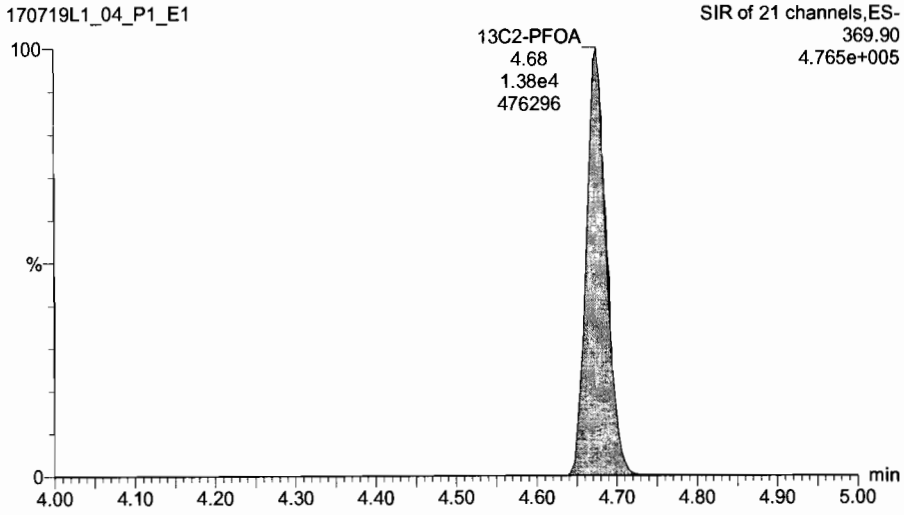

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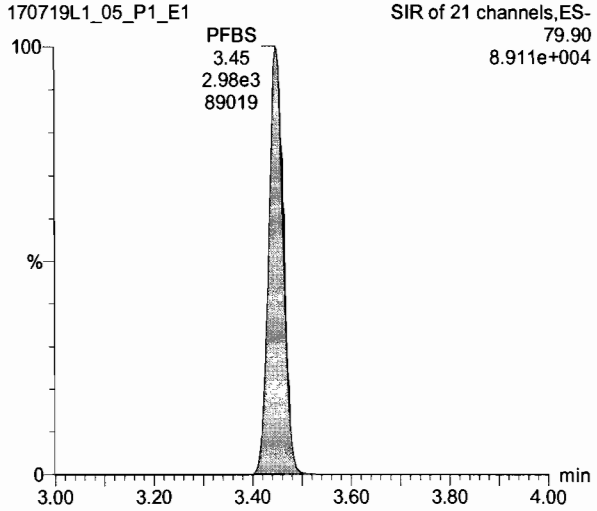
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_05.wiff, Date: 19-Jul-2017, Time: 18:00:46, ID: ST170719L1-4 537 DW CS(0) 17G1917, Description: 537 DW CS0 17G1917

PFBS



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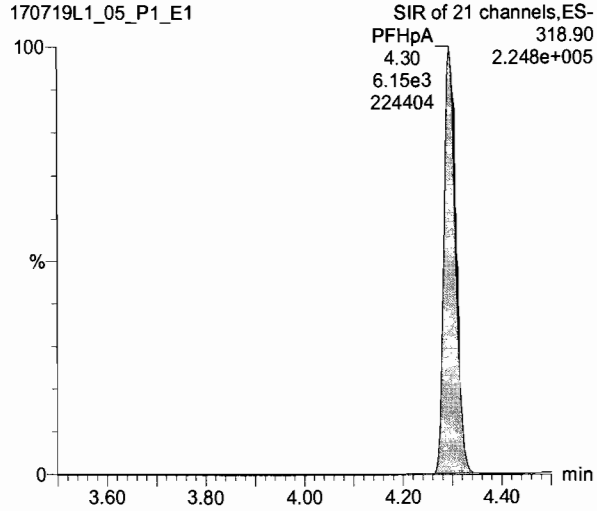

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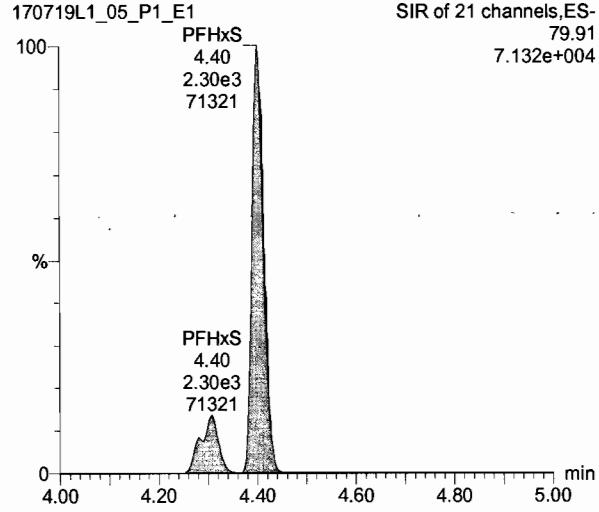

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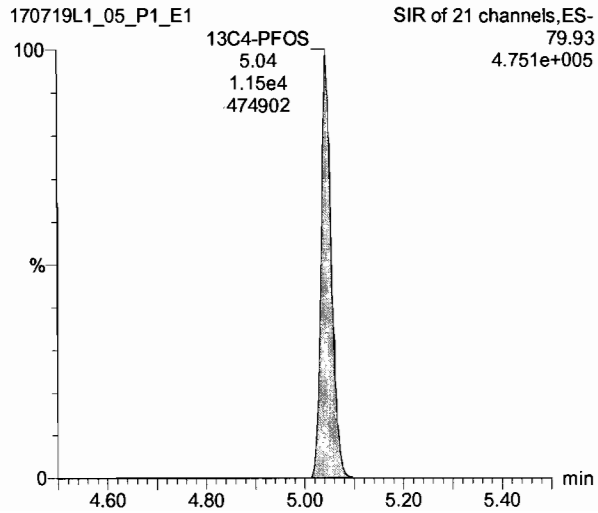

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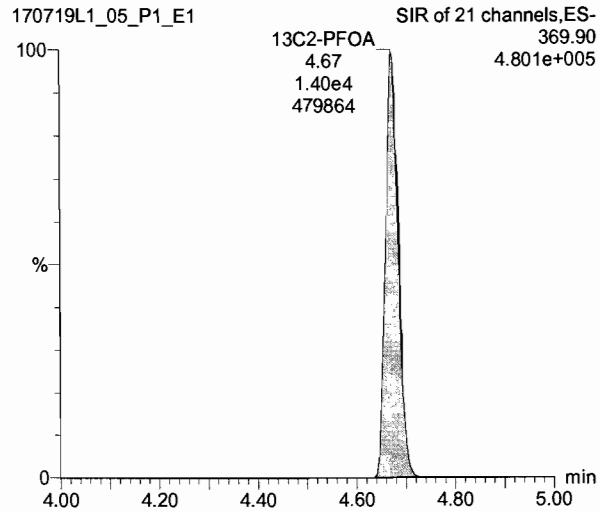

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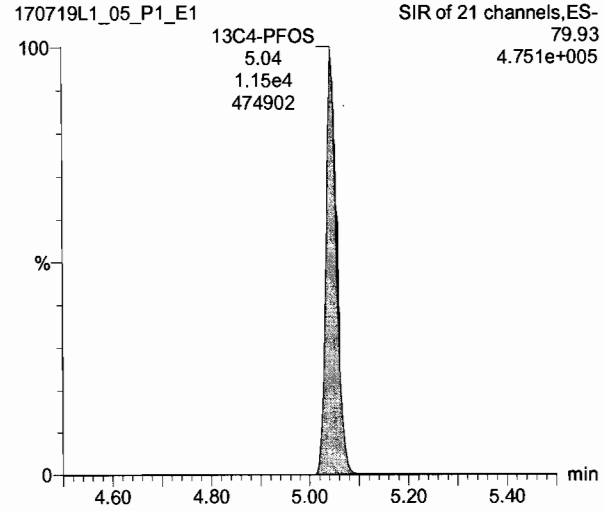
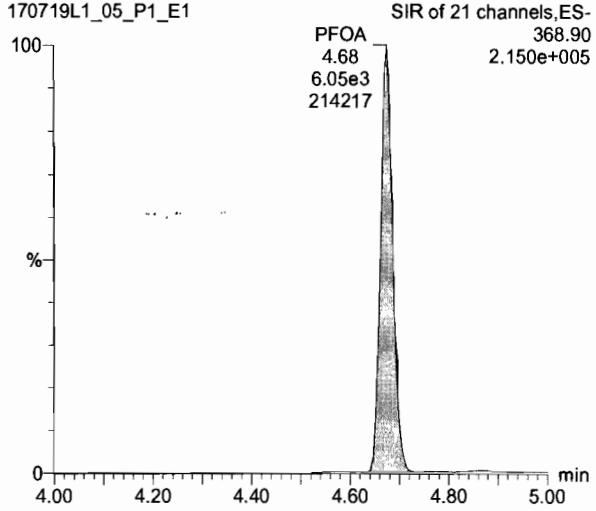


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_05.wiff, Date: 19-Jul-2017, Time: 18:00:46, ID: ST170719L1-4 537 DW CS(0) 17G1917, Description: 537 DW CS0 17G1917

PFOA



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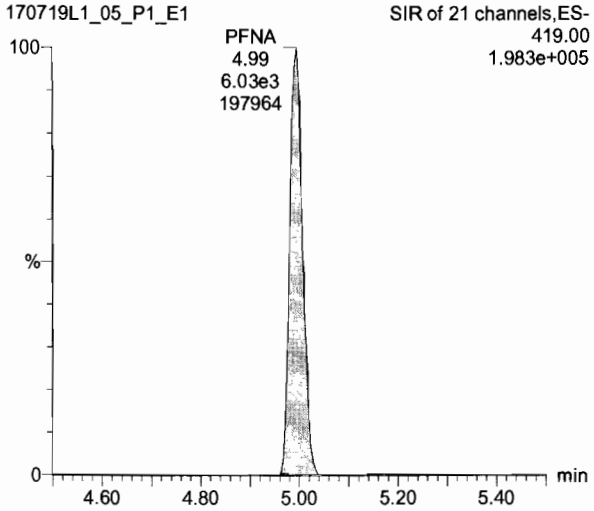

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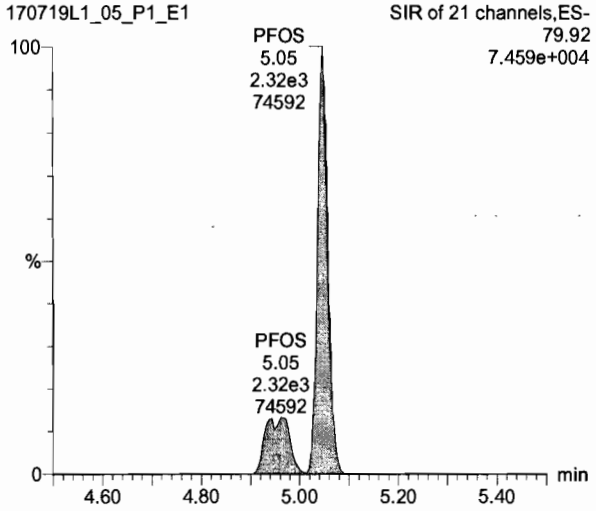

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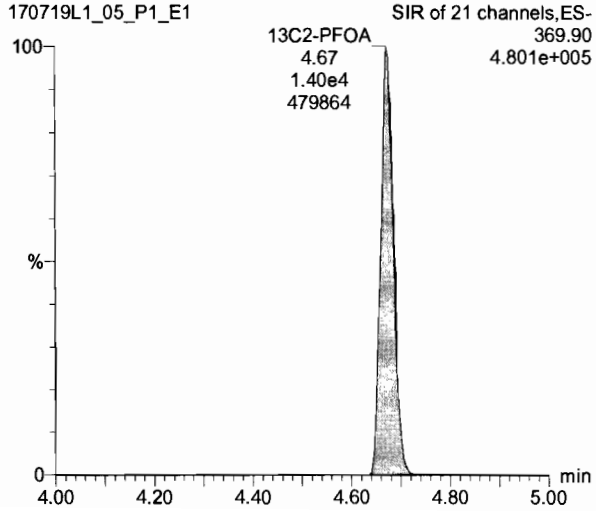

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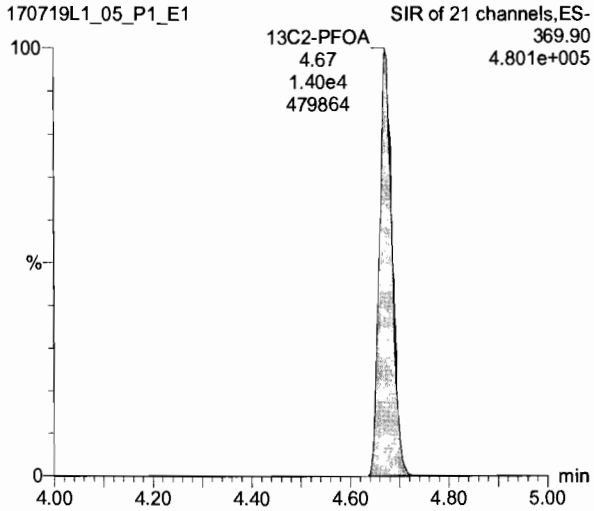

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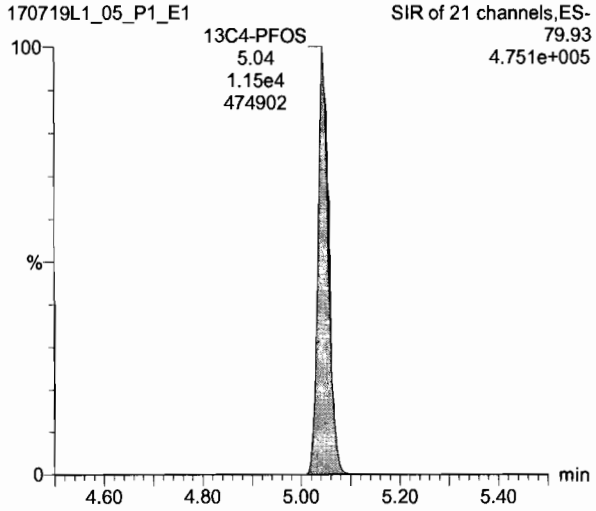


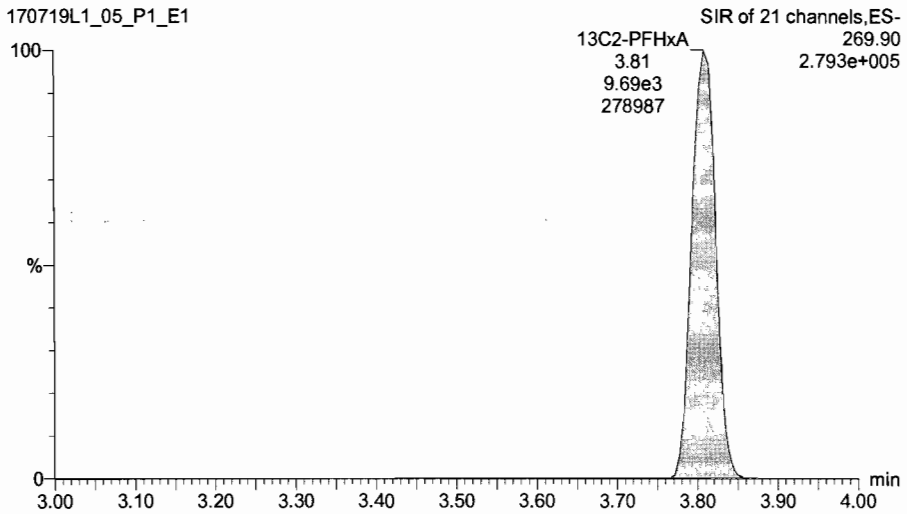
Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_05.wiff, Date: 19-Jul-2017, Time: 18:00:46, ID: ST170719L1-4 537 DW CS(0) 17G1917, Description: 537 DW CS0 17G1917

13C2-PFHxA



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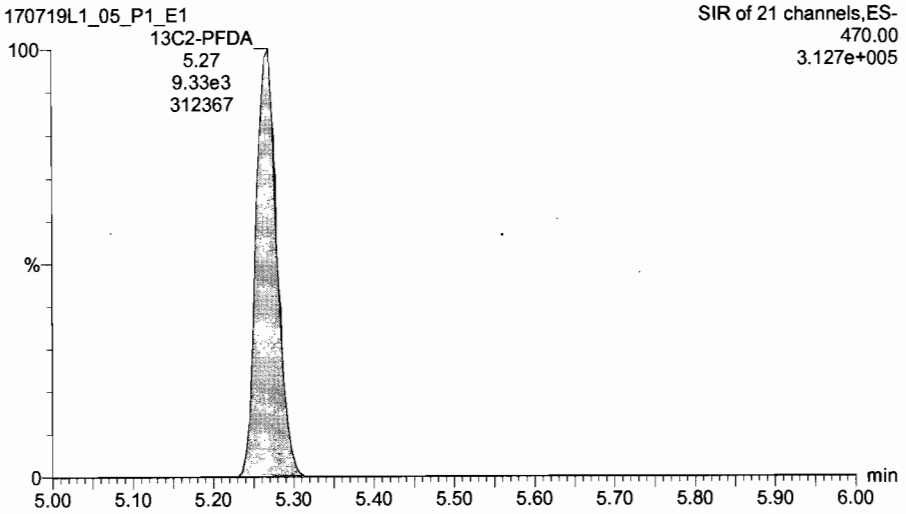

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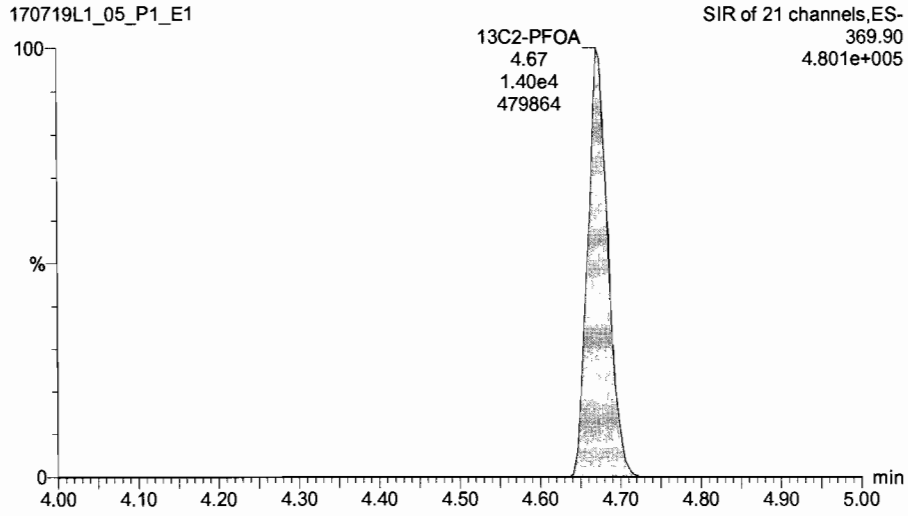

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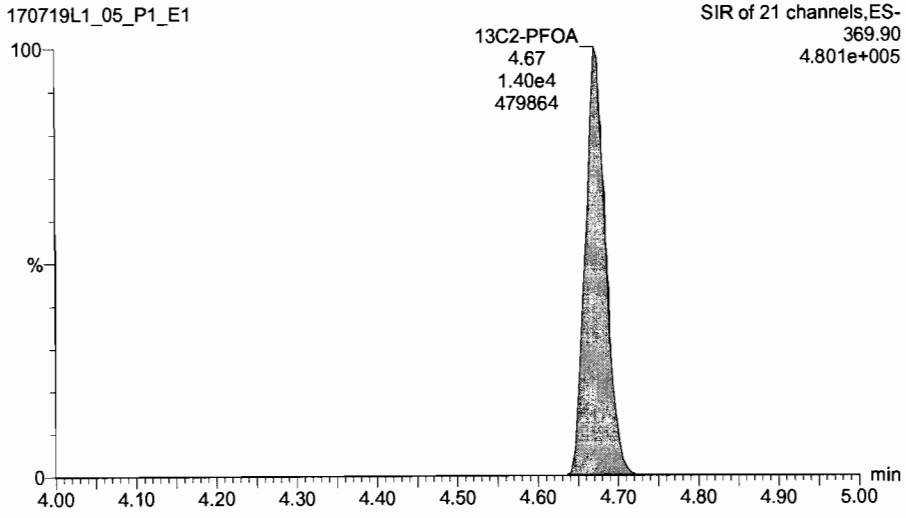

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
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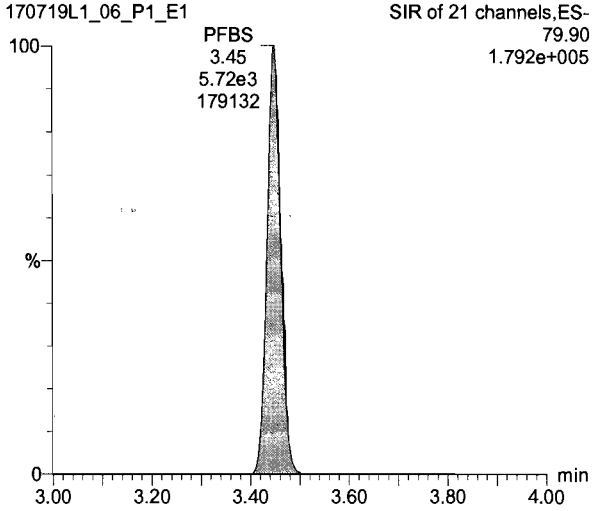
Name: 170719L1_06.wiff, Date: 19-Jul-2017, Time: 18:13:02, ID: ST170719L1-5 537 DW CS1 17G1918, Description: 537 DW CS1 17G1918

PFBS



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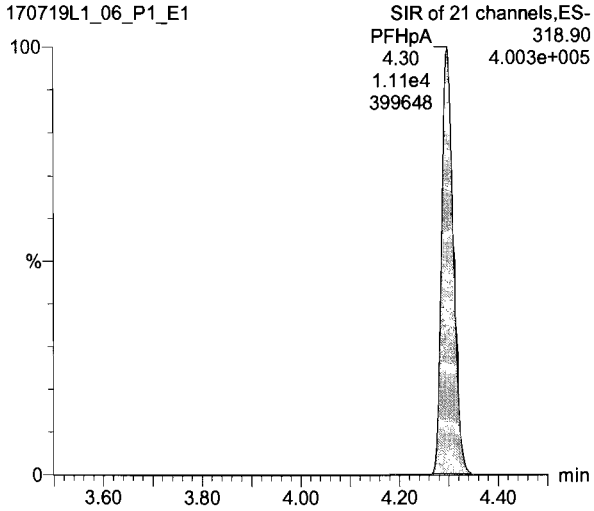

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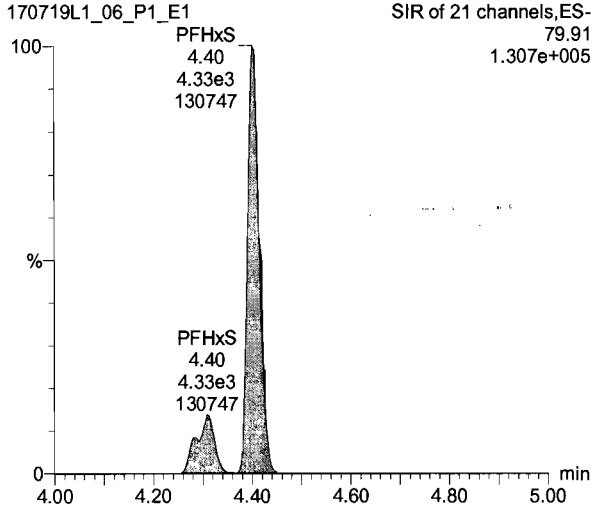

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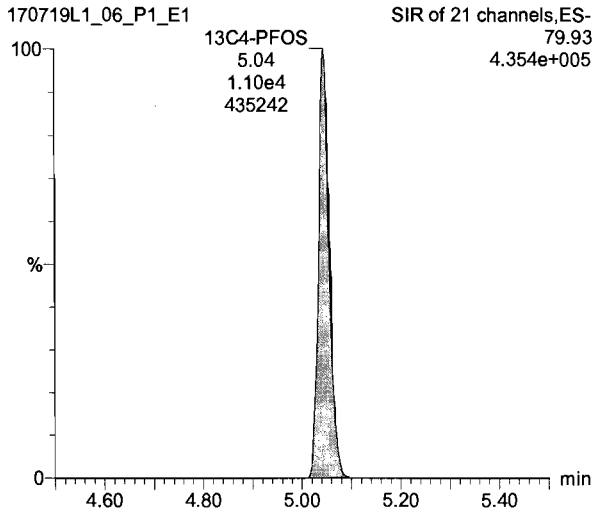

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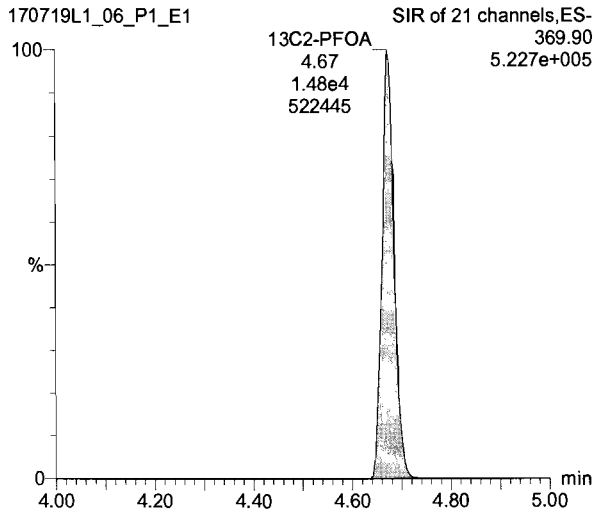

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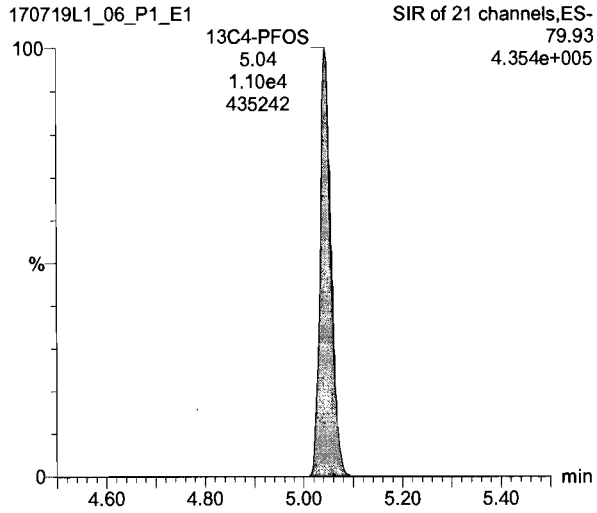


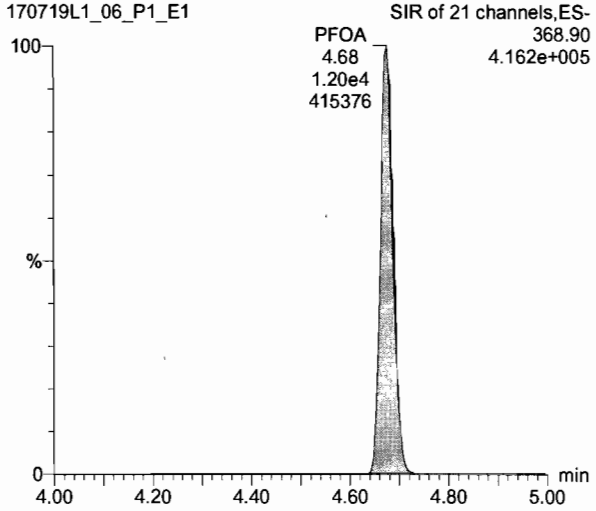
Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_06.wiff, Date: 19-Jul-2017, Time: 18:13:02, ID: ST170719L1-5 537 DW CS1 17G1918, Description: 537 DW CS1 17G1918

PFOA



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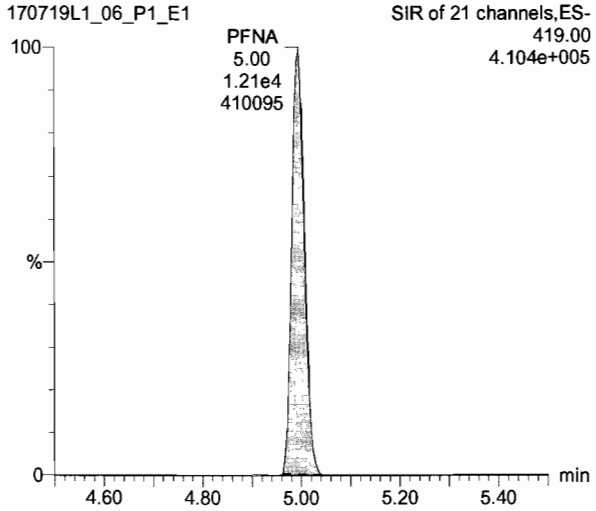

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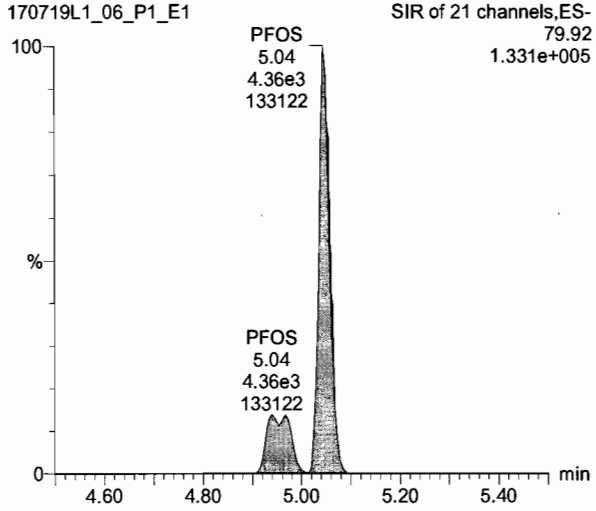

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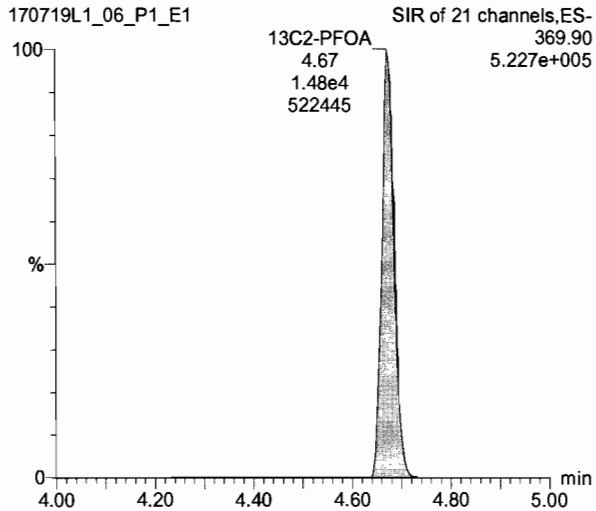

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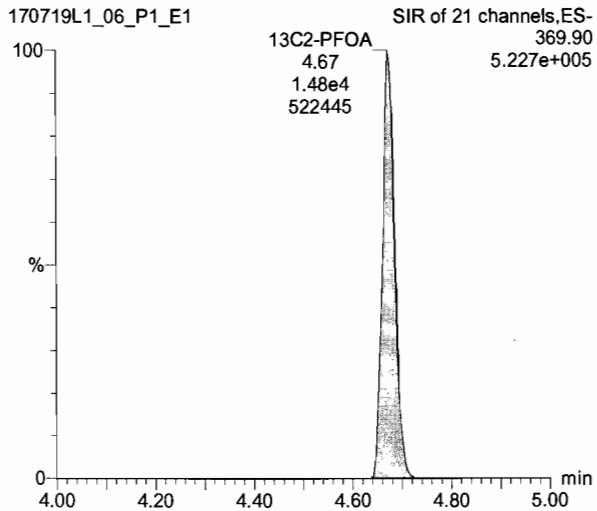

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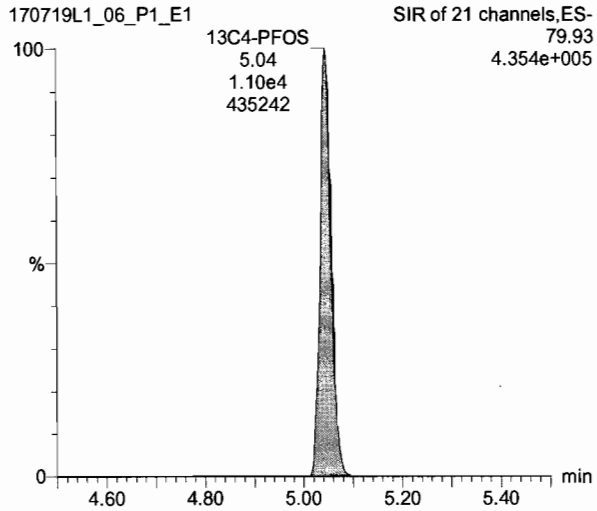

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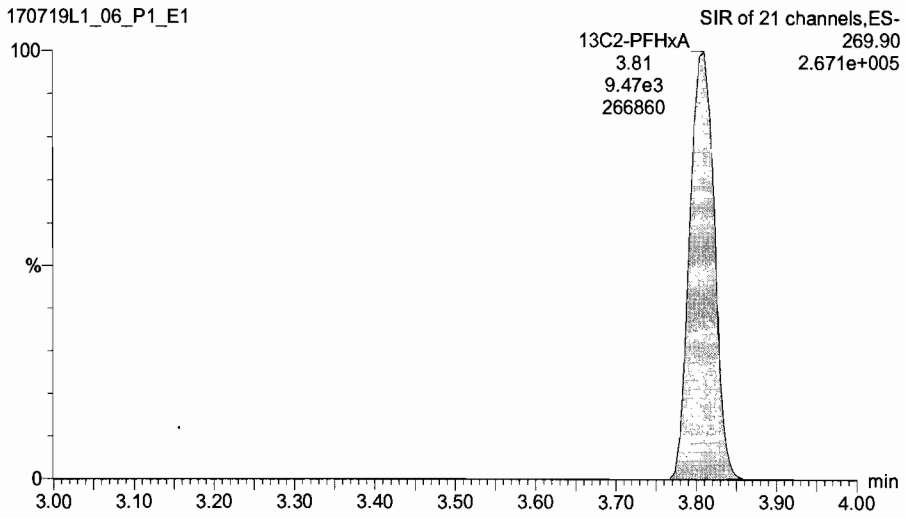
Name: 170719L1_06.wiff, Date: 19-Jul-2017, Time: 18:13:02, ID: ST170719L1-5 537 DW CS1 17G1918, Description: 537 DW CS1 17G1918

13C2-PFHxA



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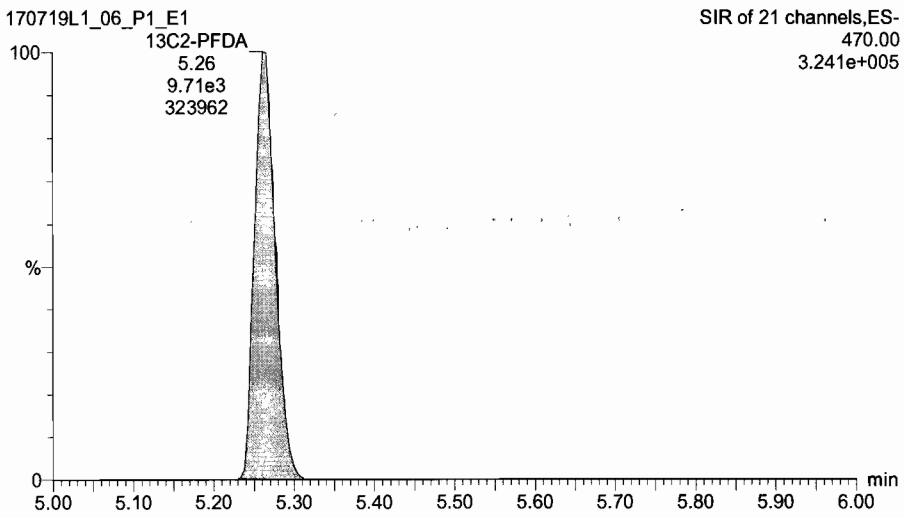

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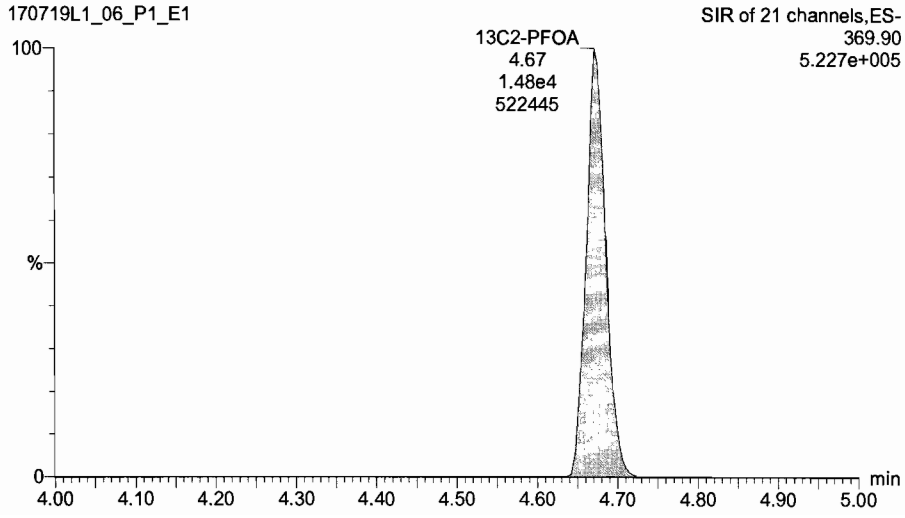

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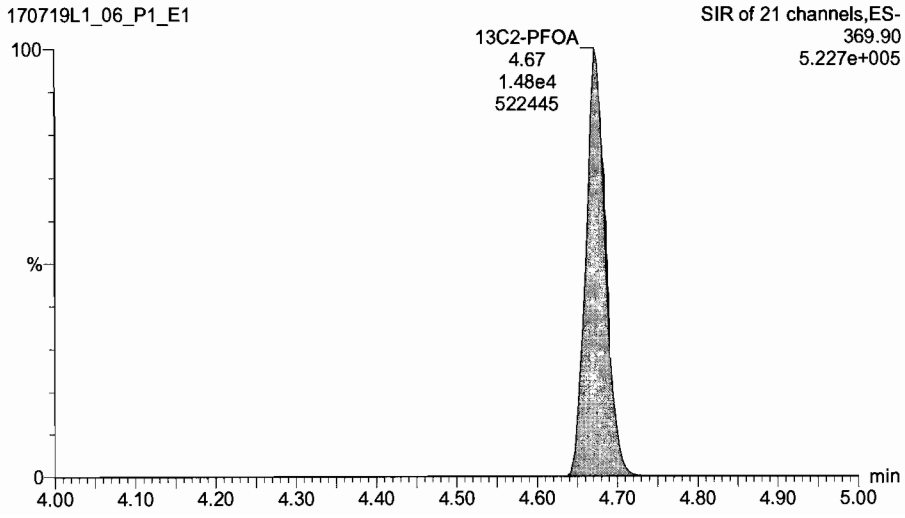

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Name: 170719L1_07.wiff, Date: 19-Jul-2017, Time: 18:25:12, ID: ST170719L1-6 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919

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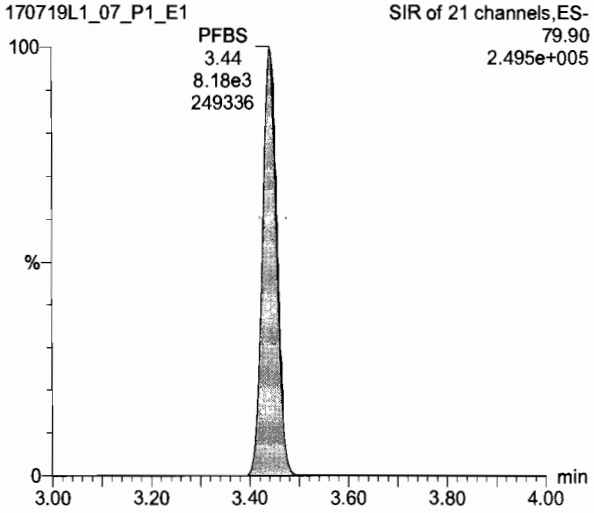
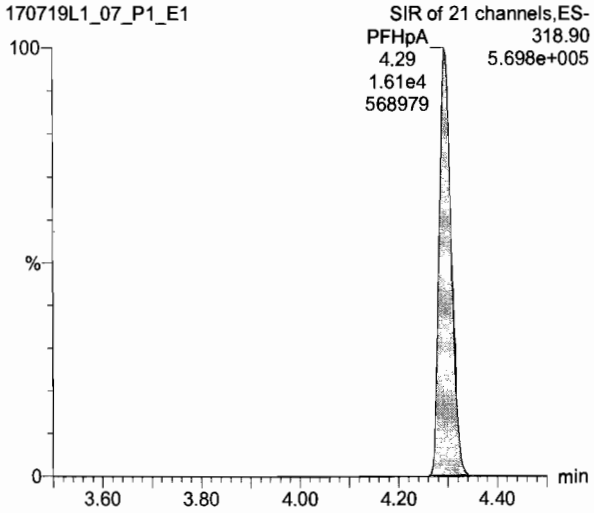


PFHpA



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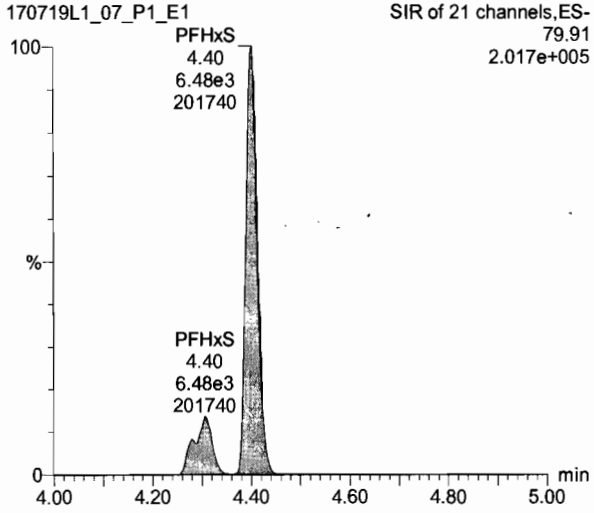

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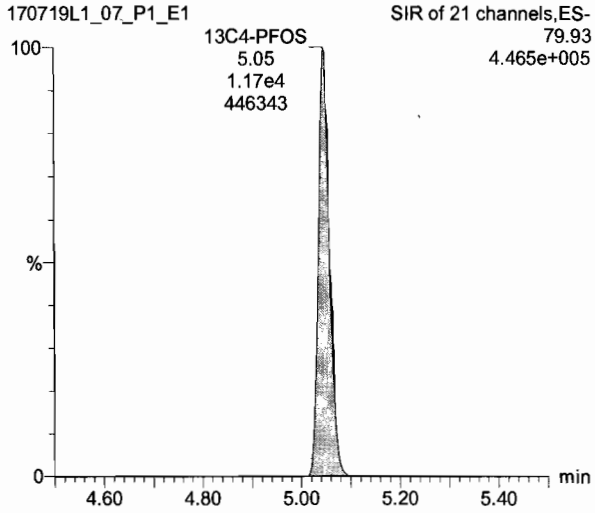

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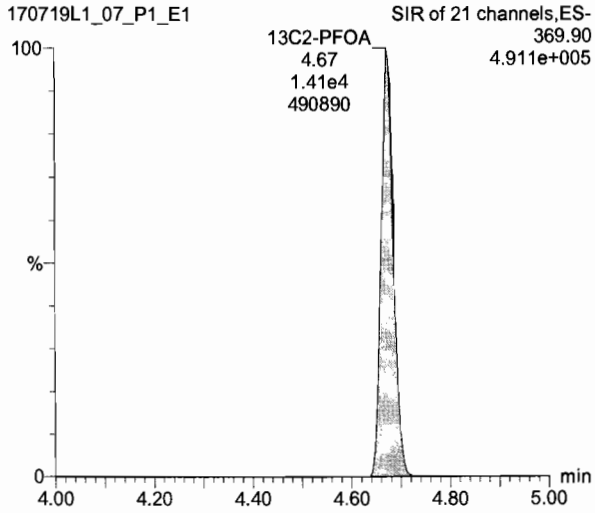

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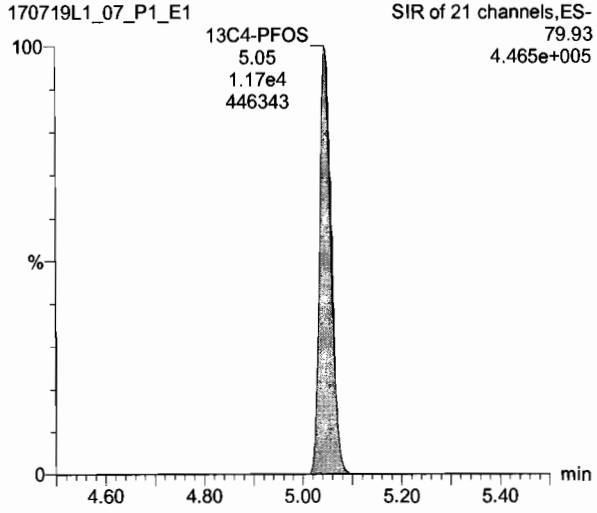

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

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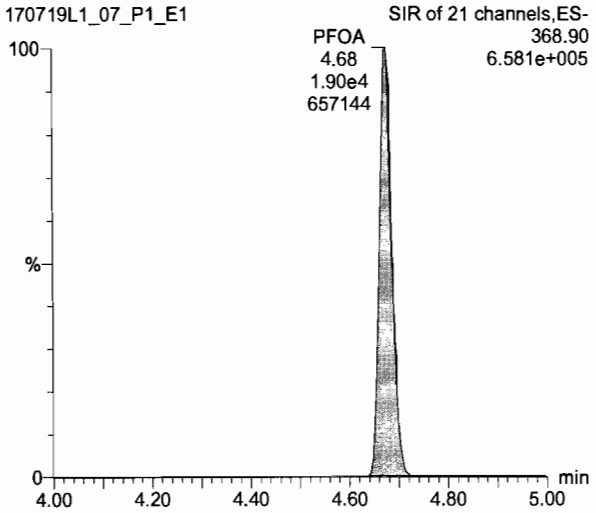
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_07.wiff, Date: 19-Jul-2017, Time: 18:25:12, ID: ST170719L1-6 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919

PFOA



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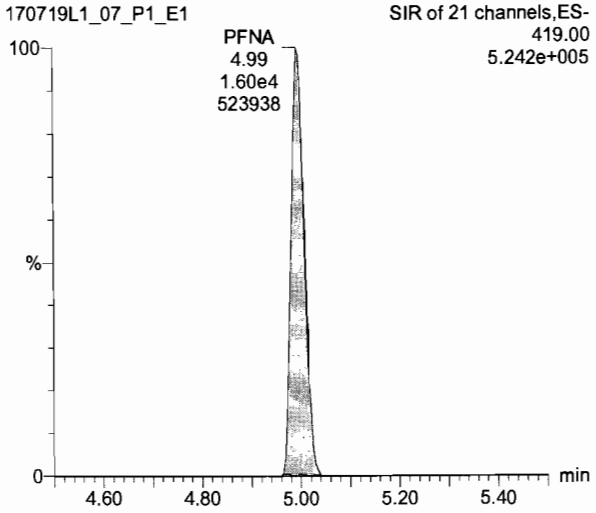

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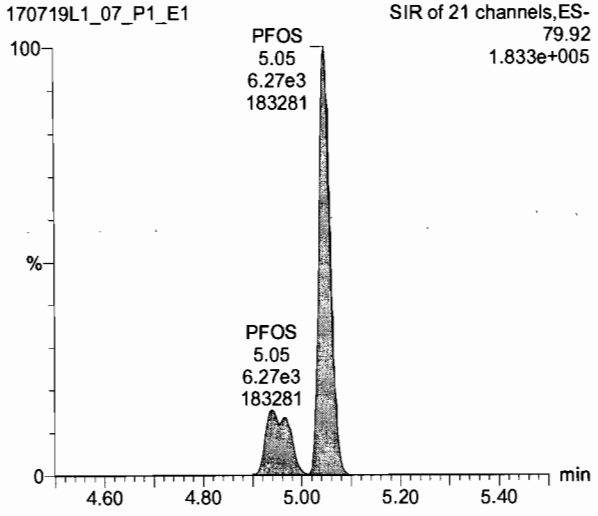

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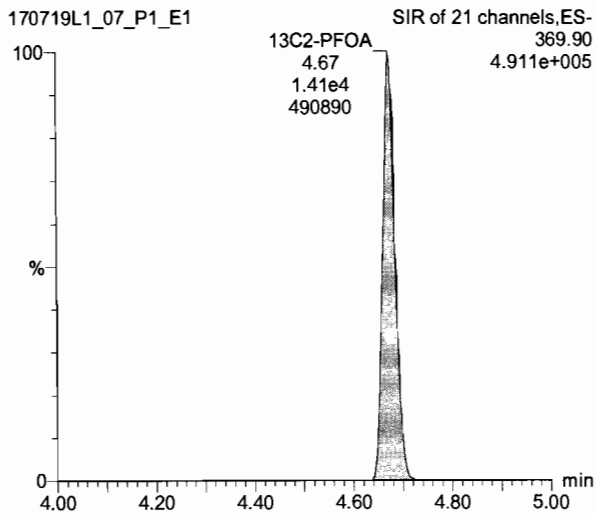

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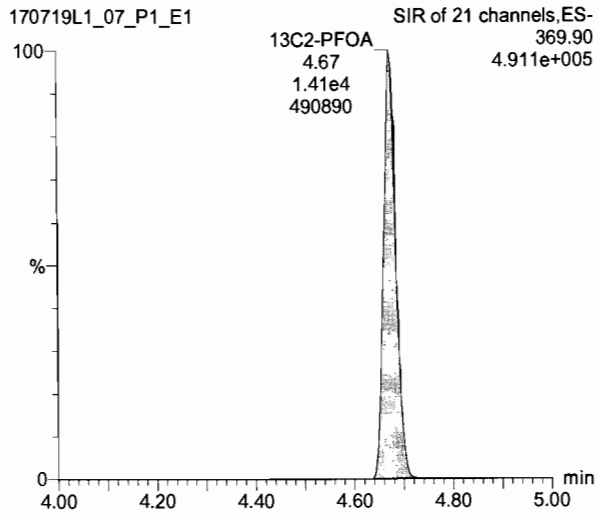

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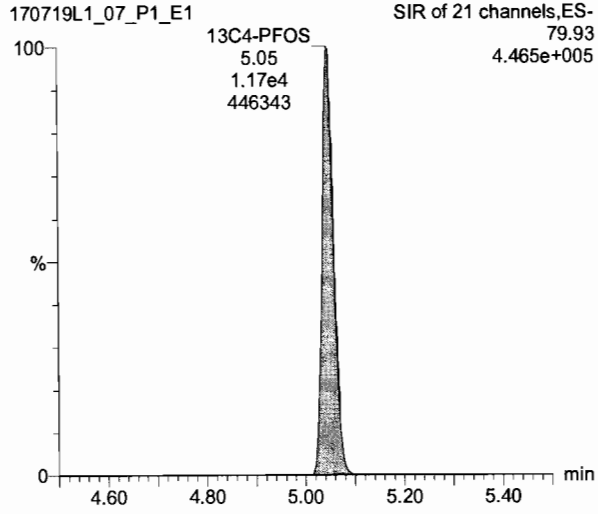

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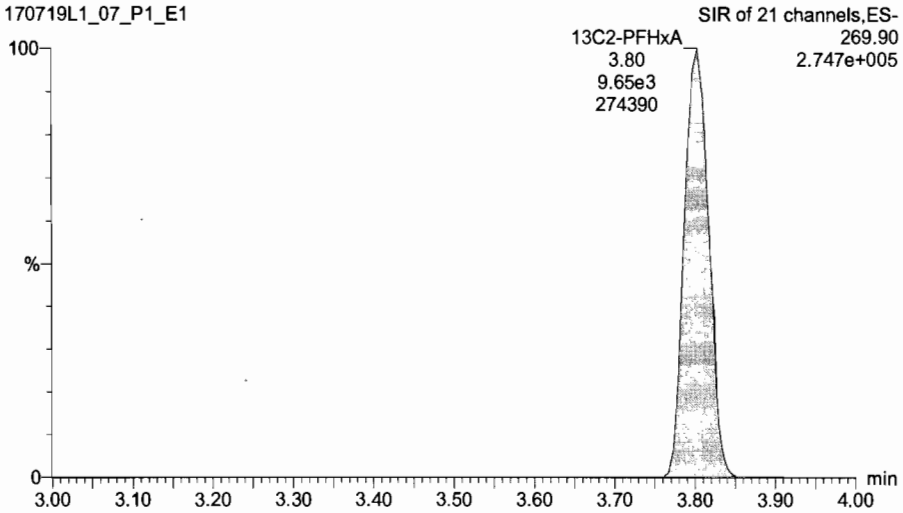
Name: 170719L1_07.wiff, Date: 19-Jul-2017, Time: 18:25:12, ID: ST170719L1-6 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919

13C2-PFHxA



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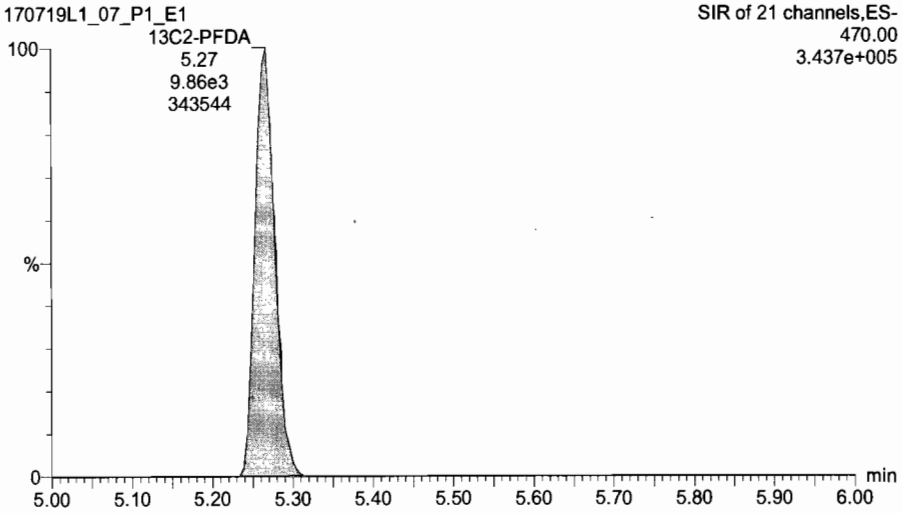

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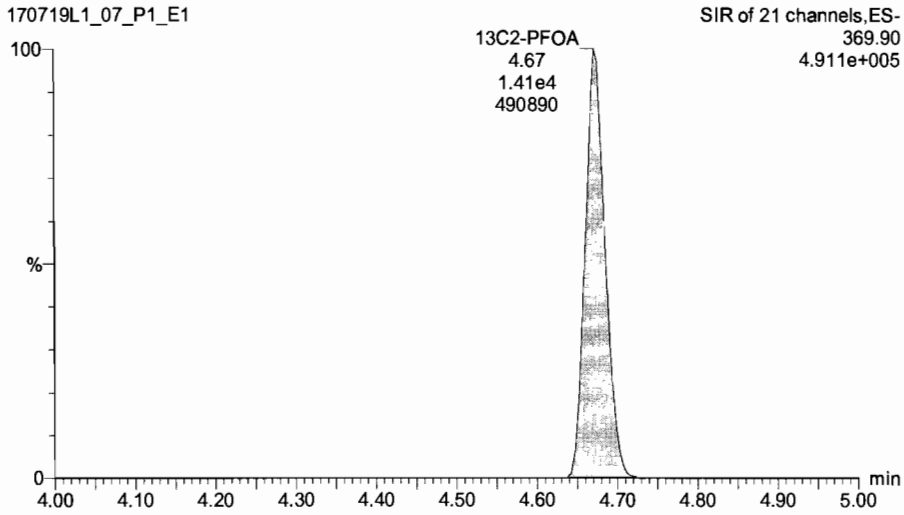

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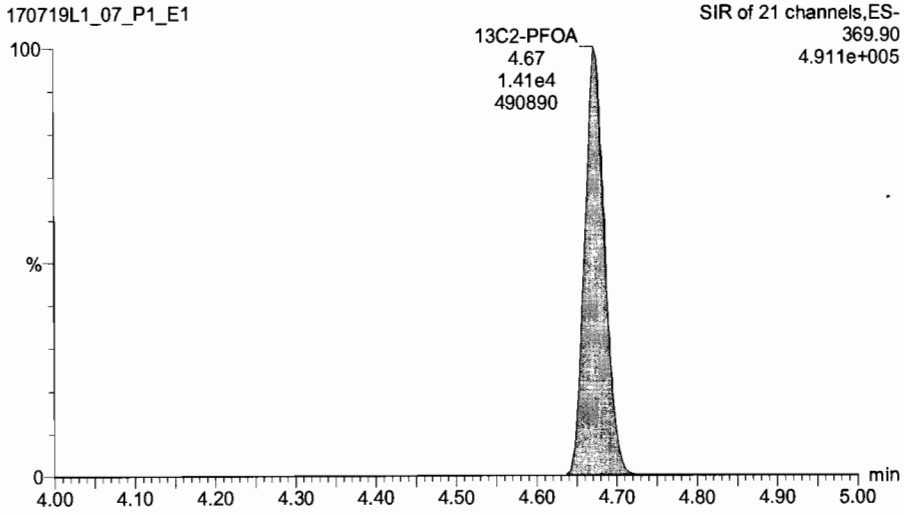

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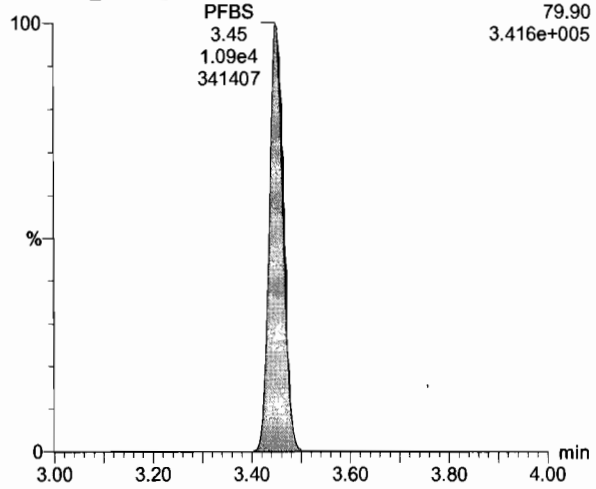

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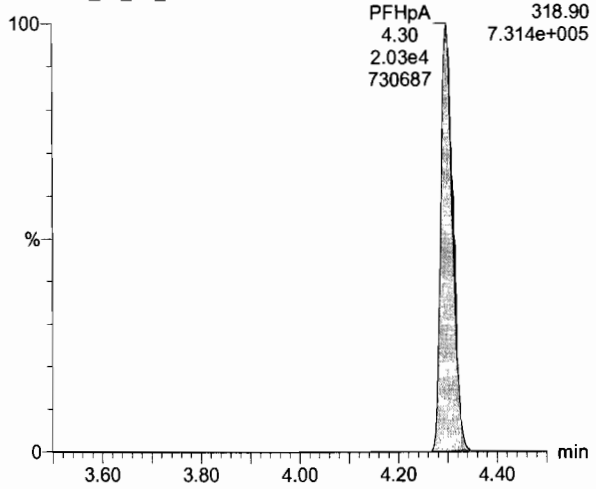

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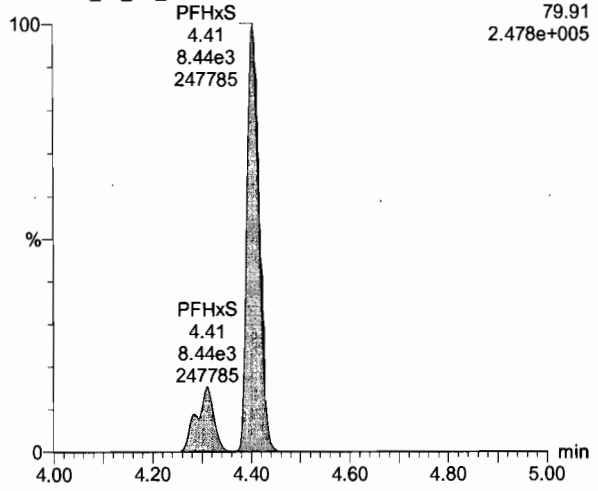

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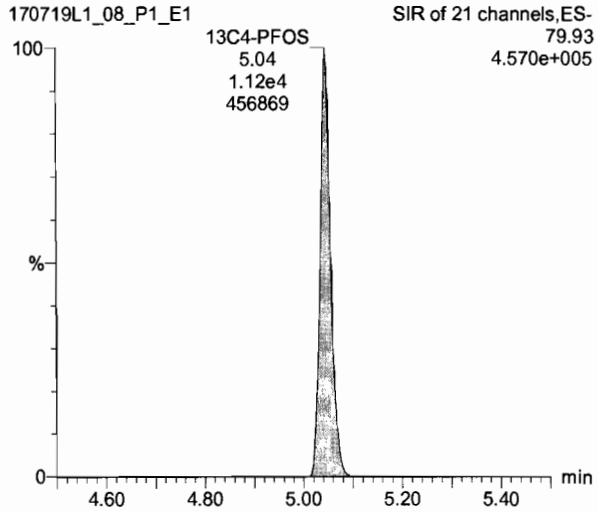
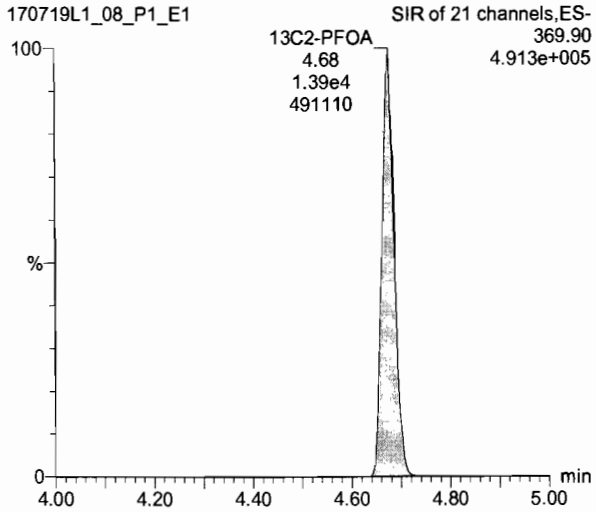
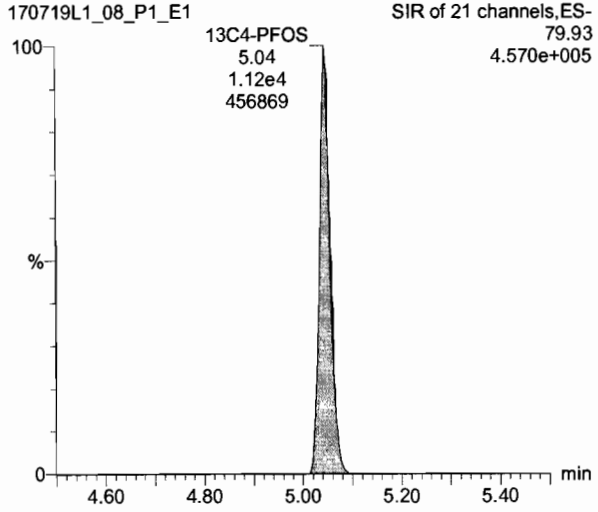


13C2-PFOA



13C4-PFOS



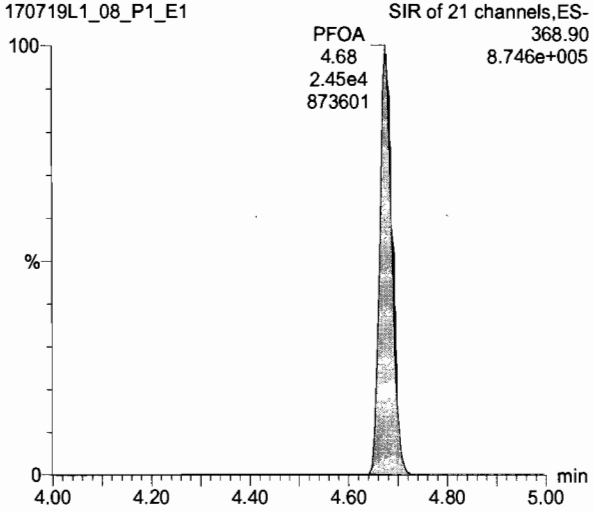
Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_08.wiff, Date: 19-Jul-2017, Time: 18:37:29, ID: ST170719L1-7 537 DW CS3 17G1920, Description: 537 DW CS3 17G1920

PFOA



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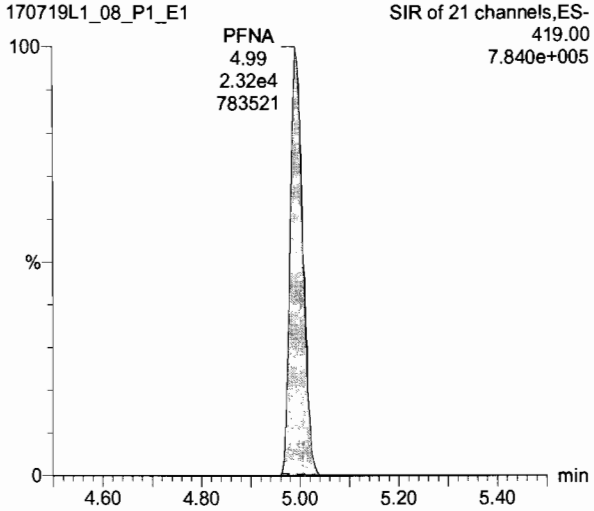
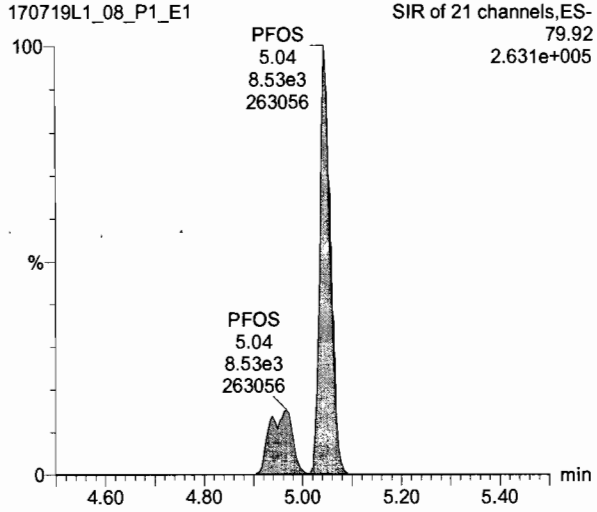


PFOS



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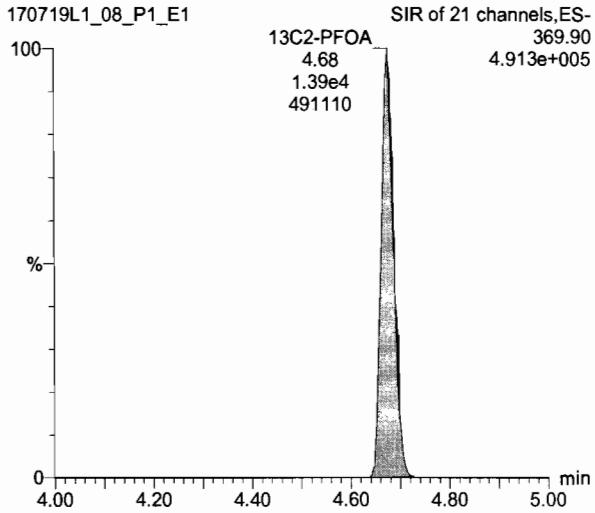

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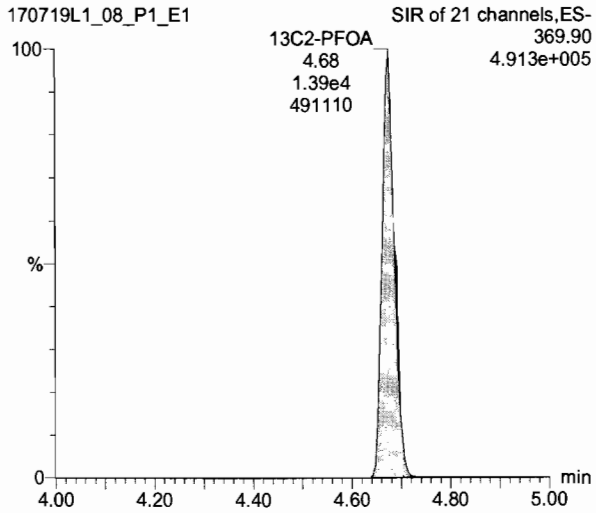

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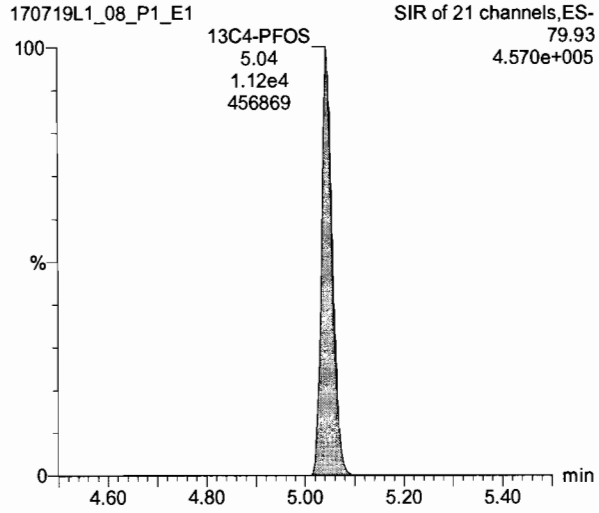
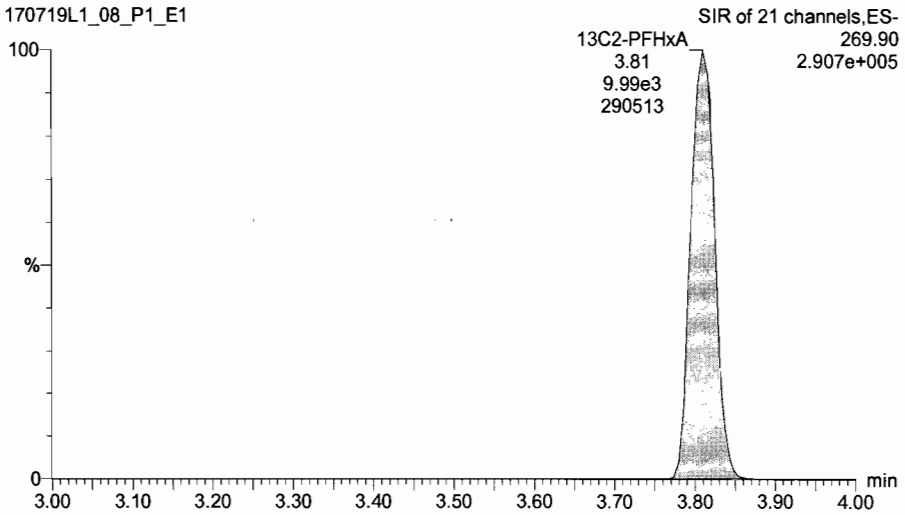


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_08.wiff, Date: 19-Jul-2017, Time: 18:37:29, ID: ST170719L1-7 537 DW CS3 17G1920, Description: 537 DW CS3 17G1920

13C2-PFHxA



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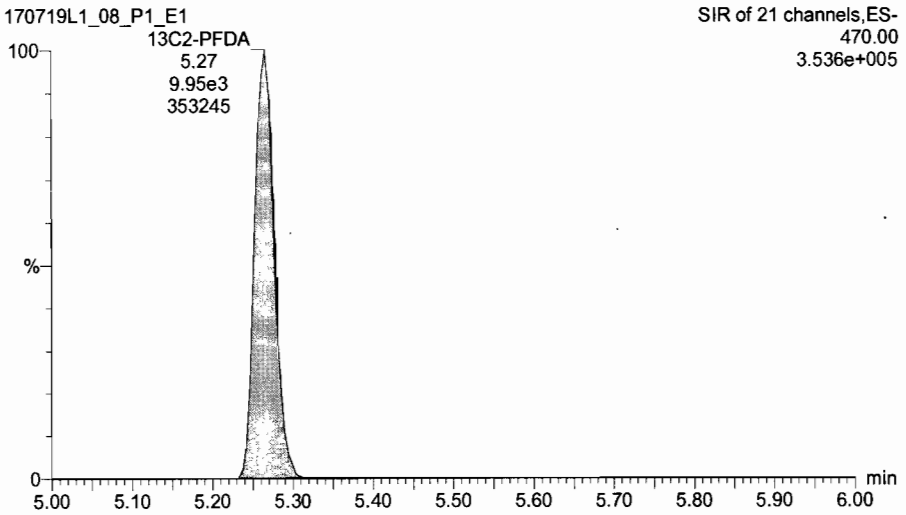

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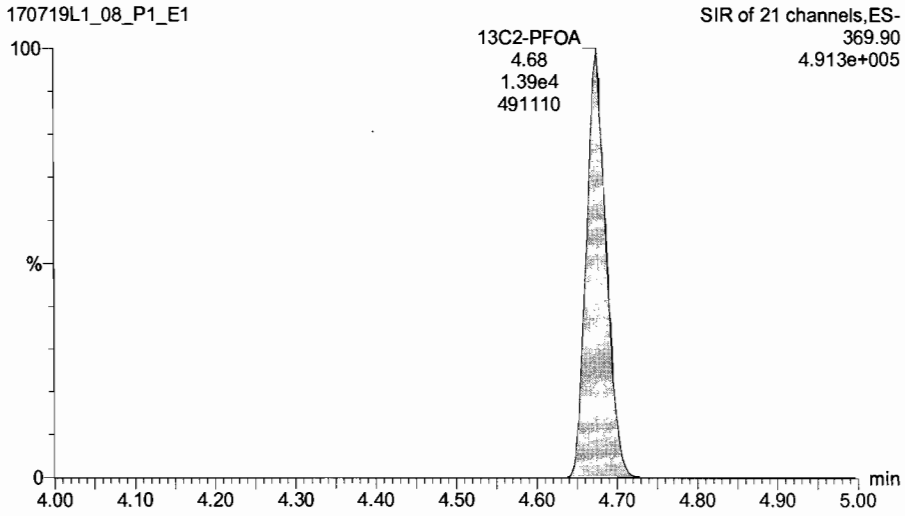

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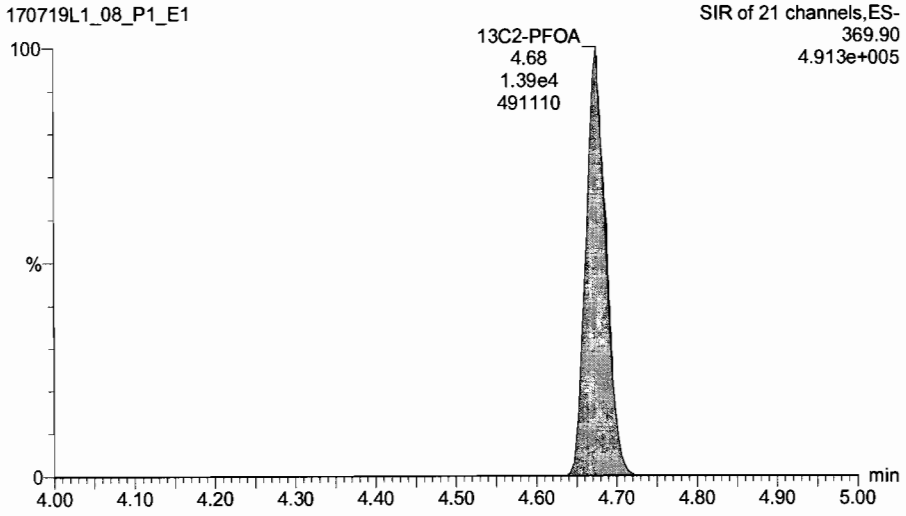

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_09.wiff, Date: 19-Jul-2017, Time: 18:49:44, ID: ST170719L1-8 537 DW CS4 17G1921, Description: 537 DW CS4 17G1921

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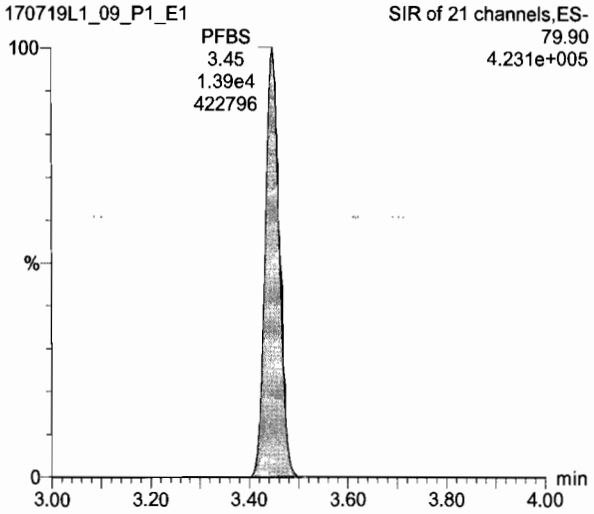

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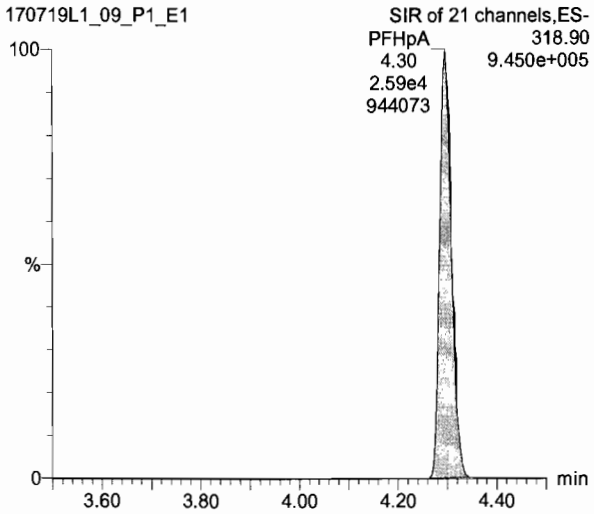
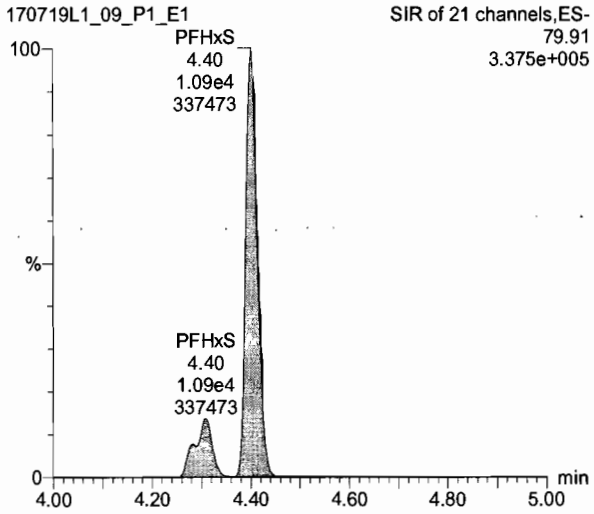


PFHxS



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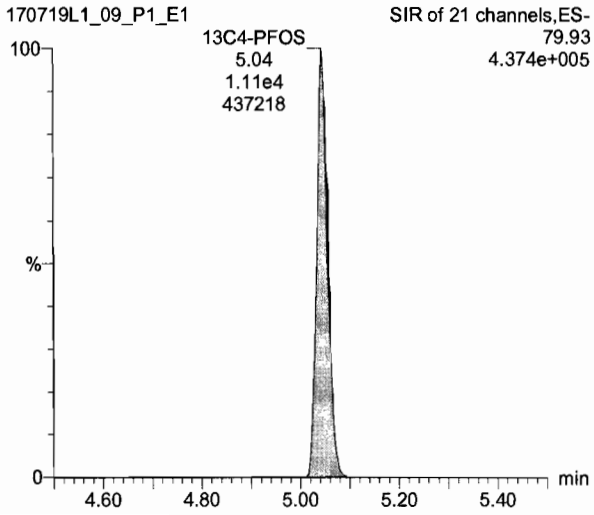

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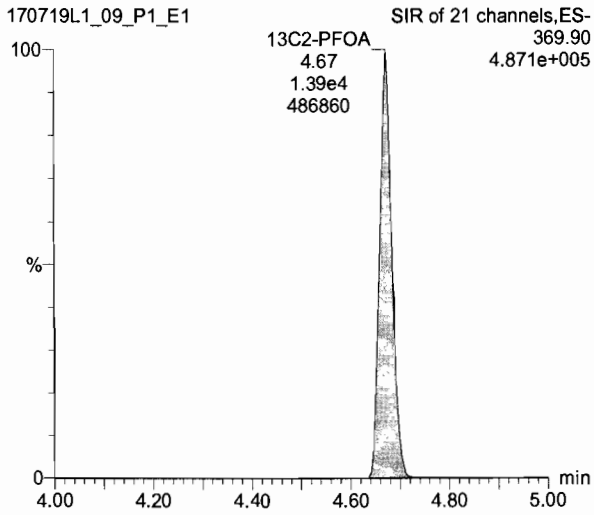

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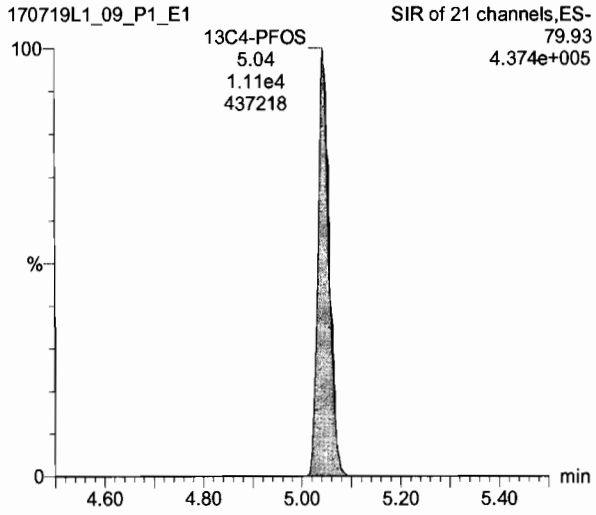
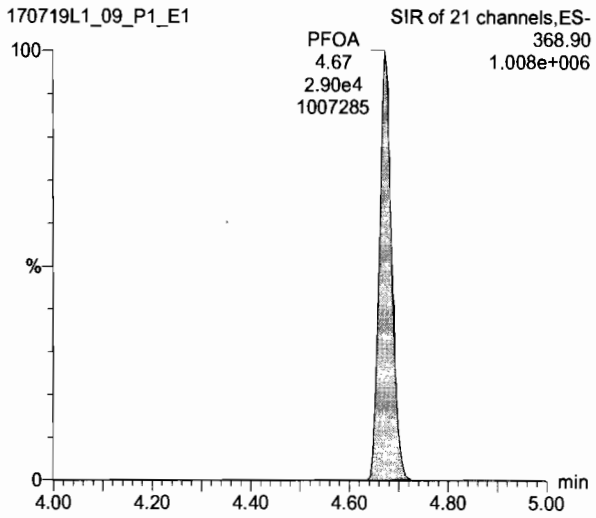


Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_09.wiff, Date: 19-Jul-2017, Time: 18:49:44, ID: ST170719L1-8 537 DW CS4 17G1921, Description: 537 DW CS4 17G1921

PFOA



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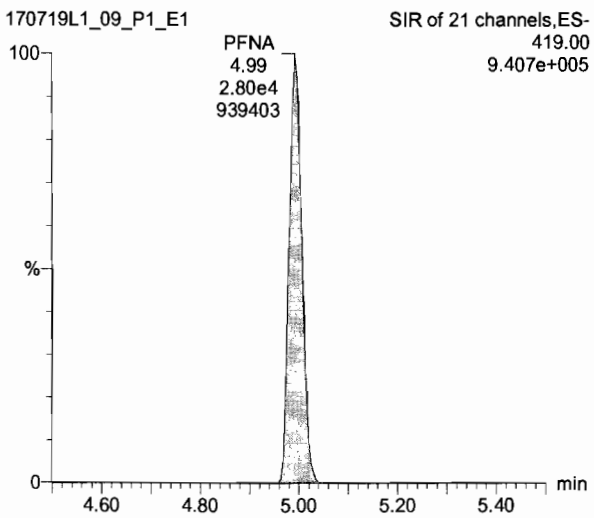

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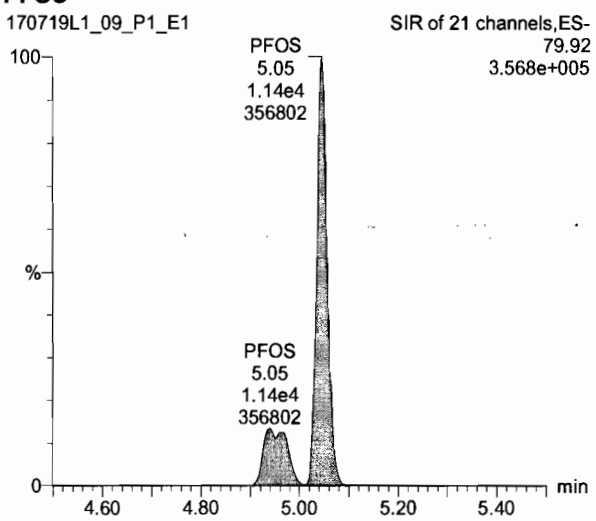

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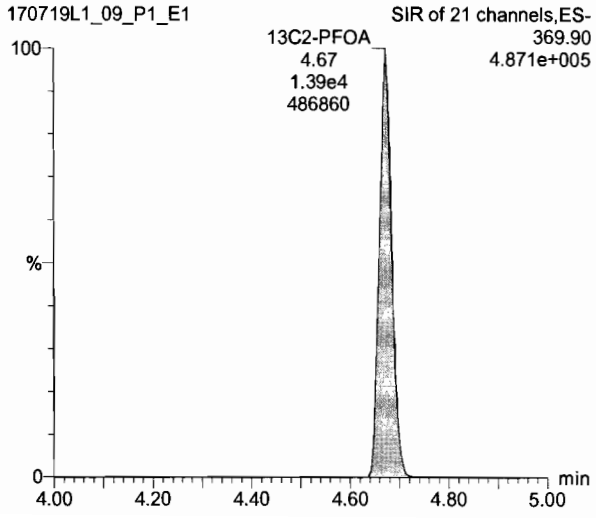

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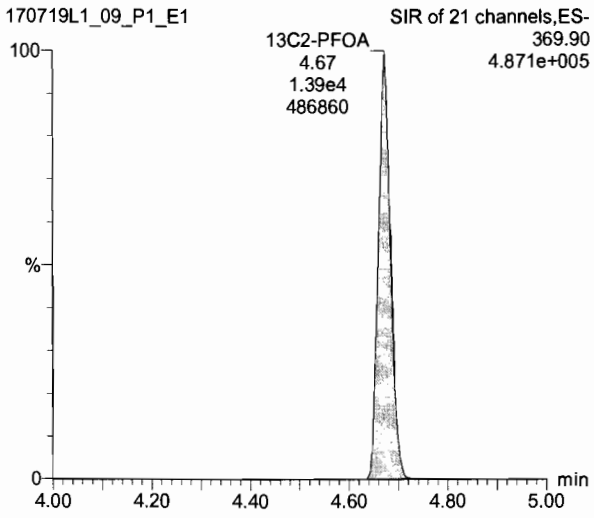

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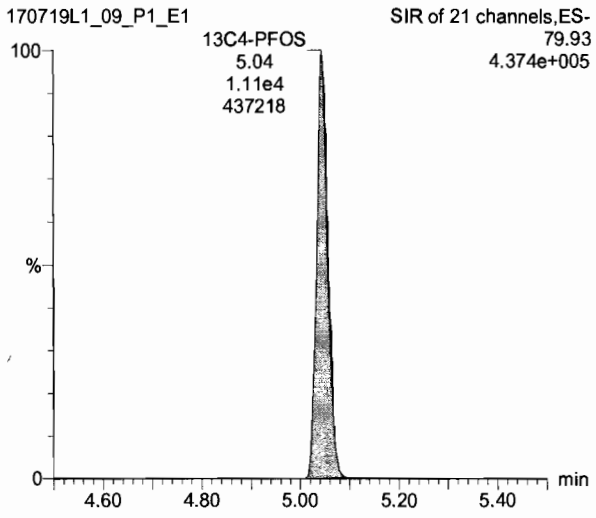

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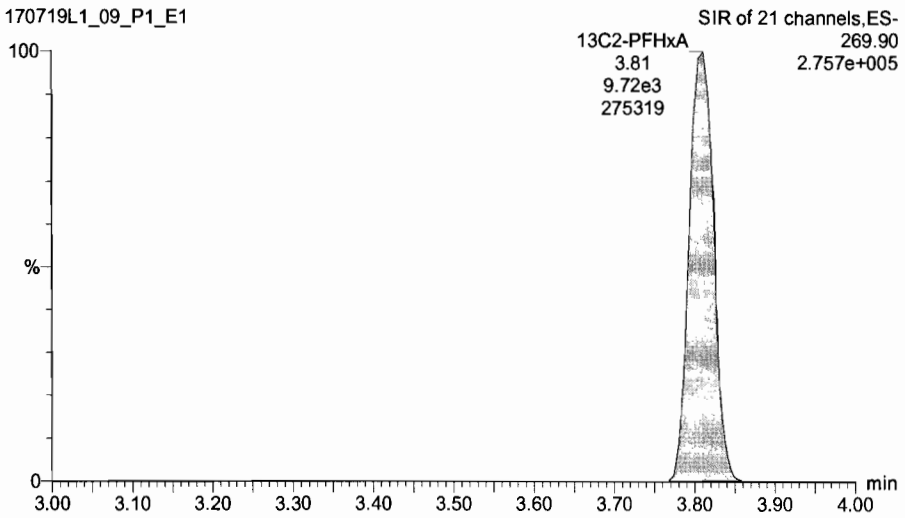
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_09.wiff, Date: 19-Jul-2017, Time: 18:49:44, ID: ST170719L1-8 537 DW CS4 17G1921, Description: 537 DW CS4 17G1921

13C2-PFHxA



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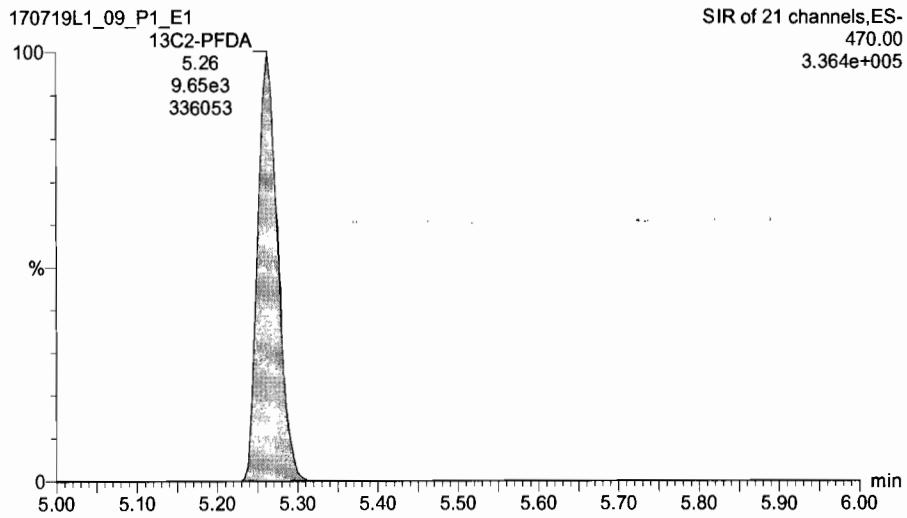

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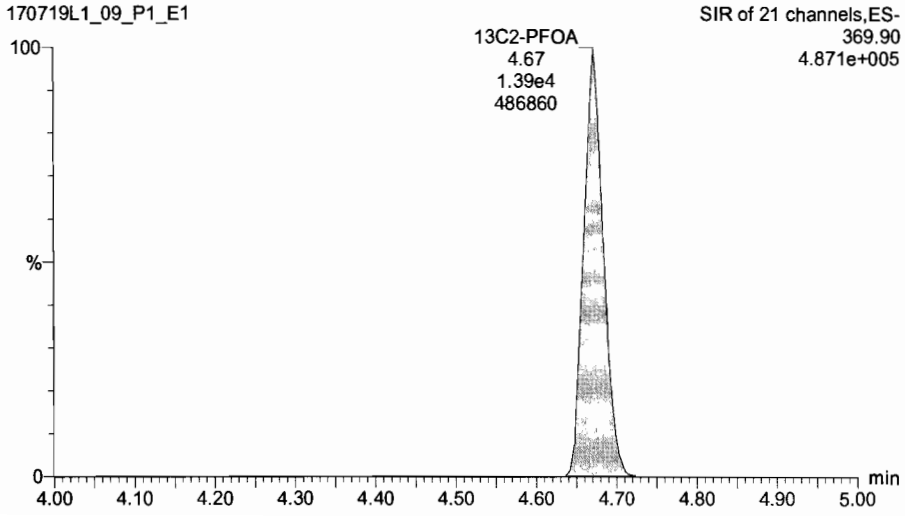

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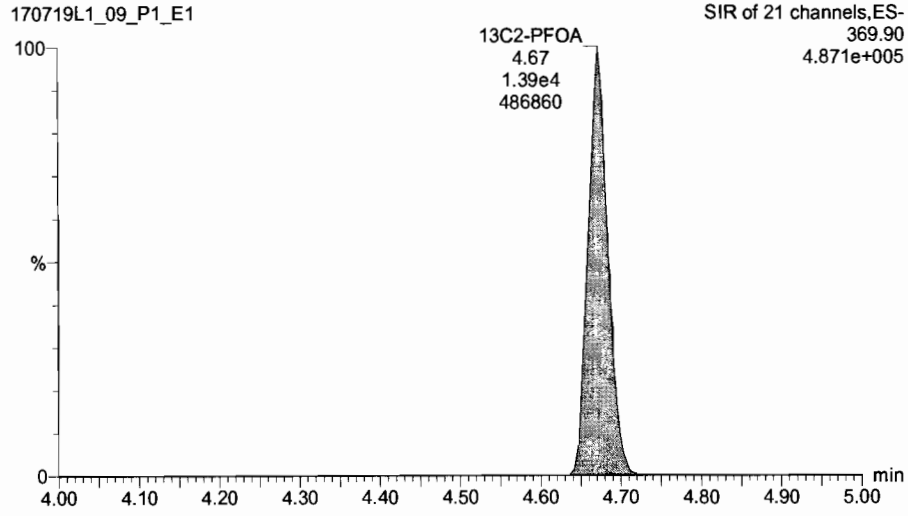

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Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_10.wiff, Date: 19-Jul-2017, Time: 19:01:58, ID: ST170719L1-9 537 DW CS5 17G1922, Description: 537 DW CS5 17G1922

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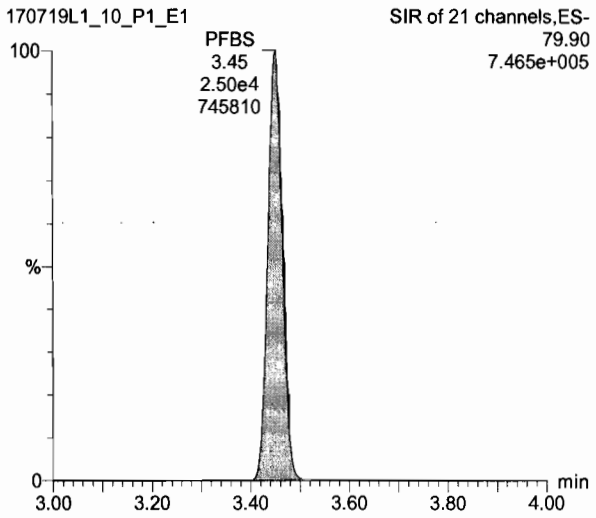
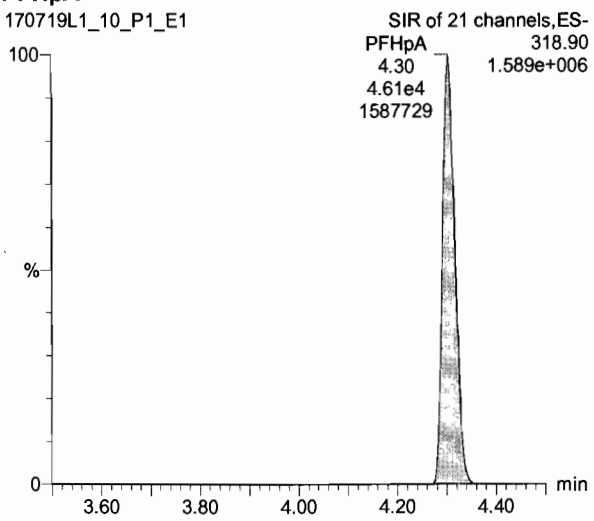


PFHpA



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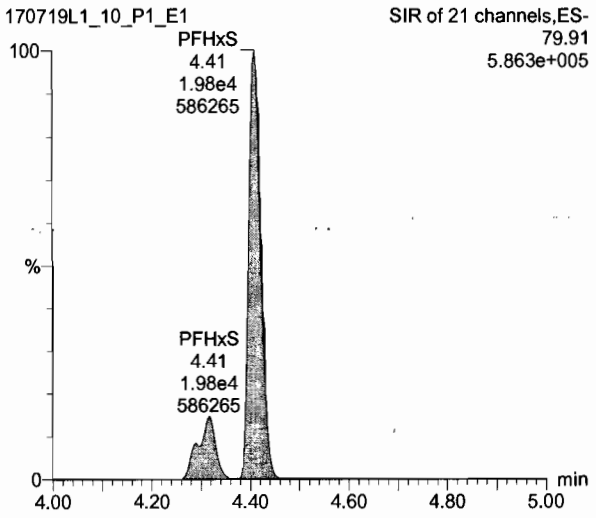

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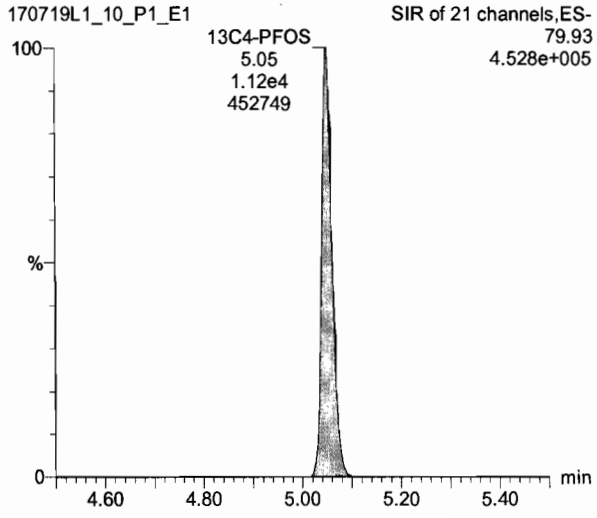

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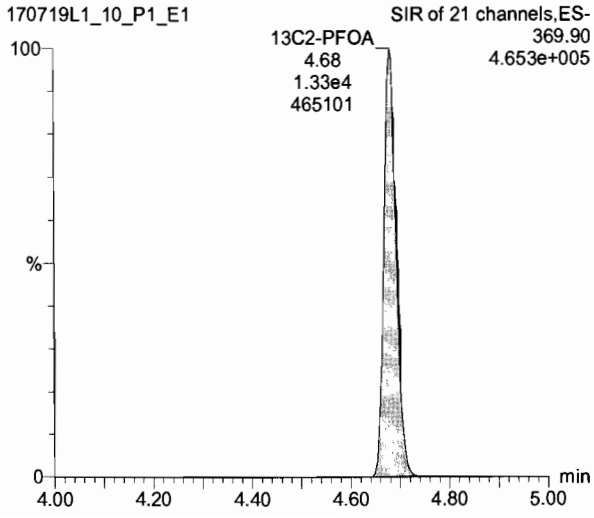

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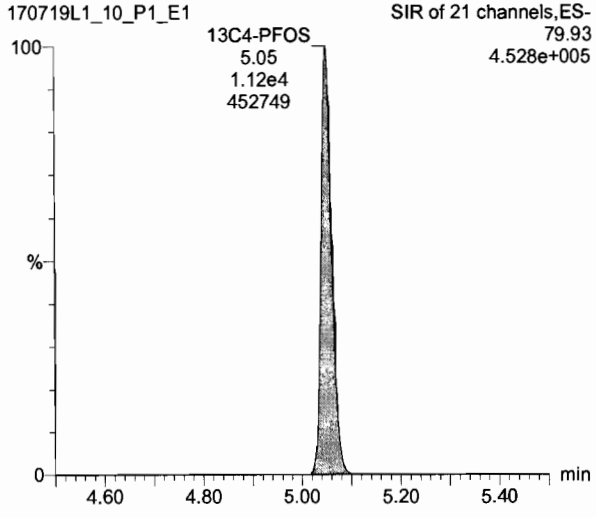

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Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_10.wiff, Date: 19-Jul-2017, Time: 19:01:58, ID: ST170719L1-9 537 DW CS5 17G1922, Description: 537 DW CS5 17G1922

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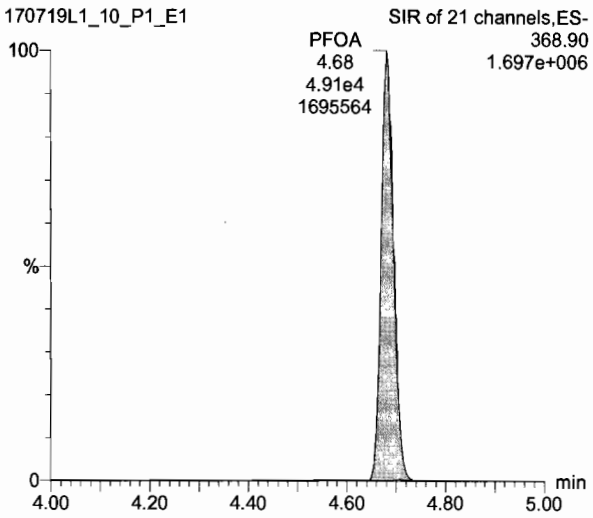

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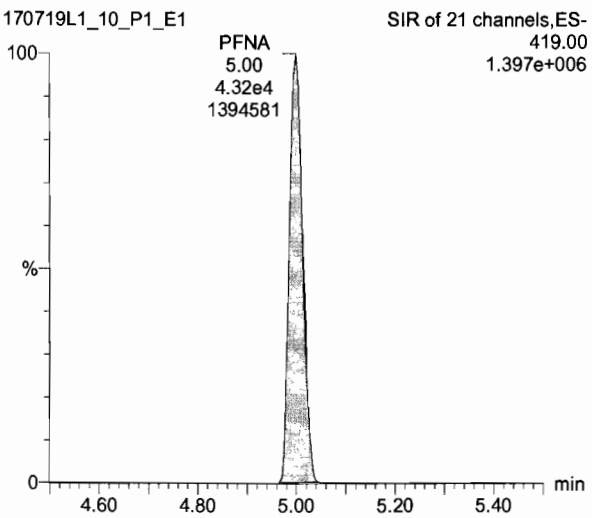

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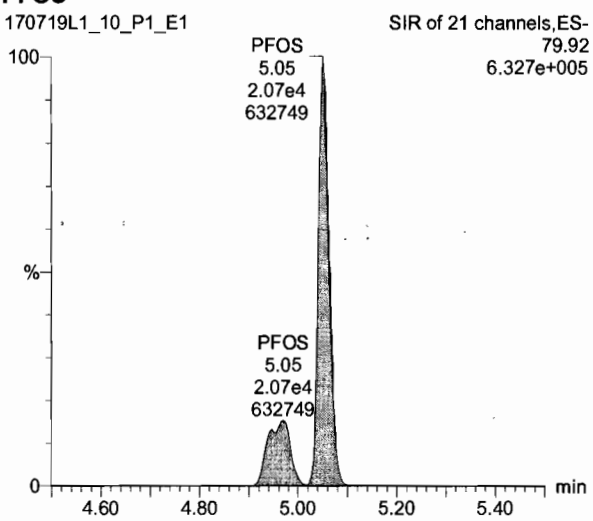

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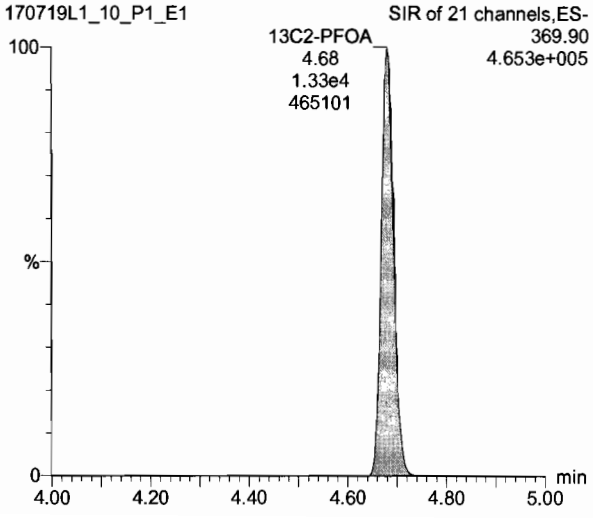

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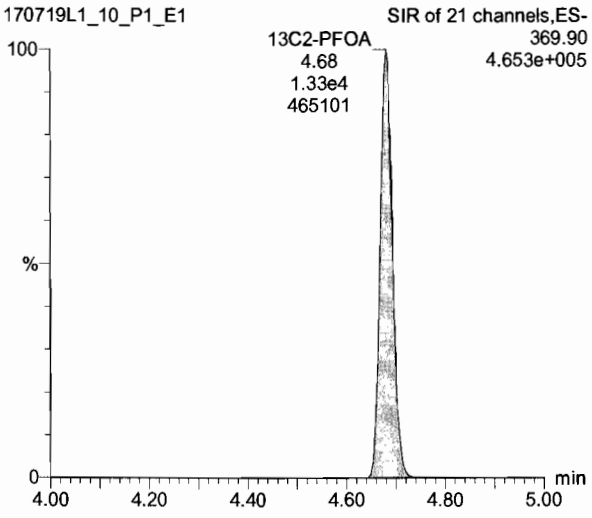

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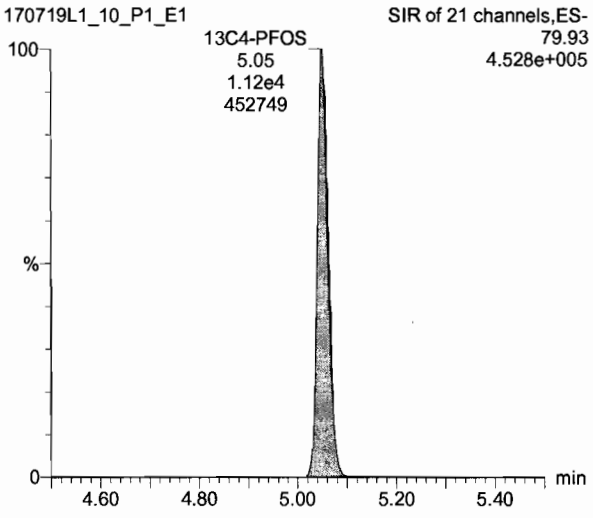

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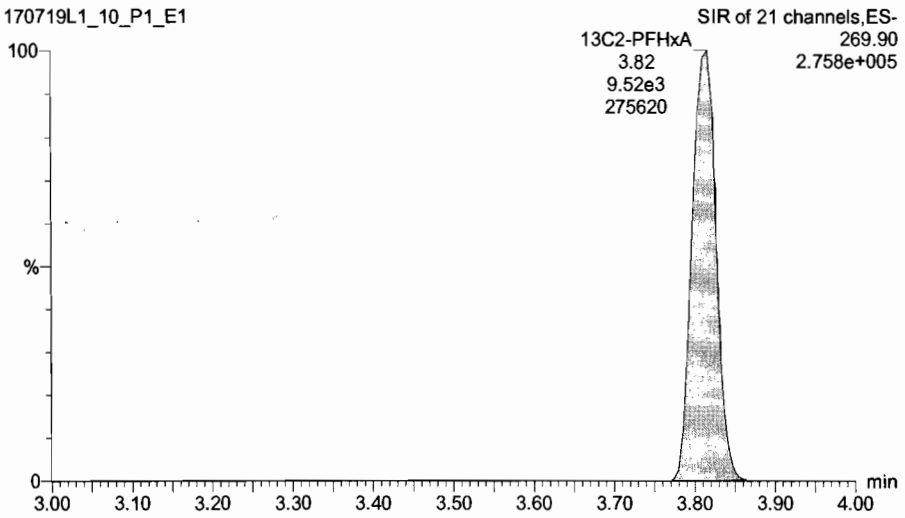
Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:35 Pacific Daylight Time

Name: 170719L1_10.wiff, Date: 19-Jul-2017, Time: 19:01:58, ID: ST170719L1-9 537 DW CS5 17G1922, Description: 537 DW CS5 17G1922

13C2-PFHxA



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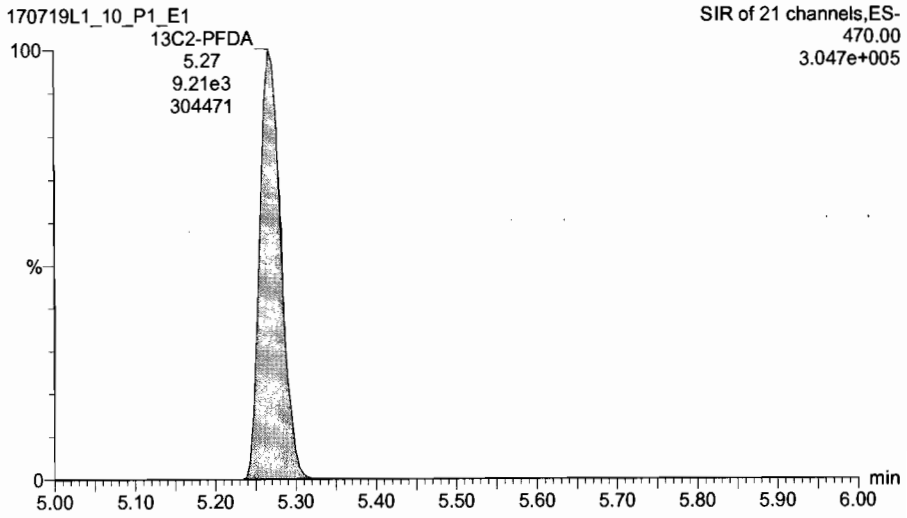

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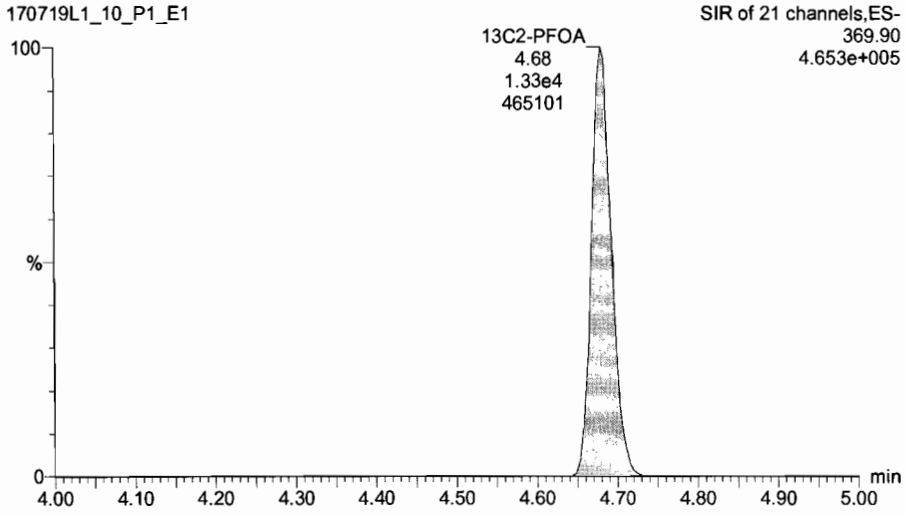

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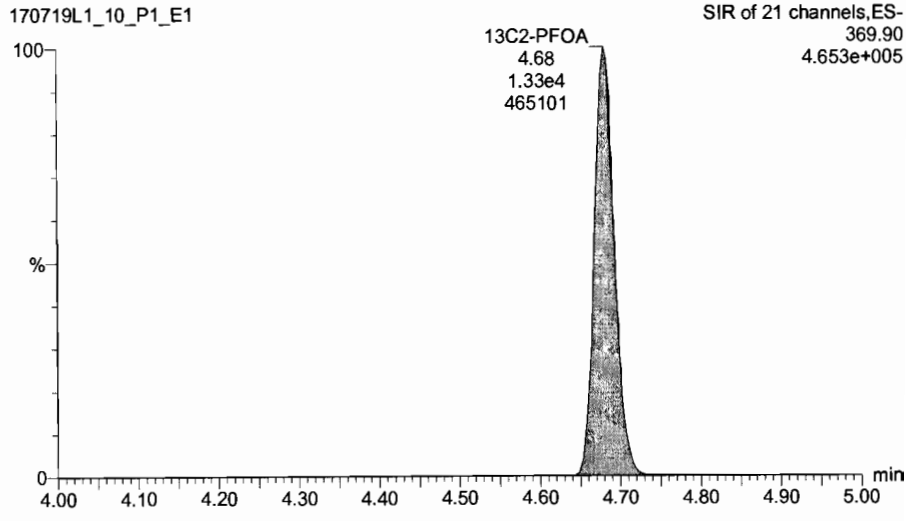

Vista Analytical Laboratory Q2

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:11:42 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:13:28 Pacific Daylight Time

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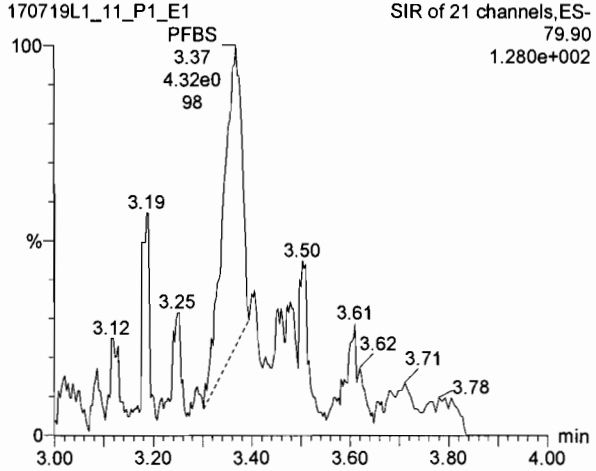
Name: 170719L1_11.wiff, Date: 19-Jul-2017, Time: 19:14:13, ID: IPA, Description: IPA

PFBS



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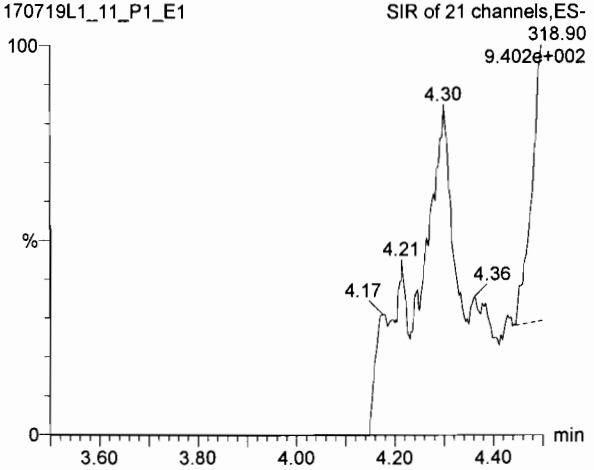

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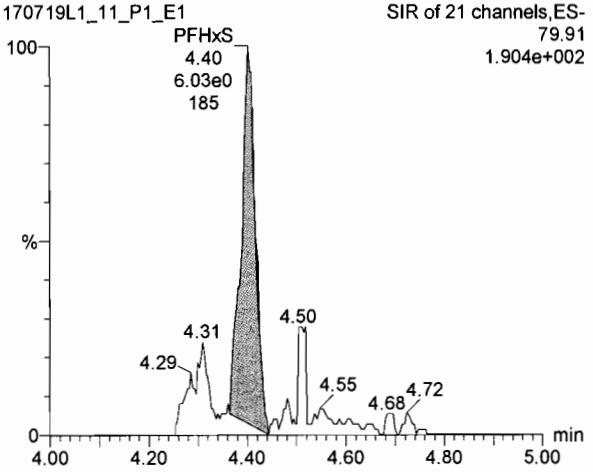
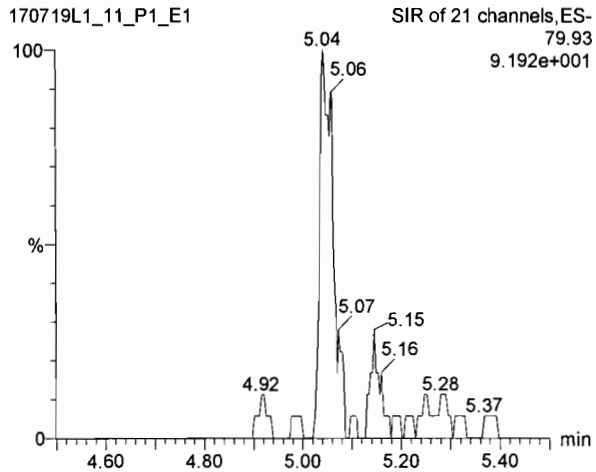


13C4-PFOS



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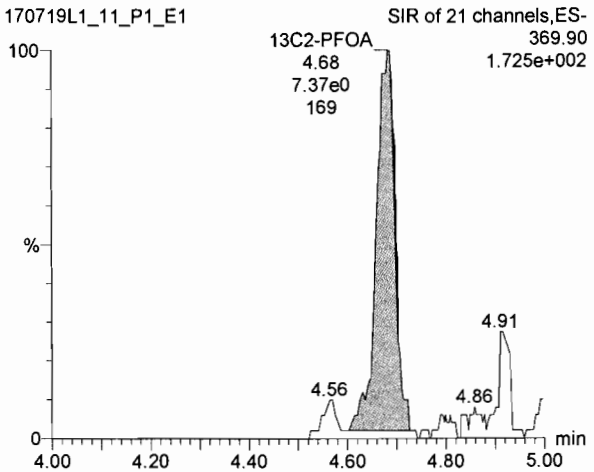

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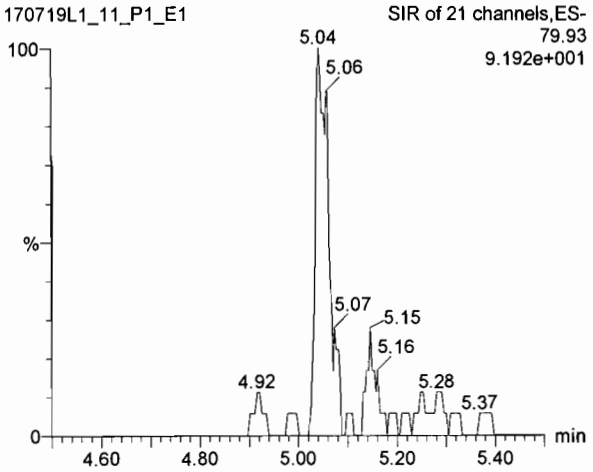

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:11:42 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:13:28 Pacific Daylight Time

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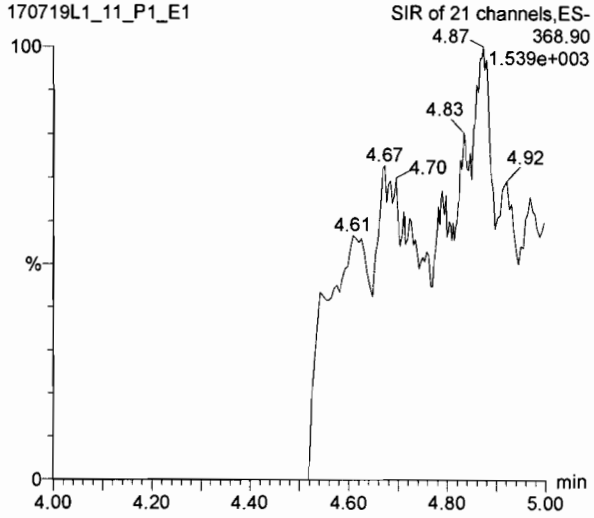
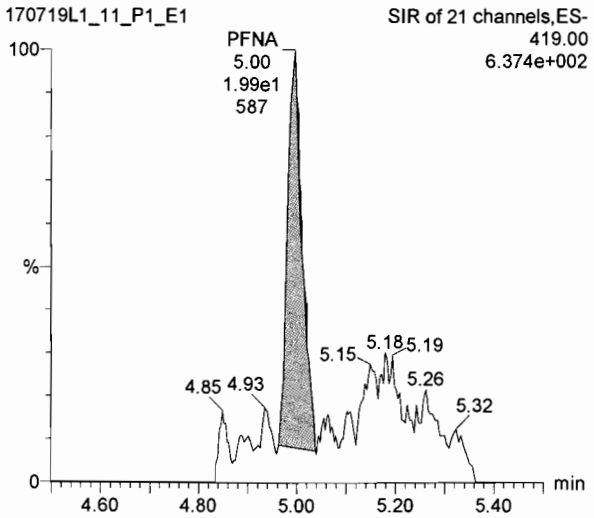
PFOA



PFNA



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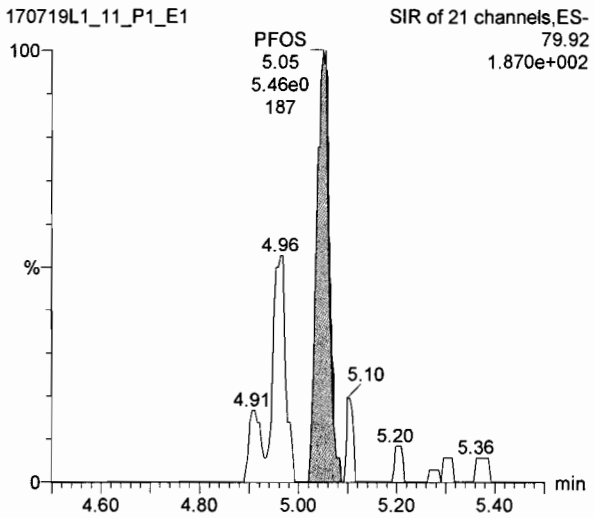
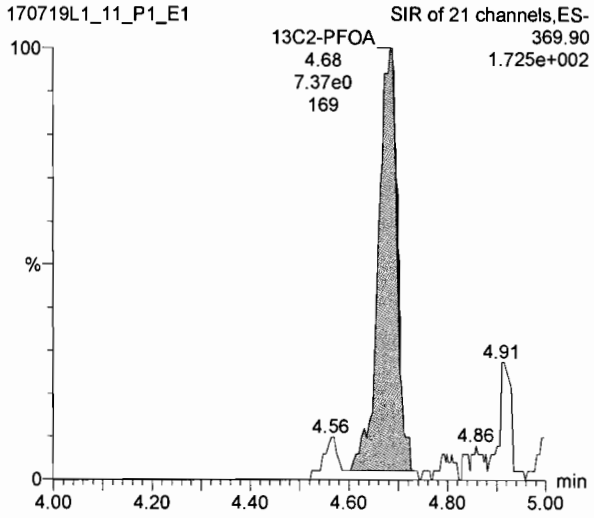


13C2-PFOA



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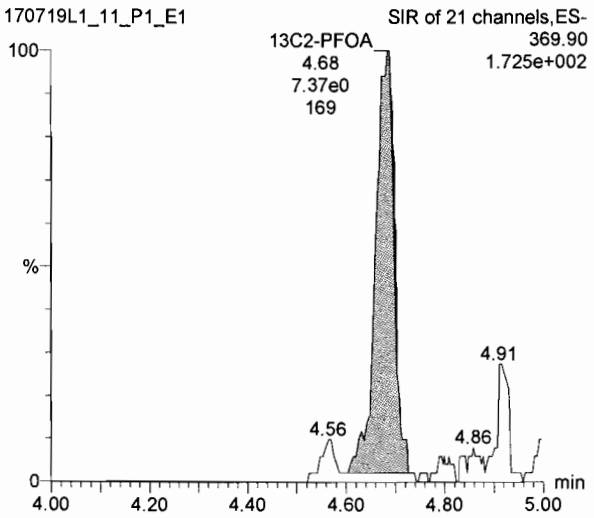

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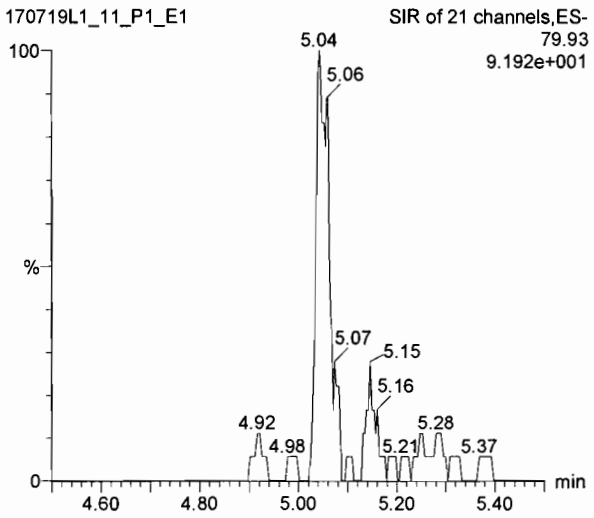

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Last Altered: Thursday, July 20, 2017 10:11:42 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:13:28 Pacific Daylight Time

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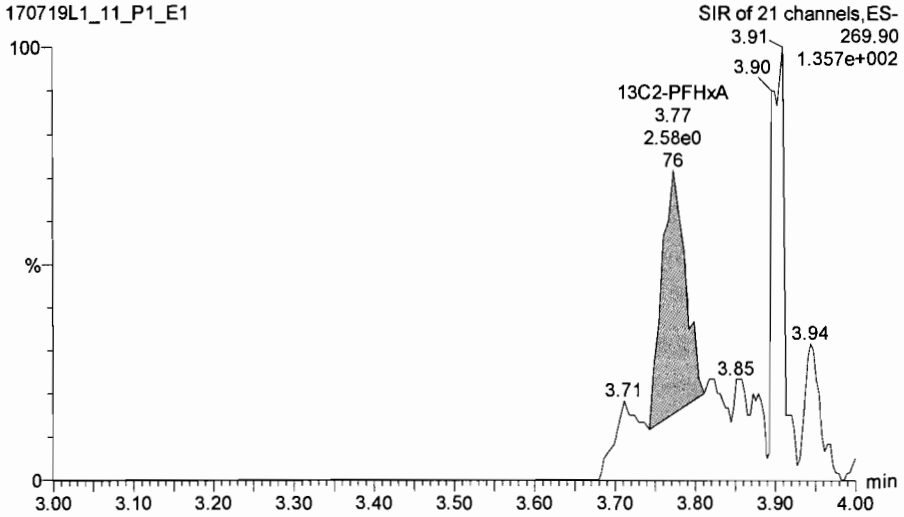
13C2-PFHxA



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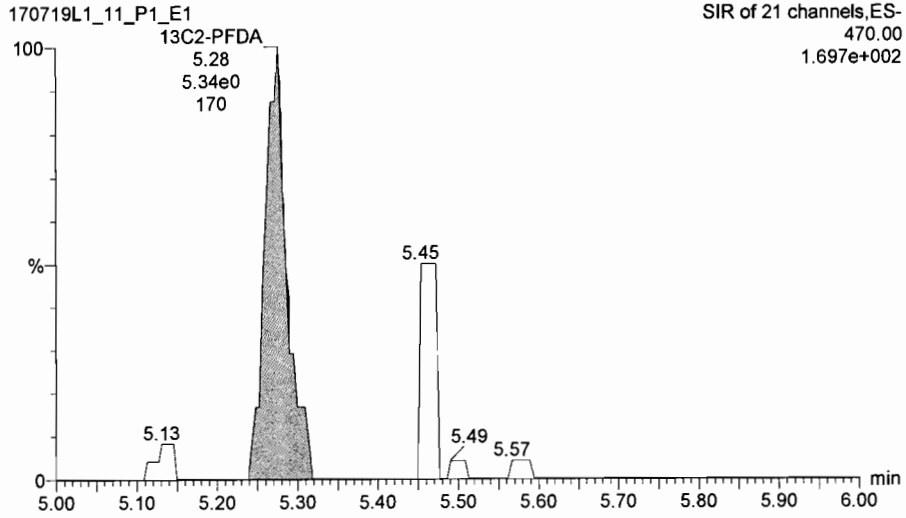

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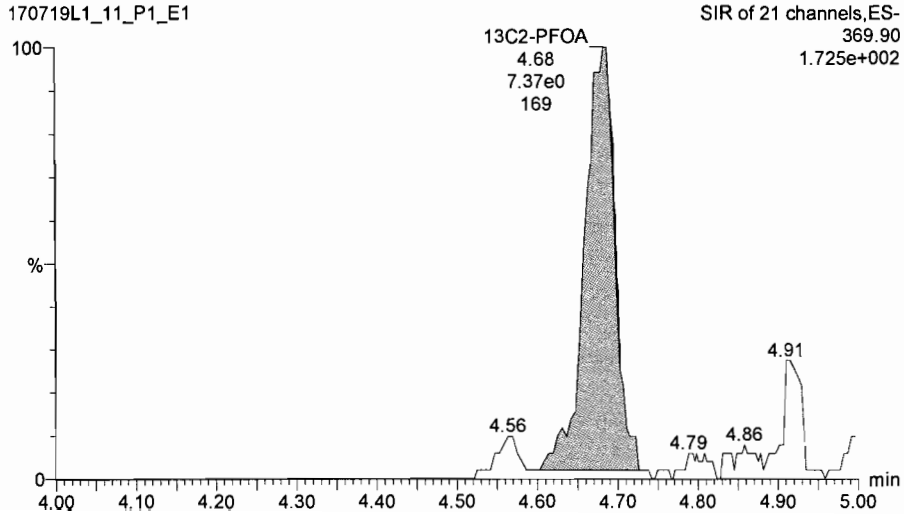

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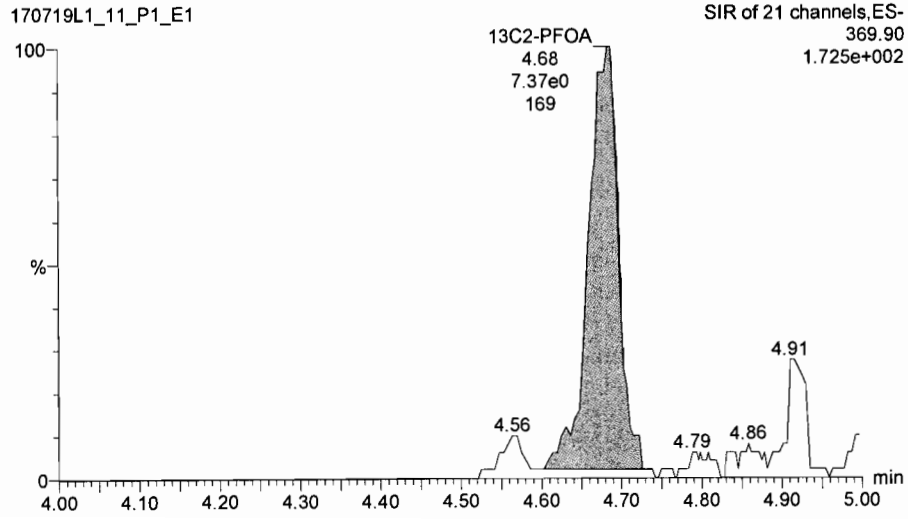

Analytical Standard Record

Vista Analytical Laboratory

17F1415

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2407	EPA-537SS (IS)	24-May-17	** Vendor **	01-Mar-22	24-May-17 11:16 by INJ	3

Description:	537 SS (IS)	Expires:	14-Jun-18
Standard Type:	Reagent	Prepared:	14-Jun-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	15	Department:	LCMS
Vials:	1	Last Edit:	14-Jun-17 13:37 by INJ

Analyte	CAS Number	Concentration	Units
d5-EtFOSAA		0.8	ug/mL
13C2-PFHxA		0.2	ug/mL
13C2-PFDA		0.2	ug/mL

Reviewed By Date

17E2407

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-537SS

Surrogate Primary Dilution Standard

PRODUCT CODE:	EPA-537SS
LOT NUMBER:	537SS0217
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	02/28/2017
LAST TESTED: (mm/dd/yyyy)	03/01/2017
EXPIRY DATE: (mm/dd/yyyy)	03/01/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537SS is a solution/mixture of two mass-labelled (^{13}C) perfluoroalkylcarboxylic acids and a mass-labelled (^{2}H) perfluorooctanesulfonamidoacetic acid. The components and their concentrations are given in Table A.

The mass-labelled perfluoroalkylcarboxylic acids both have chemical purities of >98% and isotopic purities of ≥99%. The mass-labelled perfluorooctanesulfonamidoacetic acid has a chemical purity of >98% and an isotopic purity of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
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 acids to their respective methyl esters.

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Analytical Standard Record

Vista Analytical Laboratory

17D1705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D1702	PFAC-24PAR Natives	17-Apr-17	Jamie C. Stockman	11-Dec-21	17-Apr-17 10:23 by JCS	4

Description:	537 DW NS	Expires:	17-Apr-18
Standard Type:	Analyte Spike	Prepared:	19-Apr-17
Solvent:	1%H2O in MeOH	Prepared By:	Jamie C. Stockman
Final Volume (mls):	8	Department:	LCMS
Vials:	1	Last Edit:	19-Apr-17 09:11 by JCS

Analyte	CAS Number	Concentration	Units
PFHpS	375-92-8	0.95	ug/mL
6:2 FTS	27619-97-2	0.95	ug/mL
8:2 FTS	70887-84-2	0.96	ug/mL
EtFOSAA		1	ug/mL
MeFOSAA		1	ug/mL
PFBA	375-22-4	1	ug/mL
PFBS	375-73-5	0.885	ug/mL
PFDA	335-76-2	1	ug/mL
PFDoA	307-55-1	1	ug/mL
4:2 FTS		0.935	ug/mL
PFHpA	375-85-9	1	ug/mL
PFUnA	2058-94-8	1	ug/mL
PFHxA	307-24-4	1	ug/mL
PFHxS	355-46-4	0.91	ug/mL
PFNA	375-95-1	1	ug/mL
PFOA	335-67-1	1	ug/mL
PFOS	1763-23-1	0.925	ug/mL
PFOSA	754-91-6	1	ug/mL
PFPeA	2706-90-3	1	ug/mL
PFTeDA		1	ug/mL
PFTrDA	72629-94-8	1	ug/mL
PFDS	335-77-3	0.965	ug/mL

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CERTIFICATE OF ANALYSIS DOCUMENTATION

17D1702

PFAC-24PAR x4

Native Per- and Poly-fluoroalkyl Substance Precision and Recovery Standard Solution

PRODUCT CODE:	PFAC-24PAR
LOT NUMBER:	PFAC24PAR1216
SOLVENT(S):	Methanol / Isopropanol (4%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	12/09/2016
LAST TESTED: (mm/dd/yyyy)	12/11/2016
EXPIRY DATE: (mm/dd/yyyy)	12/11/2021
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-24PAR is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C_4-C_{14}), seven native perfluoroalkylsulfonates (C_4, C_5, C_7, C_9, and C_{10} linear; C_6 and C_8 linear and branched), three native telomer sulfonates (4:2, 6:2, and 8:2), two native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, native telomer sulfonates, native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of PFHxSK
Table C: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
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 acids to their respective methyl esters.

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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 compounds 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

Table A: **PFAC-24PAR; Components and Concentrations (ng/ml, ± 5% in Methanol / Isopropanol (4%) / Water (<1%))**

Compound	Abbreviation	Concentration (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	2000	A
Perfluoro-n-pentanoic acid	PFPeA	2000	B
Perfluoro-n-hexanoic acid	PFHxA	2000	E
Perfluoro-n-heptanoic acid	PFHpA	2000	G
Perfluoro-n-octanoic acid	PFOA	2000	K
Perfluoro-n-nonanoic acid	PFNA	2000	M
Perfluoro-n-decanoic acid	PFDA	2000	Q
Perfluoro-n-undecanoic acid	PFUdA	2000	U
Perfluoro-n-dodecanoic acid	PFDoA	2000	X
Perfluoro-n-tridecanoic acid	PFTrDA	2000	Y
Perfluoro-n-tetradecanoic acid	PFTeDA	2000	Z
Perfluoro-1-octanesulfonamide	FOSA	2000	V
N-methylperfluoro-1-octanesulfonamidoacetic acid	N-MeFOSAA	2000	S
N-ethylperfluoro-1-octanesulfonamidoacetic acid	N-EtFOSAA	2000	T

Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	2000	1880	F
Potassium perfluorohexanesulfonate*	PFHxSK: linear isomer	1620	1480	I
	PFHxSK: ∑ branched isomers	378	344	H
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	2000	1900	L
Potassium perfluorooctanesulfonate**	PFOSK: linear isomer	1580	1460	O
	PFOSK: ∑ branched isomers	422	391	N
Sodium perfluoro-1-nonanesulfonate	L-PFNS	2000	1920	R
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	W
Sodium 1H,1H,2H,2H-perfluoro-1-hexanesulfonate	4:2FTS	2000	1870	D
Sodium 1H,1H,2H,2H-perfluoro-1-octanesulfonate	6:2FTS	2000	1900	J
Sodium 1H,1H,2H,2H-perfluoro-1-decanesulfonate	8:2FTS	2000	1920	P

* See Table B for percent composition of linear and branched PFHxSK isomers.
** See Table C for percent composition of linear and branched PFOSK isomers.

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

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

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

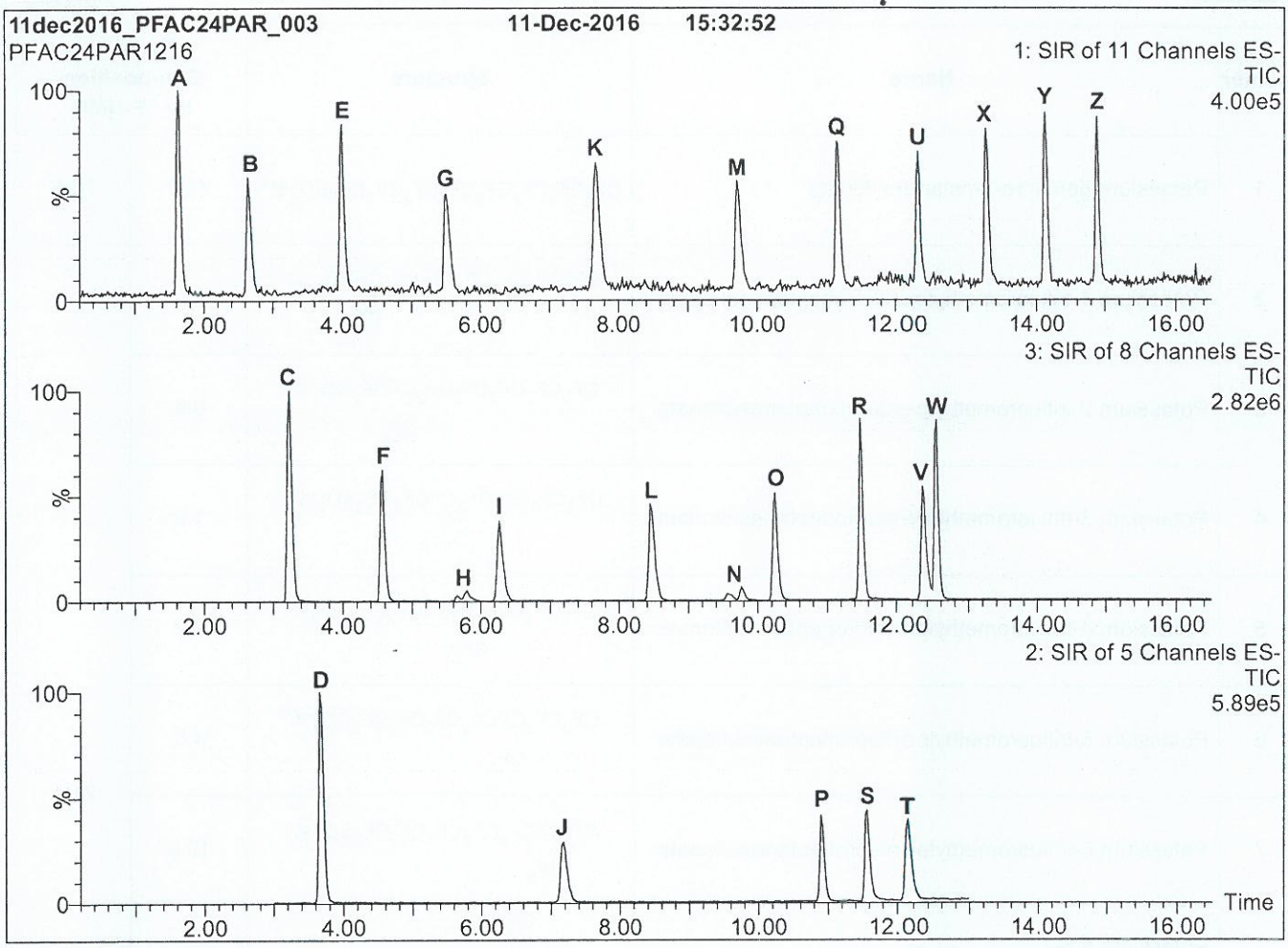
Table C: **PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6	
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9	
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2	
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5	
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0	
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2	
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.03	
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.4	
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07	

* Percent of total perfluorooctanesulfonate isomers only.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

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

Figure 1: **PFAC-24PAR; LC/MS Data (Total Ion Current Chromatogram; SIR)**



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 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)

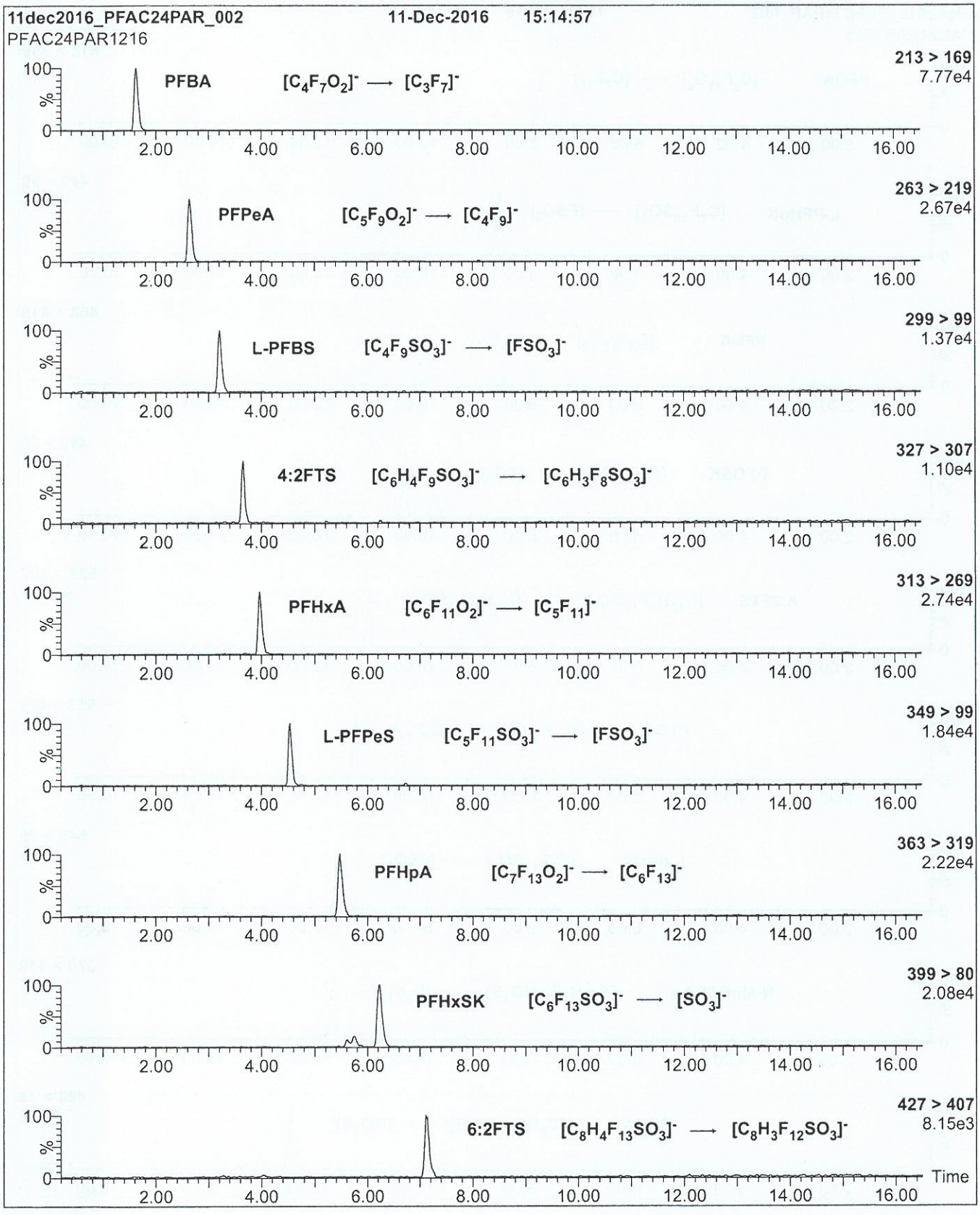


Figure 2: PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)

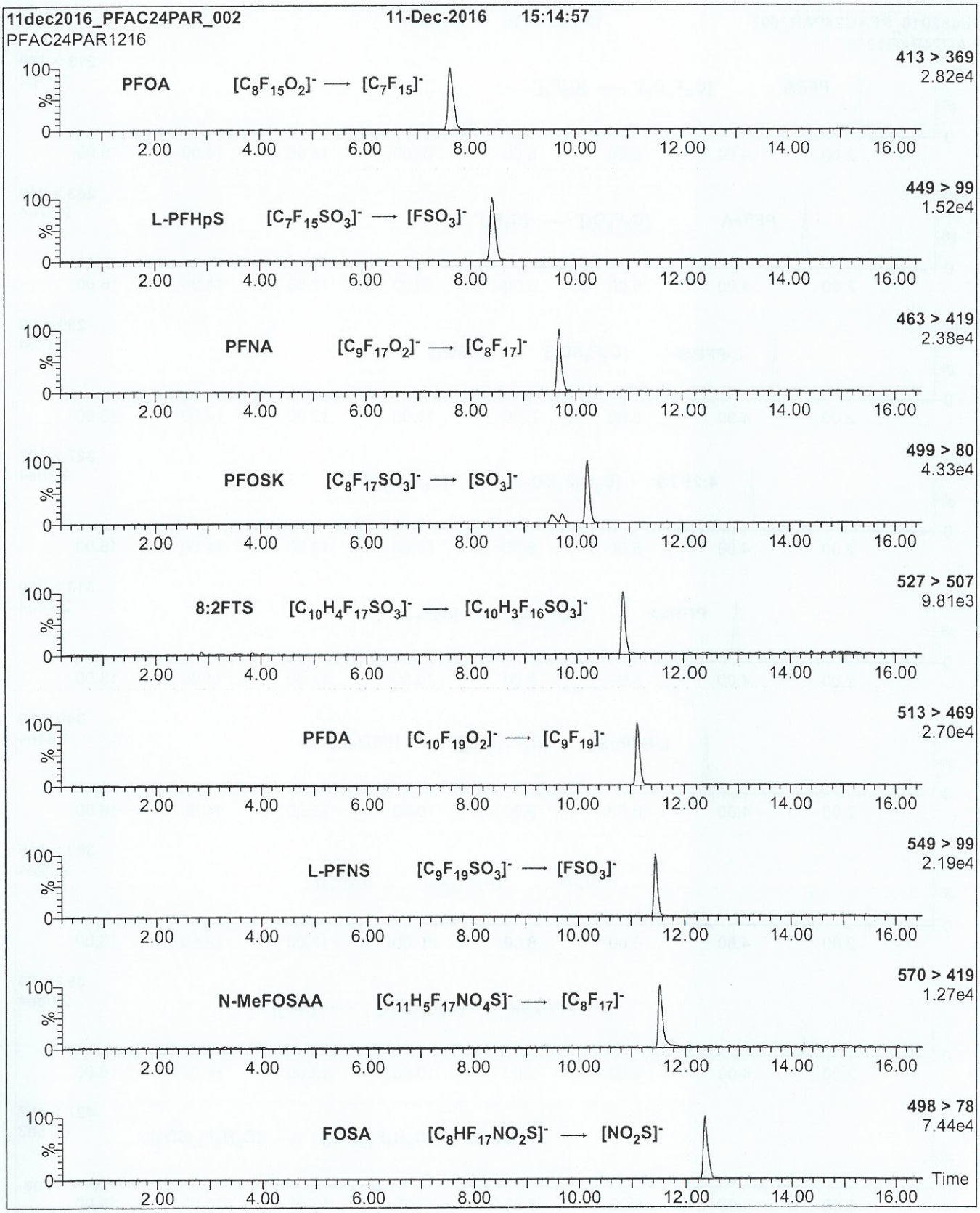
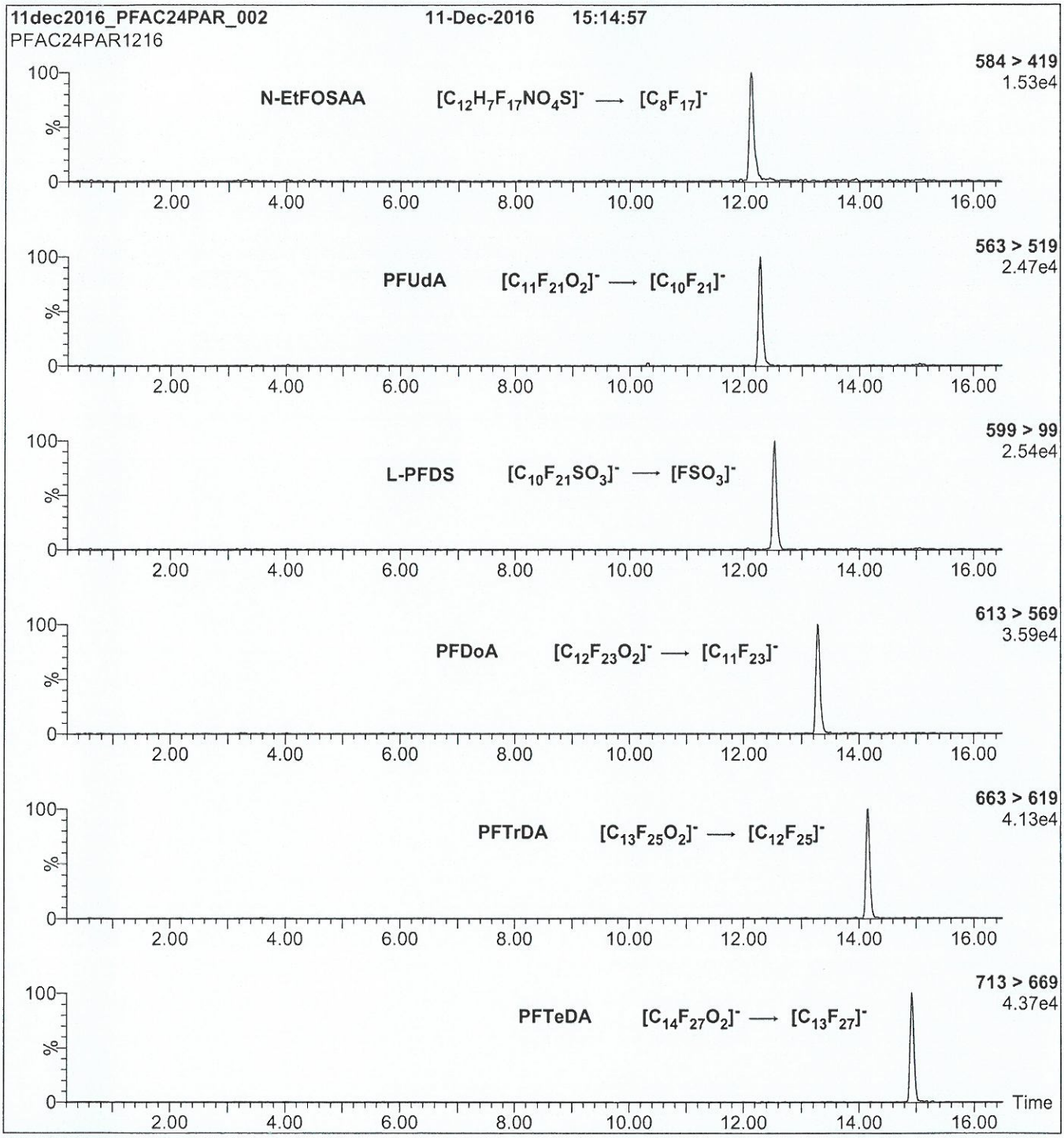


Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-24PAR)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3

Collision Energy (eV) = 8-50 (variable)

Analytical Standard Record

Vista Analytical Laboratory

17F1416

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E1720	EPA-537IS (RS)	17-May-17	** Vendor **	01-Mar-22	17-May-17 12:47 by INJ	1
17E2408	EPA-537IS (RS)	24-May-17	** Vendor **	01-Mar-22	24-May-17 11:17 by INJ	2

Description:	537 IS (RS)	Expires:	14-Jun-18
Standard Type:	Reagent	Prepared:	14-Jun-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	15	Department:	LCMS
Vials:	1	Last Edit:	14-Jun-17 13:38 by INJ

Analyte	CAS Number	Concentration	Units
d3-MeFOSAA		0.8	ug/mL
13C4-PFOS		0.574	ug/mL
13C2-PFOA		0.2	ug/mL

Reviewed By Date

17E1719 INJ 5/17/17

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

17E1720

EPA-537IS

Internal Standard
Primary Dilution Standard

PRODUCT CODE:	EPA-537IS
LOT NUMBER:	537IS0217
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	02/28/2017
LAST TESTED: (mm/dd/yyyy)	03/01/2017
EXPIRY DATE: (mm/dd/yyyy)	03/01/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537IS is a solution/mixture of a mass-labelled (^{13}C) perfluoroalkylcarboxylic acid, a mass-labelled (^{13}C) perfluoroalkylsulfonate, and a mass-labelled (^{2}H) perfluorooctanesulfonamidoacetic acid. The components and their concentrations are given in Table A.

The mass-labelled perfluoroalkylcarboxylic acid and the mass-labelled perfluoroalkylsulfonate both have chemical purities of >98% and isotopic purities of ≥99%. The mass-labelled perfluorooctanesulfonamidoacetic acid has a chemical purity of >98% and an isotopic purity of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
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.

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17E2408

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-537IS

Internal Standard
Primary Dilution Standard

PRODUCT CODE:	EPA-537IS
LOT NUMBER:	537IS0217
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	02/28/2017
LAST TESTED: (mm/dd/yyyy)	03/01/2017
EXPIRY DATE: (mm/dd/yyyy)	03/01/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537IS is a solution/mixture of a mass-labelled (^{13}C) perfluoroalkylcarboxylic acid, a mass-labelled (^{13}C) perfluoroalkylsulfonate, and a mass-labelled (^{2}H) perfluorooctanesulfonamidoacetic acid. The components and their concentrations are given in Table A.

The mass-labelled perfluoroalkylcarboxylic acid and the mass-labelled perfluoroalkylsulfonate both have chemical purities of >98% and isotopic purities of ≥99%. The mass-labelled perfluorooctanesulfonamidoacetic acid has a chemical purity of >98% and an isotopic purity of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
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

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

"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","375-73-
5","PFBS","0.872","ng/L","J","0.394","LOD","","TRG","","","8.90","LOQ","YES","-99","","0.281","0.001","4.45",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","375-85-
9","PFHpA","2.12","ng/L","J","0.475","LOD","","TRG","","","8.90","LOQ","YES","-99","","0.281","0.001","4.45",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","355-46-
4","PFHxS","2.23","ng/L","J","0.369","LOD","","TRG","","","8.90","LOQ","YES","-99","","0.281","0.001","4.45",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","335-67-
1","PFOA","5.93","ng/L","J","0.962","LOD","","TRG","","","8.90","LOQ","YES","-99","","0.281","0.001","4.45",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","375-95-
1","PFNA","4.45","ng/L","U","1.28","LOD","","TRG","","","8.90","LOQ","YES","-99","","0.281","0.001","4.45",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","1763-23-
1","PFOS","5.90","ng/L","J","0.926","LOD","","TRG","","","8.90","LOQ","YES","-99","","0.281","0.001","4.45",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","13C2-PFHxA","13C2-
PFHxA","106","%R","","-99","NA","","SURR","106","","-99","NA","YES","100","","0.281","0.001","-99",""
"RW-19-20170713","EPA Method 537","Initial","1700877-01","Vista","13C2-PFDA","13C2-
PFDA","92.8","%R","","-99","NA","","SURR","92.8","","-99","NA","YES","100","","0.281","0.001","-99",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","375-73-
5","PFBS","4.64","ng/L","U","0.411","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.270","0.001","4.64",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","375-85-
9","PFHpA","4.64","ng/L","U","0.494","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.270","0.001","4.64",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","355-46-
4","PFHxS","4.64","ng/L","U","0.385","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.270","0.001","4.64",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","335-67-
1","PFOA","4.64","ng/L","U","1.00","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.270","0.001","4.64",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","375-95-
1","PFNA","4.64","ng/L","U","1.34","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.270","0.001","4.64",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","1763-23-
1","PFOS","4.64","ng/L","U","0.964","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.270","0.001","4.64",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","13C2-PFHxA","13C2-
PFHxA","104","%R","","-99","NA","","SURR","104","","-99","NA","YES","100","","0.270","0.001","-99",""
"FRB-19-20170713","EPA Method 537","Initial","1700877-02","Vista","13C2-PFDA","13C2-
PFDA","109","%R","","-99","NA","","SURR","109","","-99","NA","YES","100","","0.270","0.001","-99",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","375-73-
5","PFBS","5.00","ng/L","U","0.443","LOD","","TRG","","","10.0","LOQ","YES","-99","","0.250","0.001","5.00",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","375-85-
9","PFHpA","5.00","ng/L","U","0.533","LOD","","TRG","","","10.0","LOQ","YES","-99","","0.250","0.001","5.00",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","355-46-
4","PFHxS","5.00","ng/L","U","0.415","LOD","","TRG","","","10.0","LOQ","YES","-99","","0.250","0.001","5.00",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","335-67-
1","PFOA","5.00","ng/L","U","1.08","LOD","","TRG","","","10.0","LOQ","YES","-99","","0.250","0.001","5.00",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","375-95-
1","PFNA","5.00","ng/L","U","1.44","LOD","","TRG","","","10.0","LOQ","YES","-99","","0.250","0.001","5.00",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","1763-23-
1","PFOS","5.00","ng/L","U","1.04","LOD","","TRG","","","10.0","LOQ","YES","-99","","0.250","0.001","5.00",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","13C2-PFHxA","13C2-
PFHxA","95.8","%R","","-99","NA","","SUR","95.8","","-99","NA","YES","100","","0.250","0.001","-99",""
"B7G0069-BLK1","EPA Method 537","Initial","B7G0069-BLK1","Vista","13C2-PFDA","13C2-
PFDA","89.2","%R","","-99","NA","","SUR","89.2","","-99","NA","YES","100","","0.250","0.001","-99",""
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","375-73-
5","PFBS","37.1","ng/L","","0.443","LOD","","TRG","105","","10.0","LOQ","YES","35.4","","0.250","0.001","5.00","
"
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","375-85-
9","PFHpA","40.9","ng/L","","0.533","LOD","","TRG","102","","10.0","LOQ","YES","40.0","","0.250","0.001","5.00"

,""
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","355-46-
4","PFHxS","39.3","ng/L","","0.415","LOD","","TRG","108","","10.0","LOQ","YES","36.4","","0.250","0.001","5.00"
,""
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","335-67-
1","PFOA","37.4","ng/L","","1.08","LOD","","TRG","93.4","","10.0","LOQ","YES","40.0","","0.250","0.001","5.00","
"
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","375-95-
1","PFNA","37.8","ng/L","","1.44","LOD","","TRG","94.5","","10.0","LOQ","YES","40.0","","0.250","0.001","5.00","
"
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","1763-23-
1","PFOS","37.6","ng/L","","1.04","LOD","","TRG","102","","10.0","LOQ","YES","37.0","","0.250","0.001","5.00",""
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","13C2-PFHxA","13C2-
PFHxA","93.4","%R","","-99","NA","","SUR","93.4","","-99","NA","YES","100","","0.250","0.001","-99",""
"B7G0069-BS1","EPA Method 537","Initial","B7G0069-BS1","Vista","13C2-PFDA","13C2-
PFDA","94.6","%R","","-99","NA","","SUR","94.6","","-99","NA","YES","100","","0.250","0.001","-99",""
"NAWC Trenton","NAWC Trenton","RW-19-20170713","07/13/2017 13:15","DW","1700877-
01","NM","","2.30","EPA Method 537","METHOD","Initial","07/17/2017 08:27","07/19/2017
20:52","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0069","B7G0069","NA","S7G0049","1700877","07/14/2017 09:33","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","FRB-19-20170713","07/13/2017 13:05","DW","1700877-
02","NM","","2.30","EPA Method 537","METHOD","Initial","07/17/2017 08:27","07/19/2017
21:04","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0069","B7G0069","NA","S7G0049","1700877","07/14/2017 09:33","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7G0069-BLK1","01/01/1900 00:00","DW","B7G0069-
BLK1","MB","","-99","EPA Method 537","METHOD","Initial","07/17/2017 08:27","07/19/2017
20:27","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0069","B7G0069","NA","S7G0049","1700877","01/01/1900 00:00","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7G0069-BS1","01/01/1900 00:00","DW","B7G0069-
BS1","LCS","","-99","EPA Method 537","METHOD","Initial","07/17/2017 08:27","07/19/2017
19:50","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0069","B7G0069","NA","S7G0049","1700877","01/01/1900 00:00","01/01/1900 00:00",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **MARY MANG** **DATE:** **AUGUST 3, 2017**

FROM: **MEGAN RITCHIE** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)**
CTO WE08 - FORMER NAWC TRENTON
SDG 1700877

SAMPLES: 2 Aqueous / PFAS

RW-19-20170713 FRB-19-20170713

Overview

The sample set for NAWC Trenton, SDG 1700877 consists of one (1) private well water environmental samples and one (1) field reagent blank (designated FRB-). No field duplicates were included in this data set. The samples were analyzed for six polyfluoroalkyl substances (PFAS).

The samples were collected by Tetra Tech on July 13, 2017 and analyzed by Vista Analytical Laboratory. The analysis was conducted in accordance with EPA Method 537 Revision 1.1 analytical and reporting protocols.

The parameters contained in this SDG were validated with regard to the following parameters: data completeness, holding times, initial/continuing calibrations, laboratory method blanks, surrogate spike recoveries, laboratory control sample results, matrix spike/matrix spike duplicate results, field and laboratory duplicate results, internal standard performance, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Minor

- Detected results reported below the Limit of Quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated (J).

Notes

The field reagent blank FRB-19-20170713 was non-detect for all target analytes.

All analyses were conducted within the hold times specified by the site specific Sampling and Analysis Plan (SAP) and the analytical method.

Non-detected results were reported to the Limit of Detection (LOD).

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Positive results below the LOQ were qualified as estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Superfund Organic Methods Data Review" (January 2017). The text of this report has been formulated to address only those areas affecting data quality.

Megan Ritchie

Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator

Joseph A. Samchuck

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Sample ID: RW-19-20170713

EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 13-Jul-2017 13:15
Location: Trenton

Sample Data

Matrix: Drinking Water
Sample Size: 0.281 L

Laboratory Data

Lab Sample: 1700877-01 Date Received: 14-Jul-2017 9:33
QC Batch: B7G0069 Date Extracted: 17-Jul-2017 8:27
Date Analyzed: 19-Jul-17 20:52 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	0.872	0.394	4.45	8.90	J
PFHpA	2.12	0.475	4.45	8.90	J
PFHxS	2.23	0.369	4.45	8.90	J
PFOA	5.93	0.962	4.45	8.90	J
PFNA	ND	1.28	4.45	8.90	
PFOS	5.90	0.926	4.45	8.90	J

Labeled Standard	%R	LCL-UCL	Qualifiers
SUR 13C2-PFHxA	106	70 - 130	
SUR 13C2-PFDA	92.8	70 - 130	

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

7/26/2017
MNR

Sample ID: FRB-19-20170713

EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 13-Jul-2017 13:05
Location: Trenton

Sample Data

Matrix: Drinking Water
Sample Size: 0.270 L

Laboratory Data

Lab Sample: 1700877-02 Date Received: 14-Jul-2017 9:33
QC Batch: B7G0069 Date Extracted: 17-Jul-2017 8:27
Date Analyzed: 19-Jul-17 21:04 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	0.411	4.64	9.27	
PFHpA	ND	0.494	4.64	9.27	
PFHxS	ND	0.385	4.64	9.27	
PFOA	ND	1.00	4.64	9.27	
PFNA	ND	1.34	4.64	9.27	
PFOS	ND	0.964	4.64	9.27	

Labeled Standard	%R	LCL-UCL	Qualifiers
SUR 13C2-PFHxA	104	70 - 130	
SUR 13C2-PFDA	109	70 - 130	

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

7/26/2017
MNR

Appendix B

Results as Reported by the Laboratory

Sample ID: RW-19-20170713

EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 13-Jul-2017 13:15
Location: Trenton

Sample Data

Matrix: Drinking Water
Sample Size: 0.281 L

Laboratory Data

Lab Sample: 1700877-01 Date Received: 14-Jul-2017 9:33
QC Batch: B7G0069 Date Extracted: 17-Jul-2017 8:27
Date Analyzed: 19-Jul-17 20:52 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	0.872	0.394	4.45	8.90	J
PFHpA	2.12	0.475	4.45	8.90	J
PFHxS	2.23	0.369	4.45	8.90	J
PFOA	5.93	0.962	4.45	8.90	J
PFNA	ND	1.28	4.45	8.90	
PFOS	5.90	0.926	4.45	8.90	J

Labeled Standard	%R	LCL-UCL	Qualifiers
SUR 13C2-PFHxA	106	70 - 130	
SUR 13C2-PFDA	92.8	70 - 130	

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: FRB-19-20170713

EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 13-Jul-2017 13:05
Location: Trenton

Sample Data

Matrix: Drinking Water
Sample Size: 0.270 L

Laboratory Data

Lab Sample: 1700877-02 Date Received: 14-Jul-2017 9:33
QC Batch: B7G0069 Date Extracted: 17-Jul-2017 8:27
Date Analyzed: 19-Jul-17 21:04 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	0.411	4.64	9.27	
PFHpA	ND	0.494	4.64	9.27	
PFHxS	ND	0.385	4.64	9.27	
PFOA	ND	1.00	4.64	9.27	
PFNA	ND	1.34	4.64	9.27	
PFOS	ND	0.964	4.64	9.27	

Labeled Standard	%R	LCL-UCL	Qualifiers
SUR 13C2-PFHxA	104	70 - 130	
SUR 13C2-PFDA	109	70 - 130	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Appendix C

Support Documentation

Submit by Email*

Vista

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project ID: 1700877 Temp 2.3 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

TAT: (Check One)
Standard ◉ 21 days
Rush (surcharge may apply)
◯ 14 days ◯ 7 days Specify:

Project I.D.: **NAWC Trenton** P.O. #: **1135710** Sampler: **Chuck Myer** (Name)

Invoice to: Name	Company	Address	City	State	Zip	Ph#	Fax #
Tetra Tech	**Foster Plaza VII**	**661 Anderson Drive**	**Pittsburgh**	**PA**	**15220**	**412-921-7090**	**412-921-4040**

Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Chuck Myer	**7/13/2017**	**18:00**	Beth Benedict B. Benedict	07/14/17	1000
Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

See "Sample Log-in Checklist" for additional sample information

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 • Fax (916) 673-0106

Method of Shipment: **FedEx**

Tracking No.:

ATTN: **Sample Custodian**

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Container(s) Type	Matrix	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8290 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 2378-TCDD	EPA1668 2378-TCDD/TCDF	EPA1668 PCDD/PCDF	EPA1614 TOTALS	CARB429 COPLANAR PCBs	CARB429 209 CONGENERS	CARB429 PBDE	CARB429 PAH	CARB429 WHO-29	CARB429 UCMR 3 List
RW-19-20170713	7/13/17	13:15	Trenton	2	PJ	AQ																X
FRB-19-20170713	7/13/17	13:05	Trenton	2	PJ	AQ																X

Special Instructions/Comments:
FedEx 6612 1992 7014

SEND DOCUMENTATION AND RESULTS TO:

Name: **Mary Mang**
Company: **Tetra Tech**
Address: **234 Mall Blvd Suite 260**
City: **King of Prussia** State: **PA** Zip: **19406**
Phone: **610-382-1174** Fax: **610-491-9645**
Email: **mary.mang@tetratech.com**

Container Types: A = 1 Liter Amber, G = Glass Jar
P = PUF, T = MM5 Train, O = Other **PJ**

***Bottle Preservative Type:** ☐ T = Thiosulfate,
☐ O = Other

Matrix Types: DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B=Blood/Serum
O = Other AQ

Vista Work Order No. 1700877
Case Narrative

Sample Condition on Receipt:

Two drinking samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 537

The drinking water samples were extracted and analyzed for the UCMR list of six PFAS using EPA Method 537.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Laboratory Fortified Blank (LFB) and Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the LRB above 1/2 the LOQ. The LFB recoveries were within the method acceptance criteria

The surrogate recoveries for all QC and field samples were within the acceptance criteria.

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-19.qld

Last Altered: Thursday, July 20, 2017 10:48:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:50:21 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: 1700877-01, Description: RW-19-20170713, Name: 170719L1_19.wiff, Date: 19-Jul-2017, Time: 20:52:16

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90	1.110e2	8.406e3		0.281	3.46	0.872	
2	3	PFHpA	318.90	4.516e2	1.034e4		0.281	4.30	2.12	
3	4	PFHxS	79.91	2.159e2	8.406e3		0.281	4.40	2.23	
4	5	PFOA	368.90	1.594e3	1.034e4		0.281	4.68	5.93	
5	6	PFNA	419.00	2.000e2	1.034e4		0.281	5.00	0.767	
6	7	PFOS	79.92	5.761e2	8.406e3		0.281	5.05	5.90	
7	15	13C2-PFHxA	269.90	7.575e3	1.034e4	0.690	0.281	3.82	37.8	106
8	16	13C2-PFDA	470.00	6.522e3	1.034e4	0.680	0.281	5.27	33.0	92.8
9	18	13C2-PFOA	369.90	1.034e4	1.034e4	1.000	0.281	4.67	35.6	100
10	19	13C4-PFOS	79.93	8.406e3	8.406e3	1.000	0.281	5.04	102	100

Example Calculation for PFOA for Sample RW-19-20170713

(1594 / 10340) * (35.6 / 0.931647) = 5.89

GM 7/20/17

Sample ID: LRB

EPA Method 537

Matrix: Drinking Water
Sample Size: 0.250 L

QC Batch: B7G0069
Date Extracted: 17-Jul-2017 8:27

Lab Sample: B7G0069-BLK1
Date Analyzed: 19-Jul-17 20:27 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	0.443	5.00	10.0	
PFHpA	ND	0.533	5.00	10.0	
PFHxS	ND	0.415	5.00	10.0	
PFOA	ND	1.08	5.00	10.0	
PFNA	ND	1.44	5.00	10.0	
PFOS	ND	1.04	5.00	10.0	

Labeled Standard		%R	LCL-UCL	Qualifiers
SUR	13C2-PFHxA	95.8	70 - 130	
SUR	13C2-PFDA	89.2	70 - 130	

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: LFB

EPA Method 537

Matrix:	Drinking Water	QC Batch:	B7G0069	Lab Sample:	B7G0069-BS1
Sample Size:	0.250 L	Date Extracted:	17-Jul-2017 8:27	Date Analyzed:	19-Jul-17 19:50 Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits
PFBS	37.1	35.4	105	70 - 130
PFHpA	40.9	40.0	102	70 - 130
PFHxS	39.3	36.4	108	70 - 130
PFOA	37.4	40.0	93.4	70 - 130
PFNA	37.8	40.0	94.5	70 - 130
PFOS	37.6	37.0	102	70 - 130

	Labeled Standard	%R	LCL-UCL
SUR	13C2-PFHxA	93.4	70 - 130
SUR	13C2-PFDA	94.6	70 - 130

LCL-UCL - Lower control limit - upper control limit

Batch: B7G0069

Matrix: Drinking Water

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1700877-01	0.28079 ✓	NA	NA	1000	17-Jul-17 08:27	HAC			Drinking Water	537 PFAS DW DoD Unmo
1700877-02	0.26959 ✓	↓	↓	1000	17-Jul-17 08:27	HAC			Drinking Water	537 PFAS DW DoD Unmo
B7G0069-BLK1	0.25 ✓	↓	↓	1000	17-Jul-17 08:27	HAC				QC
B7G0069-BS1	0.25 ✓	↓	↓	1000	17-Jul-17 08:27	HAC	17D2705 ✓	10 ✓		QC

HB 7/18/17

Matrix: Drinking Water

Method: 537 PFAS DW DoD Unmodifie

PREPARATION BENCH SHEET

B7G0069

Chemist: JTC

Prep Date/Time: 17-Jul-17 08:27

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE C7G0062	IS CHEM/WIT DATE
☐	B7G0069-BLK1 (A)	NA	NA	(0.250) ✓	JTC SK 7/17/17	BD JTC 7.17.17	JTC SK JTC 7.17.17
☐	B7G0069-BS1 (A)	↓	↓	↓ ✓	↓	↓	↓
☐	1700877-01	307.66	26.87	0.28079 ✓	↓	↓	↓
☐	1700877-02	297.86	29.17	0.26959 ✓	↓	↓	↓

(A) 1.15g trizma added JTC 7/17/17

SS Name	NS Name	IS Name		
17F1415, 50µl (V4)	17D1705, 10µL (V1)	17F1416, 50µL (V4)	SPE Chem: Strata X 33µm 500mg/6mL Lot#: 517-001874 Ele SOLV: MeOH Lot#: DR972 Final Volume(s): 1mL	Check Out: Chemist/Date: JTC 7/17/17 Check In: Chemist/Date: LA Balance ID: HMS-8

Comments: Assume 1 g = 1 mL

HRMS - 8

Vista Analytical Laboratory

BALANCE CALIBRATION CHECK

Weights # 22370 and 7718

Date	☑ for Weight # verification	Weight 1 1 g (0.9900 – 1.0100)	Weight 2 100 g (99.00 – 101.00)	Weight 3 2000 g (1980 – 2020)	Initials	Acceptable? (Y/N)
6/20/17	✓	1.00	100.00	2000.00	OBF	Y
6/21/17	✓	1.01	100.01	2000.03	HB	Y
6/22/17	✓	1.00	99.99	2000.01	KBF	Y
6/23/17	✓	0.99	100.00	2000.00	HB	Y
6/26/17	✓	1.00	100.00	2000.00	HB	Y
6/27/17	✓	1.01	100.00	2000.04	HB	Y
6/28/17	✓	1.00	~~101.00~~ 100.01	2000.01	HB	Y
6/29/17	✓	1.00	100.01	1999.98	JK	Y
6/30/17	✓	1.00	99.99	1999.98	HB	Y
7/3/17	✓	1.01	100.00	1999.99	KBF	Y
7/5/17	✓	1.00	100.00	2000.01	JK	Y
7/6/17	✓	1.00	100.00	1999.99	EL	Y
7/7/17	✓	1.00	100.00	1999.99	KBF	Y
7.8.17	✓	0.99	100.00	2000.00	BP	Y
7/10/17	✓	1.00	100.00	2000.02	HB	Y
7/11/17	✓	1.00	100.00	2000.04	TM	Y
7/12/17	✓	~~0.99~~ 1.00 KBF 7/12/17	99.99	1999.99	KBF	Y
7.13.17	✓	1.01	99.99	~~1999.97~~ 1999.99 BP 7.13.17	BP	Y
7/14/17	✓	1.00	100.00	2000.02	HB	Y
7/17/17	✓	0.99	100.01	2000.05	JK	Y
7/18/17	✓	1.00	100.00	2000.01	HB	Y

Comments:

Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-35.qld

Last Altered: Thursday, July 20, 2017 10:53:59 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:54:18 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 20 Jul 2017 10:37:36
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

ID: ST170719L1-10 537 DW CS2 17G1919, Description: 537 DW CS2 17G1919, Name: 170719L1_35.wiff, Date: 20-Jul-2017, Time: 00:08:18

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1	PFBS	79.90	8.666e3	1.168e4		1.00	3.45	13.8	104
2	3	PFHpA	318.90	1.767e4	1.552e4		1.00	4.30	15.5	103
3	4	PFHxS	79.91	6.681e3	1.168e4		1.00	4.40	13.9	102
4	5	PFOA	368.90	1.916e4	1.552e4		1.00	4.68	14.1	93.8
5	6	PFNA	419.00	1.806e4	1.552e4		1.00	4.99	14.0	93.4
6	7	PFOS	79.92	6.841e3	1.168e4		1.00	5.04	14.2	102
7	15	13C2-PFHxA	269.90	1.051e4	1.552e4	0.690	1.00	3.81	9.81	98.1
8	16	13C2-PFDA	470.00	9.405e3	1.552e4	0.680	1.00	5.26	8.91	89.1
9	18	13C2-PFOA	369.90	1.552e4	1.552e4	1.000	1.00	4.67	10.0	100
10	19	13C4-PFOS	79.93	1.168e4	1.168e4	1.000	1.00	5.04	28.7	100

70-130

7/20/17

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170719L1_01_P...	IPA	19-Jul-17	17:11:50
2	170719L1_02_P...	ST170719L1-1 537 DW CS(-3) 17G1913	19-Jul-17	17:24:05
3	170719L1_03_P...	ST170719L1-2 537 DW CS(-2) 17G1915	19-Jul-17	17:36:20
4	170719L1_04_P...	ST170719L1-3 537 DW CS(-1) 17G1916	19-Jul-17	17:48:34
5	170719L1_05_P...	ST170719L1-4 537 DW CS(0) 17G1917	19-Jul-17	18:00:46
6	170719L1_06_P...	ST170719L1-5 537 DW CS1 17G1918	19-Jul-17	18:13:02
7	170719L1_07_P...	ST170719L1-6 537 DW CS2 17G1919	19-Jul-17	18:25:12
8	170719L1_08_P...	ST170719L1-7 537 DW CS3 17G1920	19-Jul-17	18:37:29
9	170719L1_09_P...	ST170719L1-8 537 DW CS4 17G1921	19-Jul-17	18:49:44
10	170719L1_10_P...	ST170719L1-9 537 DW CS5 17G1922	19-Jul-17	19:01:58
11	170719L1_11_P...	IPA	19-Jul-17	19:14:13
12	170719L1_12_P...	SS170719L1-1 537 DW SSS 17G1923	19-Jul-17	19:26:29
13	170719L1_13_P...	IPA	19-Jul-17	19:38:43
14	170719L1_14_P...	B7G0069-BS1	19-Jul-17	19:50:58
15	170719L1_15_P...	IPA	19-Jul-17	20:03:13
16	170719L1_16_P...	B7F0065-BLK1	19-Jul-17	20:15:29
17	170719L1_17_P...	B7G0069-BLK1	19-Jul-17	20:27:44
18	170719L1_18_P...	B7F0104-BLK1	19-Jul-17	20:40:00
19	170719L1_19_P...	1700877-01	19-Jul-17	20:52:16
20	170719L1_20_P...	1700877-02	19-Jul-17	21:04:32
21	170719L1_21_P...	B7F0104-BS1	19-Jul-17	21:16:47
22	170719L1_22_P...	B7F0104-BS2	19-Jul-17	21:29:02
23	170719L1_23_P...	B7F0104-BS3	19-Jul-17	21:41:18
24	170719L1_24_P...	B7F0104-BS4	19-Jul-17	21:53:33
25	170719L1_25_P...	B7F0065-BS1	19-Jul-17	22:05:47
26	170719L1_26_P...	B7F0065-BS2	19-Jul-17	22:18:02
27	170719L1_27_P...	B7F0065-BS3	19-Jul-17	22:30:16
28	170719L1_28_P...	B7F0065-BS4	19-Jul-17	22:42:32
29	170719L1_29_P...	IPA	19-Jul-17	22:54:47
30	170719L1_30_P...	B7G0025-BLK1	19-Jul-17	23:07:03
31	170719L1_31_P...	B7G0025-BS2	19-Jul-17	23:19:18

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
32	170719L1_32_P...	B7G0025-BS3	19-Jul-17	23:31:31
33	170719L1_33_P...	B7G0025-BS4	19-Jul-17	23:43:46
34	170719L1_34_P...	B7G0025-BS5	19-Jul-17	23:56:02
35	170719L1_35_P...	ST170719L1-10 537 DW CS2 17G1919	20-Jul-17	00:08:18

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:06:40 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

Compound name: PFBS
Coefficient of Determination: R^2 = 0.994915
Calibration curve: 1.54739 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	0.885	3.45	6.57e2	1.10e4	1.10	24.7	1.93
2	2	170719L1_04_P1_...	1.77	3.45	1.17e3	1.12e4	1.94	9.8	1.70
3	3	170719L1_05_P1_...	4.42	3.45	2.98e3	1.15e4	4.82	9.0	1.69
4	4	170719L1_06_P1_...	8.85	3.45	5.72e3	1.10e4	9.63	8.8	1.68
5	5	170719L1_07_P1_...	13.3	3.44	8.18e3	1.17e4	13.0	-1.9	1.52
6	6	170719L1_08_P1_...	17.7	3.45	1.09e4	1.12e4	18.0	1.9	1.58
7	7	170719L1_09_P1_...	22.1	3.45	1.39e4	1.11e4	23.2	5.0	1.62
8	8	170719L1_10_P1_...	44.2	3.45	2.50e4	1.12e4	41.4	-6.2	1.45

7/20/17

7/20/17

Compound name: PFHpA
Coefficient of Determination: R^2 = 0.993511
Calibration curve: 0.733581 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	1.00	4.30	1.34e3	1.41e4	1.30	30.3	0.956
2	2	170719L1_04_P1_...	2.00	4.30	2.45e3	1.38e4	2.42	21.2	0.889
3	3	170719L1_05_P1_...	5.00	4.30	6.15e3	1.40e4	5.98	19.7	0.878
4	4	170719L1_06_P1_...	10.0	4.30	1.11e4	1.48e4	10.2	2.4	0.751
5	5	170719L1_07_P1_...	15.0	4.29	1.61e4	1.41e4	15.6	4.2	0.764
6	6	170719L1_08_P1_...	20.0	4.30	2.03e4	1.39e4	19.9	-0.5	0.730
7	7	170719L1_09_P1_...	25.0	4.30	2.59e4	1.39e4	25.4	1.7	0.746
8	8	170719L1_10_P1_...	50.0	4.30	4.61e4	1.33e4	47.1	-5.8	0.691

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:18 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.996283
Calibration curve: 1.1771 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	0.910	4.40	4.97e2	1.10e4	1.10	20.7	1.42
2	2	170719L1_04_P1_...	1.82	4.40	9.27e2	1.12e4	2.02	11.2	1.31
3	3	170719L1_05_P1_...	4.56	4.40	2.30e3	1.15e4	4.90	7.5	1.26
4	4	170719L1_06_P1_...	9.12	4.40	4.33e3	1.10e4	9.58	5.0	1.24
5	5	170719L1_07_P1_...	13.7	4.40	6.48e3	1.17e4	13.5	-1.0	1.17
6	6	170719L1_08_P1_...	18.2	4.41	8.44e3	1.12e4	18.3	0.6	1.18
7	7	170719L1_09_P1_...	22.8	4.40	1.09e4	1.11e4	24.1	5.6	1.24
8	8	170719L1_10_P1_...	45.6	4.41	1.98e4	1.12e4	43.2	-5.3	1.11

Compound name: PFOA
Coefficient of Determination: R^2 = 0.997935
Calibration curve: -0.00384959 * x^2 + 0.931647 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	1.00	4.68	1.43e3	1.41e4	1.10	9.8	1.02
2	2	170719L1_04_P1_...	2.00	4.68	2.78e3	1.38e4	2.19	9.5	1.01
3	3	170719L1_05_P1_...	5.00	4.68	6.05e3	1.40e4	4.73	-5.4	0.864
4	4	170719L1_06_P1_...	10.0	4.68	1.20e4	1.48e4	9.06	-9.4	0.813
5	5	170719L1_07_P1_...	15.0	4.68	1.90e4	1.41e4	15.5	3.4	0.902
6	6	170719L1_08_P1_...	20.0	4.68	2.45e4	1.39e4	20.7	3.3	0.880
7	7	170719L1_09_P1_...	25.0	4.67	2.90e4	1.39e4	25.0	0.1	0.836
8	8	170719L1_10_P1_...	50.0	4.68	4.91e4	1.33e4	49.7	-0.6	0.736

Vista Analytical Laboratory Q2

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:18 Pacific Daylight Time

Compound name: PFNA
Coefficient of Determination: R^2 = 0.995887
Calibration curve: -0.00490978 * x^2 + 0.898989 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	1.00	5.00	1.34e3	1.41e4	1.07	7.0 (A)	0.956
2	2	170719L1_04_P1_...	2.00	5.00	2.80e3	1.38e4	2.29	14.6	1.02
3	3	170719L1_05_P1_...	5.00	4.99	6.03e3	1.40e4	4.92	-1.6	0.861
4	4	170719L1_06_P1_...	10.0	5.00	1.21e4	1.48e4	9.60	-4.0	0.818
5	5	170719L1_07_P1_...	15.0	4.99	1.60e4	1.41e4	13.7	-8.8	0.758
6	6	170719L1_08_P1_...	20.0	4.99	2.32e4	1.39e4	20.9	4.6	0.833
7	7	170719L1_09_P1_...	25.0	4.99	2.80e4	1.39e4	26.2	4.8	0.807
8	8	170719L1_10_P1_...	50.0	5.00	4.32e4	1.33e4	49.3	-1.4	0.648

(A) point was excluded.
DM 7/20/17

Compound name: PFOS
Coefficient of Determination: R^2 = 0.996748
Calibration curve: 1.18715 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	0.924	5.05	4.92e2	1.10e4	1.08	16.5	1.38
2	2	170719L1_04_P1_...	1.85	5.05	8.59e2	1.12e4	1.86	0.5	1.19
3	3	170719L1_05_P1_...	4.62	5.05	2.32e3	1.15e4	4.89	5.8	1.26
4	4	170719L1_06_P1_...	9.24	5.04	4.36e3	1.10e4	9.57	3.5	1.23
5	5	170719L1_07_P1_...	13.9	5.05	6.27e3	1.17e4	13.0	-6.5	1.11
6	6	170719L1_08_P1_...	18.5	5.04	8.53e3	1.12e4	18.4	-0.6	1.18
7	7	170719L1_09_P1_...	23.1	5.05	1.14e4	1.11e4	24.8	7.4	1.27
8	8	170719L1_10_P1_...	46.2	5.05	2.07e4	1.12e4	44.7	-3.2	1.15

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:06:40 Pacific Daylight Time

Compound name: 13C2-PFHxA
Response Factor: 0.690499
RRF SD: 0.0268534, Relative SD: 3.88898
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	10.0	3.81	9.33e3	1.41e4	9.62	-3.8	0.664
2	2	170719L1_04_P1_...	10.0	3.81	9.75e3	1.38e4	10.3	2.7	0.709
3	3	170719L1_05_P1_...	10.0	3.81	9.69e3	1.40e4	10.0	0.2	0.692
4	4	170719L1_06_P1_...	10.0	3.81	9.47e3	1.48e4	9.26	-7.4	0.640
5	5	170719L1_07_P1_...	10.0	3.80	9.65e3	1.41e4	9.95	-0.5	0.687
6	6	170719L1_08_P1_...	10.0	3.81	9.99e3	1.39e4	10.4	4.0	0.718
7	7	170719L1_09_P1_...	10.0	3.81	9.72e3	1.39e4	10.2	1.6	0.701
8	8	170719L1_10_P1_...	10.0	3.82	9.52e3	1.33e4	10.3	3.3	0.713

Compound name: 13C2-PFDA
Response Factor: 0.679755
RRF SD: 0.0249008, Relative SD: 3.66321
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	10.0	5.27	9.38e3	1.41e4	9.82	-1.8	0.668
2	2	170719L1_04_P1_...	10.0	5.26	8.85e3	1.38e4	9.47	-5.3	0.644
3	3	170719L1_05_P1_...	10.0	5.27	9.33e3	1.40e4	9.80	-2.0	0.666
4	4	170719L1_06_P1_...	10.0	5.26	9.71e3	1.48e4	9.66	-3.4	0.656
5	5	170719L1_07_P1_...	10.0	5.27	9.86e3	1.41e4	10.3	3.2	0.702
6	6	170719L1_08_P1_...	10.0	5.27	9.95e3	1.39e4	10.5	5.3	0.716
7	7	170719L1_09_P1_...	10.0	5.26	9.65e3	1.39e4	10.2	2.4	0.696
8	8	170719L1_10_P1_...	10.0	5.27	9.21e3	1.33e4	10.2	1.6	0.690

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:06:40 Pacific Daylight Time

Compound name: 13C2-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	10.0	4.68	1.41e4	1.41e4	10.0	0.0	1.00
2	2	170719L1_04_P1_...	10.0	4.68	1.38e4	1.38e4	10.0	0.0	1.00
3	3	170719L1_05_P1_...	10.0	4.67	1.40e4	1.40e4	10.0	0.0	1.00
4	4	170719L1_06_P1_...	10.0	4.67	1.48e4	1.48e4	10.0	0.0	1.00
5	5	170719L1_07_P1_...	10.0	4.67	1.41e4	1.41e4	10.0	0.0	1.00
6	6	170719L1_08_P1_...	10.0	4.68	1.39e4	1.39e4	10.0	0.0	1.00
7	7	170719L1_09_P1_...	10.0	4.67	1.39e4	1.39e4	10.0	0.0	1.00
8	8	170719L1_10_P1_...	10.0	4.68	1.33e4	1.33e4	10.0	0.0	1.00

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170719L1_03_P1_...	28.7	5.05	1.10e4	1.10e4	28.7	0.0	1.00
2	2	170719L1_04_P1_...	28.7	5.05	1.12e4	1.12e4	28.7	0.0	1.00
3	3	170719L1_05_P1_...	28.7	5.04	1.15e4	1.15e4	28.7	0.0	1.00
4	4	170719L1_06_P1_...	28.7	5.04	1.10e4	1.10e4	28.7	0.0	1.00
5	5	170719L1_07_P1_...	28.7	5.05	1.17e4	1.17e4	28.7	0.0	1.00
6	6	170719L1_08_P1_...	28.7	5.04	1.12e4	1.12e4	28.7	0.0	1.00
7	7	170719L1_09_P1_...	28.7	5.04	1.11e4	1.11e4	28.7	0.0	1.00
8	8	170719L1_10_P1_...	28.7	5.05	1.12e4	1.12e4	28.7	0.0	1.00

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170719L1_01_P...	IPA	19-Jul-17	17:11:50
2	170719L1_02_P...	ST170719L1-1 537 DW CS(-3) 17G1913	19-Jul-17	17:24:05
3	170719L1_03_P...	ST170719L1-2 537 DW CS(-2) 17G1915	19-Jul-17	17:36:20
4	170719L1_04_P...	ST170719L1-3 537 DW CS(-1) 17G1916	19-Jul-17	17:48:34
5	170719L1_05_P...	ST170719L1-4 537 DW CS(0) 17G1917	19-Jul-17	18:00:46
6	170719L1_06_P...	ST170719L1-5 537 DW CS1 17G1918	19-Jul-17	18:13:02
7	170719L1_07_P...	ST170719L1-6 537 DW CS2 17G1919	19-Jul-17	18:25:12
8	170719L1_08_P...	ST170719L1-7 537 DW CS3 17G1920	19-Jul-17	18:37:29
9	170719L1_09_P...	ST170719L1-8 537 DW CS4 17G1921	19-Jul-17	18:49:44
10	170719L1_10_P...	ST170719L1-9 537 DW CS5 17G1922	19-Jul-17	19:01:58
11	170719L1_11_P...	IPA	19-Jul-17	19:14:13
12	170719L1_12_P...	SS170719L1-1 537 DW SSS 17G1923 (A)	19-Jul-17	19:26:29
13	170719L1_13_P...	IPA	19-Jul-17	19:38:43
14	170719L1_14_P...	B7G0069-BS1	19-Jul-17	19:50:58
15	170719L1_15_P...	IPA	19-Jul-17	20:03:13
16	170719L1_16_P...	B7F0065-BLK1	19-Jul-17	20:15:29
17	170719L1_17_P...	B7G0069-BLK1	19-Jul-17	20:27:44
18	170719L1_18_P...	B7F0104-BLK1	19-Jul-17	20:40:00
19	170719L1_19_P...	1700877-01	19-Jul-17	20:52:16
20	170719L1_20_P...	1700877-02	19-Jul-17	21:04:32
21	170719L1_21_P...	B7F0104-BS1	19-Jul-17	21:16:47
22	170719L1_22_P...	B7F0104-BS2	19-Jul-17	21:29:02
23	170719L1_23_P...	B7F0104-BS3	19-Jul-17	21:41:18
24	170719L1_24_P...	B7F0104-BS4	19-Jul-17	21:53:33
25	170719L1_25_P...	B7F0065-BS1	19-Jul-17	22:05:47
26	170719L1_26_P...	B7F0065-BS2	19-Jul-17	22:18:02
27	170719L1_27_P...	B7F0065-BS3	19-Jul-17	22:30:16
28	170719L1_28_P...	B7F0065-BS4	19-Jul-17	22:42:32
29	170719L1_29_P...	IPA	19-Jul-17	22:54:47
30	170719L1_30_P...	B7G0025-BLK1	19-Jul-17	23:07:03
31	170719L1_31_P...	B7G0025-BS2	19-Jul-17	23:19:18

(A) Second source standard already run for this quarter, see 537_Q2_07-05-17_L6_SS.
elh
7/20/17

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 10:21:48 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:22:07 Pacific Daylight Time

Compound name: PFBS

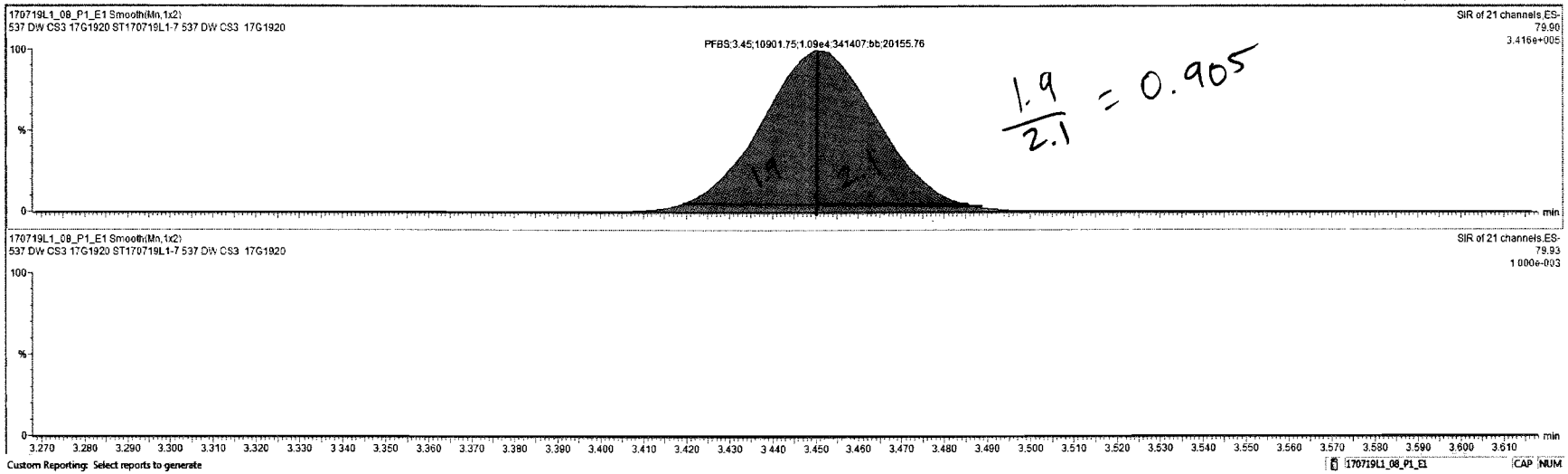
	Name	ID	Acq.Date	Acq.Time
32	170719L1_32_P...	B7G0025-BS3	19-Jul-17	23:31:31
33	170719L1_33_P...	B7G0025-BS4	19-Jul-17	23:43:46
34	170719L1_34_P...	B7G0025-BS5	19-Jul-17	23:56:02
35	170719L1_35_P...	ST170719L1-10 537 DW CS2 17G1919	20-Jul-17	00:08:18

TargetLynx - 170719L1-CRV.qld - [Chromatogram]

File Edit View Display Processing Window Help

170719L1_08_P1_E1 - ST170719L1-7 537 DW CS3 17G1920 - 537 DW CS3 17G1920

	Name	Resp	ISTD	wt/vol	RT	RA	My	Conc	%Rec	DL	EMPC
1	PFBS	1.09e4		1.000	3.45			18.0	102	0.00172	
2	PFHxA	1.65e4		1.000	3.82			20.5	103	0.00650	
3	PFHpA	2.03e4		1.000	4.30			19.9	99.5	0.00558	
4	PFHxS	8.44e3		1.000	4.41			18.3	101	0.00757	
5	PFOA	2.45e4		1.000	4.68			21.6	108	0.00965	
6	PFNA	2.32e4		1.000	4.99			22.2	111	0.00427	
7	PFOS	8.53e3		1.000	5.04			18.4	99.4	0.000904	
8	PFDA	1.44e4		1.000	5.27			21.1	105	0.00218	
9	N-MeFOSAA	8.43e3		1.000	5.39			18.3	91.3	0.00940	
10	N-EtFOSAA	6.52e3		1.000	5.50			16.3	81.4	0.00290	
11	PFUnA	1.56e4		1.000	5.50			19.8	98.9	0.00184	
12	PFDoA	1.83e4		1.000	5.71			18.4	91.9	0.00328	
13	PFTrDA	1.82e4		1.000	5.89			19.0	95.0	0.00193	
14	PFTeDA	1.63e4		1.000	6.06			19.6	98.2	0.00179	
15	13C2-PFHxA	9.99e3	0.69	1.000	3.81			10.4	104	0.00210	
16	13C2-PFDA	9.95e3	0.68	1.000	5.27			10.5	105	0.000606	
17	d5-N-EtFOSAA	2.31e2	0.17	1.000	5.49			36.1	87.8	1.92	
18	13C2-PFOA	1.39e4	1.00	1.000	4.68			10.0	100	0.00131	
19	13C4-PFOS	1.12e4	1.00	1.000	5.04			26.7	100	0.000993	
20	d3-N-MeFOSAA	1.56e3	1.00	1.000	5.38			40.0	100	0.0109	



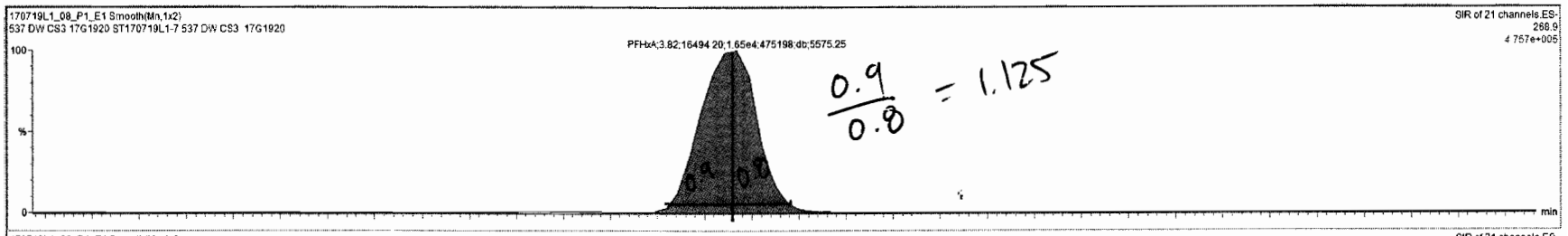
$$\frac{1.9}{2.1} = 0.905$$

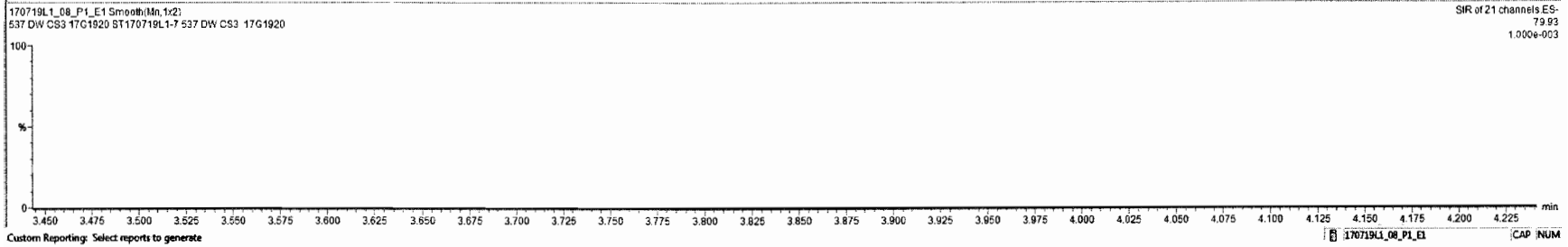
TargetLynx - 170719L1-CRV.qld - [Chromatogram]

File Edit View Display Processing Window Help

170719L1_08_P1_E1 - ST170719L1-7 537 DW CS3 17G1920 - 537 DW CS3 17G1920

	Name	Resp	RRF	wtVol	RT	RA	sy	Conc	%Rec	DL	EMPC
1	PFBS	1.09e4		1.000	3.45			18.0	102	0.00172	
2	PFHxA	1.65e4		1.000	3.82			20.5	103	0.00650	
3	PFHpA	2.03e4		1.000	4.30			19.9	99.5	0.00558	
4	PFHxS	8.44e3		1.000	4.41			18.3	101	0.00757	
5	PFOA	2.45e4		1.000	4.68			21.6	108	0.00965	
6	PFNA	2.32e4		1.000	4.99			22.2	111	0.00427	
7	PFOS	8.53e3		1.000	5.04			18.4	99.4	0.000904	
8	PFDA	1.44e4		1.000	5.27			21.1	105	0.00218	
9	N-MeFOSAA	8.43e3		1.000	5.39			18.3	91.3	0.00948	
10	N-EtFOSAA	6.52e3		1.000	5.50			16.3	81.4	0.00290	
11	PFUnA	1.50e4		1.000	5.50			19.8	98.9	0.00184	
12	PFDoA	1.83e4		1.000	5.71			18.4	91.9	0.00328	
13	PFTrDA	1.82e4		1.000	5.89			19.0	95.0	0.00193	
14	PFTeDA	1.63e4		1.000	6.06			19.6	98.2	0.00179	
15	13C2-PFHxA	9.99e3	0.69	1.000	3.81			10.4	104	0.00210	
16	13C2-PFDA	9.95e3	0.68	1.000	5.27			10.5	105	0.000606	
17	d5-N-EtFOSAA	2.31e2	0.17	1.000	5.49			35.1	87.8	1.92	
18	13C2-PFOA	1.39e4	1.00	1.000	4.68			10.0	100	0.00131	
19	13C4-PFOS	1.12e4	1.00	1.000	5.04			28.7	100	0.000993	
20	d3-N-MeFOSAA	1.58e3	1.00	1.000	5.38			40.0	100	0.0105	





Custom Reporting: Select reports to generate

170719L1_08_P1_E1 CAP NUM

Quantify Compound Summary Report

Printed Thu Jul 20 09:13:19 2017

Compound 19: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Fl
1	ST170719L1-2 537 DW CS(-2) 17G1915	170719L1_03_P1_E1	Standard	28.7	5.05	11043.28	11043.28	28.7	bb
2	ST170719L1-3 537 DW CS(-1) 17G1916	170719L1_04_P1_E1	Standard	28.7	5.04	11168.012	11168.012	28.7	bb
3	ST170719L1-4 537 DW CS(0) 17G1917	170719L1_05_P1_E1	Standard	28.7	5.04	11466.354	11466.354	28.7	bb
4	ST170719L1-5 537 DW CS1 17G1918	170719L1_06_P1_E1	Standard	28.7	5.04	11011.62	11011.62	28.7	bb
5	ST170719L1-6 537 DW CS2 17G1919	170719L1_07_P1_E1	Standard	28.7	5.05	11660.281	11660.281	28.7	bb
6	ST170719L1-7 537 DW CS3 17G1920	170719L1_08_P1_E1	Standard	28.7	5.04	11210.401	11210.401	28.7	bb
7	ST170719L1-8 537 DW CS4 17G1921	170719L1_09_P1_E1	Standard	28.7	5.04	11078.607	11078.607	28.7	bb
8	ST170719L1-9 537 DW CS5 17G1922	170719L1_10_P1_E1	Standard	28.7	5.05	11174.181	11174.181	28.7	bb

RPD

HIGH AREA	11660.281
LOW AREA	11011.62
RPD %	5.7

INSTRUCTIONS: IN TARGETLYNX, VERIFY YOU ARE USING THE LIST14 DW LAYOUT. RIGHT CLICK ON THE SUMMARY BOX AND SELECT "LIST BY COMPOUND". SELECT 13C2-PFOA, 13C4-PFOS OR D3-NMEFOSAA. CLICK ON EDIT. SELECT

Quantify Compound Summary Report

Printed Thu Jul 20 09:16:54 2017

Compound 18: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Fl	Conc.
1	ST170719L1-2 537 DW CS(-2) 17G1915	170719L1_03_P1_E1	Standard	10	4.68	14051.525	14051.525	10	bb	10
2	ST170719L1-3 537 DW CS(-1) 17G1916	170719L1_04_P1_E1	Standard	10	4.68	13755.888	13755.888	10	bb	10
3	ST170719L1-4 537 DW CS(0) 17G1917	170719L1_05_P1_E1	Standard	10	4.67	14010.383	14010.383	10	bb	10
4	ST170719L1-5 537 DW CS1 17G1918	170719L1_06_P1_E1	Standard	10	4.67	14797.67	14797.67	10	bb	10
5	ST170719L1-6 537 DW CS2 17G1919	170719L1_07_P1_E1	Standard	10	4.67	14057.743	14057.743	10	bb	10
6	ST170719L1-7 537 DW CS3 17G1920	170719L1_08_P1_E1	Standard	10	4.68	13901.337	13901.337	10	bb	10
7	ST170719L1-8 537 DW CS4 17G1921	170719L1_09_P1_E1	Standard	10	4.67	13866.152	13866.152	10	bb	10
8	ST170719L1-9 537 DW CS5 17G1922	170719L1_10_P1_E1	Standard	10	4.68	13343.445	13343.445	10	bb	10

RPD

HIGH AREA	14797.67
LOW AREA	13343.445
RPD %	10.3

INSTRUCTIONS: IN TARGETLYNX, VERIFY YOU ARE USING THE LIST14 DW LAYOUT. RIGHT CLICK ON THE SUMMARY BOX AND SELECT "LIST BY COMPOUND". SELECT 13C2-PFOA, 13C4-PFOS OR D3-NMEFOSAA. CLICK ON EDIT. SELECT COP

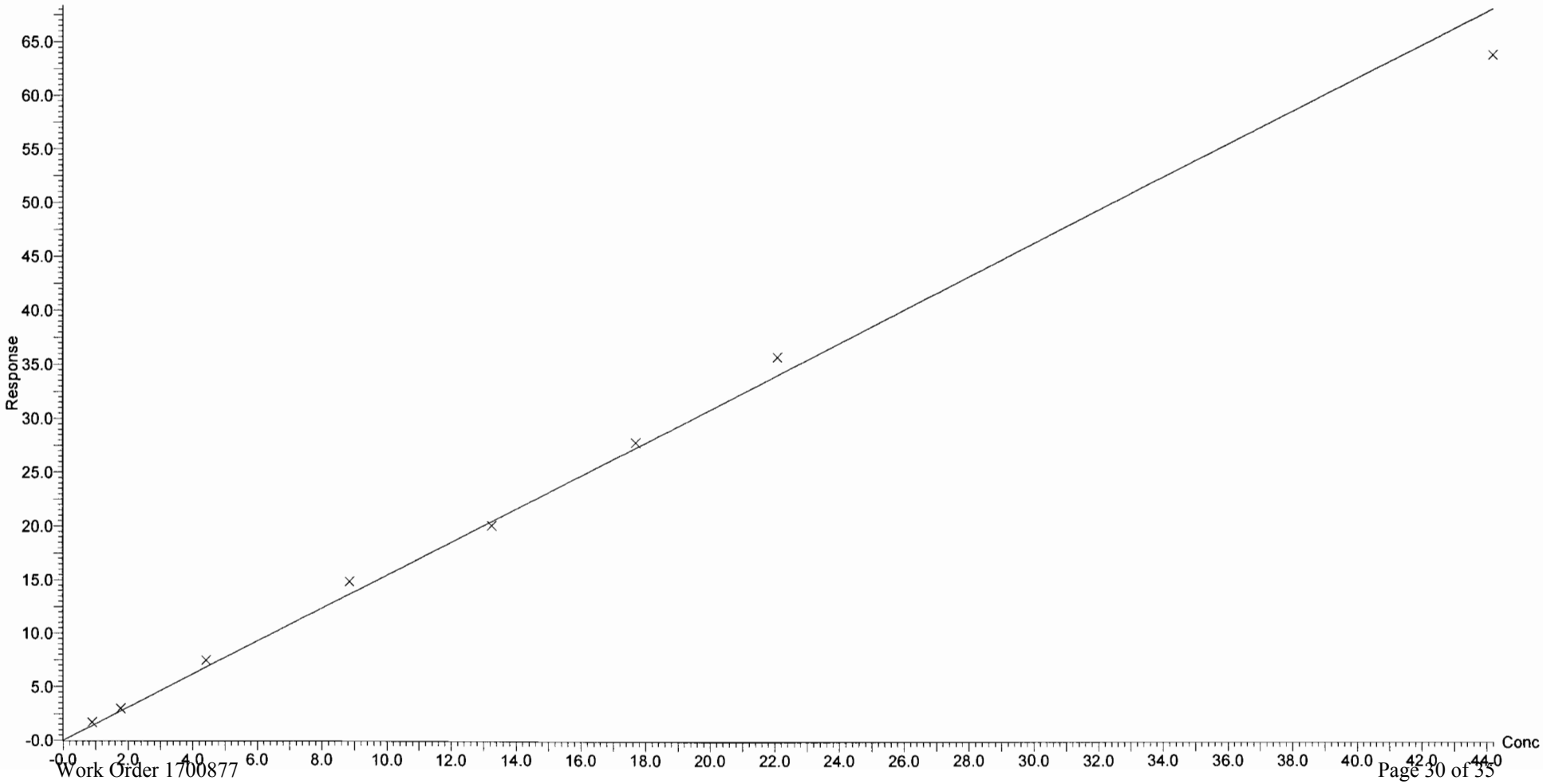
Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 09:27:40

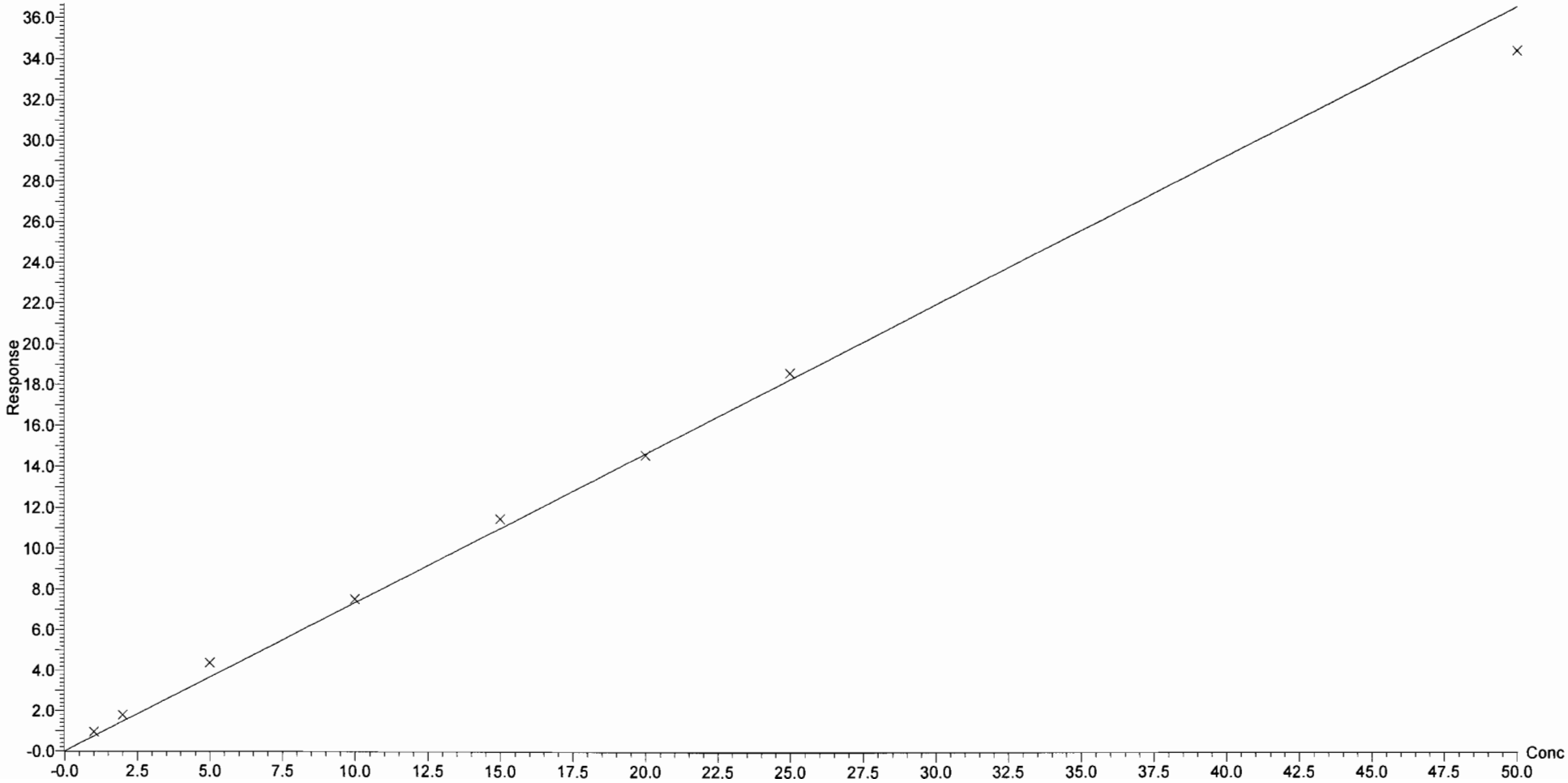
Compound name: PFBS
Coefficient of Determination: R^2 = 0.994915
Calibration curve: 1.54739 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

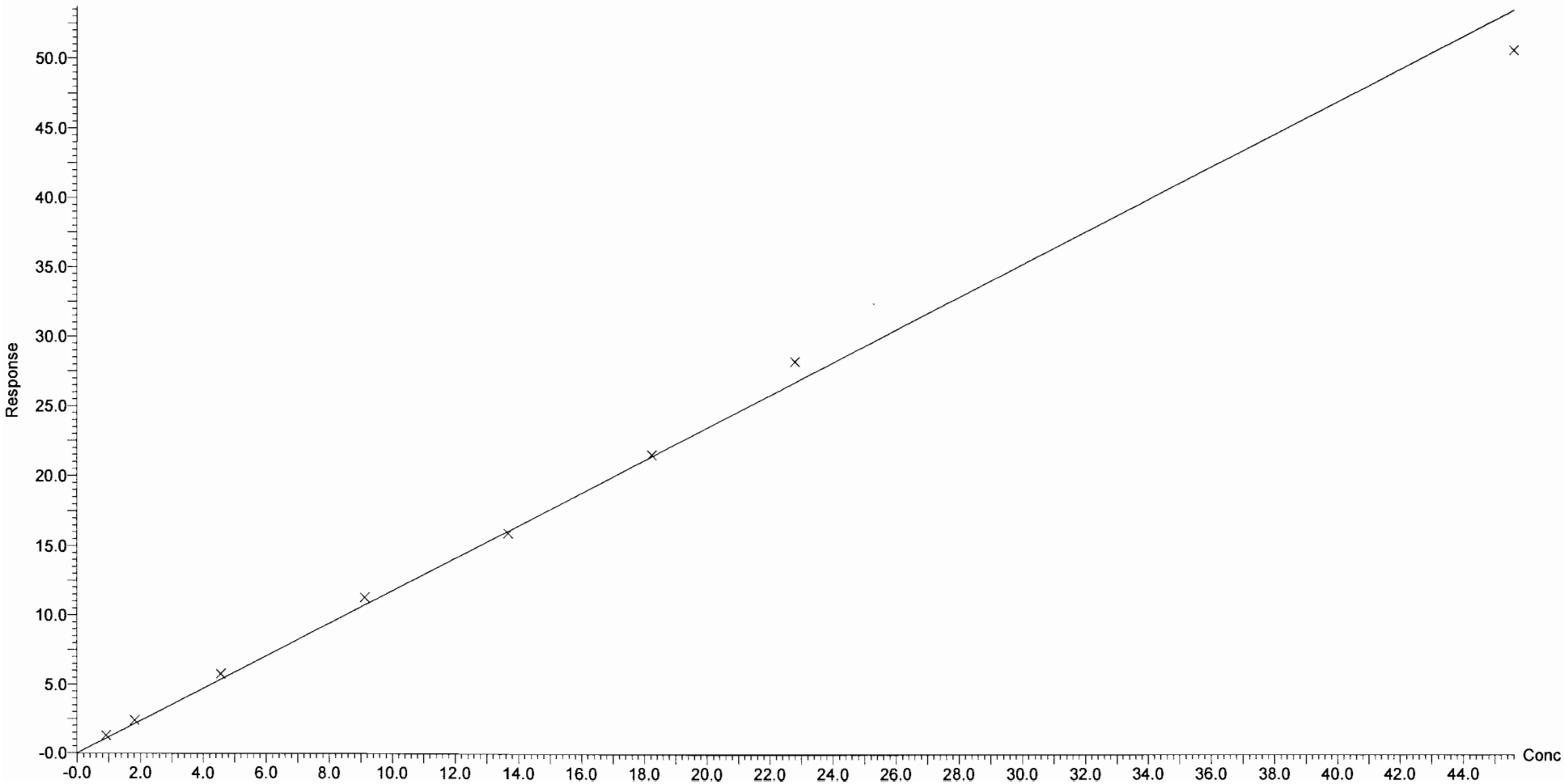
Compound name: PFHpA
Coefficient of Determination: R^2 = 0.993511
Calibration curve: 0.733581 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.996283
Calibration curve: 1.1771 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



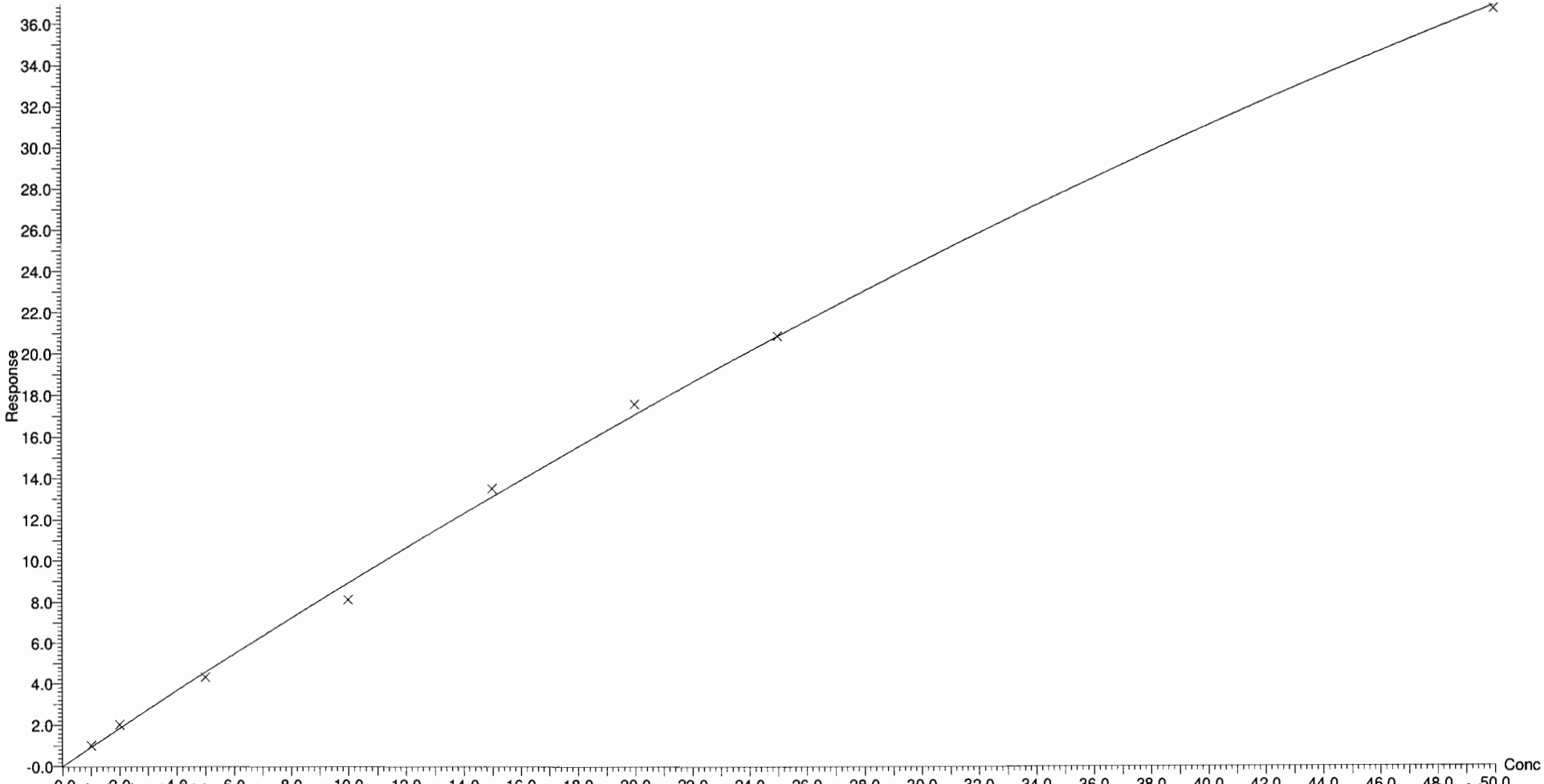
Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:45 Pacific Daylight Time

Method: U:\Q2.PRO\MethDB\PFC List 14_537_DW.mdb 19 Jul 2017 10:04:22
Calibration: U:\Q2.PRO\CurveDB\C18_537_Q2_7-19-17_L6.cdb 20 Jul 2017 10:36:38

Compound name: PFOA
Coefficient of Determination: R^2 = 0.997935
Calibration curve: -0.00384959 * x^2 + 0.931647 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

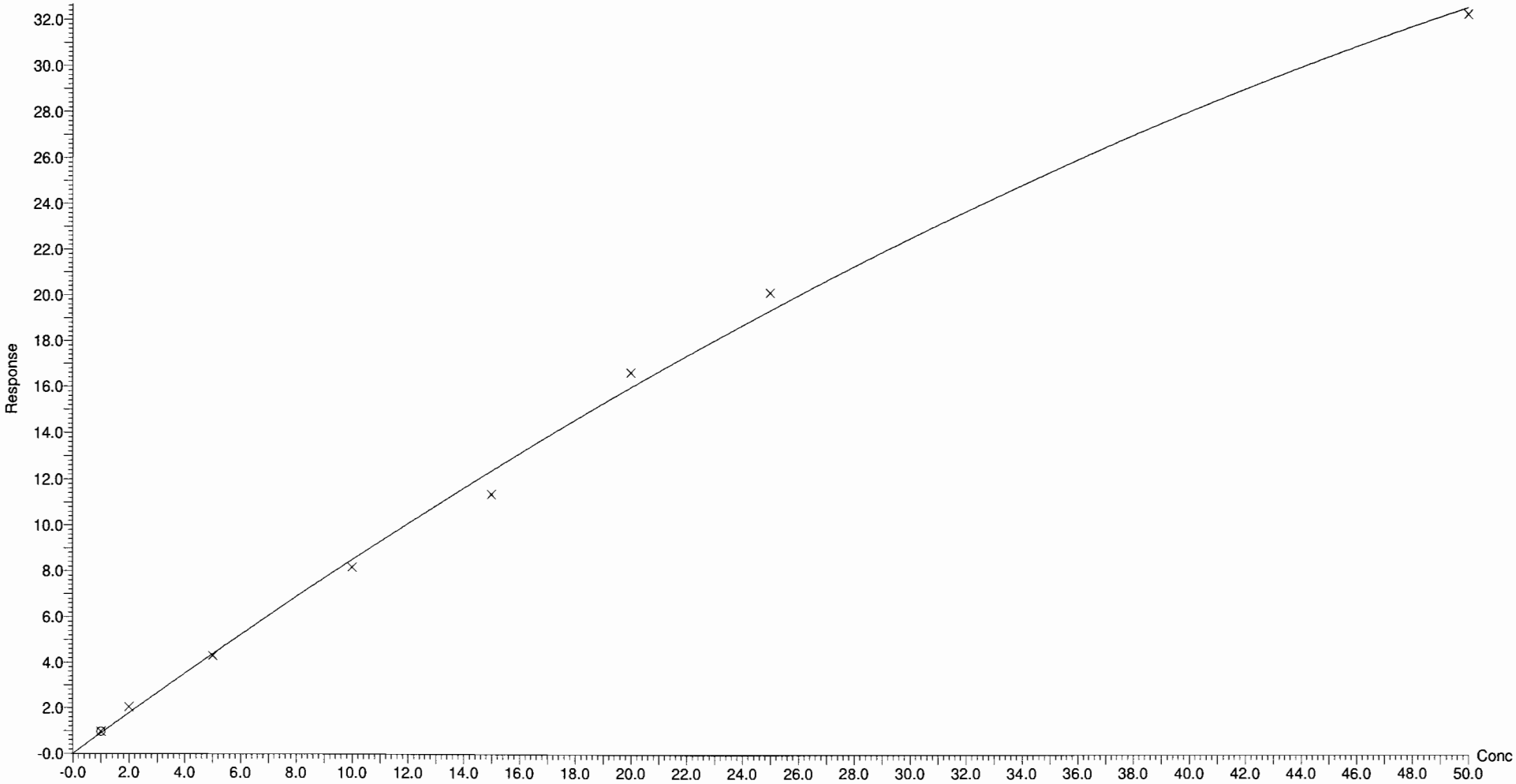


Vista Analytical Laboratory Q1

Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 10:36:38 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:38:45 Pacific Daylight Time

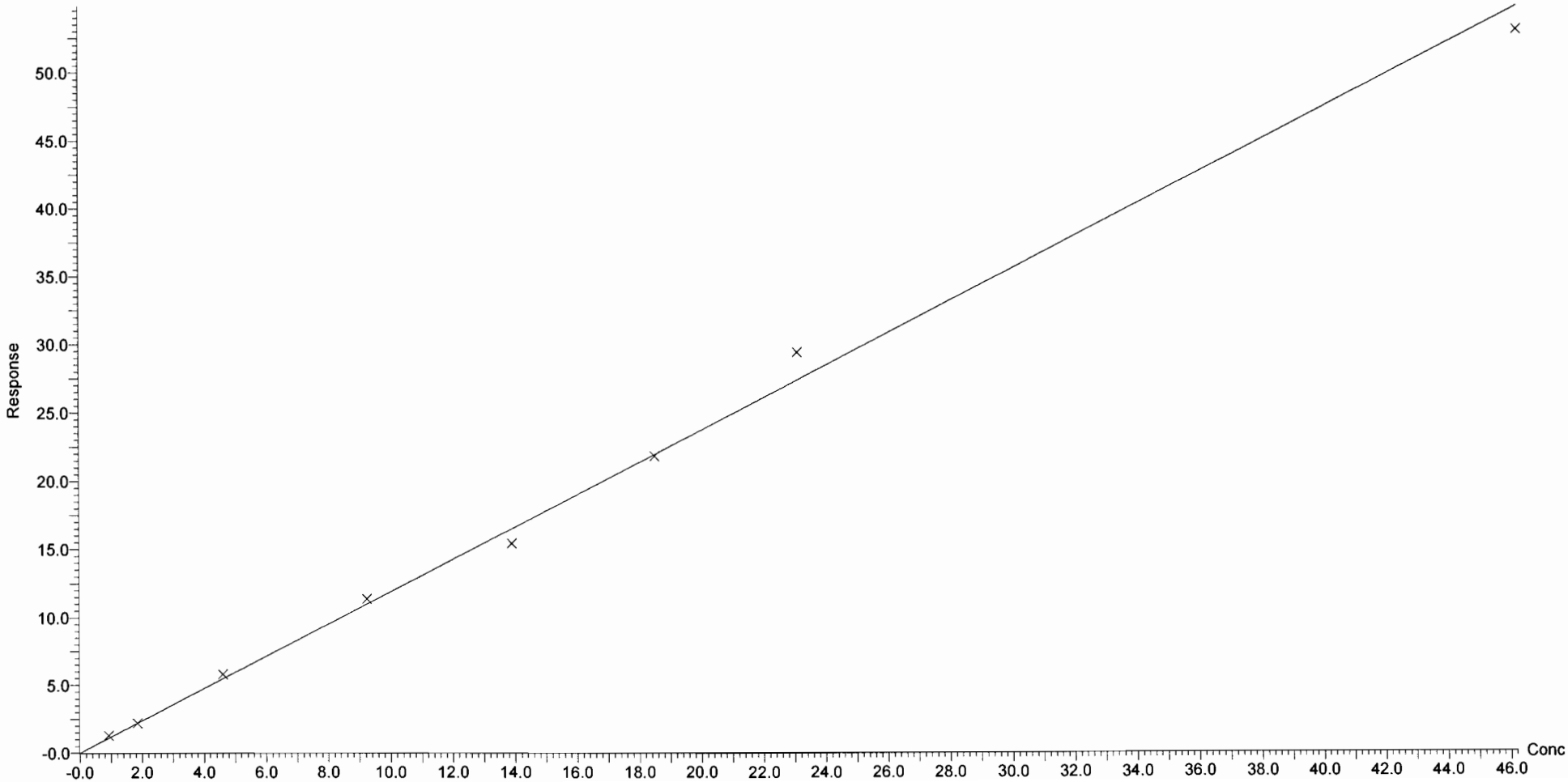
Compound name: PFNA
Coefficient of Determination: R^2 = 0.995887
Calibration curve: -0.00490978 * x^2 + 0.898989 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\Q2.PRO\Results\170719L1\170719L1-CRV.qld

Last Altered: Thursday, July 20, 2017 09:27:40 Pacific Daylight Time
Printed: Thursday, July 20, 2017 10:05:49 Pacific Daylight Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.996748
Calibration curve: 1.18715 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	TRENTON_NAWC	1700877							N6247016D9008	WE08	TETRA TECH, INC.	FRB-19-20170713	Water for QC samples	Field Reagent Blank	13-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	TRENTON_NAWC	1700877	OFFSITE_PFOAS	SITE 00001	RW19	Domestic well	404454.478	521777.83	N6247016D9008	WE08	TETRA TECH, INC.	RW-19-20170713	Drinking water	Normal (Regular)	13-Jul-17	537	Perfluoroalkyl Compounds