NAVFAC
Naval Facilities Engineering Command

Groundwater/Drinking Water Sample Results, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, Sample Location Report, SDG 1900478

NAS
Chase Field TX
December 2020

April 01, 2019

Vista Work Order No. 1900478

Ms. Nia Nikmanesh
KMEA
2423 Hoover Avenue
National City, CA 91950

Dear Ms. Nikmanesh,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on March 18, 2019 under your Project Name 'Chase Field'.

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,

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. 1900478
Case Narrative

Sample Condition on Receipt:

Three drinking water 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, Rev. 1.1

The samples were extracted and analyzed for a selected list of 14 PFAS using EPA Method 537, Rev. 1.1.

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.

Two Laboratory Fortified Blanks (LFB/LFBD) and a Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank. The LFB/LFBD recoveries were within the method acceptance criteria.

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

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900478-01	Charlie's Pasture-DW 031319	13-Mar-19 18:20	18-Mar-19 09:10	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1900478-02	Dup-1	13-Mar-19 00:00	18-Mar-19 09:10	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1900478-03	Field Blank	13-Mar-19 18:25	18-Mar-19 09:10	HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB **EPA Method 537**

Client Data
Name: KMEA
Project: Chase Field
Matrix: Aqueous

Laboratory Data
Lab Sample: B9C0124-BLK1
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFHxA	307-24-4	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFHpA	375-85-9	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFHxS	355-46-4	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFOA	335-67-1	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFNA	375-95-1	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFOS	1763-23-1	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFDA	335-76-2	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
MeFOSAA	2355-31-9	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
EtFOSAA	2991-50-6	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFUnA	2058-94-8	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFDoA	307-55-1	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFTrDA	72629-94-8	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
PFTeDA	376-06-7	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
13C2-PFDA	SURR	105	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1
d5-EtFOSAA	SURR	94.1	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:30	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LFBD **EPA Method 537**

Name:	KMEA	Lab Sample:	B9C0124-BS1/B9C0124-BSD1
Project:	Chase Field	QC Batch:	B9C0124
Matrix:	Aqueous	Samp Size:	0.250/0.250 L
		Date Extracted:	21-Mar-19
		Column:	BEH C18

Analyte	CAS Number	LFB (ug/L)	LFB Spike Amt	LFB % Rec	LFB Quals	LFBD (ug/L)	LFBD Spike Amt	LFBD % Rec	RPD	LFBD Quals	%Rec Limits	RPD Limits	LFB Analyzed	LFB Dil	LFBD Analyzed	LFBD Dil
PFBS	375-73-5	0.0713	0.0708	101		0.0657	0.0708	92.9	8.08		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFHxA	307-24-4	0.0850	0.0800	106		0.0751	0.0800	93.9	12.3		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFHpA	375-85-9	0.0819	0.0800	102		0.0763	0.0800	95.4	7.12		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFHxS	355-46-4	0.0736	0.0728	101		0.0660	0.0728	90.7	10.9		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFOA	335-67-1	0.0832	0.0800	104		0.0766	0.0800	95.8	8.18		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFNA	375-95-1	0.0836	0.0800	105		0.0718	0.0800	89.7	15.2		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFOS	1763-23-1	0.0701	0.0740	94.8		0.0715	0.0740	96.6	1.89		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFDA	335-76-2	0.0766	0.0800	95.7		0.0755	0.0800	94.4	1.42		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
MeFOSAA	2355-31-9	0.0770	0.0800	96.3		0.0752	0.0800	94.0	2.34		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
EtFOSAA	2991-50-6	0.0769	0.0800	96.2		0.0728	0.0800	91.0	5.49		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFUnA	2058-94-8	0.0710	0.0800	88.8		0.0733	0.0800	91.6	3.18		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFDoA	307-55-1	0.0696	0.0800	87.0		0.0695	0.0800	86.8	0.153		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFTrDA	72629-94-8	0.0699	0.0800	87.3		0.0691	0.0800	86.4	1.10		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1
PFTeDA	376-06-7	0.0700	0.0800	87.5		0.0665	0.0800	83.1	5.21		70-130	30	30-Mar-19 16:37	1	28-Mar-19 18:19	1

Labeled Standards	Type	LFB % Rec	LFB Quals	LFBD % Rec	LFBD Quals	Limits	LFB Analyzed	LFB Dil	LFBD Analyzed	LFBD Dil
13C2-PFHxA	SURR	109		94.4		70-130	30-Mar-19 16:37	1	28-Mar-19 18:19	1
13C2-PFDA	SURR	95.5		95.6		70-130	30-Mar-19 16:37	1	28-Mar-19 18:19	1
d5-EtFOSAA	SURR	97.2		94.3		70-130	30-Mar-19 16:37	1	28-Mar-19 18:19	1

Sample ID: Charlie's Pasture-DW 031319

EPA Method 537

Client Data

Name: KMEA
Project: Chase Field
Location: Preservative-TZ

Matrix: Drinking Water
Date Collected: 13-Mar-19 18:20

Laboratory Data

Lab Sample: 1900478-01
Date Received: 18-Mar-19 09:10

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0424	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFHxA	307-24-4	0.368	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFHpA	375-85-9	0.183	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFHxS	355-46-4	1.04	0.0304	0.0500	0.100	D	B9C0124	21-Mar-19	0.250 L	30-Mar-19 16:48	10
PFOA	335-67-1	0.807	0.0304	0.0500	0.100	D	B9C0124	21-Mar-19	0.250 L	30-Mar-19 16:48	10
PFNA	375-95-1	0.0280	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFOS	1763-23-1	1.52	0.0304	0.0500	0.100	D	B9C0124	21-Mar-19	0.250 L	30-Mar-19 16:48	10
PFDA	335-76-2	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
MeFOSAA	2355-31-9	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
EtFOSAA	2991-50-6	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFUnA	2058-94-8	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFDoA	307-55-1	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFTrDA	72629-94-8	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
PFTeDA	376-06-7	ND	0.00304	0.00500	0.0100		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	98.8	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
13C2-PFDA	SURR	90.0	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1
d5-EtFOSAA	SURR	86.6	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 18:51	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Dup-1

EPA Method 537

Client Data

Name: KMEA
Project: Chase Field
Location: Preservative-TZ

Matrix: Drinking Water
Date Collected: 13-Mar-19 00:00

Laboratory Data

Lab Sample: 1900478-02
Date Received: 18-Mar-19 09:10

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0444	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFHxA	307-24-4	0.401	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFHpA	375-85-9	0.192	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFHxS	355-46-4	0.886	0.0306	0.0502	0.101	D	B9C0124	21-Mar-19	0.249 L	30-Mar-19 16:59	10
PFOA	335-67-1	0.827	0.0306	0.0502	0.101	D	B9C0124	21-Mar-19	0.249 L	30-Mar-19 16:59	10
PFNA	375-95-1	0.0316	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFOS	1763-23-1	1.38	0.0306	0.0502	0.101	D	B9C0124	21-Mar-19	0.249 L	30-Mar-19 16:59	10
PFDA	335-76-2	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
MeFOSAA	2355-31-9	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
EtFOSAA	2991-50-6	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFUnA	2058-94-8	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFDoA	307-55-1	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFTrDA	72629-94-8	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
PFTeDA	376-06-7	ND	0.00306	0.00502	0.0101		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
13C2-PFDA	SURR	100	70 - 130		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1
d5-EtFOSAA	SURR	95.2	70 - 130		B9C0124	21-Mar-19	0.249 L	28-Mar-19 19:01	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: Field Blank

EPA Method 537

Client Data

Name: KMEA
Project: Chase Field
Location: Preservative-TZ

Matrix: Drinking Water
Date Collected: 13-Mar-19 18:25

Laboratory Data

Lab Sample: 1900478-03
Date Received: 18-Mar-19 09:10

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFHxA	307-24-4	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFHpA	375-85-9	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFHxS	355-46-4	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFOA	335-67-1	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFNA	375-95-1	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFOS	1763-23-1	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFDA	335-76-2	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
MeFOSAA	2355-31-9	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
EtFOSAA	2991-50-6	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFUnA	2058-94-8	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFDoA	307-55-1	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFTrDA	72629-94-8	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
PFTeDA	376-06-7	ND	0.00304	0.00500	0.00999		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
13C2-PFDA	SURR	99.0	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1
d5-EtFOSAA	SURR	97.6	70 - 130		B9C0124	21-Mar-19	0.250 L	28-Mar-19 19:12	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA 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
Conc.	Concentration
D	Dilution
DL	Detection limit
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
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

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

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-19-10
Virginia Department of General Services	9618
Washington Department of Ecology	C584-19
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
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

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 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

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 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

Rev. No.: 0
Rev. Date: 06/27/2017

ID: LR - 537COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1900478 Temp: 7.8 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

Project ID: Chase Field PO#: PO934 Sampler: Dan Haug (name)
wood - 5026167008.23.****

TAT (check one): Standard: ☒ 21 days; Rush (surcharge may apply): ☐ 14 days ☐ 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Kevin Olness/Kelli Miller	Wood	9210 Sky Park Court, Suite 200	San Diego	CA	858-633-2804	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Daniel B. Haug / Daniel B. Haug	3/14/19	1600	Ashley Mason agm	03/18/19	0910
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

Method of Shipment:

ATTN:

Tracking No.:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/ PFOS	UCMR3 PFAS List:6	537 List: 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/ PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
Charles Pasture-DW 031319	3/13/19	1820	Preservative - TZ	2	P	DW								X	
DUP-1	3/13/19	0000	Preservative - TZ	2	P	DW								X	
Field Blank	3/13/19	1825	Preservative - TZ	1	P	DW								X	

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:

Name: Kevin Olness / Kelli Miller
Company:
Address:
City: State: Zip:
Phone: Fax:
Email:

Container Types: P= HDPE, PJ= HDPE Jar, O = Other:

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma:

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

Page: 1 of 1

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 1900478 TAT 14 days

Samples Arrival:	**Date/Time** 03/18/19 0910	**Initials:** agm	**Location:** WR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 03/18/19 1315	**Initials:** MWS	**Location:** WR-2 **Shelf/Rack:** B-3, F-7

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

Temp °C: 7.9 (uncorrected)	**Probe used:** Y / (N)	**Thermometer ID:** IR-4
Temp °C: 7.8 (corrected)		

	YES	NO	NA
Adequate Sample Volume Received? * no backup for FB sample; 1-250mL	* ✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # 7747 0964 2033	✓		
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)	None	Other	(Yes)	No	NA
Shipping Container	(Vista)	Client	(Retain)	Return		Dispose	

Comments:

Sample label	COC ID
Dup1	Dup-1
Charlie's Pasture - Field Blank	Field Blank

Does not affect sample integrity.

EXTRACTION INFORMATION

Process Sheet

Workorder: 1900478

Prep Expiration: 2019-Mar-27
Client: KMEA

Workorder Due: 01-Apr-19 00:00

TAT: 14

Method: **537 PFAS DW DoD Unmodified**
Matrix: **Aqueous**

Prep Batch: B9C0124

Prep Data Entered: HR 03/22/19
Date and Initials

Version: 14 Analyte DW (Full List)
DoD: DoD QSM 5.1

Initial Sequence: S9C0065

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
1900478-01	"A"	☑	☑	Charlie's Pasture-DW 031319		WR-2 A-3	HDPE Bottle, 250 mL
1900478-02	↓	☑	☑	Dup-1		WR-2 A-3	HDPE Bottle, 250 mL
1900478-03	↓	☐	☐	Field Blank "Charlie's Pasture - Field Blank"		WR-2 A-3	HDPE Bottle, 250 mL

Pre-Prep Check Out: HR 03/21/19
Pre-Prep Check In: NA

Prep Check Out: NA
Prep Check In: NA

Prep Reconciled Initals/Date: HR 03/21/19
Spike Reconciled Initals/Date: MJ 03/21/19
VialBoxID: Kings

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537 PFAS DW DoD Unmodified
Method: 537 PFAS DW Unmodified
Method: 537 PFAS DW Unmodified MI Sp Sig Digs

B9C0124

Prepared using: LCMS - SPE Extraction-LCMS

Chemist: MY
Prep Date: 03/21/19
Prep Time: 08:25

BalanceID: MS-9 Date/Initials: MY 03/21/19

Cen	VISTA Sample ID	When checked Trizma Added in Lab	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☐	B9C0124-BLK1	☑	NA	NA	(0.250)	MY HR 03/21/19	MY 03/21/19	MY HR 03/22/19
☐	B9C0124-BS1	☑	↓	↓	(0.250)	↓	↓	↓
☐	B9C0124-BSD1	☑	↓	↓	(0.250)	↓	↓	↓
☐	1900460-01	☐	271.81	37.08	0.23473	↓	↓	↓
☐	1900478-01 (2)	☐	279.39	29.28	0.25041	↓	↓	↓
☐	1900478-02	☐	278.15	29.47	0.24868	↓	↓	↓
☐	1900478-03	☐	278.32	28.16	0.25016	↓	↓	↓
☐	1900483-01 (2)	☐	268.78	26.98	0.24180	↓	↓	↓
☐	1900483-02	☐	266.28	27.00	0.23928	↓	↓	↓
☐	1900483-03	☐	273.01	37.53	0.23548	↓	↓	↓
☐	1900483-04	☐	274.31	26.79	0.24762	↓	↓	↓
☐	1900483-05	☐	272.95	26.46	0.24649	↓	↓	↓
☐	1900483-06	☐	277.82	26.49	0.25133	↓	↓	↓

SS/IS: 18L1712, 10mL (V1)
NS: 19B2512, 20mL (V6)
IS/RS: 18L1713, 10mL (V4)

SPE Chem: Strata X 33um 500mg/6mL
Lot#: S18-004381

Ele SOLV: MeOH
Lot#: JB072509

Final Volume(s) 1mL

Notes: (2) MY 03/21/19

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

1 = Sample colored after centrifuge
2 = Cartridge sorbent discolored after SPE
3 = Went dry during SPE Cartridge

Matrix: Aqueous

Method: 537 PFAS DW DoD Unmodified

Vista Internal Chain-of-Custody

B9C0124

Vista Analytical Laboratory

	Location		L2	L4	WR-2 (fridge)	L2	WR-2 (fridge)	L4 D			
	Reason		R4	R4	R9	R6	R9	R8			
	Initials		HR	ng	ng	JR	ng	dm			
	Date/Time		03/21/19 07:33	03/21/19 08:51	03/21/19 13:04	03/22/19 07:47	03/22/19 13:50	3/20/19 1734			
Initial Storage	LabNumber	Cont									
WR-2 A-3	1900478-01	A	O	O	E	E	E	E			
WR-2 A-3	1900478-02	A	↓	↓	↓	↓	↓	↓			
WR-2 A-3	1900478-03	A	↓	↓	↓	↓	↓	↓			

Location Key:
L1 = Prep Lab 1
L2 = Prep Lab 2
L3 = HRMS Diox
L4 = Instrument
Other = _____

Reason Key:
R1 = Percent Solids
R2 = Eluate Preservation
R3 = Sub-Sample
R4 = Extraction
R6 = Concentration
R7 = Filtering
R8 = Analysis
R9 = Storage
Other = _____

Type Key:
O = Original Sample
E = Extract of Sample

Batch: B9C0124

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1900460-01	0.23473	N/A	N/A	1000	21-Mar-19 08:25	NY			Aqueous	537 PFAS DW Unmodified
1900478-01	0.25011			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW DoD Unmo
1900478-02	0.24868			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW DoD Unmo
1900478-03	0.25016			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW DoD Unmo
1900483-01	0.2418			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW Unmodified
1900483-02	0.23928			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW Unmodified
1900483-03	0.23548			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW Unmodified
1900483-04	0.24752			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW Unmodified
1900483-05	0.24649			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW Unmodified
1900483-06	0.25133			1000	21-Mar-19 08:25	NY			Drinking Water	537 PFAS DW Unmodified
B9C0124-BLK1	0.25			1000	21-Mar-19 08:25	NY				QC
B9C0124-BS1	0.25			1000	21-Mar-19 08:25	NY	19B2512	20		QC
B9C0124-BSD1	0.25			1000	21-Mar-19 08:25	NY	19B2512	20		QC

All bolded data on report verified against written benchsheet by (initial/date) HL 03/22/19

SAMPLE DATA –EPA METHOD 537

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-30.qld

Last Altered: Saturday, March 30, 2019 14:36:33 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:37:06 Pacific Daylight Time

Name: 190328P1_30, Date: 28-Mar-2019, Time: 18:30:11, ID: B9C0124-BLK1 LRB 0.25, Description: LRB

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0		4916.287	0.250		3.44				
2	2	PFHxA	313.1 > 269.1		9353.021	0.250		3.73				
3	4	PFHpA	363 > 319		9353.021	0.250		4.19				
4	6	PFHxS	399 > 80.0		4916.287	0.250		4.32				
5	7	PFOA	413 > 369		9353.021	0.250		4.58				
6	24	13C4-PFOS	502.9 > 79.9	4916.287	4916.287	0.250	1.000	4.95	4.94	28.7	115	100.0
7	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
8	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
9	24	13C4-PFOS	502.9 > 79.9	4916.287	4916.287	0.250	1.000	4.95	4.94	28.7	115	100.0
10	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
11	-1											
12	8	PFNA	463 > 419		9353.021	0.250		4.89				
13	9	PFOS	499 >80.0		4916.287	0.250		4.94				
14	11	PFDA	513 > 469		9353.021	0.250		5.14				
15	12	N-MeFOSAA	570 > 419.1		14982.004	0.250		5.25				
16	13	N-EtFOSAA	584.0 >419.1		14982.004	0.250		5.36				
17	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
18	24	13C4-PFOS	502.9 > 79.9	4916.287	4916.287	0.250	1.000	4.95	4.94	28.7	115	100.0
19	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
20	25	d3-N-MeFOSAA	573.0 > 419.0	14982.004	14982.004	0.250	1.000	5.27	5.25	40.0	160	100.0
21	25	d3-N-MeFOSAA	573.0 > 419.0	14982.004	14982.004	0.250	1.000	5.27	5.25	40.0	160	100.0
22	-1											
23	14	PFUnA	563 > 519		9353.021	0.250		5.37				
24	16	PFDoA	613 > 569		9353.021	0.250		5.58				
25	17	PFTrDA	662.9 > 619		9353.021	0.250		5.75				
26	18	PFTeDA	712.9 > 669		9353.021	0.250		5.90				
27	19	13C2-PFHxA	315.1 > 270	9795.163	9353.021	0.250	1.000	3.73	3.73	10.5	41.9	104.7
28	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
29	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
30	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
31	23	13C2-PFOA	415 > 370	9353.021	9353.021	0.250	1.000	4.59	4.58	10.0	40.0	100.0
32	21	13C2-PFDA	515.0 > 470.0	11908.495	9353.021	0.250	1.208	5.15	5.14	12.7	42.1	105.4
33	-1											
34	22	d5-N-EtFOSAA	589.1 > 419.0	14367.065	14982.004	0.250	1.020	5.36	5.36	38.4	150	94.1

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-30.qld

Last Altered: Saturday, March 30, 2019 14:36:33 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:37:06 Pacific Daylight Time

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Calibration: Y:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_30, Date: 28-Mar-2019, Time: 18:30:11, ID: B9C0124-BLK1 LRB 0.25, Description: LRB

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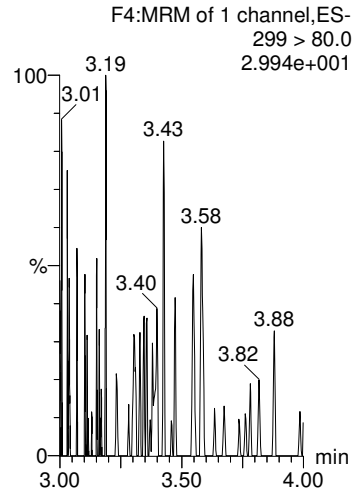
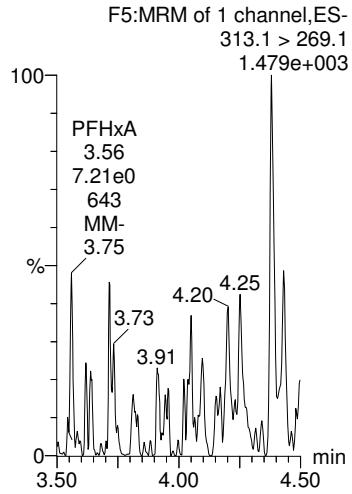


PFHxA



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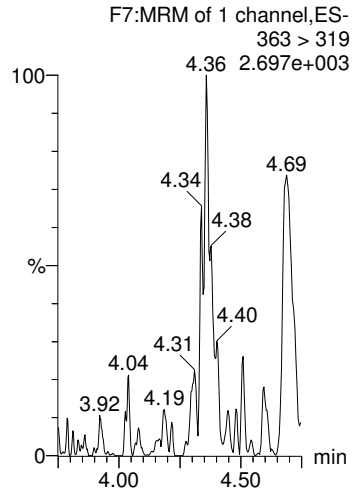

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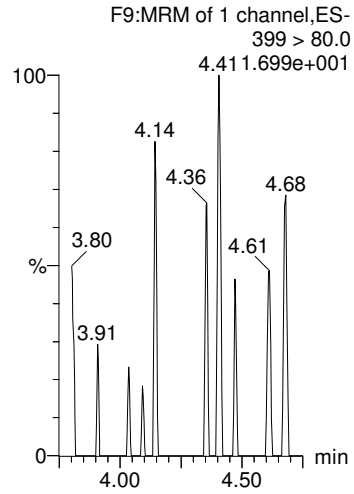

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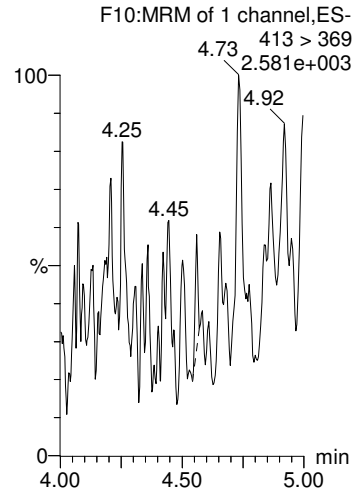

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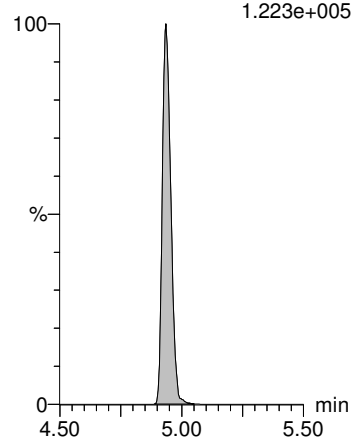

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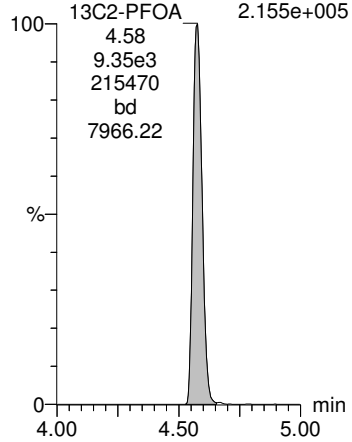

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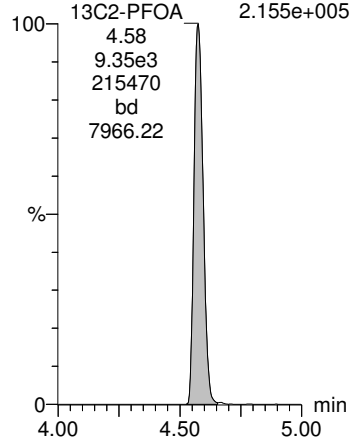

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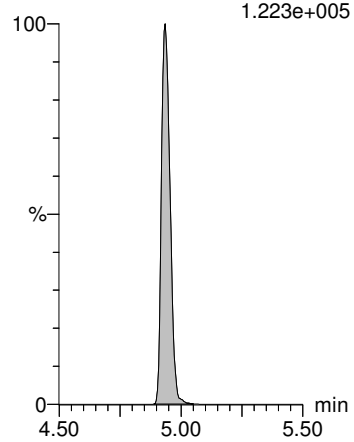

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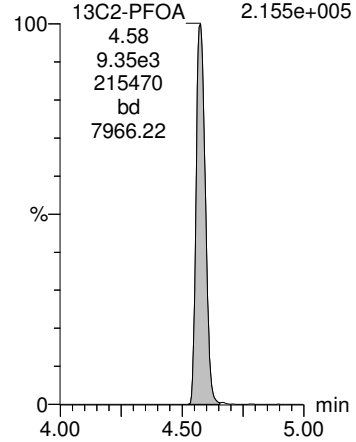

 KBF 3/30/2019

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-30.qld

Last Altered: Saturday, March 30, 2019 14:36:33 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:37:06 Pacific Daylight Time

Name: 190328P1_30, Date: 28-Mar-2019, Time: 18:30:11, ID: B9C0124-BLK1 LRB 0.25, Description: LRB

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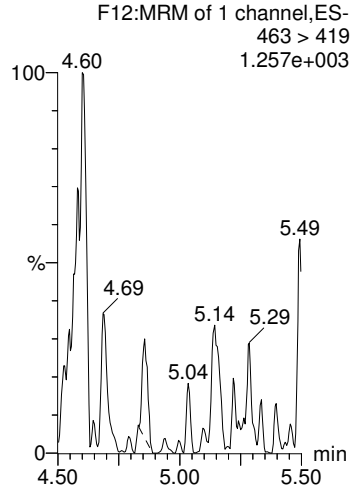

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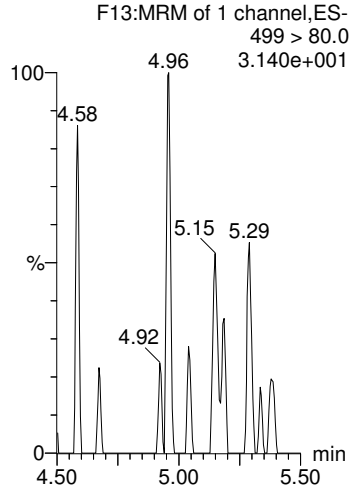

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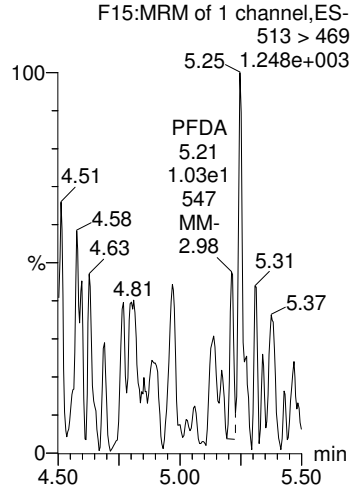

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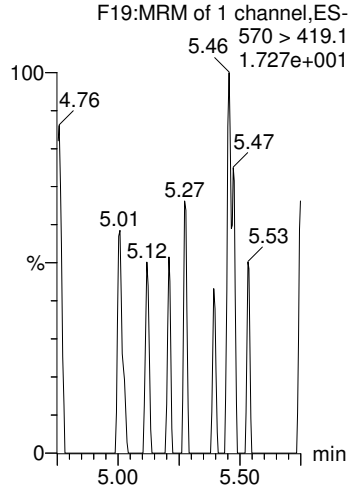

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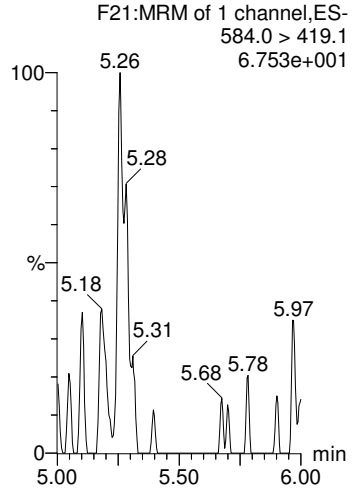

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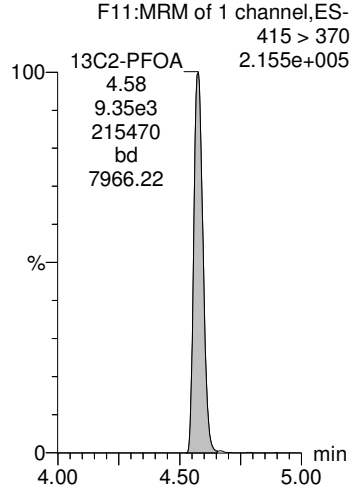

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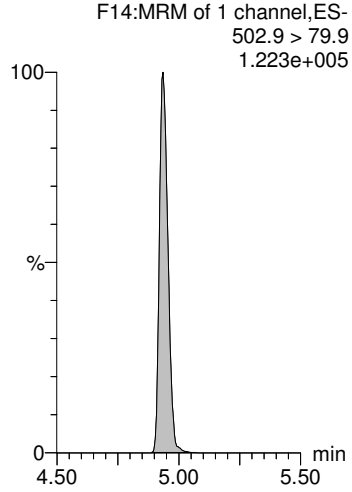

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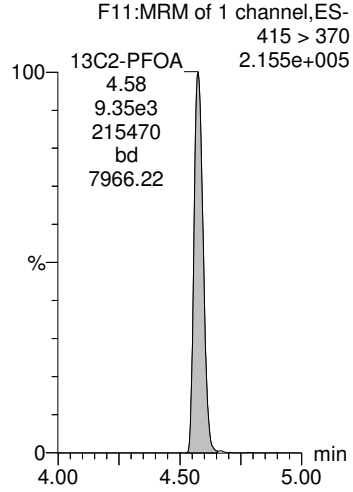
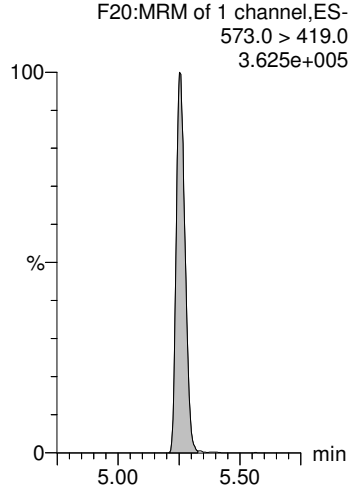


d3-N-MeFOSAA



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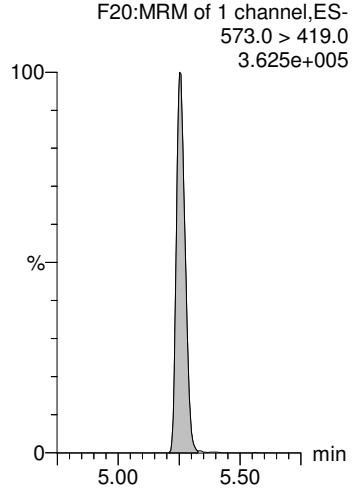

 KBF 3/30/2019

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-30.qld

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Printed: Saturday, March 30, 2019 14:37:06 Pacific Daylight Time

Name: 190328P1_30, Date: 28-Mar-2019, Time: 18:30:11, ID: B9C0124-BLK1 LRB 0.25, Description: LRB

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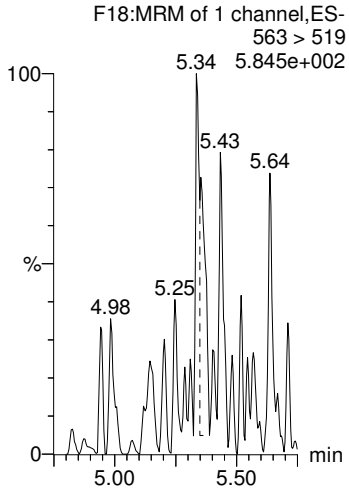

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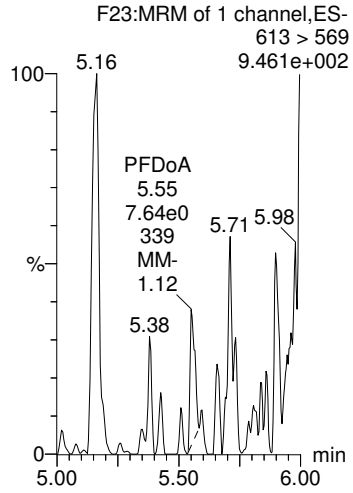

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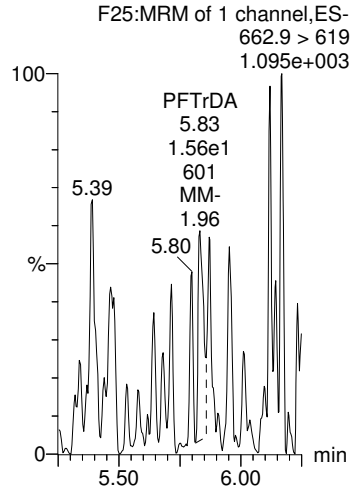
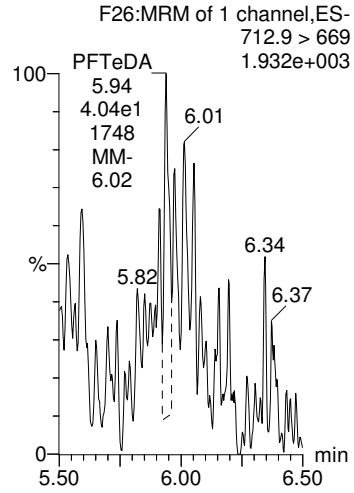
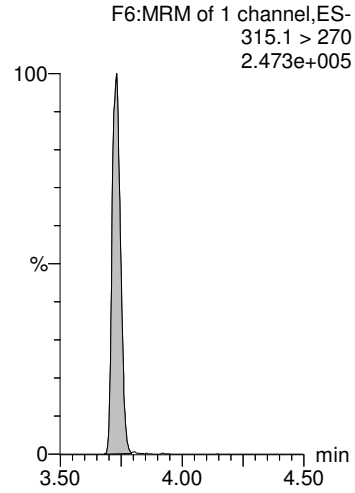


PFTeDA



13C2-PFHxA



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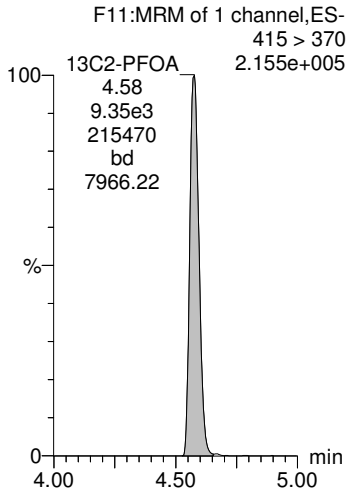

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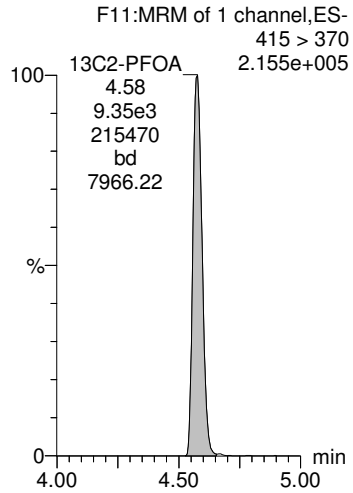

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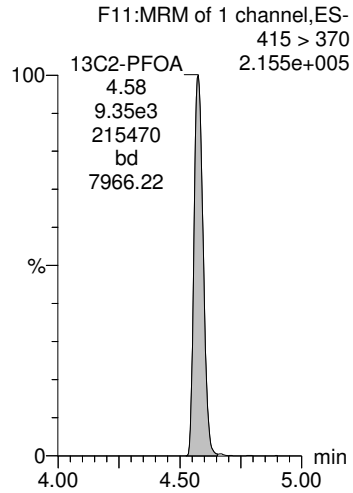

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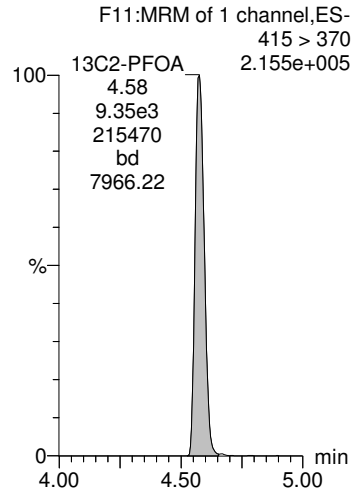

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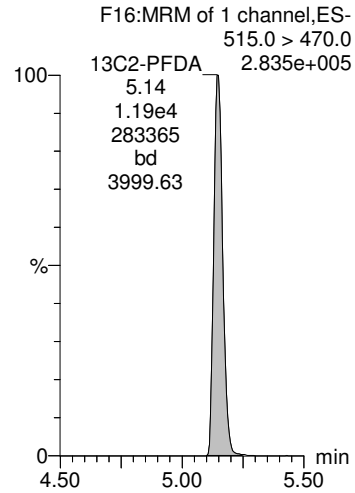

KBF 3/30/2019

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-30.qld

Last Altered: Saturday, March 30, 2019 14:36:33 Pacific Daylight Time
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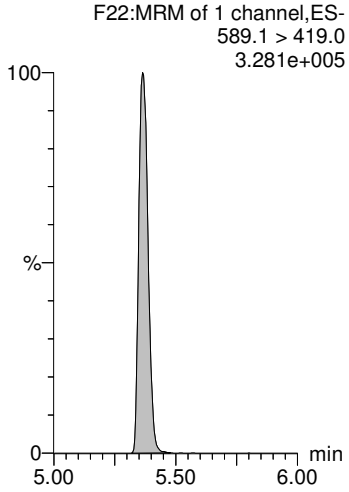
Name: 190328P1_30, Date: 28-Mar-2019, Time: 18:30:11, ID: B9C0124-BLK1 LRB 0.25, Description: LRB

d5-N-EtFOSAA



 KBF 3/30/2019

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-4.qld

Last Altered: Saturday, March 30, 2019 17:57:17 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:59:43 Pacific Daylight Time

Name: 190330P1_4, Date: 30-Mar-2019, Time: 16:37:59, ID: B9C0124-BS1 LFB 0.25, Description: LFB

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0	2657.862	5013.282	0.250		3.38	3.38	15.2	71.3	100.7
2	2	PFHxA	313.1 > 269.1	15199.370	9376.132	0.250		3.69	3.69	16.2	85.0	106.3
3	4	PFHpA	363 > 319	19583.338	9376.132	0.250		4.16	4.16	20.9	81.9	102.4
4	6	PFHxS	399 > 80.0	2475.960	5013.282	0.250		4.27	4.27	14.2	73.6	101.1
5	7	PFOA	413 > 369	18913.904	9376.132	0.250		4.53	4.53	20.2	83.2	103.9
6	24	13C4-PFOS	502.9 > 79.9	5013.282	5013.282	0.250	1.000	4.90	4.89	28.7	115	100.0
7	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
8	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
9	24	13C4-PFOS	502.9 > 79.9	5013.282	5013.282	0.250	1.000	4.90	4.89	28.7	115	100.0
10	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
11	-1											
12	8	PFNA	463 > 419	16971.871	9376.132	0.250		4.85	4.84	18.1	83.6	104.5
13	9	PFOS	499 >80.0	2681.034	5013.282	0.250		4.89	4.89	15.3	70.1	94.8
14	11	PFDA	513 > 469	18373.504	9376.132	0.250		5.11	5.11	19.6	76.6	95.7
15	12	N-MeFOSAA	570 > 419.1	5497.742	15303.156	0.250		5.21	5.22	14.4	77.0	96.3
16	13	N-EtFOSAA	584.0 >419.1	5066.139	15303.156	0.250		5.32	5.33	13.2	76.9	96.2
17	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
18	24	13C4-PFOS	502.9 > 79.9	5013.282	5013.282	0.250	1.000	4.90	4.89	28.7	115	100.0
19	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
20	25	d3-N-MeFOSAA	573.0 > 419.0	15303.156	15303.156	0.250	1.000	5.22	5.21	40.0	160	100.0
21	25	d3-N-MeFOSAA	573.0 > 419.0	15303.156	15303.156	0.250	1.000	5.22	5.21	40.0	160	100.0
22	-1											
23	14	PFUnA	563 > 519	22217.992	9376.132	0.250		5.34	5.34	23.7	71.0	88.8
24	16	PFDoA	613 > 569	27326.000	9376.132	0.250		5.53	5.53	29.1	69.6	87.0
25	17	PFTrDA	662.9 > 619	27697.832	9376.132	0.250		5.70	5.70	29.5	69.9	87.3
26	18	PFTeDA	712.9 > 669	26176.010	9376.132	0.250		5.85	5.85	27.9	70.0	87.5
27	19	13C2-PFHxA	315.1 > 270	10261.357	9376.132	0.250	1.000	3.69	3.69	10.9	43.8	109.4
28	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
29	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
30	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
31	23	13C2-PFOA	415 > 370	9376.132	9376.132	0.250	1.000	4.53	4.53	10.0	40.0	100.0
32	21	13C2-PFDA	515.0 > 470.0	10824.657	9376.132	0.250	1.208	5.11	5.11	11.5	38.2	95.5
33	-1											
34	22	d5-N-EtFOSAA	589.1 > 419.0	15166.719	15303.156	0.250	1.020	5.32	5.32	39.6	156	97.2

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Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-4.qld

Last Altered: Saturday, March 30, 2019 17:57:17 Pacific Daylight Time
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Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_4, Date: 30-Mar-2019, Time: 16:37:59, ID: B9C0124-BS1 LFB 0.25, Description: LFB

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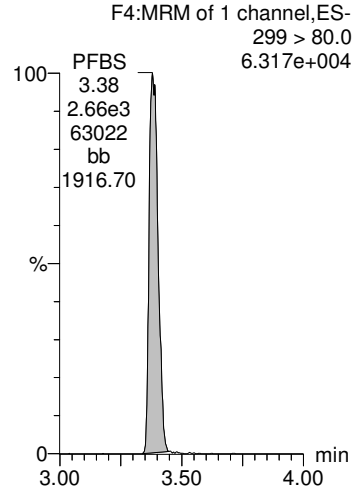

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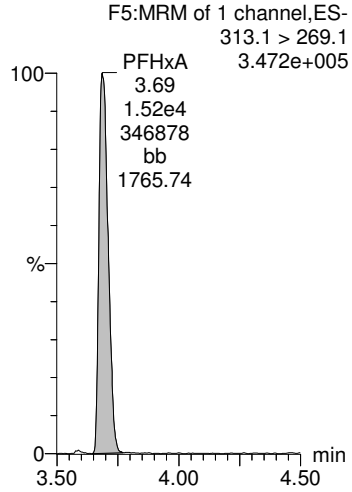

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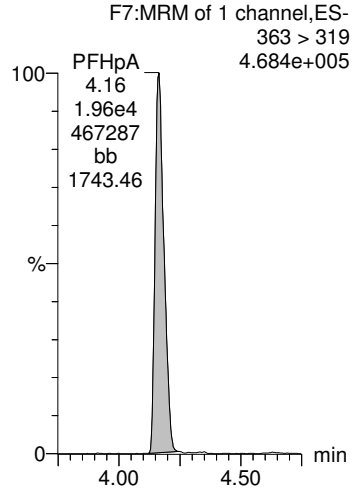

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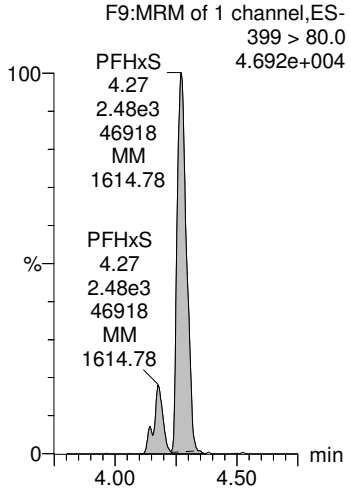

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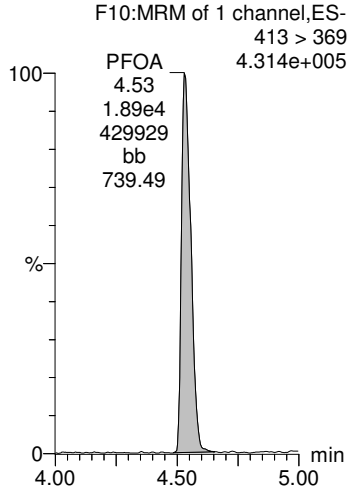

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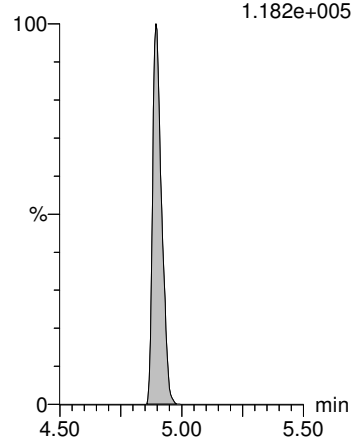

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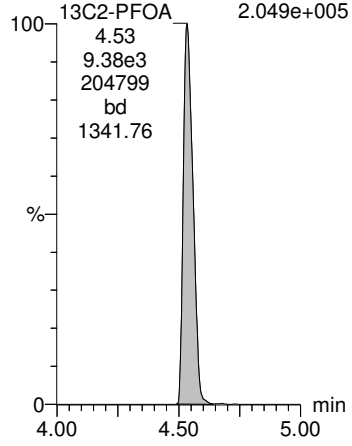

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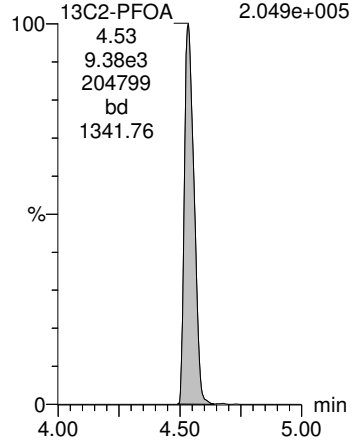

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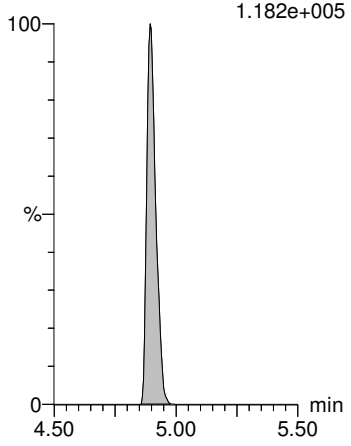

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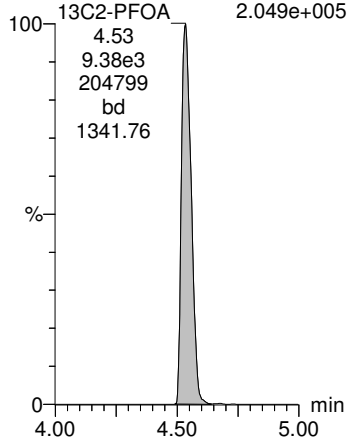

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Vista Analytical Laboratory

Review: AMR 4/1/2019

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Name: 190330P1_4, Date: 30-Mar-2019, Time: 16:37:59, ID: B9C0124-BS1 LFB 0.25, Description: LFB

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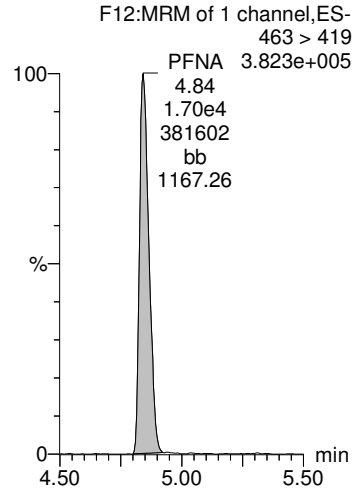

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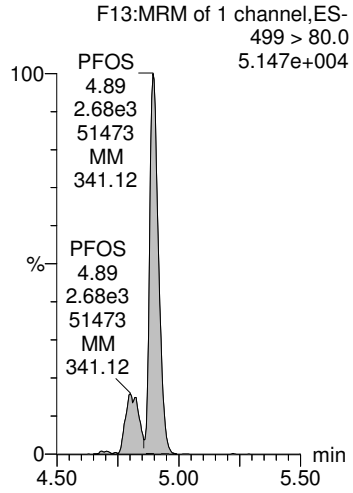

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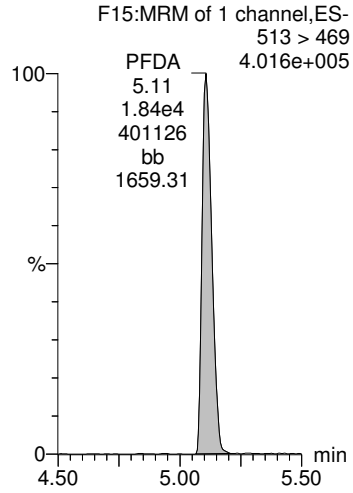

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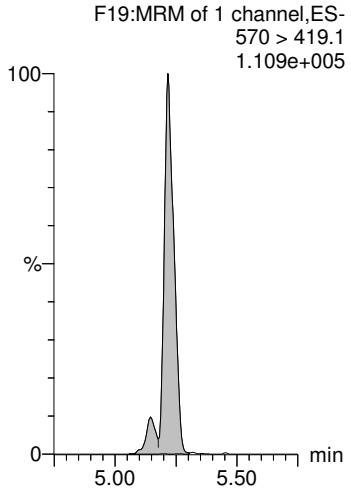

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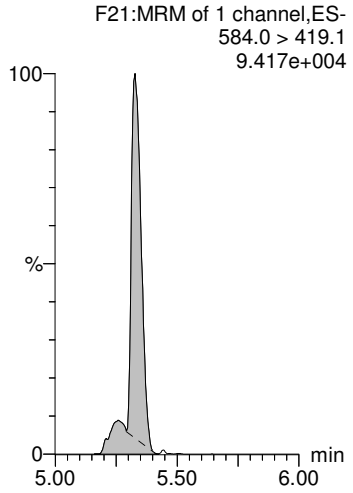

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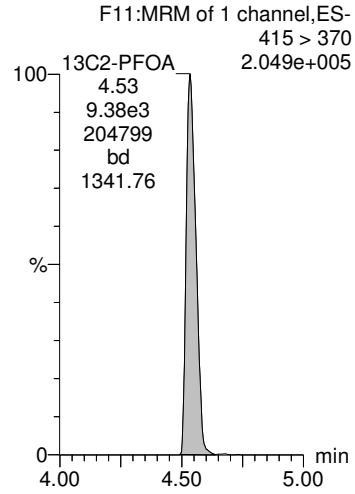

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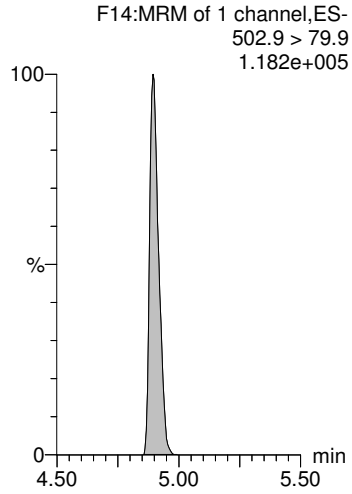

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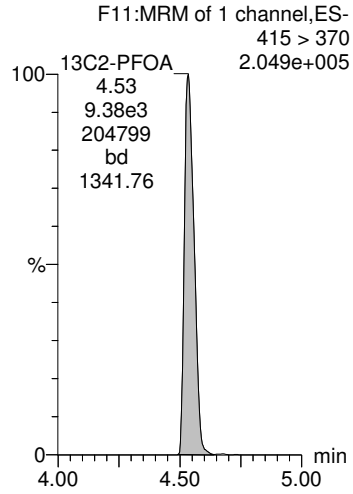

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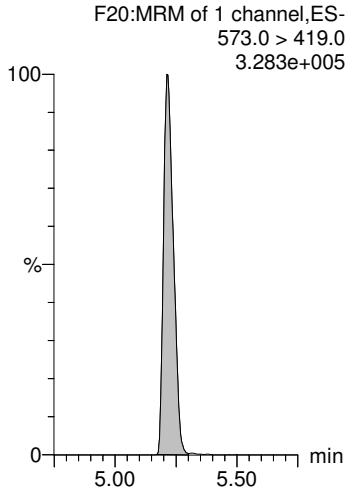

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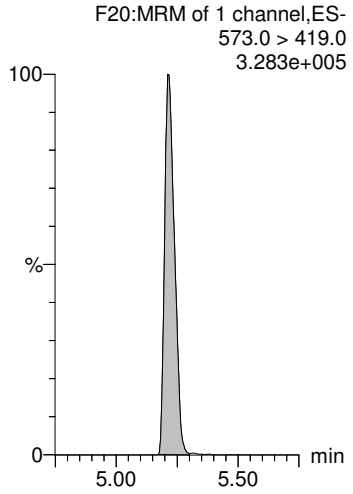
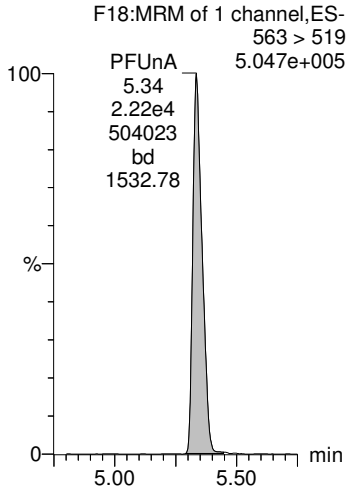


KBF 3/30/2019

Name: 190330P1_4, Date: 30-Mar-2019, Time: 16:37:59, ID: B9C0124-BS1 LFB 0.25, Description: LFB

PFUnA



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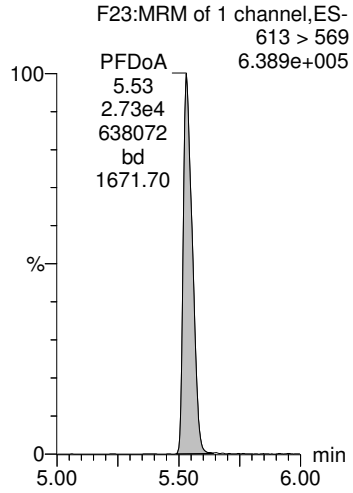

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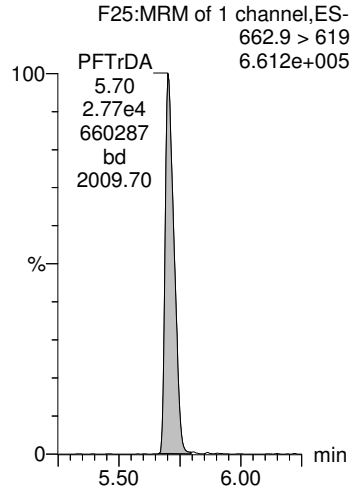

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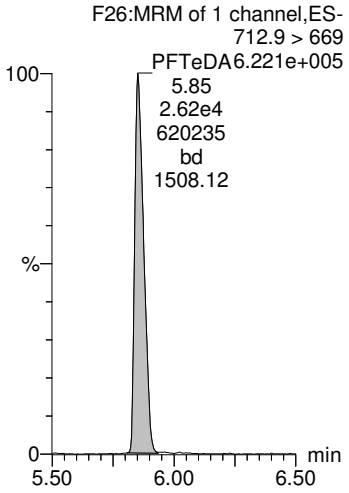

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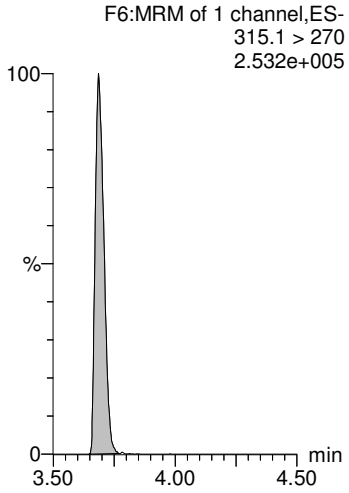

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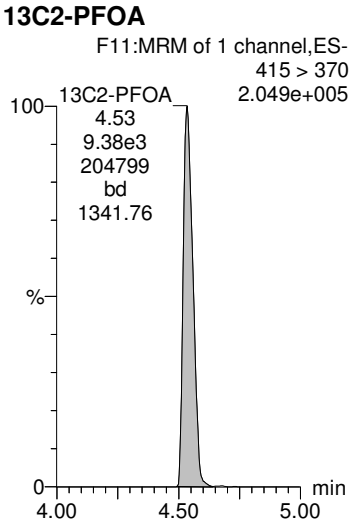

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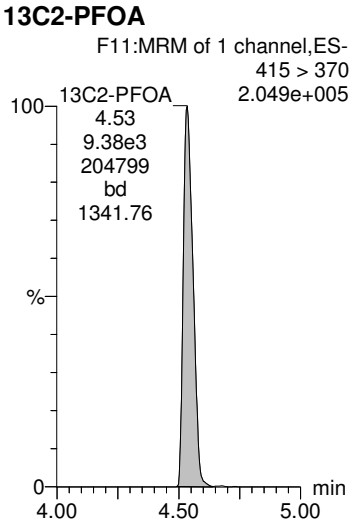
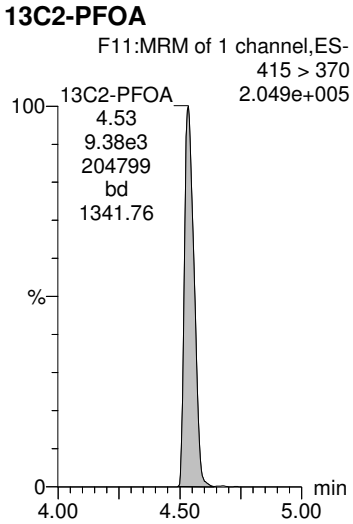


13C2-PFOA



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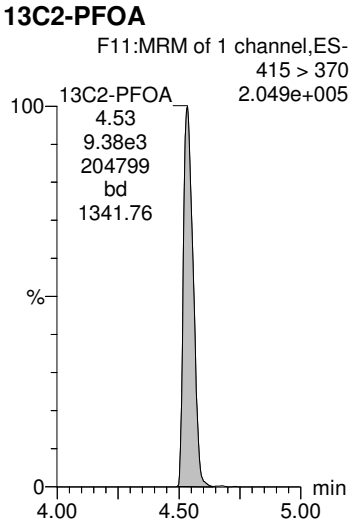
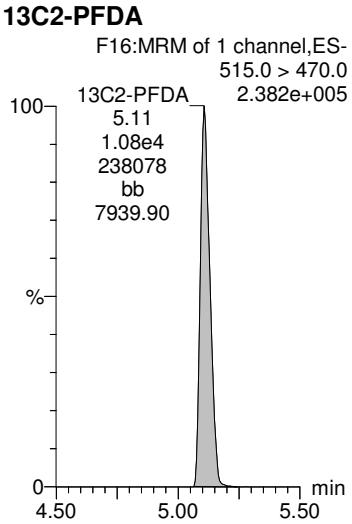


13C2-PFDA



KBF 3/30/2019

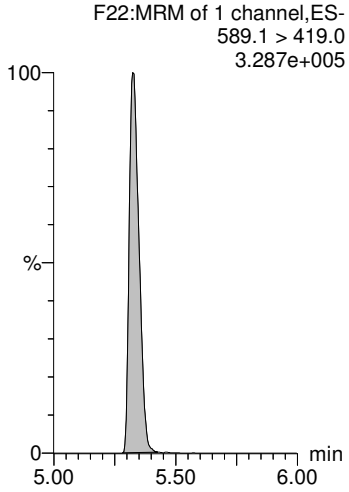
Review: AMR 4/1/2019

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-4.qld

Last Altered: Saturday, March 30, 2019 17:57:17 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:59:43 Pacific Daylight Time

Name: 190330P1_4, Date: 30-Mar-2019, Time: 16:37:59, ID: B9C0124-BS1 LFB 0.25, Description: LFB

d5-N-EtFOSAA



KBF 3/30/2019

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-29.qld

Last Altered: Saturday, March 30, 2019 14:27:58 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:34:59 Pacific Daylight Time

Name: 190328P1_29, Date: 28-Mar-2019, Time: 18:19:37, ID: B9C0124-BSD1 LFBD 0.25, Description: LFBD

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0	2449.586	5009.278	0.250		3.44	3.42	14.0	65.7	92.9
2	2	PFHxA	313.1 > 269.1	14408.327	10057.598	0.250		3.73	3.72	14.3	75.1	93.9
3	4	PFHpA	363 > 319	19561.627	10057.598	0.250		4.19	4.20	19.4	76.3	95.4
4	6	PFHxS	399 > 80.0	2219.040	5009.278	0.250		4.31	4.31	12.7	66.0	90.7
5	7	PFOA	413 > 369	18694.447	10057.598	0.250		4.58	4.57	18.6	76.6	95.8
6	24	13C4-PFOS	502.9 > 79.9	5009.278	5009.278	0.250	1.000	4.95	4.93	28.7	115	100.0
7	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
8	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
9	24	13C4-PFOS	502.9 > 79.9	5009.278	5009.278	0.250	1.000	4.95	4.93	28.7	115	100.0
10	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
11	-1											
12	8	PFNA	463 > 419	15626.806	10057.598	0.250		4.89	4.88	15.5	71.8	89.7
13	9	PFOS	499 >80.0	2729.894	5009.278	0.250		4.93	4.94	15.6	71.5	96.6
14	11	PFDA	513 > 469	19429.660	10057.598	0.250		5.15	5.14	19.3	75.5	94.4
15	12	N-MeFOSAA	570 > 419.1	5037.025	14362.670	0.250		5.26	5.25	14.0	75.2	94.0
16	13	N-EtFOSAA	584.0 >419.1	4500.675	14362.670	0.250		5.36	5.37	12.5	72.8	91.0
17	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
18	24	13C4-PFOS	502.9 > 79.9	5009.278	5009.278	0.250	1.000	4.95	4.93	28.7	115	100.0
19	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
20	25	d3-N-MeFOSAA	573.0 > 419.0	14362.670	14362.670	0.250	1.000	5.27	5.26	40.0	160	100.0
21	25	d3-N-MeFOSAA	573.0 > 419.0	14362.670	14362.670	0.250	1.000	5.27	5.26	40.0	160	100.0
22	-1											
23	14	PFUnA	563 > 519	24602.787	10057.598	0.250		5.37	5.38	24.5	73.3	91.6
24	16	PFDoA	613 > 569	29267.318	10057.598	0.250		5.58	5.57	29.1	69.5	86.8
25	17	PFTrDA	662.9 > 619	29385.131	10057.598	0.250		5.75	5.74	29.2	69.1	86.4
26	18	PFTeDA	712.9 > 669	26653.963	10057.598	0.250		5.90	5.89	26.5	66.5	83.1
27	19	13C2-PFHxA	315.1 > 270	9503.048	10057.598	0.250	1.000	3.73	3.73	9.45	37.8	94.4
28	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
29	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
30	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
31	23	13C2-PFOA	415 > 370	10057.598	10057.598	0.250	1.000	4.59	4.58	10.0	40.0	100.0
32	21	13C2-PFDA	515.0 > 470.0	11622.216	10057.598	0.250	1.208	5.15	5.15	11.6	38.3	95.6
33	-1											
34	22	d5-N-EtFOSAA	589.1 > 419.0	13804.895	14362.670	0.250	1.020	5.37	5.36	38.4	151	94.3

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-29.qld

Last Altered: Saturday, March 30, 2019 14:27:58 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:34:59 Pacific Daylight Time

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Name: 190328P1_29, Date: 28-Mar-2019, Time: 18:19:37, ID: B9C0124-BSD1 LFBD 0.25, Description: LFBD

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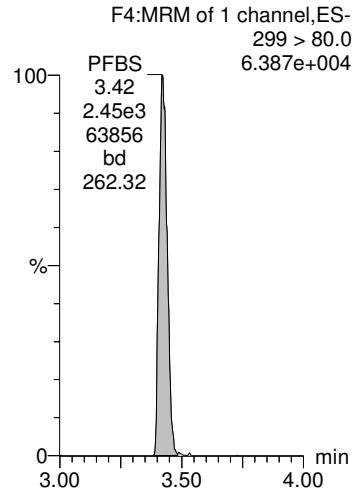
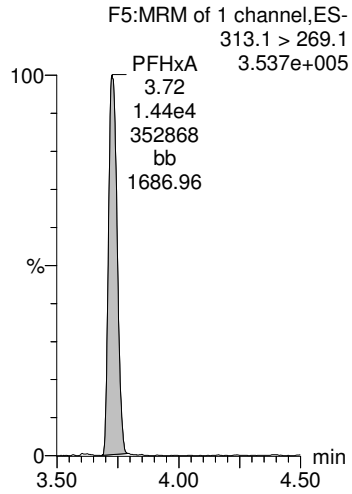
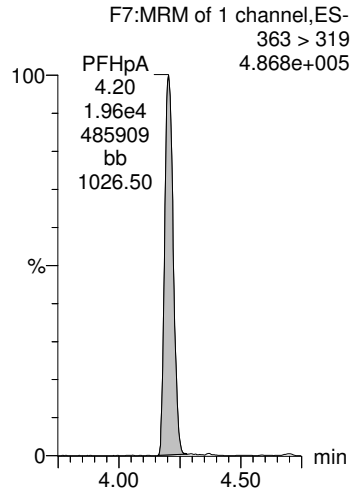


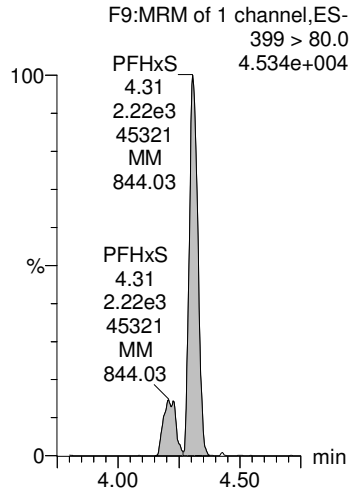
PFHxA



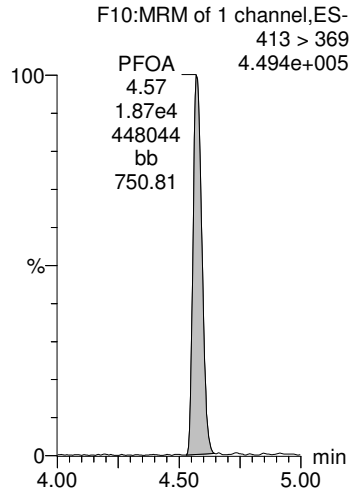
PFHpA



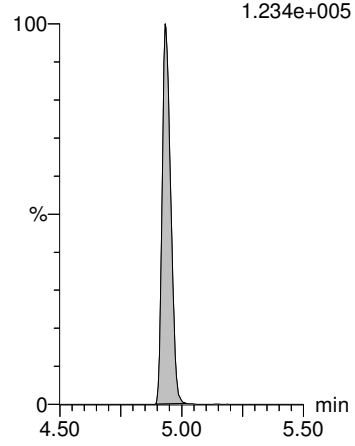
PFHxS



PFOA



13C4-PFOS



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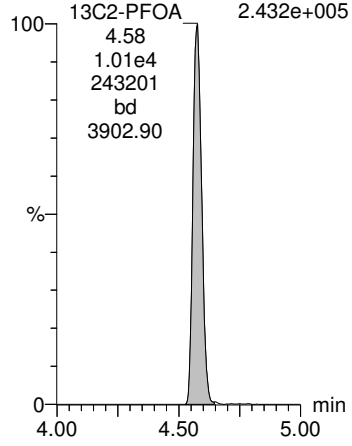

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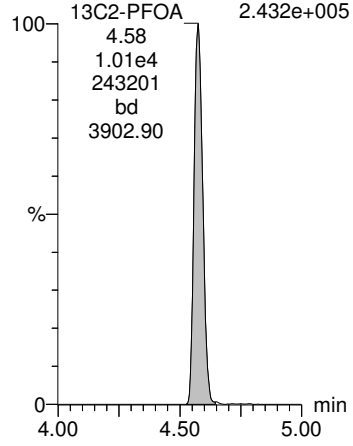

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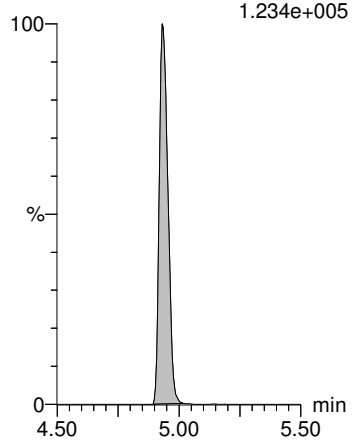

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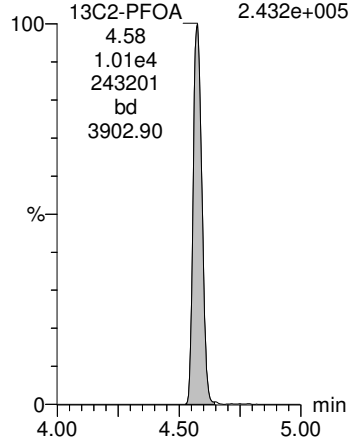

 KBF 3/30/2019

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-29.qld

Last Altered: Saturday, March 30, 2019 14:27:58 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:34:59 Pacific Daylight Time

Name: 190328P1_29, Date: 28-Mar-2019, Time: 18:19:37, ID: B9C0124-BSD1 LFBD 0.25, Description: LFBD

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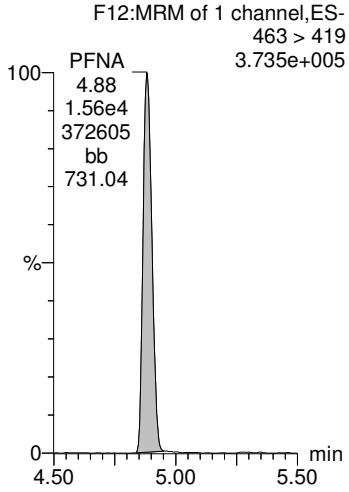
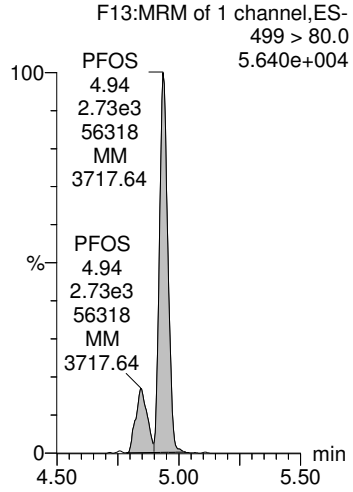


PFOS



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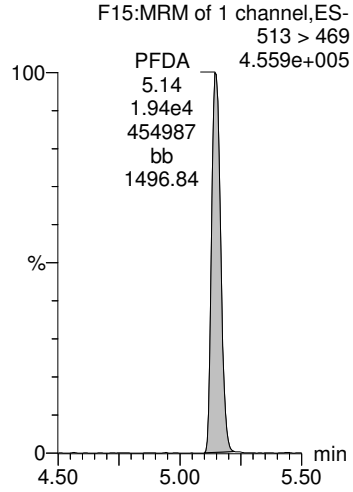
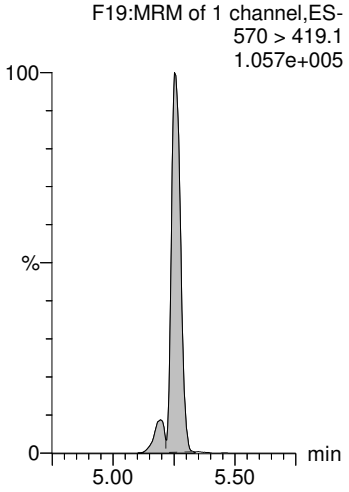


N-MeFOSAA



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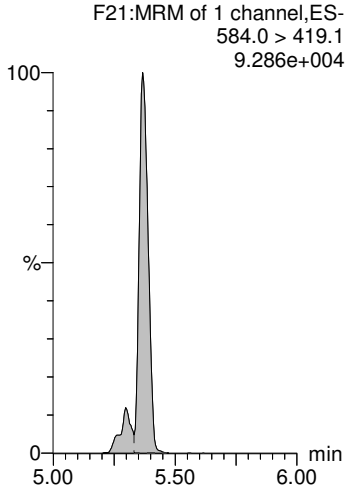

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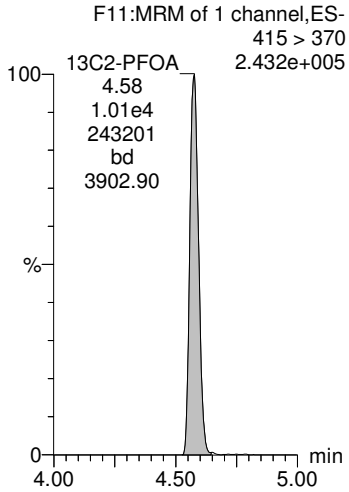
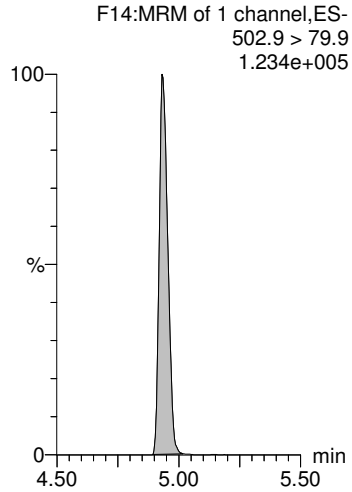


13C4-PFOS



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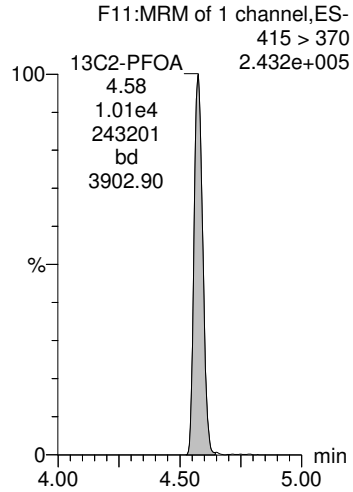
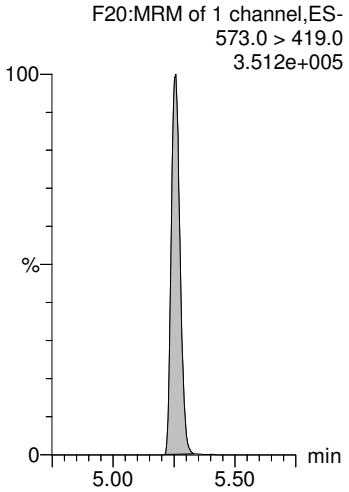


d3-N-MeFOSAA



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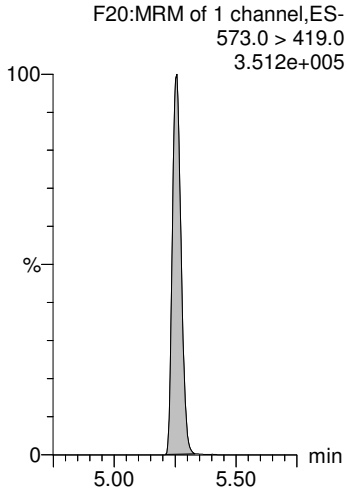

 KBF 3/30/2019

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-29.qld

Last Altered: Saturday, March 30, 2019 14:27:58 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:34:59 Pacific Daylight Time

Name: 190328P1_29, Date: 28-Mar-2019, Time: 18:19:37, ID: B9C0124-BSD1 LFBD 0.25, Description: LFBD

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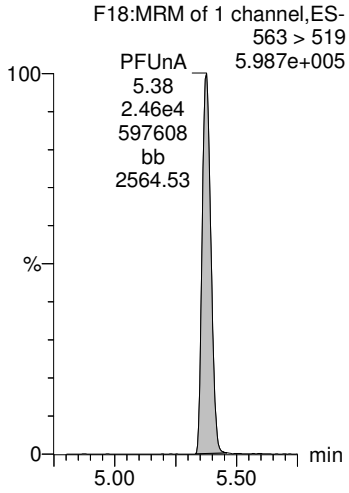

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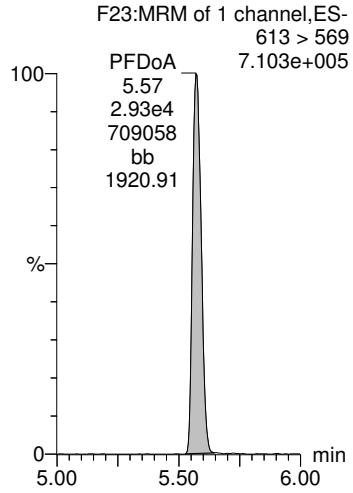

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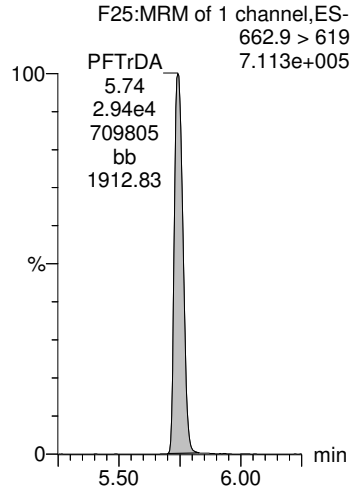
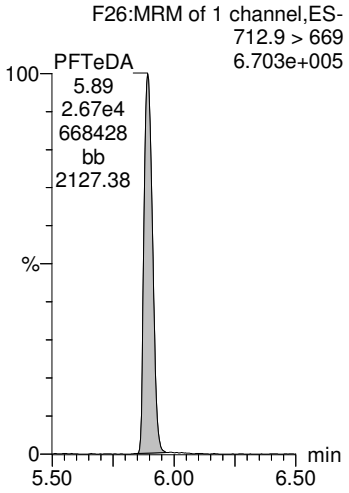
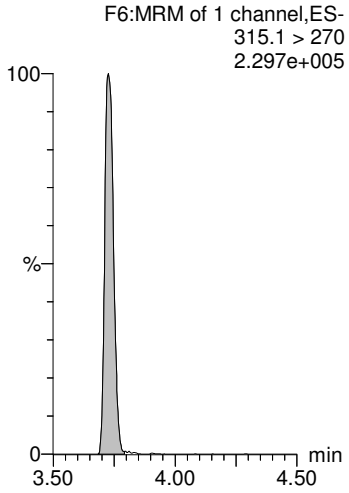


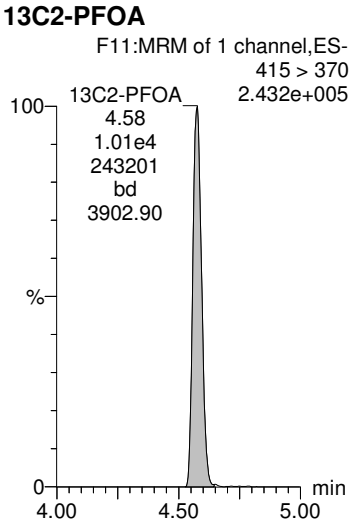
PFTeDA



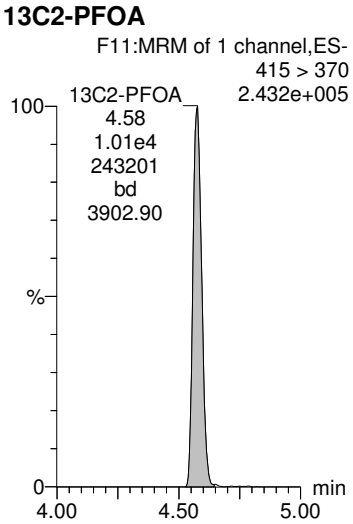
13C2-PFHxA



13C2-PFOA



13C2-PFOA



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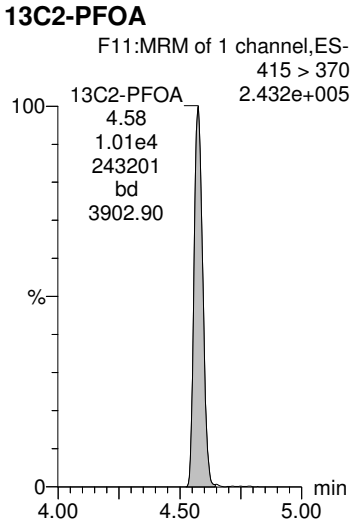
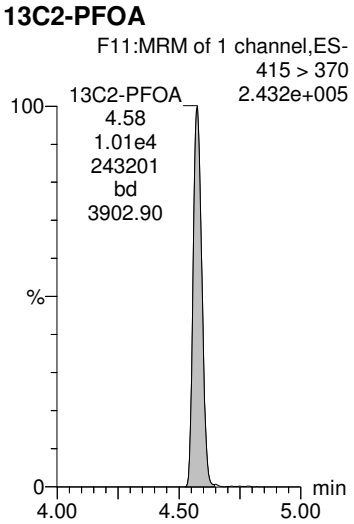


13C2-PFOA



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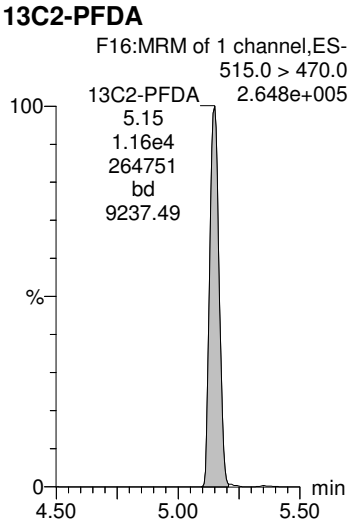


KBF 3/30/2019

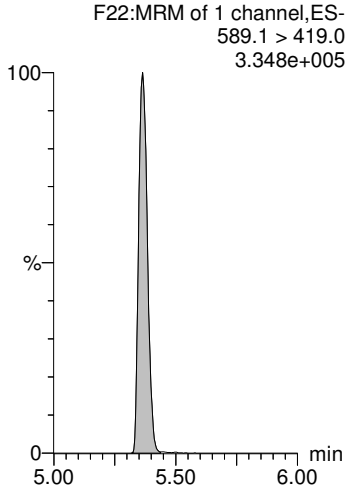
Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-29.qld

Last Altered: Saturday, March 30, 2019 14:27:58 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:34:59 Pacific Daylight Time

Name: 190328P1_29, Date: 28-Mar-2019, Time: 18:19:37, ID: B9C0124-BSD1 LFBD 0.25, Description: LFBD

d5-N-EtFOSAA



 KBF 3/30/2019

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-32.qld

Last Altered: Saturday, March 30, 2019 14:50:14 Pacific Daylight Time *See dilution
Printed: Saturday, March 30, 2019 14:57:37 Pacific Daylight Time

Name: 190328P1_32, Date: 28-Mar-2019, Time: 18:51:22, ID: 1900478-01 Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 80.0	1505.151	4768.890	0.250		3.44	3.43	9.06	42.4		
2	2	PFHxA	313.1 > 269.1	71885.180	10250.569	0.250		3.73	3.73	70.1	368		
3	4	PFHpA	363 > 319	47763.766	10250.569	0.250		4.19	4.21	46.6	183		
4	6	PFHxS	399 > 80.0	28313.150	4768.890	0.250		4.32	4.31	170	884		*E
5	7	PFOA	413 > 369	186995.313	10250.569	0.250		4.58	4.58	182	752		*E
6	24	13C4-PFOS	502.9 > 79.9	4768.890	4768.890	0.250	1.000	4.95	4.94	28.7	115	100.0	
7	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
8	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
9	24	13C4-PFOS	502.9 > 79.9	4768.890	4768.890	0.250	1.000	4.95	4.94	28.7	115	100.0	
10	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
11	-1												
12	8	PFNA	463 > 419	6219.401	10250.569	0.250		4.89	4.88	6.07	28.0		
13	9	PFOS	499 >80.0	52565.633	4768.890	0.250		4.94	4.94	316	1440		*E
14	11	PFDA	513 > 469	405.272	10250.569	0.250		5.15	5.14	0.395	1.55		
15	12	N-MeFOSAA	570 > 419.1		15160.884	0.250		5.26					
16	13	N-EtFOSAA	584.0 >419.1		15160.884	0.250		5.37					
17	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
18	24	13C4-PFOS	502.9 > 79.9	4768.890	4768.890	0.250	1.000	4.95	4.94	28.7	115	100.0	
19	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
20	25	d3-N-MeFOSAA	573.0 > 419.0	15160.884	15160.884	0.250	1.000	5.27	5.26	40.0	160	100.0	
21	25	d3-N-MeFOSAA	573.0 > 419.0	15160.884	15160.884	0.250	1.000	5.27	5.26	40.0	160	100.0	
22	-1												
23	14	PFUnA	563 > 519		10250.569	0.250		5.37					
24	16	PFDoA	613 > 569		10250.569	0.250		5.58					
25	17	PFTrDA	662.9 > 619		10250.569	0.250		5.75					
26	18	PFTeDA	712.9 > 669		10250.569	0.250		5.90					
27	19	13C2-PFHxA	315.1 > 270	10127.586	10250.569	0.250	1.000	3.73	3.73	9.88	39.5	98.8	
28	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
29	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
30	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
31	23	13C2-PFOA	415 > 370	10250.569	10250.569	0.250	1.000	4.59	4.58	10.0	40.0	100.0	
32	21	13C2-PFDA	515.0 > 470.0	11142.256	10250.569	0.250	1.208	5.15	5.15	10.9	36.0	90.0	
33	-1												
34	22	d5-N-EtFOSAA	589.1 > 419.0	13380.514	15160.884	0.250	1.020	5.37	5.37	35.3	138	86.6	

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Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-32.qld

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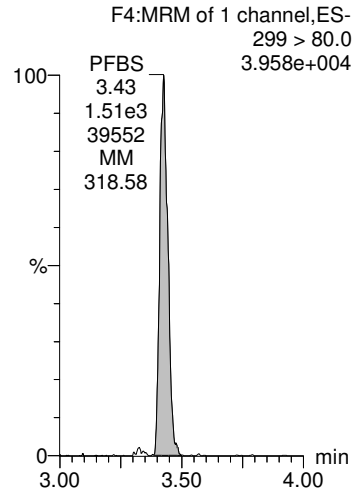
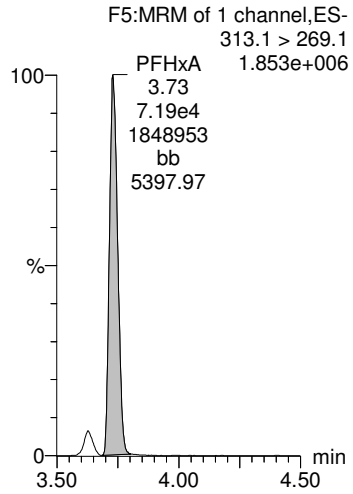
Calibration: Y:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_32, Date: 28-Mar-2019, Time: 18:51:22, ID: 1900478-01 Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

PFBS



PFHxA



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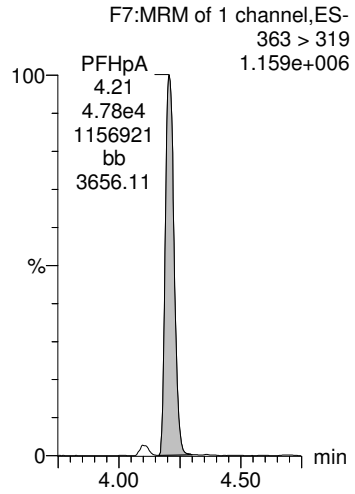
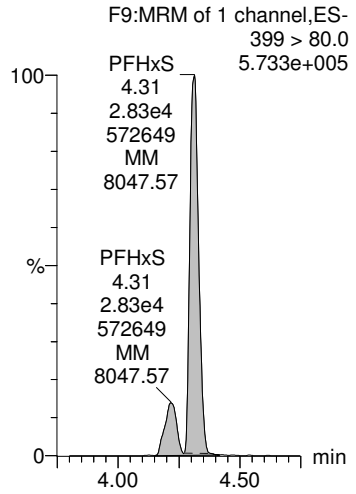
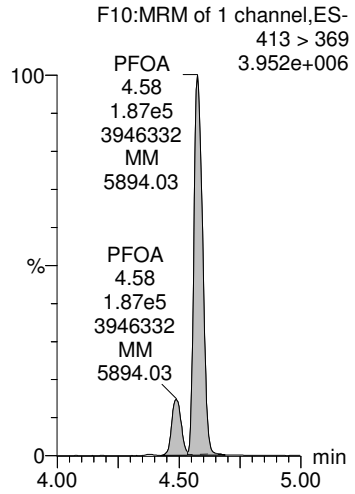


PFHxS



PFOA



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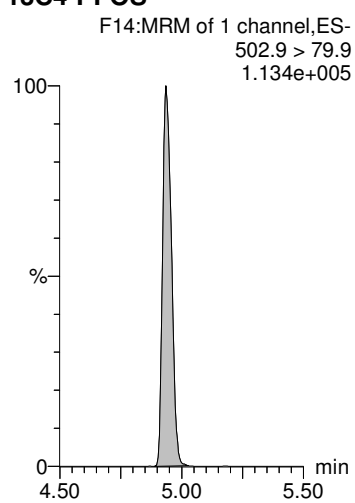

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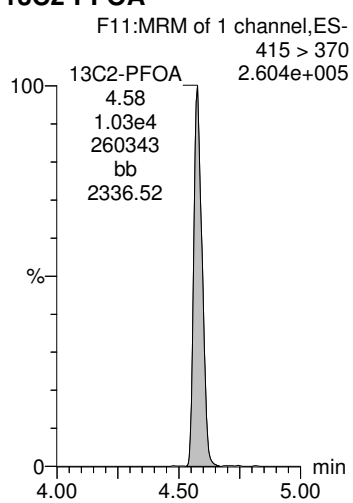

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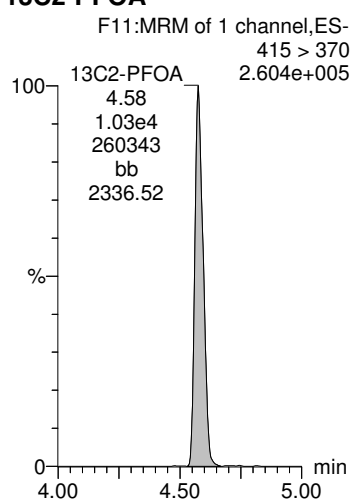

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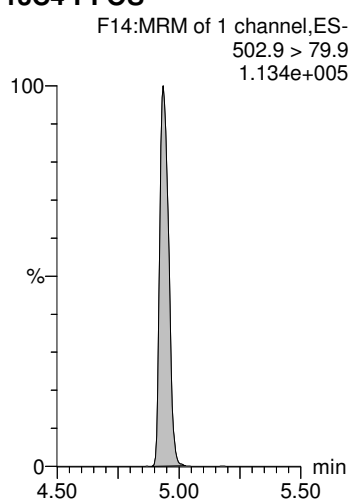

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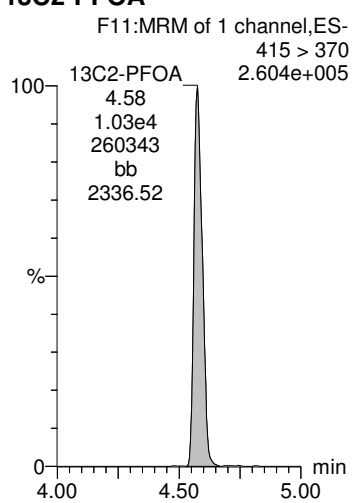


 KBF 3/30/2019

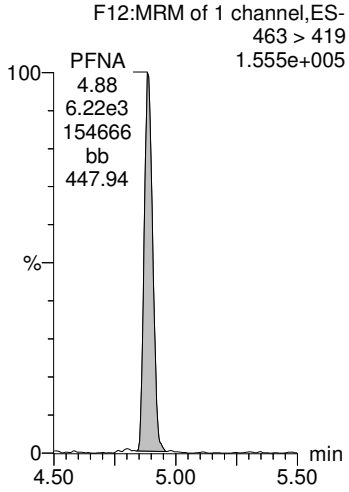
Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-32.qld

Last Altered: Saturday, March 30, 2019 14:50:14 Pacific Daylight Time
Printed: Saturday, March 30, 2019 14:57:37 Pacific Daylight Time

Name: 190328P1_32, Date: 28-Mar-2019, Time: 18:51:22, ID: 1900478-01 Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

PFNA



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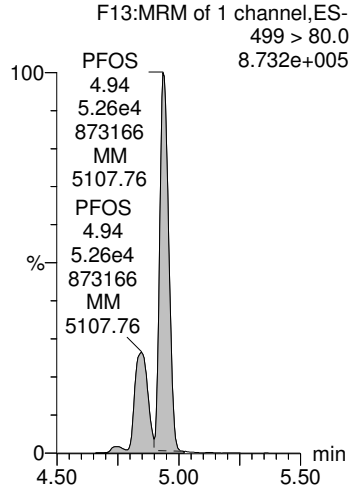

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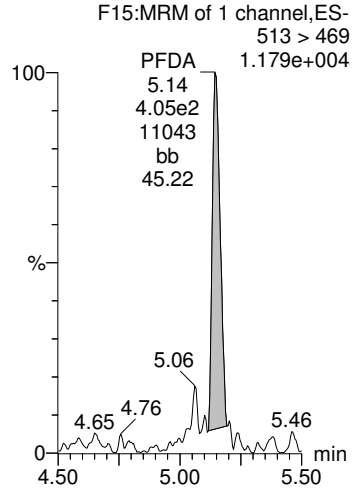

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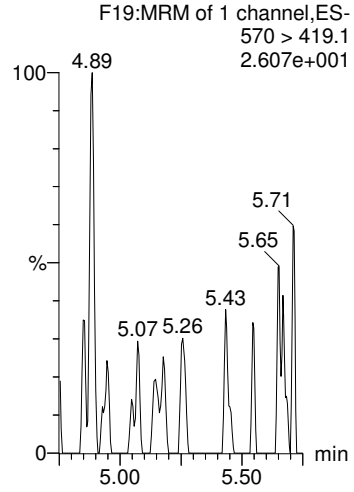

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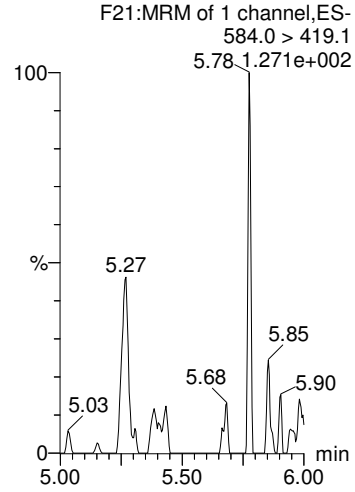

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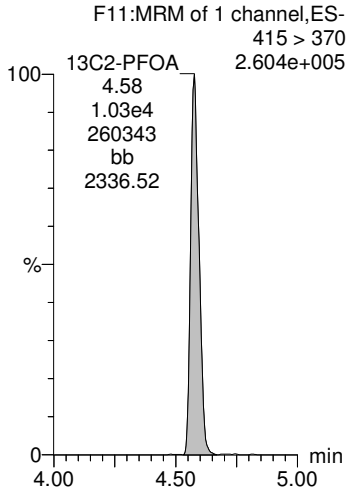

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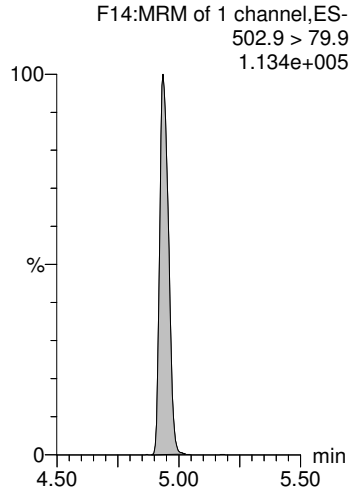

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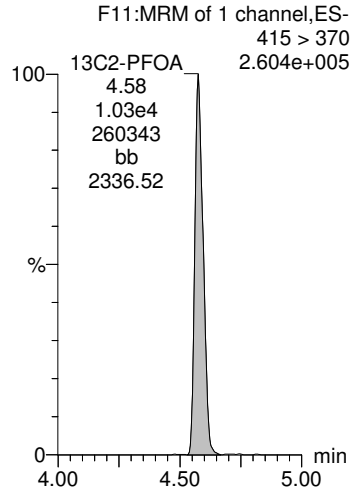

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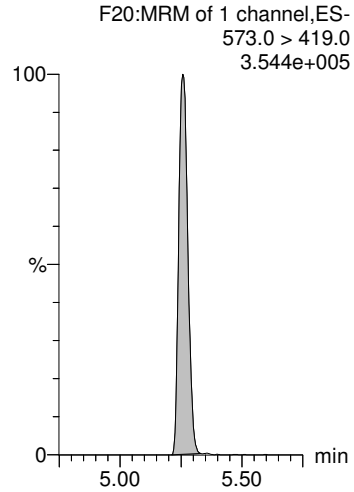

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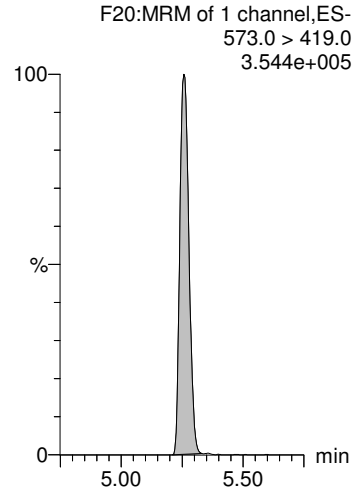
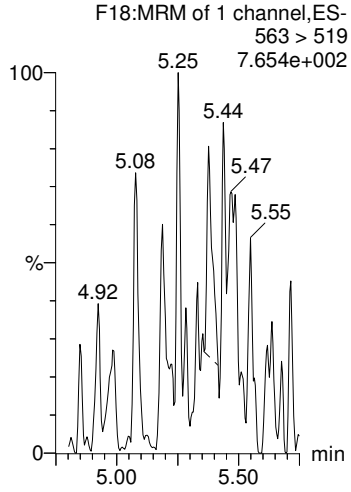


 KBF 3/30/2019

Name: 190328P1_32, Date: 28-Mar-2019, Time: 18:51:22, ID: 1900478-01 Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

PFUnA



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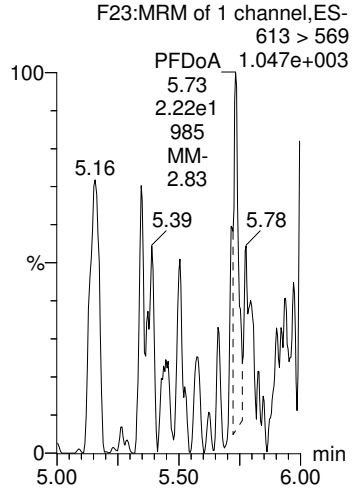

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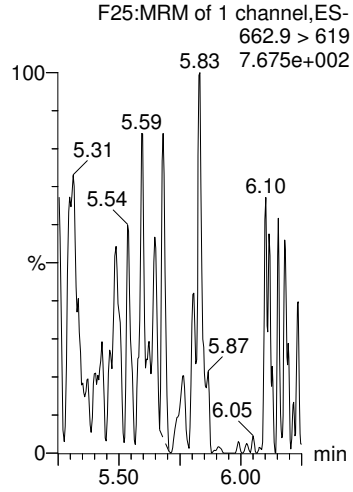

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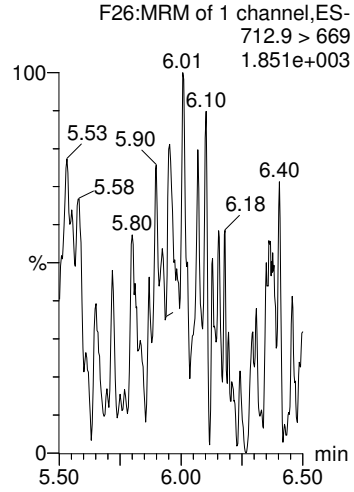

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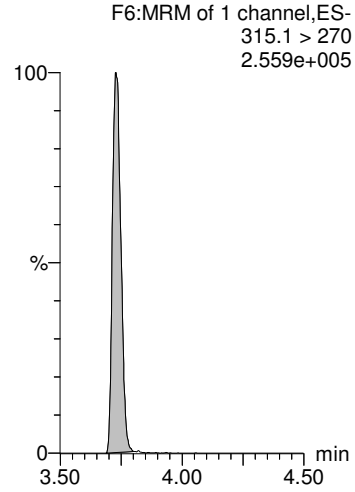

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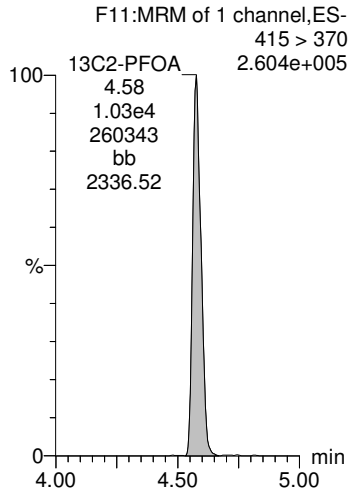

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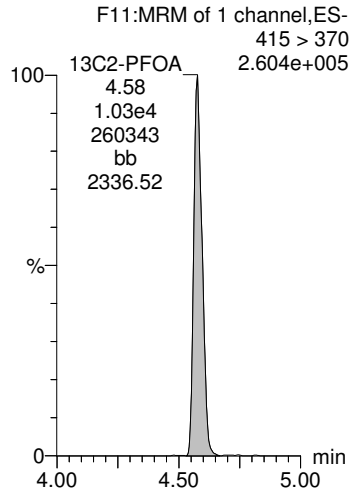

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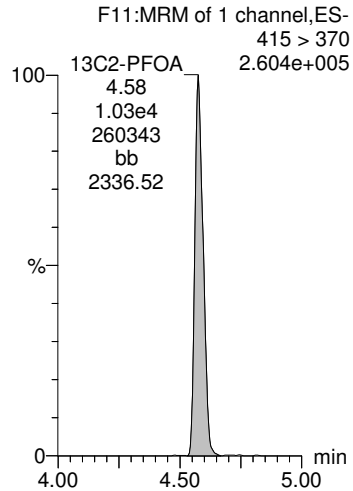

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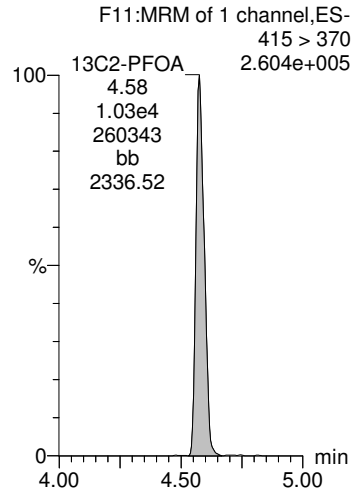

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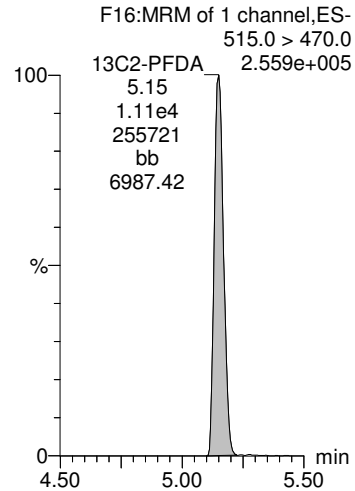

Review: AMR 4/1/2019

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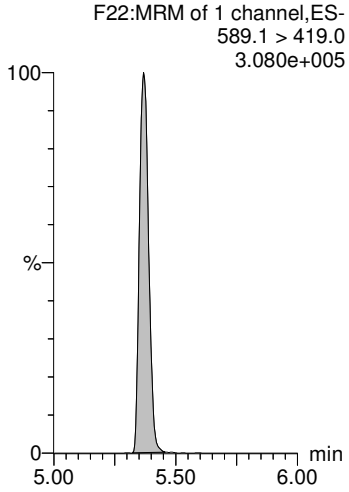
Printed: Saturday, March 30, 2019 14:57:37 Pacific Daylight Time

Name: 190328P1_32, Date: 28-Mar-2019, Time: 18:51:22, ID: 1900478-01 Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

d5-N-EtFOSAA



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Review: AMR 4/1/2019

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Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_5, Date: 30-Mar-2019, Time: 16:48:36, ID: 1900478-01@10X Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	6	PFHxS	399 > 80.0	3.47e3	4.97e2	0.2501		4.27	4.27	200	1040	
2	7	PFOA	413 > 369	1.99e4	1.02e3	0.2501		4.53	4.53	196	807	
3	9	PFOS	499 >80.0	5.78e3	4.97e2	0.2501		4.89	4.90	334	1520	
4	19	13C2-PFHxA	315.1 > 270	1.14e3	1.02e3	0.2501	1.000	3.68	3.69	11.2	44.9	112.3
5	21	13C2-PFDA	515.0 > 470.0	1.06e3	1.02e3	0.2501	1.208	5.10	5.11	10.4	34.5	86.2
6	22	d5-N-EtFOSAA	589.1 > 419.0	1.66e3	1.57e3	0.2501	1.020	5.32	5.32	42.3	166	103.8
7	23	13C2-PFOA	415 > 370	1.02e3	1.02e3	0.2501	1.000	4.53	4.53	10.0	40.0	100.0
8	24	13C4-PFOS	502.9 > 79.9	4.97e2	4.97e2	0.2501	1.000	4.90	4.89	28.7	115	100.0
9	25	d3-N-MeFOSAA	573.0 > 419.0	1.57e3	1.57e3	0.2501	1.000	5.22	5.22	40.0	160	100.0

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Review: AMR 4/1/2019

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-5.qld

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Printed: Saturday, March 30, 2019 18:05:48 Pacific Daylight Time

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Name: 190330P1_5, Date: 30-Mar-2019, Time: 16:48:36, ID: 1900478-01@10X Charlie's Pasture-DW 031319 0.25011, Description: Charlie's Pasture-DW 031319

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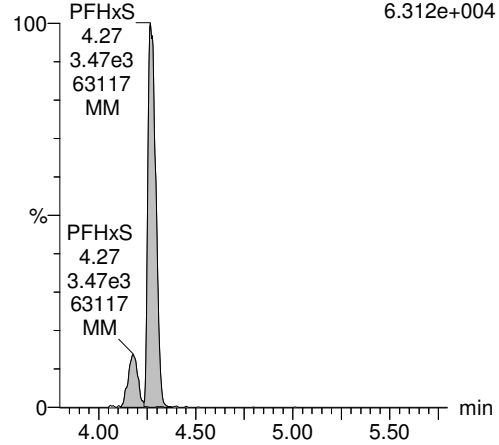
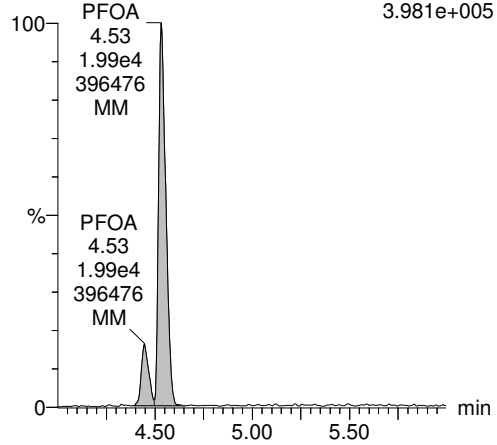
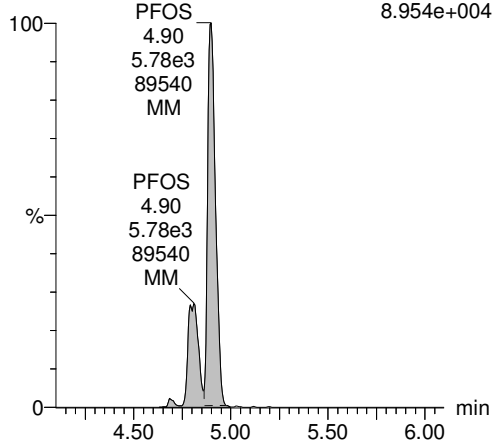


PFOA



PFOS



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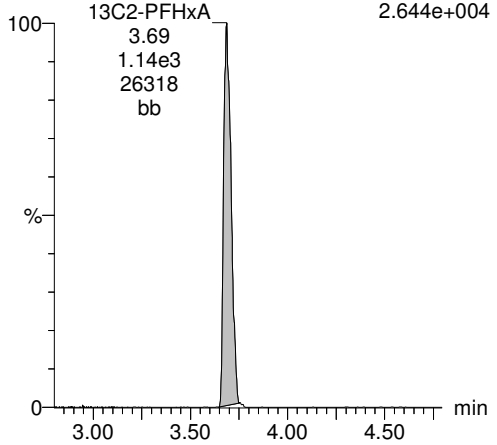

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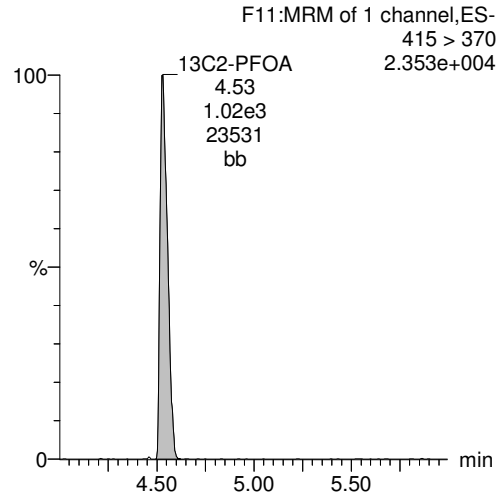

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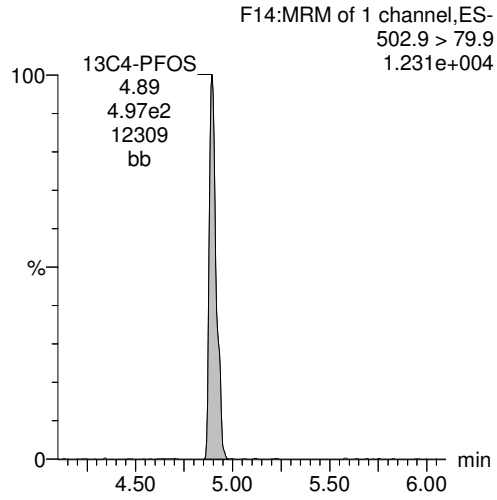

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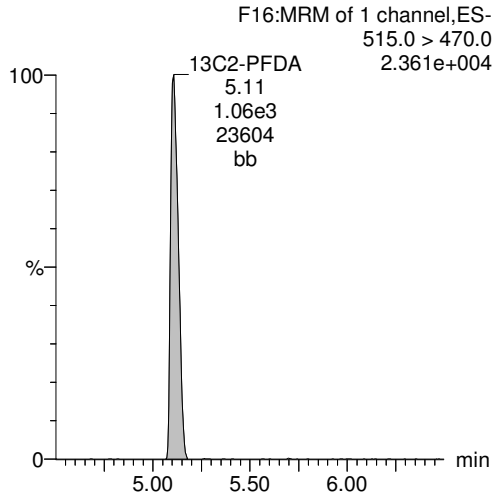

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Review: AMR 4/1/2019

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Last Altered: Saturday, March 30, 2019 15:00:25 Pacific Daylight Time
Printed: Saturday, March 30, 2019 15:00:48 Pacific Daylight Time *See dilution

Name: 190328P1_33, Date: 28-Mar-2019, Time: 19:01:56, ID: 1900478-02 Dup-1 0.24868, Description: Dup-1

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 80.0	1375.144	4184.996	0.249		3.45	3.43	9.43	44.4		
2	2	PFHxA	313.1 > 269.1	66746.492	8778.467	0.249		3.74	3.73	76.0	401		
3	4	PFHpA	363 > 319	42753.145	8778.467	0.249		4.19	4.21	48.7	192		
4	6	PFHxS	399 > 80.0	26419.168	4184.996	0.249		4.32	4.31	181	946		*E
5	7	PFOA	413 > 369	165211.031	8778.467	0.249		4.58	4.58	188	780		*E
6	24	13C4-PFOS	502.9 > 79.9	4184.996	4184.996	0.249	1.000	4.95	4.94	28.7	115	100.0	
7	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
8	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
9	24	13C4-PFOS	502.9 > 79.9	4184.996	4184.996	0.249	1.000	4.95	4.94	28.7	115	100.0	
10	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
11	-1												
12	8	PFNA	463 > 419	5983.179	8778.467	0.249		4.89	4.88	6.82	31.6		
13	9	PFOS	499 >80.0	49235.539	4184.996	0.249		4.94	4.94	338	1550		*E
14	11	PFDA	513 > 469	427.227	8778.467	0.249		5.15	5.16	0.487	1.92		
15	12	N-MeFOSAA	570 > 419.1		13962.995	0.249		5.26					
16	13	N-EtFOSAA	584.0 >419.1		13962.995	0.249		5.37					
17	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
18	24	13C4-PFOS	502.9 > 79.9	4184.996	4184.996	0.249	1.000	4.95	4.94	28.7	115	100.0	
19	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
20	25	d3-N-MeFOSAA	573.0 > 419.0	13962.995	13962.995	0.249	1.000	5.27	5.26	40.0	161	100.0	
21	25	d3-N-MeFOSAA	573.0 > 419.0	13962.995	13962.995	0.249	1.000	5.27	5.26	40.0	161	100.0	
22	-1												
23	14	PFUnA	563 > 519		8778.467	0.249		5.37					
24	16	PFDoA	613 > 569		8778.467	0.249		5.58					
25	17	PFTrDA	662.9 > 619		8778.467	0.249		5.75					
26	18	PFTeDA	712.9 > 669		8778.467	0.249		5.90					
27	19	13C2-PFHxA	315.1 > 270	9370.386	8778.467	0.249	1.000	3.73	3.74	10.7	42.9	106.7	
28	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
29	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
30	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
31	23	13C2-PFOA	415 > 370	8778.467	8778.467	0.249	1.000	4.59	4.58	10.0	40.2	100.0	
32	21	13C2-PFDA	515.0 > 470.0	10651.093	8778.467	0.249	1.208	5.15	5.15	12.1	40.4	100.4	
33	-1												
34	22	d5-N-EtFOSAA	589.1 > 419.0	13555.967	13962.995	0.249	1.020	5.37	5.37	38.8	153	95.2	

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Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-33.qld

Last Altered: Saturday, March 30, 2019 15:00:25 Pacific Daylight Time
Printed: Saturday, March 30, 2019 15:00:48 Pacific Daylight Time

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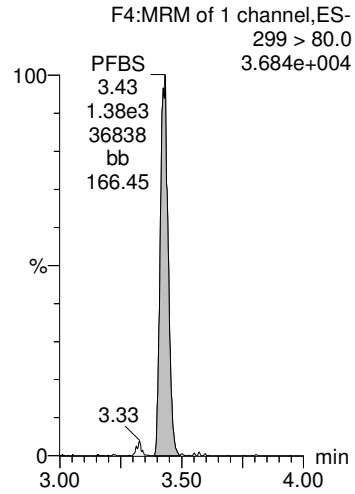
Calibration: Y:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_33, Date: 28-Mar-2019, Time: 19:01:56, ID: 1900478-02 Dup-1 0.24868, Description: Dup-1

PFBS



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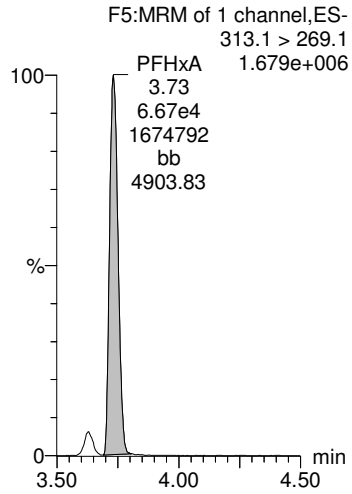

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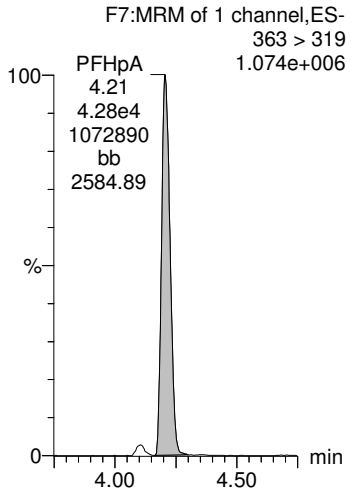

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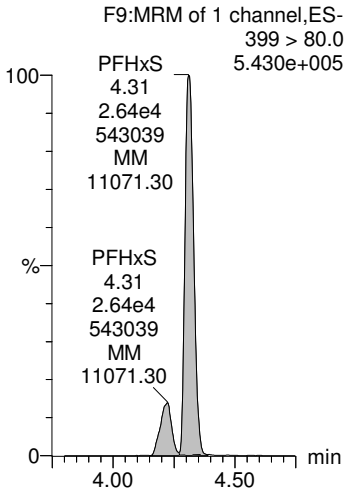

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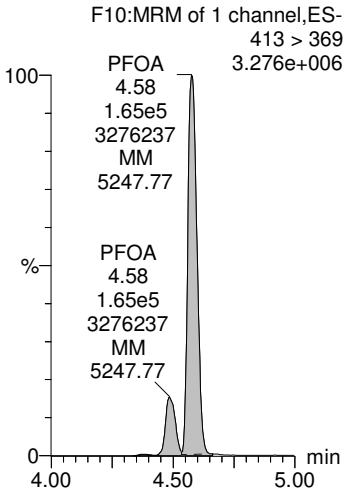

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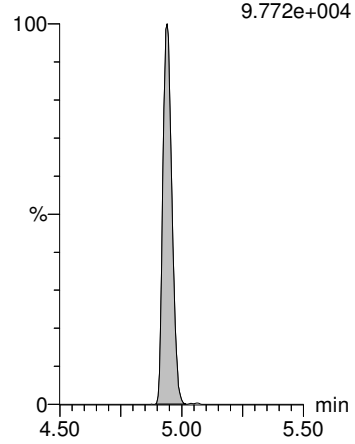

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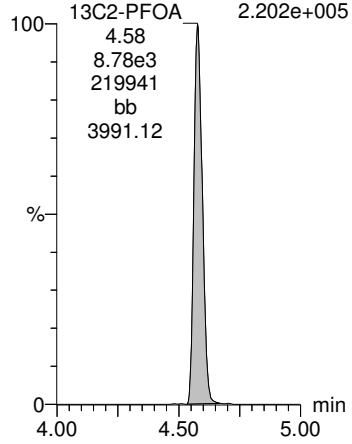

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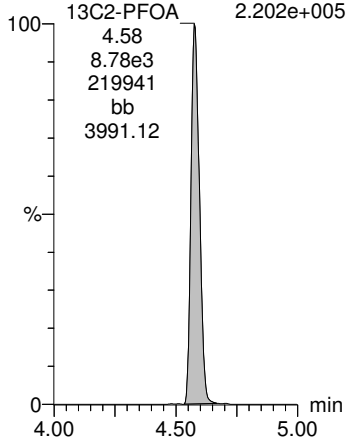

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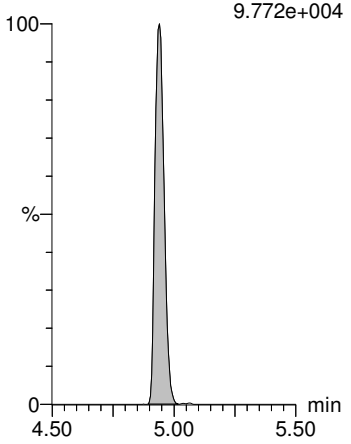

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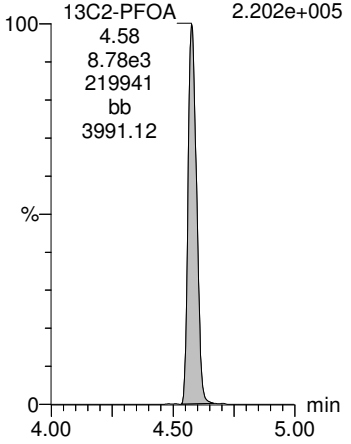


 KBF 3/30/2019

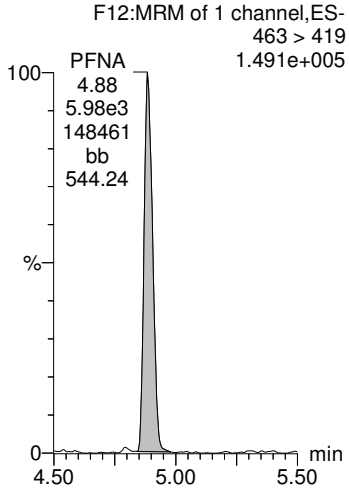
Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-33.qld

Last Altered: Saturday, March 30, 2019 15:00:25 Pacific Daylight Time
Printed: Saturday, March 30, 2019 15:00:48 Pacific Daylight Time

Name: 190328P1_33, Date: 28-Mar-2019, Time: 19:01:56, ID: 1900478-02 Dup-1 0.24868, Description: Dup-1

PFNA



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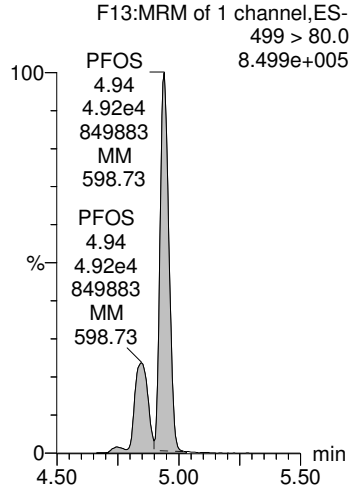

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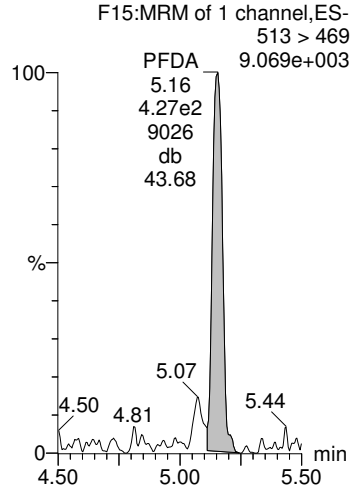

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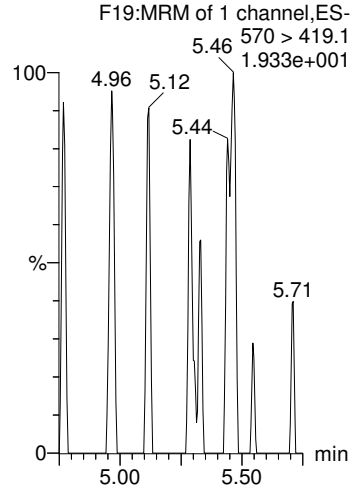

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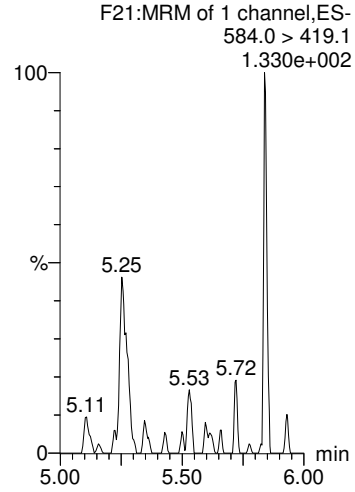

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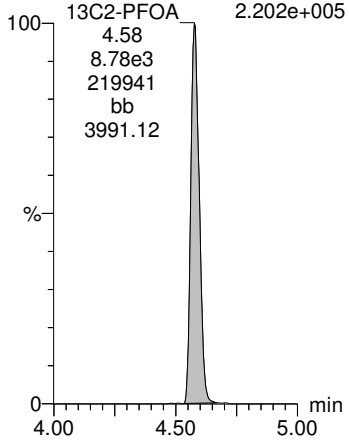

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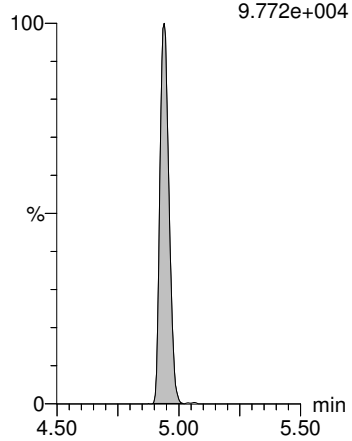

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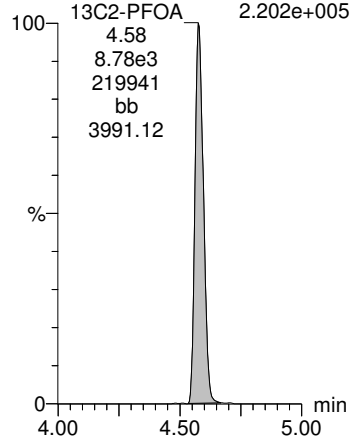

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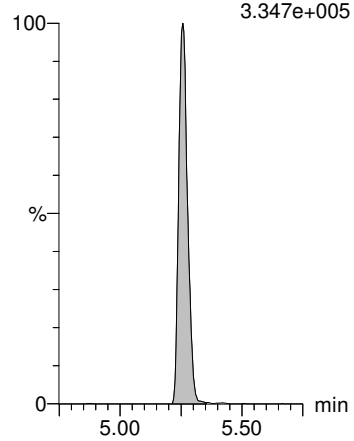

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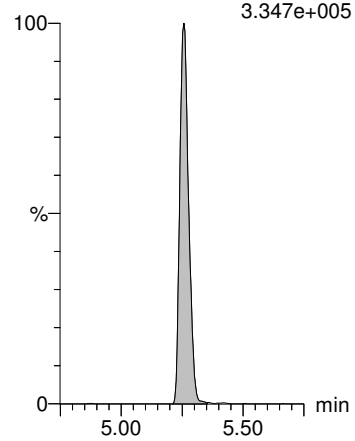

 KBF 3/30/2019

Review: AMR 4/1/2019

Name: 190328P1_33, Date: 28-Mar-2019, Time: 19:01:56, ID: 1900478-02 Dup-1 0.24868, Description: Dup-1

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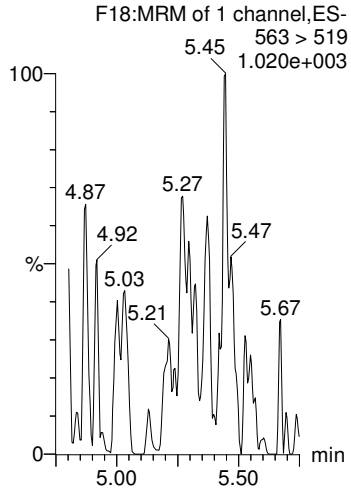

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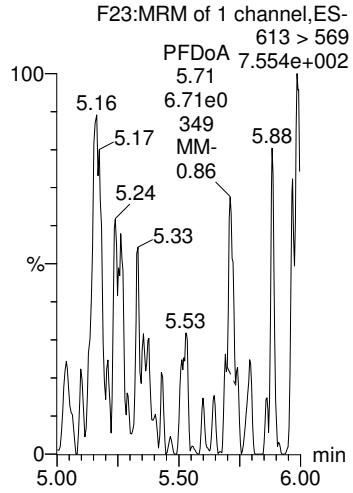

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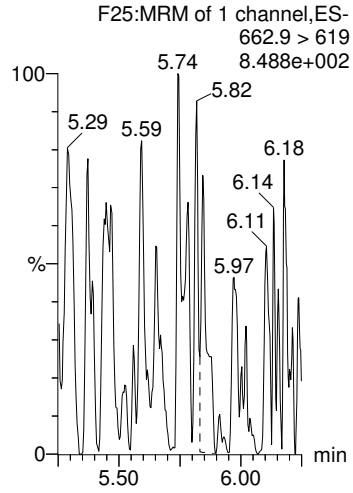
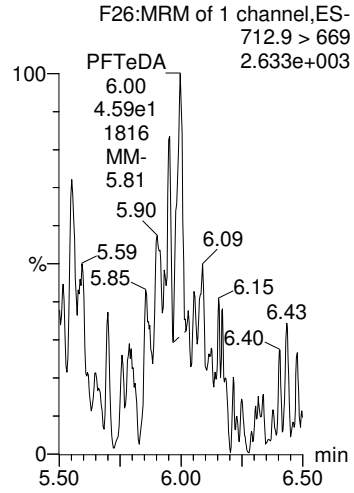


PFTeDA



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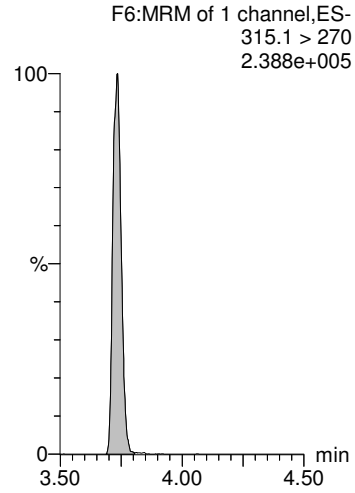

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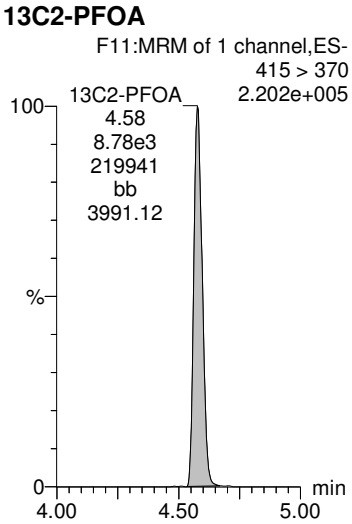

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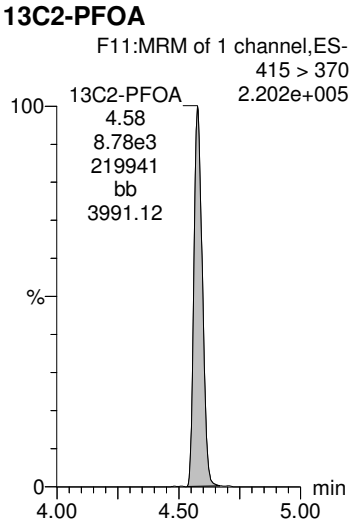

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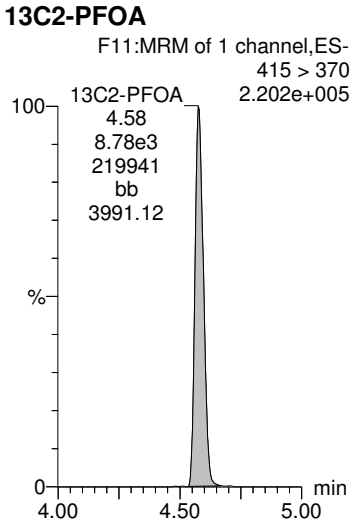

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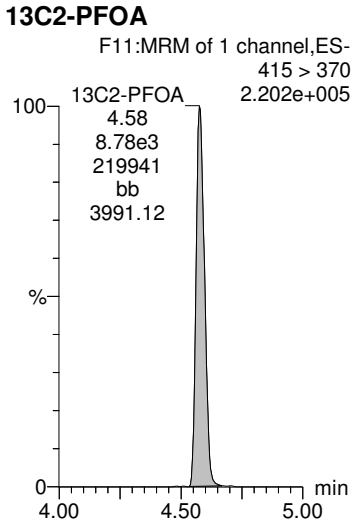

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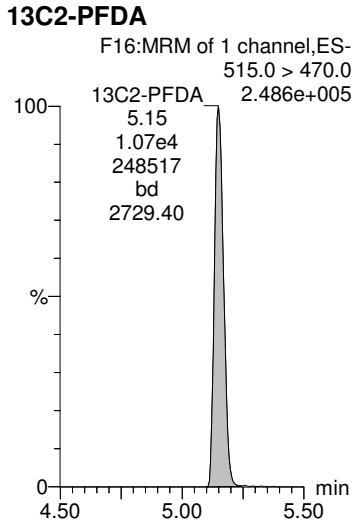


KBF 3/30/2019

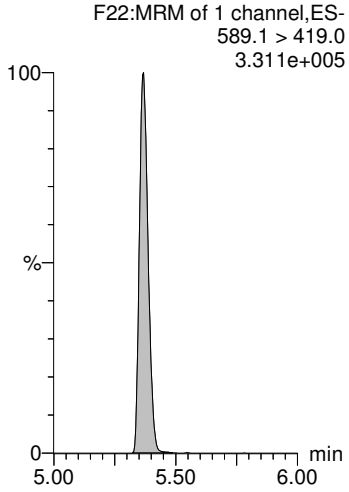
Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-33.qld

Last Altered: Saturday, March 30, 2019 15:00:25 Pacific Daylight Time
Printed: Saturday, March 30, 2019 15:00:48 Pacific Daylight Time

Name: 190328P1_33, Date: 28-Mar-2019, Time: 19:01:56, ID: 1900478-02 Dup-1 0.24868, Description: Dup-1

d5-N-EtFOSAA



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Review: AMR 4/1/2019

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-6.qld

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Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_6, Date: 30-Mar-2019, Time: 16:59:11, ID: 1900478-02@10X Dup-1 0.24868, Description: Dup-1

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1	6	PFHxS	399 > 80.0	3.07e3	5.18e2	0.2487		4.28	4.27	170	886	
2	7	PFOA	413 > 369	1.83e4	9.19e2	0.2487		4.53	4.54	199	827	
3	9	PFOS	499 >80.0	5.41e3	5.18e2	0.2487		4.91	4.90	300	1380	
4	19	13C2-PFHxA	315.1 > 270	1.02e3	9.19e2	0.2487	1.000	3.68	3.69	11.1	44.8	111.4
5	21	13C2-PFDA	515.0 > 470.0	1.03e3	9.19e2	0.2487	1.208	5.10	5.11	11.2	37.3	92.7
6	22	d5-N-EtFOSAA	589.1 > 419.0	1.81e3	1.65e3	0.2487	1.020	5.32	5.33	44.0	174	108.0
7	23	13C2-PFOA	415 > 370	9.19e2	9.19e2	0.2487	1.000	4.53	4.53	10.0	40.2	100.0
8	24	13C4-PFOS	502.9 > 79.9	5.18e2	5.18e2	0.2487	1.000	4.90	4.91	28.7	115	100.0
9	25	d3-N-MeFOSAA	573.0 > 419.0	1.65e3	1.65e3	0.2487	1.000	5.22	5.21	40.0	161	100.0

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Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-6.qld

Last Altered: Saturday, March 30, 2019 18:07:15 Pacific Daylight Time
Printed: Saturday, March 30, 2019 18:08:03 Pacific Daylight Time

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Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_6, Date: 30-Mar-2019, Time: 16:59:11, ID: 1900478-02@10X Dup-1 0.24868, Description: Dup-1

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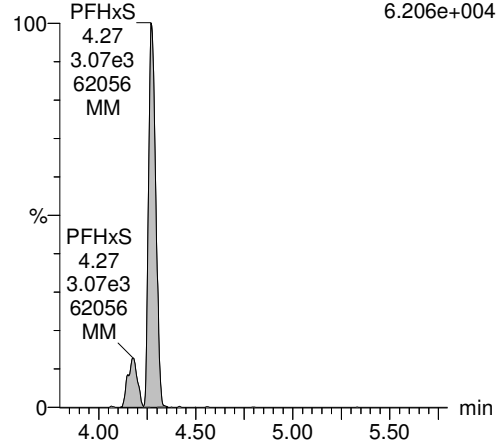
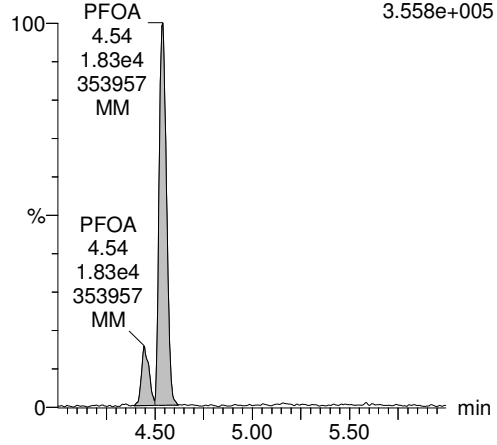
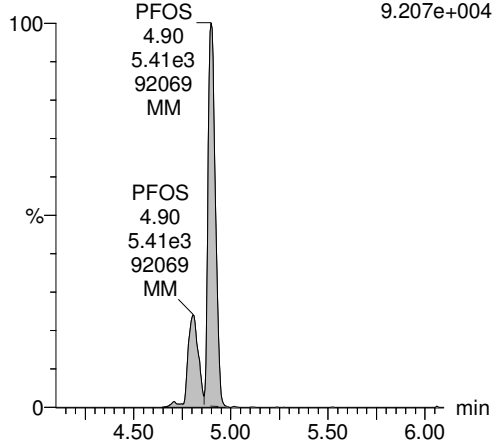


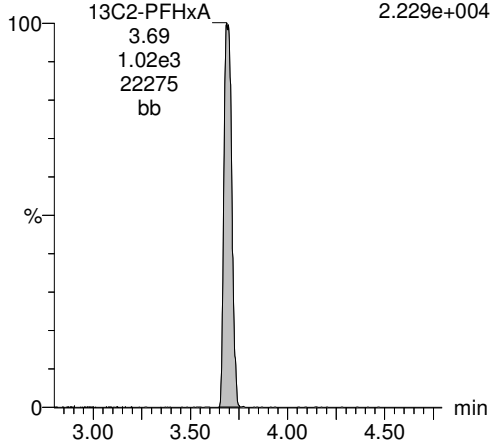
PFOA



PFOS



13C2-PFHxA



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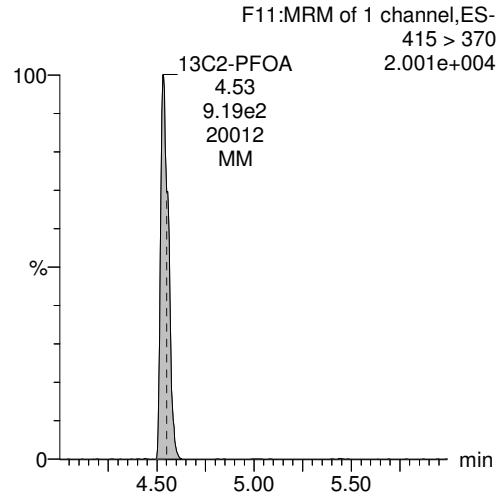
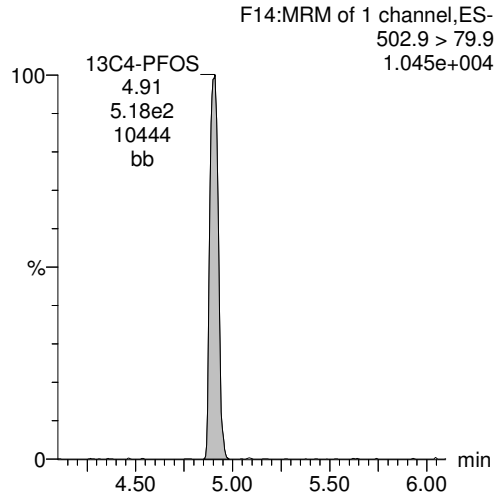


13C4-PFOS



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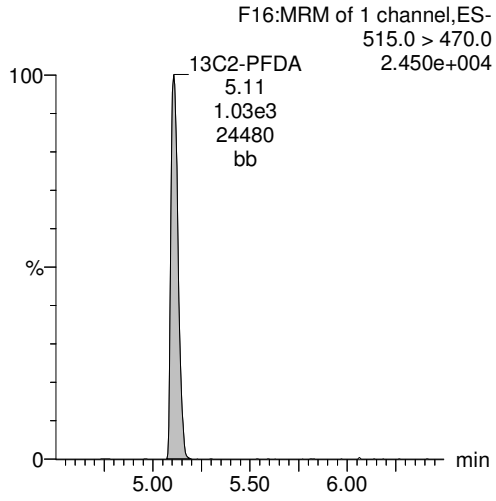

KBF 3/30/2019

Vista Analytical Laboratory

Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-34.qld

Last Altered: Saturday, March 30, 2019 15:02:26 Pacific Daylight Time
Printed: Saturday, March 30, 2019 15:02:50 Pacific Daylight Time

Name: 190328P1_34, Date: 28-Mar-2019, Time: 19:12:31, ID: 1900478-03 Field Blank 0.25016, Description: Field Blank

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0		4713.865	0.250		3.44				
2	2	PFHxA	313.1 > 269.1		9315.668	0.250		3.73				
3	4	PFHpA	363 > 319		9315.668	0.250		4.19				
4	6	PFHxS	399 > 80.0		4713.865	0.250		4.32				
5	7	PFOA	413 > 369		9315.668	0.250		4.58				
6	24	13C4-PFOS	502.9 > 79.9	4713.865	4713.865	0.250	1.000	4.95	4.94	28.7	115	100.0
7	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
8	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
9	24	13C4-PFOS	502.9 > 79.9	4713.865	4713.865	0.250	1.000	4.95	4.94	28.7	115	100.0
10	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
11	-1											
12	8	PFNA	463 > 419		9315.668	0.250		4.89				
13	9	PFOS	499 >80.0		4713.865	0.250		4.94				
14	11	PFDA	513 > 469		9315.668	0.250		5.14				
15	12	N-MeFOSAA	570 > 419.1		14369.272	0.250		5.26				
16	13	N-EtFOSAA	584.0 >419.1		14369.272	0.250		5.36				
17	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
18	24	13C4-PFOS	502.9 > 79.9	4713.865	4713.865	0.250	1.000	4.95	4.94	28.7	115	100.0
19	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
20	25	d3-N-MeFOSAA	573.0 > 419.0	14369.272	14369.272	0.250	1.000	5.27	5.26	40.0	160	100.0
21	25	d3-N-MeFOSAA	573.0 > 419.0	14369.272	14369.272	0.250	1.000	5.27	5.26	40.0	160	100.0
22	-1											
23	14	PFUnA	563 > 519		9315.668	0.250		5.37				
24	16	PFDoA	613 > 569		9315.668	0.250		5.58				
25	17	PFTrDA	662.9 > 619		9315.668	0.250		5.75				
26	18	PFTeDA	712.9 > 669		9315.668	0.250		5.90				
27	19	13C2-PFHxA	315.1 > 270	9740.219	9315.668	0.250	1.000	3.73	3.73	10.5	41.8	104.5
28	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
29	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
30	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
31	23	13C2-PFOA	415 > 370	9315.668	9315.668	0.250	1.000	4.59	4.58	10.0	40.0	100.0
32	21	13C2-PFDA	515.0 > 470.0	11147.195	9315.668	0.250	1.208	5.15	5.14	12.0	39.6	99.0
33	-1											
34	22	d5-N-EtFOSAA	589.1 > 419.0	14300.919	14369.272	0.250	1.020	5.37	5.36	39.8	156	97.6

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Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-34.qld

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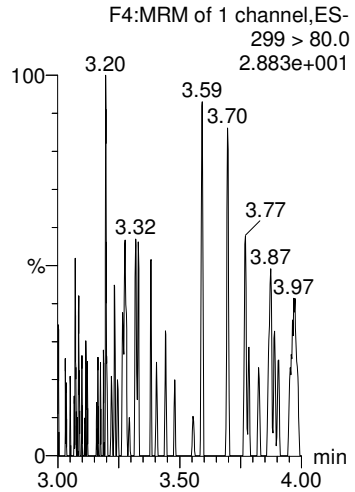
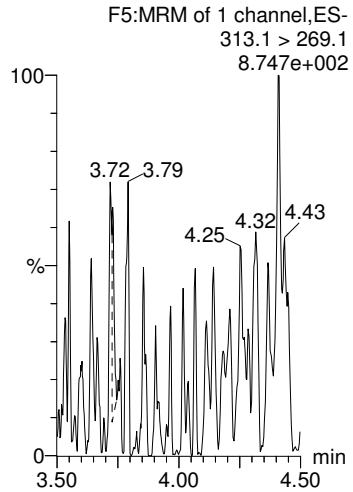


PFHxA



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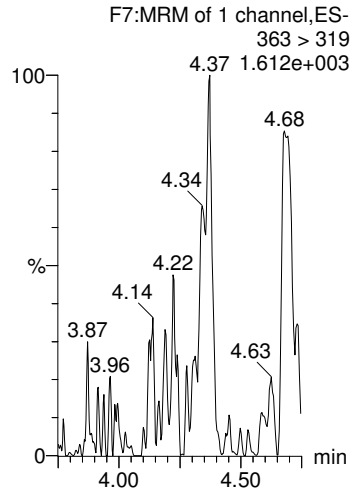

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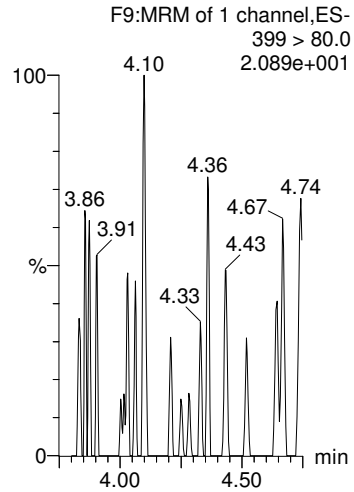
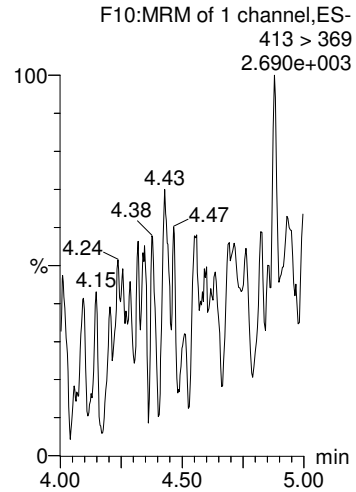


PFOA



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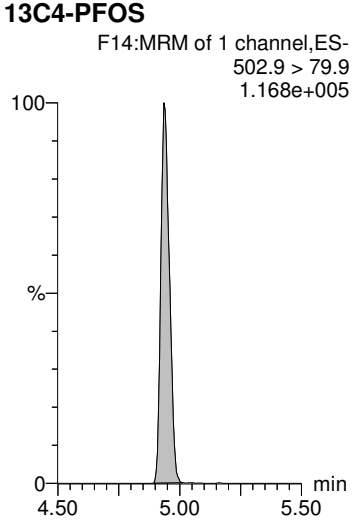

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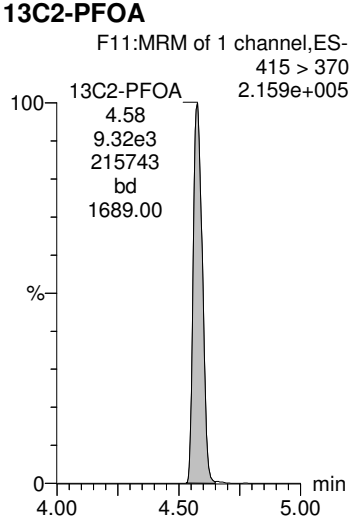

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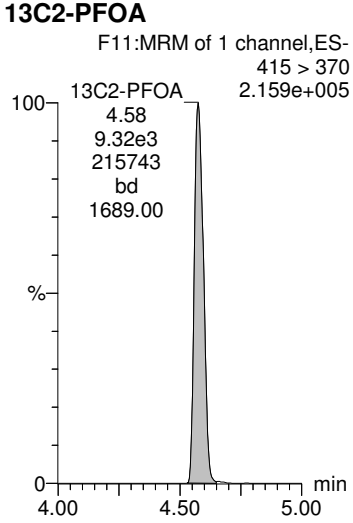

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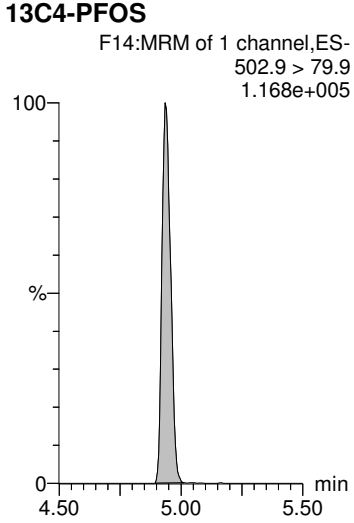

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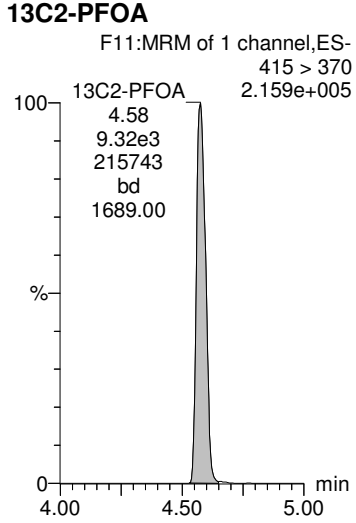

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Review: AMR 4/1/2019

Dataset: Y:\PFAS3.PRO\RESULTS\190328P1\190328P1-34.qld

Last Altered: Saturday, March 30, 2019 15:02:26 Pacific Daylight Time
Printed: Saturday, March 30, 2019 15:02:50 Pacific Daylight Time

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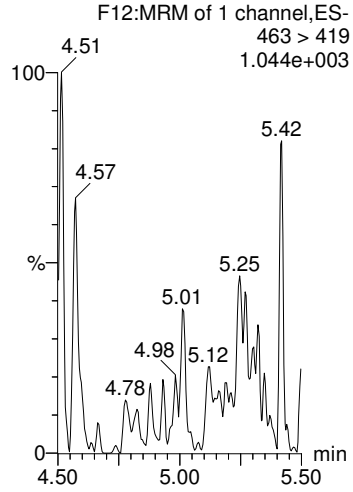

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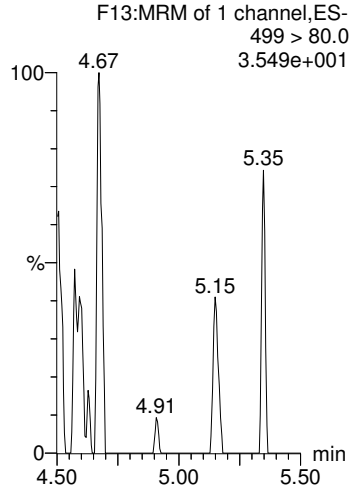

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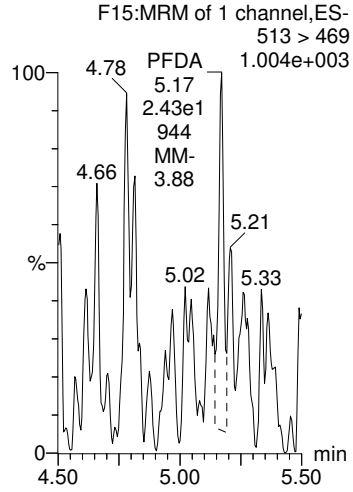

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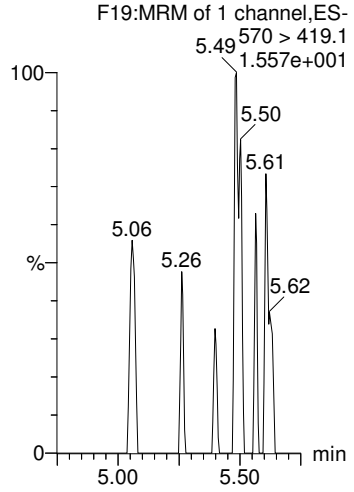

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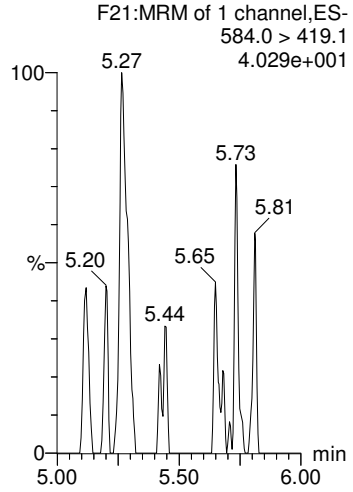

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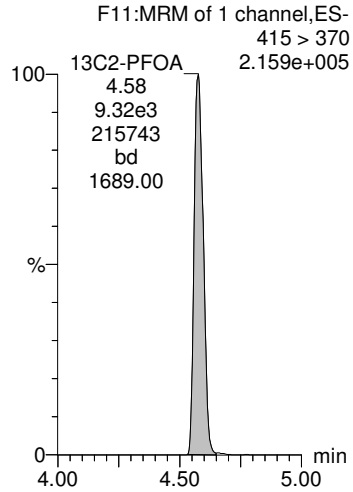

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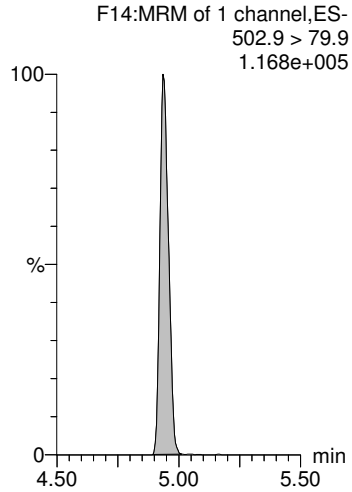

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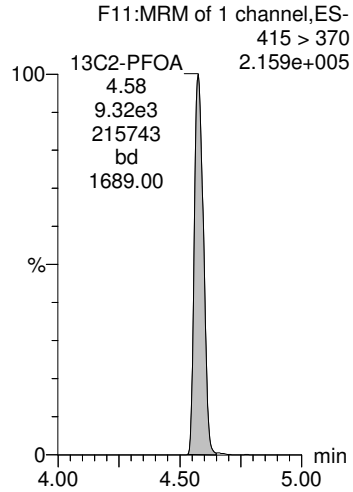

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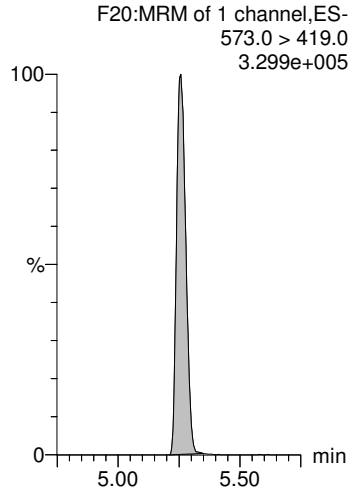

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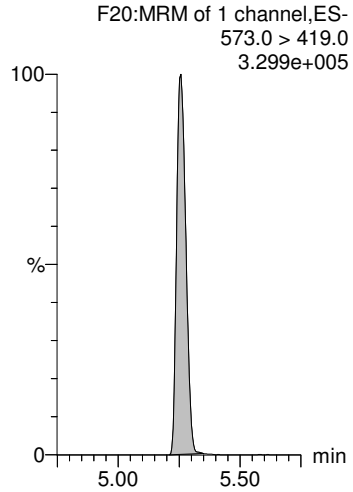

 KBF 3/30/2019

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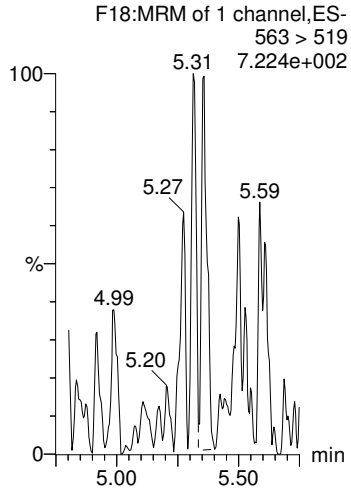

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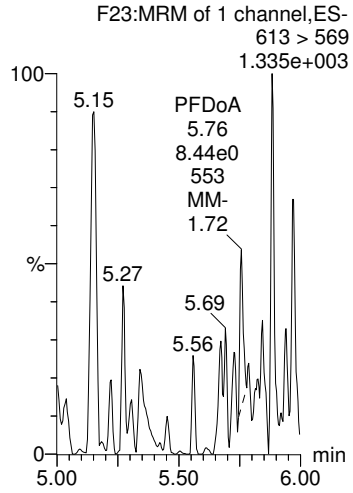

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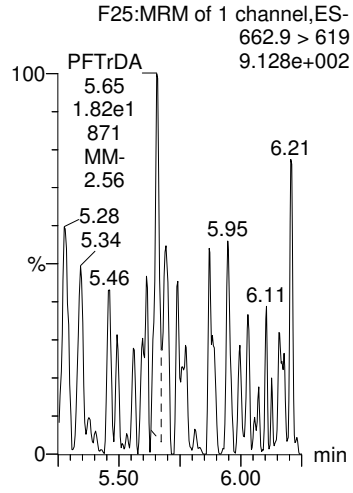

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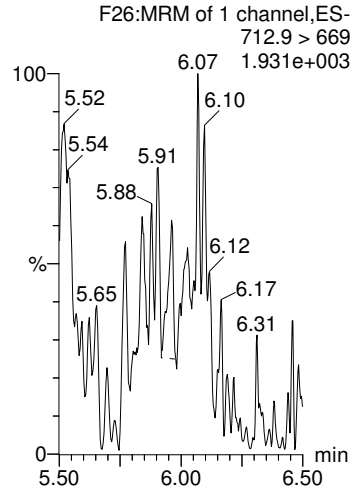

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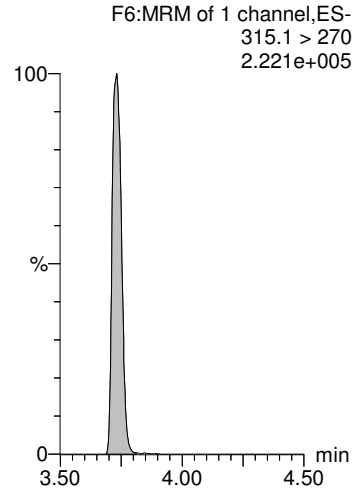

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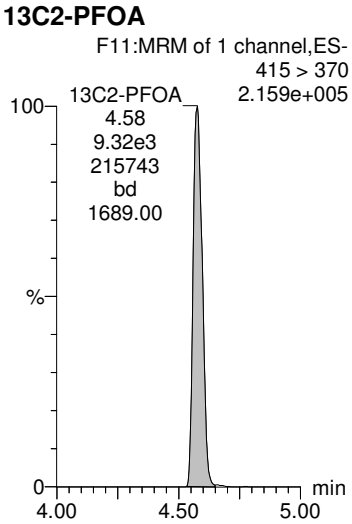

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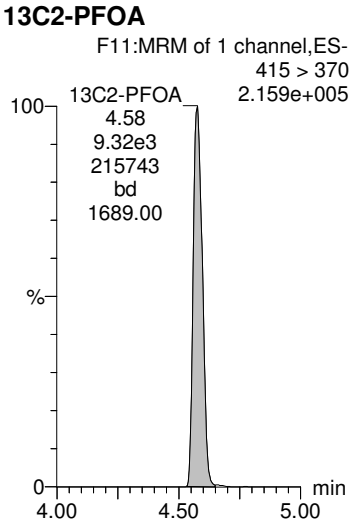

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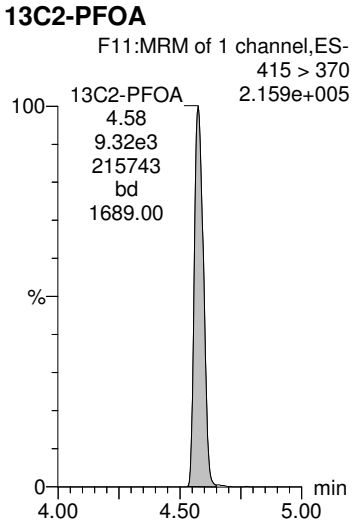

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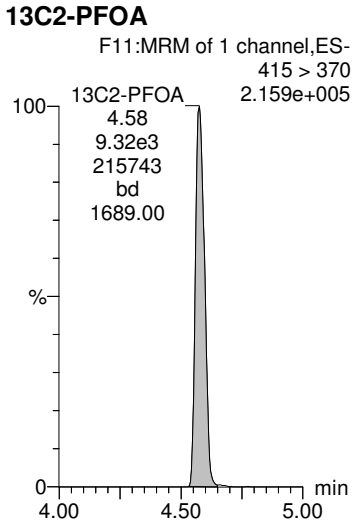

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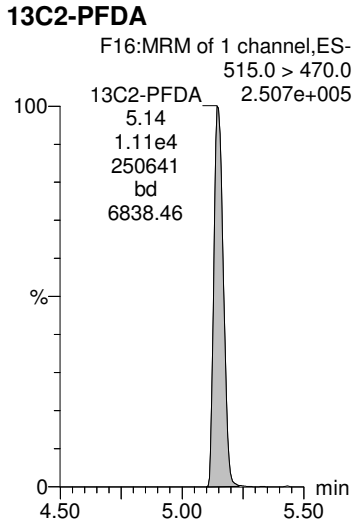

Review: AMR 4/1/2019

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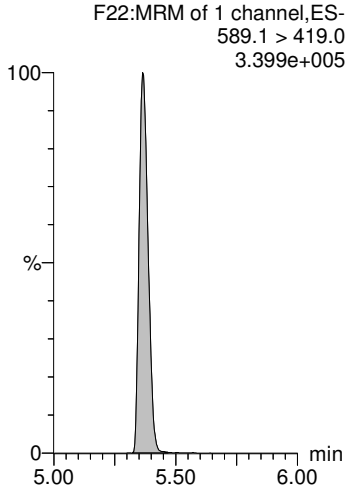
d5-N-EtFOSAA



 KBF 3/30/2019

INJECTION INTERNAL STANDARD (IIS) AREAS,

AND

CONTINUTING CALIBRATION VERIFICATIONS CCV)

ICAL

50-150%

Compound 23: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
1	IPA	190328P1_12	Analyte	10			11389.28	0.00
2	ICV190328P1-1 537 ICV 19C2512	190328P1_13	Analyte	10	4.58	11813.52	11389.28	103.72
3	IPA	190328P1_14	Analyte	10			11389.28	0.00
4	B9C0007-BLK1 LRB 0.25	190328P1_15	Analyte	10	4.59	9875.22	11389.28	86.71
5	B9C0007-BS2 LFB 0.25	190328P1_16	Analyte	10	4.59	9624.12	11389.28	84.50
6	B9C0007-BS3 LFB 0.25	190328P1_17	Analyte	10	4.58	9958.75	11389.28	87.44
7	B9C0007-BS4 LFB 0.25	190328P1_18	Analyte	10	4.58	9889.11	11389.28	86.83
8	B9C0007-BS5 LFB 0.25	190328P1_19	Analyte	10	4.58	9328.19	11389.28	81.90
9	B9C0121-BSD1 LFBD 0.25	190328P1_20	Analyte	10	4.58	8382.66	11389.28	73.60
10	B9C0121-BS1 LFB 0.25	190328P1_21	Analyte	10	4.58	9209.84	11389.28	80.86
11	B9C0121-BLK1 LRB 0.25	190328P1_22	Analyte	10	4.58	9681.35	11389.28	85.00
12	1900431-06RE1 WT1903061045RF 0.24998	190328P1_23	Analyte	10	4.58	9820.70	11389.28	86.23
13	1900431-08RE1 WR1903061115RF 0.24549	190328P1_24	Analyte	10	4.58	9866.49	11389.28	86.63
14	1900431-12RE1 WT1903051345RF 0.25175	190328P1_25	Analyte	10	4.59	8802.39	11389.28	77.29
15	1900433-02RE1 WT1903060910RF 0.25506	190328P1_26	Analyte	10	4.58	8360.76	11389.28	73.41
16	1900449-02RE1 WT1903121050MK 0.24869	190328P1_27	Analyte	10	4.58	8963.24	11389.28	78.70
17	B9C0124-BS1 LFB 0.25	190328P1_28	Analyte	10	4.59	16163.85	11389.28	141.92
18	B9C0124-BSD1 LFBD 0.25	190328P1_29	Analyte	10	4.58	10057.60	11389.28	88.31
19	B9C0124-BLK1 LRB 0.25	190328P1_30	Analyte	10	4.58	9353.02	11389.28	82.12
20	1900460-01 Iron Removal Plant 0.23473	190328P1_31	Analyte	10	4.58	9765.16	11389.28	85.74
21	1900478-01 Charlie's Pasture-DW 031319 0.25011	190328P1_32	Analyte	10	4.58	10250.57	11389.28	90.00
22	1900478-02 Dup-1 0.24868	190328P1_33	Analyte	10	4.58	8778.47	11389.28	77.08
23	1900478-03 Field Blank 0.25016	190328P1_34	Analyte	10	4.58	9315.67	11389.28	81.79
24	1900483-01 WT1903150740MK 0.2418	190328P1_35	Analyte	10	4.58	9175.00	11389.28	80.56
25	1900483-02 WT1903150810MK 0.23928	190328P1_36	Analyte	10	4.58	8716.16	11389.28	76.53
26	IPA	190328P1_37	Analyte	10			11389.28	0.00
27	ST190328P1-11 537 CS1 19C2507	190328P1_38	Analyte	10	4.58	10121.78	11389.28	88.87
28	1900483-03 WT1903150815MK 0.23548	190328P1_39	Analyte	10	4.58	9465.68	11389.28	83.11
29	1900483-04 WT1903150820MK 0.24752	190328P1_40	Analyte	10	4.58	9156.37	11389.28	80.39
30	1900483-05 WT1903150835MK 0.24649	190328P1_41	Analyte	10	4.58	9133.22	11389.28	80.19
31	1900483-06 WT1903150840MK 0.25133	190328P1_42	Analyte	10	4.58	9412.20	11389.28	82.64
32	IPA	190328P1_43	Analyte	10			11389.28	0.00
33	ST190328P1-12 537 CS3 19C2509	190328P1_44	Standard	10	4.58	10470.53	11389.28	91.93

AD 3/29/2019

Compound 24: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
1	IPA	190328P1_12	Analyte	28.7			5777.83	0.00
2	ICV190328P1-1 537 ICV 19C2512	190328P1_13	Analyte	28.7	4.95	5670.69	5777.83	98.15
3	IPA	190328P1_14	Analyte	28.7			5777.83	0.00
4	B9C0007-BLK1 LRB 0.25	190328P1_15	Analyte	28.7	4.95	5066.21	5777.83	87.68
5	B9C0007-BS2 LFB 0.25	190328P1_16	Analyte	28.7	4.95	4938.27	5777.83	85.47
6	B9C0007-BS3 LFB 0.25	190328P1_17	Analyte	28.7	4.95	4839.37	5777.83	83.76
7	B9C0007-BS4 LFB 0.25	190328P1_18	Analyte	28.7	4.95	4996.71	5777.83	86.48
8	B9C0007-BS5 LFB 0.25	190328P1_19	Analyte	28.7	4.95	4600.43	5777.83	79.62
9	B9C0121-BSD1 LFBD 0.25	190328P1_20	Analyte	28.7	4.95	4159.29	5777.83	71.99
10	B9C0121-BS1 LFB 0.25	190328P1_21	Analyte	28.7	4.95	4599.72	5777.83	79.61
11	B9C0121-BLK1 LRB 0.25	190328P1_22	Analyte	28.7	4.95	4993.93	5777.83	86.43
12	1900431-06RE1 WT1903061045RF 0.24998	190328P1_23	Analyte	28.7	4.95	4840.19	5777.83	83.77
13	1900431-08RE1 WR1903061115RF 0.24549	190328P1_24	Analyte	28.7	4.95	5056.58	5777.83	87.52
14	1900431-12RE1 WT1903051345RF 0.25175	190328P1_25	Analyte	28.7	4.95	4457.63	5777.83	77.15
15	1900433-02RE1 WT1903060910RF 0.25506	190328P1_26	Analyte	28.7	4.95	4218.51	5777.83	73.01
16	1900449-02RE1 WT1903121050MK 0.24869	190328P1_27	Analyte	28.7	4.95	5010.20	5777.83	86.71
17	B9C0124-BS1 LFB 0.25	190328P1_28	Analyte	28.7	4.95	5394.76	5777.83	93.37
18	B9C0124-BSD1 LFBD 0.25	190328P1_29	Analyte	28.7	4.93	5009.28	5777.83	86.70
19	B9C0124-BLK1 LRB 0.25	190328P1_30	Analyte	28.7	4.94	4916.29	5777.83	85.09
20	1900460-01 Iron Removal Plant 0.23473	190328P1_31	Analyte	28.7	4.94	5228.75	5777.83	90.50
21	1900478-01 Charlie's Pasture-DW 031319 0.25011	190328P1_32	Analyte	28.7	4.94	4768.89	5777.83	82.54
22	1900478-02 Dup-1 0.24868	190328P1_33	Analyte	28.7	4.94	4185.00	5777.83	72.43
23	1900478-03 Field Blank 0.25016	190328P1_34	Analyte	28.7	4.94	4713.87	5777.83	81.59
24	1900483-01 WT1903150740MK 0.2418	190328P1_35	Analyte	28.7	4.94	4762.02	5777.83	82.42
25	1900483-02 WT1903150810MK 0.23928	190328P1_36	Analyte	28.7	4.94	4847.73	5777.83	83.90
26	IPA	190328P1_37	Analyte	28.7			5777.83	0.00
27	ST190328P1-11 537 CS1 19C2507	190328P1_38	Analyte	28.7	4.94	5236.37	5777.83	90.63
28	1900483-03 WT1903150815MK 0.23548	190328P1_39	Analyte	28.7	4.94	4973.74	5777.83	86.08
29	1900483-04 WT1903150820MK 0.24752	190328P1_40	Analyte	28.7	4.94	4534.18	5777.83	78.48
30	1900483-05 WT1903150835MK 0.24649	190328P1_41	Analyte	28.7	4.94	4802.35	5777.83	83.12
31	1900483-06 WT1903150840MK 0.25133	190328P1_42	Analyte	28.7	4.94	4845.17	5777.83	83.86
32	IPA	190328P1_43	Analyte	28.7	4.81	5.04	5777.83	0.09
33	ST190328P1-12 537 CS3 19C2509	190328P1_44	Standard	28.7	4.94	5475.79	5777.83	94.77

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Compound 25: d3-N-MeFOSAA

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
1	IPA	190328P1_12	Analyte	40			17692.81	0.00
2	ICV190328P1-1 537 ICV 19C2512	190328P1_13	Analyte	40	5.27	17254.291	17692.81	97.52
3	IPA	190328P1_14	Analyte	40			17692.81	0.00
4	B9C0007-BLK1 LRB 0.25	190328P1_15	Analyte	40	5.27	14896.71	17692.81	84.20
5	B9C0007-BS2 LFB 0.25	190328P1_16	Analyte	40	5.27	15234.831	17692.81	86.11
6	B9C0007-BS3 LFB 0.25	190328P1_17	Analyte	40	5.27	14670.686	17692.81	82.92
7	B9C0007-BS4 LFB 0.25	190328P1_18	Analyte	40	5.27	15068.326	17692.81	85.17
8	B9C0007-BS5 LFB 0.25	190328P1_19	Analyte	40	5.27	14141.654	17692.81	79.93
9	B9C0121-BSD1 LFBD 0.25	190328P1_20	Analyte	40	5.26	12454.197	17692.81	70.39
10	B9C0121-BS1 LFB 0.25	190328P1_21	Analyte	40	5.26	14750.374	17692.81	83.37
11	B9C0121-BLK1 LRB 0.25	190328P1_22	Analyte	40	5.27	14910.396	17692.81	84.27
12	1900431-06RE1 WT1903061045RF 0.24998	190328P1_23	Analyte	40	5.26	15208.088	17692.81	85.96
13	1900431-08RE1 WR1903061115RF 0.24549	190328P1_24	Analyte	40	5.27	14969.46	17692.81	84.61
14	1900431-12RE1 WT1903051345RF 0.25175	190328P1_25	Analyte	40	5.26	13528.816	17692.81	76.47
15	1900433-02RE1 WT1903060910RF 0.25506	190328P1_26	Analyte	40	5.26	12773.567	17692.81	72.20
16	1900449-02RE1 WT1903121050MK 0.24869	190328P1_27	Analyte	40	5.26	14967.364	17692.81	84.60
17	B9C0124-BS1 LFB 0.25	190328P1_28	Analyte	40	5.29	10954.913	17692.81	61.92
18	B9C0124-BSD1 LFBD 0.25	190328P1_29	Analyte	40	5.26	14362.67	17692.81	81.18
19	B9C0124-BLK1 LRB 0.25	190328P1_30	Analyte	40	5.25	14982.004	17692.81	84.68
20	1900460-01 Iron Removal Plant 0.23473	190328P1_31	Analyte	40	5.25	14888.205	17692.81	84.15
21	1900478-01 Charlie's Pasture-DW 031319 0.25011	190328P1_32	Analyte	40	5.26	15160.884	17692.81	85.69
22	1900478-02 Dup-1 0.24868	190328P1_33	Analyte	40	5.26	13962.995	17692.81	78.92
23	1900478-03 Field Blank 0.25016	190328P1_34	Analyte	40	5.26	14369.272	17692.81	81.22
24	1900483-01 WT1903150740MK 0.2418	190328P1_35	Analyte	40	5.26	14381.888	17692.81	81.29
25	1900483-02 WT1903150810MK 0.23928	190328P1_36	Analyte	40	5.26	13697.924	17692.81	77.42
26	IPA	190328P1_37	Analyte	40			17692.81	0.00
27	ST190328P1-11 537 CS1 19C2507	190328P1_38	Analyte	40	5.26	15856.783	17692.81	89.62
28	1900483-03 WT1903150815MK 0.23548	190328P1_39	Analyte	40	5.26	15032.628	17692.81	84.96
29	1900483-04 WT1903150820MK 0.24752	190328P1_40	Analyte	40	5.26	13335.257	17692.81	75.37
30	1900483-05 WT1903150835MK 0.24649	190328P1_41	Analyte	40	5.26	13990.509	17692.81	79.07
31	1900483-06 WT1903150840MK 0.25133	190328P1_42	Analyte	40	5.26	13638.958	17692.81	77.09
32	IPA	190328P1_43	Analyte	40			17692.81	0.00
33	ST190328P1-12 537 CS3 19C2509	190328P1_44	Standard	40	5.26	17267.059	17692.81	97.59

AD 3/29/2019

CCAL

70-140%

Compound 23: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	CCAL AREA	% AREA
27	**ST190328P1-11 537 CS1 19C2507**	**190328P1_38**	**Analyte**	**10**	**4.58**	**10121.78**	**10121.78**	**100.00**
28	1900483-03 WT1903150815MK 0.23548	190328P1_39	Analyte	10	4.58	9465.68	10121.78	93.52
29	1900483-04 WT1903150820MK 0.24752	190328P1_40	Analyte	10	4.58	9156.37	10121.78	90.46
30	1900483-05 WT1903150835MK 0.24649	190328P1_41	Analyte	10	4.58	9133.22	10121.78	90.23
31	1900483-06 WT1903150840MK 0.25133	190328P1_42	Analyte	10	4.58	9412.20	10121.78	92.99
32	IPA	190328P1_43	Analyte	10			10121.78	0.00
33	ST190328P1-12 537 CS3 19C2509	190328P1_44	Standard	10	4.58	10470.53	10121.78	103.45

Compound 24: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	CCAL AREA	% AREA
27	**ST190328P1-11 537 CS1 19C2507**	**190328P1_38**	**Analyte**	**28.7**	**4.94**	**5236.37**	**5236.37**	**100.00**
28	1900483-03 WT1903150815MK 0.23548	190328P1_39	Analyte	28.7	4.94	4973.74	5236.37	94.98
29	1900483-04 WT1903150820MK 0.24752	190328P1_40	Analyte	28.7	4.94	4534.18	5236.37	86.59
30	1900483-05 WT1903150835MK 0.24649	190328P1_41	Analyte	28.7	4.94	4802.35	5236.37	91.71
31	1900483-06 WT1903150840MK 0.25133	190328P1_42	Analyte	28.7	4.94	4845.17	5236.37	92.53
32	IPA	190328P1_43	Analyte	28.7	4.81	5.04	5236.37	0.10
33	ST190328P1-12 537 CS3 19C2509	190328P1_44	Standard	28.7	4.94	5475.79	5236.37	104.57

Compound 25: d3-N-MeFOSAA

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
27	**ST190328P1-11 537 CS1 19C2507**	**190328P1_38**	**Analyte**	**40**	**5.26**	**15856.78**	**15856.78**	**100.00**
28	1900483-03 WT1903150815MK 0.23548	190328P1_39	Analyte	40	5.26	15032.63	15856.78	94.80
29	1900483-04 WT1903150820MK 0.24752	190328P1_40	Analyte	40	5.26	13335.26	15856.78	84.10
30	1900483-05 WT1903150835MK 0.24649	190328P1_41	Analyte	40	5.26	13990.51	15856.78	88.23
31	1900483-06 WT1903150840MK 0.25133	190328P1_42	Analyte	40	5.26	13638.96	15856.78	86.01
32	IPA	190328P1_43	Analyte	40			15856.78	0.00
33	ST190328P1-12 537 CS3 19C2509	190328P1_44	Standard	40	5.26	17267.06	15856.78	108.89

AD 3/29/2019

LC Calibration Standards Review Checklist Q5

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	N/A
		N/A						
Calibration ID: ST190328P1-11	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID: ↓ -12	L M (H)	☐	☑	☑	☑	☑	☑	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐ N/A AD 3/29/19	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 03-27-19

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☐ N/A

IIS Area Saved ☑

Reviewed By: 3/29/19
Initials/Date

Comments:

DW L18

ID: LR - LCSRC *Rev. No.:* 1 *Rev. Date:* 02/06/2018 *Page:* 1 of 1

Vista Analytical Laboratory

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-38.qld

Last Altered: Friday, March 29, 2019 10:34:29 Pacific Daylight Time
Printed: Friday, March 29, 2019 10:43:00 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_38, Date: 28-Mar-2019, Time: 19:54:50, ID: ST190328P1-11 537 CS1 19C2507, Description: 537 CS1 19C2507

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0	1.30e3	5.24e3	1.00		3.44	3.42	7.10	8.32	94.1
2	2	PFHxA	313.1 > 269.1	7.99e3	1.01e4	1.00		3.73	3.73	7.89	10.3	103.5
3	3	HFPO-DA	285 > 168.9	3.26e3	1.01e4	1.00		3.90	3.89	3.22	11.6	115.8
4	4	PFHpA	363 > 319	1.08e4	1.01e4	1.00		4.19	4.21	10.7	10.5	104.6
5	5	ADONA	377.1>251	1.67e4	1.01e4	1.00		4.29	4.28	16.5	11.5	114.9
6	6	PFHxS	399 > 80.0	1.20e3	5.24e3	1.00		4.32	4.31	6.58	8.54	93.6
7	7	PFOA	413 > 369	9.88e3	1.01e4	1.00		4.58	4.58	9.76	10.1	100.6
8	8	PFNA	463 > 419	8.41e3	1.01e4	1.00		4.89	4.88	8.31	9.60	96.0
9	9	PFOS	499 >80.0	1.39e3	5.24e3	1.00		4.94	4.94	7.62	8.71	94.2
10	10	9Cl-PF3ONS	531.1>351.1	4.86e3	5.24e3	1.00		5.10	5.09	26.6	11.0	110.1
11	11	PFDA	513 > 469	1.04e4	1.01e4	1.00		5.15	5.15	10.3	10.0	100.4
12	12	N-MeFOSAA	570 > 419.1	3.06e3	1.59e4	1.00		5.26	5.26	7.73	10.5	104.9
13	13	N-EtFOSAA	584.0 >419.1	2.65e3	1.59e4	1.00		5.37	5.37	6.69	9.72	97.2
14	14	PFUnA	563 > 519	1.32e4	1.01e4	1.00		5.37	5.38	13.1	9.78	97.8
15	15	11Cl-PF3OUdS	630.9>451.0	5.33e3	5.24e3	1.00		5.52	5.51	29.2	10.9	109.1
16	16	PFDoA	613 > 569	1.66e4	1.01e4	1.00		5.58	5.57	16.4	9.80	98.0
17	17	PFTrDA	662.9 > 619	1.70e4	1.01e4	1.00		5.75	5.75	16.8	9.92	99.2
18	18	PFTeDA	712.9 > 669	1.58e4	1.01e4	1.00		5.90	5.89	15.6	9.80	98.0
19	19	13C2-PFHxA	315.1 > 270	1.06e4	1.01e4	1.00	1.000	3.73	3.73	10.5	10.5	104.7
20	20	13C3-HFPO-DA	287 >185	9.11e2	1.01e4	1.00	0.085	3.90	3.89	0.900	10.6	105.9
21	21	13C2-PFDA	515.0 > 470.0	1.20e4	1.01e4	1.00	1.208	5.15	5.15	11.8	9.77	97.7
22	22	d5-N-EtFOSAA	589.1 > 419.0	1.58e4	1.59e4	1.00	1.020	5.37	5.37	39.9	39.1	97.8
23	23	13C2-PFOA	415 > 370	1.01e4	1.01e4	1.00	1.000	4.59	4.58	10.0	10.0	100.0
24	24	13C4-PFOS	502.9 > 79.9	5.24e3	5.24e3	1.00	1.000	4.95	4.94	28.7	28.7	100.0
25	25	d3-N-MeFOSAA	573.0 > 419.0	1.59e4	1.59e4	1.00	1.000	5.27	5.26	40.0	40.0	100.0

3/29/19

AD 3/29/19

Dataset: Untitled

Last Altered: Friday, March 29, 2019 11:02:41 Pacific Daylight Time
Printed: Friday, March 29, 2019 11:03:15 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
1	1	190328P1_1	IPA	28-Mar-19	10:44:30
2	2	190328P1_2	ST190328P1-1 537 CS-4 19C2502	28-Mar-19	10:55:07
3	3	190328P1_3	ST190328P1-2 537 CS-3 19C2503	28-Mar-19	11:05:41
4	4	190328P1_4	ST190328P1-3 537 CS-2 19C2504	28-Mar-19	11:16:17
5	5	190328P1_5	ST190328P1-4 537 CS-1 19C2505	28-Mar-19	11:26:51
6	6	190328P1_6	ST190328P1-5 537 CS0 19C2506	28-Mar-19	11:37:26
7	7	190328P1_7	ST190328P1-6 537 CS1 19C2507	28-Mar-19	11:48:01
8	8	190328P1_8	ST190328P1-7 537 CS2 19C2508	28-Mar-19	11:58:36
9	9	190328P1_9	ST190328P1-8 537 CS3 19C2509	28-Mar-19	12:09:11
10	10	190328P1_10	ST190328P1-9 537 CS4 19C2510	28-Mar-19	12:19:45
11	11	190328P1_11	ST190328P1-10 537 CS5 19C2511	28-Mar-19	12:30:19
12	12	190328P1_12	IPA	28-Mar-19	12:40:55
13	13	190328P1_13	ICV190328P1-1 537 ICV 19C2512	28-Mar-19	12:51:29
14	14	190328P1_14	IPA	28-Mar-19	13:02:04
15	15	190328P1_15	B9C0007-BLK1 LRB 0.25	28-Mar-19	13:12:38
16	16	190328P1_16	B9C0007-BS2 LFB 0.25	28-Mar-19	13:23:14
17	17	190328P1_17	B9C0007-BS3 LFB 0.25	28-Mar-19	13:33:48
18	18	190328P1_18	B9C0007-BS4 LFB 0.25	28-Mar-19	13:44:23
19	19	190328P1_19	B9C0007-BS5 LFB 0.25	28-Mar-19	13:54:58
20	20	190328P1_20	B9C0121-BSD1 LFBD 0.25	28-Mar-19	14:05:33
21	21	190328P1_21	B9C0121-BS1 LFB 0.25	28-Mar-19	14:16:07
22	22	190328P1_22	B9C0121-BLK1 LRB 0.25	28-Mar-19	14:26:42
23	23	190328P1_23	1900431-06RE1 WT1903061045RF 0.24998	28-Mar-19	14:37:16
24	24	190328P1_24	1900431-08RE1 WR1903061115RF 0.24549	28-Mar-19	14:47:51
25	25	190328P1_25	1900431-12RE1 WT1903051345RF 0.25175	28-Mar-19	14:58:26
26	26	190328P1_26	1900433-02RE1 WT1903060910RF 0.25506	28-Mar-19	15:09:01
27	27	190328P1_27	1900449-02RE1 WT1903121050MK 0.24869	28-Mar-19	15:19:37
28	28	190328P1_28	B9C0124-BS1 LFB 0.25	28-Mar-19	18:08:53
29	29	190328P1_29	B9C0124-BSD1 LFBD 0.25	28-Mar-19	18:19:37
30	30	190328P1_30	B9C0124-BLK1 LRB 0.25	28-Mar-19	18:30:11
31	31	190328P1_31	1900460-01 Iron Removal Plant 0.23473	28-Mar-19	18:40:47
32	32	190328P1_32	1900478-01 Charlie's Pasture-DW 031319 0.25011	28-Mar-19	18:51:22

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, March 29, 2019 11:02:41 Pacific Daylight Time
Printed: Friday, March 29, 2019 11:03:15 Pacific Daylight Time

Compound name: PFBS

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33	33	190328P1_33	1900478-02 Dup-1 0.24868	28-Mar-19	19:01:56
34	34	190328P1_34	1900478-03 Field Blank 0.25016	28-Mar-19	19:12:31
35	35	190328P1_35	1900483-01 WT1903150740MK 0.2418	28-Mar-19	19:23:06
36	36	190328P1_36	1900483-02 WT1903150810MK 0.23928	28-Mar-19	19:33:41
37	37	190328P1_37	IPA	28-Mar-19	19:44:16
38	38	190328P1_38	ST190328P1-11 537 CS1 19C2507	28-Mar-19	19:54:50
39	39	190328P1_39	1900483-03 WT1903150815MK 0.23548	28-Mar-19	20:05:26
40	40	190328P1_40	1900483-04 WT1903150820MK 0.24752	28-Mar-19	20:16:00
41	41	190328P1_41	1900483-05 WT1903150835MK 0.24649	28-Mar-19	20:26:35
42	42	190328P1_42	1900483-06 WT1903150840MK 0.25133	28-Mar-19	20:37:10
43	43	190328P1_43	IPA	28-Mar-19	20:47:45
44	44	190328P1_44	ST190328P1-12 537 CS3 19C2509	28-Mar-19	20:58:20

Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-38.qld

Last Altered: Friday, March 29, 2019 10:34:29 Pacific Daylight Time
Printed: Friday, March 29, 2019 10:43:00 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_38, Date: 28-Mar-2019, Time: 19:54:50, ID: ST190328P1-11 537 CS1 19C2507, Description: 537 CS1 19C2507

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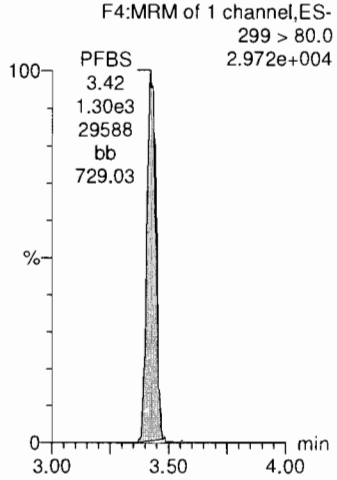

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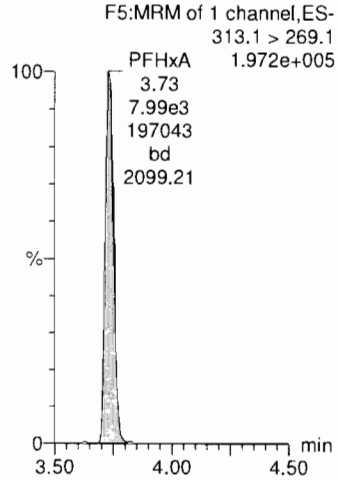
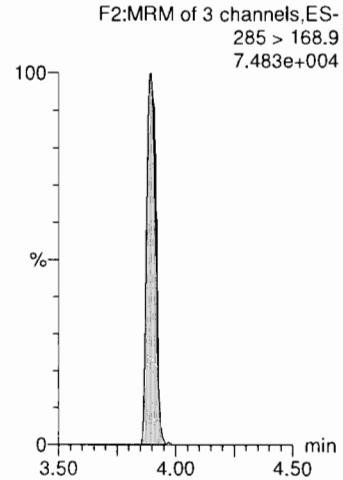


HFPO-DA



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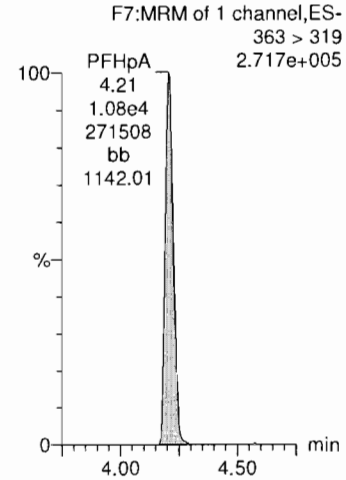

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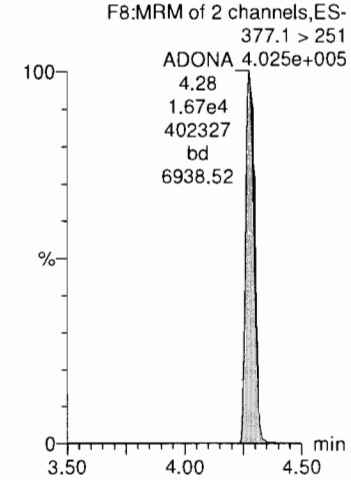
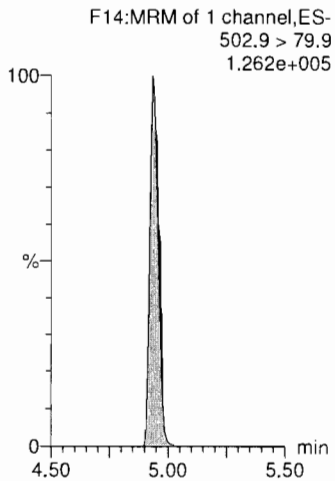


13C4-PFOS



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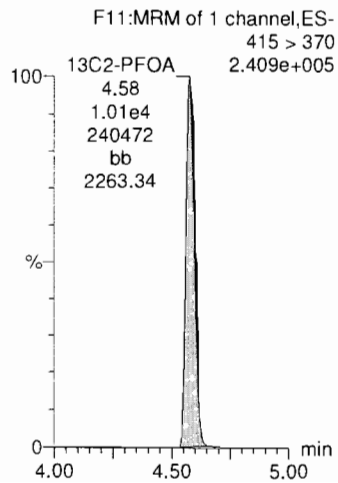

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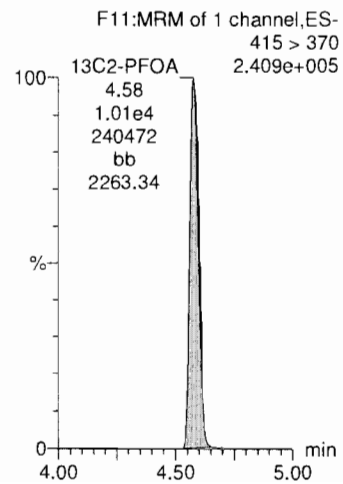

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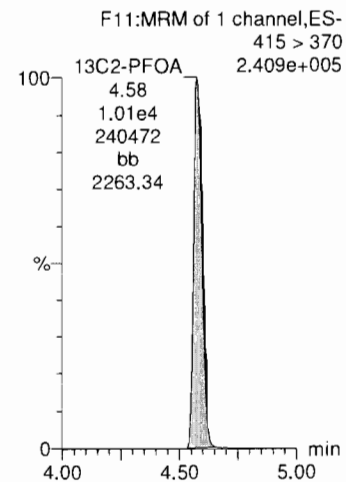

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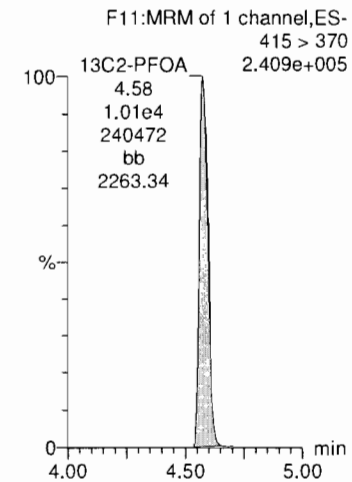

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Last Altered: Friday, March 29, 2019 10:34:29 Pacific Daylight Time
Printed: Friday, March 29, 2019 10:43:00 Pacific Daylight Time

Name: 190328P1_38, Date: 28-Mar-2019, Time: 19:54:50, ID: ST190328P1-11 537 CS1 19C2507, Description: 537 CS1 19C2507

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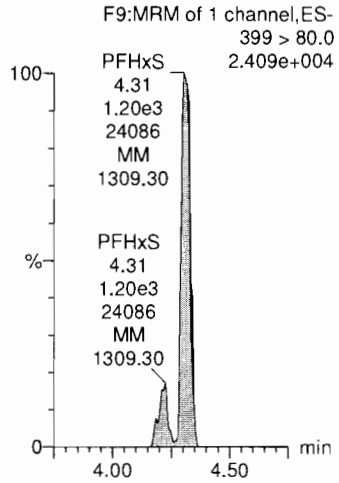

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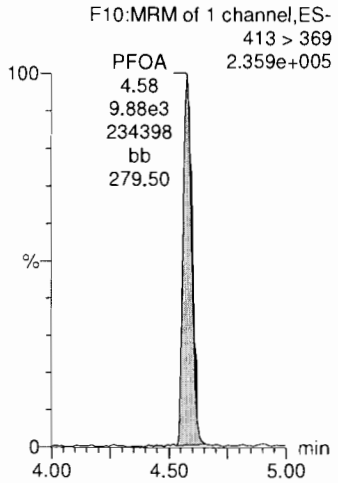

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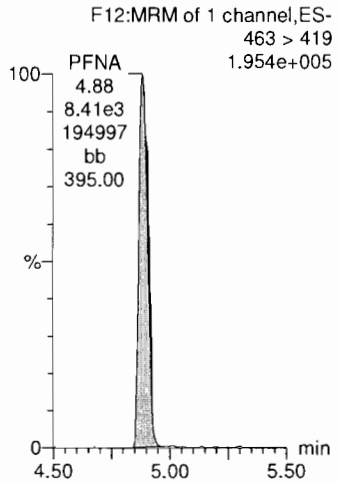

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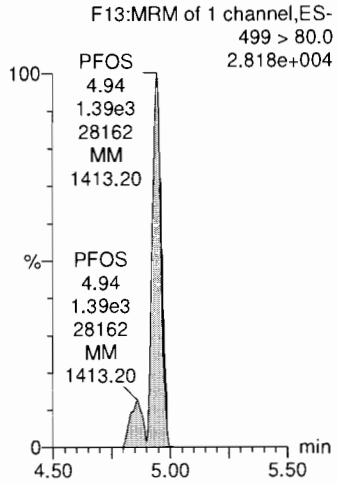
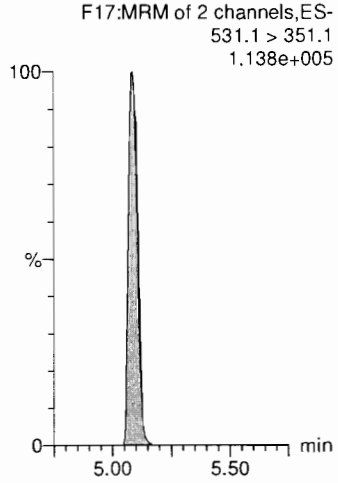


9Cl-PF3ONS



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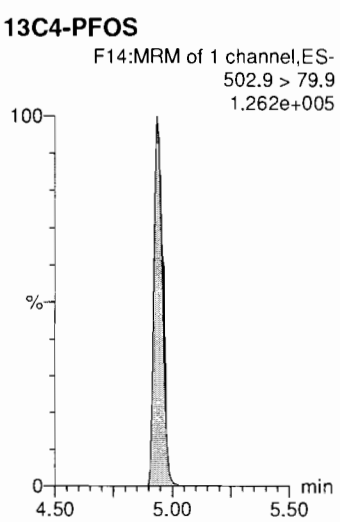

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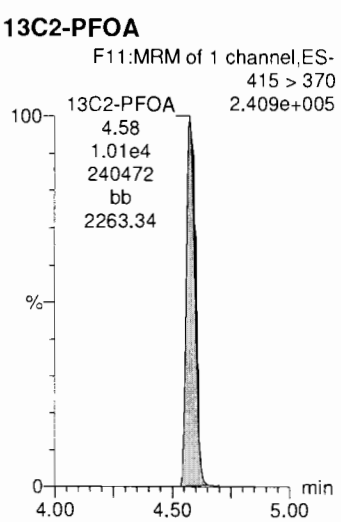

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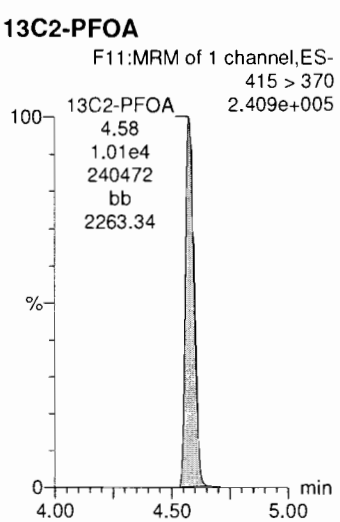

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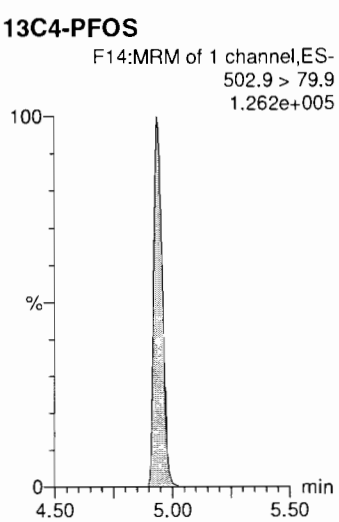

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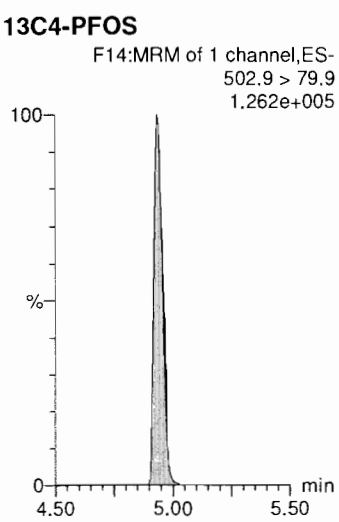

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Last Altered: Friday, March 29, 2019 10:34:29 Pacific Daylight Time
Printed: Friday, March 29, 2019 10:43:00 Pacific Daylight Time

Name: 190328P1_38, Date: 28-Mar-2019, Time: 19:54:50, ID: ST190328P1-11 537 CS1 19C2507, Description: 537 CS1 19C2507

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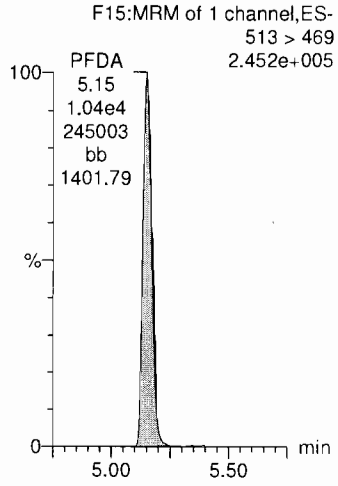

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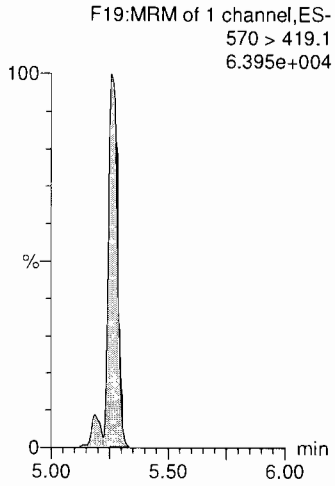

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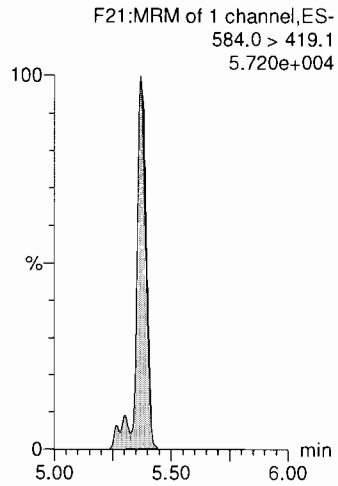

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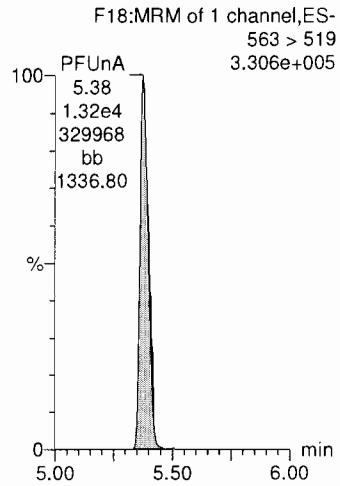

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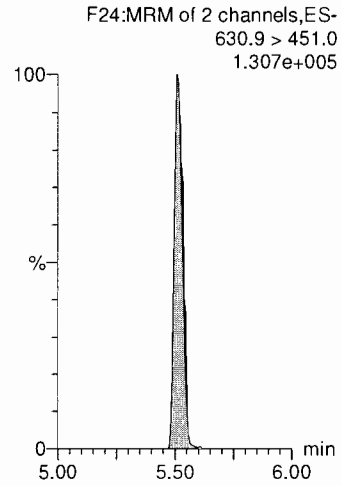

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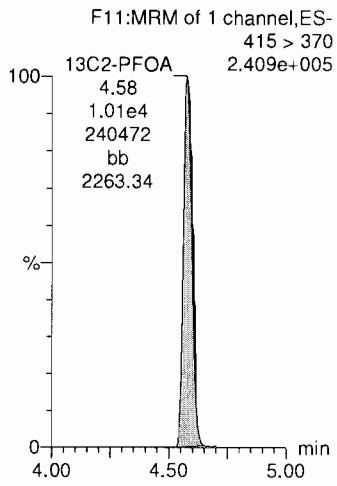

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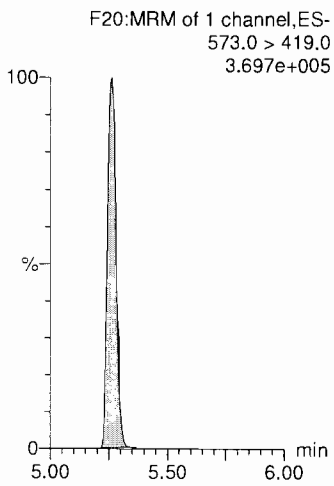

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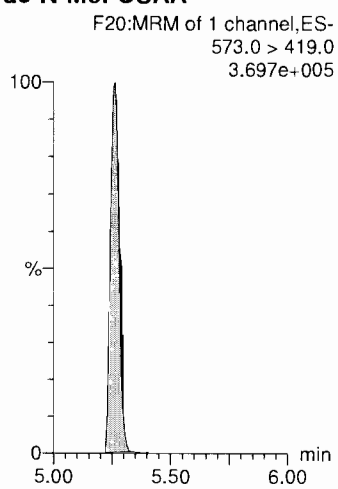

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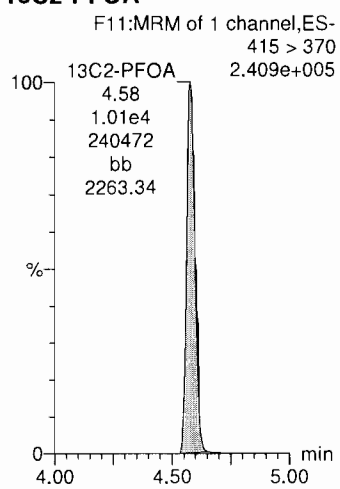

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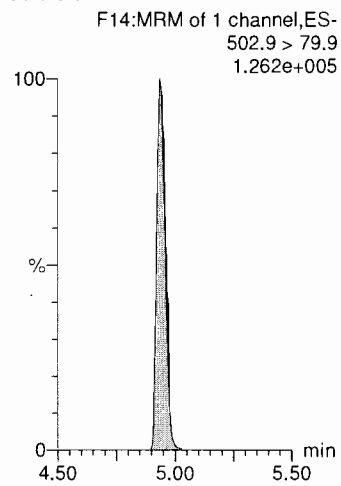

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Last Altered: Friday, March 29, 2019 10:34:29 Pacific Daylight Time
Printed: Friday, March 29, 2019 10:43:00 Pacific Daylight Time

Name: 190328P1_38, Date: 28-Mar-2019, Time: 19:54:50, ID: ST190328P1-11 537 CS1 19C2507, Description: 537 CS1 19C2507

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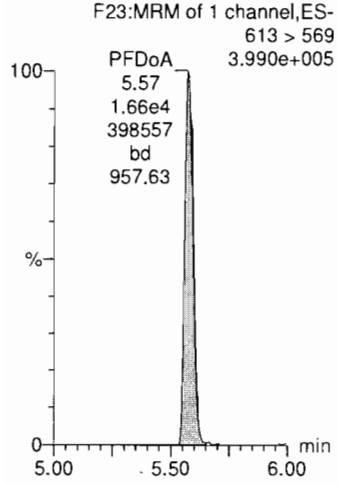

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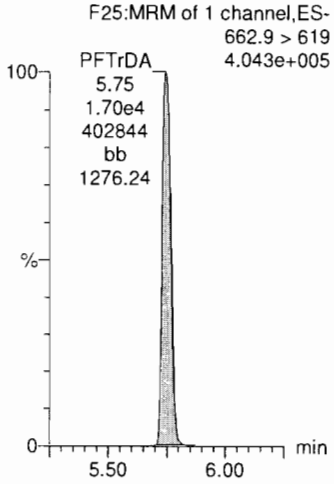

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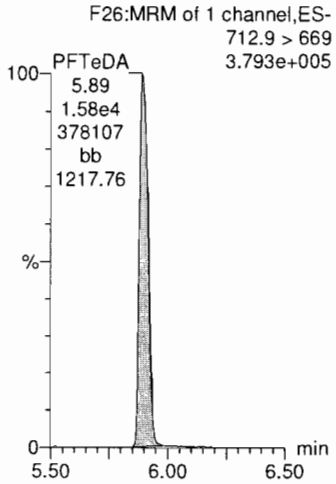

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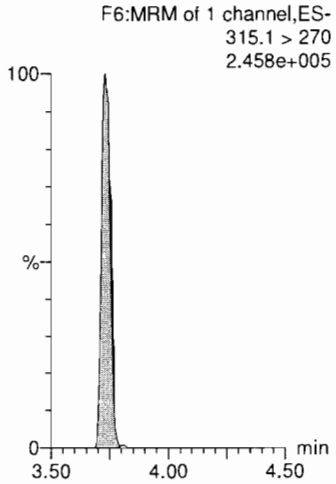

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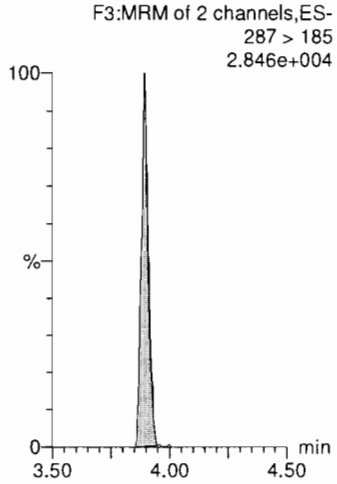

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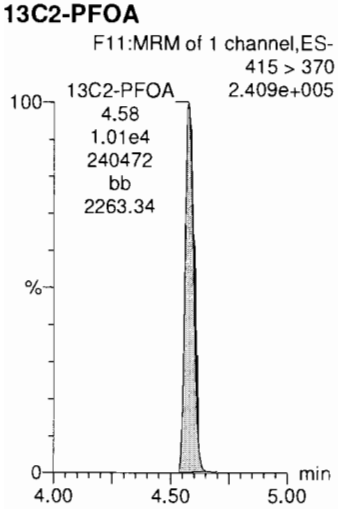

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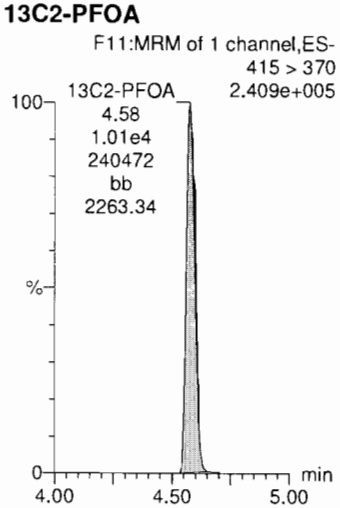

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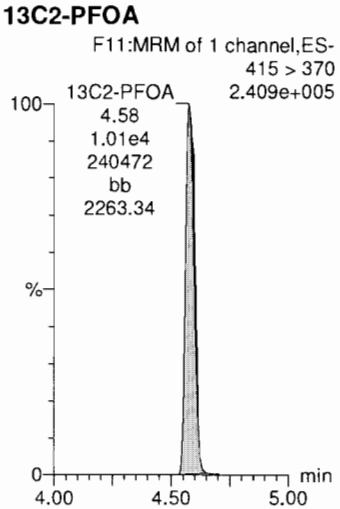

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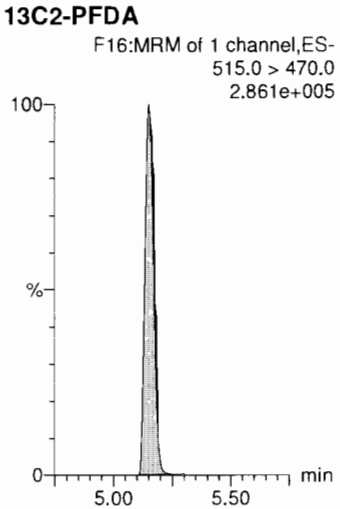

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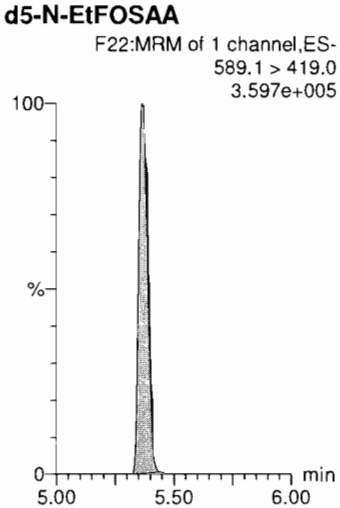


ICAL

50-150%

Compound 23: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
1	ST190330P1-1 537 CS-1 19C2505	190330P1_2	Analyte	10	4.53	9510.08	11389.28	83.50
2	IPA	190330P1_3	Analyte	10			11389.28	0.00
3	B9C0124-BS1 LFB 0.25	190330P1_4	Analyte	10	4.53	9376.13	11389.28	82.32
4	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	190330P1_5	Analyte	10	4.53	1018.05	11389.28	8.94
5	1900478-02@10X Dup-1 0.24868	190330P1_6	Analyte	10	4.53	624.35	11389.28	5.48
6	IPA	190330P1_7	Analyte	10			11389.28	0.00
7	ST190330P1-2 537 CS1 19C2507	190330P1_8	Analyte	10	4.53	10773.70	11389.28	94.60

Compound 24: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
1	ST190330P1-1 537 CS-1 19C2505	190330P1_2	Analyte	28.7	4.90	5522.22	5777.83	95.58
2	IPA	190330P1_3	Analyte	28.7			5777.83	0.00
3	B9C0124-BS1 LFB 0.25	190330P1_4	Analyte	28.7	4.89	5013.28	5777.83	86.77
4	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	190330P1_5	Analyte	28.7	4.89	497.13	5777.83	8.60
5	1900478-02@10X Dup-1 0.24868	190330P1_6	Analyte	28.7	4.91	518.31	5777.83	8.97
6	IPA	190330P1_7	Analyte	28.7			5777.83	0.00
7	ST190330P1-2 537 CS1 19C2507	190330P1_8	Analyte	28.7	4.90	5424.70	5777.83	93.89

Compound 25: d3-N-MeFOSAA

	ID	Name	Type	Std. Conc	RT	Area	ICAL AREA	% AREA
1	ST190330P1-1 537 CS-1 19C2505	190330P1_2	Analyte	40	5.22	17058.91	17692.81	96.42
2	IPA	190330P1_3	Analyte	40			17692.81	0.00
3	B9C0124-BS1 LFB 0.25	190330P1_4	Analyte	40	5.21	15303.16	17692.81	86.49
4	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	190330P1_5	Analyte	40	5.22	1566.01	17692.81	8.85
5	1900478-02@10X Dup-1 0.24868	190330P1_6	Analyte	40	5.21	1647.01	17692.81	9.31

KBF 3/30/2019

6	IPA	190330P1_7	Analyte	40			17692.81	0.00
7	ST190330P1-2 537 CS1 19C2507	190330P1_8	Analyte	40	5.22	18045.17	17692.81	101.99

CCAL

70-140%

Compound 23: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	CCAL AREA	% AREA
1	**ST190330P1-1 537 CS-1 19C2505**	**190330P1_2**	**Analyte**	**10**	**4.53**	**9510.08**	**9510.08**	**100.00**
2	IPA	190330P1_3	Analyte	10			9510.08	0.00
3	B9C0124-BS1 LFB 0.25	190330P1_4	Analyte	10	4.53	9376.13	9510.08	98.59
4	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	190330P1_5	Analyte	10	4.53	1018.05	9510.08	10.70
5	1900478-02@10X Dup-1 0.24868	190330P1_6	Analyte	10	4.53	624.35	9510.08	6.57
6	IPA	190330P1_7	Analyte	10			9510.08	0.00
7	ST190330P1-2 537 CS1 19C2507	190330P1_8	Analyte	10	4.53	10773.70	9510.08	113.29

Compound 24: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	CCAL AREA	% AREA
1	**ST190330P1-1 537 CS-1 19C2505**	**190330P1_2**	**Analyte**	**28.7**	**4.90**	**5522.22**	**5522.22**	**100.00**
2	IPA	190330P1_3	Analyte	28.7			5522.22	0.00
3	B9C0124-BS1 LFB 0.25	190330P1_4	Analyte	28.7	4.89	5013.28	5522.22	90.78
4	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	190330P1_5	Analyte	28.7	4.89	497.13	5522.22	9.00
5	1900478-02@10X Dup-1 0.24868	190330P1_6	Analyte	28.7	4.91	518.31	5522.22	9.39
6	IPA	190330P1_7	Analyte	28.7			5522.22	0.00
7	ST190330P1-2 537 CS1 19C2507	190330P1_8	Analyte	28.7	4.90	5424.70	5522.22	98.23

Compound 25: d3-N-MeFOSAA

	ID	Name	Type	Std. Conc	RT	Area	CCAL AREA	% AREA
1	**ST190330P1-1 537 CS-1 19C2505**	**190330P1_2**	**Analyte**	**40**	**5.22**	**17058.91**	**17058.91**	**100.00**

KBF 3/30/2019

2	IPA	190330P1_3	Analyte	40			17058.91	0.00
3	B9C0124-BS1 LFB 0.25	190330P1_4	Analyte	40	5.21	15303.16	17058.91	89.71
4	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	190330P1_5	Analyte	40	5.22	1566.01	17058.91	9.18
5	1900478-02@10X Dup-1 0.24868	190330P1_6	Analyte	40	5.21	1647.01	17058.91	9.65
6	IPA	190330P1_7	Analyte	40			17058.91	0.00
7	ST190330P1-2 537 CS1 19C2507	190330P1_8	Analyte	40	5.22	18045.17	17058.91	105.78

KBF 3/30/2019

LC Calibration Standards Review Checklist Q5

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	ST190330P1-1	[✓ L] M H	☒ NA	☑	☑	☑	☑	☑	☐
Calibration ID:	↓ -2	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	☐	☐	☐	☐	☐	☐	☐

NA KBF 3/30/19

Full Mass Cal. Date: 3/27/19

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☒ NA

IIS Area Saved ☑

Reviewed By: JJM 3/31/19
Initials/Date

Comments:

L18 DW

Vista Analytical Laboratory

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-2.qld

Last Altered: Saturday, March 30, 2019 17:39:50 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:40:16 Pacific Daylight Time

VM 3/31/19

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_033019.mdb 30 Mar 2019 17:37:07
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_2, Date: 30-Mar-2019, Time: 16:09:06, ID: ST190330P1-1 537 CS-1 19C2505, Description: 537 CS-1 19C2505

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0	2.87e2	5.52e3	1.00		3.39	3.38	1.49	1.75	98.2
2	2	PFHxA	313.1 > 269.1	1.55e3	9.51e3	1.00		3.69	3.69	1.63	2.14	106.9
3	3	HFPO-DA	285 > 168.9	6.88e2	9.51e3	1.00		3.85	3.84	0.723	2.60	129.9
4	4	PFHpA	363 > 319	2.08e3	9.51e3	1.00		4.16	4.17	2.19	2.14	107.2
5	5	ADONA	377.1>251	3.15e3	9.51e3	1.00		4.24	4.24	3.32	2.31	115.3
6	6	PFHxS	399 > 80.0	2.50e2	5.52e3	1.00		4.27	4.27	1.30	1.69	92.6
7	7	PFOA	413 > 369	1.99e3	9.51e3	1.00		4.53	4.53	2.10	2.16	108.0
8	8	PFNA	463 > 419	1.82e3	9.51e3	1.00		4.85	4.84	1.92	2.21	110.6
9	9	PFOS	499 >80.0	2.36e2	5.52e3	1.00		4.90	4.91	1.23	1.40	75.4
10	10	9Cl-PF3ONS	531.1>351.1	8.35e2	5.52e3	1.00		5.04	5.05	4.34	1.79	89.6
11	11	PFDA	513 > 469	2.10e3	9.51e3	1.00		5.11	5.11	2.21	2.17	108.6
12	12	N-MeFOSAA	570 > 419.1	5.48e2	1.71e4	1.00		5.22	5.22	1.28	1.77	88.3
13	13	N-EtFOSAA	584.0 >419.1	6.00e2	1.71e4	1.00		5.33	5.33	1.41	2.04	102.2
14	14	PFUnA	563 > 519	2.71e3	9.51e3	1.00		5.34	5.34	2.85	2.13	106.6
15	15	11Cl-PF3OUdS	630.9>451.0	9.76e2	5.52e3	1.00		5.47	5.47	5.07	1.89	94.7
16	16	PFDoA	613 > 569	3.40e3	9.51e3	1.00		5.53	5.53	3.57	2.13	106.6
17	17	PFTrDA	662.9 > 619	3.15e3	9.51e3	1.00		5.70	5.70	3.31	1.96	98.0
18	18	PFTeDA	712.9 > 669	3.12e3	9.51e3	1.00		5.85	5.86	3.28	2.05	102.7
19	19	13C2-PFHxA	315.1 > 270	1.13e4	9.51e3	1.00	1.000	3.69	3.69	11.9	11.9	118.6
20	20	13C3-HFPO-DA	287 >185	9.61e2	9.51e3	1.00	0.085	3.86	3.85	1.01	11.9	118.8
21	21	13C2-PFDA	515.0 > 470.0	1.21e4	9.51e3	1.00	1.208	5.11	5.11	12.7	10.5	105.3
22	22	d5-N-EtFOSAA	589.1 > 419.0	1.77e4	1.71e4	1.00	1.020	5.32	5.33	41.5	40.7	101.7
23	23	13C2-PFOA	415 > 370	9.51e3	9.51e3	1.00	1.000	4.53	4.53	10.0	10.0	100.0
24	24	13C4-PFOS	502.9 > 79.9	5.52e3	5.52e3	1.00	1.000	4.90	4.90	28.7	28.7	100.0
25	25	d3-N-MeFOSAA	573.0 > 419.0	1.71e4	1.71e4	1.00	1.000	5.22	5.22	40.0	40.0	100.0

KBF 3/30/19

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Saturday, March 30, 2019 17:42:32 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:42:46 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_033019.mdb 30 Mar 2019 17:37:07
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
1	1	190330P1_1	IPA	30-Mar-19	15:58:28
2	2	190330P1_2	ST190330P1-1 537 CS-1 19C2505	30-Mar-19	16:09:06
3	3	190330P1_3	IPA	30-Mar-19	16:27:24
4	4	190330P1_4	B9C0124-BS1 LFB 0.25	30-Mar-19	16:37:59
5	5	190330P1_5	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	30-Mar-19	16:48:36
6	6	190330P1_6	1900478-02@10X Dup-1 0.24868	30-Mar-19	16:59:11
7	7	190330P1_7	IPA	30-Mar-19	17:09:46
8	8	190330P1_8	ST190330P1-2 537 CS1 19C2507	30-Mar-19	17:20:20

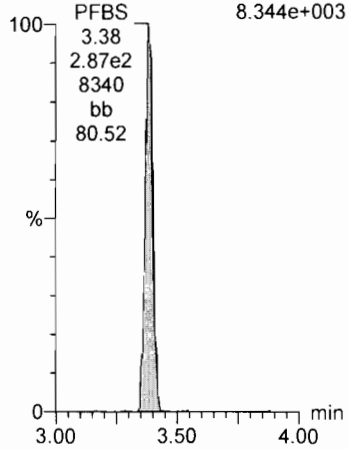
Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-2.qld

Last Altered: Saturday, March 30, 2019 17:39:50 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:40:16 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_033019.mdb 30 Mar 2019 17:37:07
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_2, Date: 30-Mar-2019, Time: 16:09:06, ID: ST190330P1-1 537 CS-1 19C2505, Description: 537 CS-1 19C2505

PFBS



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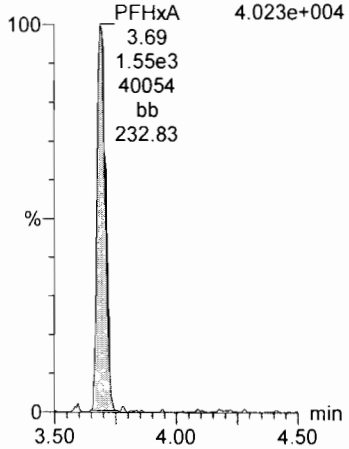

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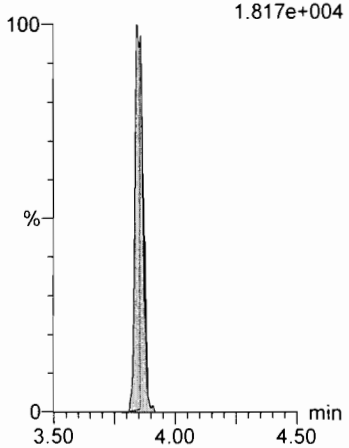

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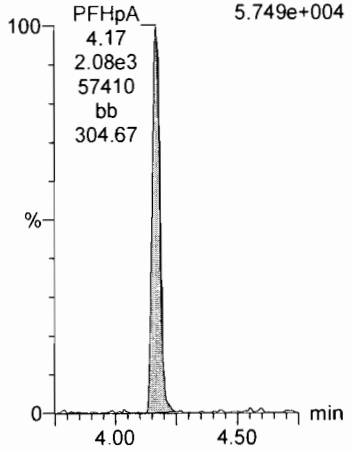

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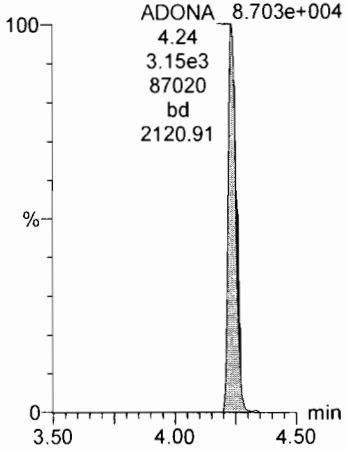

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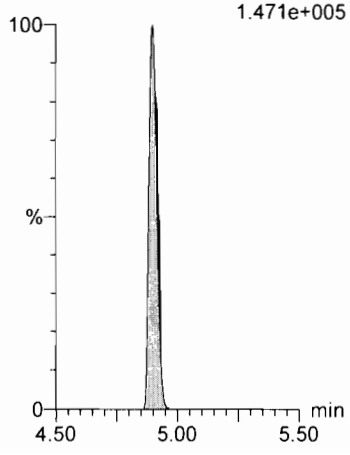

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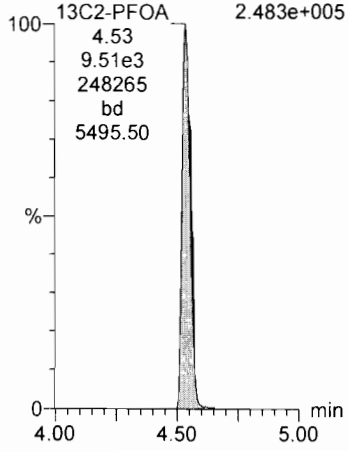

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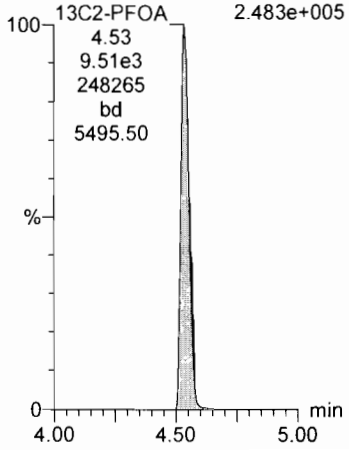

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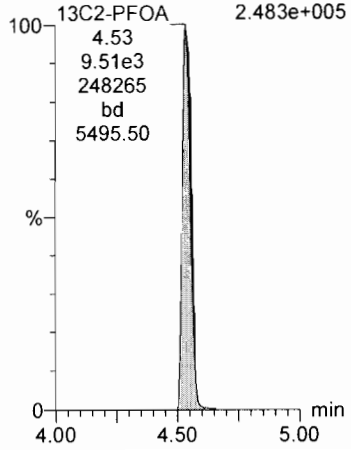

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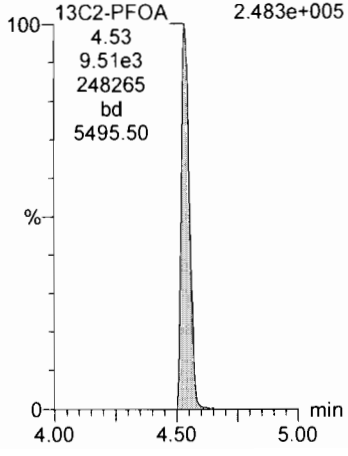

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-2.qld

Last Altered: Saturday, March 30, 2019 17:39:50 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:40:16 Pacific Daylight Time

Name: 190330P1_2, Date: 30-Mar-2019, Time: 16:09:06, ID: ST190330P1-1 537 CS-1 19C2505, Description: 537 CS-1 19C2505

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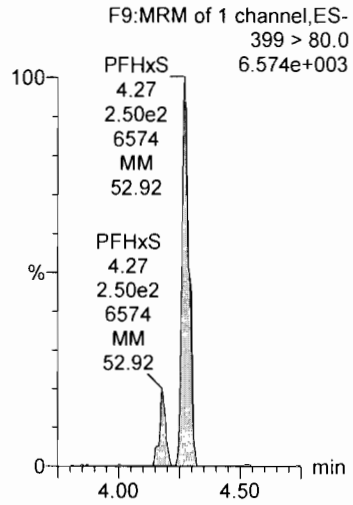

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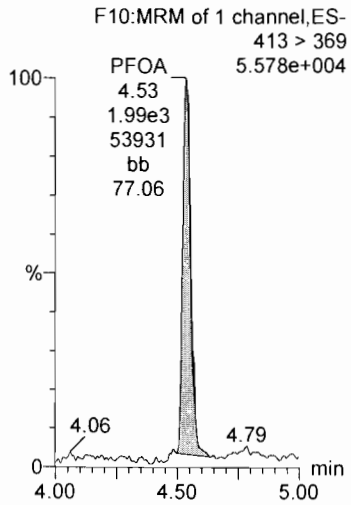

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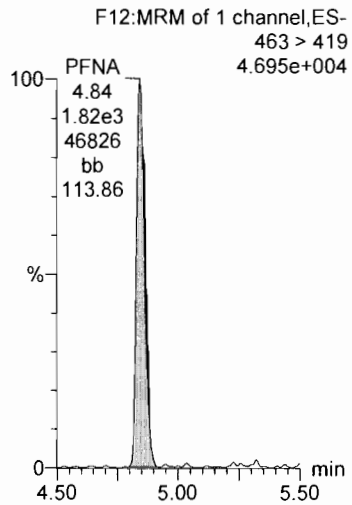

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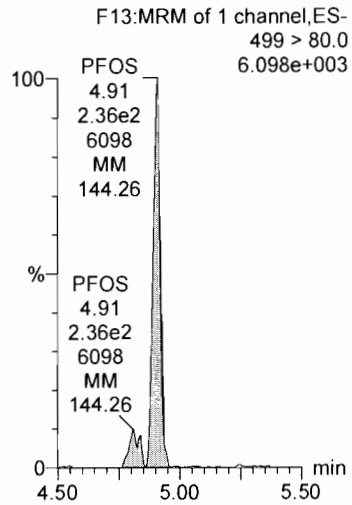

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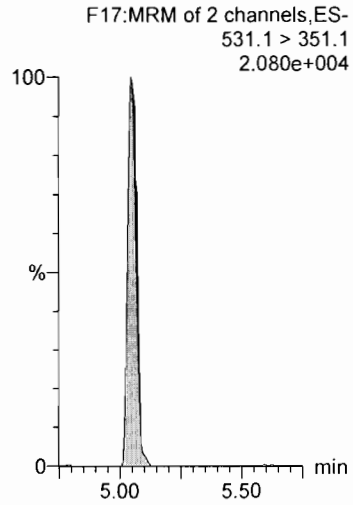

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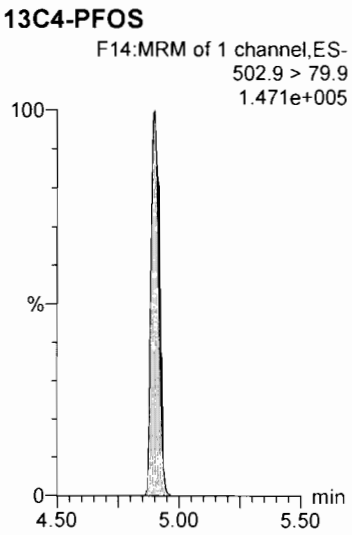

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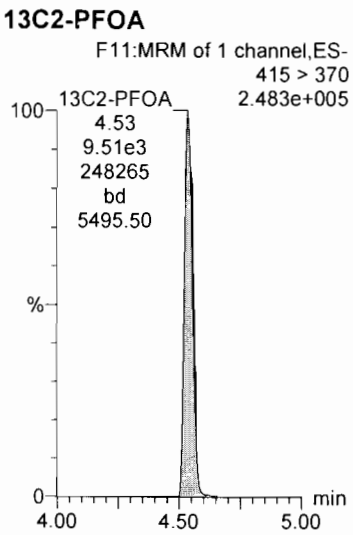

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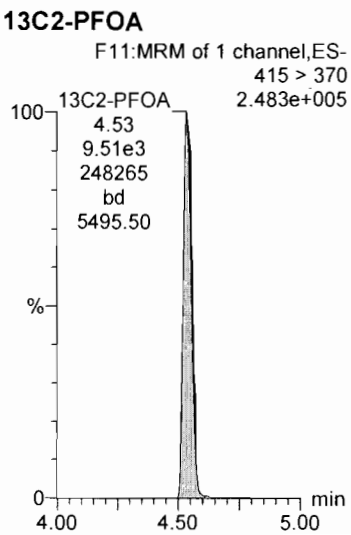

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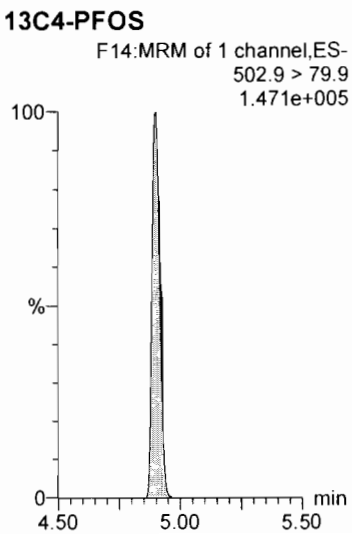

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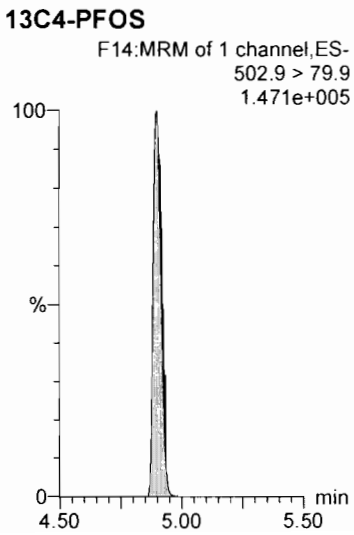

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-2.qld

Last Altered: Saturday, March 30, 2019 17:39:50 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:40:16 Pacific Daylight Time

Name: 190330P1_2, Date: 30-Mar-2019, Time: 16:09:06, ID: ST190330P1-1 537 CS-1 19C2505, Description: 537 CS-1 19C2505

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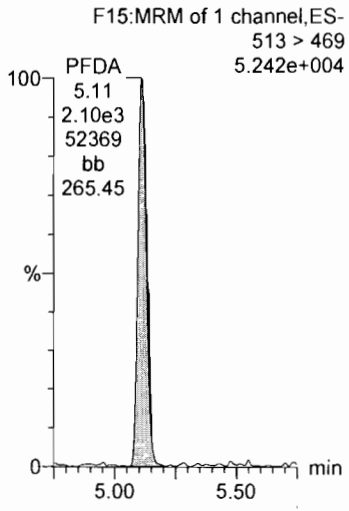

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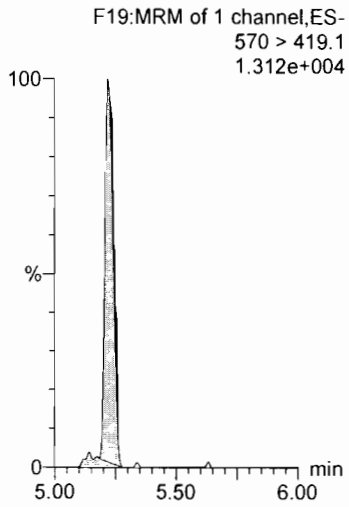

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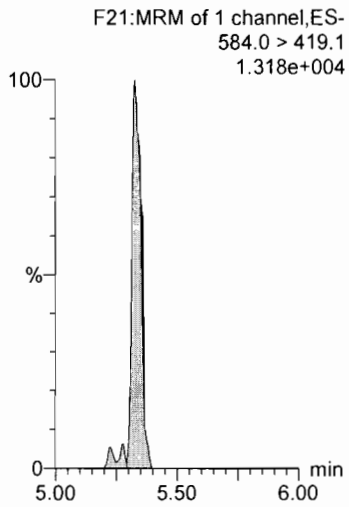

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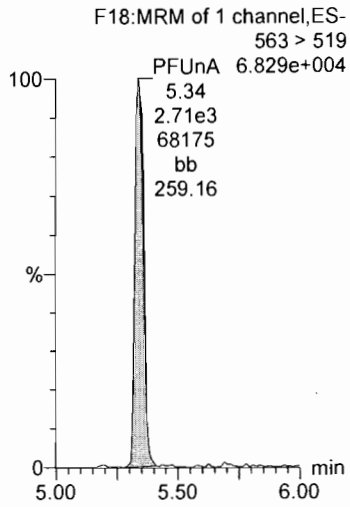

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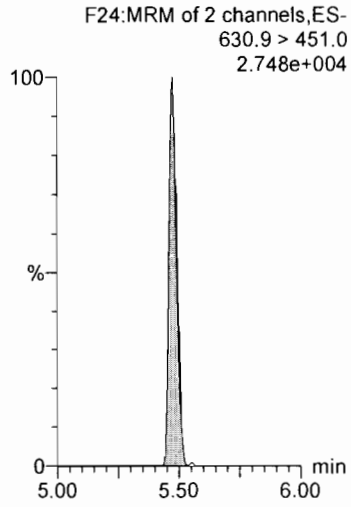

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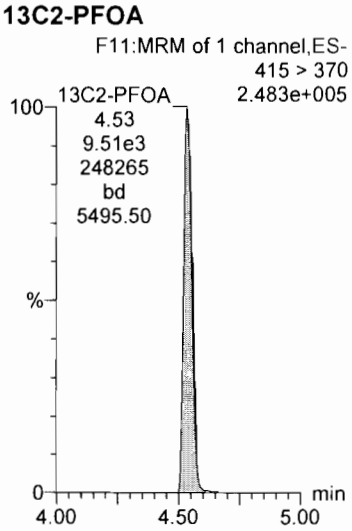
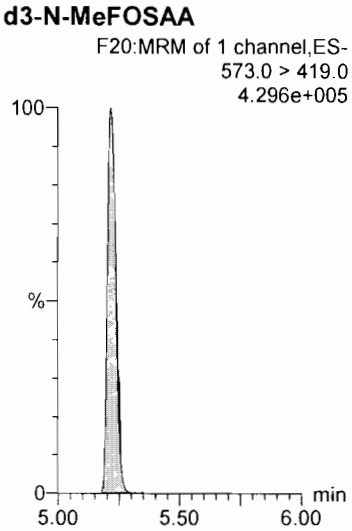
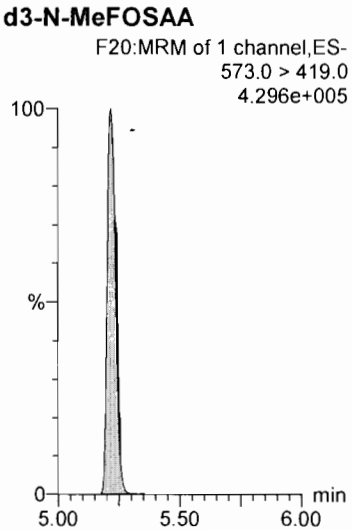


d3-N-MeFOSAA



d3-N-MeFOSAA



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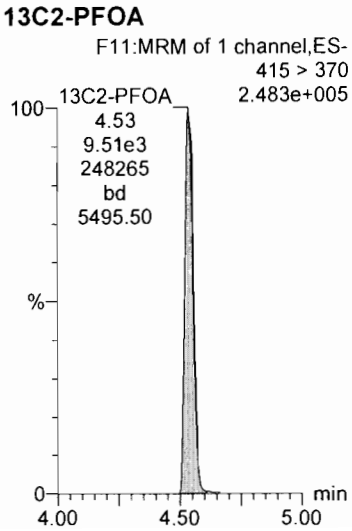

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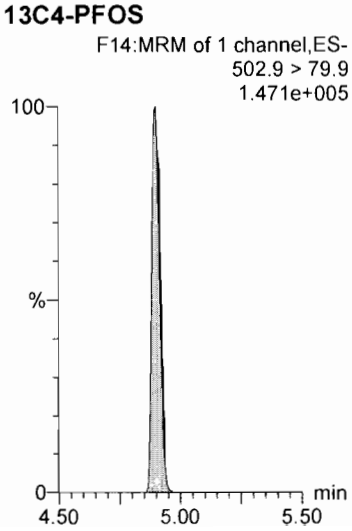
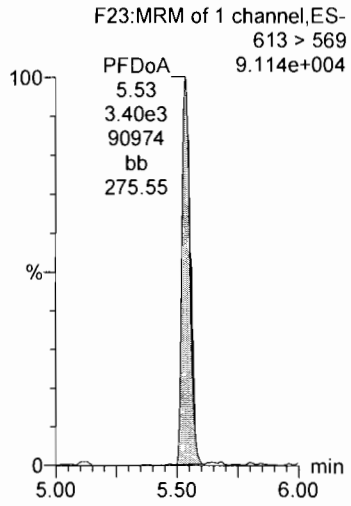


Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-2.qld

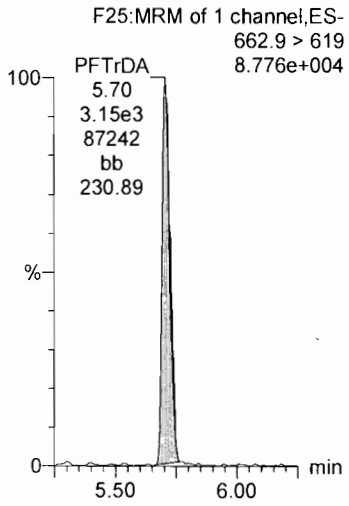
Last Altered: Saturday, March 30, 2019 17:39:50 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:40:16 Pacific Daylight Time

Name: 190330P1_2, Date: 30-Mar-2019, Time: 16:09:06, ID: ST190330P1-1 537 CS-1 19C2505, Description: 537 CS-1 19C2505

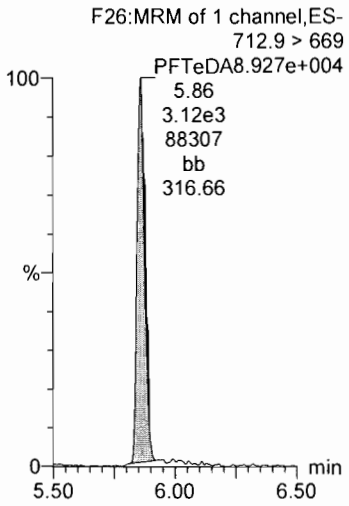
PFDoA



PFTrDA



PFTeDA



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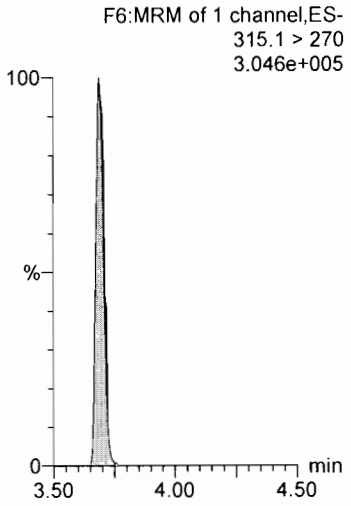

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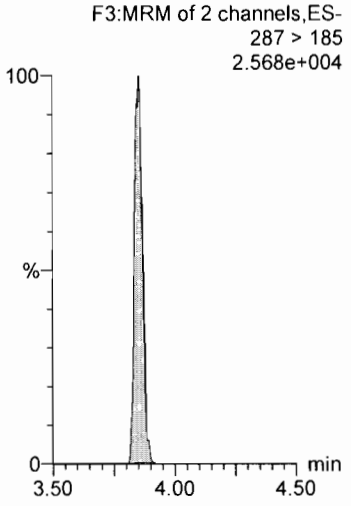

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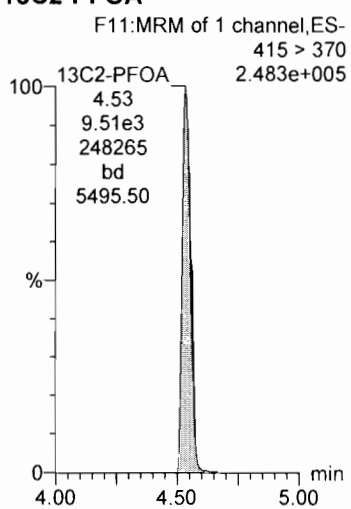

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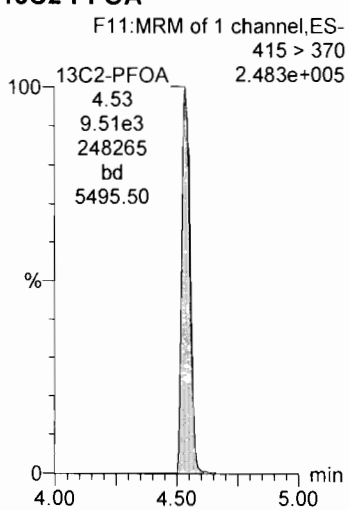

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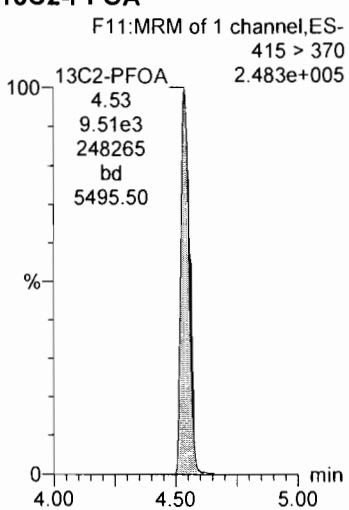

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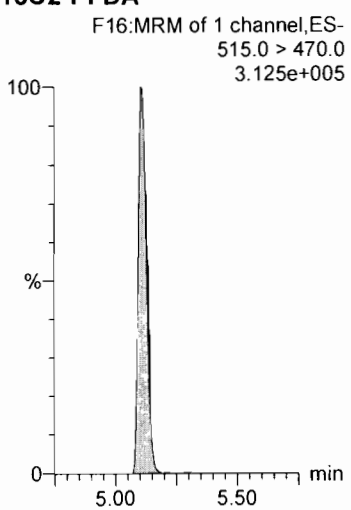
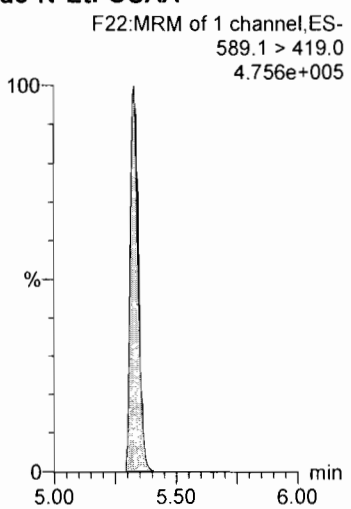


d5-N-EtFOSAA



Quantify Sample Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-8.qld

Last Altered: Saturday, March 30, 2019 17:37:09 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:37:36 Pacific Daylight Time

3/3/19

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_033019.mdb 30 Mar 2019 17:37:07
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_8, Date: 30-Mar-2019, Time: 17:20:20, ID: ST190330P1-2 537 CS1 19C2507, Description: 537 CS1 19C2507

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0	1.47e3	5.42e3	1.00		3.39	3.39	7.79	9.13	103.3
2	2	PFHxA	313.1 > 269.1	8.41e3	1.08e4	1.00		3.69	3.69	7.81	10.2	102.4
3	3	HFPO-DA	285 > 168.9	3.50e3	1.08e4	1.00		3.85	3.85	3.25	11.7	116.7
4	4	PFHpA	363 > 319	1.13e4	1.08e4	1.00		4.16	4.16	10.5	10.3	102.7
5	5	ADONA	377.1>251	1.87e4	1.08e4	1.00		4.24	4.24	17.4	12.1	121.0
6	6	PFHxS	399 > 80.0	1.52e3	5.42e3	1.00		4.27	4.27	8.05	10.4	114.5
7	7	PFOA	413 > 369	1.06e4	1.08e4	1.00		4.53	4.53	9.83	10.1	101.3
8	8	PFNA	463 > 419	9.56e3	1.08e4	1.00		4.85	4.85	8.87	10.2	102.5
9	9	PFOS	499 >80.0	1.41e3	5.42e3	1.00		4.90	4.90	7.48	8.54	92.4
10	10	9Cl-PF3ONS	531.1>351.1	4.94e3	5.42e3	1.00		5.04	5.04	26.2	10.8	108.1
11	11	PFDA	513 > 469	1.05e4	1.08e4	1.00		5.11	5.11	9.74	9.55	95.5
12	12	N-MeFOSAA	570 > 419.1	3.45e3	1.80e4	1.00		5.22	5.22	7.65	10.4	103.8
13	13	N-EtFOSAA	584.0 >419.1	3.31e3	1.80e4	1.00		5.32	5.33	7.33	10.7	106.5
14	14	PFUnA	563 > 519	1.28e4	1.08e4	1.00		5.34	5.34	11.9	8.93	89.3
15	15	11Cl-PF3OUdS	630.9>451.0	5.85e3	5.42e3	1.00		5.47	5.47	30.9	11.5	115.5
16	16	PFDoA	613 > 569	1.65e4	1.08e4	1.00		5.53	5.53	15.3	9.14	91.4
17	17	PFTrDA	662.9 > 619	1.66e4	1.08e4	1.00		5.70	5.70	15.4	9.09	90.9
18	18	PFTeDA	712.9 > 669	1.68e4	1.08e4	1.00		5.85	5.85	15.6	9.77	97.7
19	19	13C2-PFHxA	315.1 > 270	1.21e4	1.08e4	1.00	1.000	3.69	3.69	11.3	11.3	112.6
20	20	13C3-HFPO-DA	287 >185	1.00e3	1.08e4	1.00	0.085	3.86	3.86	0.930	10.9	109.4
21	21	13C2-PFDA	515.0 > 470.0	1.27e4	1.08e4	1.00	1.208	5.11	5.11	11.8	9.77	97.7
22	22	d5-N-EtFOSAA	589.1 > 419.0	2.05e4	1.80e4	1.00	1.020	5.32	5.32	45.4	44.6	111.4
23	23	13C2-PFOA	415 > 370	1.08e4	1.08e4	1.00	1.000	4.53	4.53	10.0	10.0	100.0
24	24	13C4-PFOS	502.9 > 79.9	5.42e3	5.42e3	1.00	1.000	4.90	4.90	28.7	28.7	100.0
25	25	d3-N-MeFOSAA	573.0 > 419.0	1.80e4	1.80e4	1.00	1.000	5.22	5.22	40.0	40.0	100.0

3/30/19

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Saturday, March 30, 2019 17:42:32 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:42:46 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_033019.mdb 30 Mar 2019 17:37:07
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
1	1	190330P1_1	IPA	30-Mar-19	15:58:28
2	2	190330P1_2	ST190330P1-1 537 CS-1 19C2505	30-Mar-19	16:09:06
3	3	190330P1_3	IPA	30-Mar-19	16:27:24
4	4	190330P1_4	B9C0124-BS1 LFB 0.25	30-Mar-19	16:37:59
5	5	190330P1_5	1900478-01@10X Charlie's Pasture-DW 031319 0.25011	30-Mar-19	16:48:36
6	6	190330P1_6	1900478-02@10X Dup-1 0.24868	30-Mar-19	16:59:11
7	7	190330P1_7	IPA	30-Mar-19	17:09:46
8	8	190330P1_8	ST190330P1-2 537 CS1 19C2507	30-Mar-19	17:20:20

Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-8.qld

Last Altered: Saturday, March 30, 2019 17:37:09 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:37:36 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_033019.mdb 30 Mar 2019 17:37:07
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190330P1_8, Date: 30-Mar-2019, Time: 17:20:20, ID: ST190330P1-2 537 CS1 19C2507, Description: 537 CS1 19C2507

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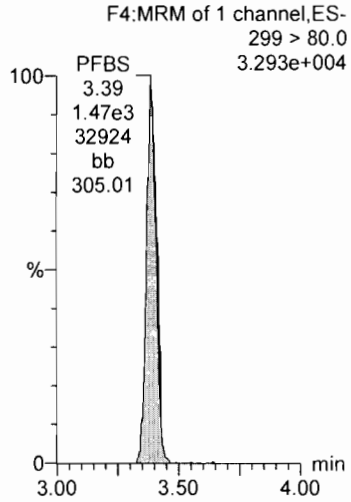
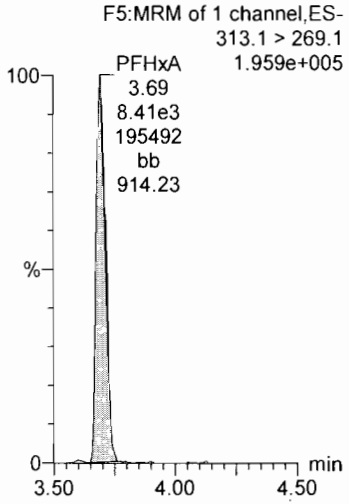
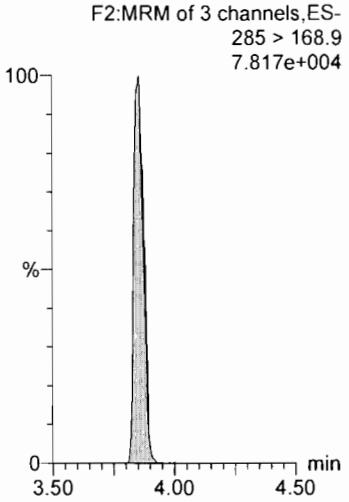


PFHxA



HFPO-DA



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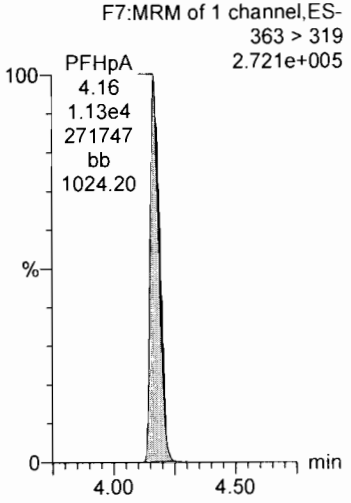

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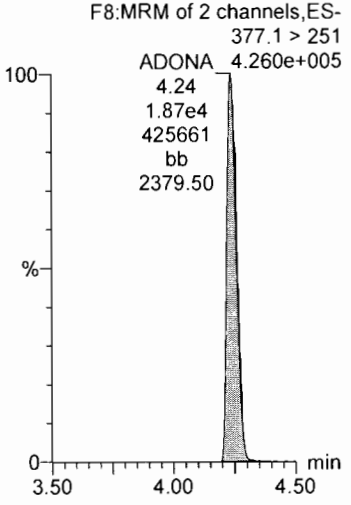

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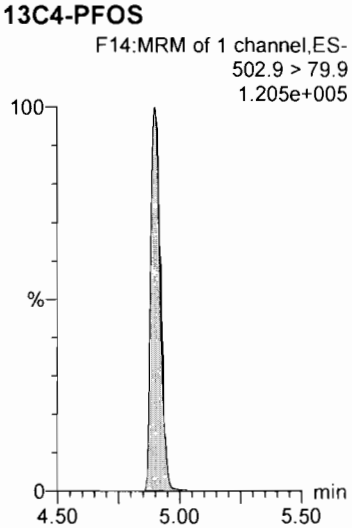

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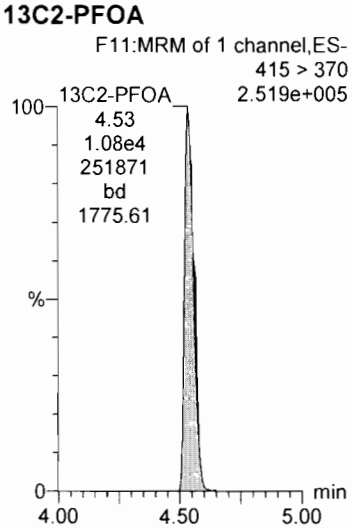

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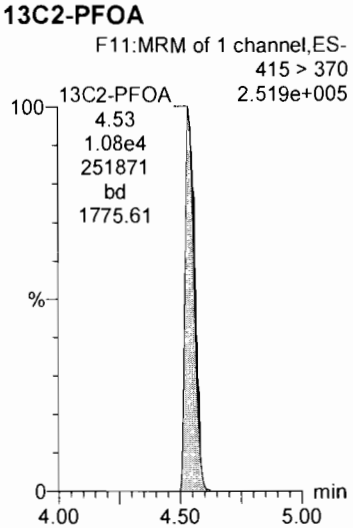

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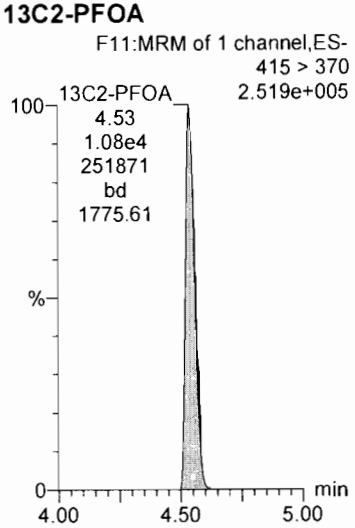

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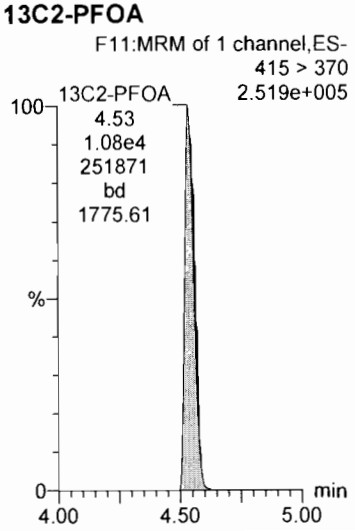

Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-8.qld

Last Altered: Saturday, March 30, 2019 17:37:09 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:37:36 Pacific Daylight Time

Name: 190330P1_8, Date: 30-Mar-2019, Time: 17:20:20, ID: ST190330P1-2 537 CS1 19C2507, Description: 537 CS1 19C2507

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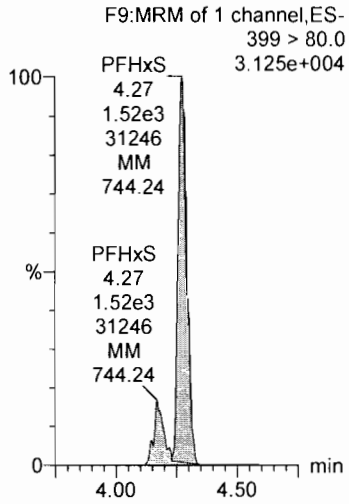

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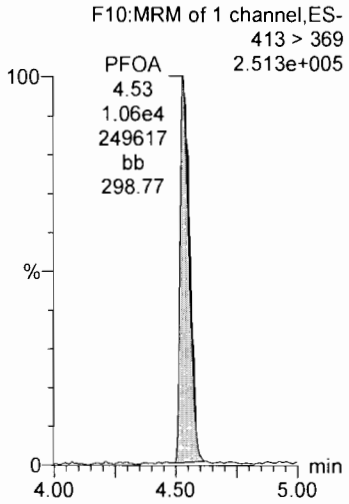

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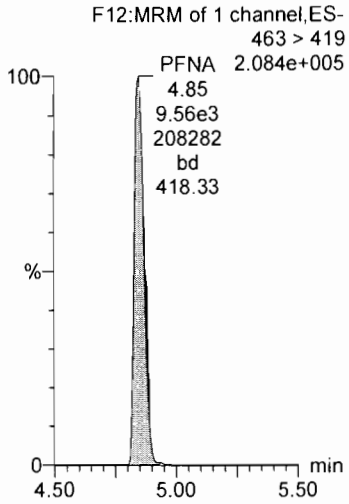

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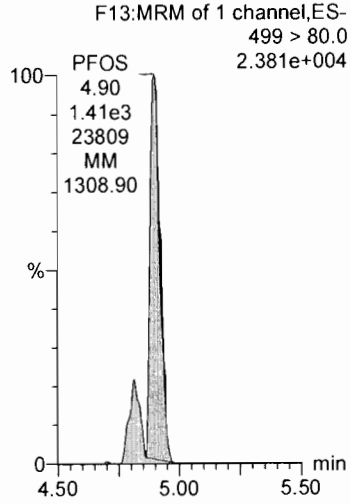

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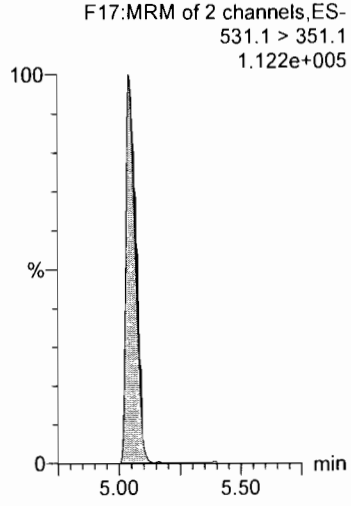

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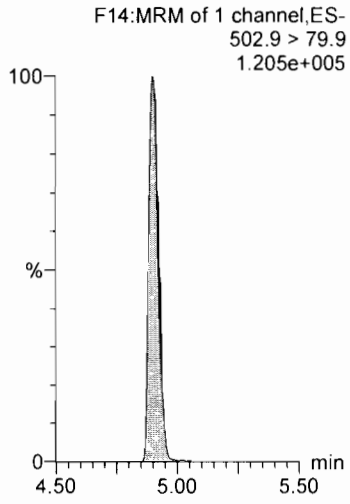

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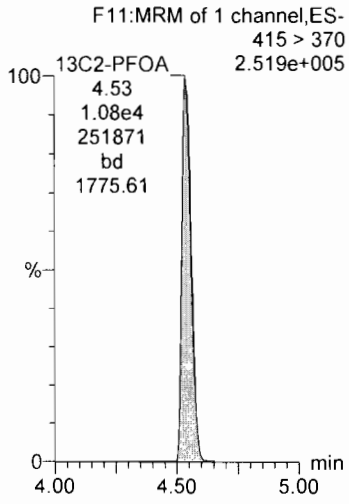

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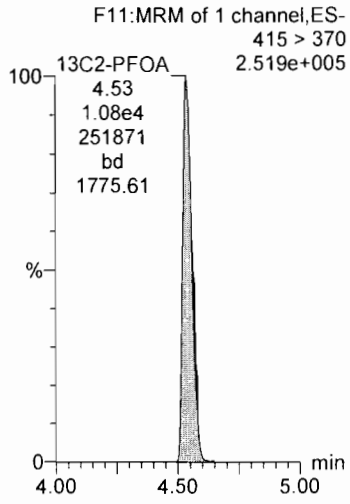

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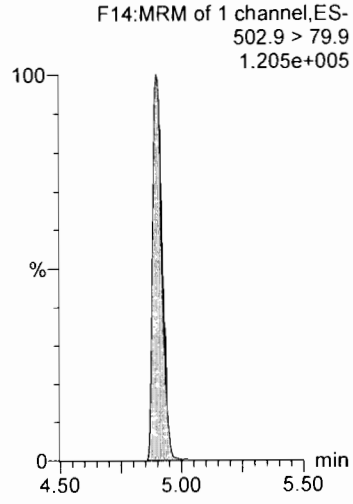

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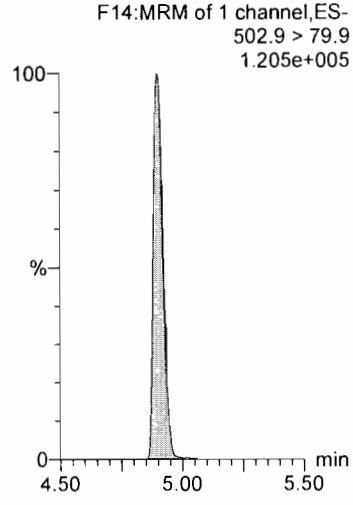
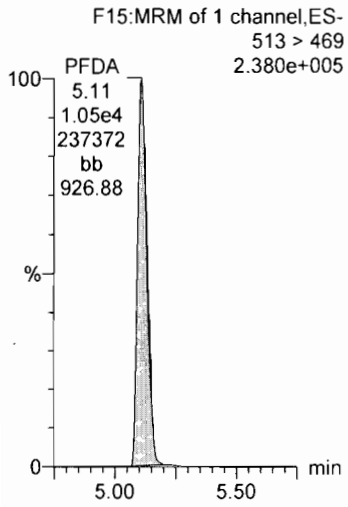


Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-8.qld

Last Altered: Saturday, March 30, 2019 17:37:09 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:37:36 Pacific Daylight Time

Name: 190330P1_8, Date: 30-Mar-2019, Time: 17:20:20, ID: ST190330P1-2 537 CS1 19C2507, Description: 537 CS1 19C2507

PFDA



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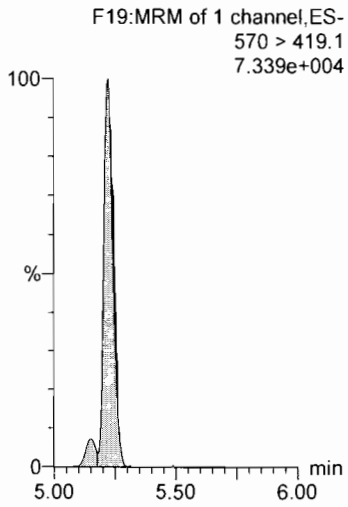

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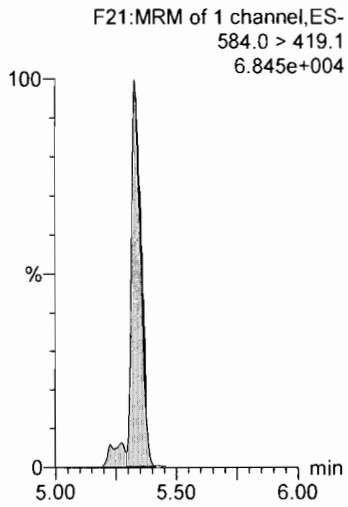

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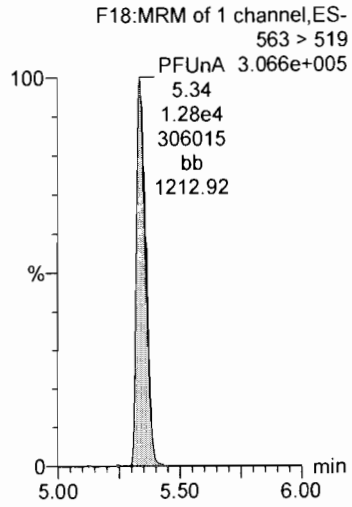

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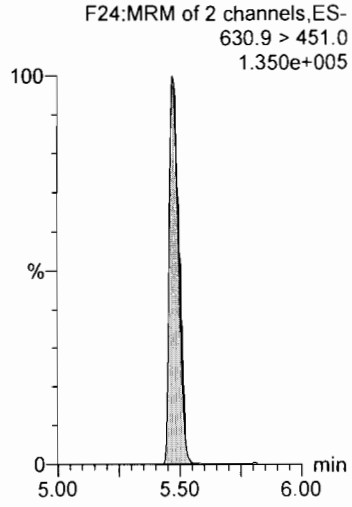

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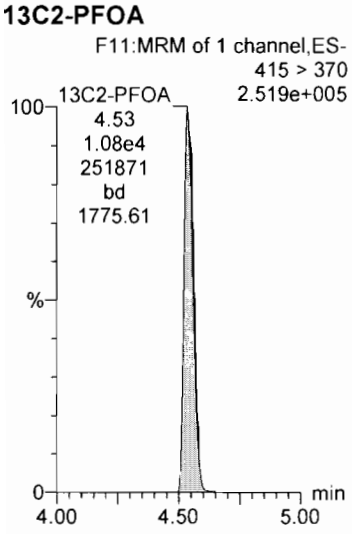

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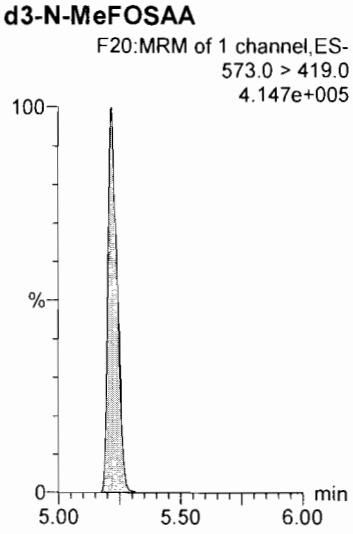

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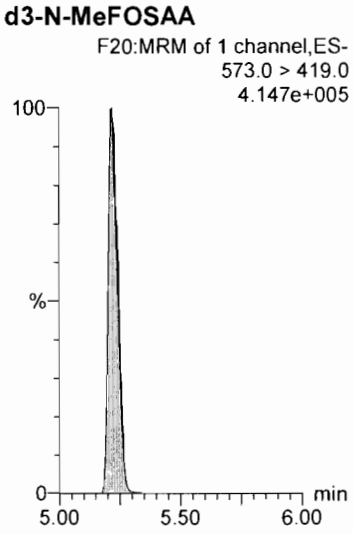

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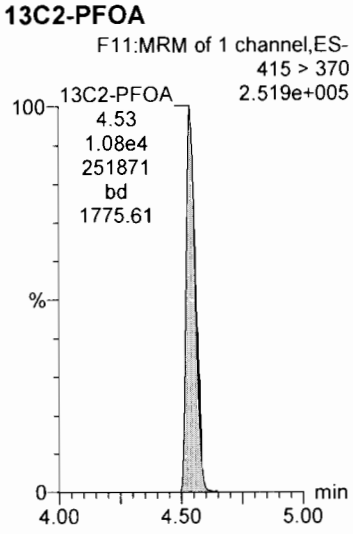

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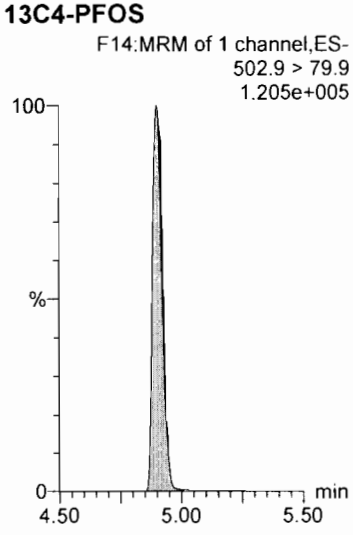
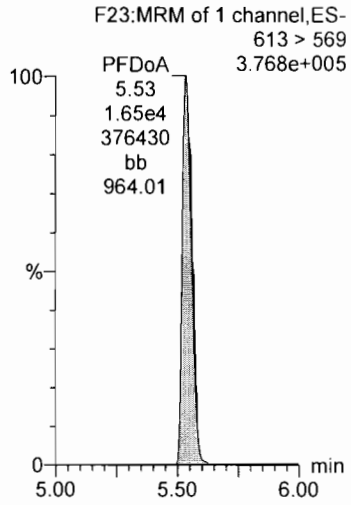


Dataset: D:\PFAS3.PRO\RESULTS\190330P1\190330P1-8.qld

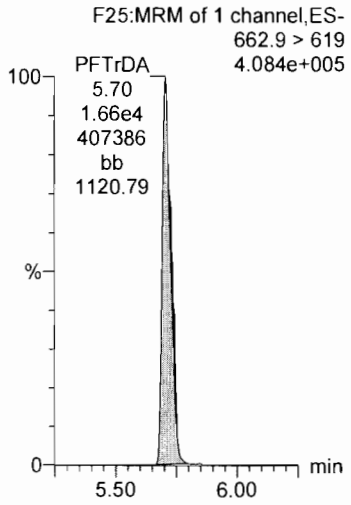
Last Altered: Saturday, March 30, 2019 17:37:09 Pacific Daylight Time
Printed: Saturday, March 30, 2019 17:37:36 Pacific Daylight Time

Name: 190330P1_8, Date: 30-Mar-2019, Time: 17:20:20, ID: ST190330P1-2 537 CS1 19C2507, Description: 537 CS1 19C2507

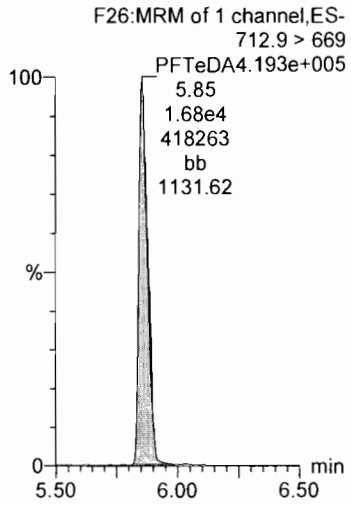
PFDoA



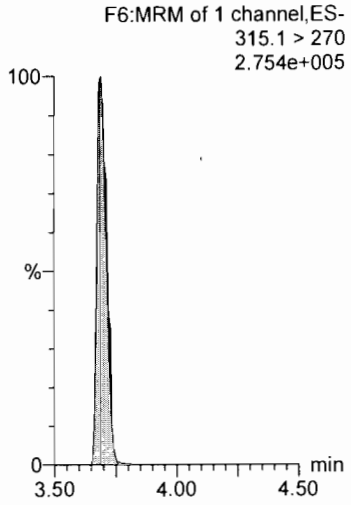
PFTrDA



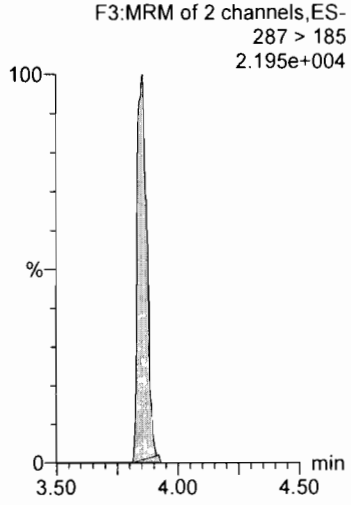
PFTeDA



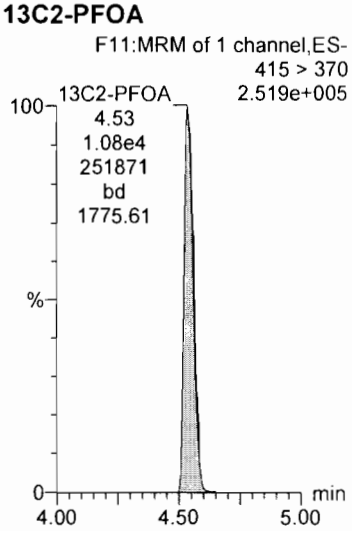
13C2-PFHxA



13C3-HFPO-DA



13C2-PFOA



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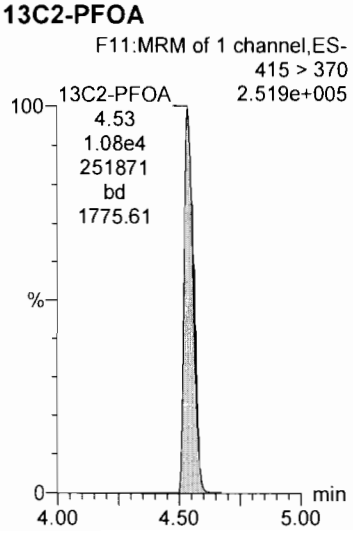

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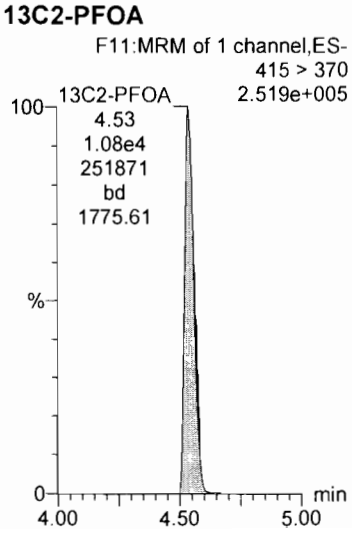
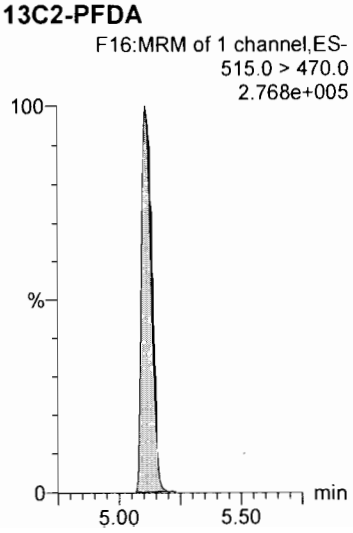
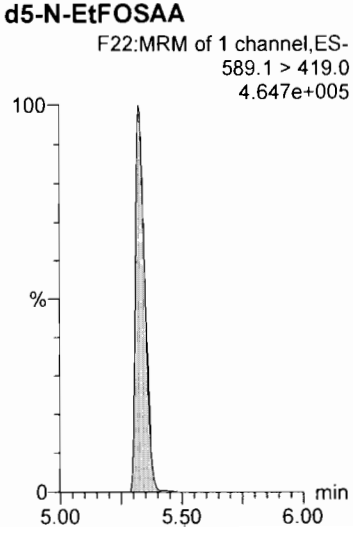


13C2-PFDA



d5-N-EtFOSAA



INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV)

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

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high
no high pts excluded.

low
HFPO-DA = 0.5
PFHxS = 0.456
N-EtFOSAA = 0.5

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

JAD 3/29/19

Compound name: PFBS
Coefficient of Determination: R^2 = 0.998723
Calibration curve: 0.853818 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

AM 3/20/19

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.222	3.46	27.246	5818.330	0.134	0.2	-29.1	NO	0.999	NO	MM
2	2	190328P1_3	Standard	0.444	3.43	61.622	5789.858	0.305	0.4	-19.4	NO	0.999	NO	MM
3	3	190328P1_4	Standard	0.888	3.43	154.397	5861.137	0.756	0.9	-0.3	NO	0.999	NO	MM
4	4	190328P1_5	Standard	1.780	3.44	275.510	6040.236	1.309	1.5	-13.9	NO	0.999	NO	MM
5	5	190328P1_6	Standard	4.440	3.43	747.778	5930.806	3.619	4.2	-4.5	NO	0.999	NO	MM
6	6	190328P1_7	Standard	8.840	3.44	1398.974	5470.568	7.339	8.6	-2.8	NO	0.999	NO	MM
7	7	190328P1_8	Standard	22.100	3.44	3709.807	6052.243	17.592	20.6	-6.8	NO	0.999	NO	bd
8	8	190328P1_9	Standard	44.200	3.43	7243.832	5564.294	37.363	43.8	-1.0	NO	0.999	NO	bd
9	9	190328P1_10	Standard	66.400	3.44	11223.434	5469.428	58.893	69.0	3.9	NO	0.999	NO	MM
10	10	190328P1_11	Standard	88.500	3.44	15256.875	5781.354	75.739	88.7	0.2	NO	0.999	NO	bd

Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999418
Calibration curve: 0.762567 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	3.75	193.462	11052.179	0.175	0.2	-8.2	NO	0.999	NO	MM
2	2	190328P1_3	Standard	0.500	3.74	440.419	11250.450	0.391	0.5	2.7	NO	0.999	NO	MM
3	3	190328P1_4	Standard	1.000	3.74	872.724	11798.468	0.740	1.0	-3.0	NO	0.999	NO	bd
4	4	190328P1_5	Standard	2.000	3.74	1840.231	11275.746	1.632	2.1	7.0	NO	0.999	NO	bd
5	5	190328P1_6	Standard	5.000	3.74	4277.783	11708.892	3.653	4.8	-4.2	NO	0.999	NO	bb
6	6	190328P1_7	Standard	10.000	3.74	8328.442	10851.720	7.675	10.1	0.6	NO	0.999	NO	bb
7	7	190328P1_8	Standard	25.000	3.74	21000.350	11732.616	17.899	23.5	-6.1	NO	0.999	NO	MM
8	8	190328P1_9	Standard	50.000	3.74	42932.926	11241.349	38.192	50.1	0.2	NO	0.999	NO	bd
9	9	190328P1_10	Standard	75.000	3.74	67080.781	11485.659	58.404	76.6	2.1	NO	0.999	NO	bd
10	10	190328P1_11	Standard	100.000	3.74	87572.344	11495.679	76.178	99.9	-0.1	NO	0.999	NO	bb

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Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

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Compound name: HFPO-DA
Coefficient of Determination: R^2 = 0.998566
Calibration curve: 0.278394 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	3.90	65.068	11052.179	0.059	0.2	-15.4	NO	0.999	NO	MMX
2	2	190328P1_3	Standard	0.500	3.90	104.448	11250.450	0.093	0.3	-33.3	NO	0.999	NO	MM
3	3	190328P1_4	Standard	1.000	3.91	288.022	11798.468	0.244	0.9	-12.3	NO	0.999	NO	MM
4	4	190328P1_5	Standard	2.000	3.90	565.570	11275.746	0.502	1.8	-9.9	NO	0.999	NO	bb
5	5	190328P1_6	Standard	5.000	3.90	1577.268	11708.892	1.347	4.8	-3.2	NO	0.999	NO	bb
6	6	190328P1_7	Standard	10.000	3.91	3422.813	10851.720	3.154	11.3	13.3	NO	0.999	NO	bb
7	7	190328P1_8	Standard	25.000	3.90	8567.425	11732.616	7.302	26.2	4.9	NO	0.999	NO	bb
8	8	190328P1_9	Standard	50.000	3.90	15328.733	11241.349	13.636	49.0	-2.0	NO	0.999	NO	bd
9	9	190328P1_10	Standard	75.000	3.90	23815.156	11485.659	20.735	74.5	-0.7	NO	0.999	NO	bb
10	10	190328P1_11	Standard	100.000	3.90	31884.613	11495.679	27.736	99.6	-0.4	NO	0.999	NO	bd

Compound name: PFHpA
Coefficient of Determination: R^2 = 0.999727
Calibration curve: 1.01987 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	4.21	294.598	11052.179	0.267	0.3	4.5	NO	1.000	NO	MM
2	2	190328P1_3	Standard	0.500	4.21	590.741	11250.450	0.525	0.5	3.0	NO	1.000	NO	MM
3	3	190328P1_4	Standard	1.000	4.22	1218.960	11798.468	1.033	1.0	1.3	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	4.22	2342.238	11275.746	2.077	2.0	1.8	NO	1.000	NO	bb
5	5	190328P1_6	Standard	5.000	4.22	5951.956	11708.892	5.083	5.0	-0.3	NO	1.000	NO	bb
6	6	190328P1_7	Standard	10.000	4.21	11376.994	10851.720	10.484	10.3	2.8	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	4.22	28507.971	11732.616	24.298	23.8	-4.7	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	4.21	57242.527	11241.349	50.921	49.9	-0.1	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	4.22	88204.695	11485.659	76.796	75.3	0.4	NO	1.000	NO	bb
10	10	190328P1_11	Standard	100.000	4.22	117951.328	11495.679	102.605	100.6	0.6	NO	1.000	NO	bb

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Compound name: ADONA
Coefficient of Determination: R^2 = 0.998368
Calibration curve: 1.43734 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	4.29	427.747	11052.179	0.387	0.3	7.7	NO	0.998	NO	bb
2	2	190328P1_3	Standard	0.500	4.28	837.115	11250.450	0.744	0.5	3.5	NO	0.998	NO	bb
3	3	190328P1_4	Standard	1.000	4.29	1736.306	11798.468	1.472	1.0	2.4	NO	0.998	NO	bb
4	4	190328P1_5	Standard	2.000	4.28	3157.703	11275.746	2.800	1.9	-2.6	NO	0.998	NO	bd
5	5	190328P1_6	Standard	5.000	4.29	8359.892	11708.892	7.140	5.0	-0.7	NO	0.998	NO	bb
6	6	190328P1_7	Standard	10.000	4.29	17509.102	10851.720	16.135	11.2	12.3	NO	0.998	NO	bd
7	7	190328P1_8	Standard	25.000	4.29	45411.184	11732.616	38.705	26.9	7.7	NO	0.998	NO	bd
8	8	190328P1_9	Standard	50.000	4.29	78818.117	11241.349	70.114	48.8	-2.4	NO	0.998	NO	bb
9	9	190328P1_10	Standard	75.000	4.29	125191.867	11485.659	108.998	75.8	1.1	NO	0.998	NO	bb
10	10	190328P1_11	Standard	100.000	4.29	160698.828	11495.679	139.791	97.3	-2.7	NO	0.998	NO	bb

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.997285
Calibration curve: 0.770531 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.228	4.33	16.419	5818.330	0.081	0.1	-53.9	NO	0.997	NO	MMX
2	2	190328P1_3	Standard	0.456	4.33	55.297	5789.858	0.274	0.4	-22.0	NO	0.997	NO	MM
3	3	190328P1_4	Standard	0.912	4.32	116.896	5861.137	0.572	0.7	-18.5	NO	0.997	NO	MM
4	4	190328P1_5	Standard	1.820	4.32	245.766	6040.236	1.168	1.5	-16.7	NO	0.997	NO	MM
5	5	190328P1_6	Standard	4.560	4.33	698.320	5930.806	3.379	4.4	-3.8	NO	0.997	NO	MM
6	6	190328P1_7	Standard	9.120	4.32	1326.804	5470.568	6.961	9.0	-0.9	NO	0.997	NO	MM
7	7	190328P1_8	Standard	22.800	4.32	3293.969	6052.243	15.620	20.3	-11.1	NO	0.997	NO	MM
8	8	190328P1_9	Standard	45.500	4.32	6760.159	5564.294	34.868	45.3	-0.5	NO	0.997	NO	MM
9	9	190328P1_10	Standard	68.200	4.32	10591.532	5469.428	55.577	72.1	5.8	NO	0.997	NO	MM
10	10	190328P1_11	Standard	91.000	4.32	14075.313	5781.354	69.873	90.7	-0.3	NO	0.997	NO	MM

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Compound name: PFOA
Coefficient of Determination: R^2 = 0.999778
Calibration curve: 0.970341 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	4.58	344.253	11052.179	0.311	0.3	28.4	NO	1.000	NO	MM
2	2	190328P1_3	Standard	0.500	4.59	513.015	11250.450	0.456	0.5	-6.0	NO	1.000	NO	MM
3	3	190328P1_4	Standard	1.000	4.58	1112.664	11798.468	0.943	1.0	-2.8	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	4.59	2140.172	11275.746	1.898	2.0	-2.2	NO	1.000	NO	bb
5	5	190328P1_6	Standard	5.000	4.59	5658.542	11708.892	4.833	5.0	-0.4	NO	1.000	NO	bb
6	6	190328P1_7	Standard	10.000	4.58	10669.905	10851.720	9.832	10.1	1.3	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	4.59	27648.229	11732.616	23.565	24.3	-2.9	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	4.59	54912.332	11241.349	48.849	50.3	0.7	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	4.59	83073.938	11485.659	72.328	74.5	-0.6	NO	1.000	NO	bb
10	10	190328P1_11	Standard	100.000	4.59	112385.609	11495.679	97.763	100.8	0.8	NO	1.000	NO	bb

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999217
Calibration curve: 0.865972 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	4.90	193.182	11052.179	0.175	0.2	-19.3	NO	0.999	NO	bb
2	2	190328P1_3	Standard	0.500	4.89	528.521	11250.450	0.470	0.5	8.5	NO	0.999	NO	bb
3	3	190328P1_4	Standard	1.000	4.90	932.813	11798.468	0.791	0.9	-8.7	NO	0.999	NO	bb
4	4	190328P1_5	Standard	2.000	4.89	2046.033	11275.746	1.815	2.1	4.8	NO	0.999	NO	db
5	5	190328P1_6	Standard	5.000	4.89	4887.097	11708.892	4.174	4.8	-3.6	NO	0.999	NO	bb
6	6	190328P1_7	Standard	10.000	4.89	9239.409	10851.720	8.514	9.8	-1.7	NO	0.999	NO	bb
7	7	190328P1_8	Standard	25.000	4.89	23556.918	11732.616	20.078	23.2	-7.3	NO	0.999	NO	bb
8	8	190328P1_9	Standard	50.000	4.89	49202.332	11241.349	43.769	50.5	1.1	NO	0.999	NO	bb
9	9	190328P1_10	Standard	75.000	4.89	76062.672	11485.659	66.224	76.5	2.0	NO	0.999	NO	bb
10	10	190328P1_11	Standard	100.000	4.89	99691.672	11495.679	86.721	100.1	0.1	NO	0.999	NO	bb

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Compound name: PFOS
Coefficient of Determination: R^2 = 0.998587
Calibration curve: 0.875608 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.232	4.95	47.961	5818.330	0.237	0.3	16.5	NO	0.999	NO	MM
2	2	190328P1_3	Standard	0.464	4.94	76.061	5789.858	0.377	0.4	-7.2	NO	0.999	NO	MM
3	3	190328P1_4	Standard	0.928	4.95	131.723	5861.137	0.645	0.7	-20.6	NO	0.999	NO	MM
4	4	190328P1_5	Standard	1.860	4.94	291.838	6040.236	1.387	1.6	-14.9	NO	0.999	NO	MM
5	5	190328P1_6	Standard	4.640	4.94	778.410	5930.806	3.767	4.3	-7.3	NO	0.999	NO	MM
6	6	190328P1_7	Standard	9.240	4.95	1507.219	5470.568	7.907	9.0	-2.3	NO	0.999	NO	MM
7	7	190328P1_8	Standard	23.100	4.95	3956.451	6052.243	18.762	21.4	-7.2	NO	0.999	NO	MM
8	8	190328P1_9	Standard	46.200	4.95	7925.417	5564.294	40.878	46.7	1.1	NO	0.999	NO	MM
9	9	190328P1_10	Standard	69.400	4.95	11998.520	5469.428	62.960	71.9	3.6	NO	0.999	NO	MM
10	10	190328P1_11	Standard	92.500	4.95	16261.275	5781.354	80.725	92.2	-0.3	NO	0.999	NO	MM

Compound name: 9Cl-PF3ONS
Coefficient of Determination: R^2 = 0.997938
Calibration curve: 2.42042 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.10	90.887	5818.330	0.448	0.2	-25.9	NO	0.998	NO	bb
2	2	190328P1_3	Standard	0.500	5.09	202.370	5789.858	1.003	0.4	-17.1	NO	0.998	NO	MM
3	3	190328P1_4	Standard	1.000	5.10	495.884	5861.137	2.428	1.0	0.3	NO	0.998	NO	bd
4	4	190328P1_5	Standard	2.000	5.10	918.101	6040.236	4.362	1.8	-9.9	NO	0.998	NO	bb
5	5	190328P1_6	Standard	5.000	5.10	2308.596	5930.806	11.172	4.6	-7.7	NO	0.998	NO	bb
6	6	190328P1_7	Standard	10.000	5.10	4977.998	5470.568	26.116	10.8	7.9	NO	0.998	NO	bb
7	7	190328P1_8	Standard	25.000	5.10	13080.917	6052.243	62.030	25.6	2.5	NO	0.998	NO	bb
8	8	190328P1_9	Standard	50.000	5.09	23047.838	5564.294	118.878	49.1	-1.8	NO	0.998	NO	bd
9	9	190328P1_10	Standard	75.000	5.09	36437.941	5469.428	191.203	79.0	5.3	NO	0.998	NO	bb
10	10	190328P1_11	Standard	100.000	5.10	46904.773	5781.354	232.846	96.2	-3.8	NO	0.998	NO	bd

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999626
Calibration curve: 0.000338008 * x^2 + 1.01705 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.18	306.084	11052.179	0.277	0.3	8.9	NO	1.000	NO	bb
2	2	190328P1_3	Standard	0.500	5.17	614.436	11250.450	0.546	0.5	7.4	NO	1.000	NO	bb
3	3	190328P1_4	Standard	1.000	5.16	1262.785	11798.468	1.070	1.1	5.2	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	5.16	2189.023	11275.746	1.941	1.9	-4.6	NO	1.000	NO	bb
5	5	190328P1_6	Standard	5.000	5.16	5921.377	11708.892	5.057	5.0	-0.7	NO	1.000	NO	bb
6	6	190328P1_7	Standard	10.000	5.16	11806.867	10851.720	10.880	10.7	6.6	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	5.16	28970.063	11732.616	24.692	24.1	-3.7	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	5.16	57933.727	11241.349	51.536	49.8	-0.3	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	5.16	90697.648	11485.659	78.966	75.7	1.0	NO	1.000	NO	bb
10	10	190328P1_11	Standard	100.000	5.16	120415.898	11495.679	104.749	99.7	-0.3	NO	1.000	NO	bb

Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.998828
Calibration curve: 0.0011037 * x^2 + 0.725197 * x
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.26	49.721	17412.145	0.114	0.2	-37.0	NO	0.999	NO	bb
2	2	190328P1_3	Standard	0.500	5.27	125.047	17407.193	0.287	0.4	-20.8	NO	0.999	NO	bb
3	3	190328P1_4	Standard	1.000	5.27	306.263	17546.832	0.698	1.0	-3.9	NO	0.999	NO	MM
4	4	190328P1_5	Standard	2.000	5.27	603.898	17769.572	1.359	1.9	-6.5	NO	0.999	NO	MM
5	5	190328P1_6	Standard	5.000	5.27	1740.253	17789.320	3.913	5.4	7.0	NO	0.999	NO	MM
6	6	190328P1_7	Standard	10.000	5.27	3251.459	17481.215	7.440	10.1	1.0	NO	0.999	NO	MM
7	7	190328P1_8	Standard	25.000	5.27	8496.299	18924.680	17.958	23.9	-4.4	NO	0.999	NO	MM
8	8	190328P1_9	Standard	50.000	5.27	17242.857	17723.484	38.915	49.9	-0.2	NO	0.999	NO	MM
9	9	190328P1_10	Standard	75.000	5.27	27069.723	17138.338	63.179	77.9	3.9	NO	0.999	NO	MM
10	10	190328P1_11	Standard	100.000	5.27	36299.789	17735.316	81.870	98.2	-1.8	NO	0.999	NO	MM

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Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999044
Calibration curve: 0.688491 * x
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.38	35.037	17412.145	0.080	0.1	-53.2	NO	0.999	NO	MMX
2	2	190328P1_3	Standard	0.500	5.37	112.522	17407.193	0.259	0.4	-24.9	NO	0.999	NO	MM
3	3	190328P1_4	Standard	1.000	5.38	234.142	17546.832	0.534	0.8	-22.5	NO	0.999	NO	MM
4	4	190328P1_5	Standard	2.000	5.38	536.302	17769.572	1.207	1.8	-12.3	NO	0.999	NO	MM
5	5	190328P1_6	Standard	5.000	5.38	1479.490	17789.320	3.327	4.8	-3.4	NO	0.999	NO	MM
6	6	190328P1_7	Standard	10.000	5.38	2942.915	17481.215	6.734	9.8	-2.2	NO	0.999	NO	MM
7	7	190328P1_8	Standard	25.000	5.38	7722.744	18924.680	16.323	23.7	-5.2	NO	0.999	NO	MM
8	8	190328P1_9	Standard	50.000	5.38	15117.973	17723.484	34.120	49.6	-0.9	NO	0.999	NO	MM
9	9	190328P1_10	Standard	75.000	5.38	22598.893	17138.338	52.745	76.6	2.1	NO	0.999	NO	MM
10	10	190328P1_11	Standard	100.000	5.38	30864.838	17735.316	69.612	101.1	1.1	NO	0.999	NO	MM

Compound name: PFUnA
Coefficient of Determination: R^2 = 0.999779
Calibration curve: 1.33481 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.38	417.207	11052.179	0.377	0.3	13.1	NO	1.000	NO	bb
2	2	190328P1_3	Standard	0.500	5.38	744.890	11250.450	0.662	0.5	-0.8	NO	1.000	NO	bd
3	3	190328P1_4	Standard	1.000	5.39	1575.699	11798.468	1.336	1.0	0.1	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	5.38	3094.538	11275.746	2.744	2.1	2.8	NO	1.000	NO	bb
5	5	190328P1_6	Standard	5.000	5.38	7676.759	11708.892	6.556	4.9	-1.8	NO	1.000	NO	bb
6	6	190328P1_7	Standard	10.000	5.38	14396.731	10851.720	13.267	9.9	-0.6	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	5.39	37527.027	11732.616	31.985	24.0	-4.2	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	5.38	75522.070	11241.349	67.182	50.3	0.7	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	5.38	115362.516	11485.659	100.440	75.2	0.3	NO	1.000	NO	bb
10	10	190328P1_11	Standard	100.000	5.39	154247.000	11495.679	134.178	100.5	0.5	NO	1.000	NO	bb

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Compound name: 11Cl-PF3OUdS
Coefficient of Determination: R^2 = 0.998329
Calibration curve: 2.67821 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.52	131.924	5818.330	0.651	0.2	-2.8	NO	0.998	NO	MM
2	2	190328P1_3	Standard	0.500	5.52	233.414	5789.858	1.157	0.4	-13.6	NO	0.998	NO	MM
3	3	190328P1_4	Standard	1.000	5.53	505.521	5861.137	2.475	0.9	-7.6	NO	0.998	NO	bb
4	4	190328P1_5	Standard	2.000	5.52	906.274	6040.236	4.306	1.6	-19.6	NO	0.998	NO	bb
5	5	190328P1_6	Standard	5.000	5.52	2607.332	5930.806	12.617	4.7	-5.8	NO	0.998	NO	bb
6	6	190328P1_7	Standard	10.000	5.52	5661.112	5470.568	29.700	11.1	10.9	NO	0.998	NO	bb
7	7	190328P1_8	Standard	25.000	5.52	14611.459	6052.243	69.288	25.9	3.5	NO	0.998	NO	bb
8	8	190328P1_9	Standard	50.000	5.52	24870.189	5564.294	128.278	47.9	-4.2	NO	0.998	NO	bd
9	9	190328P1_10	Standard	75.000	5.52	39429.336	5469.428	206.900	77.3	3.0	NO	0.998	NO	bb
10	10	190328P1_11	Standard	100.000	5.52	53260.613	5781.354	264.398	98.7	-1.3	NO	0.998	NO	bd

Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999692
Calibration curve: 1.67575 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.59	521.319	11052.179	0.472	0.3	12.6	NO	1.000	NO	bb
2	2	190328P1_3	Standard	0.500	5.58	914.982	11250.450	0.813	0.5	-2.9	NO	1.000	NO	bb
3	3	190328P1_4	Standard	1.000	5.58	1956.214	11798.468	1.658	1.0	-1.1	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	5.58	3743.514	11275.746	3.320	2.0	-0.9	NO	1.000	NO	bb
5	5	190328P1_6	Standard	5.000	5.58	9562.463	11708.892	8.167	4.9	-2.5	NO	1.000	NO	bd
6	6	190328P1_7	Standard	10.000	5.58	17930.846	10851.720	16.524	9.9	-1.4	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	5.58	47234.938	11732.616	40.260	24.0	-3.9	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	5.58	93251.063	11241.349	82.954	49.5	-1.0	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	5.58	144625.875	11485.659	125.919	75.1	0.2	NO	1.000	NO	bb
10	10	190328P1_11	Standard	100.000	5.58	195739.969	11495.679	170.273	101.6	1.6	NO	1.000	NO	dd

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999787
Calibration curve: 1.69111 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.76	481.584	11052.179	0.436	0.3	3.1	NO	1.000	NO	bb
2	2	190328P1_3	Standard	0.500	5.75	1024.533	11250.450	0.911	0.5	7.7	NO	1.000	NO	dd
3	3	190328P1_4	Standard	1.000	5.76	2136.686	11798.468	1.811	1.1	7.1	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	5.75	3802.516	11275.746	3.372	2.0	-0.3	NO	1.000	NO	bd
5	5	190328P1_6	Standard	5.000	5.75	9678.479	11708.892	8.266	4.9	-2.2	NO	1.000	NO	bb
6	6	190328P1_7	Standard	10.000	5.75	18599.035	10851.720	17.139	10.1	1.3	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	5.75	48598.766	11732.616	41.422	24.5	-2.0	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	5.75	94695.273	11241.349	84.238	49.8	-0.4	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	5.75	143968.891	11485.659	125.347	74.1	-1.2	NO	1.000	NO	bd
10	10	190328P1_11	Standard	100.000	5.75	197200.531	11495.679	171.543	101.4	1.4	NO	1.000	NO	bb

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999568
Calibration curve: 1.59498 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	0.250	5.91	447.268	11052.179	0.405	0.3	1.5	NO	1.000	NO	bb
2	2	190328P1_3	Standard	0.500	5.90	870.199	11250.450	0.773	0.5	-3.0	NO	1.000	NO	bb
3	3	190328P1_4	Standard	1.000	5.90	1988.218	11798.468	1.685	1.1	5.7	NO	1.000	NO	bb
4	4	190328P1_5	Standard	2.000	5.90	3791.021	11275.746	3.362	2.1	5.4	NO	1.000	NO	bb
5	5	190328P1_6	Standard	5.000	5.90	9138.347	11708.892	7.805	4.9	-2.1	NO	1.000	NO	bb
6	6	190328P1_7	Standard	10.000	5.90	17766.066	10851.720	16.372	10.3	2.6	NO	1.000	NO	bb
7	7	190328P1_8	Standard	25.000	5.90	44392.930	11732.616	37.837	23.7	-5.1	NO	1.000	NO	bb
8	8	190328P1_9	Standard	50.000	5.90	88751.023	11241.349	78.951	49.5	-1.0	NO	1.000	NO	bb
9	9	190328P1_10	Standard	75.000	5.90	139703.984	11485.659	121.633	76.3	1.7	NO	1.000	NO	bb
10	10	190328P1_11	Standard	100.000	5.90	183733.188	11495.679	159.828	100.2	0.2	NO	1.000	NO	bb

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Compound name: 13C2-PFHxA
Response Factor: 1.00045
RRF SD: 0.0300683, Relative SD: 3.00549
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	10.000	3.74	11446.940	11052.179	10.357	10.4	3.5	NO		NO	bb
2	2	190328P1_3	Standard	10.000	3.74	11355.578	11250.450	10.093	10.1	0.9	NO		NO	bb
3	3	190328P1_4	Standard	10.000	3.74	11526.254	11798.468	9.769	9.8	-2.4	NO		NO	bb
4	4	190328P1_5	Standard	10.000	3.74	11610.755	11275.746	10.297	10.3	2.9	NO		NO	bd
5	5	190328P1_6	Standard	10.000	3.74	11505.086	11708.892	9.826	9.8	-1.8	NO		NO	bd
6	6	190328P1_7	Standard	10.000	3.74	11232.259	10851.720	10.351	10.3	3.5	NO		NO	bd
7	7	190328P1_8	Standard	10.000	3.74	11011.896	11732.616	9.386	9.4	-6.2	NO		NO	bd
8	8	190328P1_9	Standard	10.000	3.74	11183.225	11241.349	9.948	9.9	-0.6	NO		NO	bd
9	9	190328P1_10	Standard	10.000	3.74	11537.298	11485.659	10.045	10.0	0.4	NO		NO	bd
10	10	190328P1_11	Standard	10.000	3.75	11463.763	11495.679	9.972	10.0	-0.3	NO		NO	bd

Compound name: 13C3-HFPO-DA
Response Factor: 0.0850231
RRF SD: 0.00412777, Relative SD: 4.85488
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	10.000	3.90	962.747	11052.179	0.871	10.2	2.5	NO		NO	MM
2	2	190328P1_3	Standard	10.000	3.90	1016.602	11250.450	0.904	10.6	6.3	NO		NO	bb
3	3	190328P1_4	Standard	10.000	3.90	954.733	11798.468	0.809	9.5	-4.8	NO		NO	MM
4	4	190328P1_5	Standard	10.000	3.90	997.596	11275.746	0.885	10.4	4.1	NO		NO	MM
5	5	190328P1_6	Standard	10.000	3.90	973.189	11708.892	0.831	9.8	-2.2	NO		NO	bb
6	6	190328P1_7	Standard	10.000	3.91	984.363	10851.720	0.907	10.7	6.7	NO		NO	bb
7	7	190328P1_8	Standard	10.000	3.91	923.511	11732.616	0.787	9.3	-7.4	NO		NO	bb
8	8	190328P1_9	Standard	10.000	3.90	937.547	11241.349	0.834	9.8	-1.9	NO		NO	bb
9	9	190328P1_10	Standard	10.000	3.90	935.943	11485.659	0.815	9.6	-4.2	NO		NO	bd
10	10	190328P1_11	Standard	10.000	3.90	987.937	11495.679	0.859	10.1	1.1	NO		NO	bd

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Compound name: 13C2-PFDA
Response Factor: 1.20833
RRF SD: 0.0438257, Relative SD: 3.62697
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	10.000	5.16	14204.684	11052.179	12.852	10.6	6.4	NO		NO	bd
2	2	190328P1_3	Standard	10.000	5.16	13820.920	11250.450	12.285	10.2	1.7	NO		NO	bd
3	3	190328P1_4	Standard	10.000	5.16	13783.155	11798.468	11.682	9.7	-3.3	NO		NO	bd
4	4	190328P1_5	Standard	10.000	5.16	13549.769	11275.746	12.017	9.9	-0.6	NO		NO	bd
5	5	190328P1_6	Standard	10.000	5.16	13739.922	11708.892	11.735	9.7	-2.9	NO		NO	bd
6	6	190328P1_7	Standard	10.000	5.16	13636.746	10851.720	12.566	10.4	4.0	NO		NO	bb
7	7	190328P1_8	Standard	10.000	5.16	13495.252	11732.616	11.502	9.5	-4.8	NO		NO	bd
8	8	190328P1_9	Standard	10.000	5.16	13867.783	11241.349	12.336	10.2	2.1	NO		NO	bd
9	9	190328P1_10	Standard	10.000	5.16	13411.643	11485.659	11.677	9.7	-3.4	NO		NO	bd
10	10	190328P1_11	Standard	10.000	5.16	14002.133	11495.679	12.180	10.1	0.8	NO		NO	bb

Compound name: d5-N-EtFOSAA
Response Factor: 1.01954
RRF SD: 0.0345669, Relative SD: 3.39042
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	40.000	5.38	18344.367	17412.145	42.142	41.3	3.3	NO		NO	bb
2	2	190328P1_3	Standard	40.000	5.38	18149.766	17407.193	41.706	40.9	2.3	NO		NO	bb
3	3	190328P1_4	Standard	40.000	5.38	18516.000	17546.832	42.209	41.4	3.5	NO		NO	bb
4	4	190328P1_5	Standard	40.000	5.38	17987.186	17769.572	40.490	39.7	-0.7	NO		NO	bd
5	5	190328P1_6	Standard	40.000	5.38	17854.006	17789.320	40.145	39.4	-1.6	NO		NO	bb
6	6	190328P1_7	Standard	40.000	5.38	17775.303	17481.215	40.673	39.9	-0.3	NO		NO	bb
7	7	190328P1_8	Standard	40.000	5.38	17726.957	18924.680	37.468	36.8	-8.1	NO		NO	bb
8	8	190328P1_9	Standard	40.000	5.38	18140.938	17723.484	40.942	40.2	0.4	NO		NO	bb
9	9	190328P1_10	Standard	40.000	5.38	17854.117	17138.338	41.671	40.9	2.2	NO		NO	bd
10	10	190328P1_11	Standard	40.000	5.38	17899.926	17735.316	40.371	39.6	-1.0	NO		NO	bb

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:13:02 Pacific Daylight Time

Compound name: 13C2-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	10.000	4.59	11052.179	11052.179	10.000	10.0	0.0	NO		NO	bd
2	2	190328P1_3	Standard	10.000	4.58	11250.450	11250.450	10.000	10.0	0.0	NO		NO	bd
3	3	190328P1_4	Standard	10.000	4.59	11798.468	11798.468	10.000	10.0	0.0	NO		NO	bb
4	4	190328P1_5	Standard	10.000	4.58	11275.746	11275.746	10.000	10.0	0.0	NO		NO	bb
5	5	190328P1_6	Standard	10.000	4.59	11708.892	11708.892	10.000	10.0	0.0	NO		NO	bb
6	6	190328P1_7	Standard	10.000	4.59	10851.720	10851.720	10.000	10.0	0.0	NO		NO	bd
7	7	190328P1_8	Standard	10.000	4.59	11732.616	11732.616	10.000	10.0	0.0	NO		NO	bb
8	8	190328P1_9	Standard	10.000	4.58	11241.349	11241.349	10.000	10.0	0.0	NO		NO	bd
9	9	190328P1_10	Standard	10.000	4.58	11485.659	11485.659	10.000	10.0	0.0	NO		NO	bb
10	10	190328P1_11	Standard	10.000	4.59	11495.679	11495.679	10.000	10.0	0.0	NO		NO	bd

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	28.700	4.95	5818.330	5818.330	28.700	28.7	0.0	NO		NO	bb
2	2	190328P1_3	Standard	28.700	4.95	5789.858	5789.858	28.700	28.7	0.0	NO		NO	bb
3	3	190328P1_4	Standard	28.700	4.95	5861.137	5861.137	28.700	28.7	0.0	NO		NO	bb
4	4	190328P1_5	Standard	28.700	4.95	6040.236	6040.236	28.700	28.7	0.0	NO		NO	bb
5	5	190328P1_6	Standard	28.700	4.95	5930.806	5930.806	28.700	28.7	0.0	NO		NO	bb
6	6	190328P1_7	Standard	28.700	4.95	5470.568	5470.568	28.700	28.7	0.0	NO		NO	bb
7	7	190328P1_8	Standard	28.700	4.95	6052.243	6052.243	28.700	28.7	0.0	NO		NO	bb
8	8	190328P1_9	Standard	28.700	4.95	5564.294	5564.294	28.700	28.7	0.0	NO		NO	bb
9	9	190328P1_10	Standard	28.700	4.95	5469.428	5469.428	28.700	28.7	0.0	NO		NO	bb
10	10	190328P1_11	Standard	28.700	4.95	5781.354	5781.354	28.700	28.7	0.0	NO		NO	bd

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Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:13:02 Pacific Daylight Time

Compound name: d3-N-MeFOSAA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	190328P1_2	Standard	40.000	5.27	17412.145	17412.145	40.000	40.0	0.0	NO		NO	bb
2	2	190328P1_3	Standard	40.000	5.27	17407.193	17407.193	40.000	40.0	0.0	NO		NO	bb
3	3	190328P1_4	Standard	40.000	5.27	17546.832	17546.832	40.000	40.0	0.0	NO		NO	bd
4	4	190328P1_5	Standard	40.000	5.27	17769.572	17769.572	40.000	40.0	0.0	NO		NO	bd
5	5	190328P1_6	Standard	40.000	5.27	17789.320	17789.320	40.000	40.0	0.0	NO		NO	bd
6	6	190328P1_7	Standard	40.000	5.27	17481.215	17481.215	40.000	40.0	0.0	NO		NO	bd
7	7	190328P1_8	Standard	40.000	5.27	18924.680	18924.680	40.000	40.0	0.0	NO		NO	bb
8	8	190328P1_9	Standard	40.000	5.27	17723.484	17723.484	40.000	40.0	0.0	NO		NO	bb
9	9	190328P1_10	Standard	40.000	5.27	17138.338	17138.338	40.000	40.0	0.0	NO		NO	dd
10	10	190328P1_11	Standard	40.000	5.27	17735.316	17735.316	40.000	40.0	0.0	NO		NO	bd

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Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:13:18 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_2, Date: 28-Mar-2019, Time: 10:55:07, ID: ST190328P1-1 537 CS-4 19C2502, Description: 537 CS-4 19C2502

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBS	24	0.9987	NO	
2	2	PFHxA	23	0.9994	NO	
3	3	HFPO-DA	23	0.9986	NO	
4	4	PFHpA	23	0.9997	NO	
5	5	ADONA	23	0.9984	NO	
6	6	PFHxS	24	0.9973	NO	
7	7	PFOA	23	0.9998	NO	
8	8	PFNA	23	0.9992	NO	
9	9	PFOS	24	0.9986	NO	
10	10	9Cl-PF3ONS	24	0.9979	NO	
11	11	PFDA	23	0.9996	NO	
12	12	N-MeFOSAA	25	0.9988	NO	
13	13	N-EtFOSAA	25	0.9990	NO	
14	14	PFUnA	23	0.9998	NO	
15	15	11Cl-PF3OUdS	24	0.9983	NO	
16	16	PFDoA	23	0.9997	NO	
17	17	PFTrDA	23	0.9998	NO	
18	18	PFTeDA	23	0.9996	NO	
19	19	13C2-PFHxA	23		NO	3.005
20	20	13C3-HFPO-DA	23		NO	4.855
21	21	13C2-PFDA	23		NO	3.627
22	22	d5-N-EtFOSAA	25		NO	3.390
23	23	13C2-PFOA	23		NO	0.000
24	24	13C4-PFOS	24		NO	0.000
25	25	d3-N-MeFOSAA	25		NO	0.000

ICAL RPD

	HIGH	11798.47	RPD
Compound 23: 13C2-PFOA	LOW	10851.72	8.359736

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags
1	ST190328P1-1 537 CS-4 19C2502	190328P1_2	Standard	10	4.59	11052.18	11052.18	bd
2	ST190328P1-2 537 CS-3 19C2503	190328P1_3	Standard	10	4.58	11250.45	11250.45	bd
3	ST190328P1-3 537 CS-2 19C2504	190328P1_4	Standard	10	4.59	11798.47	11798.47	bb High
4	ST190328P1-4 537 CS-1 19C2505	190328P1_5	Standard	10	4.58	11275.75	11275.75	bb
5	ST190328P1-5 537 CS0 19C2506	190328P1_6	Standard	10	4.59	11708.89	11708.89	bb
6	ST190328P1-6 537 CS1 19C2507	190328P1_7	Standard	10	4.59	10851.72	10851.72	bd Low
7	ST190328P1-7 537 CS2 19C2508	190328P1_8	Standard	10	4.59	11732.62	11732.62	bb
8	ST190328P1-8 537 CS3 19C2509	190328P1_9	Standard	10	4.58	11241.35	11241.35	bd
9	ST190328P1-9 537 CS4 19C2510	190328P1_10	Standard	10	4.58	11485.66	11485.66	bb
10	ST190328P1-10 537 CS5 19C2511	190328P1_11	Standard	10	4.59	11495.68	11495.68	bd
						AVERAGE	11389.28	

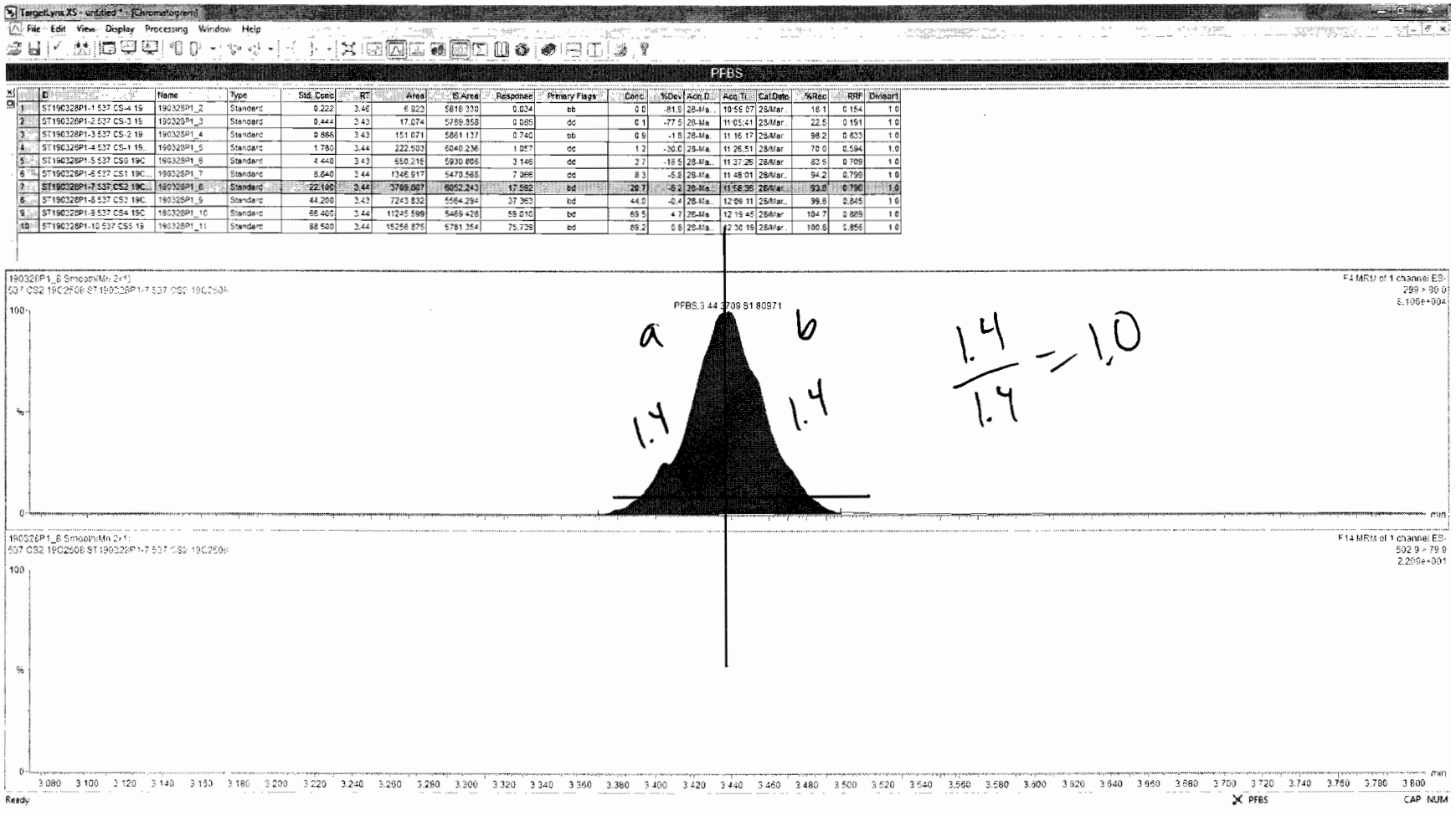
	HIGH	6052.243	RPD
Compound 24: 13C4-PFOS	LOW	5469.428	10.11685

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags
1	ST190328P1-1 537 CS-4 19C2502	190328P1_2	Standard	28.7	4.95	5818.330	5818.330	bb
2	ST190328P1-2 537 CS-3 19C2503	190328P1_3	Standard	28.7	4.95	5789.858	5789.858	bb
3	ST190328P1-3 537 CS-2 19C2504	190328P1_4	Standard	28.7	4.95	5861.137	5861.137	bb
4	ST190328P1-4 537 CS-1 19C2505	190328P1_5	Standard	28.7	4.95	6040.236	6040.236	bb
5	ST190328P1-5 537 CS0 19C2506	190328P1_6	Standard	28.7	4.95	5930.806	5930.806	bb
6	ST190328P1-6 537 CS1 19C2507	190328P1_7	Standard	28.7	4.95	5470.568	5470.568	bb
7	ST190328P1-7 537 CS2 19C2508	190328P1_8	Standard	28.7	4.95	6052.243	6052.243	bb High
8	ST190328P1-8 537 CS3 19C2509	190328P1_9	Standard	28.7	4.95	5564.294	5564.294	bb
9	ST190328P1-9 537 CS4 19C2510	190328P1_10	Standard	28.7	4.95	5469.428	5469.428	bb Low
10	ST190328P1-10 537 CS5 19C2511	190328P1_11	Standard	28.7	4.95	5781.354	5781.354	bd
						AVERAGE	5777.825	

3/20/19

	HIGH	18924.68	RPD
Compound 25: d3-N-MeFOSAA	LOW	17138.34	9.90678

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags	
1	ST190328P1-1 537 CS-4 19C2502	190328P1_2	Standard	40	5.27	17412.15	17412.15	bb	
2	ST190328P1-2 537 CS-3 19C2503	190328P1_3	Standard	40	5.27	17407.19	17407.19	bb	
3	ST190328P1-3 537 CS-2 19C2504	190328P1_4	Standard	40	5.27	17546.83	17546.83	bd	
4	ST190328P1-4 537 CS-1 19C2505	190328P1_5	Standard	40	5.27	17769.57	17769.57	bd	
5	ST190328P1-5 537 CS0 19C2506	190328P1_6	Standard	40	5.27	17789.32	17789.32	bd	
6	ST190328P1-6 537 CS1 19C2507	190328P1_7	Standard	40	5.27	17481.22	17481.22	bd	
7	ST190328P1-7 537 CS2 19C2508	190328P1_8	Standard	40	5.27	18924.68	18924.68	bb	High
8	ST190328P1-8 537 CS3 19C2509	190328P1_9	Standard	40	5.27	17723.48	17723.48	bb	
9	ST190328P1-9 537 CS4 19C2510	190328P1_10	Standard	40	5.27	17138.34	17138.34	dd	Low
10	ST190328P1-10 537 CS5 19C2511	190328P1_11	Standard	40	5.27	17735.32	17735.32	bd	
						AVERAGE	17692.81		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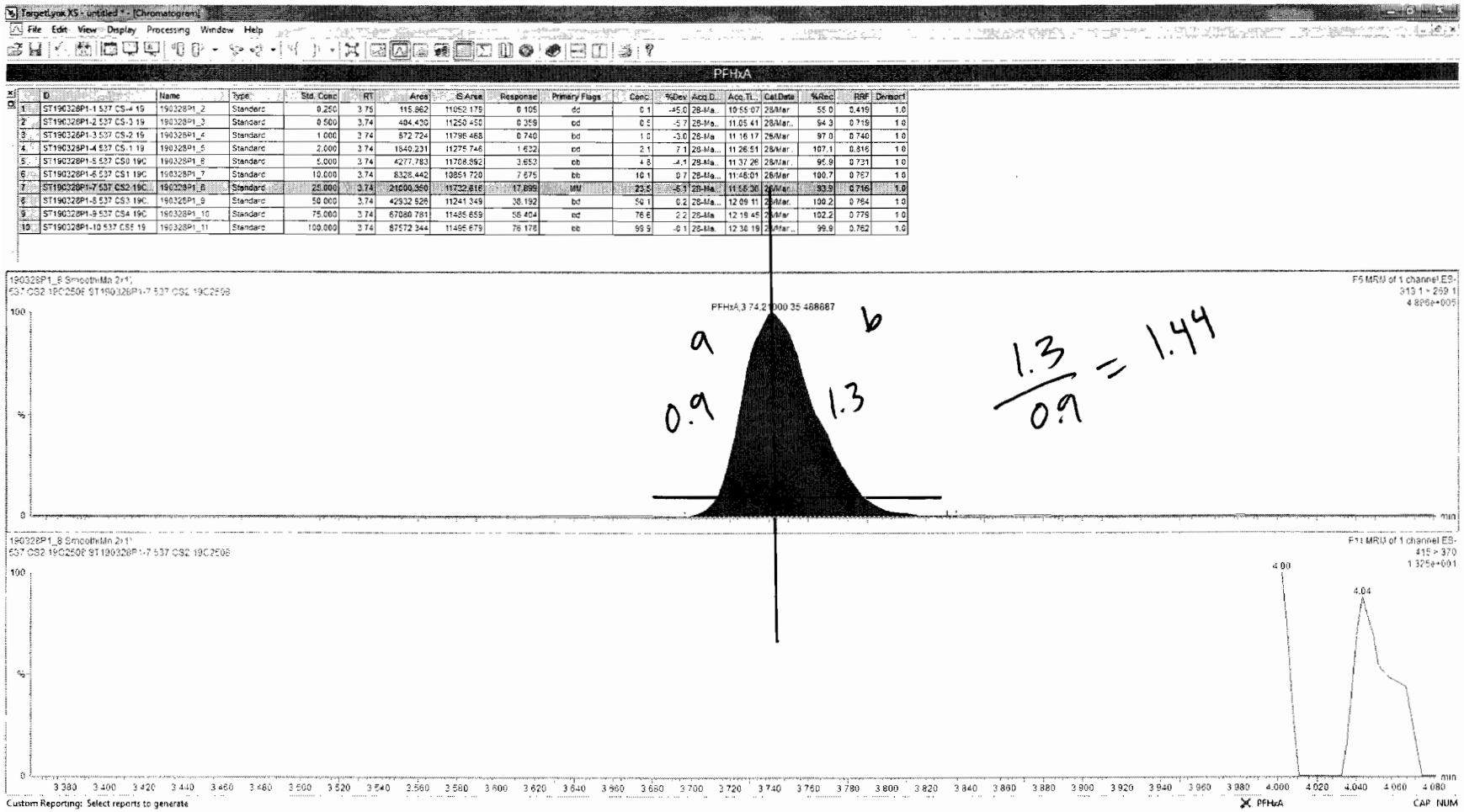
PFBS
PFBS,3.44,3709.81,80971
a
b
1.4
1.4
1.4/1.4 = 1.0
F4 MRM of 1 channel ES-
299 > 99.0
6.106e+004
F14 MRM of 1 channel ES-
502.9 > 79.9
2.209e+001
Ready
PFBS
CAP NUM



	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Flags	Conc.	%Dev	Acq D...	Acq. Ti...	Cal.Date	%Rec	RRF	Devsort
1	ST190328P1-1 537 CS-4 19	190328P1_2	Standard	0.250	3.75	115.862	11052.175	0.105	dd	0.1	-45.0	28-Ma...	10:55:07	28/Mar	55.0	0.419	1.0
2	ST190328P1-2 537 CS-3 19	190328P1_3	Standard	0.500	3.74	404.430	11250.450	0.359	cd	0.5	-5.7	28-Ma...	11:05:41	28/Mar...	94.3	0.719	1.0
3	ST190328P1-3 537 CS-2 19	190328P1_4	Standard	1.000	3.74	872.724	11796.468	0.740	bd	1.0	-3.0	28-Ma	11:16:17	28/Mar	97.0	0.740	1.0
4	ST190328P1-4 537 CS-1 19	190328P1_5	Standard	2.000	3.74	1540.231	11275.746	1.632	cd	2.1	7.1	28-Ma...	11:26:51	28/Mar	107.1	0.816	1.0
5	ST190328P1-5 537 CS0 19C	190328P1_6	Standard	5.000	3.74	4277.783	11708.892	3.653	cb	4.8	-4.1	28-Ma...	11:37:26	28/Mar	95.9	0.731	1.0
6	ST190328P1-6 537 CS1 19C	190328P1_7	Standard	10.000	3.74	8328.442	10851.720	7.675	bb	10.1	0.7	28-Ma...	11:48:01	28/Mar	100.7	0.767	1.0
7	ST190328P1-7 537 CS2 19C...	190328P1_8	Standard	25.000	3.74	21000.350	11732.816	17.895	MM	23.5	-6.1	28-Ma...	11:58:36	28/Mar	93.9	0.716	1.0
8	ST190328P1-8 537 CS3 19C	190328P1_9	Standard	50.000	3.74	42932.926	11241.349	38.192	bd	50.1	0.2	28-Ma...	12:09:11	28/Mar	100.2	0.764	1.0
9	ST190328P1-9 537 CS4 19C	190328P1_10	Standard	75.000	3.74	67080.781	11485.659	58.404	cd	76.6	2.2	28-Ma	12:19:45	28/Mar	102.2	0.778	1.0
10	ST190328P1-10 537 CS5 19	190328P1_11	Standard	100.000	3.74	87572.344	11496.679	76.178	bb	99.5	-0.1	28-Ma...	12:30:19	28/Mar...	99.9	0.762	1.0

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Dataset: Untitled

Last Altered: Thursday, March 28, 2019 18:15:25 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:15:44 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
1	1	190328P1_1	IPA	28-Mar-19	10:44:30
2	2	190328P1_2	ST190328P1-1 537 CS-4 19C2502	28-Mar-19	10:55:07
3	3	190328P1_3	ST190328P1-2 537 CS-3 19C2503	28-Mar-19	11:05:41
4	4	190328P1_4	ST190328P1-3 537 CS-2 19C2504	28-Mar-19	11:16:17
5	5	190328P1_5	ST190328P1-4 537 CS-1 19C2505	28-Mar-19	11:26:51
6	6	190328P1_6	ST190328P1-5 537 CS0 19C2506	28-Mar-19	11:37:26
7	7	190328P1_7	ST190328P1-6 537 CS1 19C2507	28-Mar-19	11:48:01
8	8	190328P1_8	ST190328P1-7 537 CS2 19C2508	28-Mar-19	11:58:36
9	9	190328P1_9	ST190328P1-8 537 CS3 19C2509	28-Mar-19	12:09:11
10	10	190328P1_10	ST190328P1-9 537 CS4 19C2510	28-Mar-19	12:19:45
11	11	190328P1_11	ST190328P1-10 537 CS5 19C2511	28-Mar-19	12:30:19
12	12	190328P1_12	IPA	28-Mar-19	12:40:55
13	13	190328P1_13	ICV190328P1-1 537 ICV 19C2512	28-Mar-19	12:51:29

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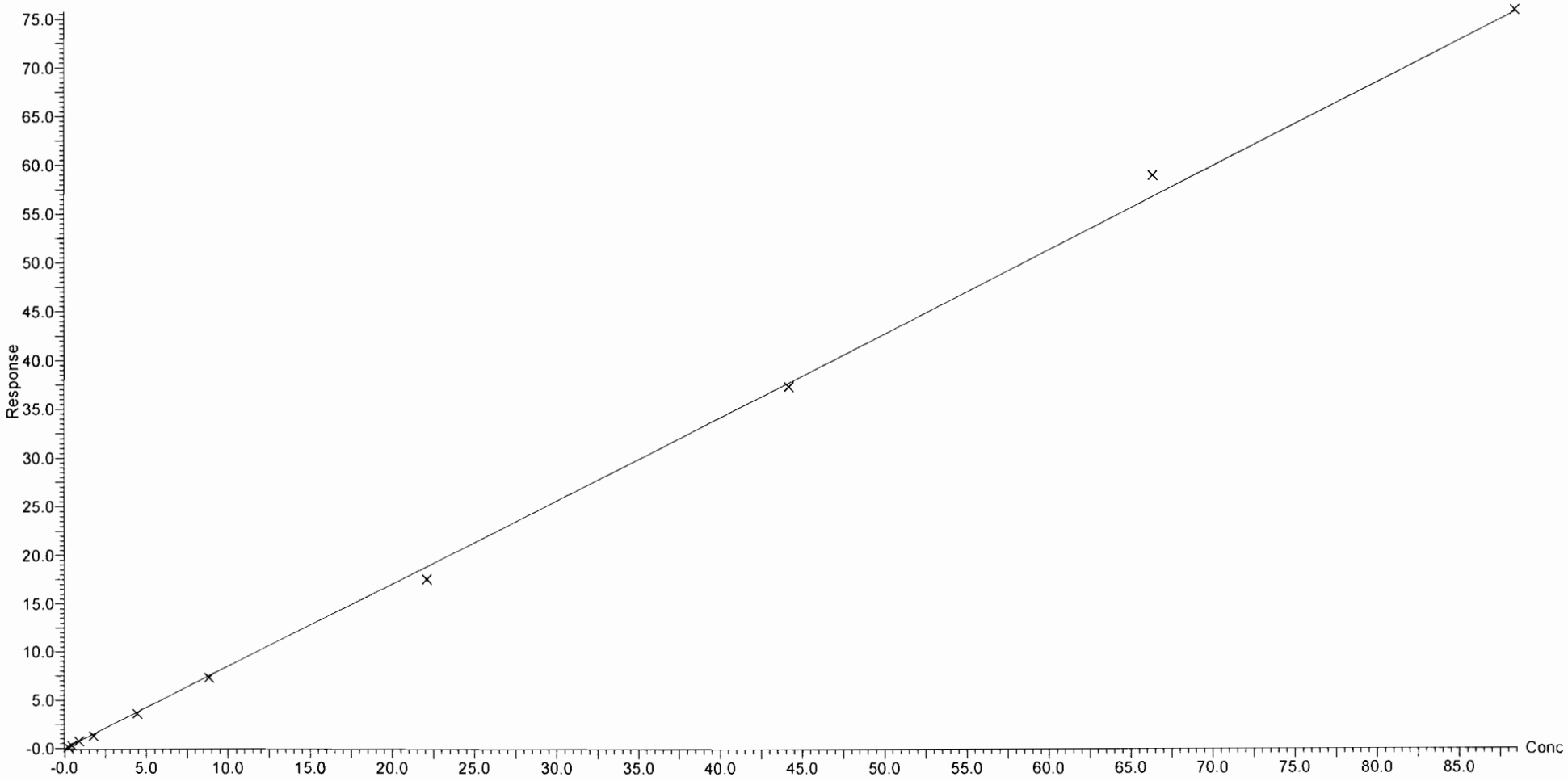
Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Compound name: PFBS
Coefficient of Determination: R^2 = 0.998723
Calibration curve: 0.853818 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

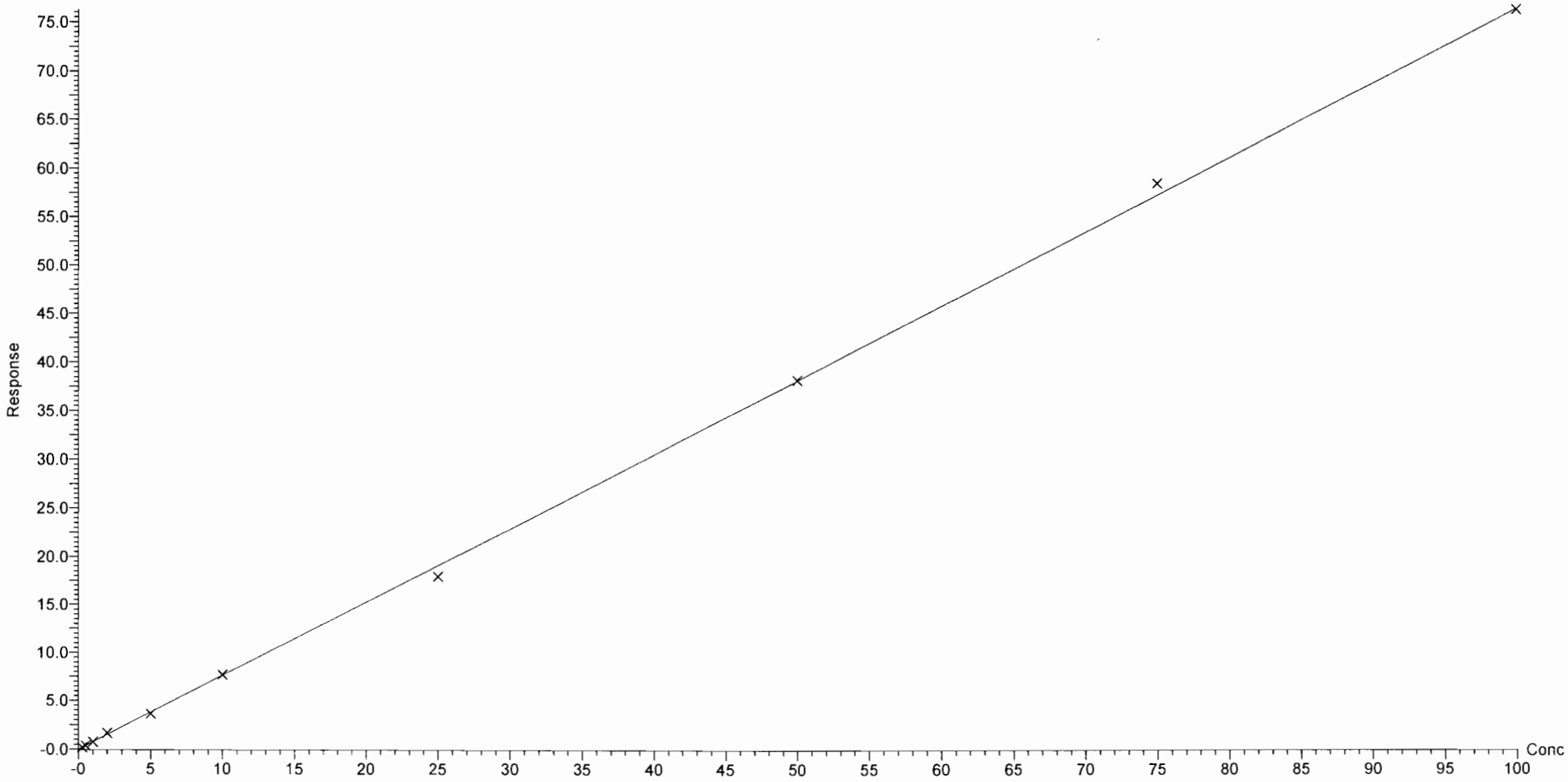


Vista Analytical Laboratory Q1

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

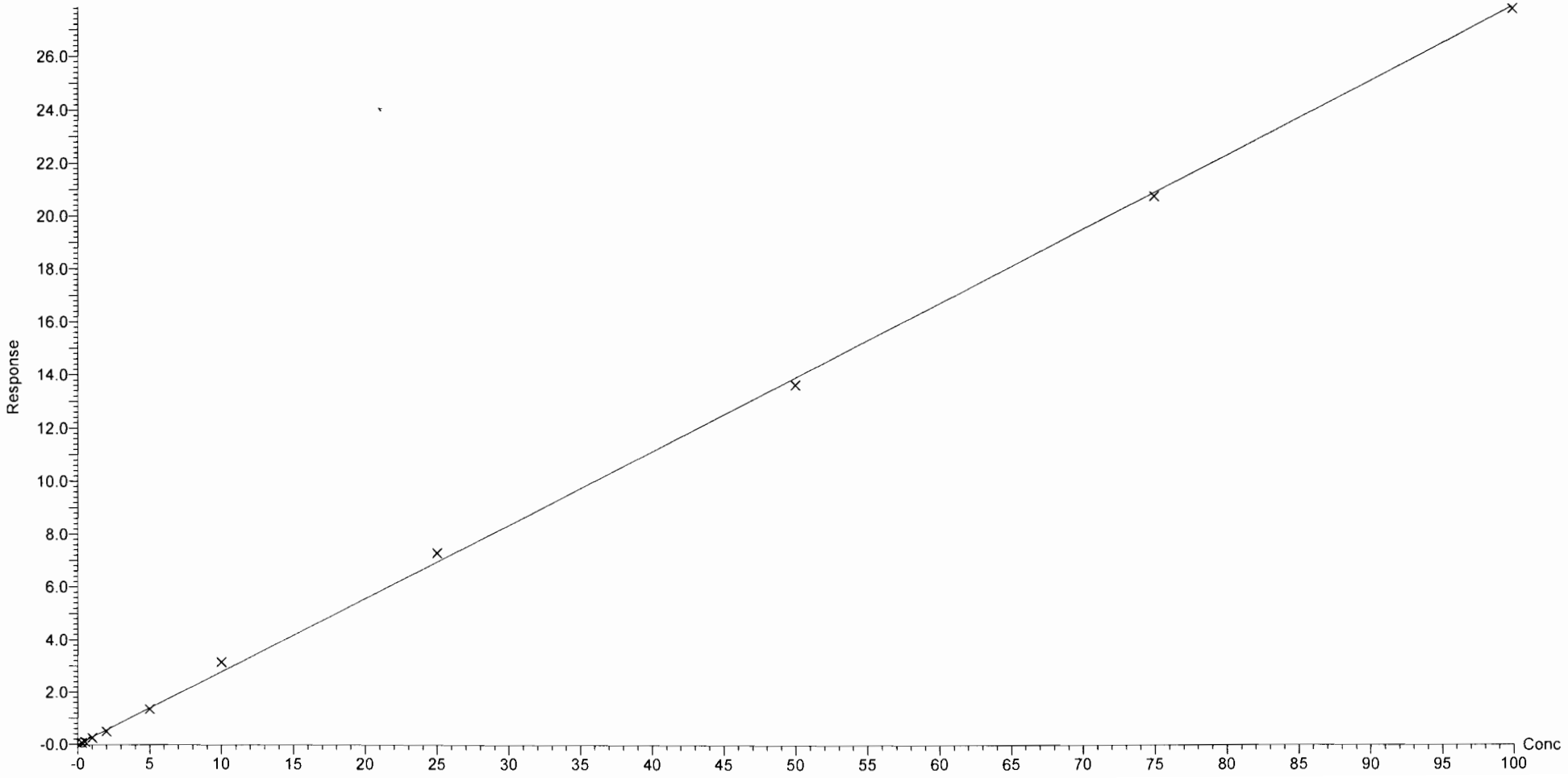
Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999418
Calibration curve: 0.762567 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

Compound name: HFPO-DA
Coefficient of Determination: R^2 = 0.998566
Calibration curve: 0.278394 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

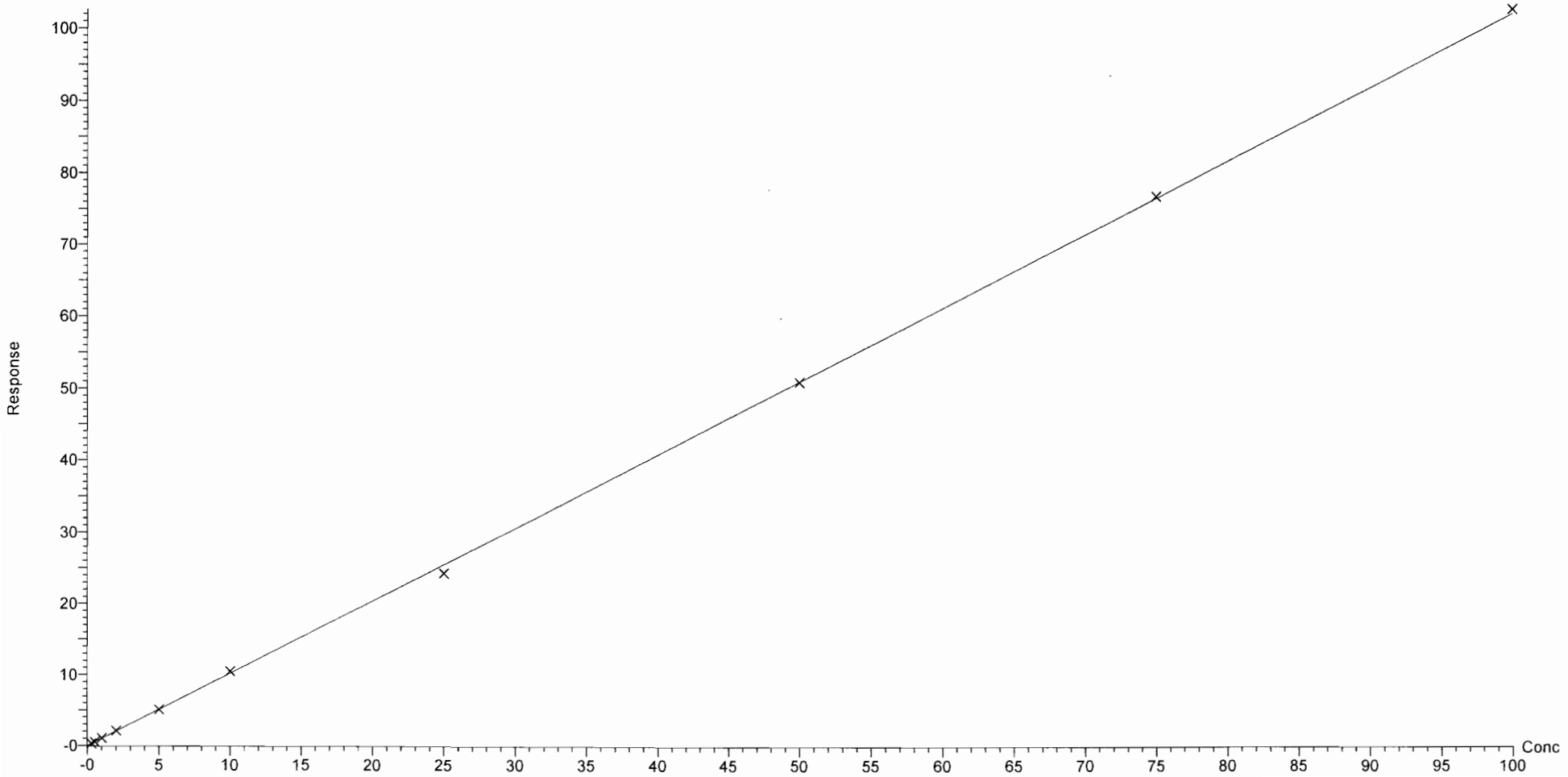


Vista Analytical Laboratory Q1

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

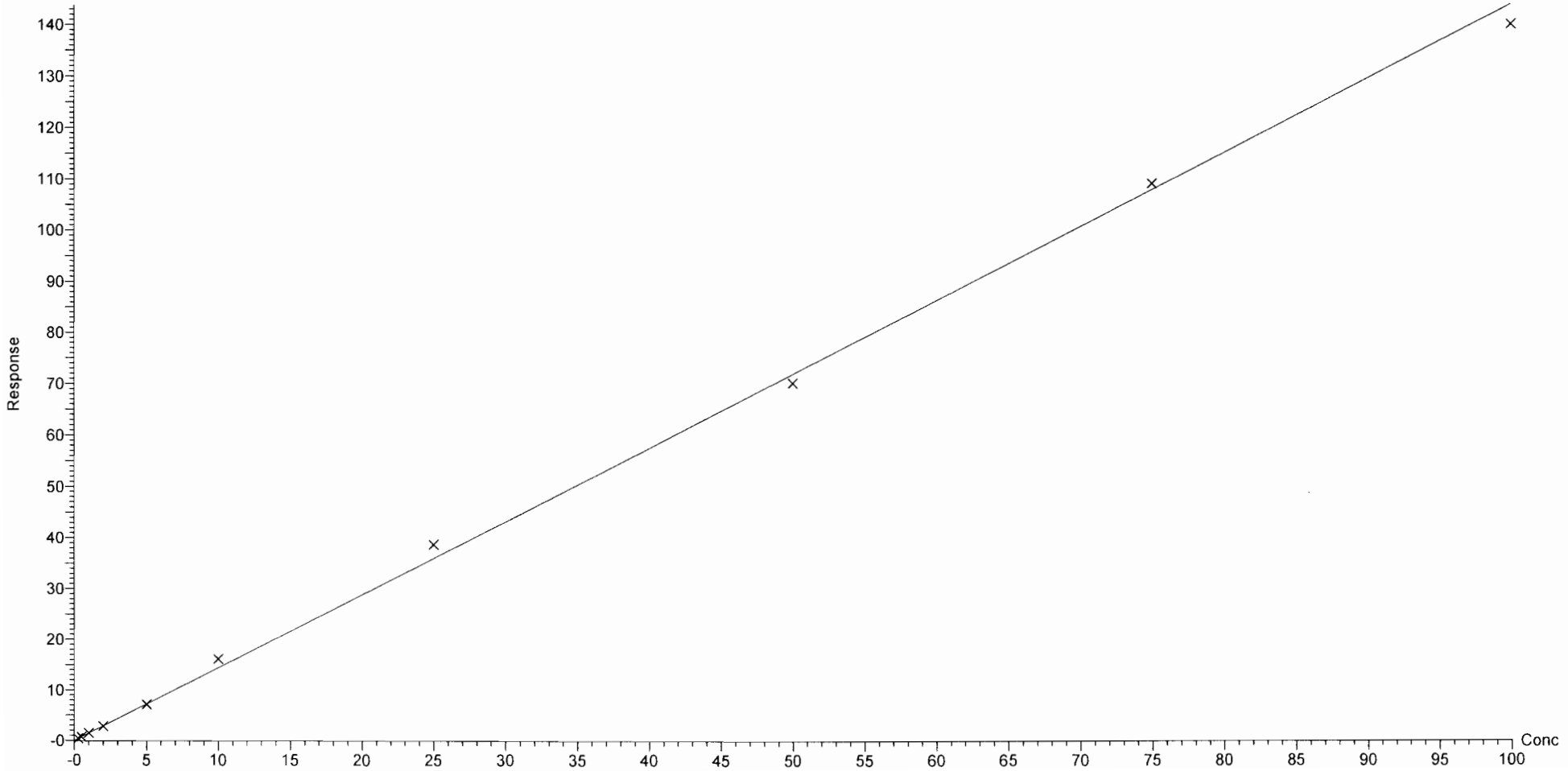
Compound name: PFHpA
Coefficient of Determination: R^2 = 0.999727
Calibration curve: 1.01987 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

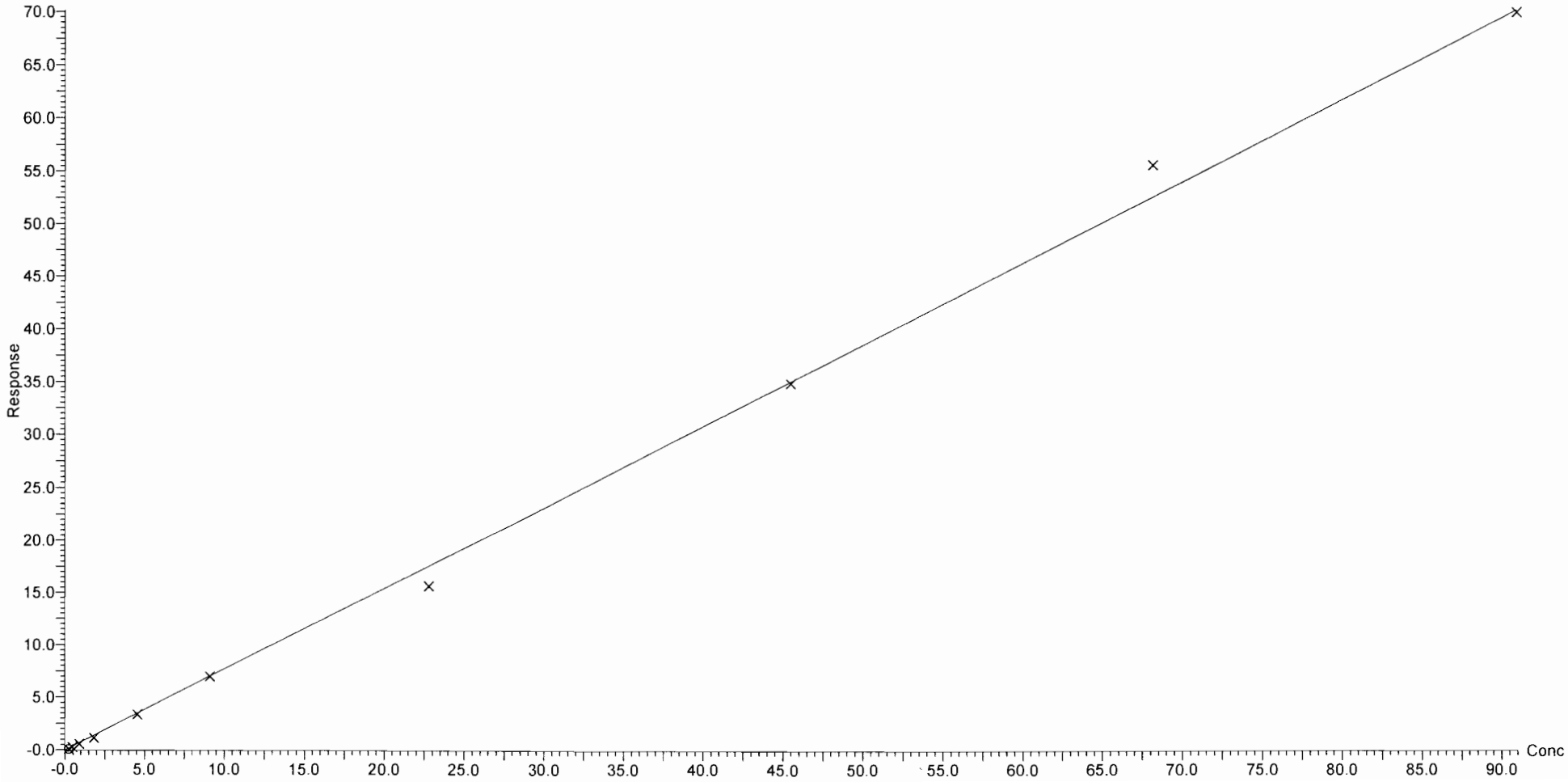
Compound name: ADONA
Coefficient of Determination: R^2 = 0.998368
Calibration curve: 1.43734 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

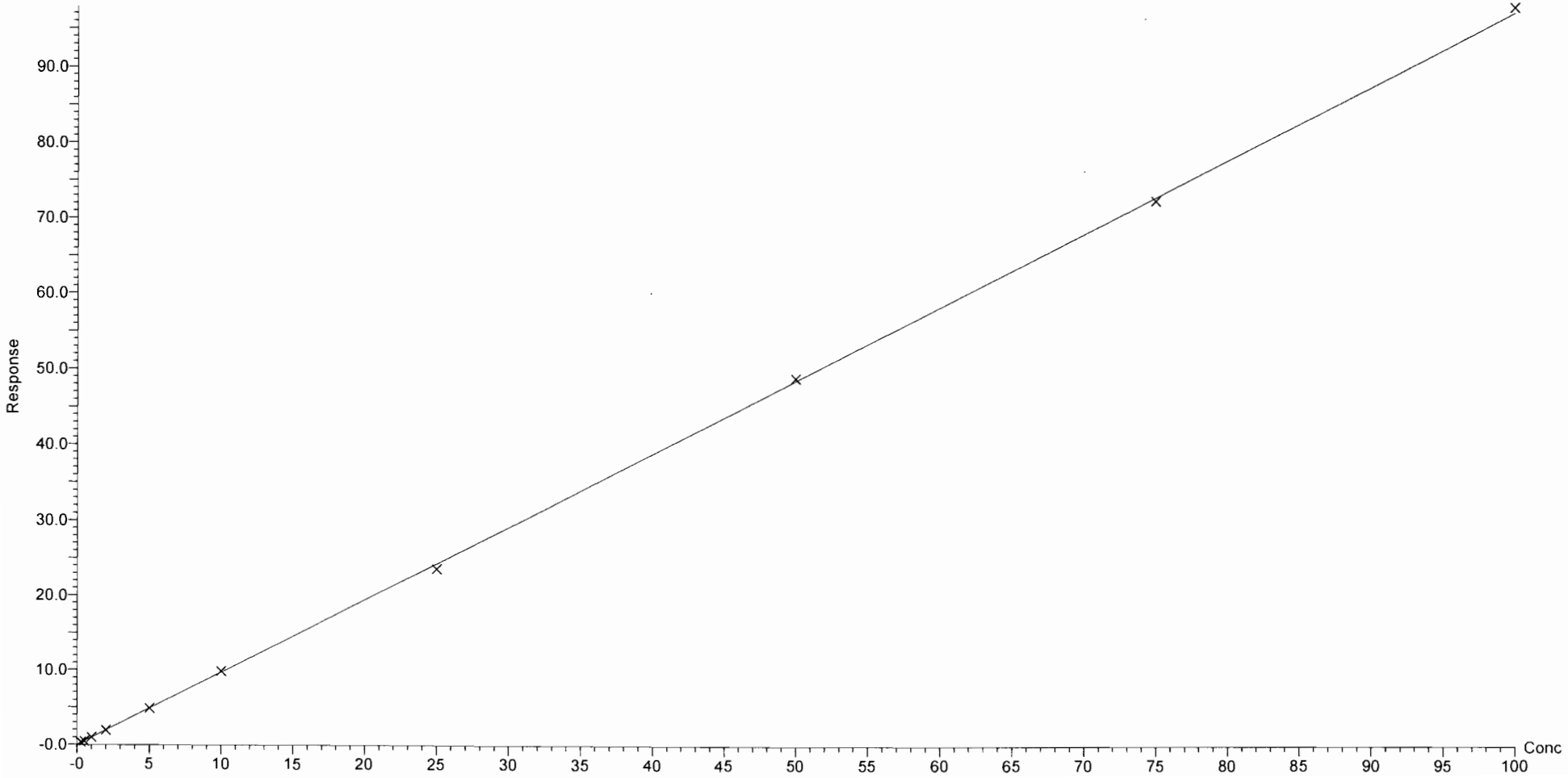
Compound name: PFHxS
Coefficient of Determination: R^2 = 0.997285
Calibration curve: 0.770531 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

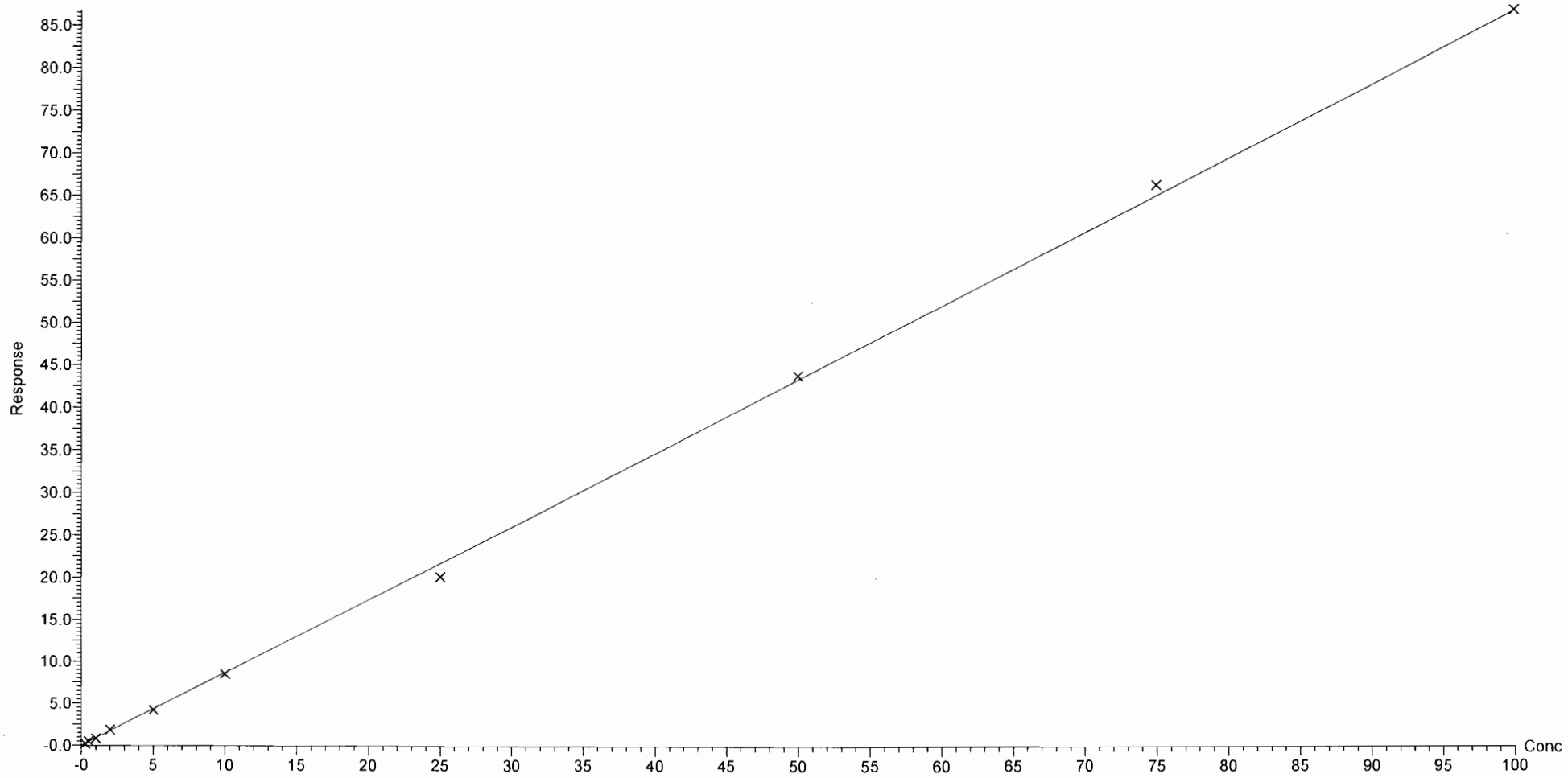
Compound name: PFOA
Coefficient of Determination: R^2 = 0.999778
Calibration curve: 0.970341 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

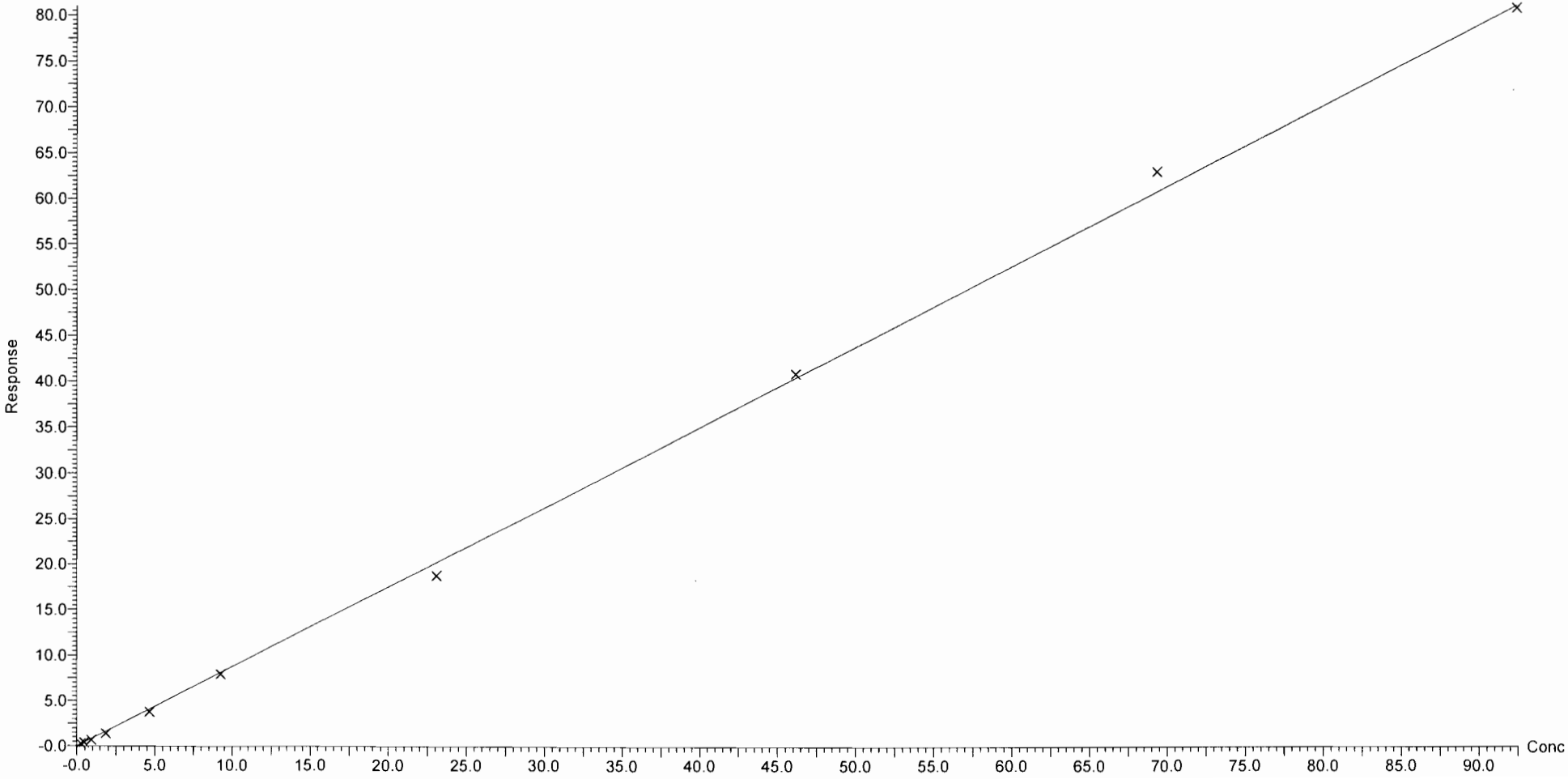
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999217
Calibration curve: 0.865972 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:11:38 Pacific Daylight Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.998587
Calibration curve: 0.875608 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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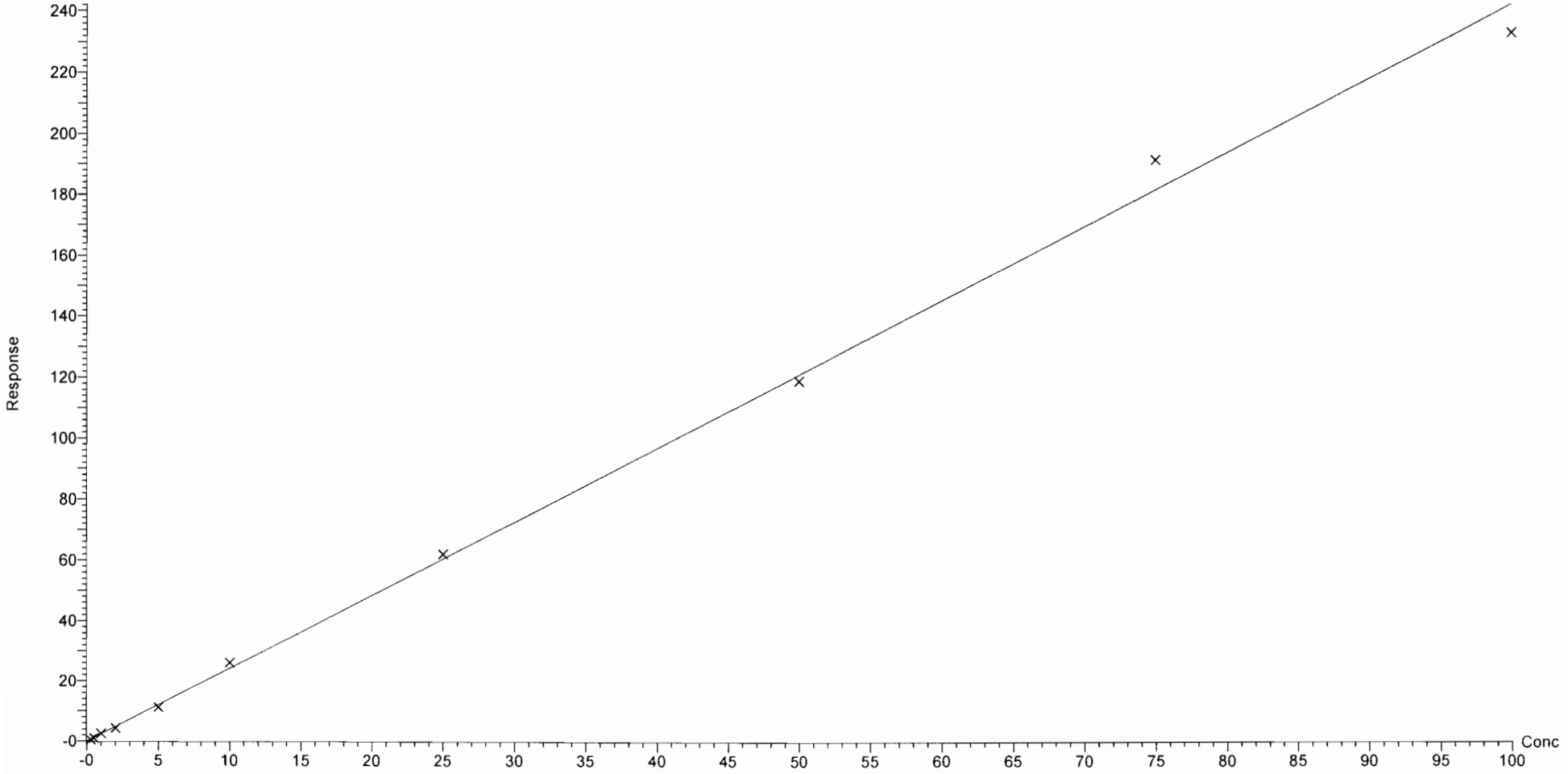
Compound name: 9Cl-PF3ONS
Coefficient of Determination: R^2 = 0.997938
Calibration curve: 2.42042 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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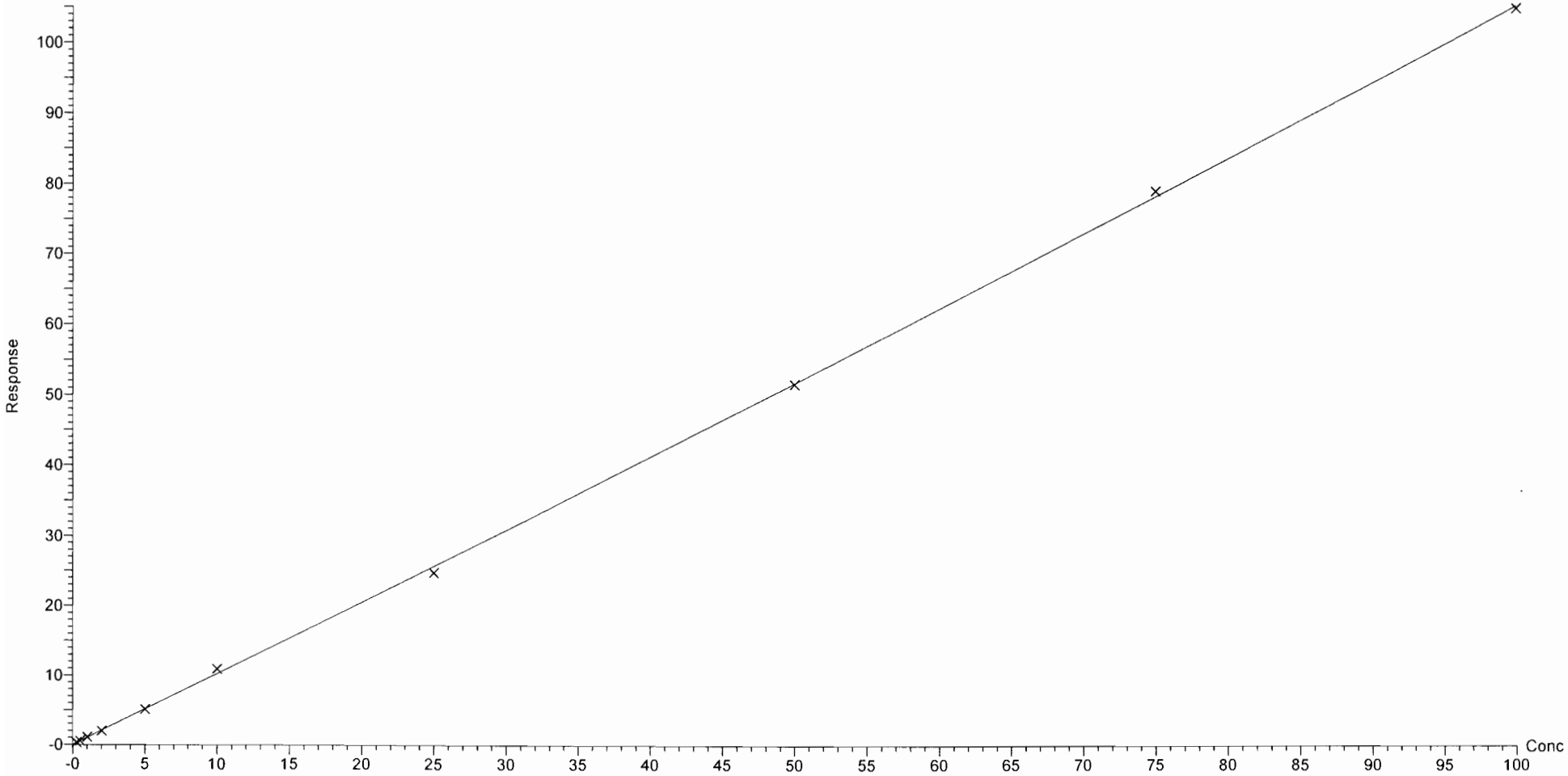
Compound name: PFDA
Coefficient of Determination: R^2 = 0.999626
Calibration curve: 0.000338008 * x^2 + 1.01705 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q1

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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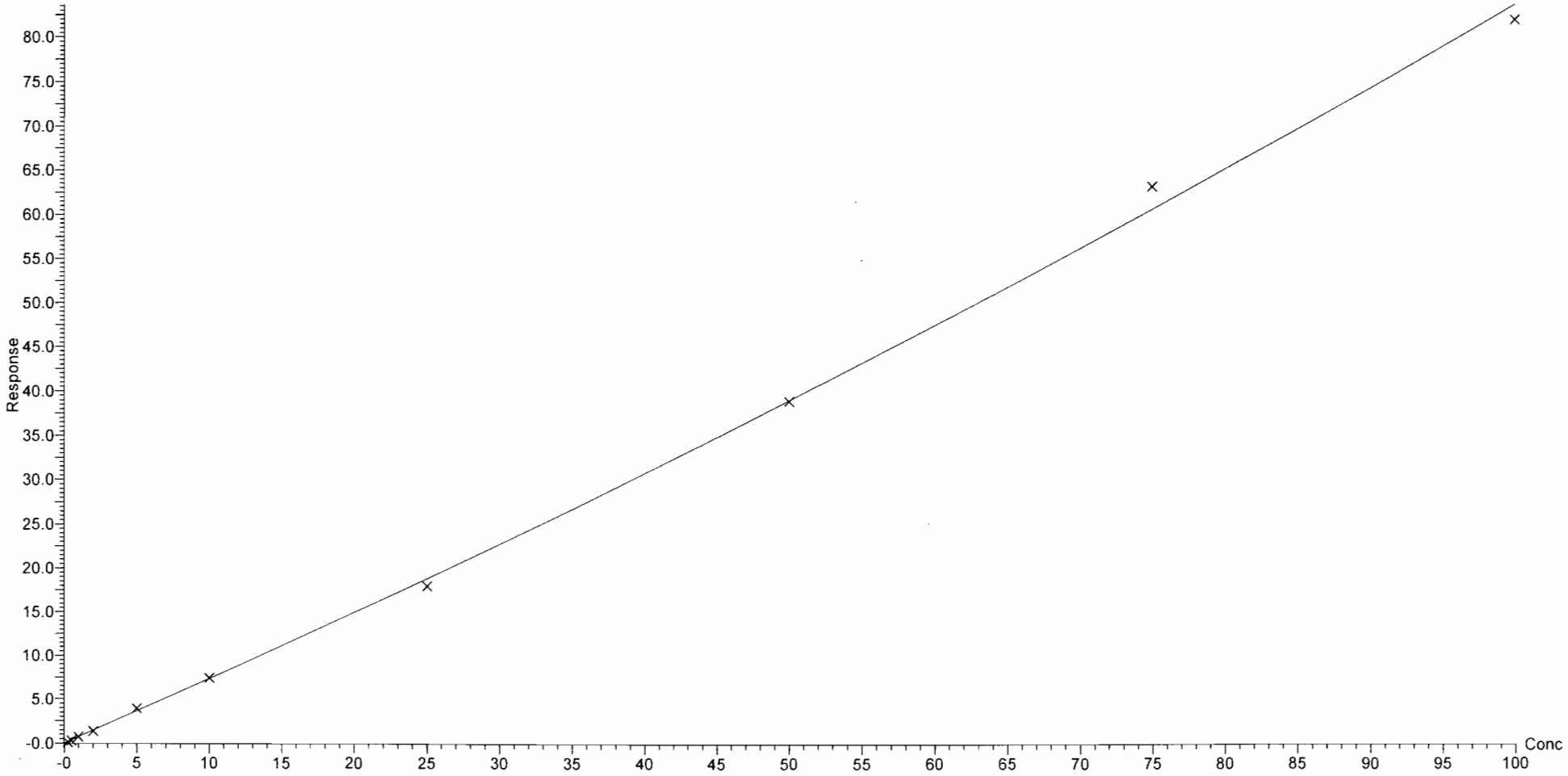
Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.998828
Calibration curve: 0.0011037 * x^2 + 0.725197 * x
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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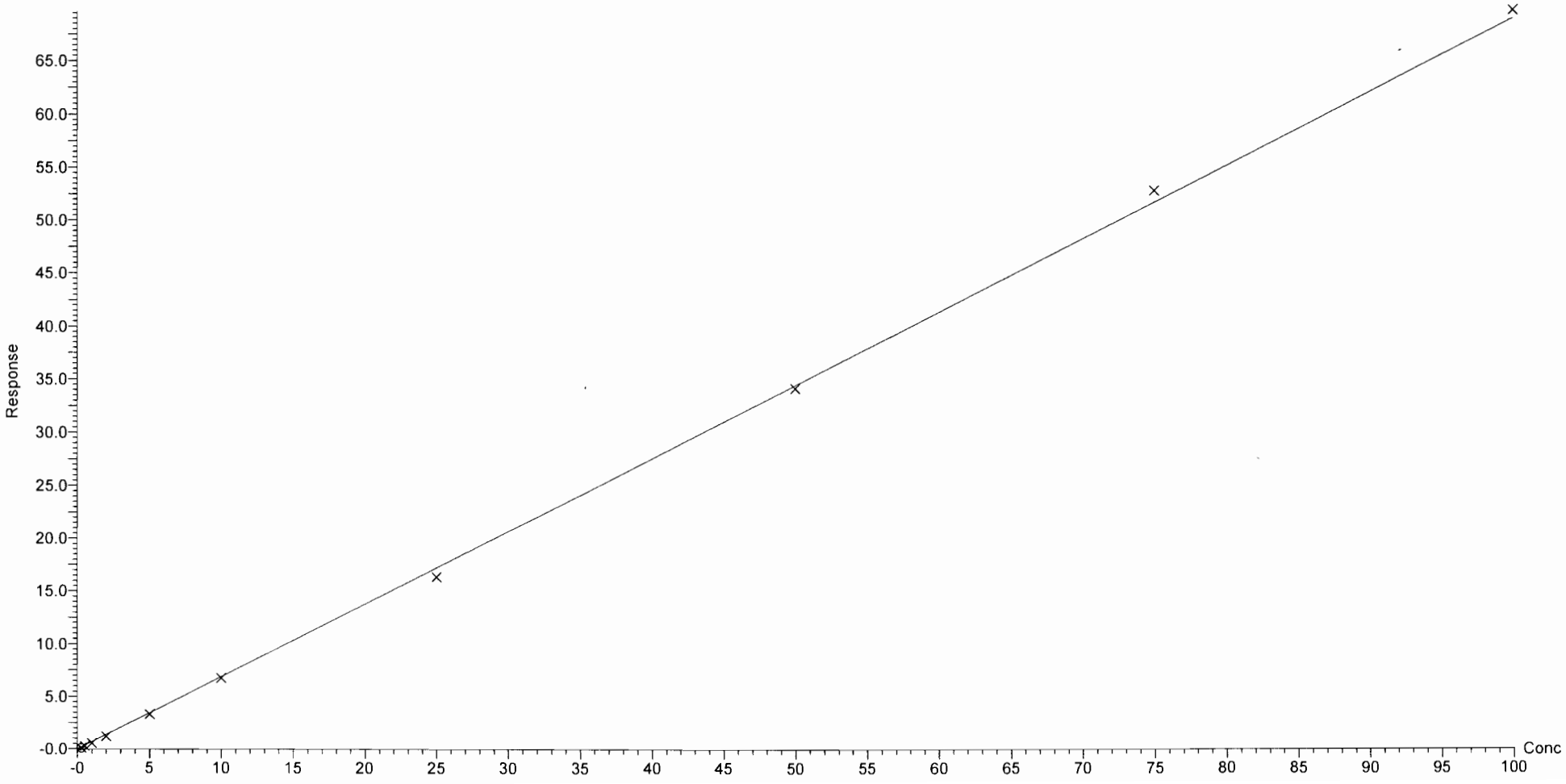
Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999044
Calibration curve: 0.688491 * x
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

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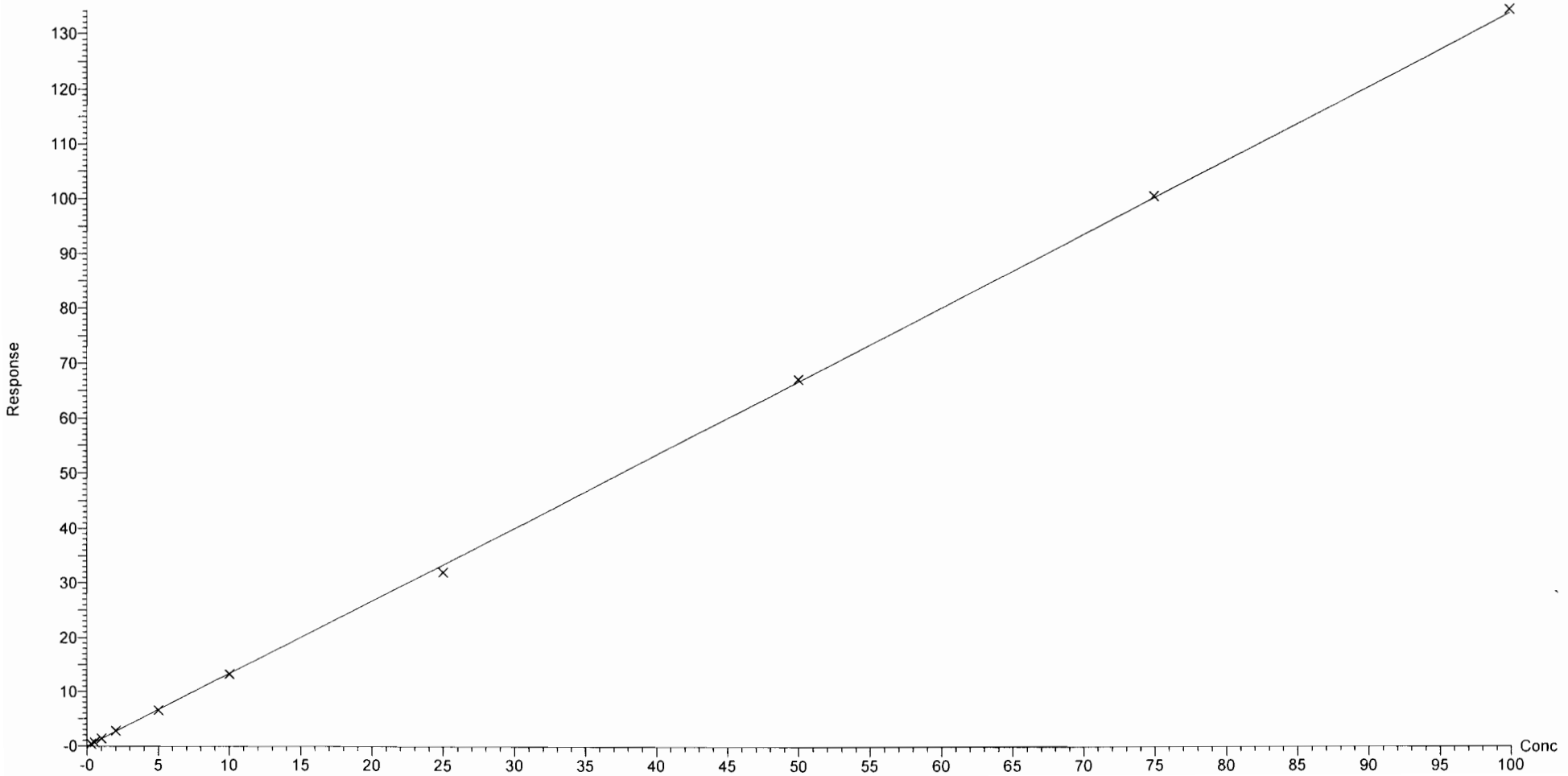
Compound name: PFUnA
Coefficient of Determination: R^2 = 0.999779
Calibration curve: 1.33481 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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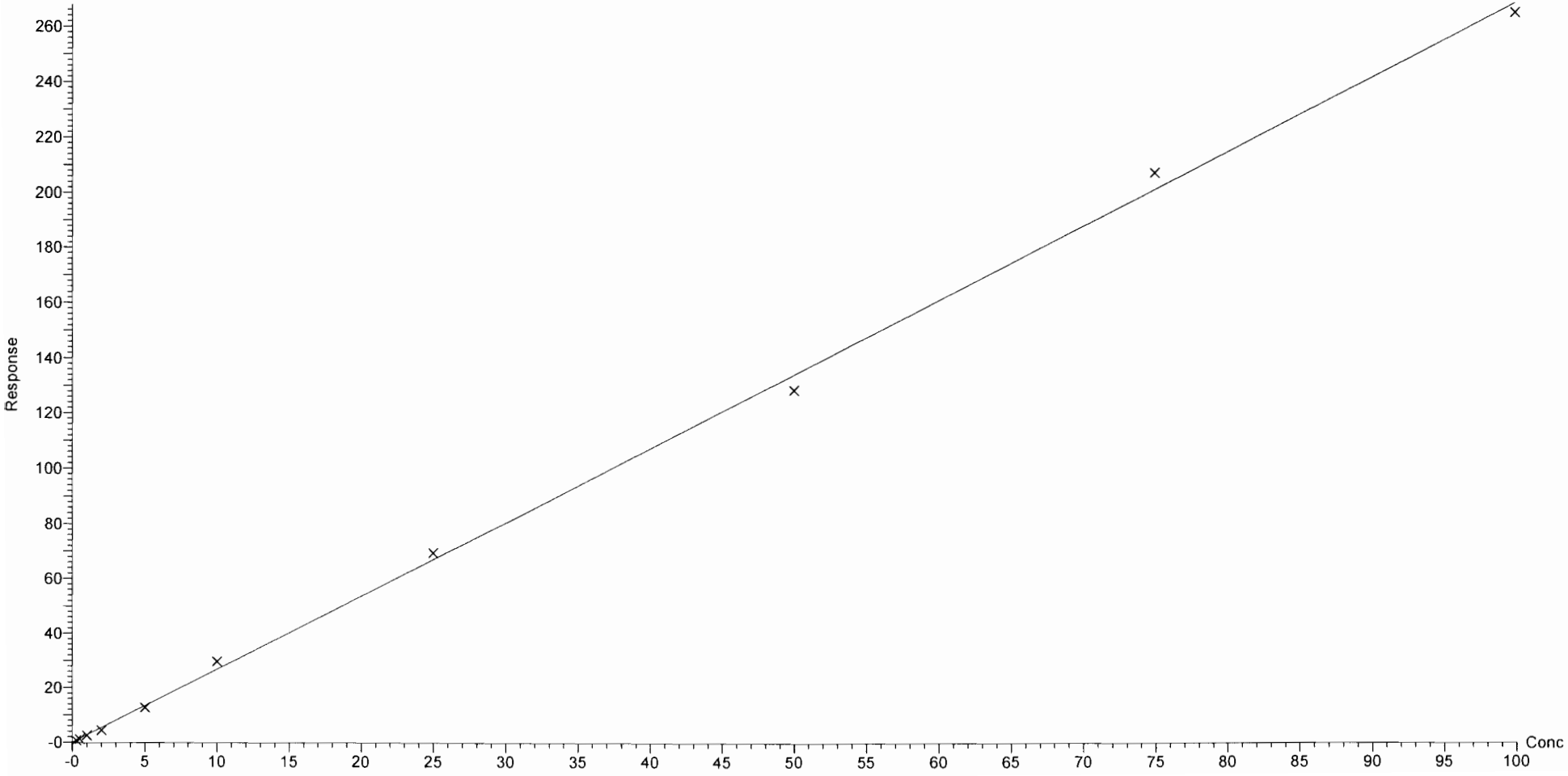
Compound name: 11Cl-PF3OUdS
Coefficient of Determination: R^2 = 0.998329
Calibration curve: 2.67821 * x
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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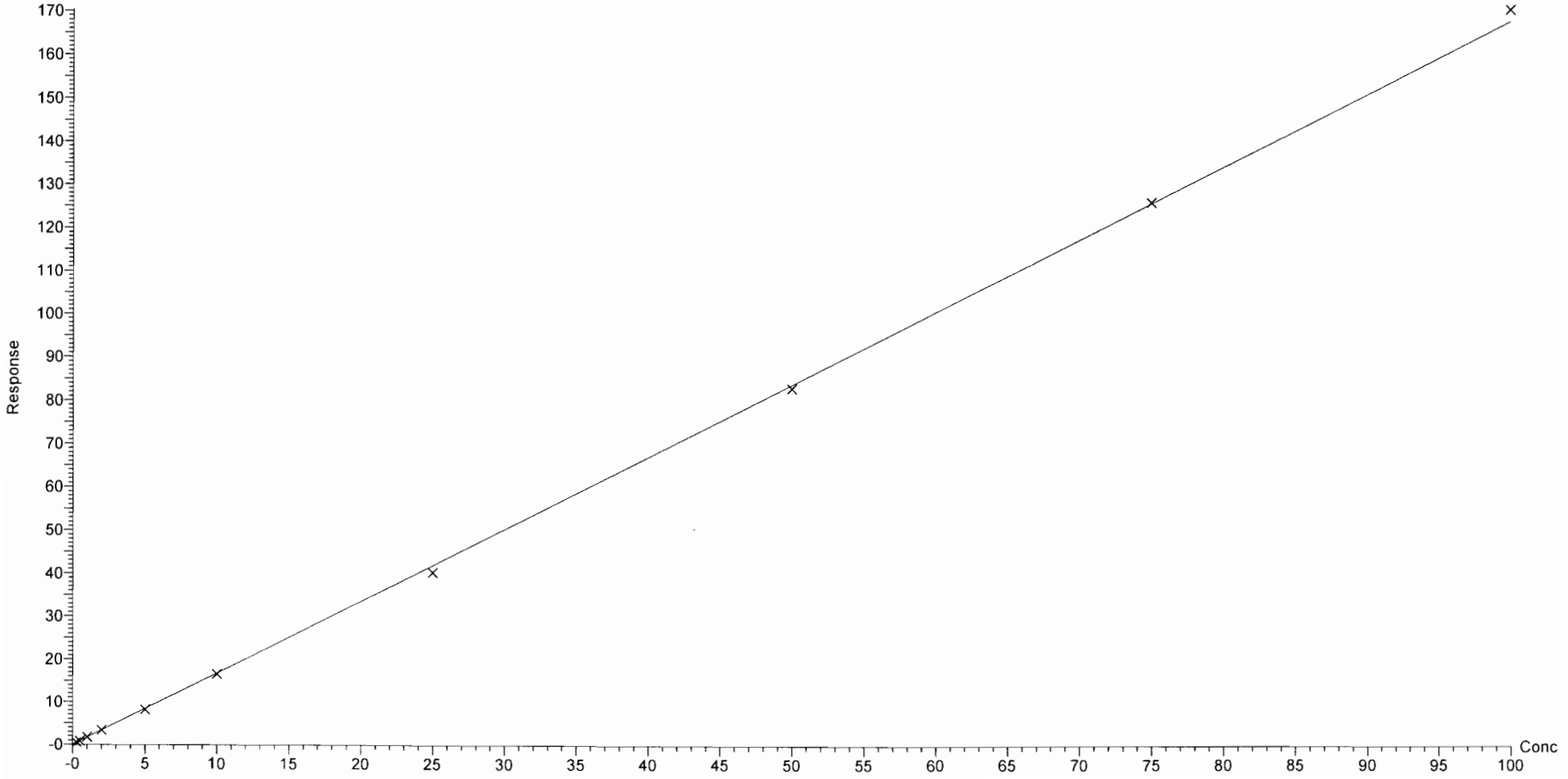
Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999692
Calibration curve: 1.67575 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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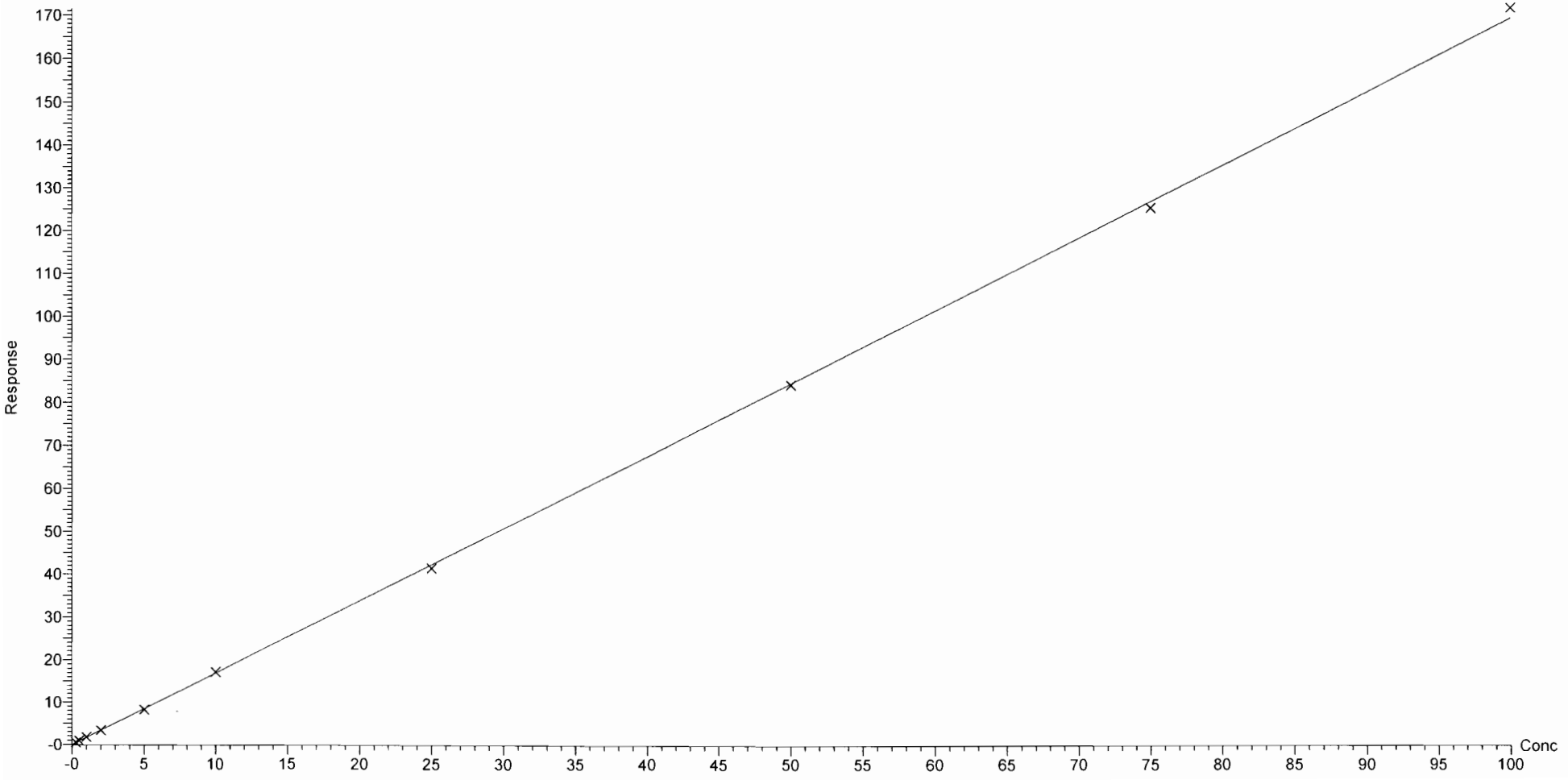
Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999787
Calibration curve: 1.69111 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q1

Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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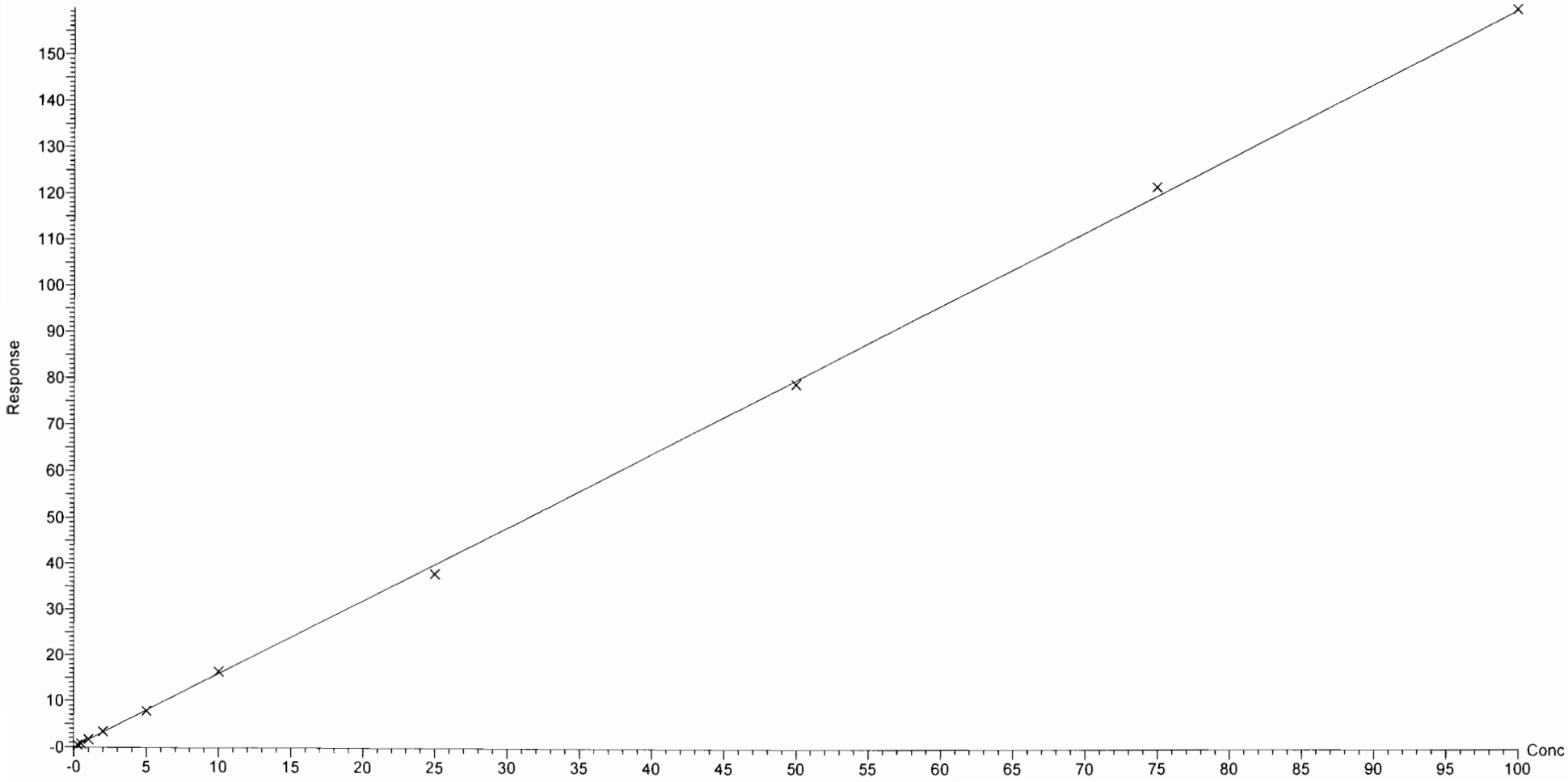
Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999568
Calibration curve: 1.59498 * x
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-CRV.qld

Last Altered: Thursday, March 28, 2019 15:24:26 Pacific Daylight Time
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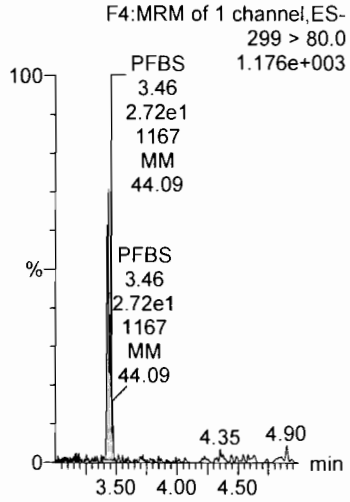
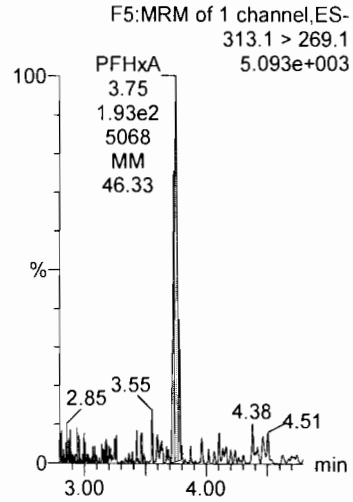
Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_2, Date: 28-Mar-2019, Time: 10:55:07, ID: ST190328P1-1 537 CS-4 19C2502, Description: 537 CS-4 19C2502

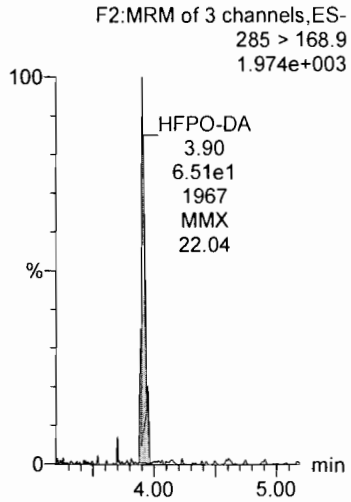
PFBS



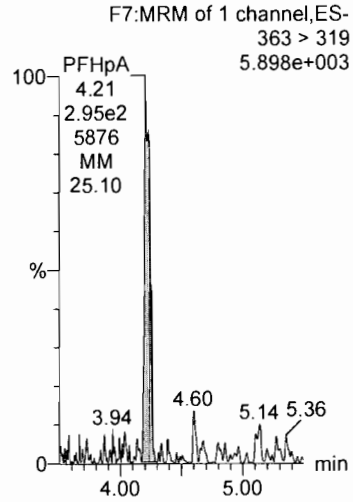
PFHxA



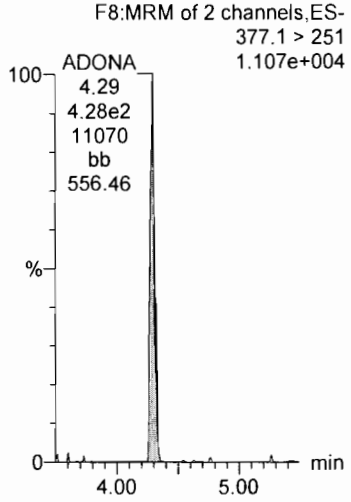
HFPO-DA



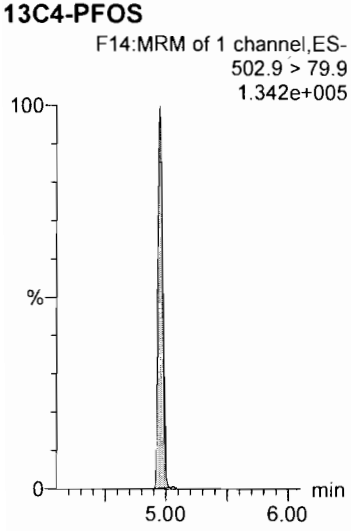
PFHpA



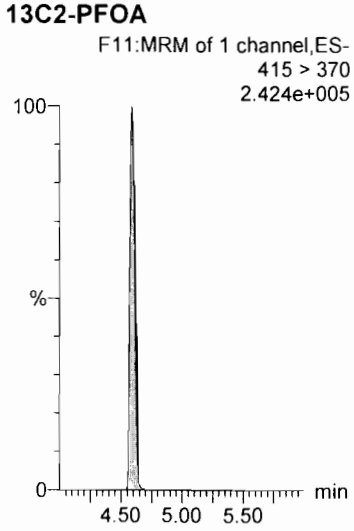
ADONA



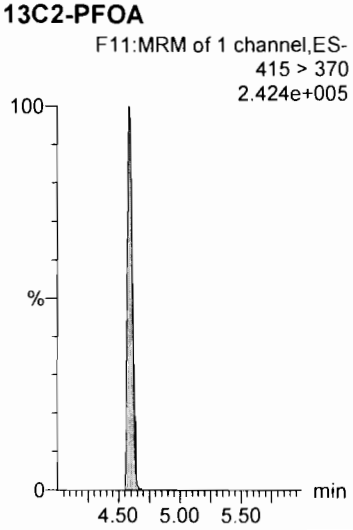
13C4-PFOS



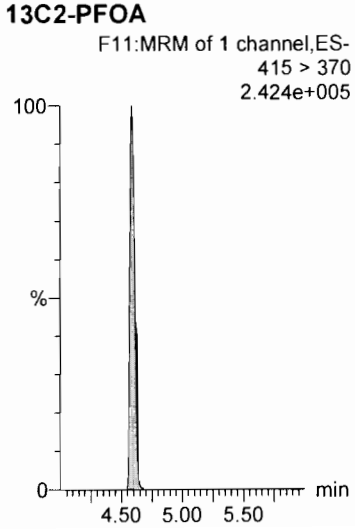
13C2-PFOA



13C2-PFOA



13C2-PFOA



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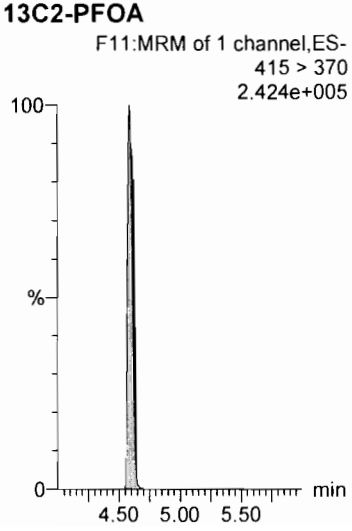

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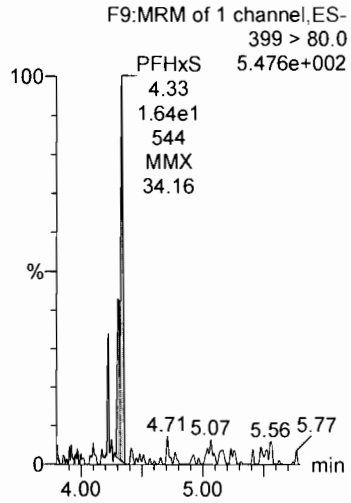
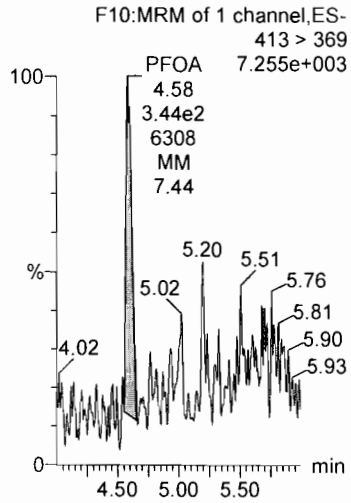
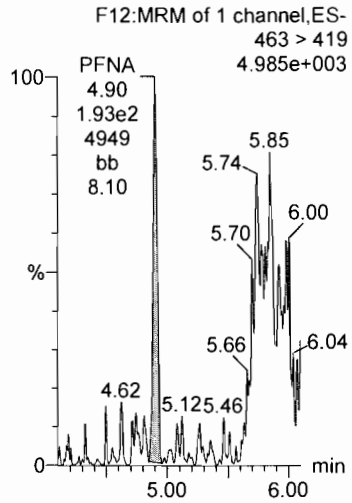
PFHxS



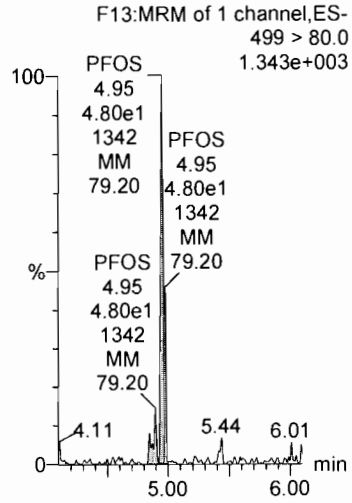
PFOA



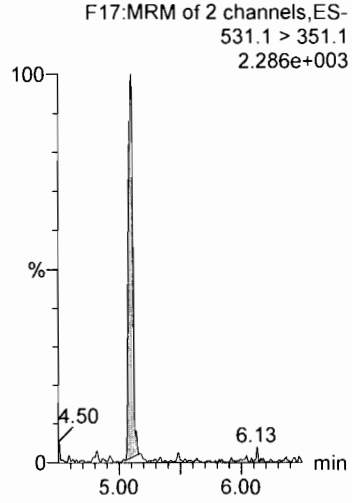
PFNA



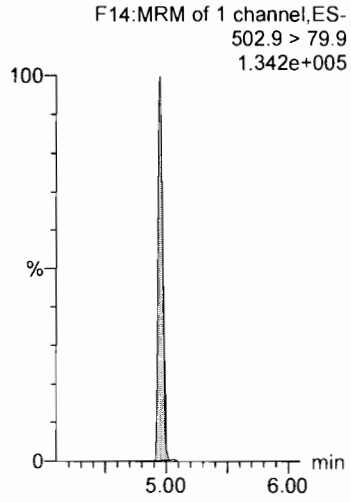
PFOS



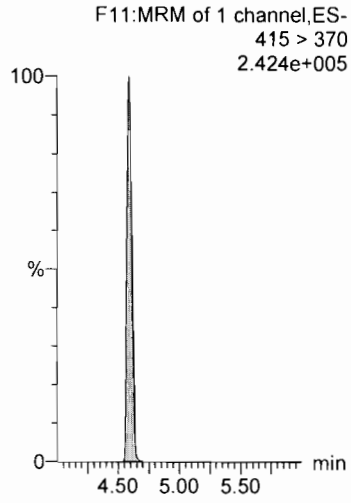
9Cl-PF3ONS



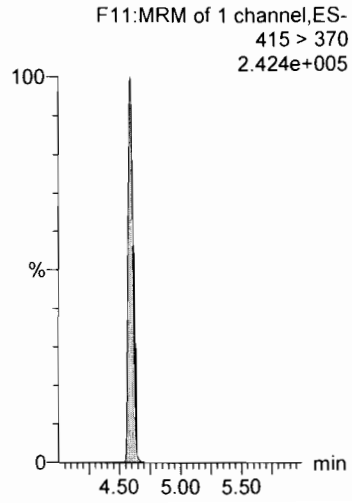
13C4-PFOS



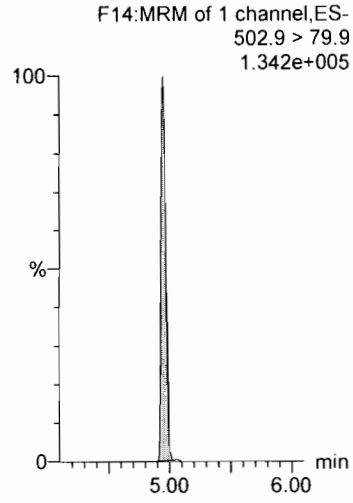
13C2-PFOA



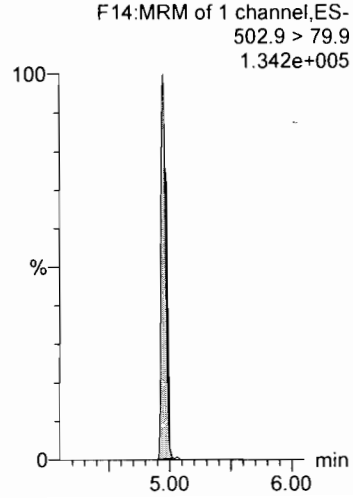
13C2-PFOA



13C4-PFOS



13C4-PFOS



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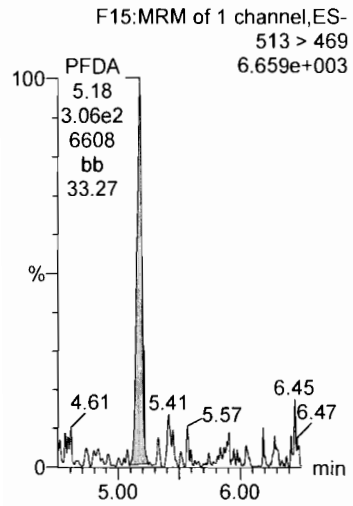
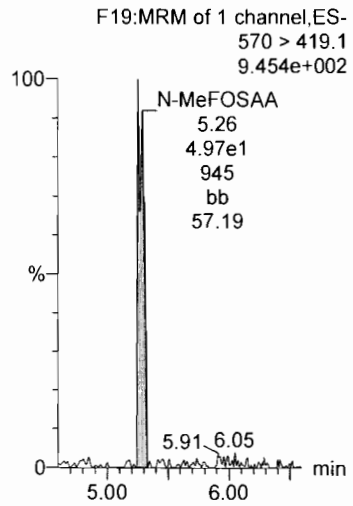
Name: 190328P1_2, Date: 28-Mar-2019, Time: 10:55:07, ID: ST190328P1-1 537 CS-4 19C2502, Description: 537 CS-4 19C2502

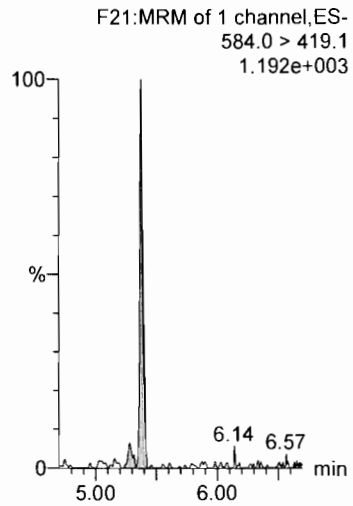
PFDA



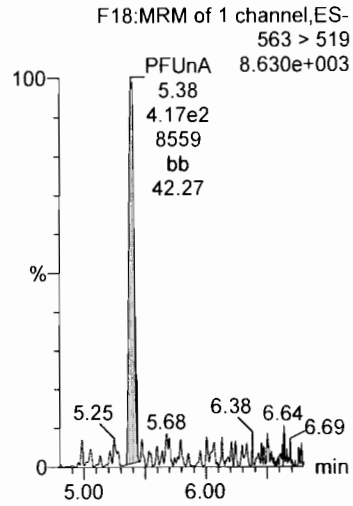
N-MeFOSAA



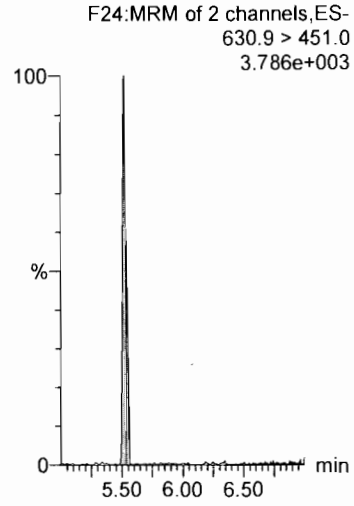
N-EtFOSAA



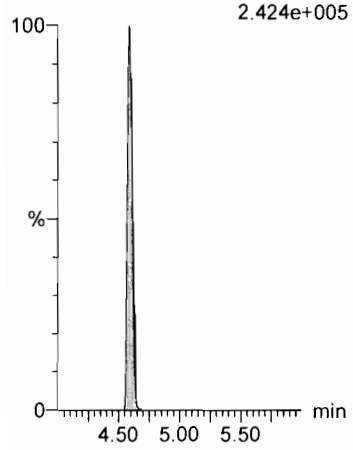
PFUnA



11Cl-PF3OUdS



13C2-PFOA



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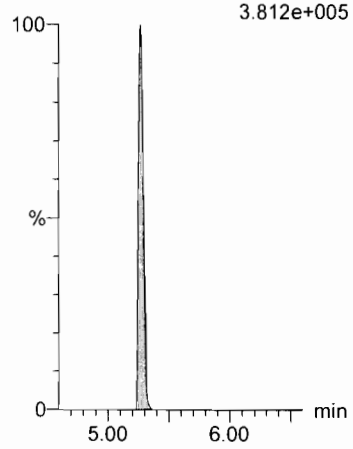

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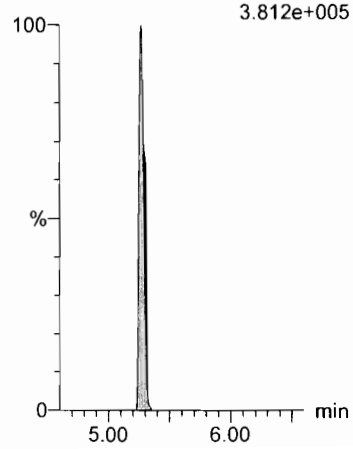

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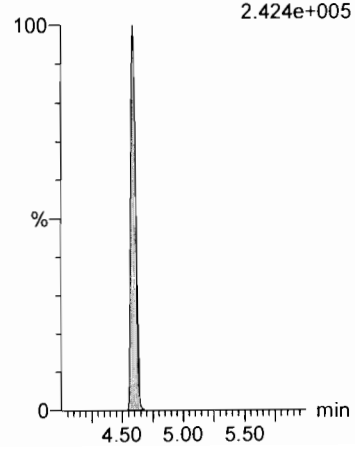

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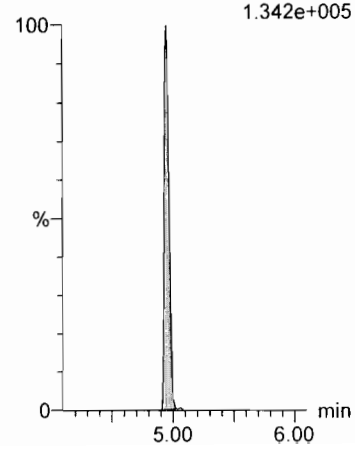

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Printed: Thursday, March 28, 2019 18:08:33 Pacific Daylight Time

Name: 190328P1_2, Date: 28-Mar-2019, Time: 10:55:07, ID: ST190328P1-1 537 CS-4 19C2502, Description: 537 CS-4 19C2502

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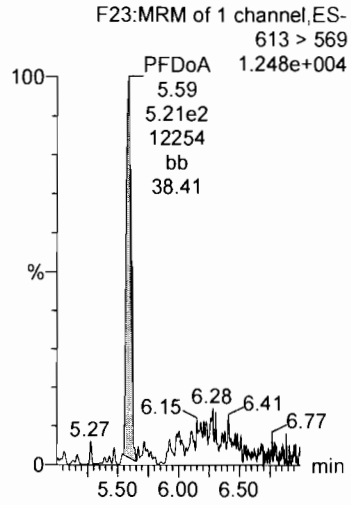

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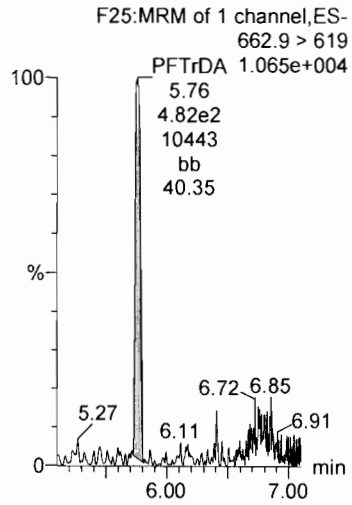

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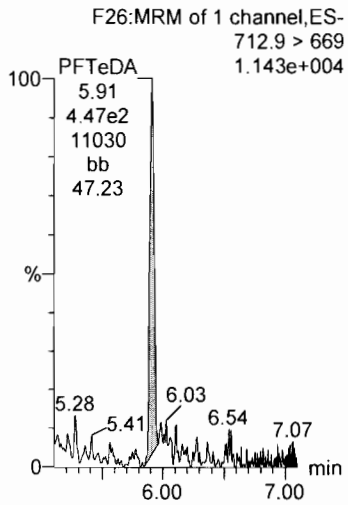

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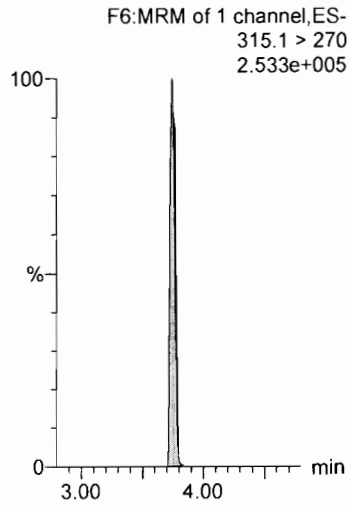

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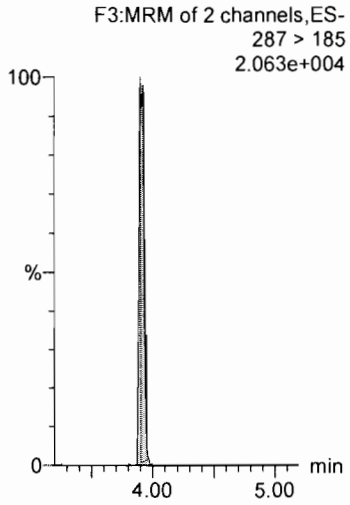

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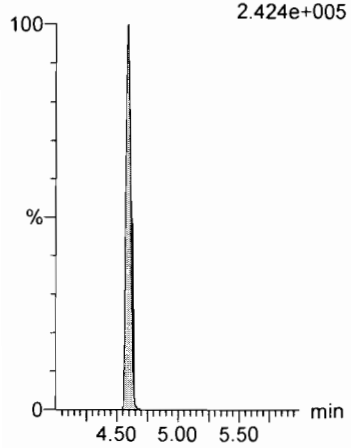

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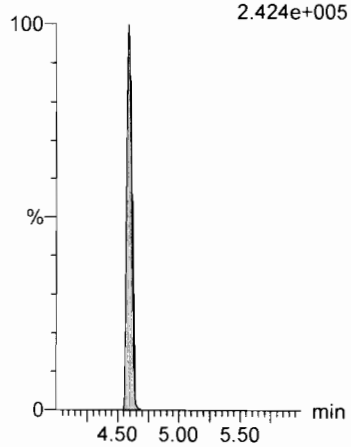

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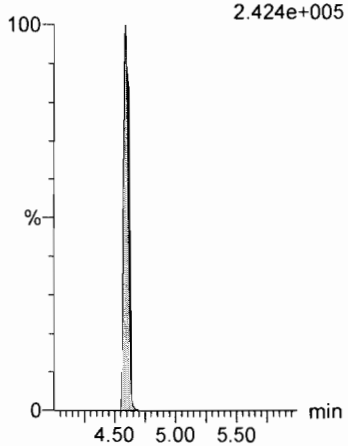

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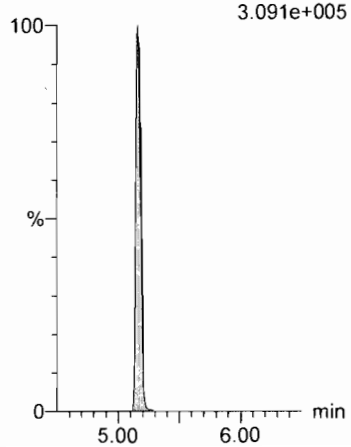
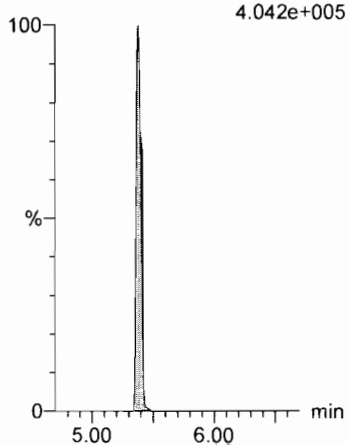


d5-N-EtFOSAA



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Name: 190328P1_3, Date: 28-Mar-2019, Time: 11:05:41, ID: ST190328P1-2 537 CS-3 19C2503, Description: 537 CS-3 19C2503

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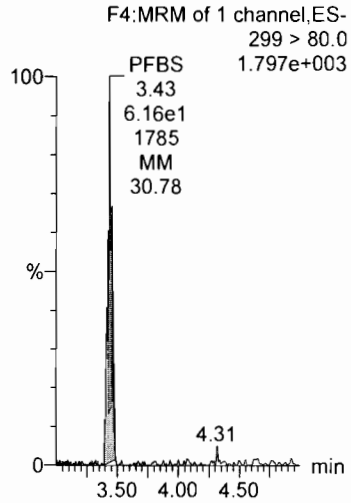

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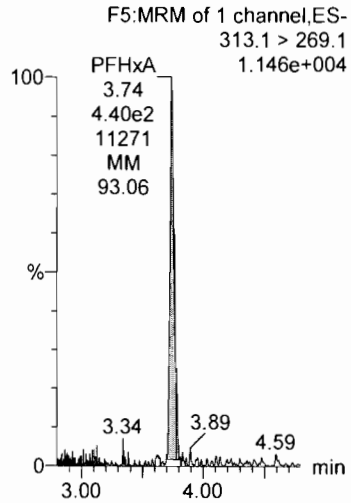

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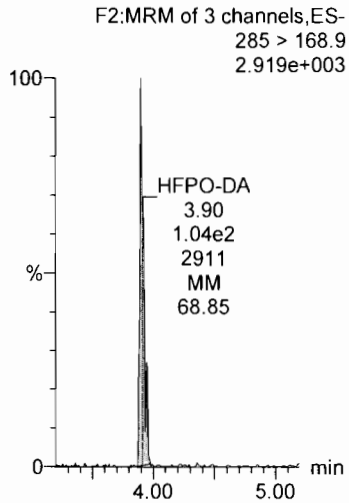

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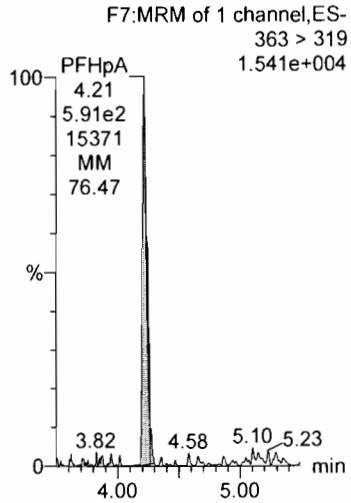

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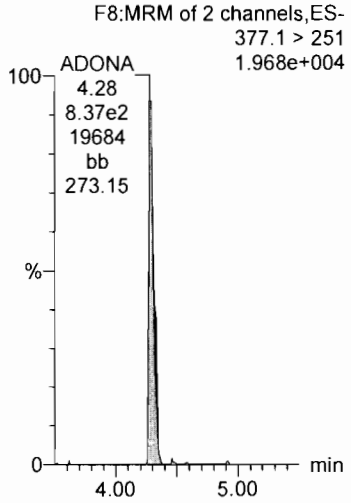

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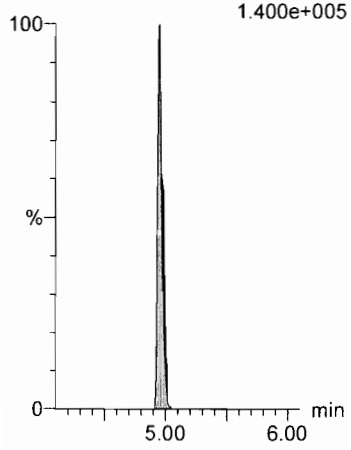

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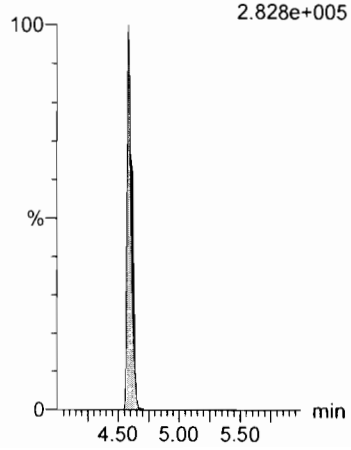

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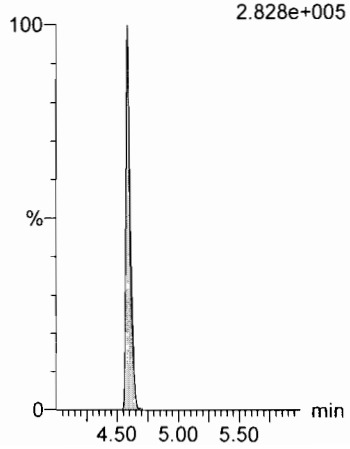

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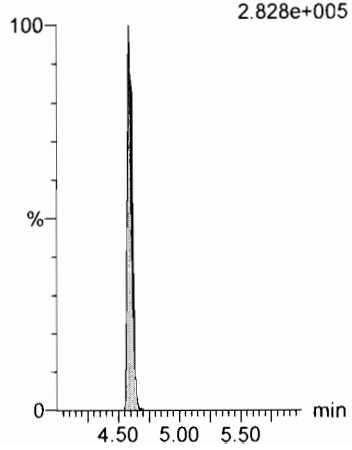

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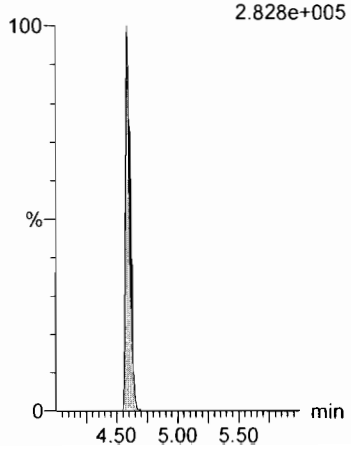

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Name: 190328P1_3, Date: 28-Mar-2019, Time: 11:05:41, ID: ST190328P1-2 537 CS-3 19C2503, Description: 537 CS-3 19C2503

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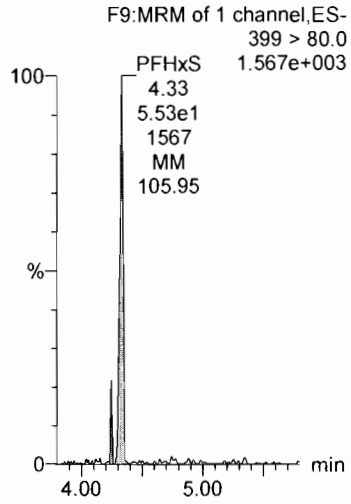

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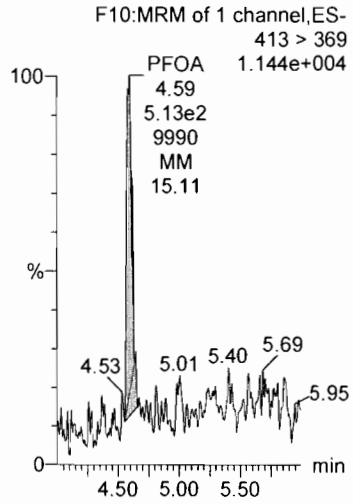

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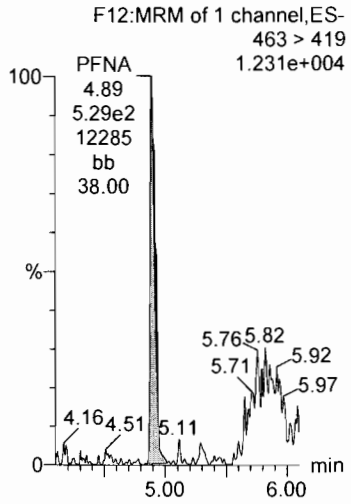

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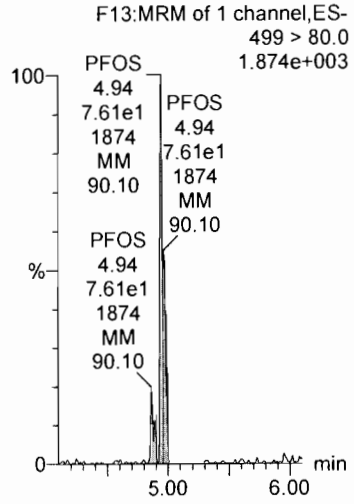
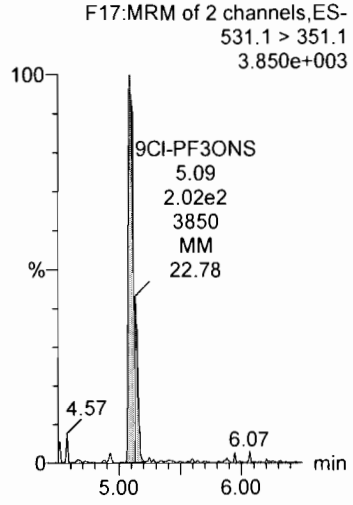


9Cl-PF3ONS



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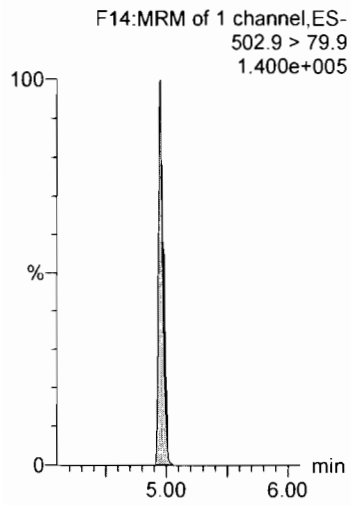

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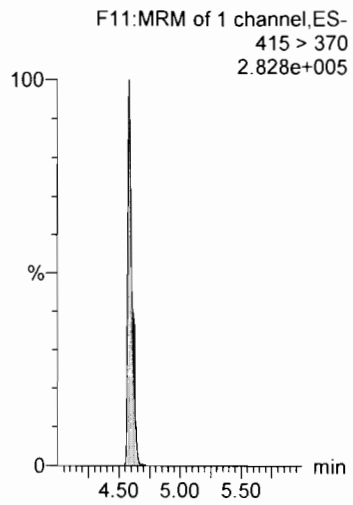

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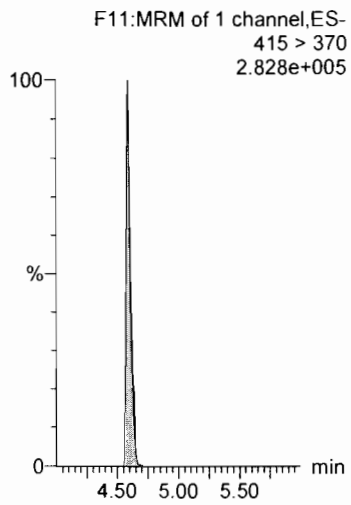

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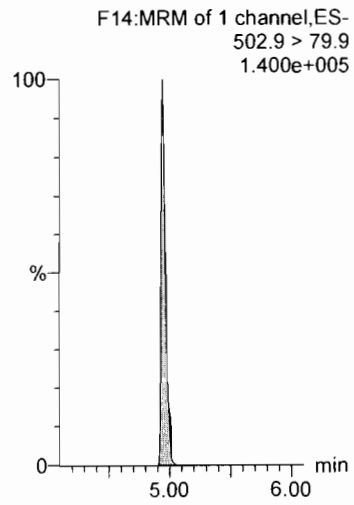

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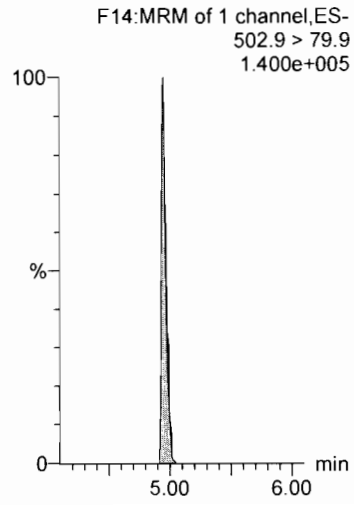

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Name: 190328P1_3, Date: 28-Mar-2019, Time: 11:05:41, ID: ST190328P1-2 537 CS-3 19C2503, Description: 537 CS-3 19C2503

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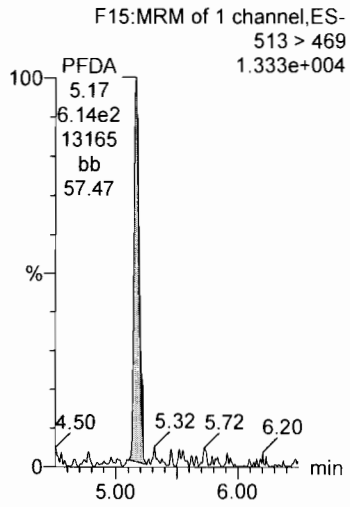

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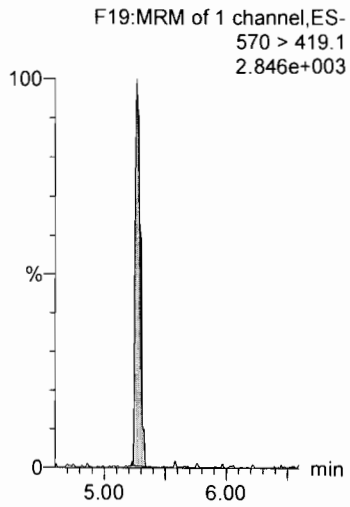

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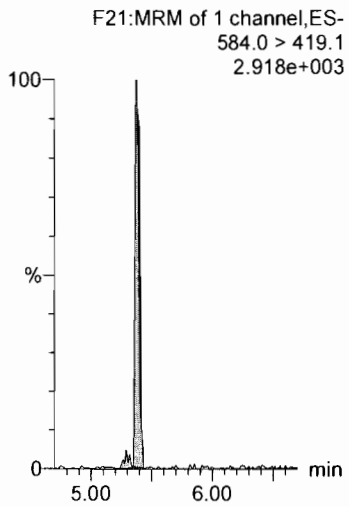

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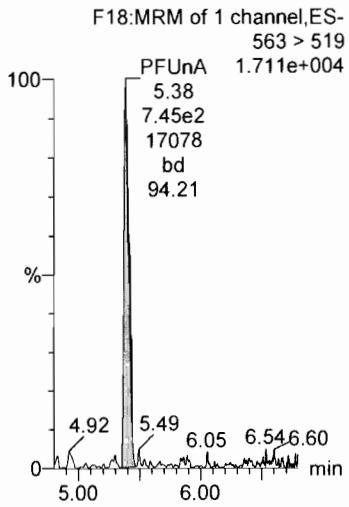

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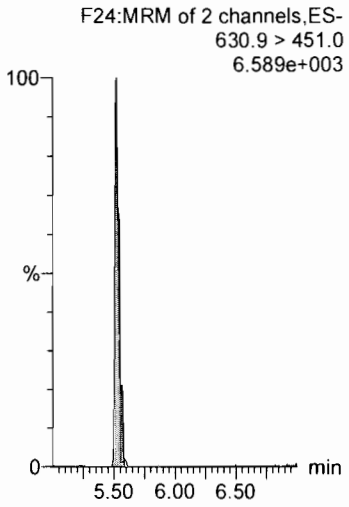

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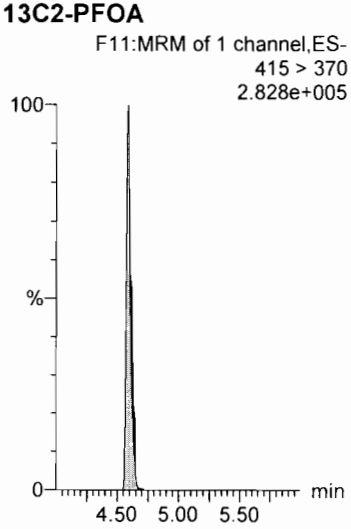

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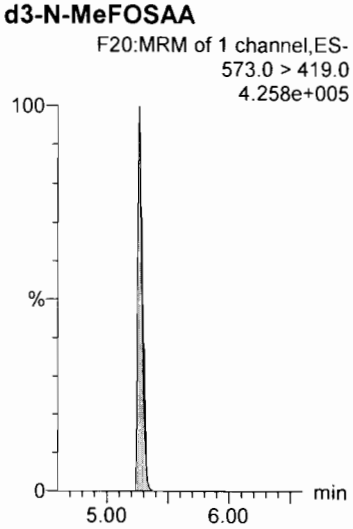

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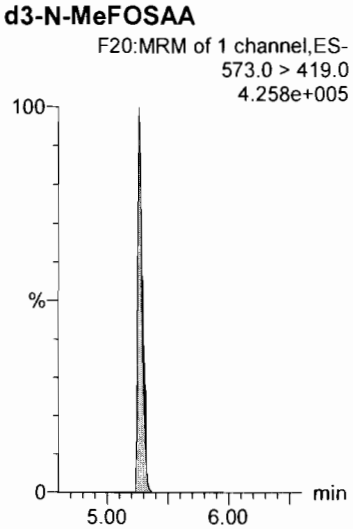

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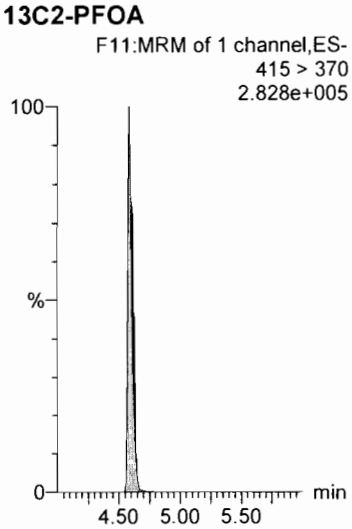

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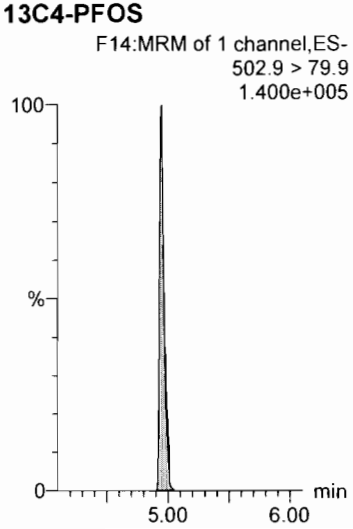

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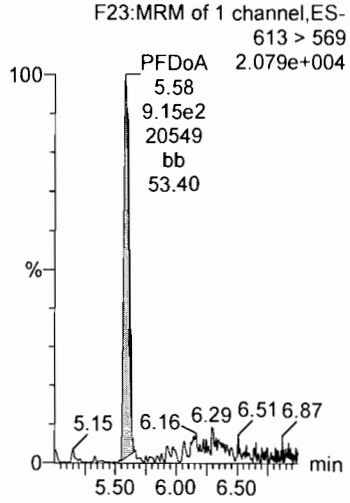
Name: 190328P1_3, Date: 28-Mar-2019, Time: 11:05:41, ID: ST190328P1-2 537 CS-3 19C2503, Description: 537 CS-3 19C2503

PFDoA



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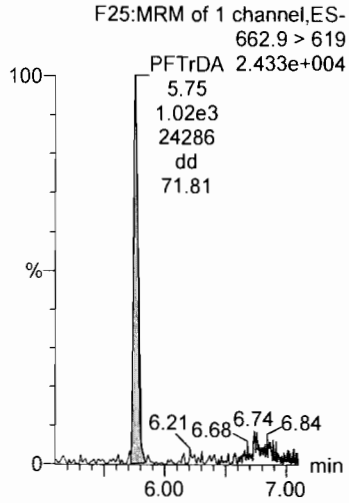

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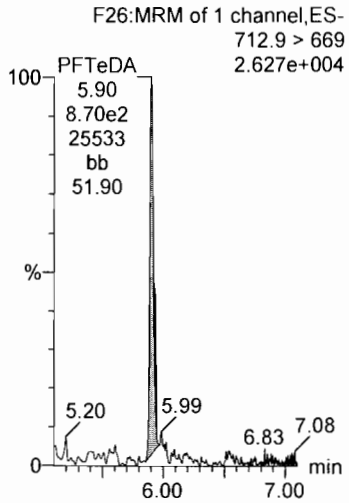

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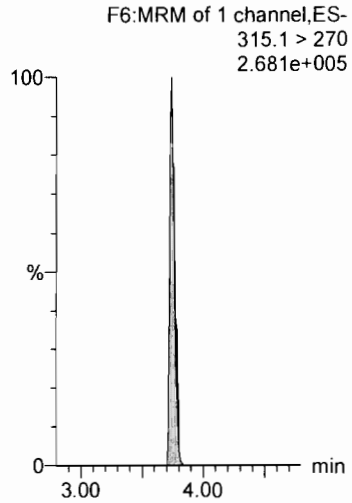

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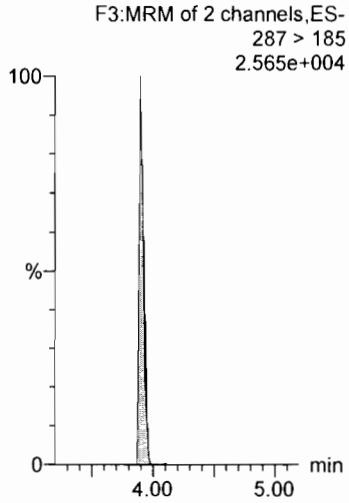

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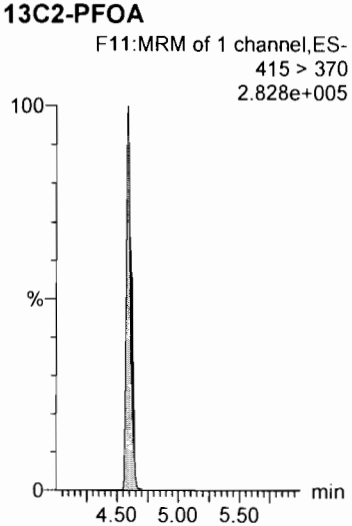

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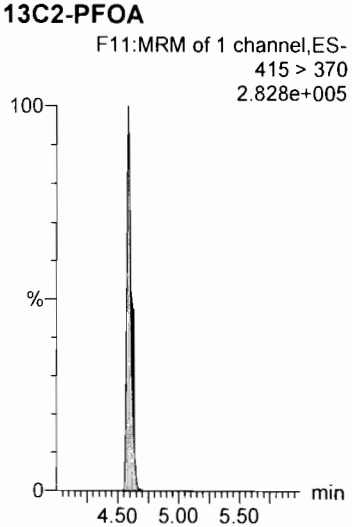

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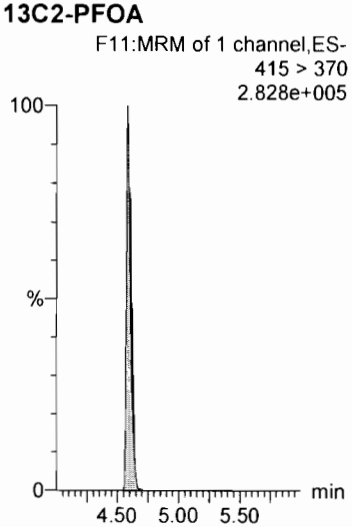

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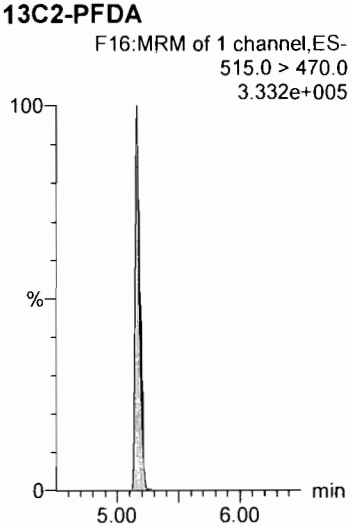

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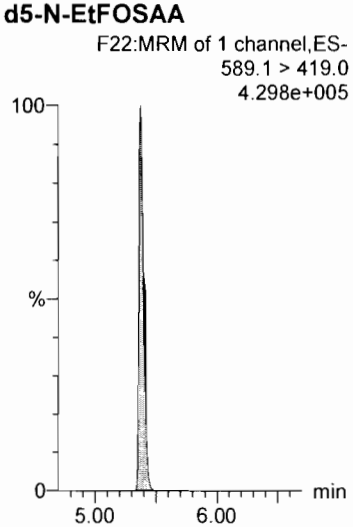

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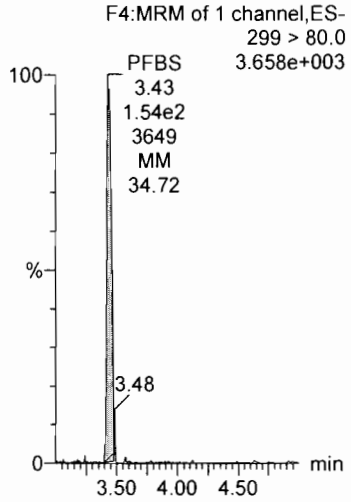

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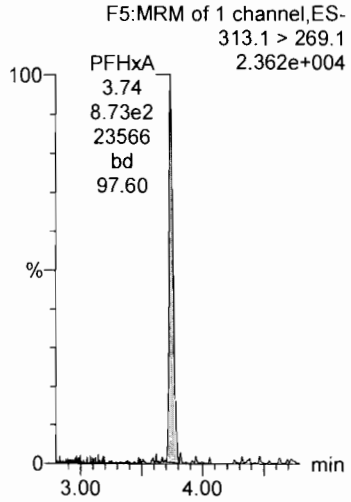

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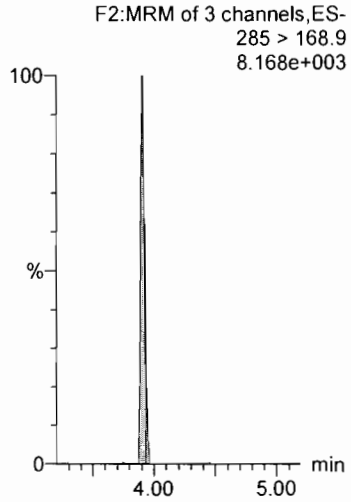

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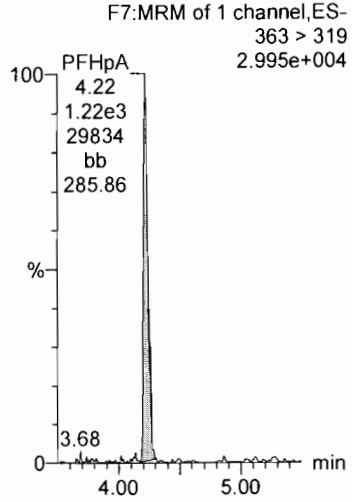

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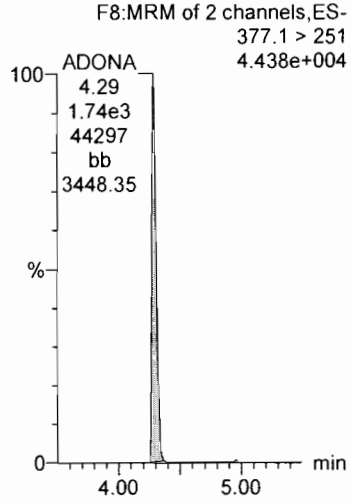

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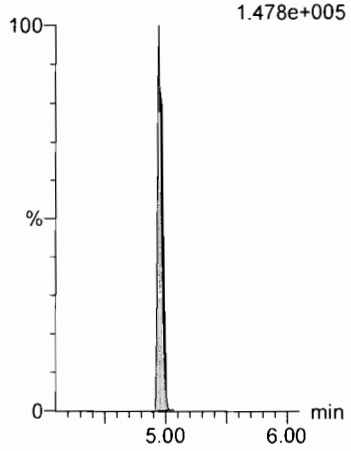

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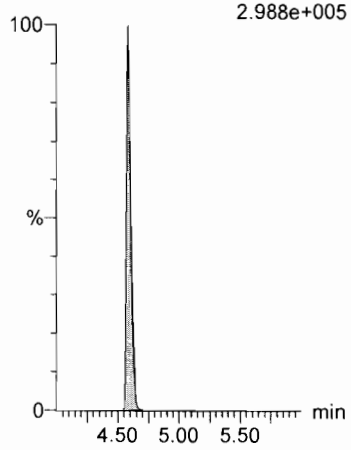

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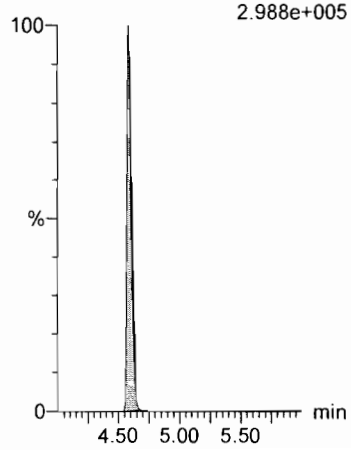

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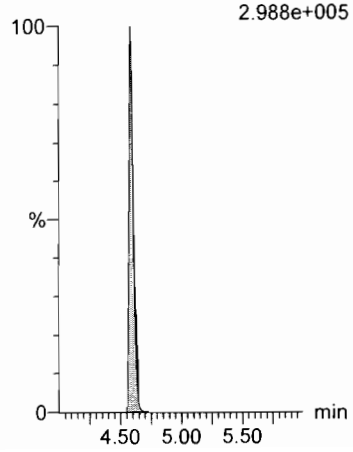

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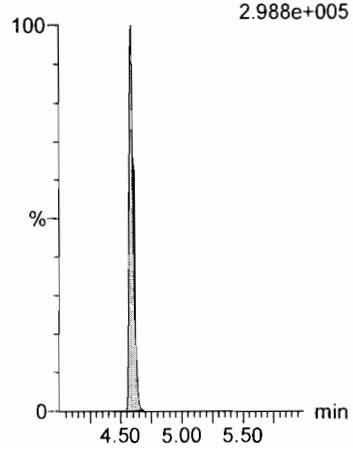

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Printed: Thursday, March 28, 2019 18:08:33 Pacific Daylight Time

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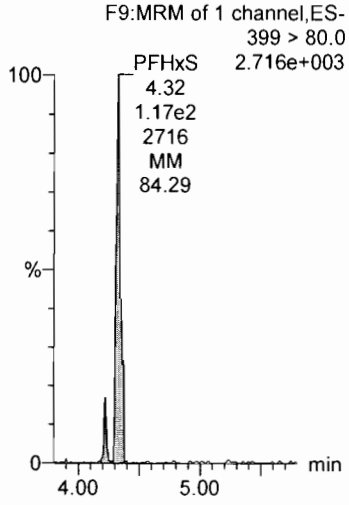

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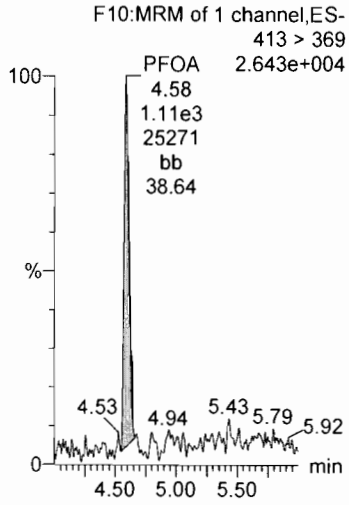

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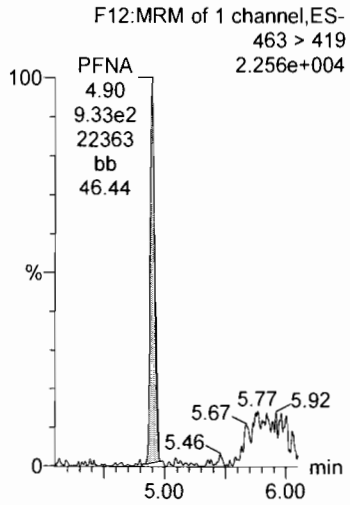

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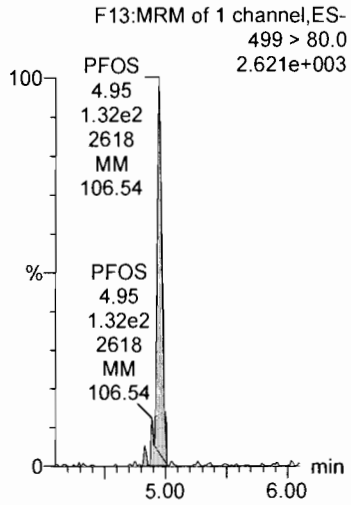

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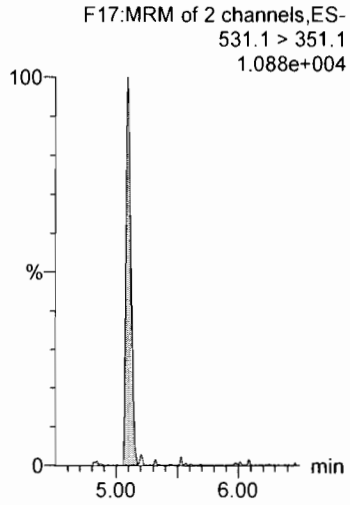

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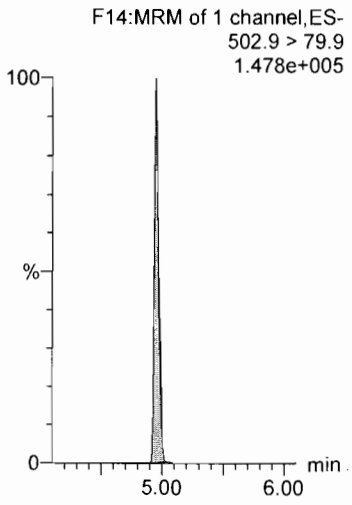

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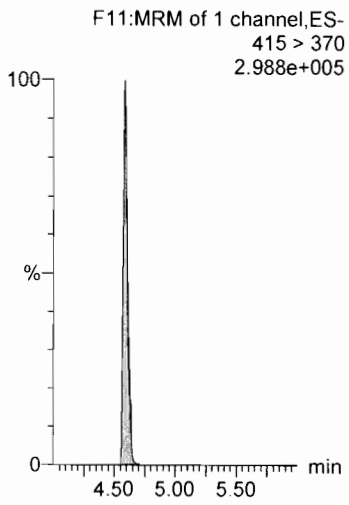

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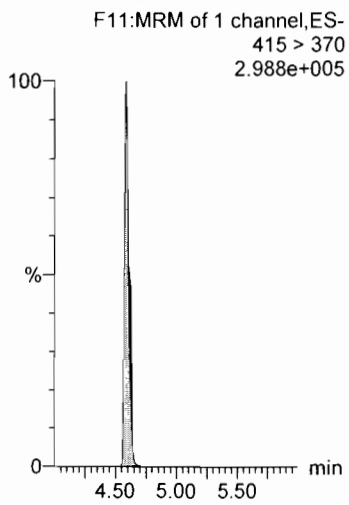

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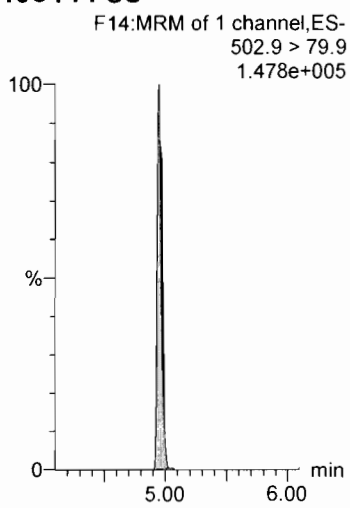

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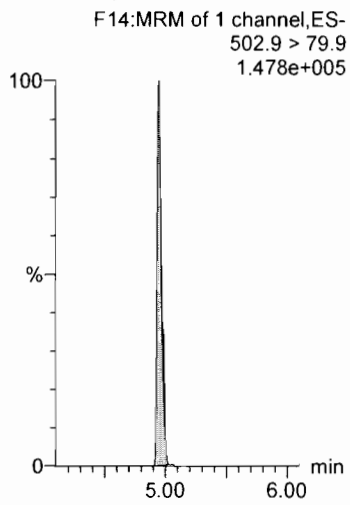

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Name: 190328P1_4, Date: 28-Mar-2019, Time: 11:16:17, ID: ST190328P1-3 537 CS-2 19C2504, Description: 537 CS-2 19C2504

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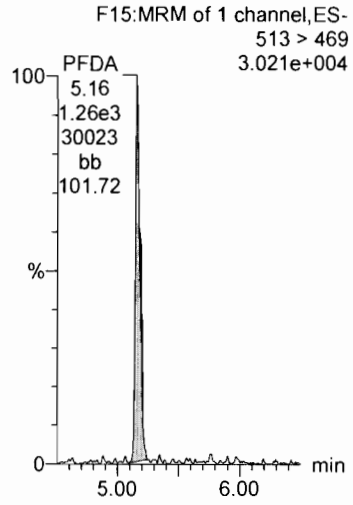

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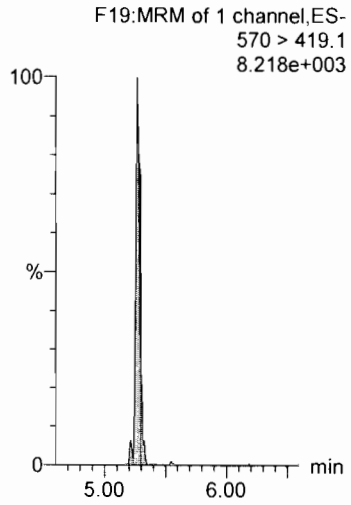

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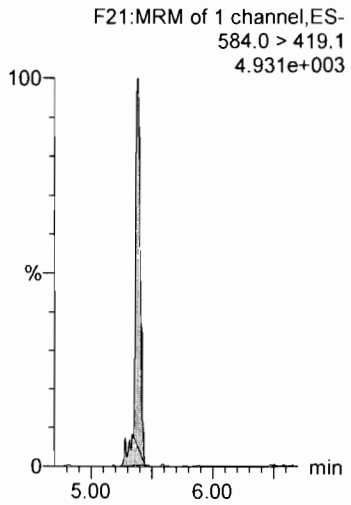

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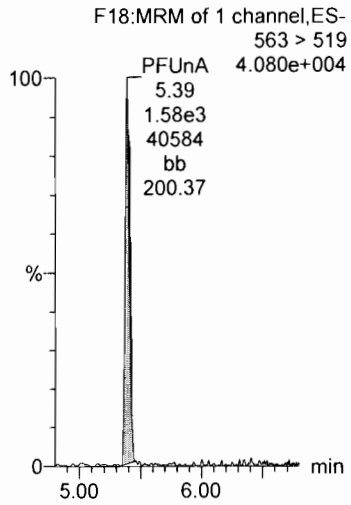

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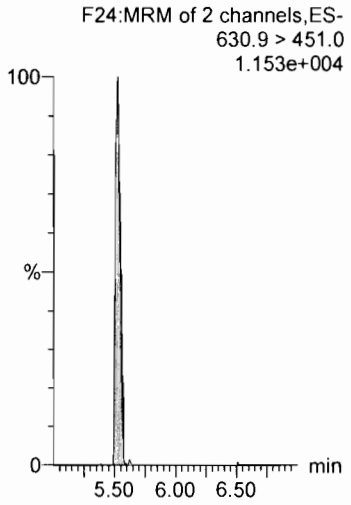

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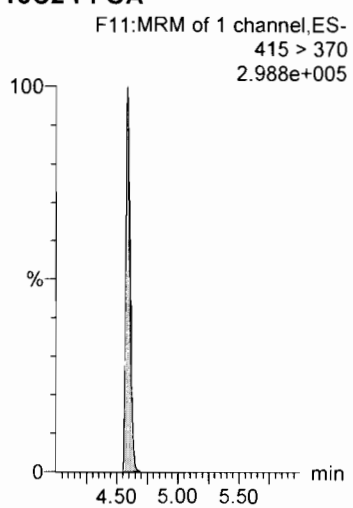

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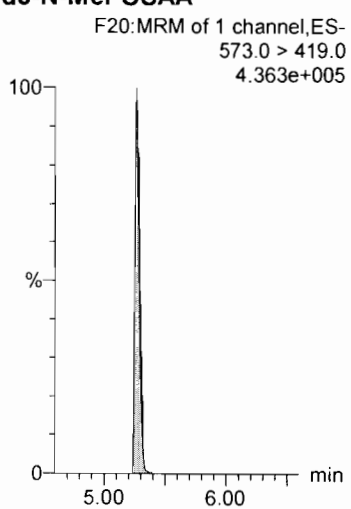

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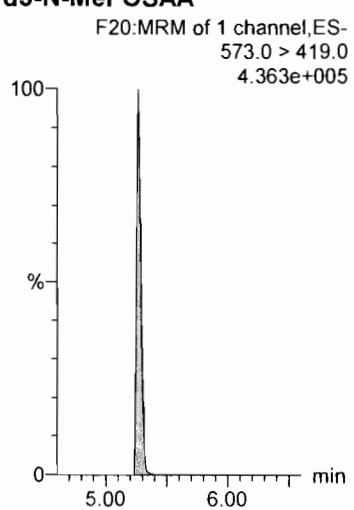

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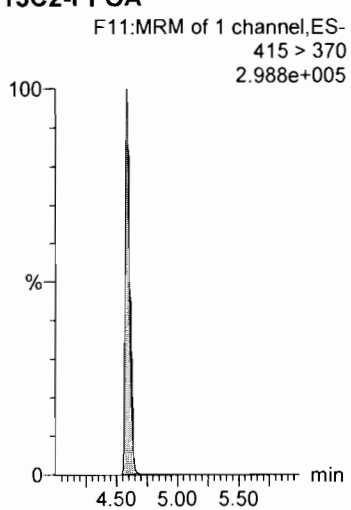

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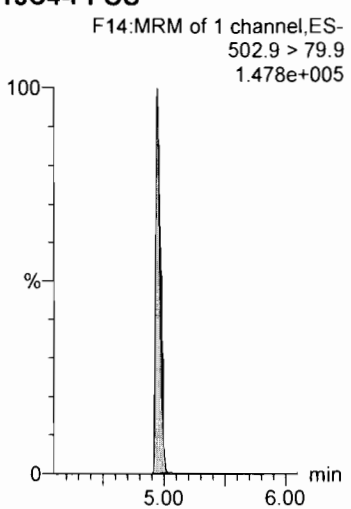

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Name: 190328P1_4, Date: 28-Mar-2019, Time: 11:16:17, ID: ST190328P1-3 537 CS-2 19C2504, Description: 537 CS-2 19C2504

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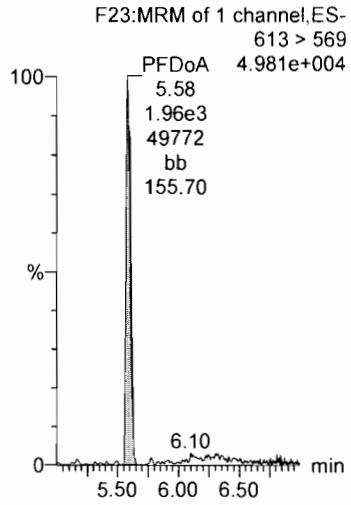

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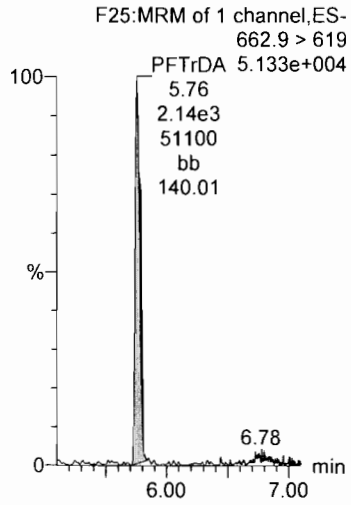

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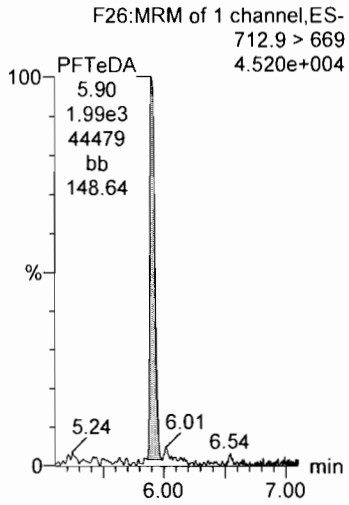

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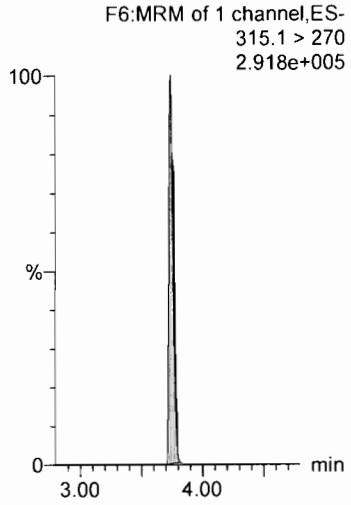

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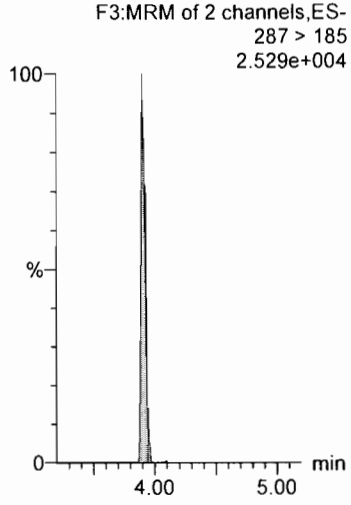

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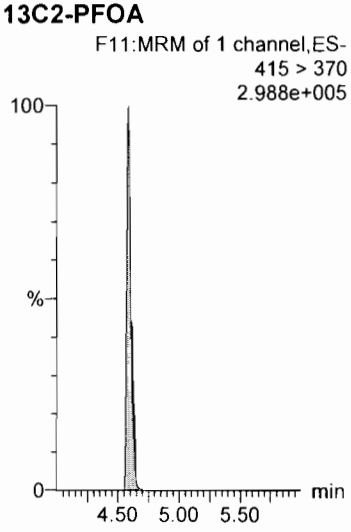

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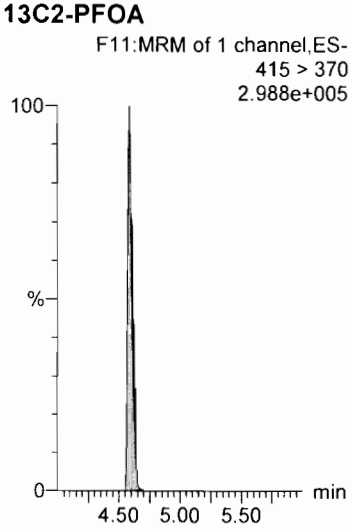

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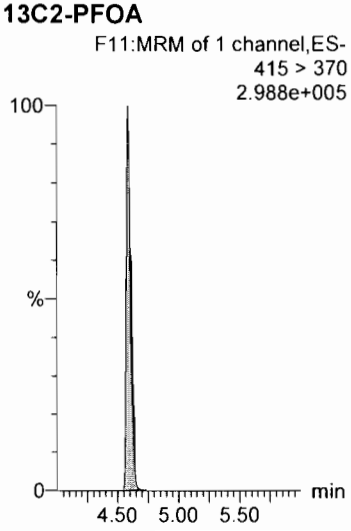

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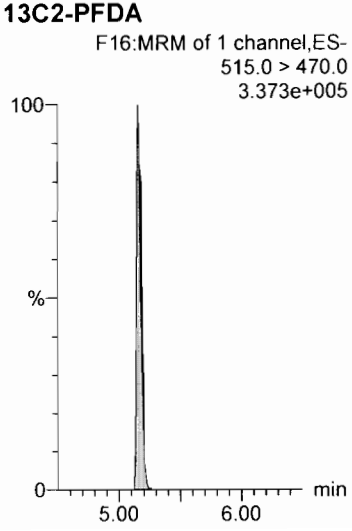

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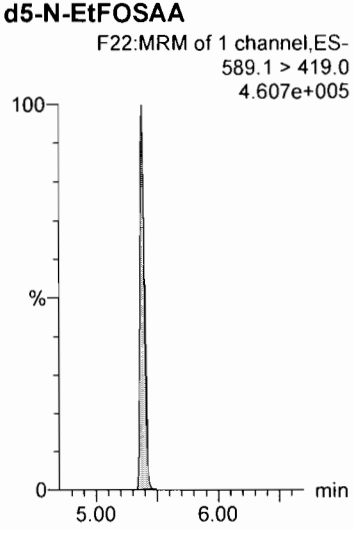

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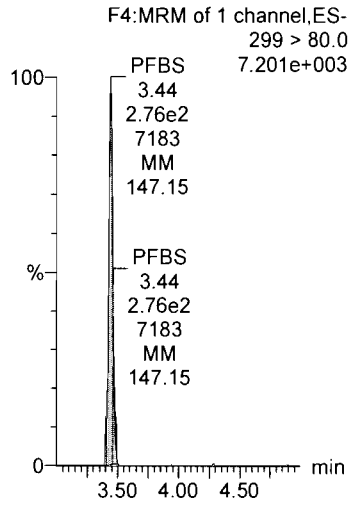

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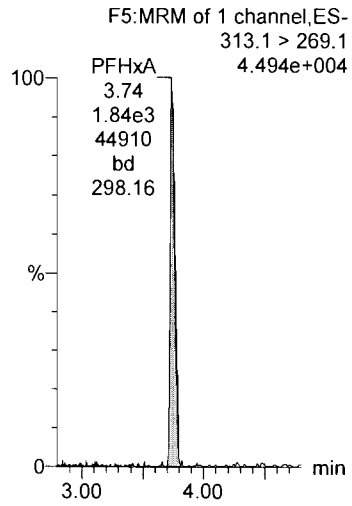

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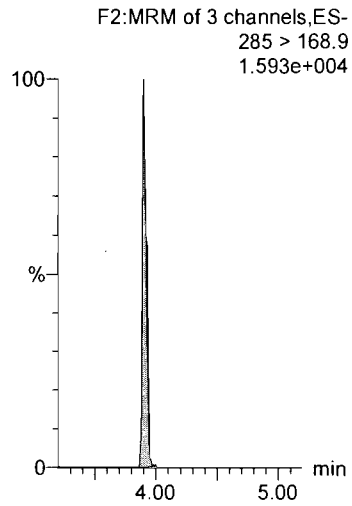

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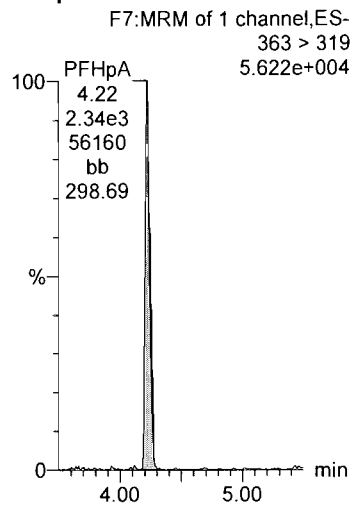

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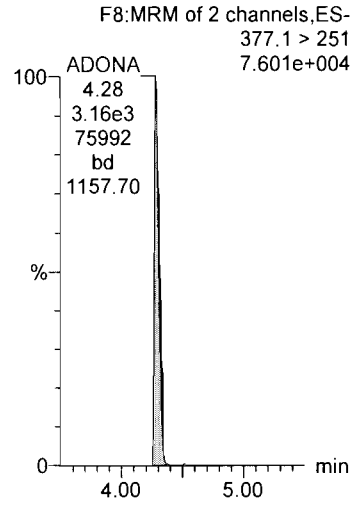

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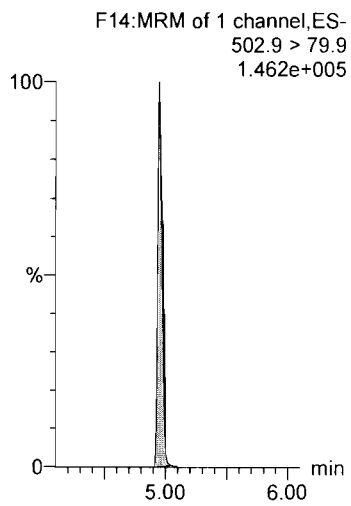

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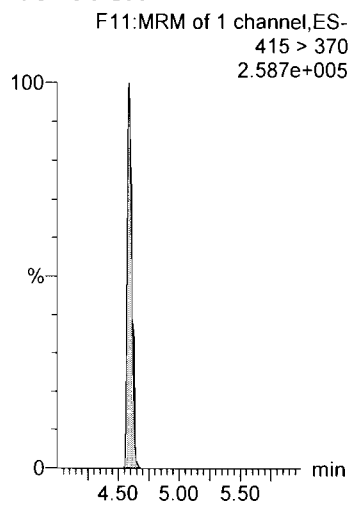

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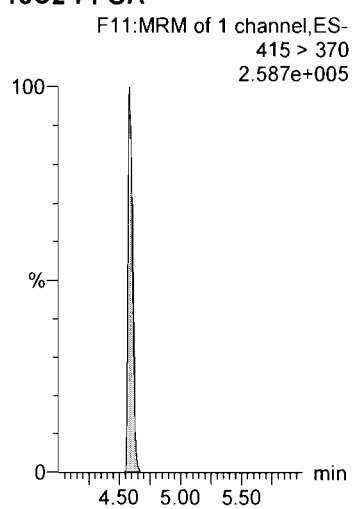

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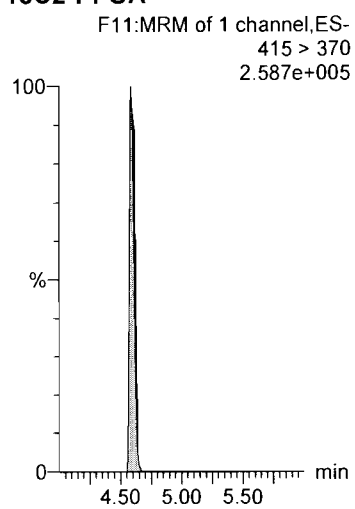

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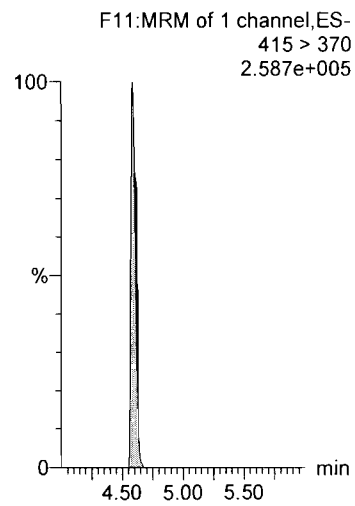

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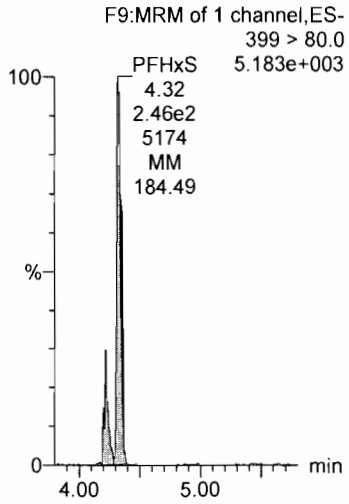
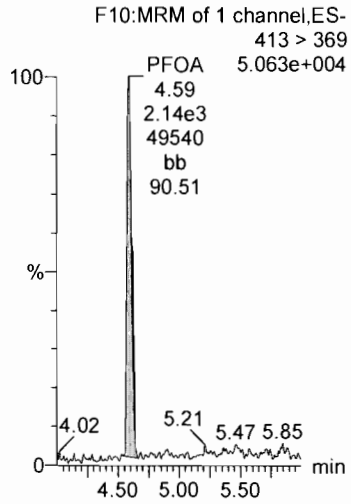
Name: 190328P1_5, Date: 28-Mar-2019, Time: 11:26:51, ID: ST190328P1-4 537 CS-1 19C2505, Description: 537 CS-1 19C2505

PFHxS



PFOA



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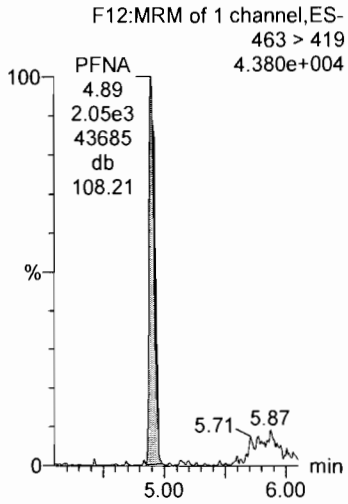

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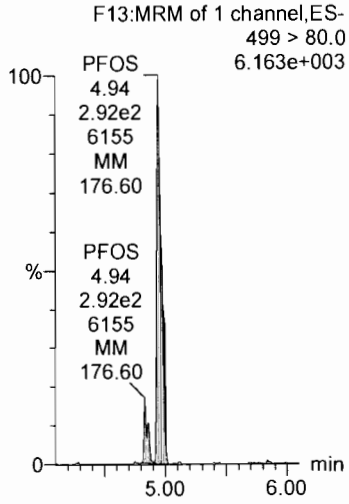

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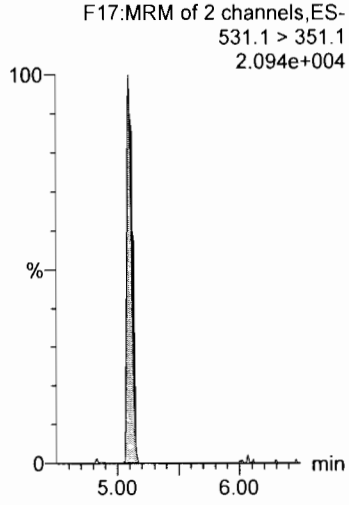

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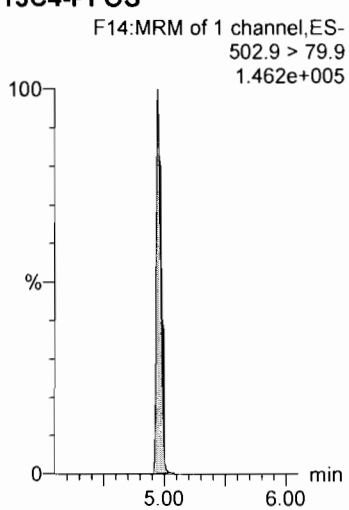

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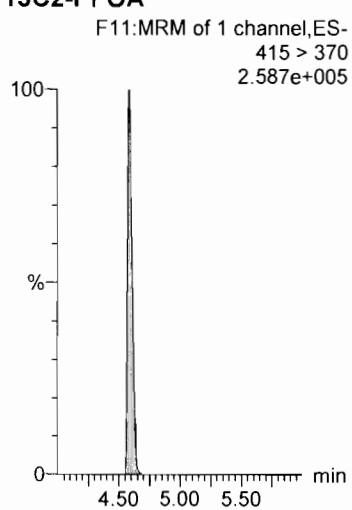

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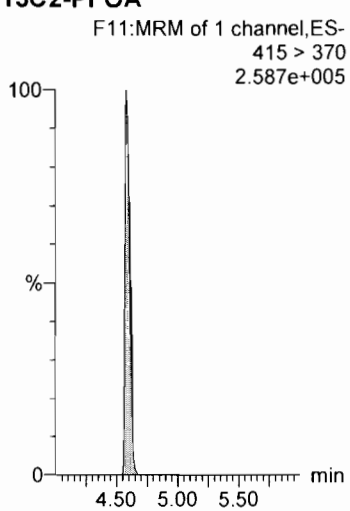

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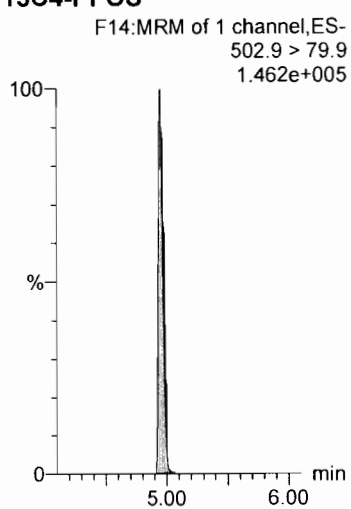

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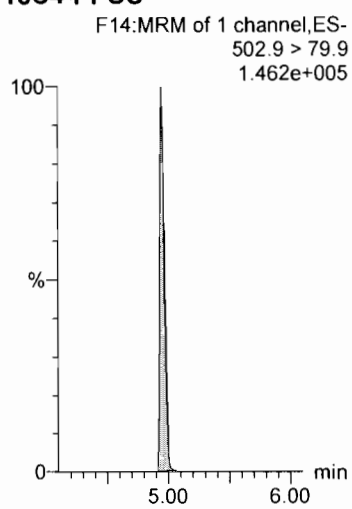

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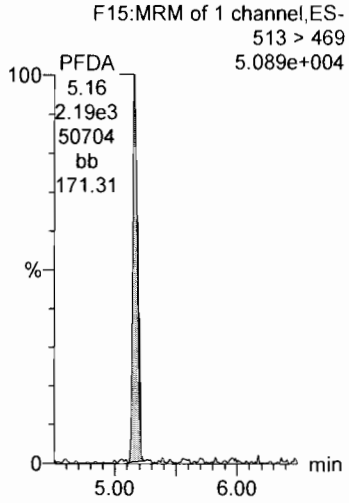

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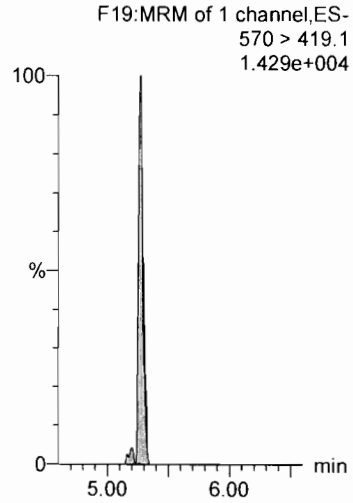

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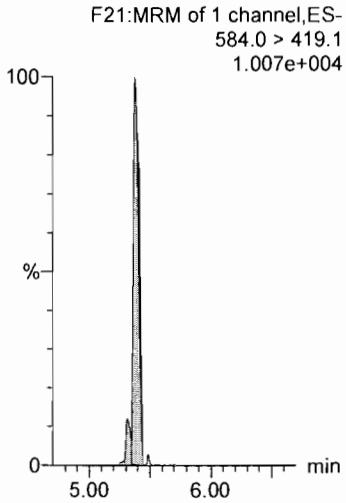

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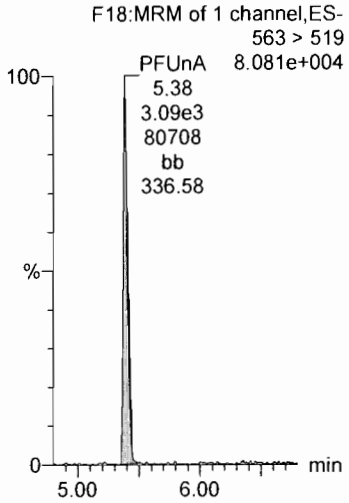

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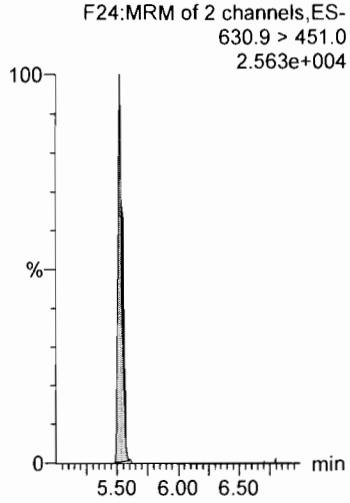

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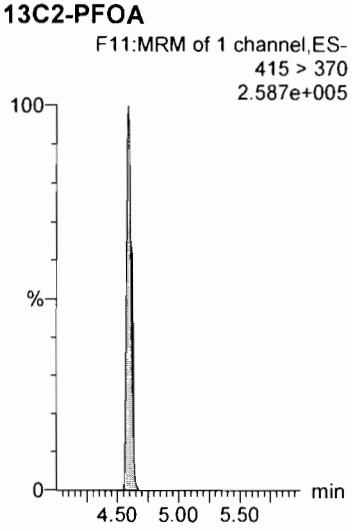

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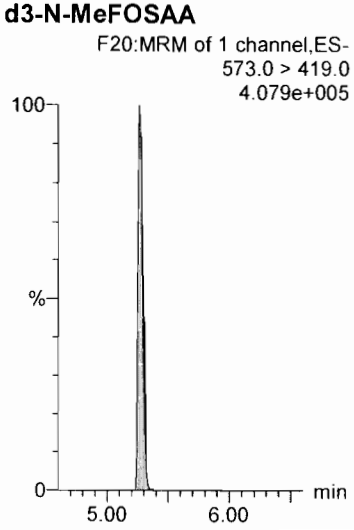

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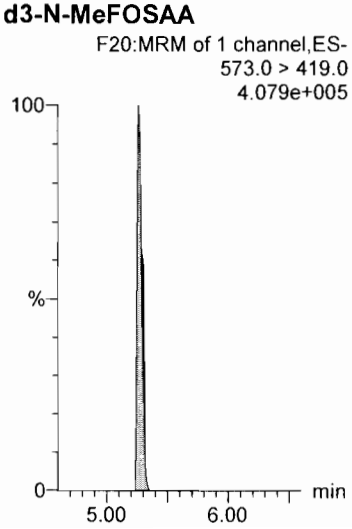

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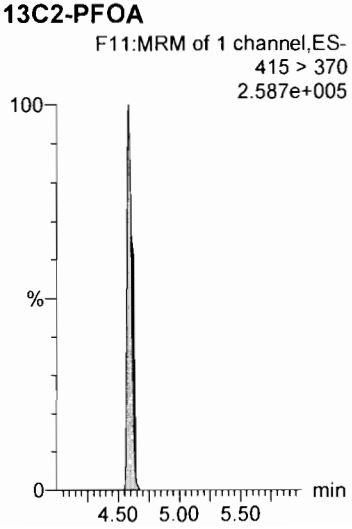

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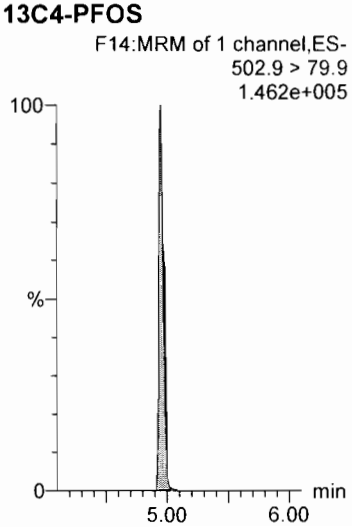

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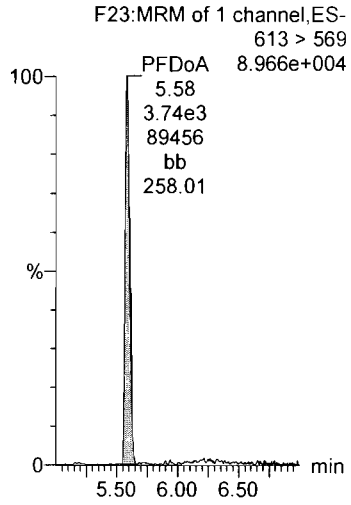

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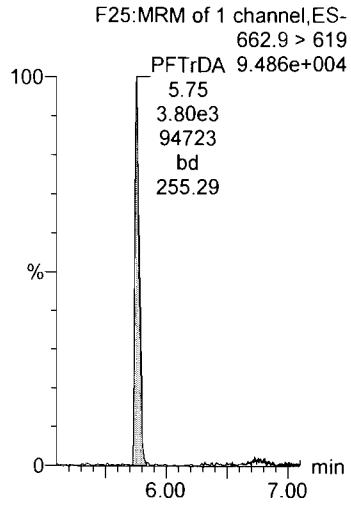

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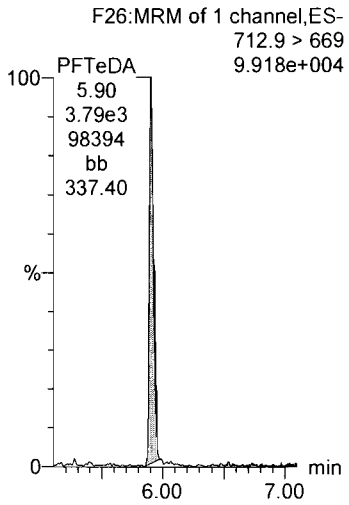

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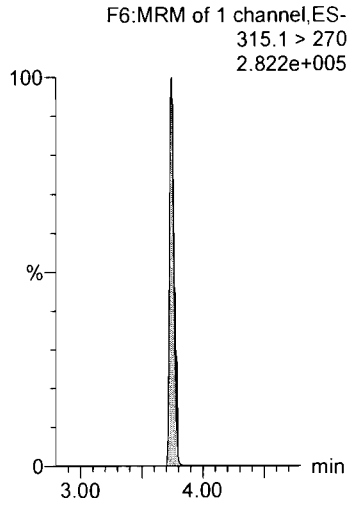

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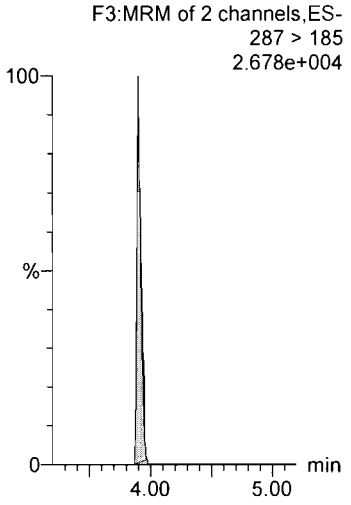

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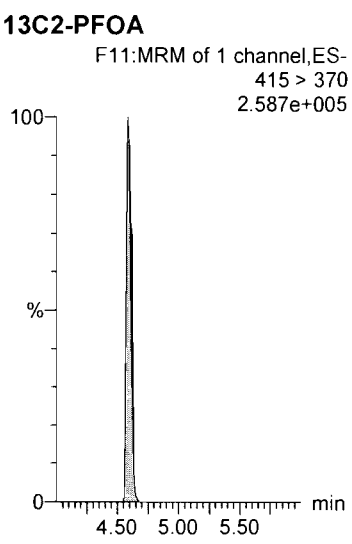

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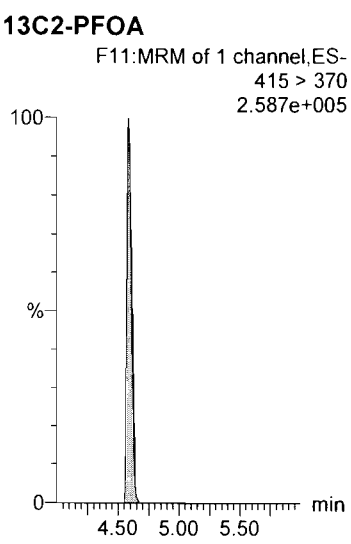

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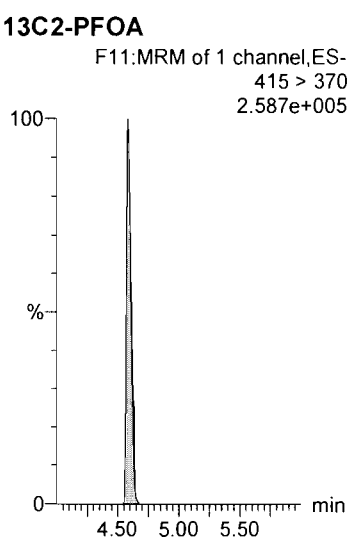

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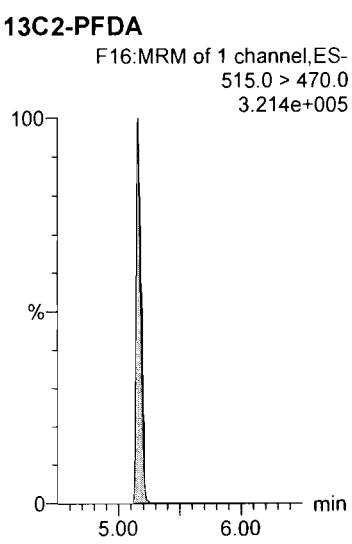

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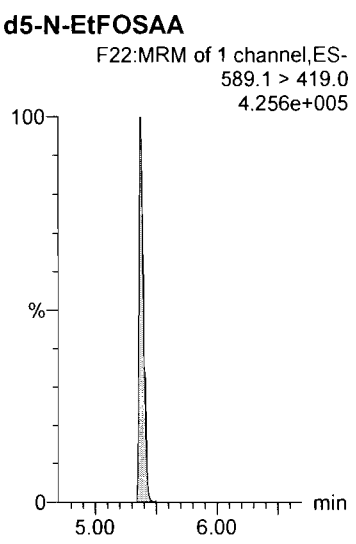

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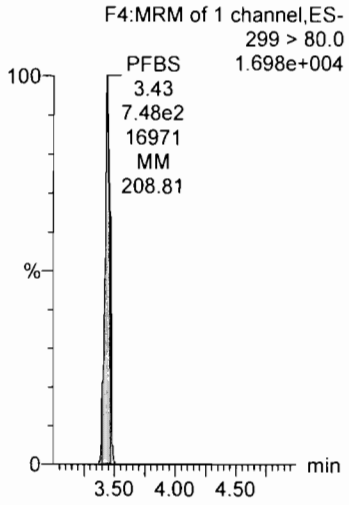

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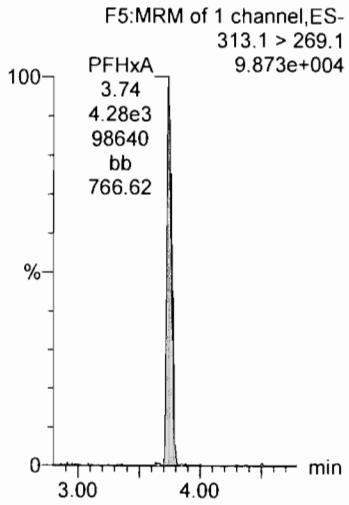

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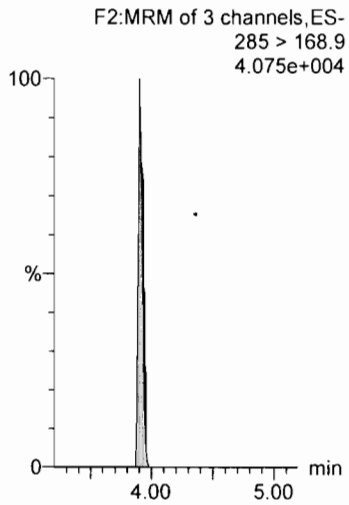

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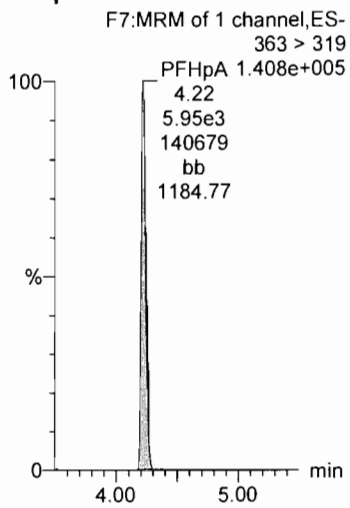

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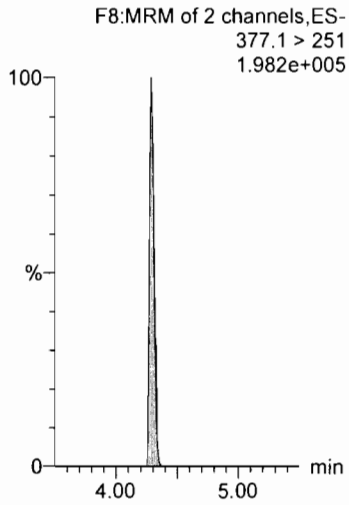

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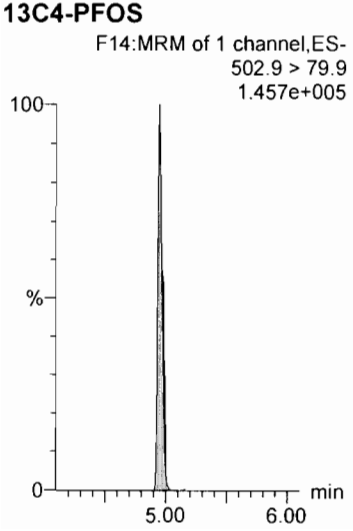

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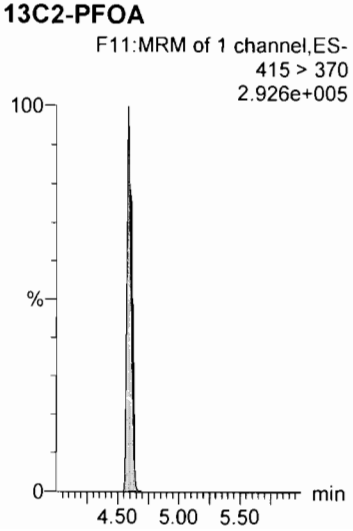

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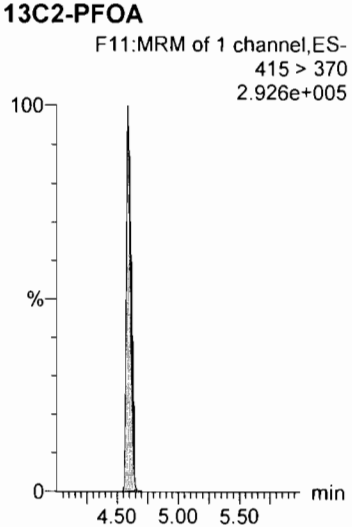

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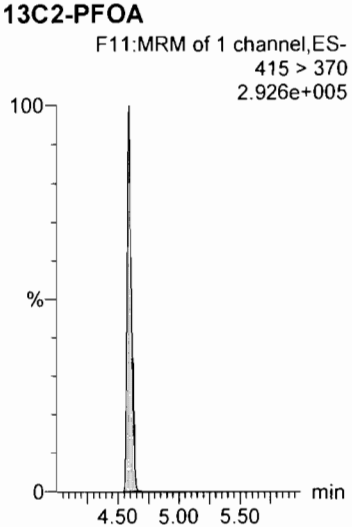

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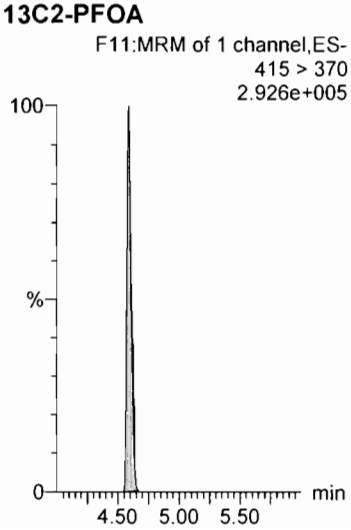

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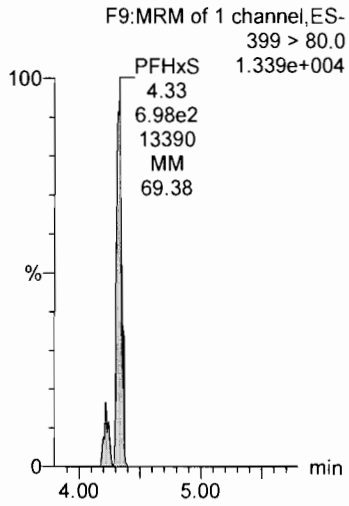

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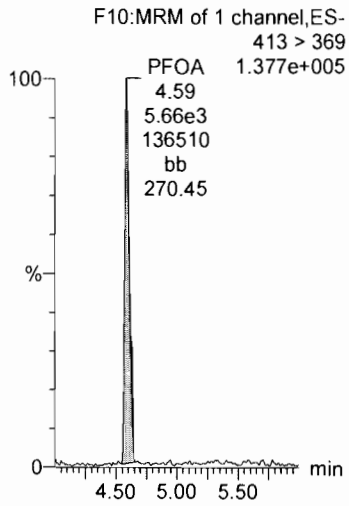

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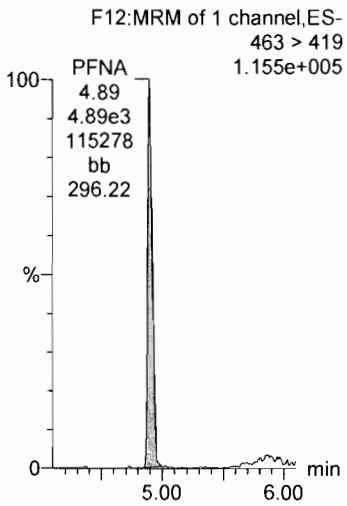

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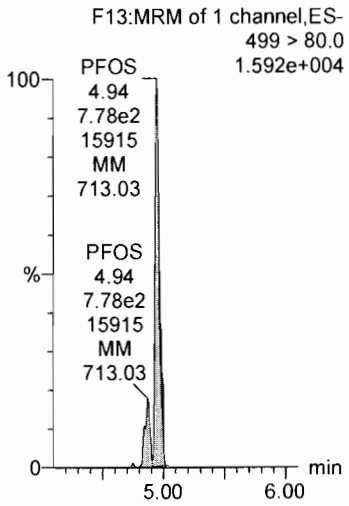

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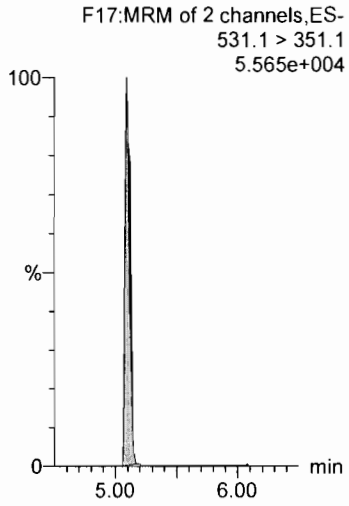

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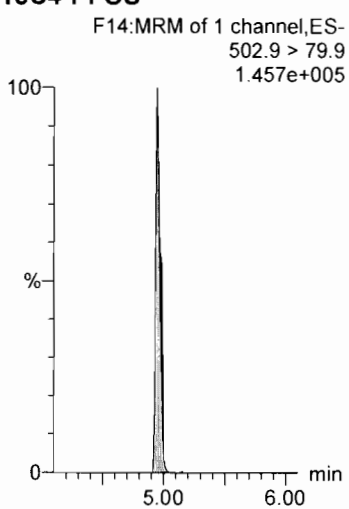

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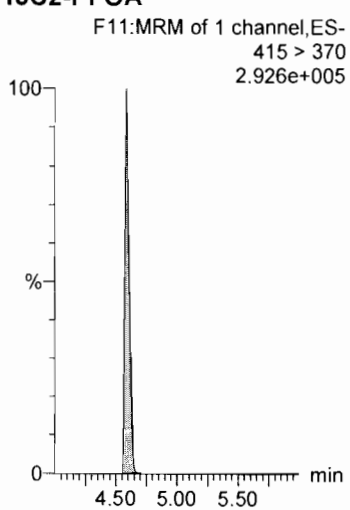

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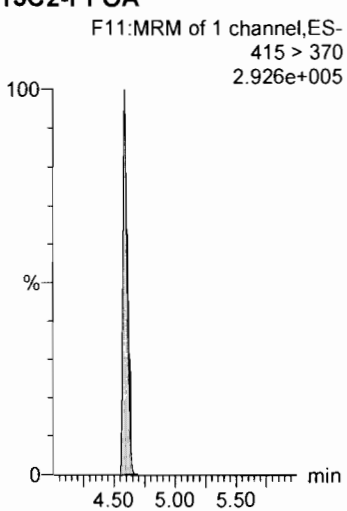

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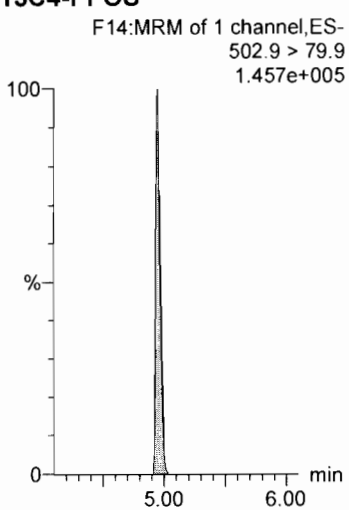

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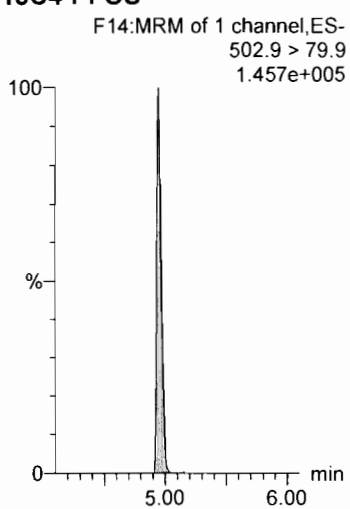

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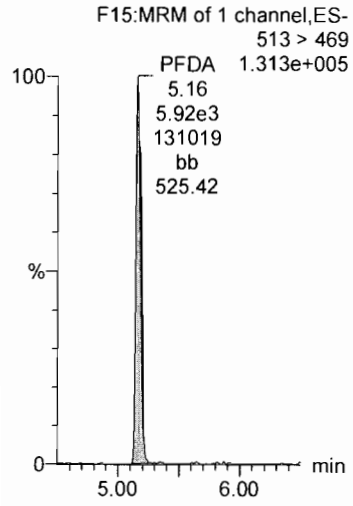

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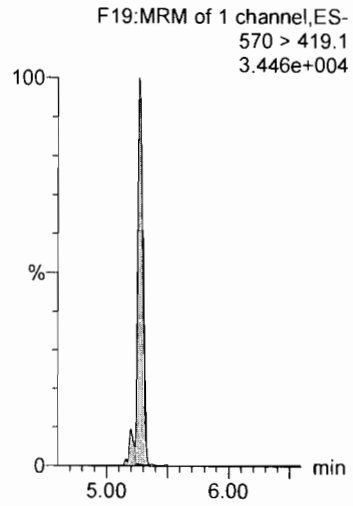

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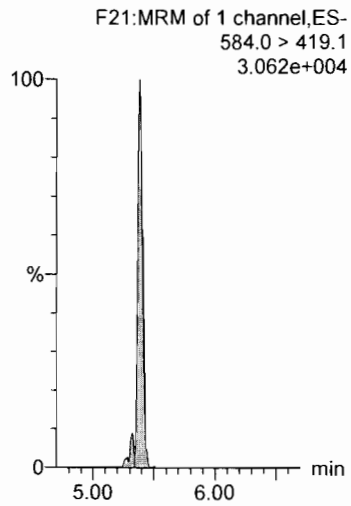

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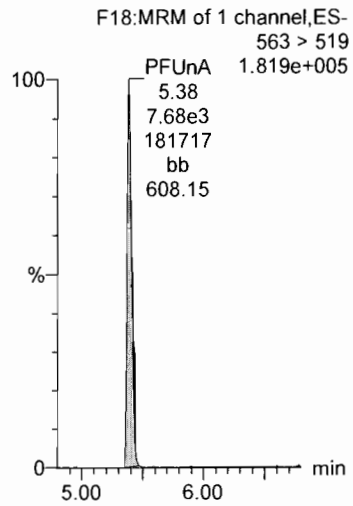

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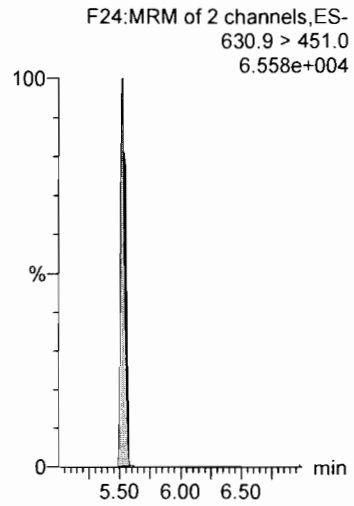

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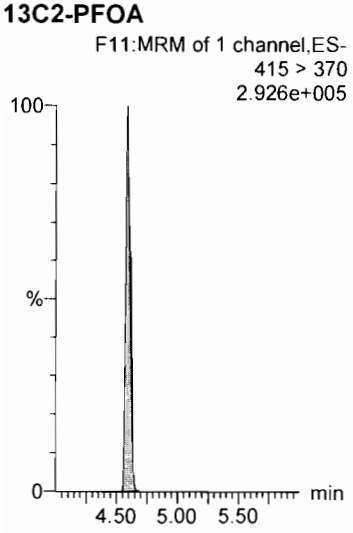

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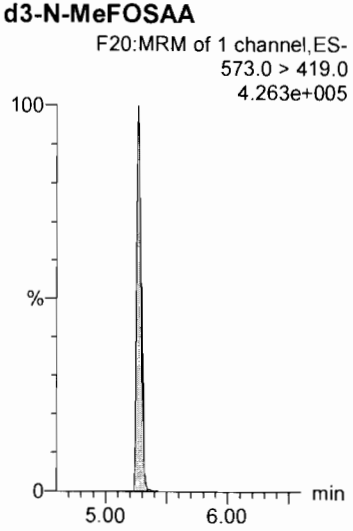

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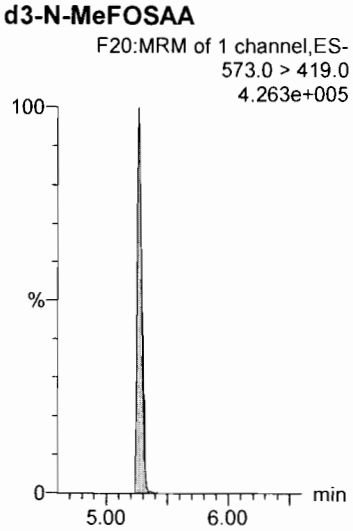

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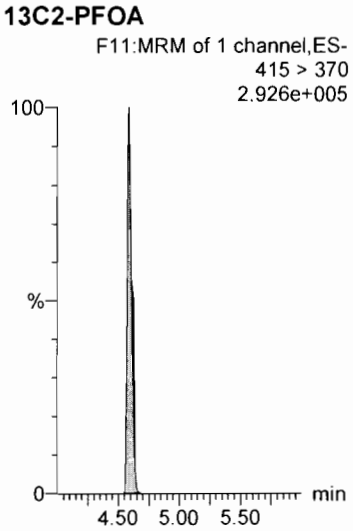

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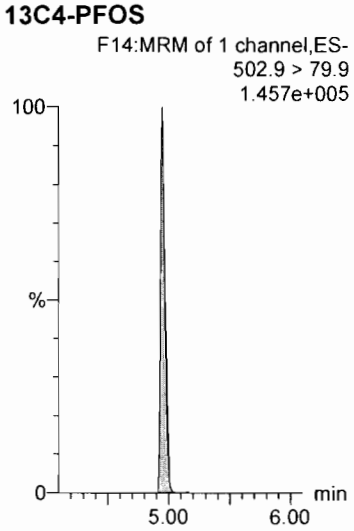

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Name: 190328P1_6, Date: 28-Mar-2019, Time: 11:37:26, ID: ST190328P1-5 537 CS0 19C2506, Description: 537 CS0 19C2506

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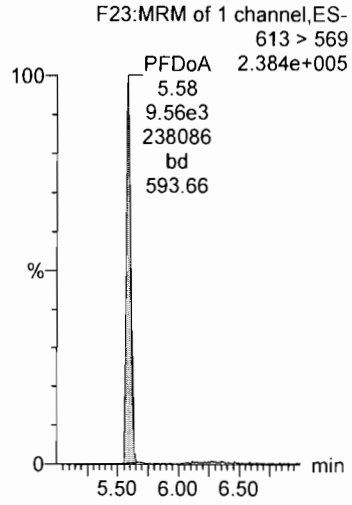

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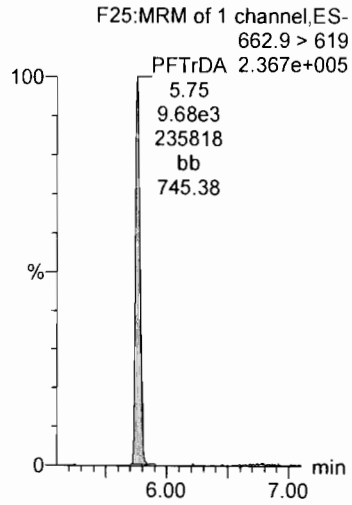

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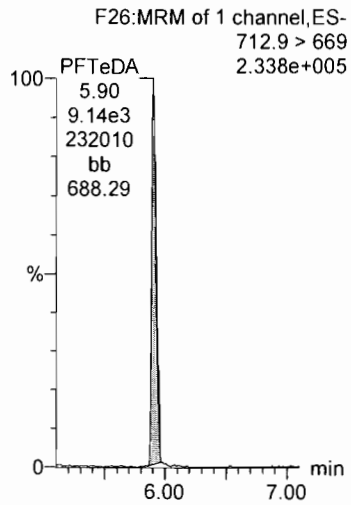

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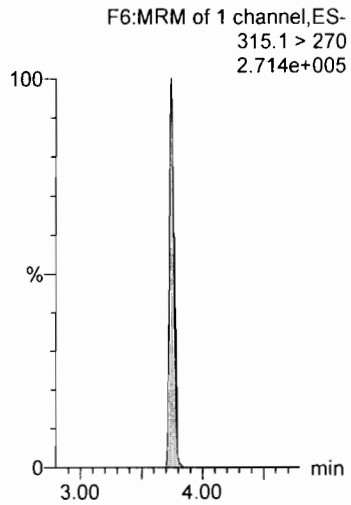

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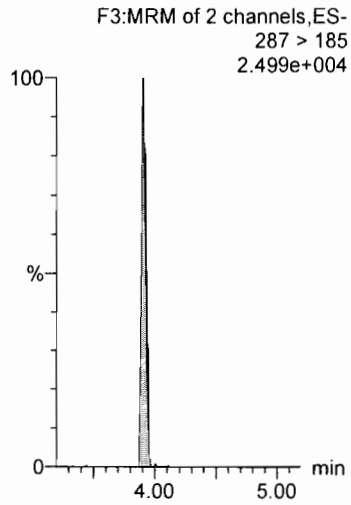

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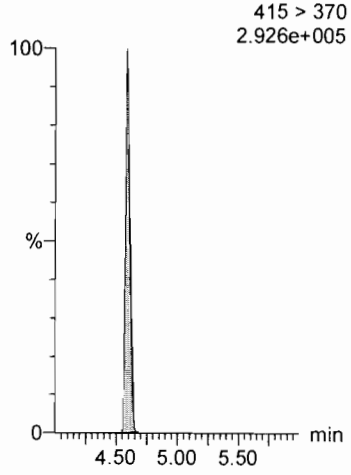

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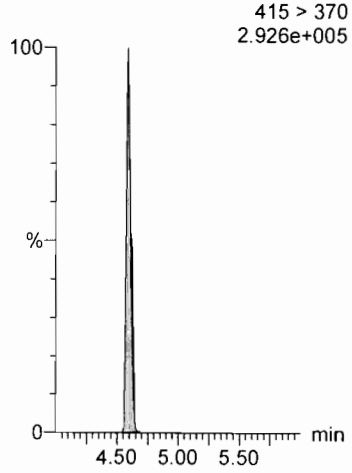

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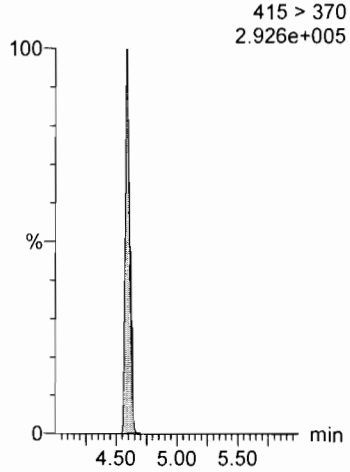

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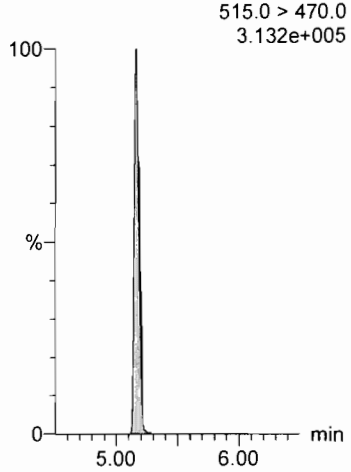

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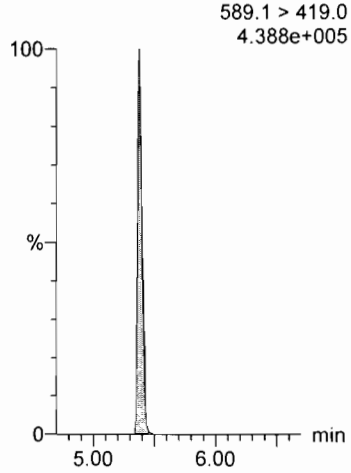

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Name: 190328P1_7, Date: 28-Mar-2019, Time: 11:48:01, ID: ST190328P1-6 537 CS1 19C2507, Description: 537 CS1 19C2507

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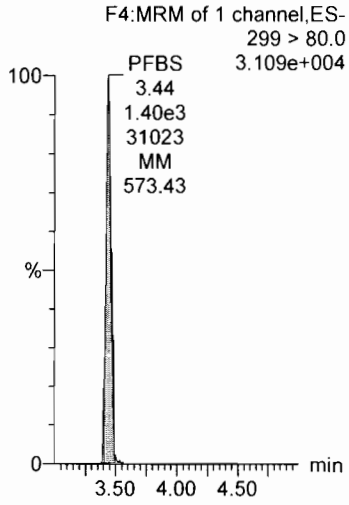

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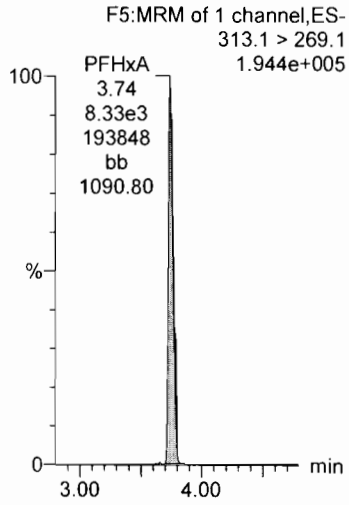

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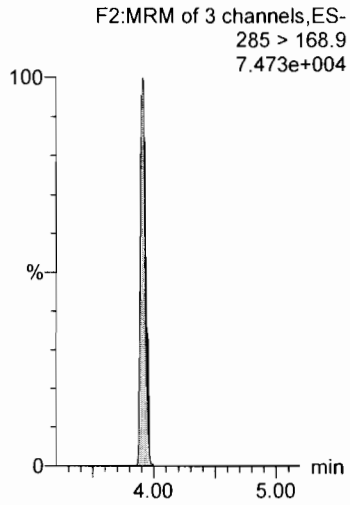

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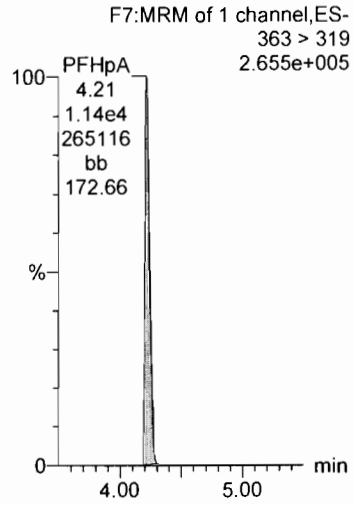

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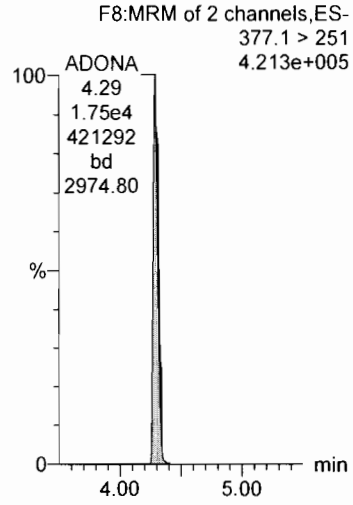

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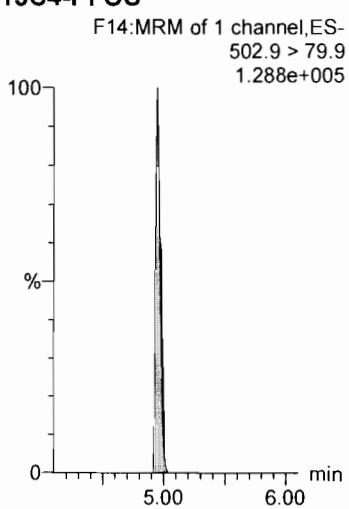

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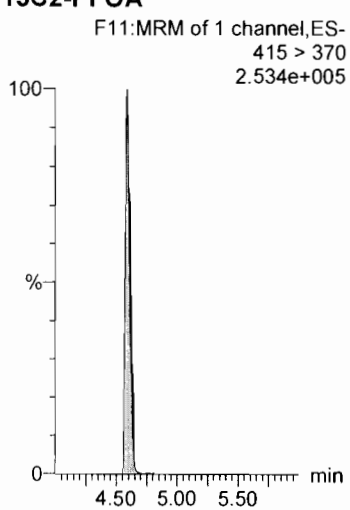

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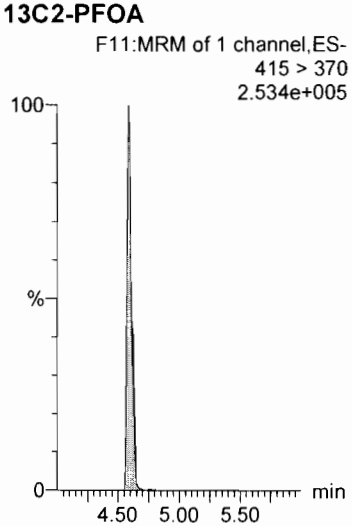

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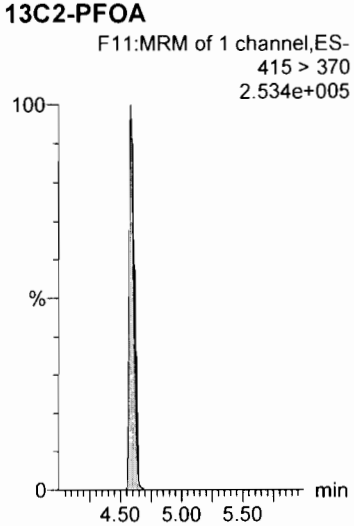

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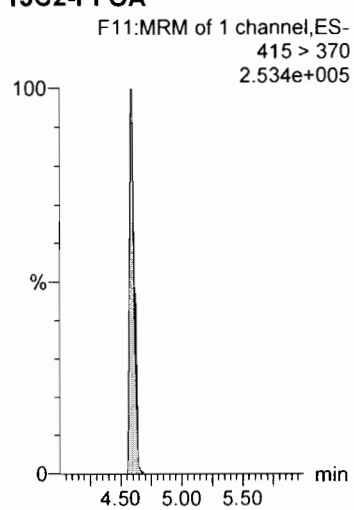

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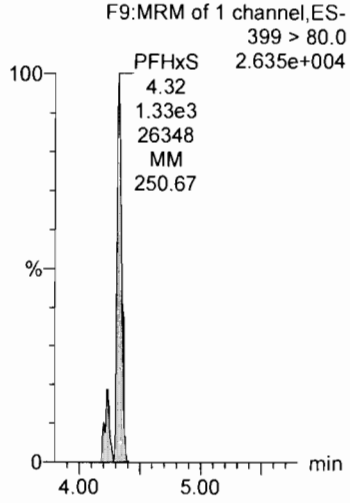

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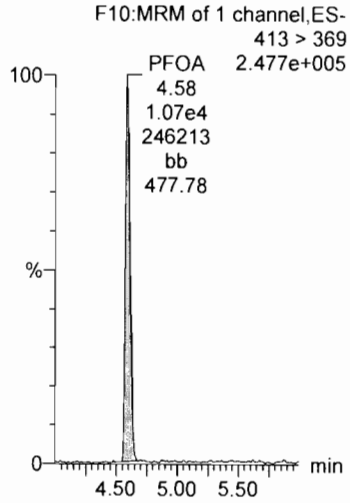

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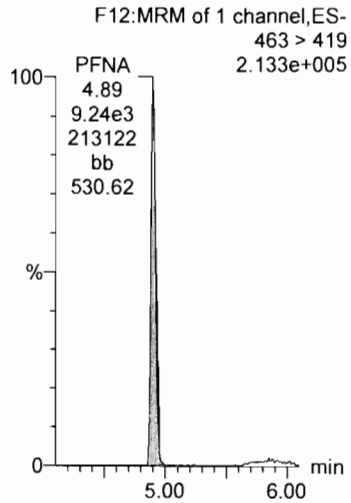

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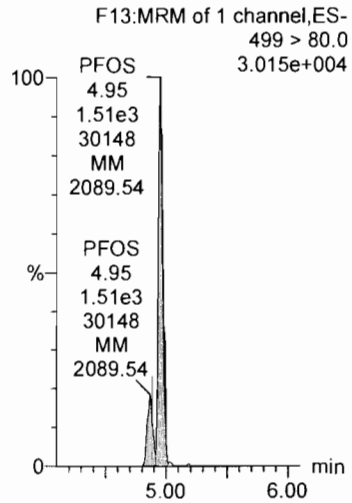

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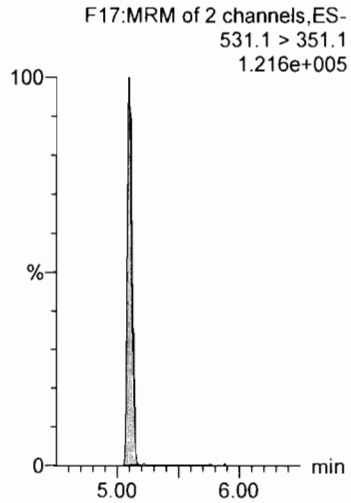

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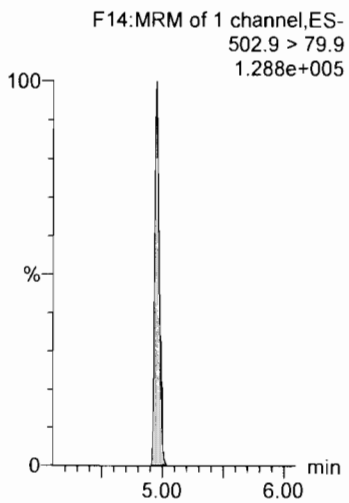

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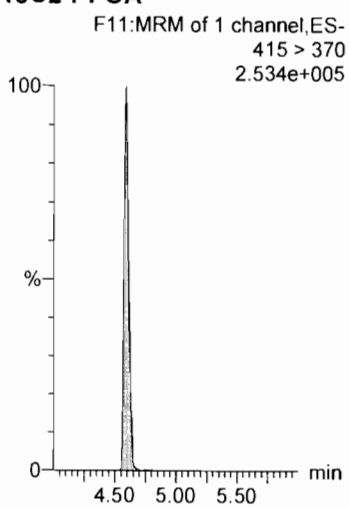

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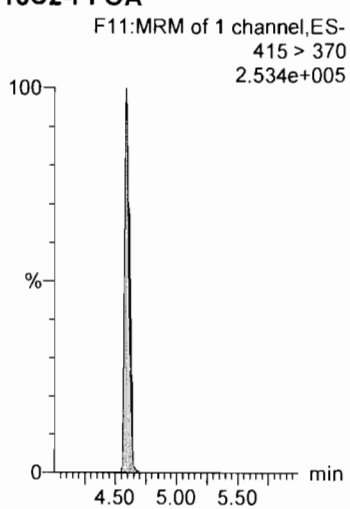

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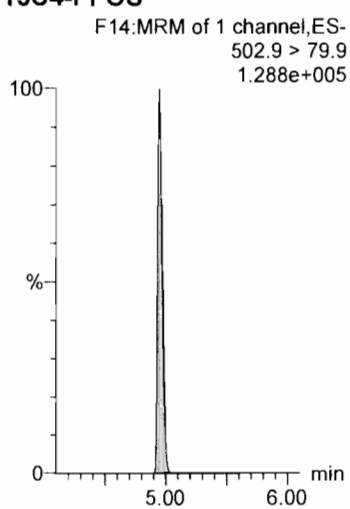

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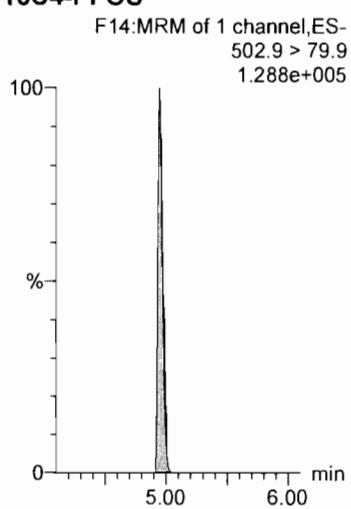

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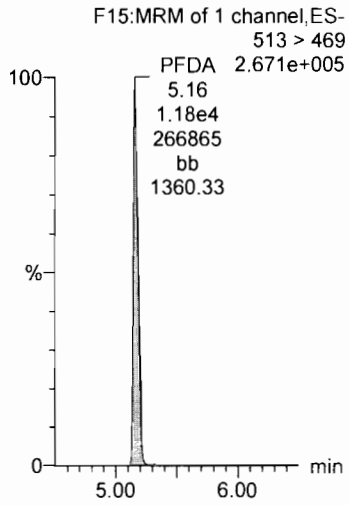

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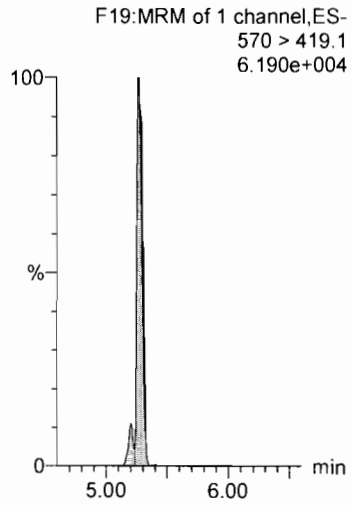

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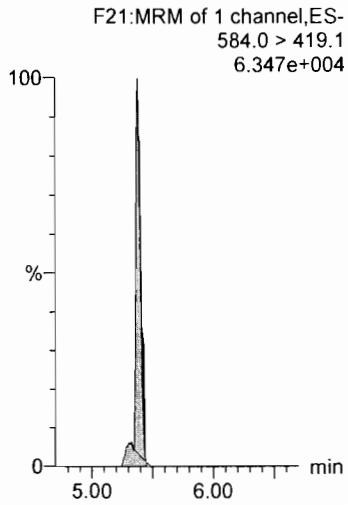

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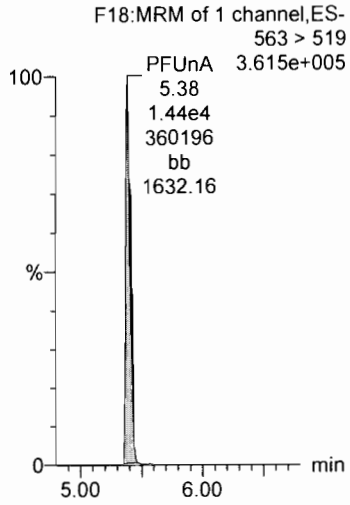

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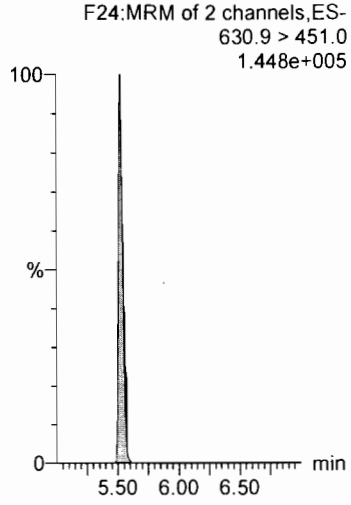

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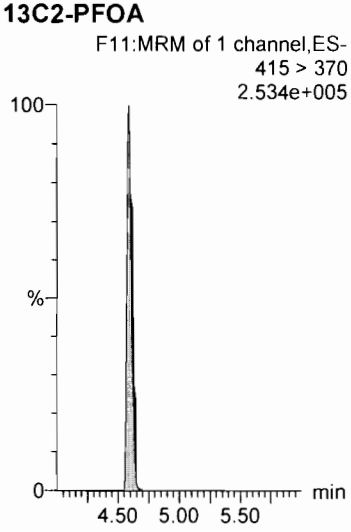

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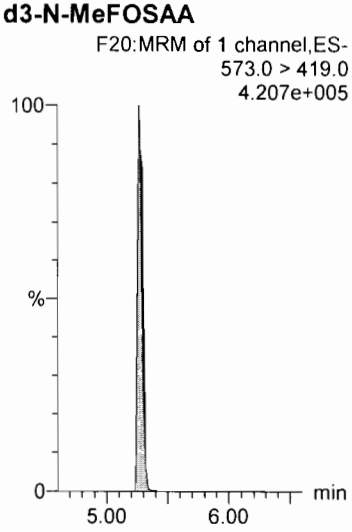

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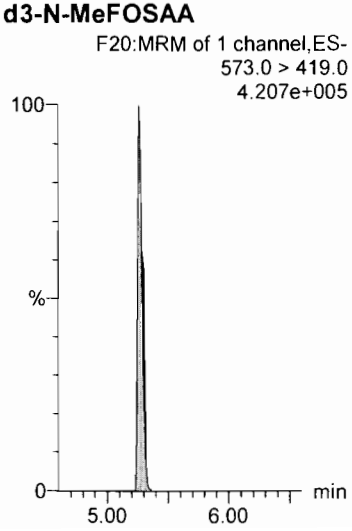

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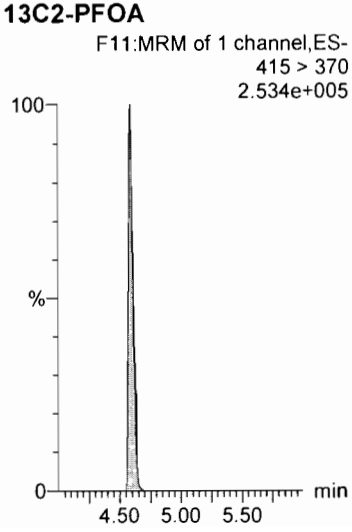

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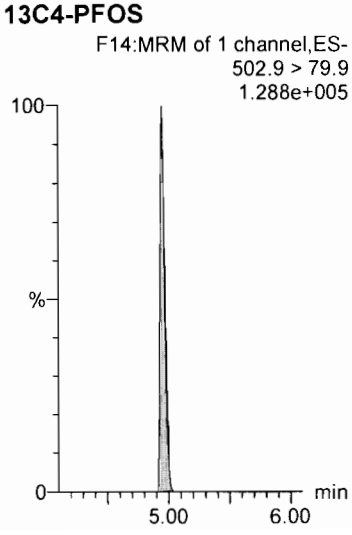

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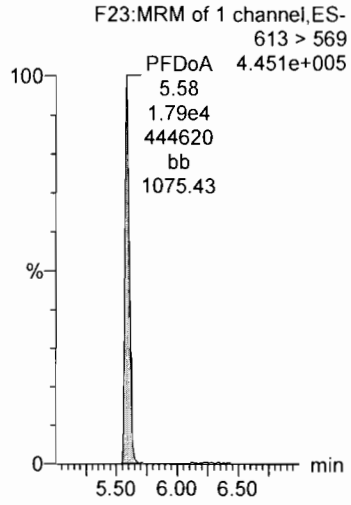

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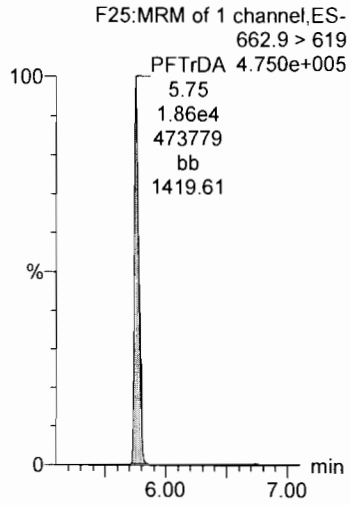

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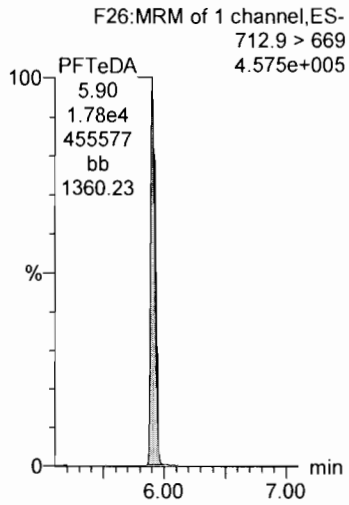

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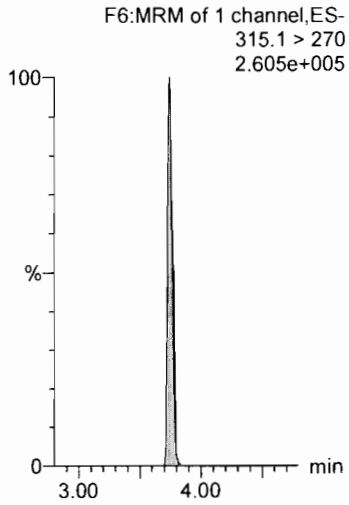

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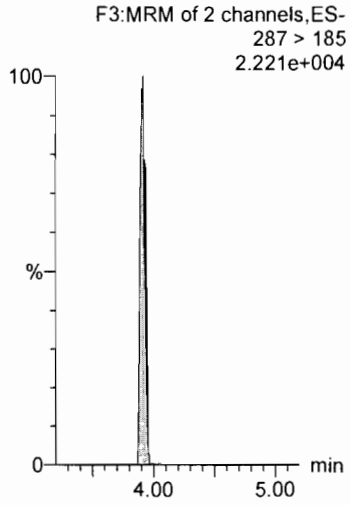

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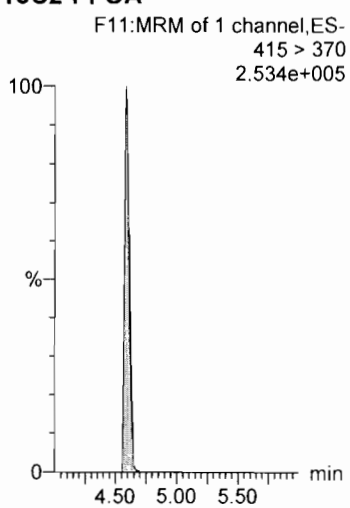

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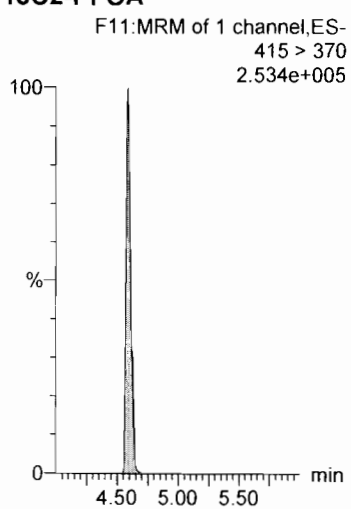

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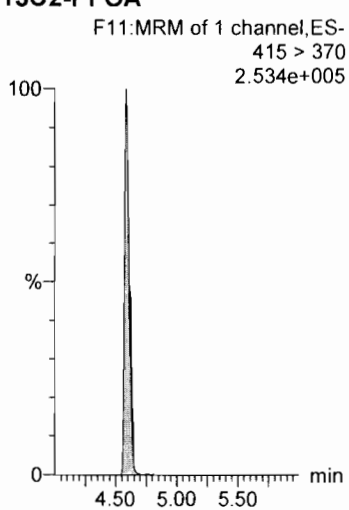

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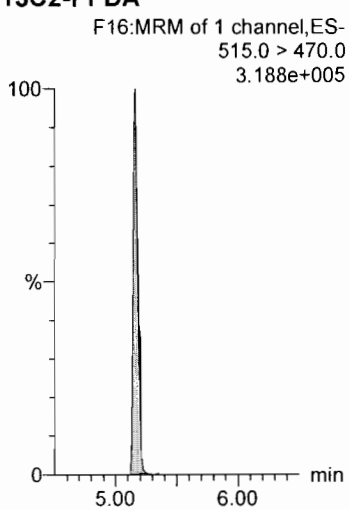

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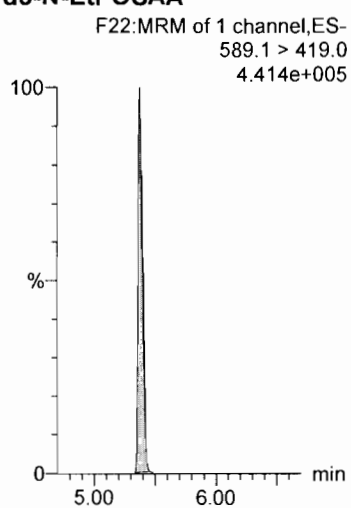

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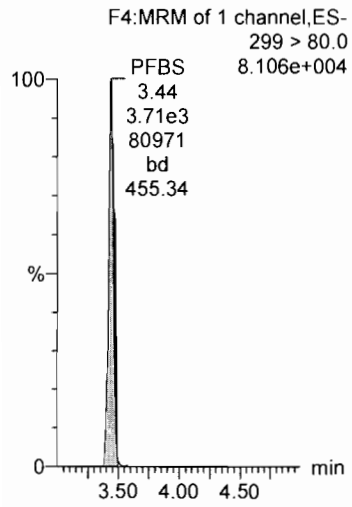

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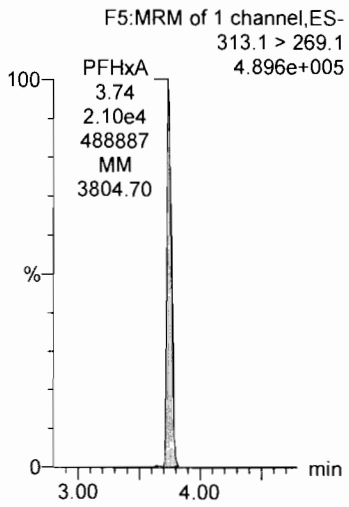

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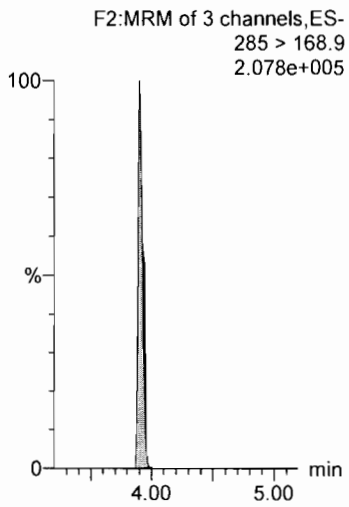

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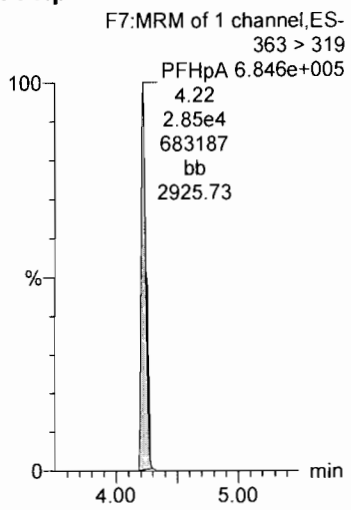

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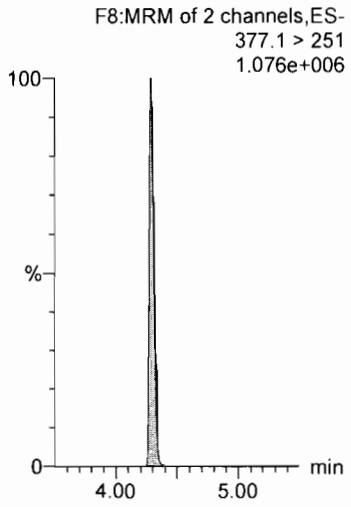

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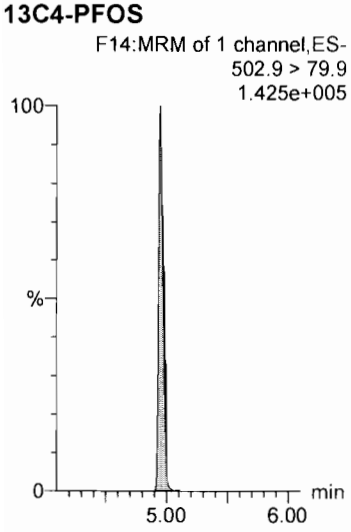

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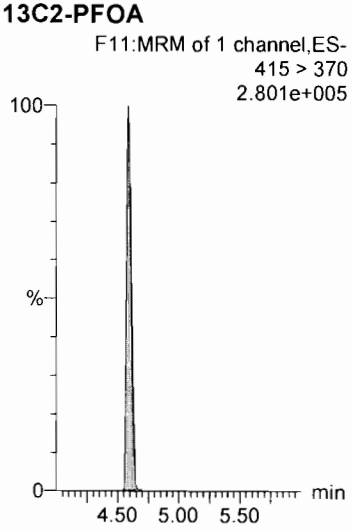

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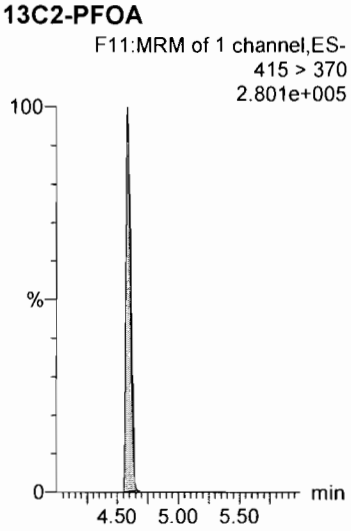

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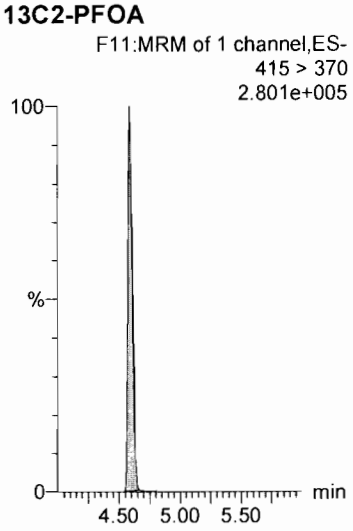

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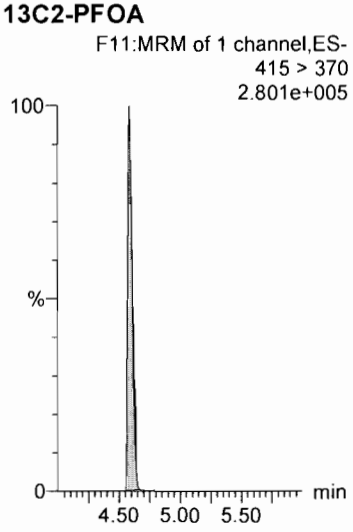

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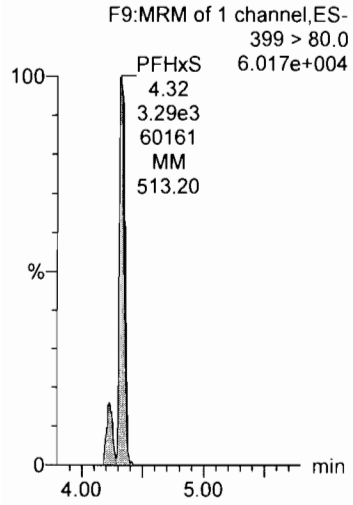

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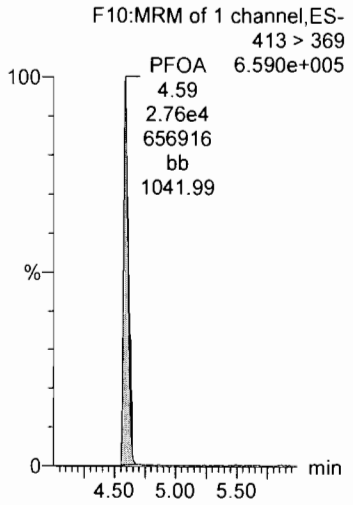

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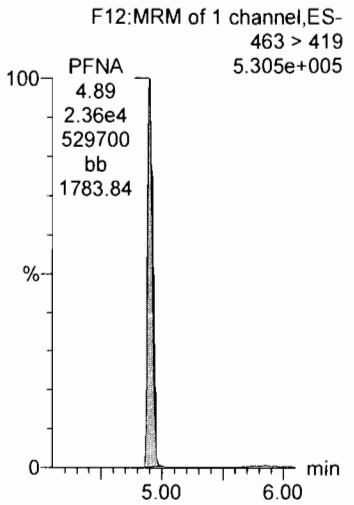

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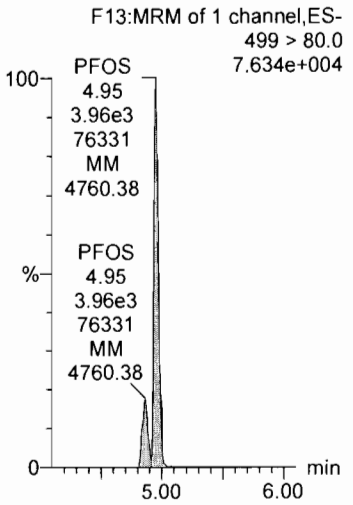

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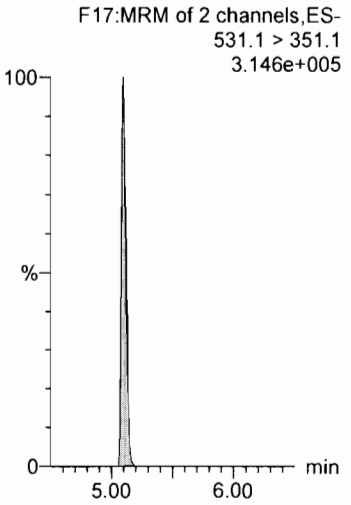

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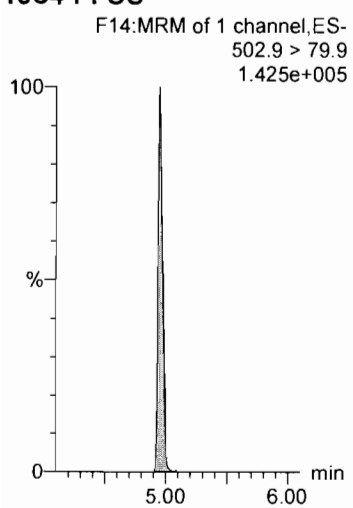

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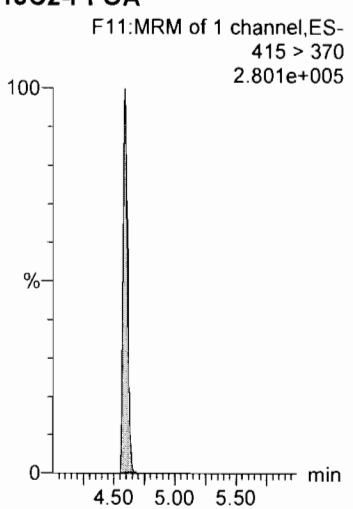

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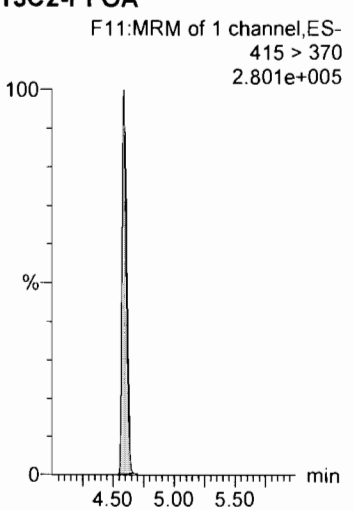

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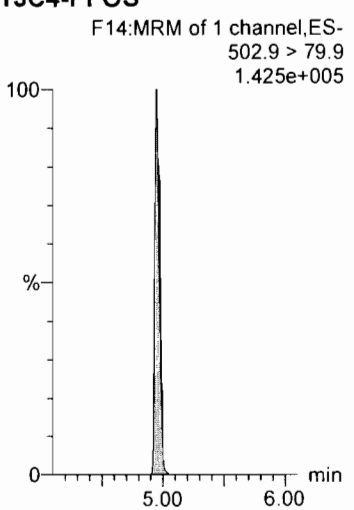

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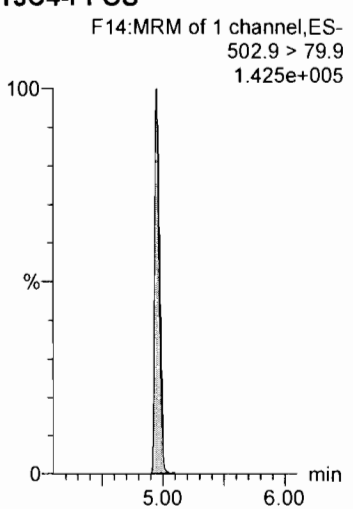

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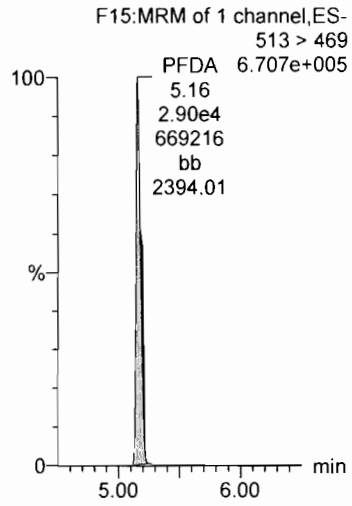

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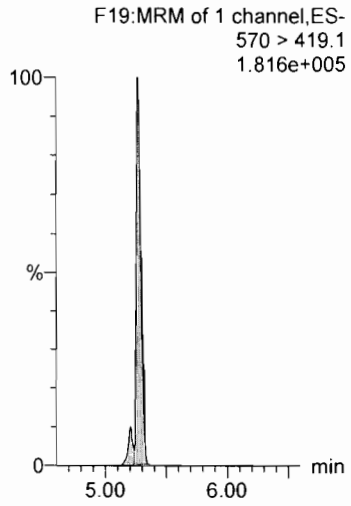

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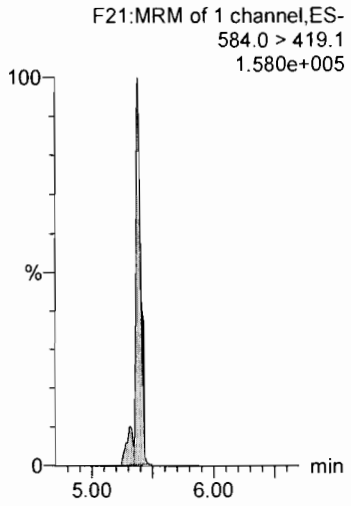

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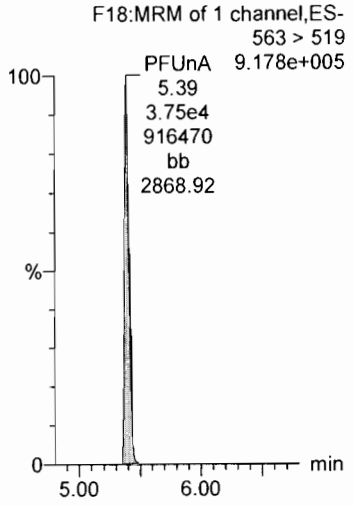

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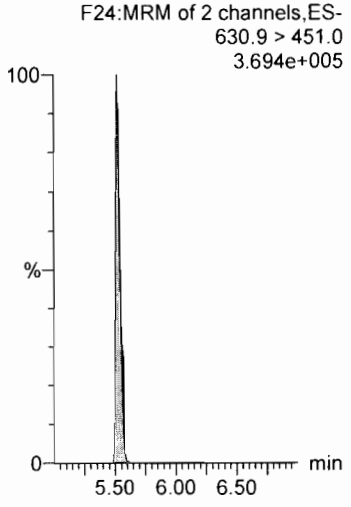

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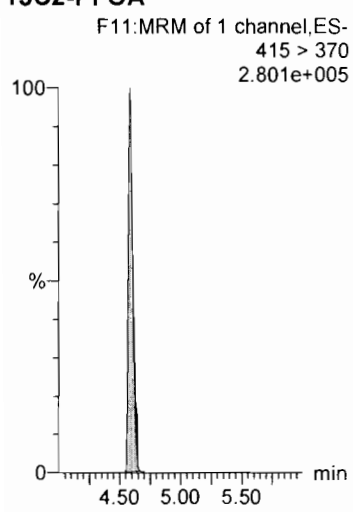

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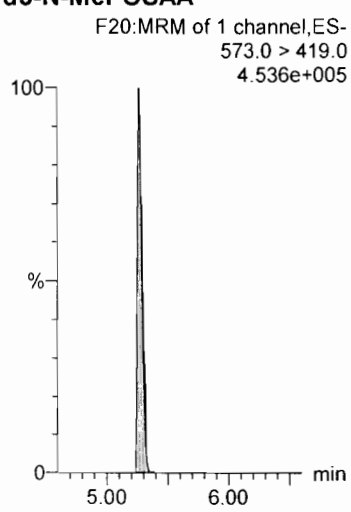

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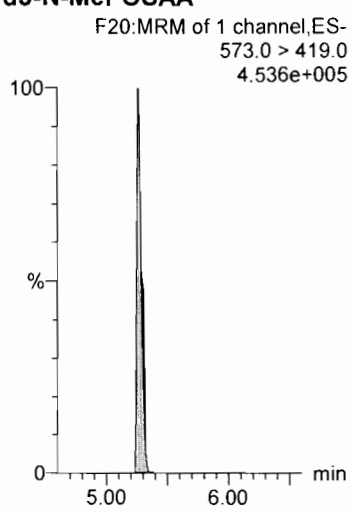

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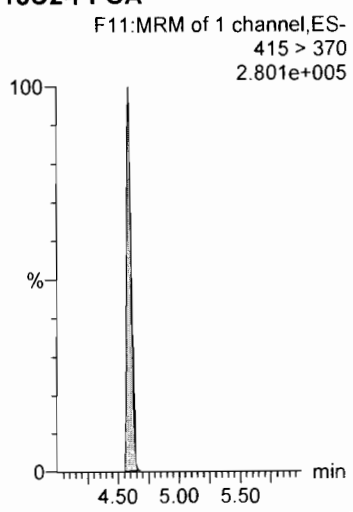

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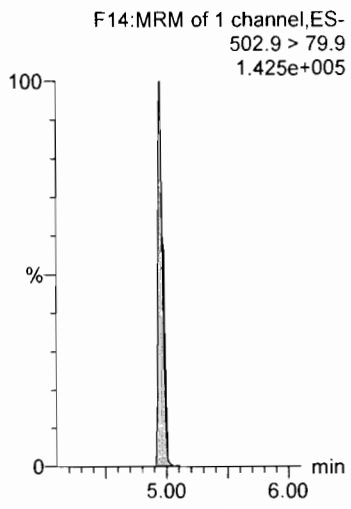

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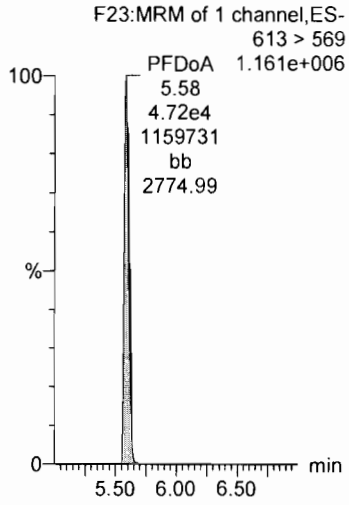

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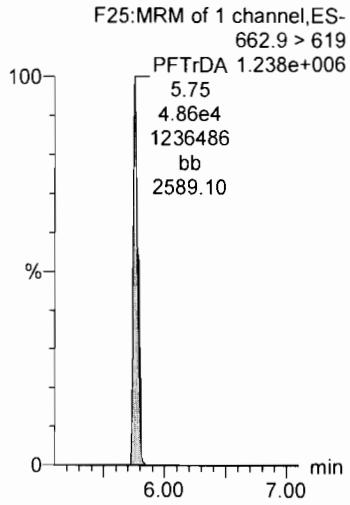

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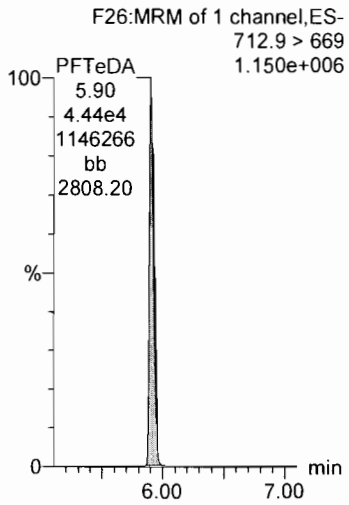

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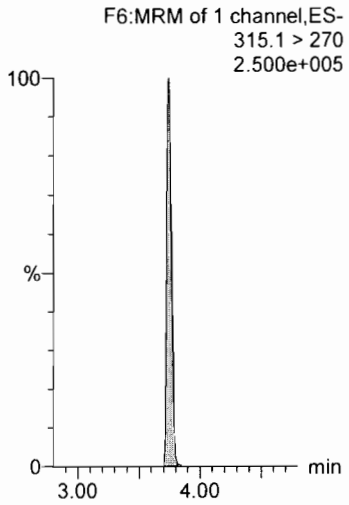

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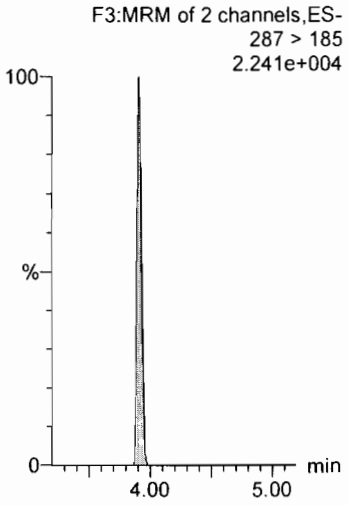

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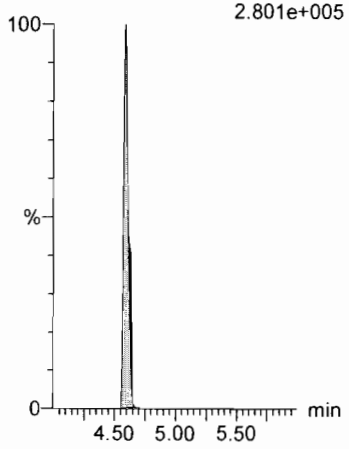

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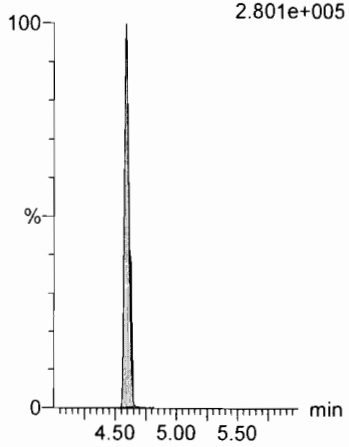

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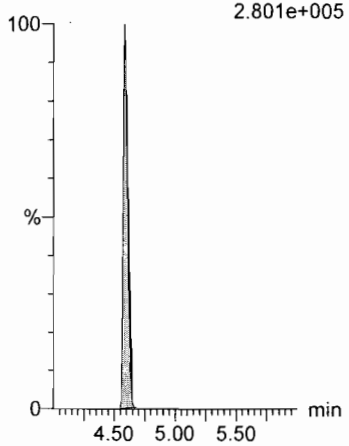

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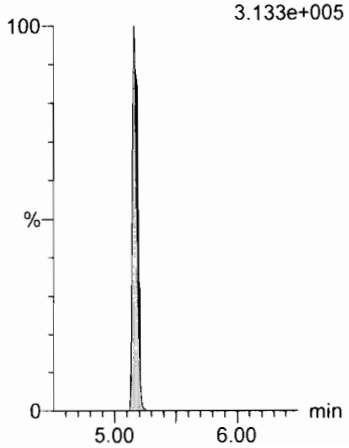

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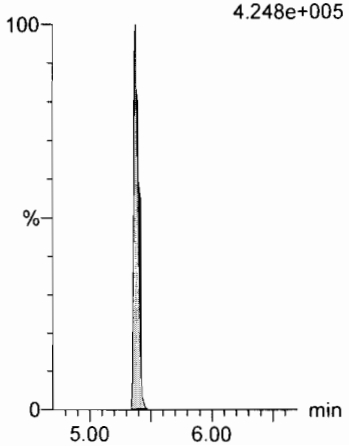

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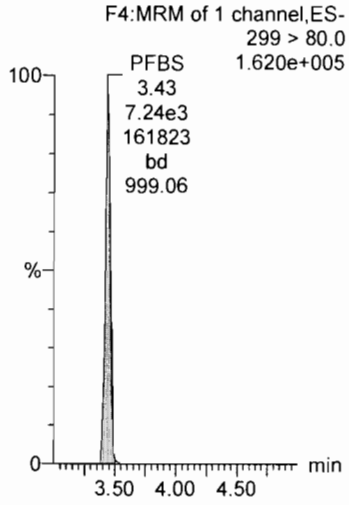

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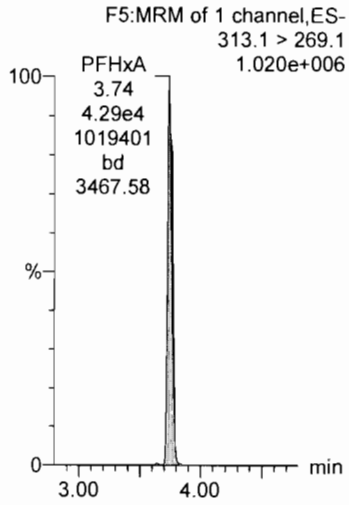

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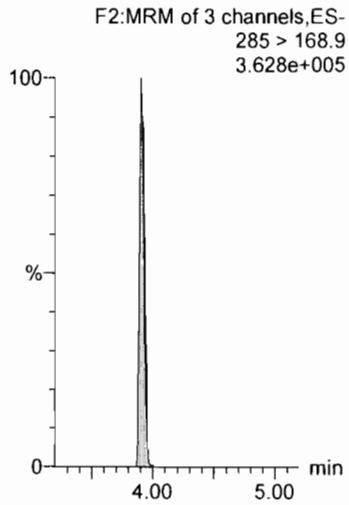

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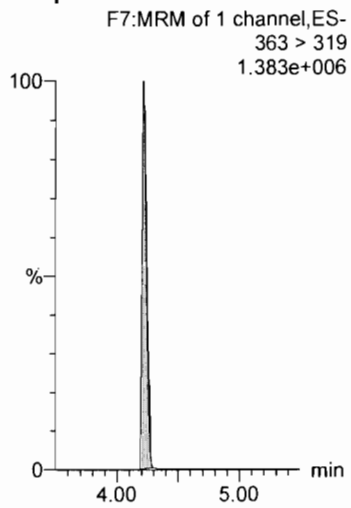

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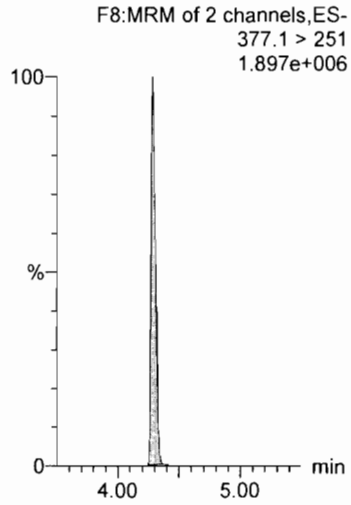

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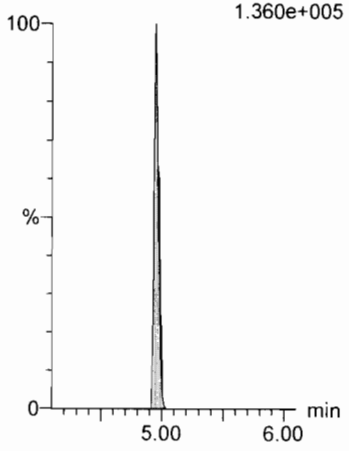

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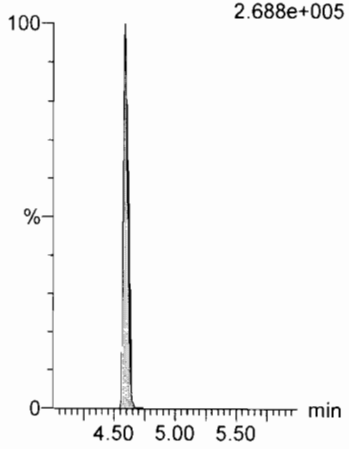

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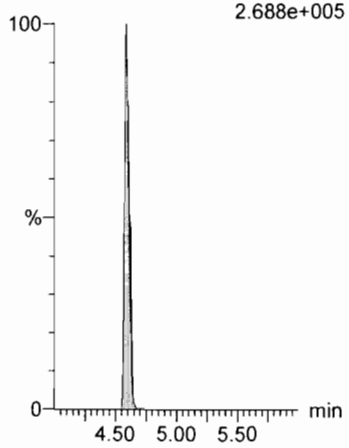

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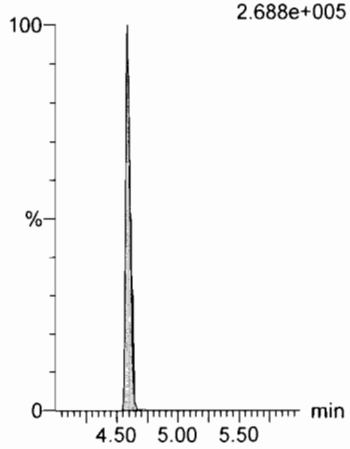

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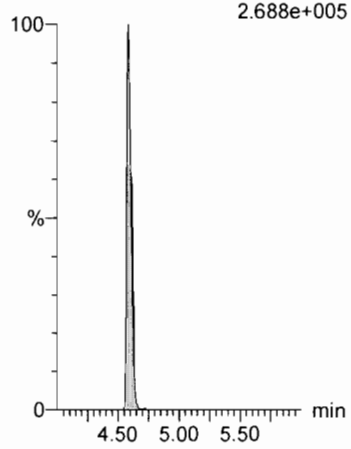

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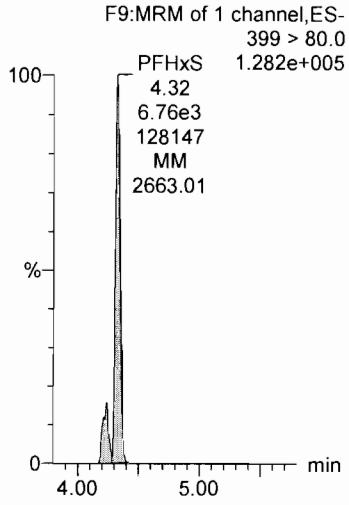

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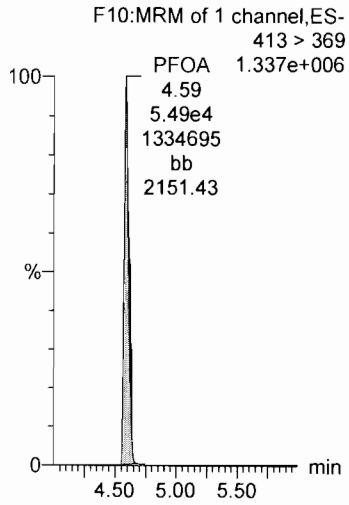

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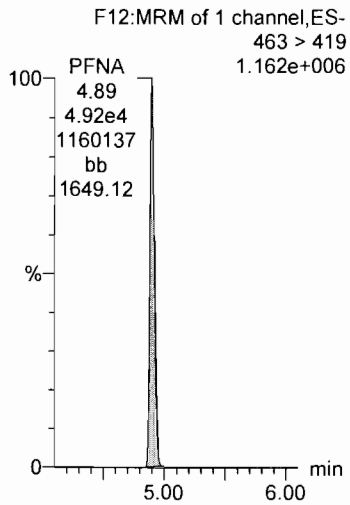

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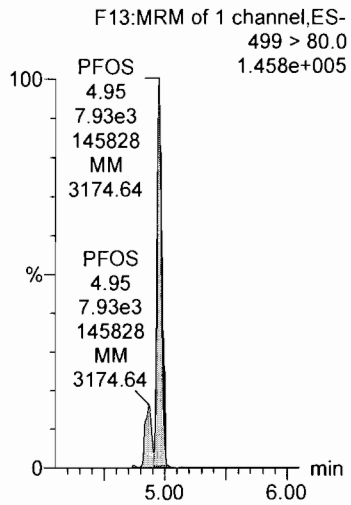
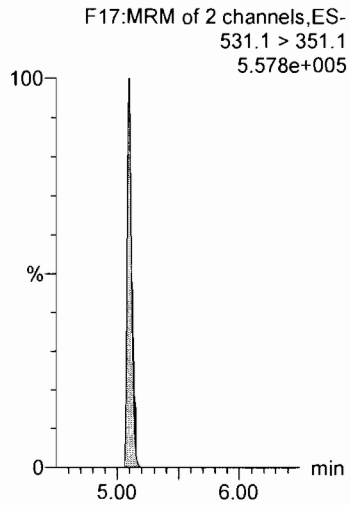
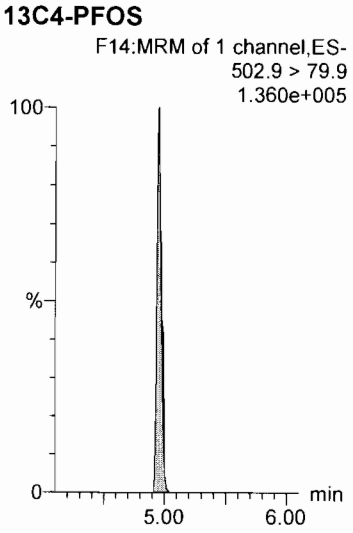


9Cl-PF3ONS



13C4-PFOS



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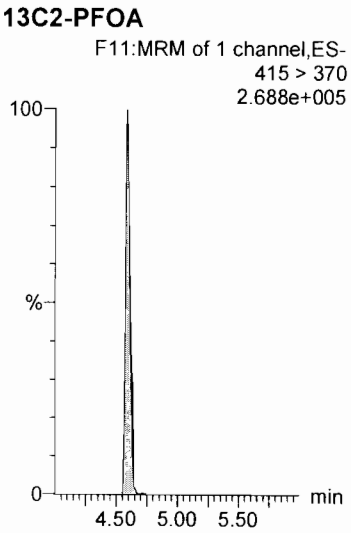

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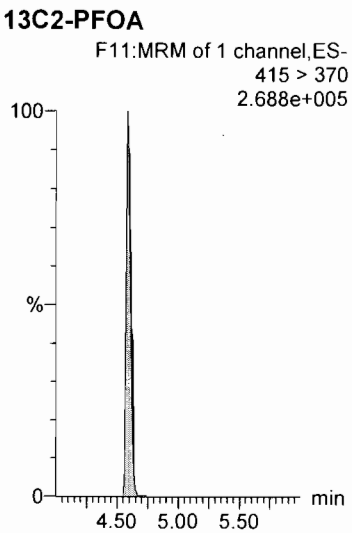

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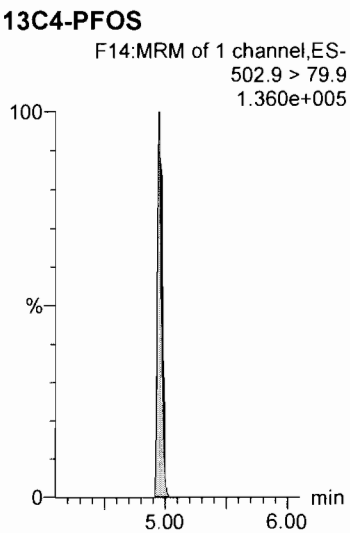

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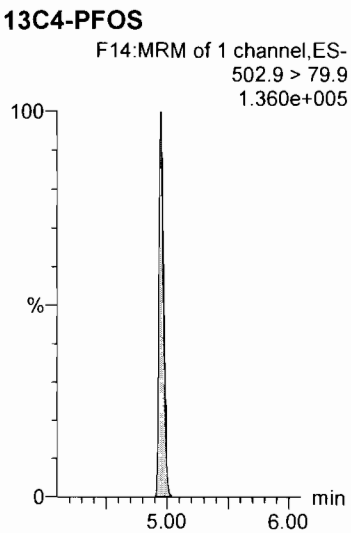

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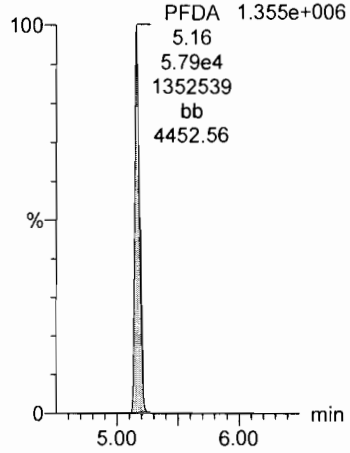
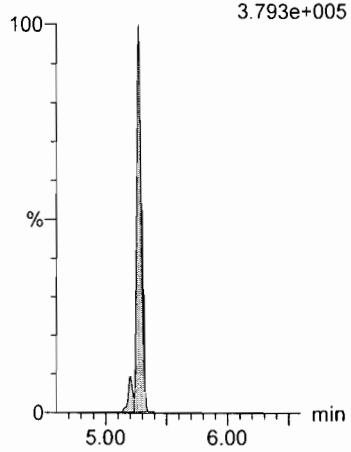
Name: 190328P1_9, Date: 28-Mar-2019, Time: 12:09:11, ID: ST190328P1-8 537 CS3 19C2509, Description: 537 CS3 19C2509

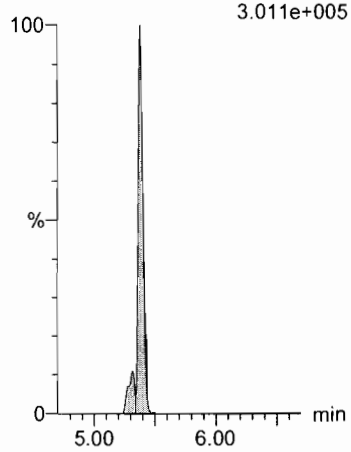
PFDA
F15:MRM of 1 channel,ES-
513 > 469
PFDA 1.355e+006
5.16
5.79e4
1352539
bb
4452.56



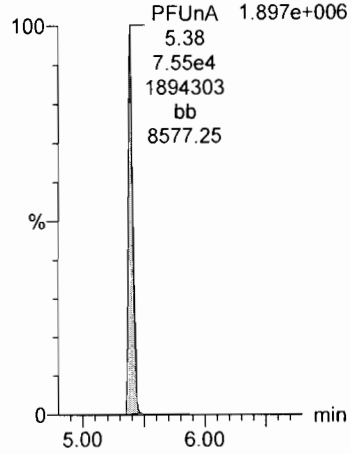
N-MeFOSAA
F19:MRM of 1 channel,ES-
570 > 419.1
3.793e+005



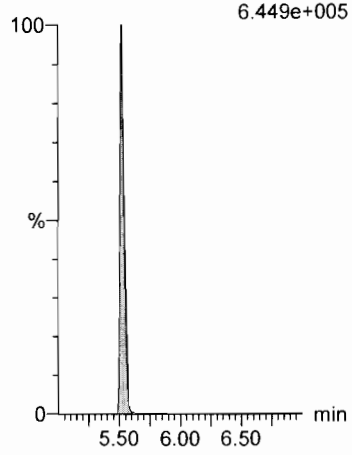
N-EtFOSAA
F21:MRM of 1 channel,ES-
584.0 > 419.1
3.011e+005



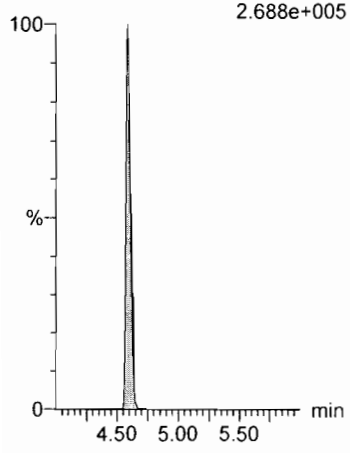
PFUnA
F18:MRM of 1 channel,ES-
563 > 519
PFUnA 1.897e+006
5.38
7.55e4
1894303
bb
8577.25



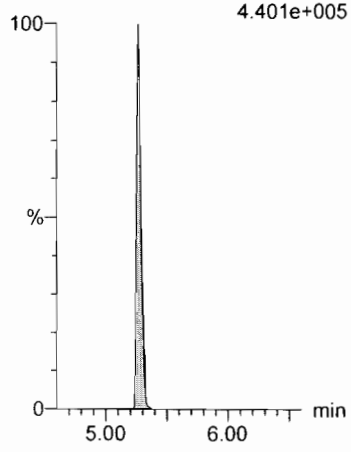
11Cl-PF3OUdS
F24:MRM of 2 channels,ES-
630.9 > 451.0
6.449e+005



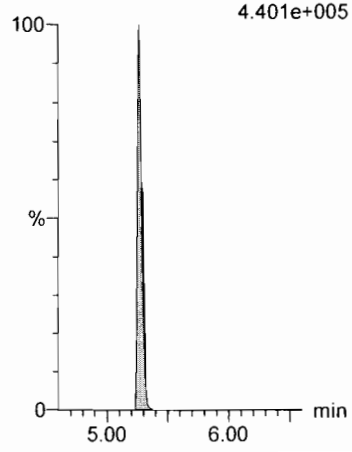
13C2-PFOA
F11:MRM of 1 channel,ES-
415 > 370
2.688e+005



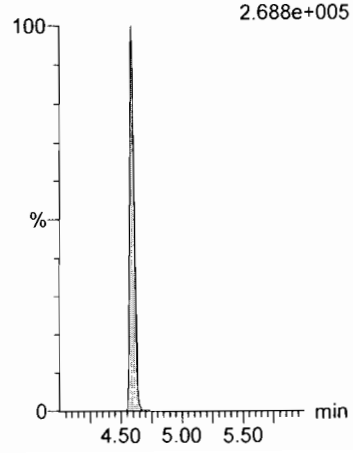
d3-N-MeFOSAA
F20:MRM of 1 channel,ES-
573.0 > 419.0
4.401e+005



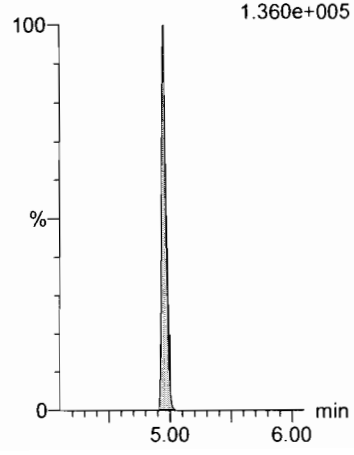
d3-N-MeFOSAA
F20:MRM of 1 channel,ES-
573.0 > 419.0
4.401e+005



13C2-PFOA
F11:MRM of 1 channel,ES-
415 > 370
2.688e+005



13C4-PFOS
F14:MRM of 1 channel,ES-
502.9 > 79.9
1.360e+005



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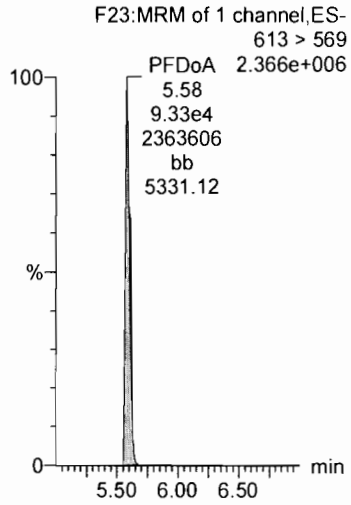
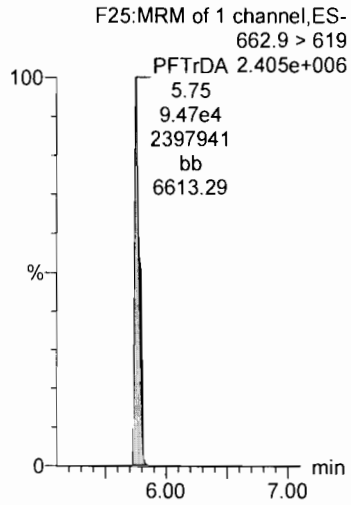
Name: 190328P1_9, Date: 28-Mar-2019, Time: 12:09:11, ID: ST190328P1-8 537 CS3 19C2509, Description: 537 CS3 19C2509

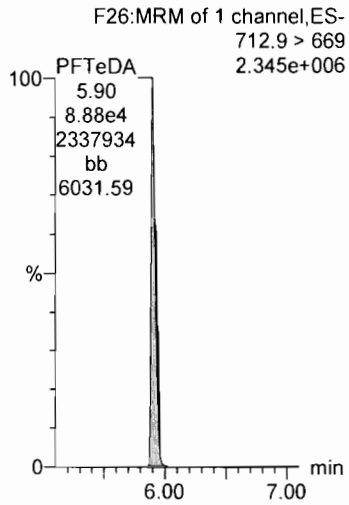
PFDoA



PFTrDA



PFTeDA



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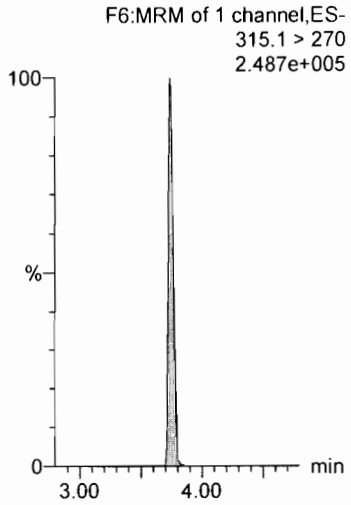
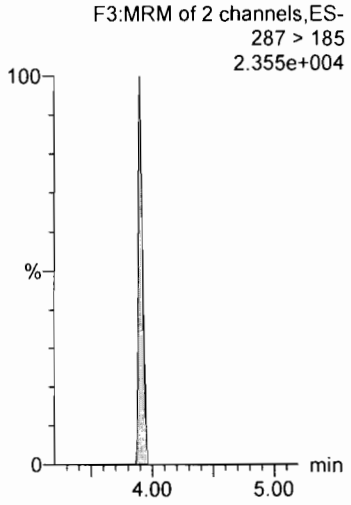


13C3-HFPO-DA



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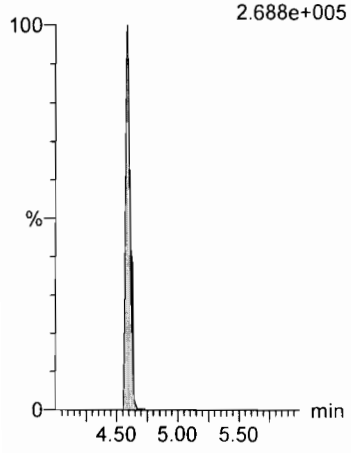

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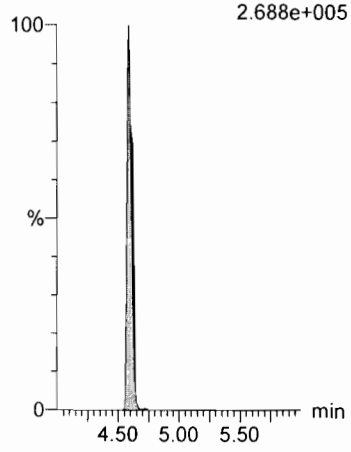

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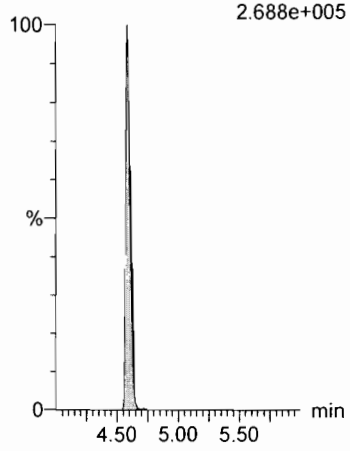

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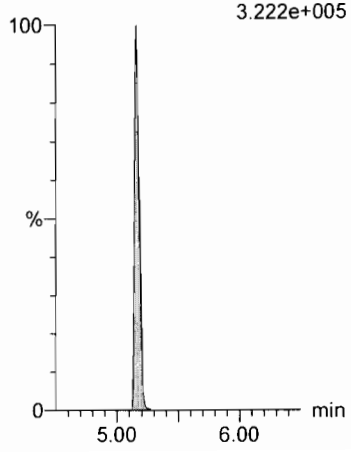
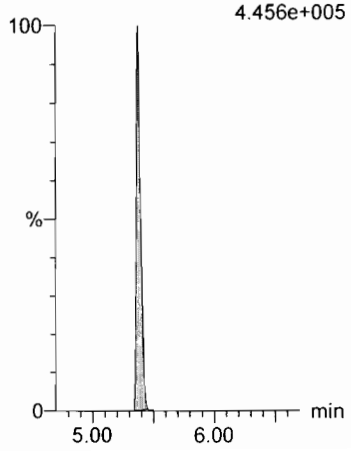


d5-N-EtFOSAA



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Name: 190328P1_10, Date: 28-Mar-2019, Time: 12:19:45, ID: ST190328P1-9 537 CS4 19C2510, Description: 537 CS4 19C2510

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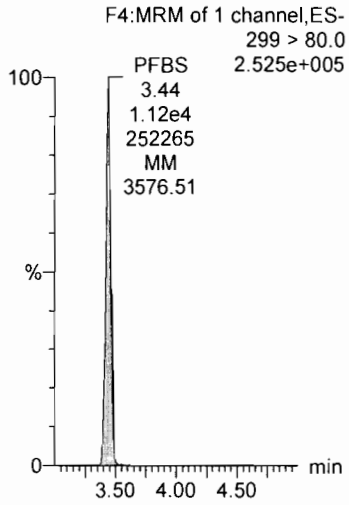

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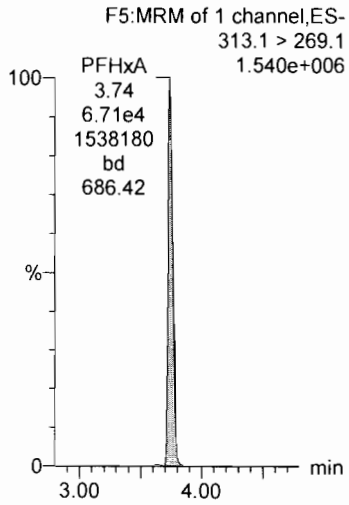
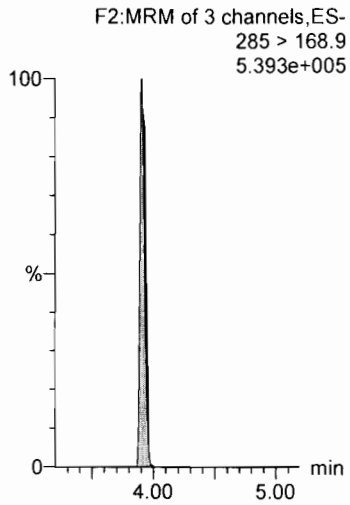
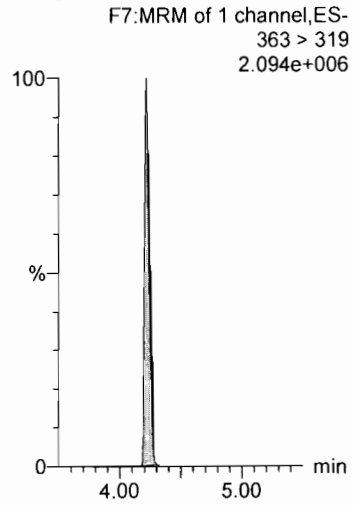


HFPO-DA



PFHpA



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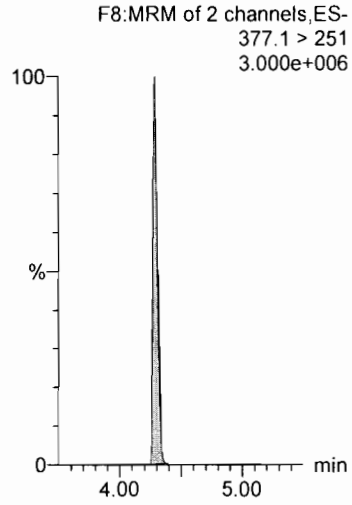

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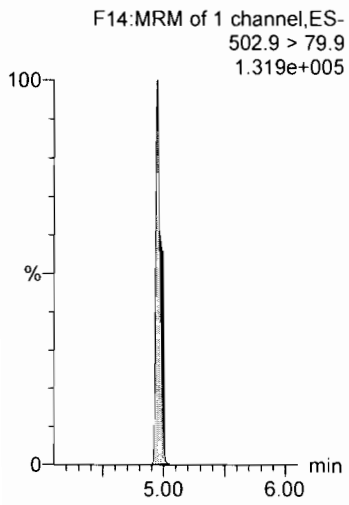

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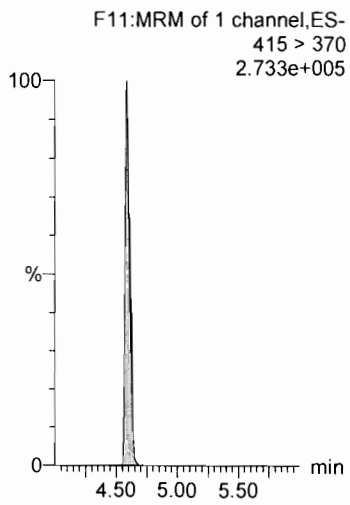

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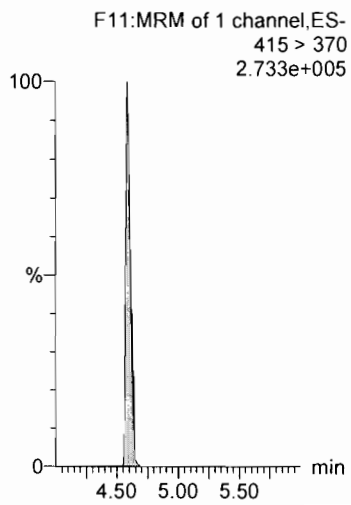

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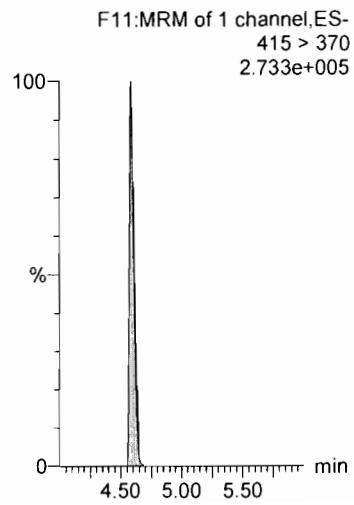

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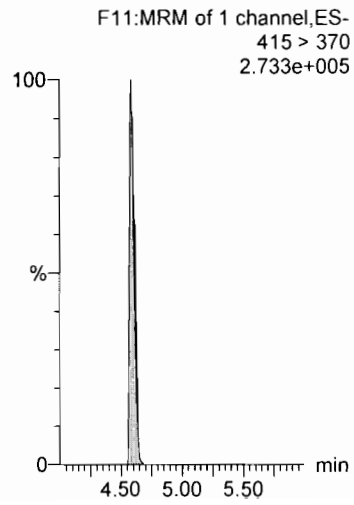

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Name: 190328P1_10, Date: 28-Mar-2019, Time: 12:19:45, ID: ST190328P1-9 537 CS4 19C2510, Description: 537 CS4 19C2510

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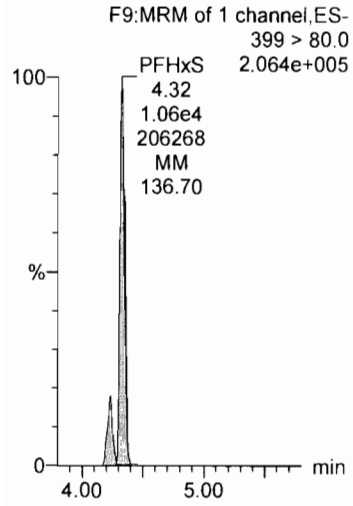

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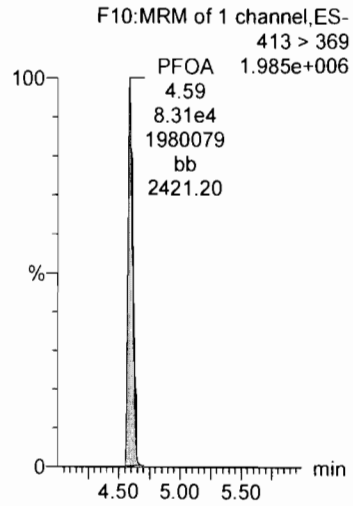

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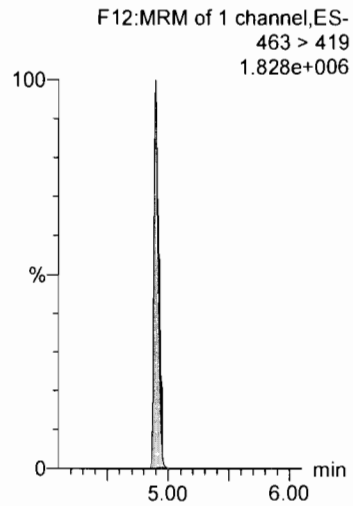
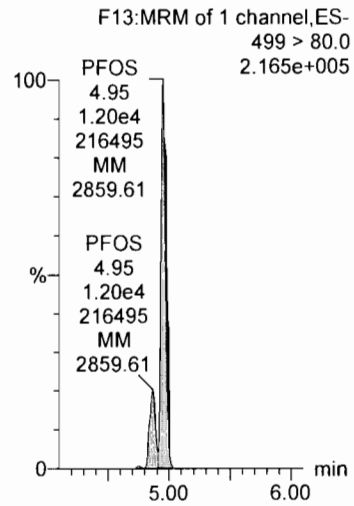
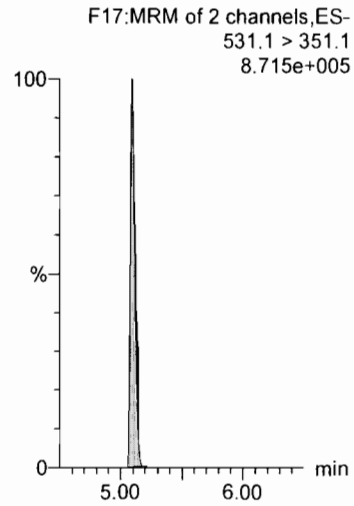


PFOS



9Cl-PF3ONS



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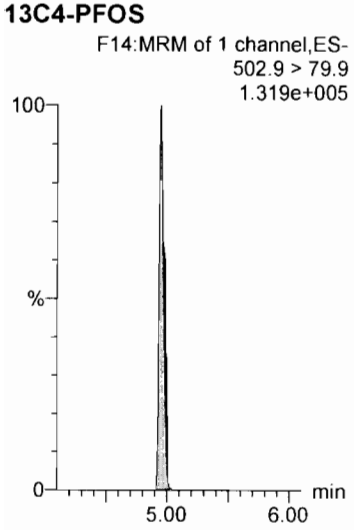

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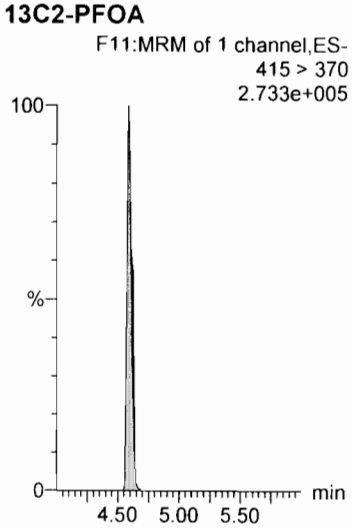

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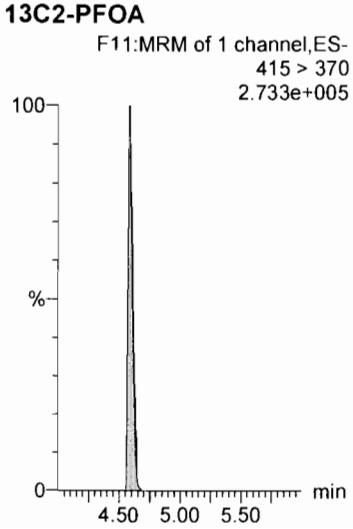

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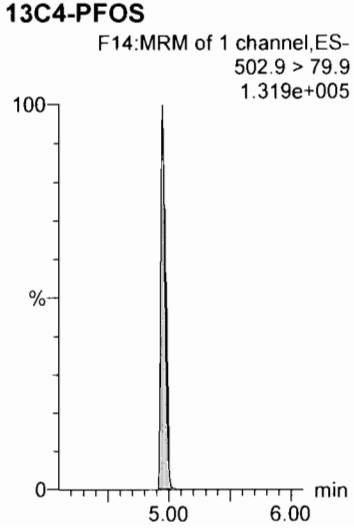

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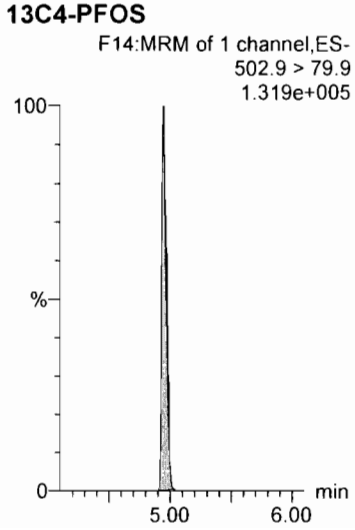

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Name: 190328P1_10, Date: 28-Mar-2019, Time: 12:19:45, ID: ST190328P1-9 537 CS4 19C2510, Description: 537 CS4 19C2510

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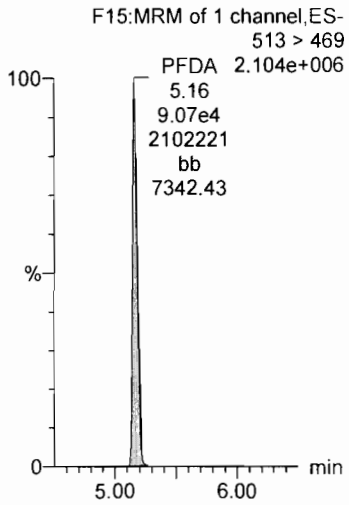

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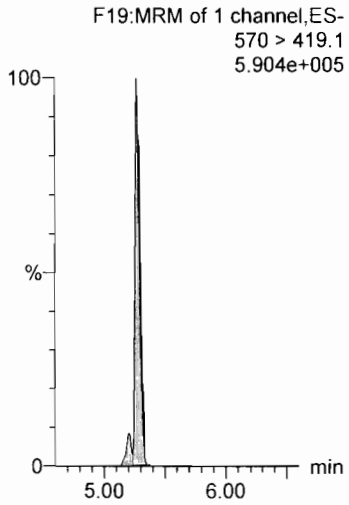

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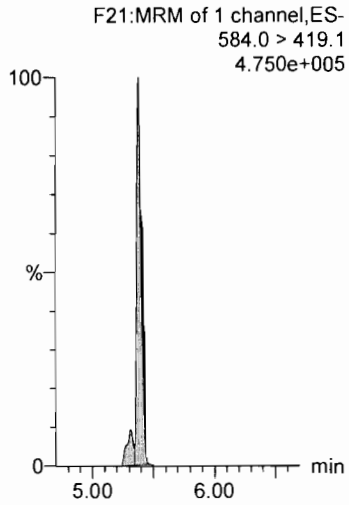

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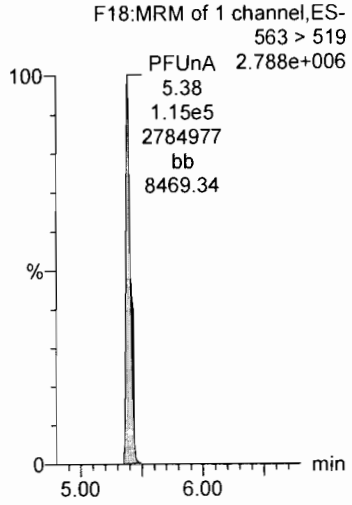

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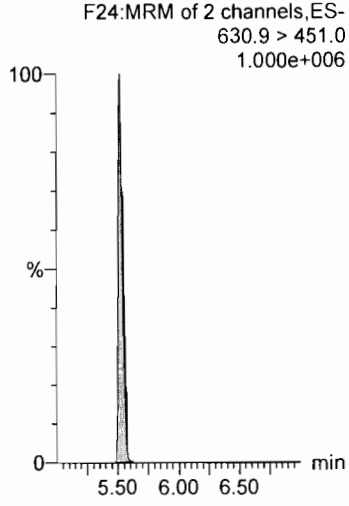

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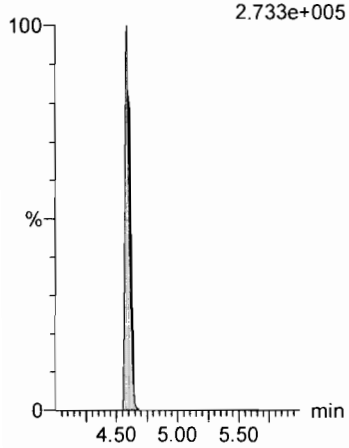

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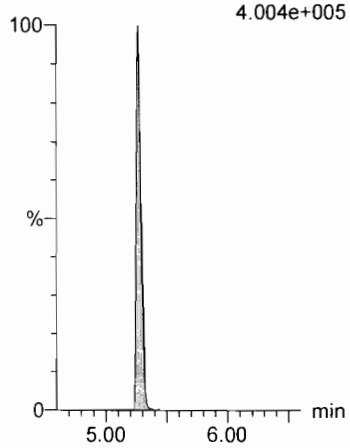

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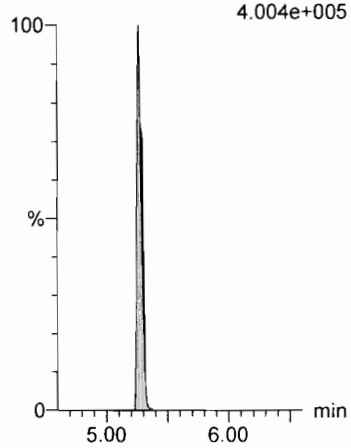

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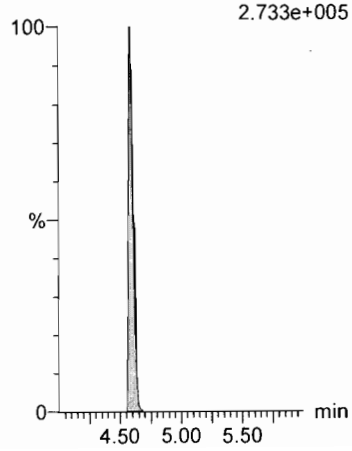

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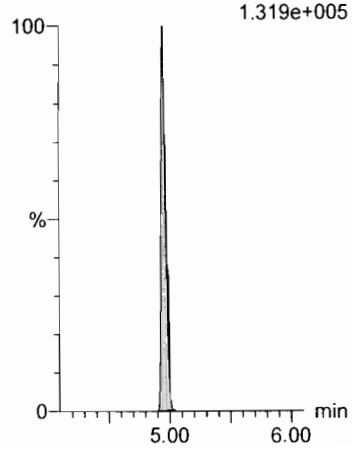

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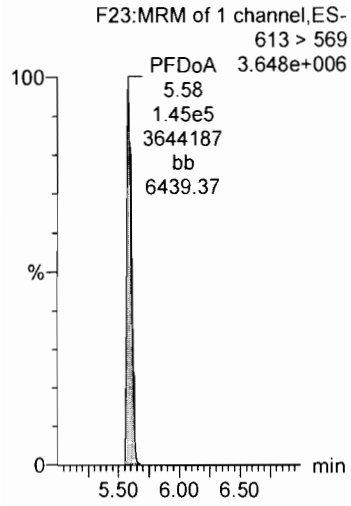

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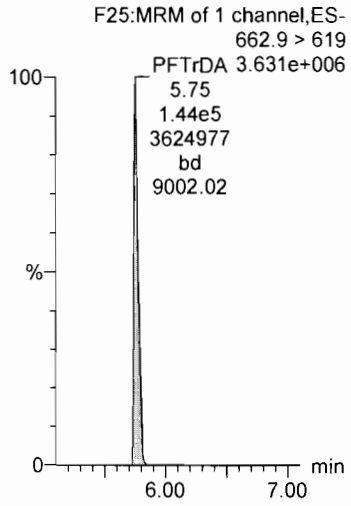

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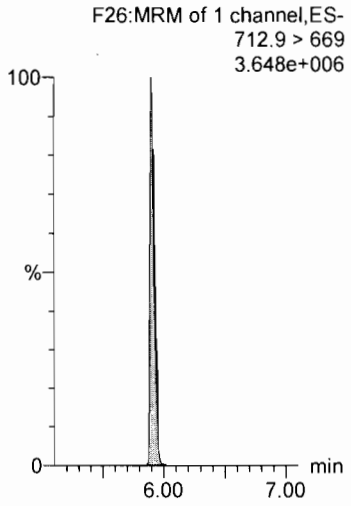

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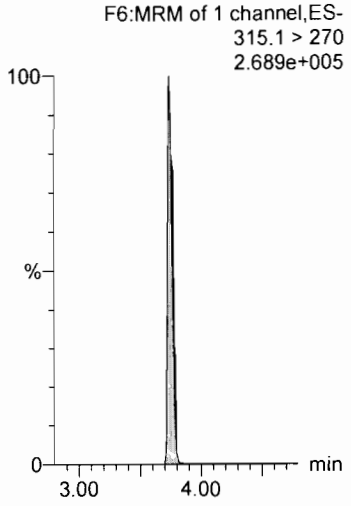

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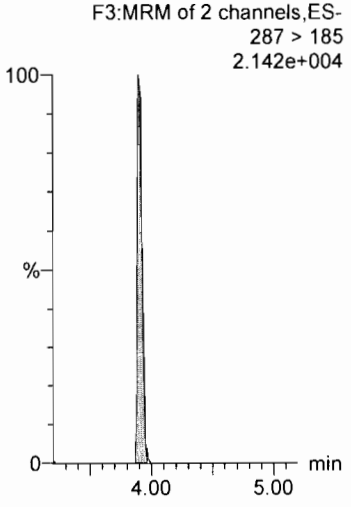

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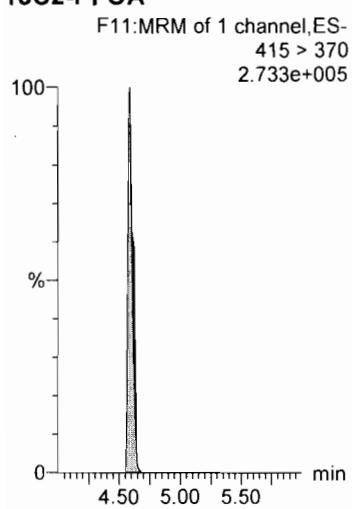

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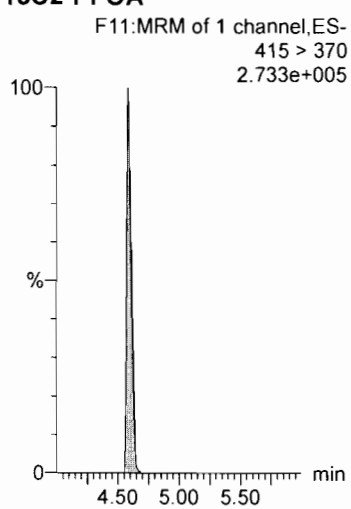

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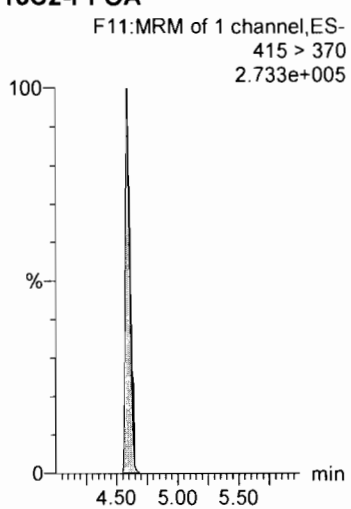

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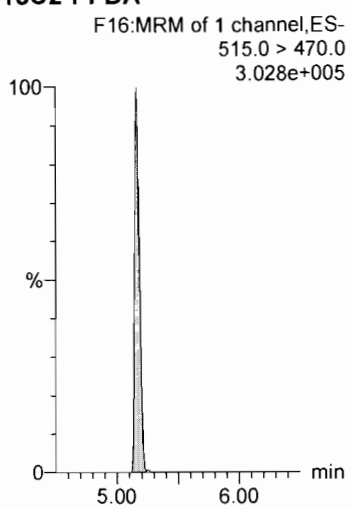

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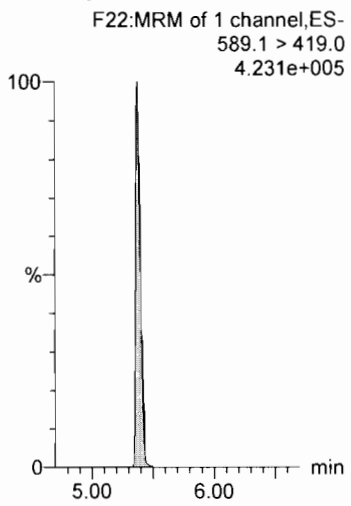

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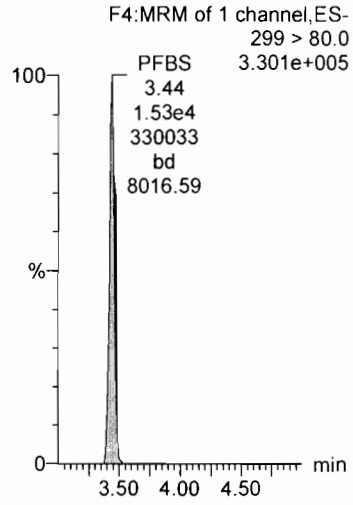

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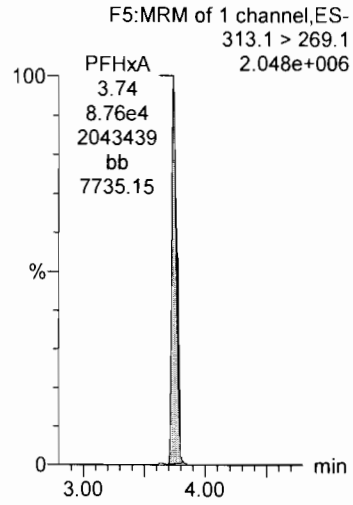

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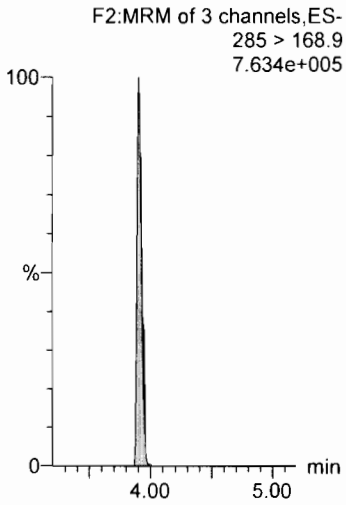

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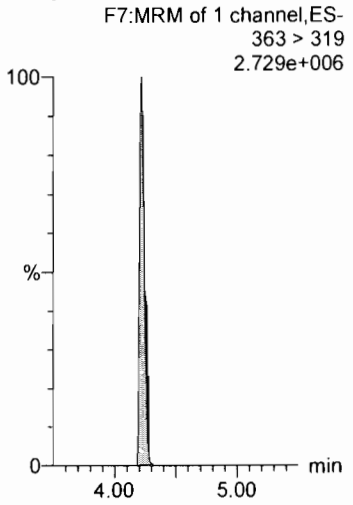

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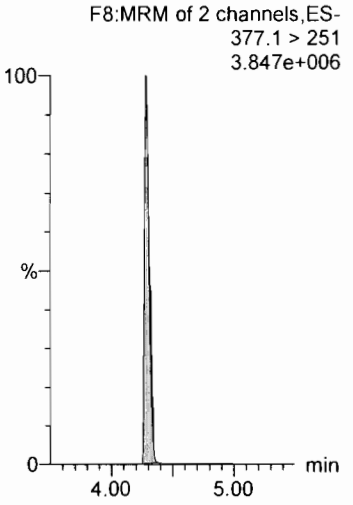

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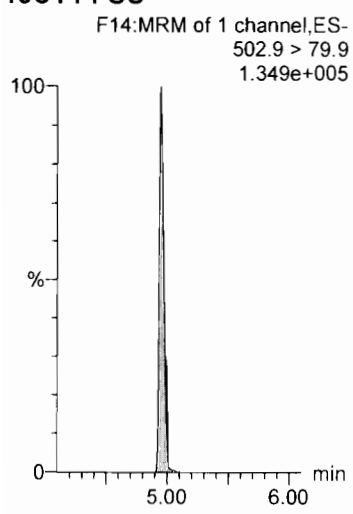

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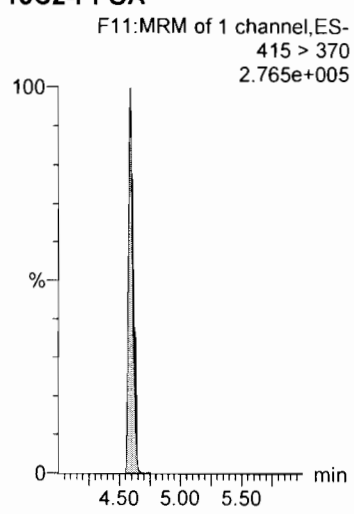

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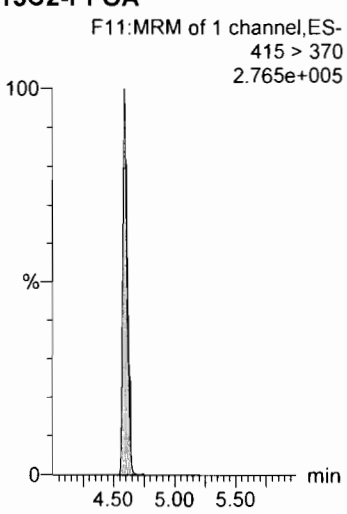

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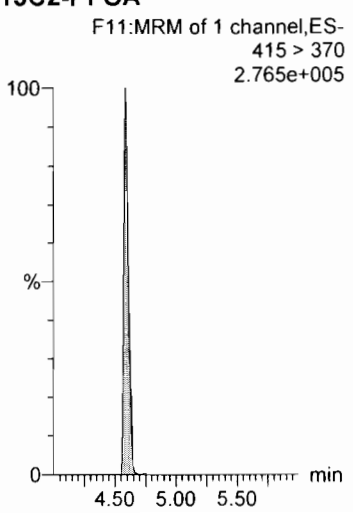

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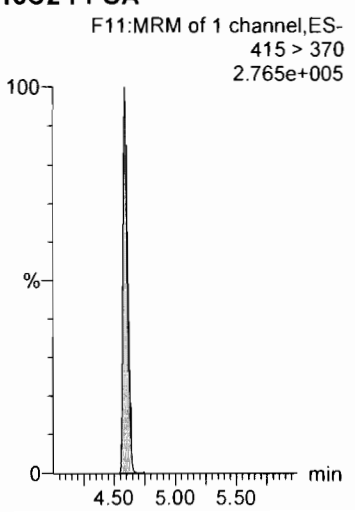

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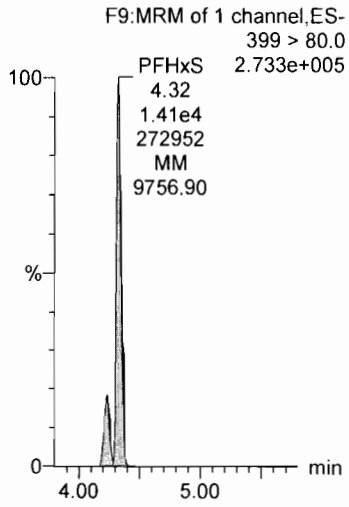

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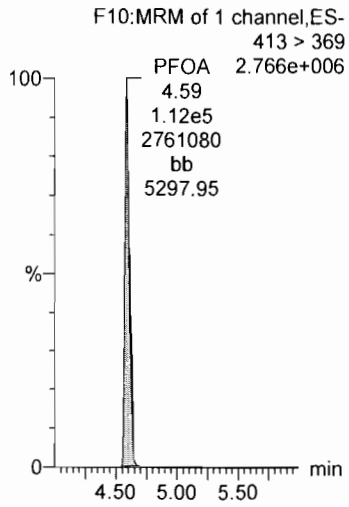

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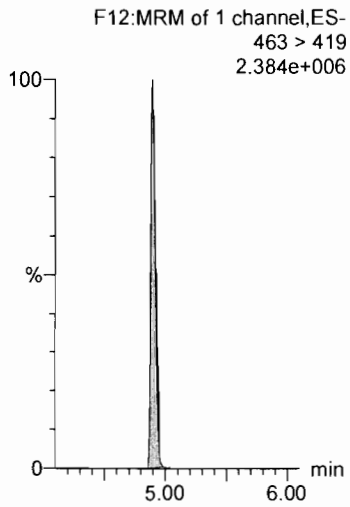

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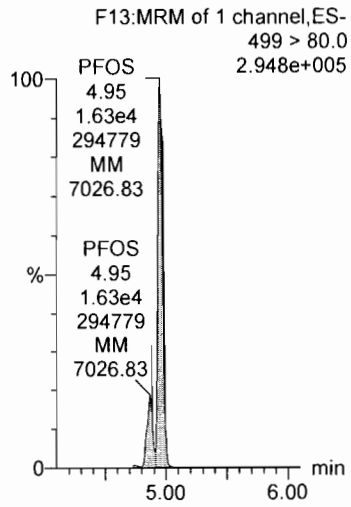

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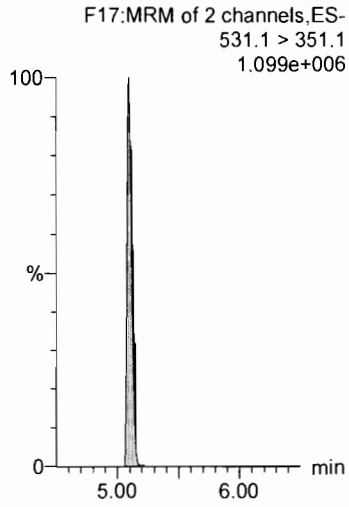

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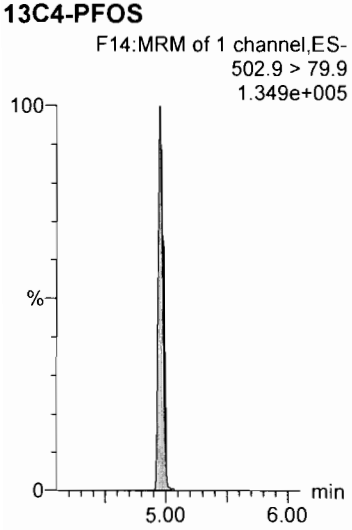

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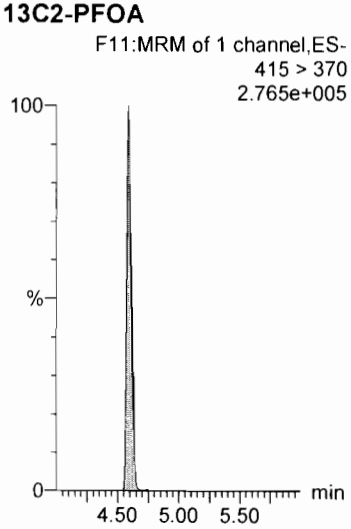

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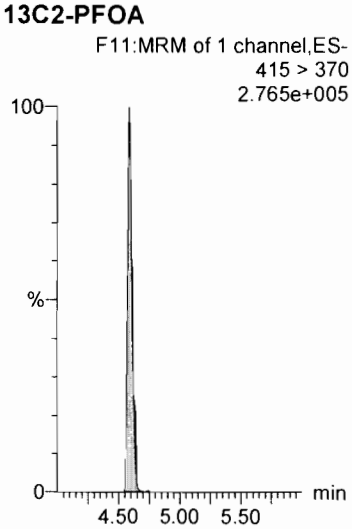

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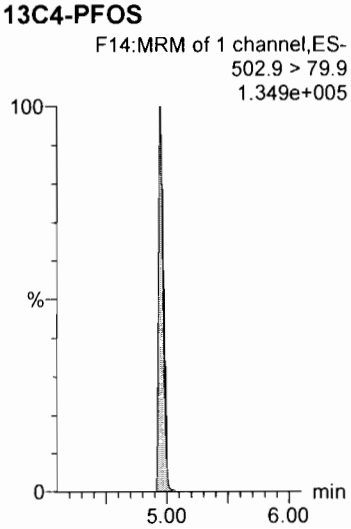

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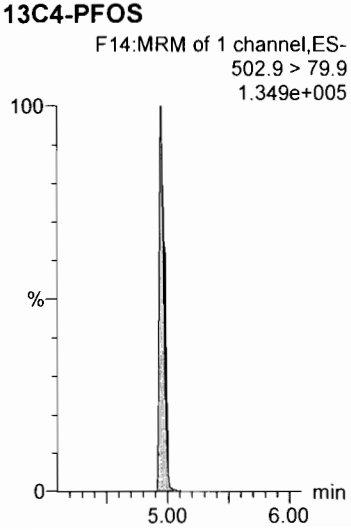

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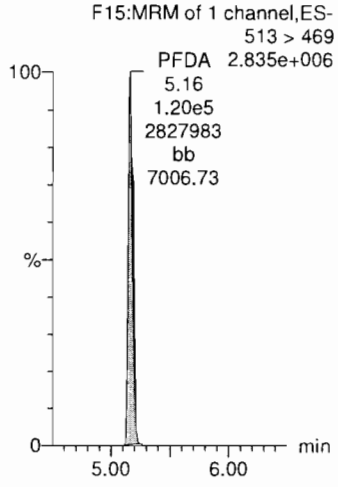

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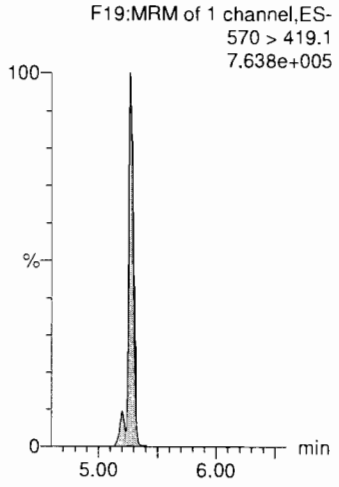

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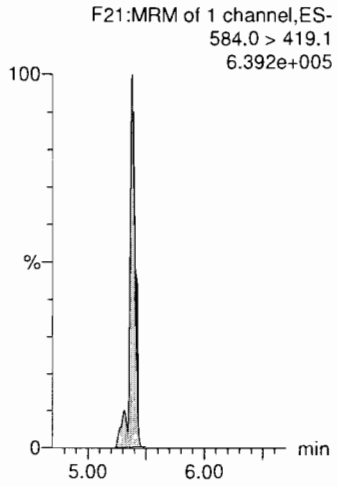

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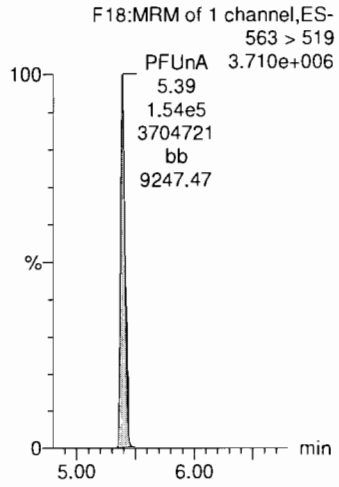

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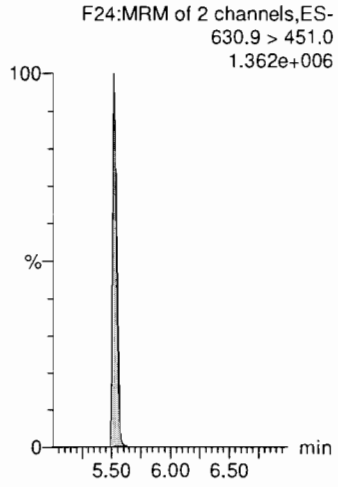

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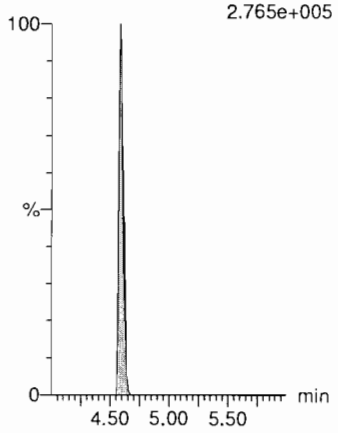

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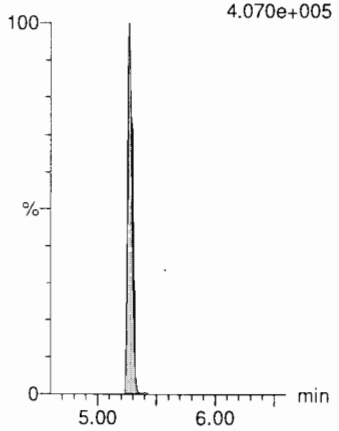

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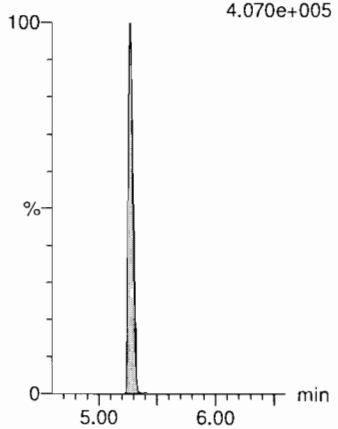

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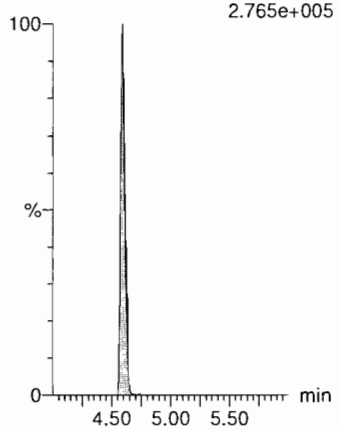

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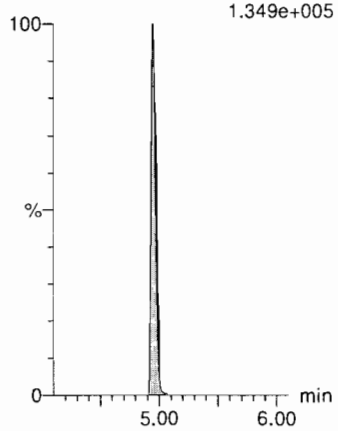

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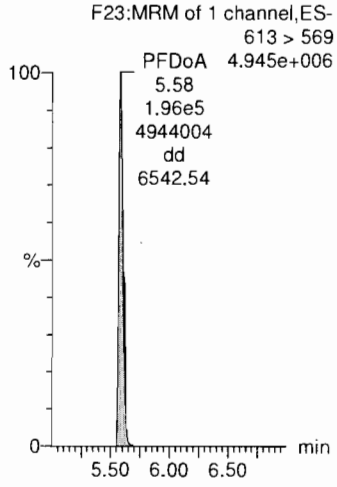
PFDoA



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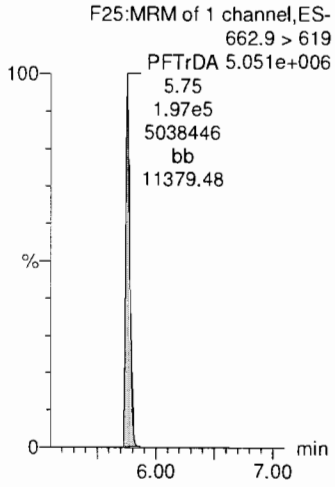

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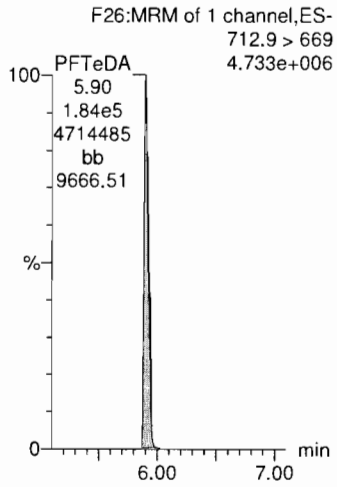

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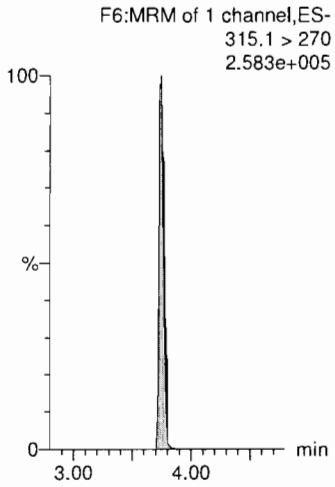

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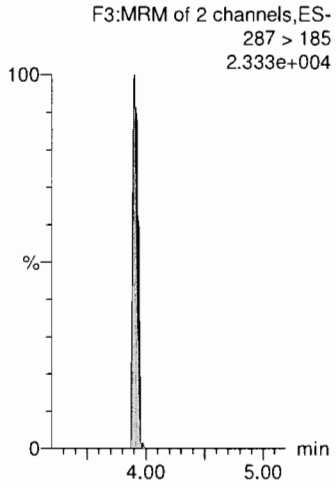

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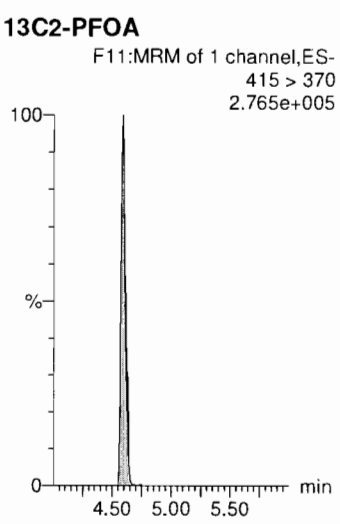

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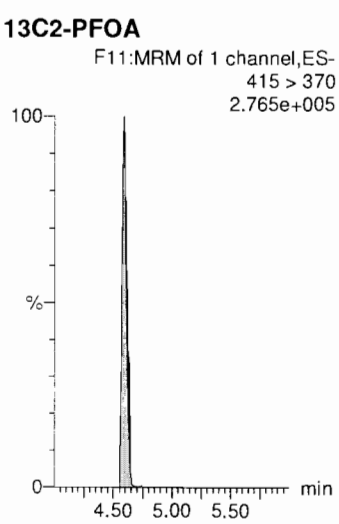

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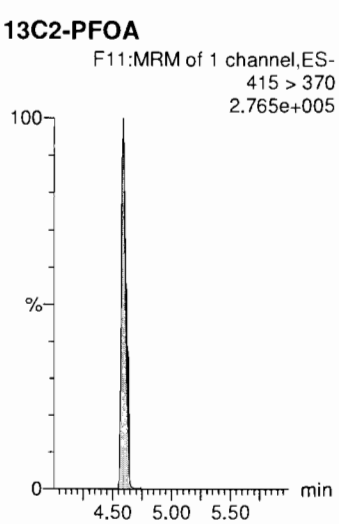

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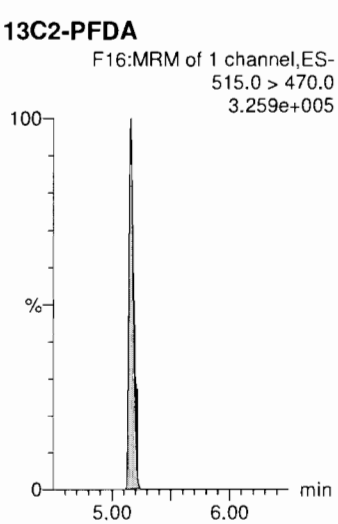

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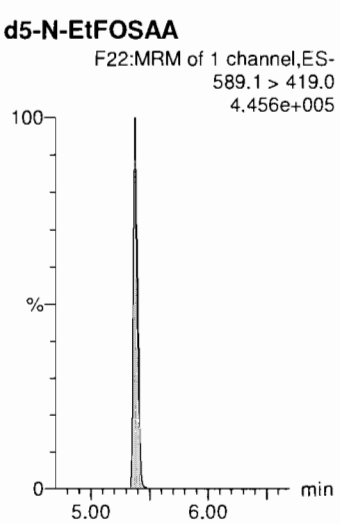

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JAD 3/29/19

(A) Not in ICV.

Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_13, Date: 28-Mar-2019, Time: 12:51:29, ID: ICV190328P1-1 537 ICV 19C2512, Description: 537 ICV 19C2511

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 80.0	1.60e3	5.67e3	1.00		3.46	3.43	8.07	9.46	94.6
2	2	PFHxA	313.1 > 269.1	8.53e3	1.18e4	1.00		3.74	3.74	7.22	9.47	94.7
3	3	HFPO-DA	285 > 168.9		1.18e4	1.00		3.90				(A)
4	4	PFHpA	363 > 319	1.16e4	1.18e4	1.00		4.20	4.22	9.86	9.67	96.7
5	5	ADONA	377.1>251		1.18e4	1.00		4.29				(A)
6	6	PFHxS	399 > 80.0	1.44e3	5.67e3	1.00		4.33	4.32	7.30	9.47	94.7
7	7	PFOA	413 > 369	1.12e4	1.18e4	1.00		4.58	4.59	9.51	9.80	98.0
8	8	PFNA	463 > 419	9.77e3	1.18e4	1.00		4.90	4.89	8.27	9.55	95.5
9	9	PFOS	499 >80.0	1.63e3	5.67e3	1.00		4.95	4.95	8.25	9.42	94.2
10	10	9Cl-PF3ONS	531.1>351.1		5.67e3	1.00		5.10				(A)
11	11	PFDA	513 > 469	1.13e4	1.18e4	1.00		5.16	5.16	9.60	9.41	94.1
12	12	N-MeFOSAA	570 > 419.1	3.00e3	1.73e4	1.00		5.27	5.27	6.95	9.44	94.4
13	13	N-EtFOSAA	584.0 >419.1	2.88e3	1.73e4	1.00		5.38	5.38	6.67	9.68	96.8
14	14	PFUnA	563 > 519	1.45e4	1.18e4	1.00		5.38	5.38	12.3	9.21	92.1
15	15	11Cl-PF3OUdS	630.9>451.0		5.67e3	1.00		5.52				(A)
16	16	PFDoA	613 > 569	1.75e4	1.18e4	1.00		5.58	5.58	14.8	8.85	88.5
17	17	PFTrDA	662.9 > 619	1.88e4	1.18e4	1.00		5.75	5.75	16.0	9.43	94.3
18	18	PFTeDA	712.9 > 669	1.72e4	1.18e4	1.00		5.91	5.90	14.5	9.11	91.1
19	19	13C2-PFHxA	315.1 > 270	1.11e4	1.18e4	1.00	1.000	3.74	3.74	9.38	9.37	93.7
20	20	13C3-HFPO-DA	287 >185	9.67e2	1.18e4	1.00	0.085	3.90	3.91	0.819	9.63	96.3
21	21	13C2-PFDA	515.0 > 470.0	1.35e4	1.18e4	1.00	1.208	5.16	5.16	11.4	9.47	94.7
22	22	d5-N-EtFOSAA	589.1 > 419.0	1.79e4	1.73e4	1.00	1.020	5.38	5.38	41.5	40.7	101.8
23	23	13C2-PFOA	415 > 370	1.18e4	1.18e4	1.00	1.000	4.59	4.58	10.0	10.0	100.0
24	24	13C4-PFOS	502.9 > 79.9	5.67e3	5.67e3	1.00	1.000	4.95	4.95	28.7	28.7	100.0
25	25	d3-N-MeFOSAA	573.0 > 419.0	1.73e4	1.73e4	1.00	1.000	5.27	5.27	40.0	40.0	100.0

AM 3/29/19

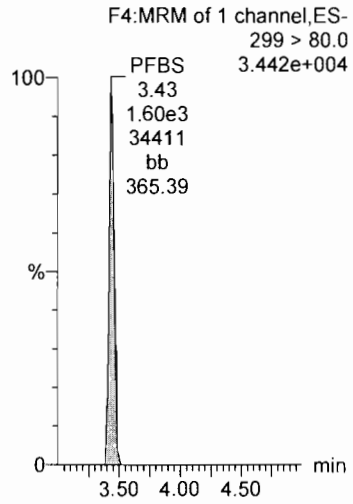
Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-ICV.qld

Last Altered: Thursday, March 28, 2019 18:17:04 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:17:17 Pacific Daylight Time

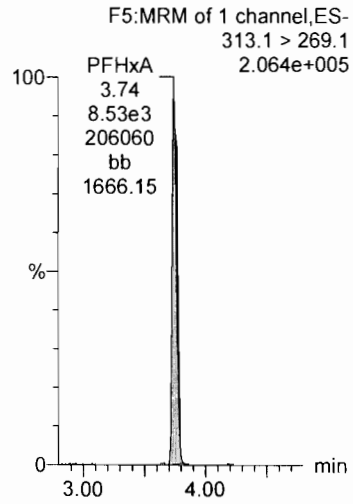
Method: D:\PFAS3.PRO\MethDB\PFAS_DW_L18_032819.mdb 28 Mar 2019 15:24:22
Calibration: D:\PFAS3.PRO\CurveDB\537_Q5_03-28-19_L18.cdb 28 Mar 2019 15:24:24

Name: 190328P1_13, Date: 28-Mar-2019, Time: 12:51:29, ID: ICV190328P1-1 537 ICV 19C2512, Description: 537 ICV 19C2511

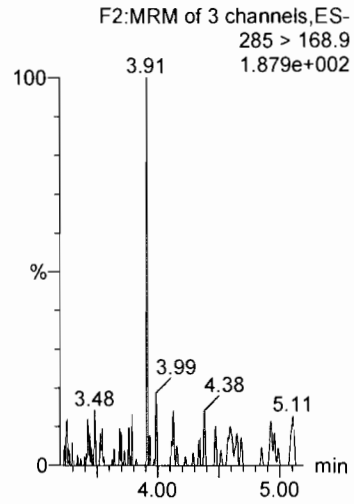
PFBS



PFHxA



HFPO-DA



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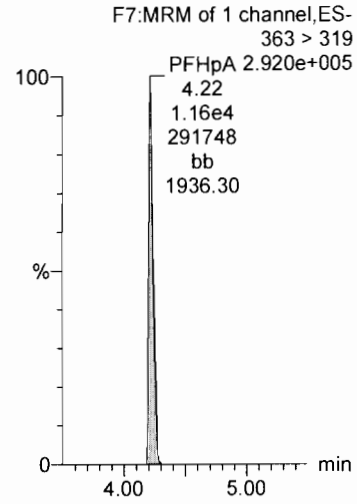
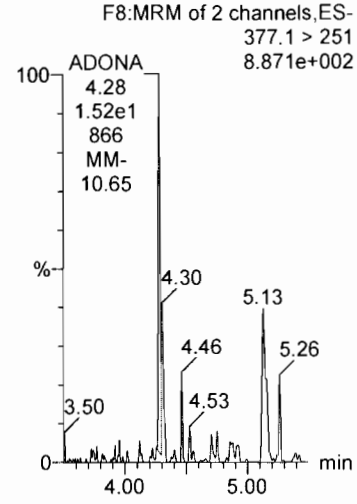
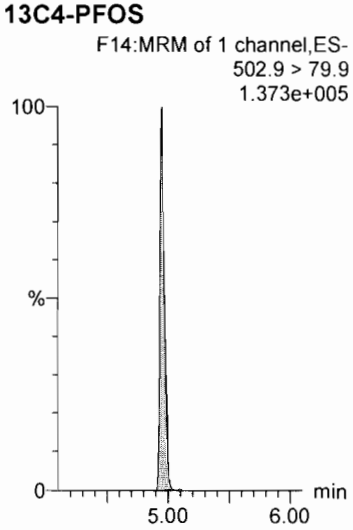


ADONA



13C4-PFOS



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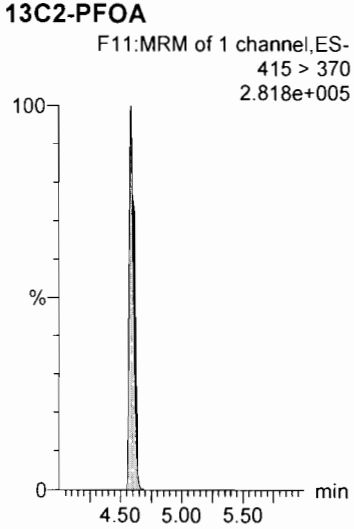

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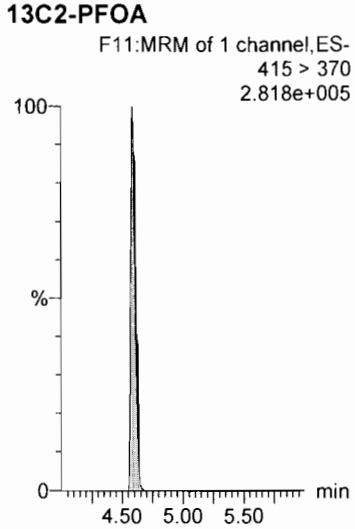

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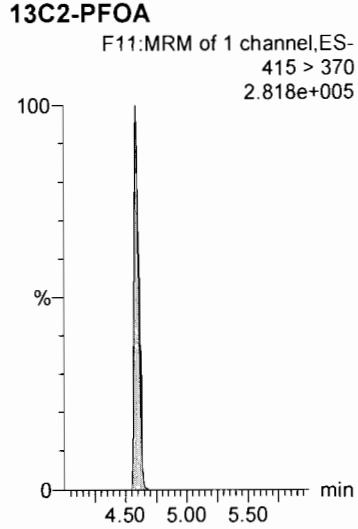

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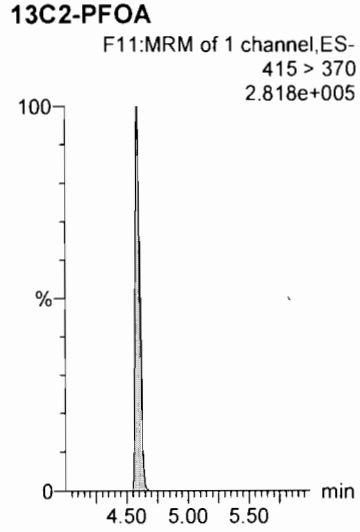
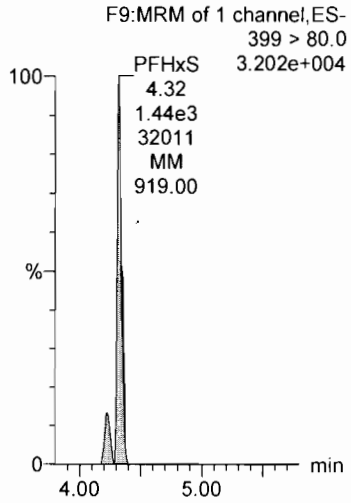


Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-ICV.qld

Last Altered: Thursday, March 28, 2019 18:17:04 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:17:17 Pacific Daylight Time

Name: 190328P1_13, Date: 28-Mar-2019, Time: 12:51:29, ID: ICV190328P1-1 537 ICV 19C2512, Description: 537 ICV 19C2511

PFHxS



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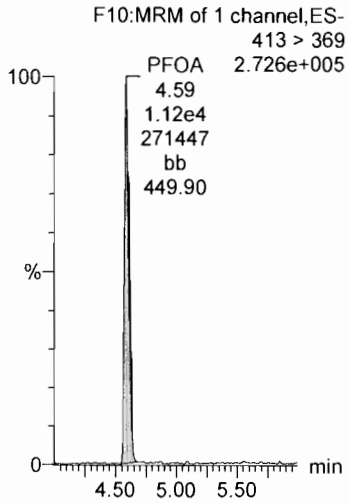

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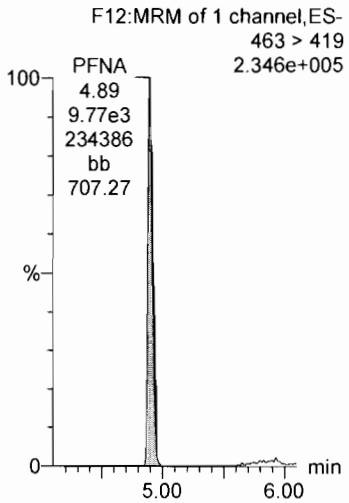

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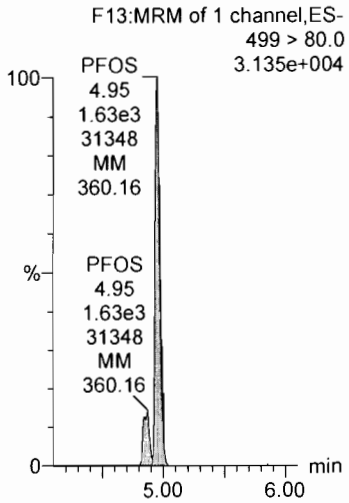
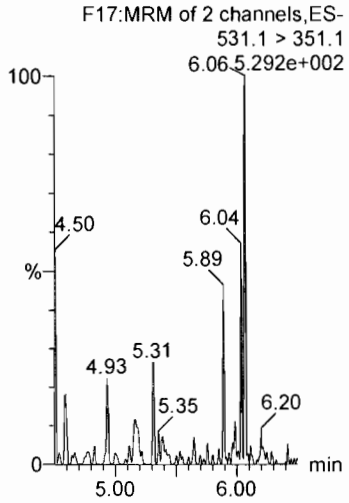
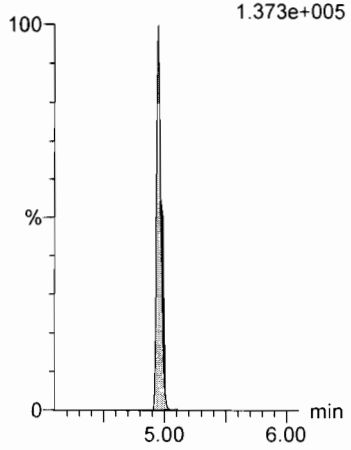


9Cl-PF3ONS



13C4-PFOS



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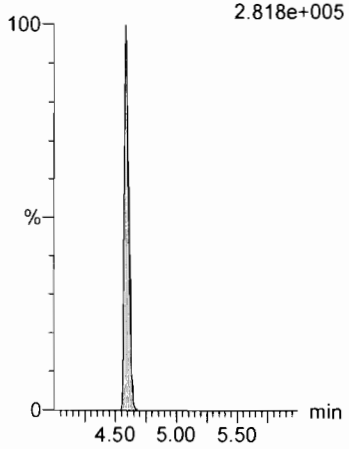

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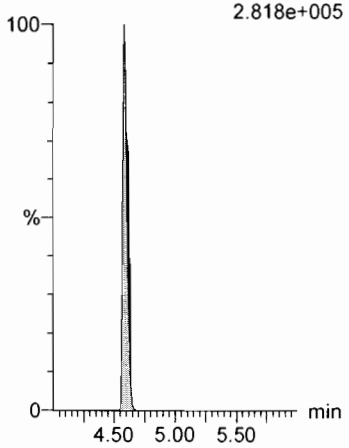

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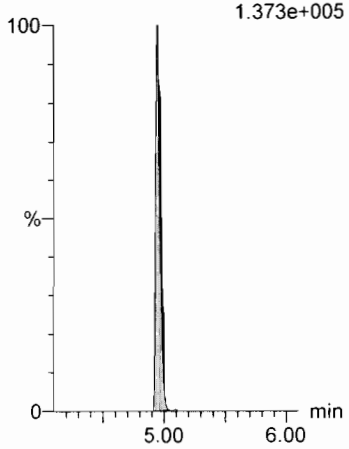

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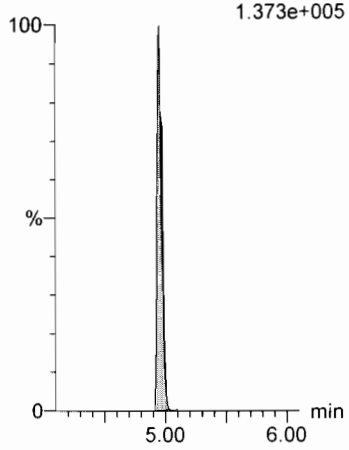
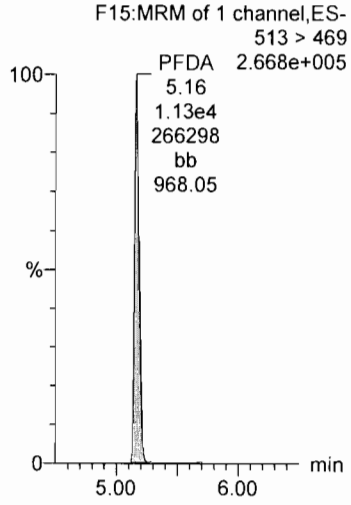


Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-ICV.qld

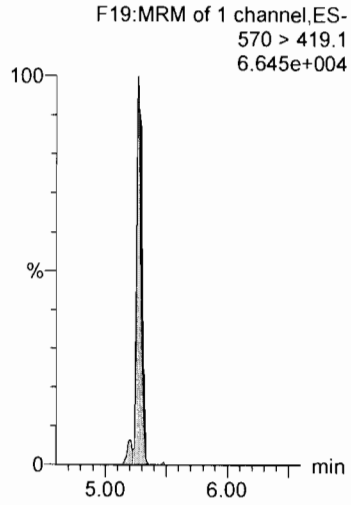
Last Altered: Thursday, March 28, 2019 18:17:04 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:17:17 Pacific Daylight Time

Name: 190328P1_13, Date: 28-Mar-2019, Time: 12:51:29, ID: ICV190328P1-1 537 ICV 19C2512, Description: 537 ICV 19C2511

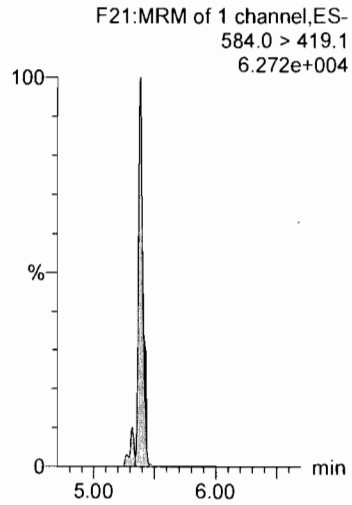
PFDA



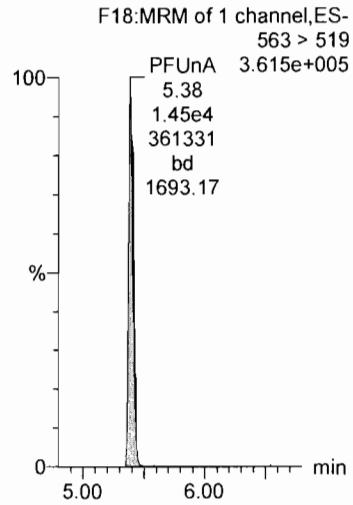
N-MeFOSAA



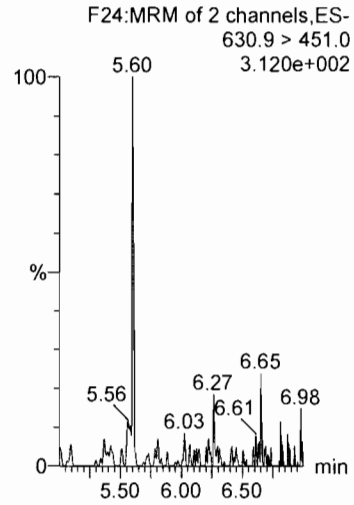
N-EtFOSAA



PFUnA



11Cl-PF3OUdS



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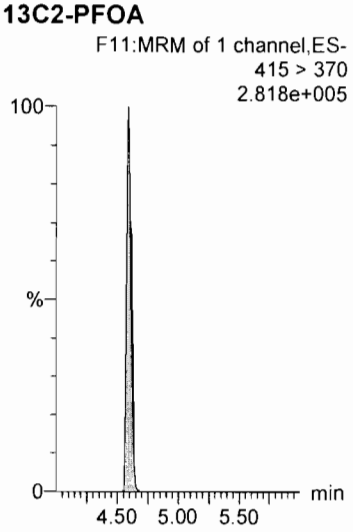

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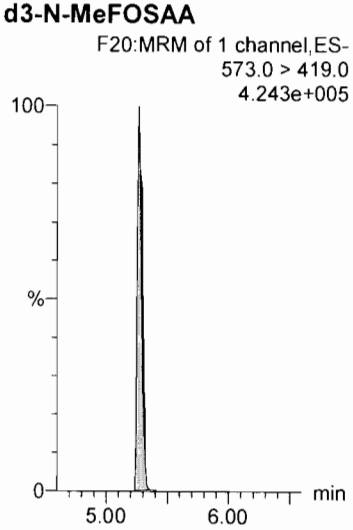

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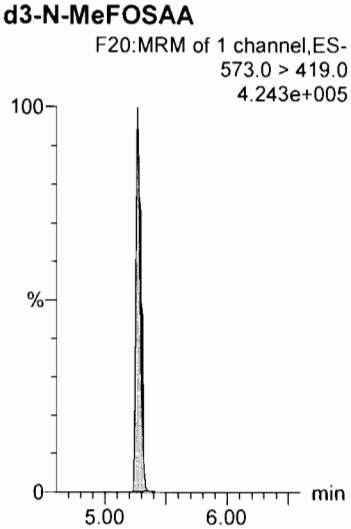

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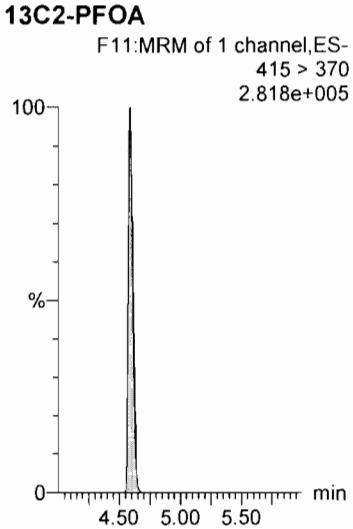

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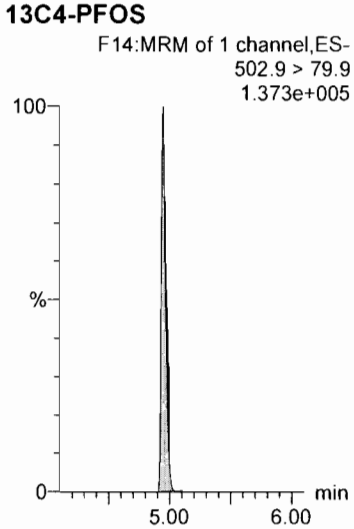
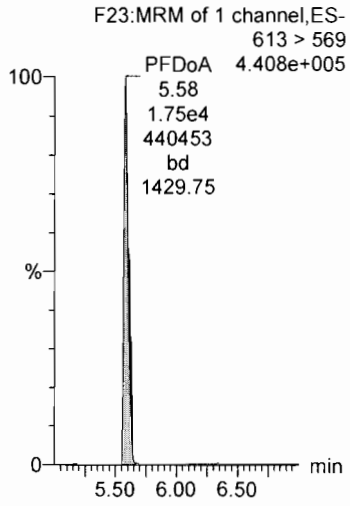


Dataset: D:\PFAS3.PRO\RESULTS\190328P1\190328P1-ICV.qld

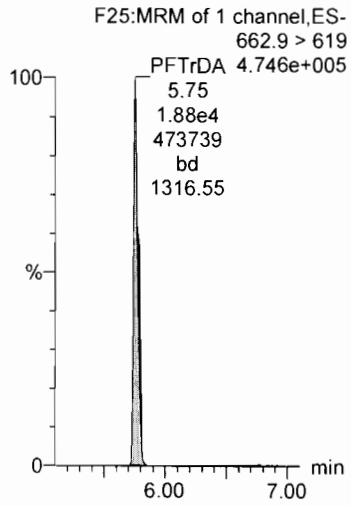
Last Altered: Thursday, March 28, 2019 18:17:04 Pacific Daylight Time
Printed: Thursday, March 28, 2019 18:17:17 Pacific Daylight Time

Name: 190328P1_13, Date: 28-Mar-2019, Time: 12:51:29, ID: ICV190328P1-1 537 ICV 19C2512, Description: 537 ICV 19C2511

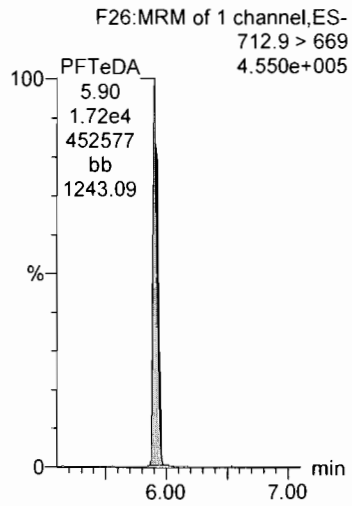
PFDoA



PFTrDA



PFTeDA



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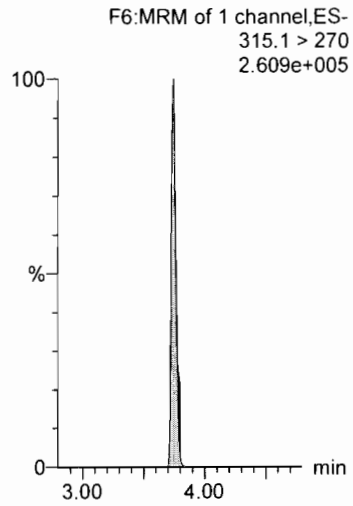
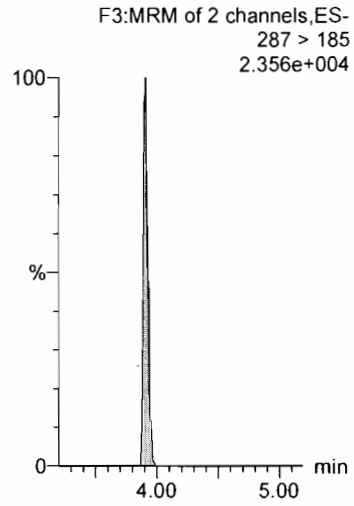
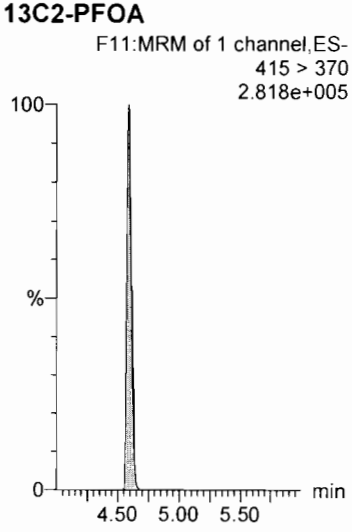


13C3-HFPO-DA



13C2-PFOA



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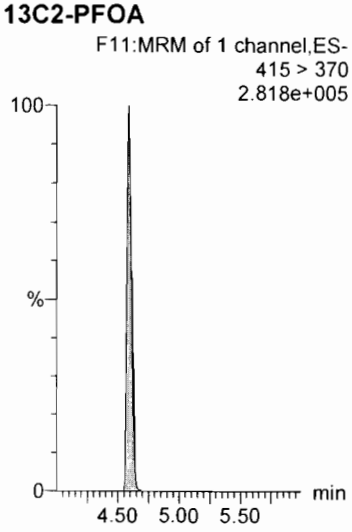

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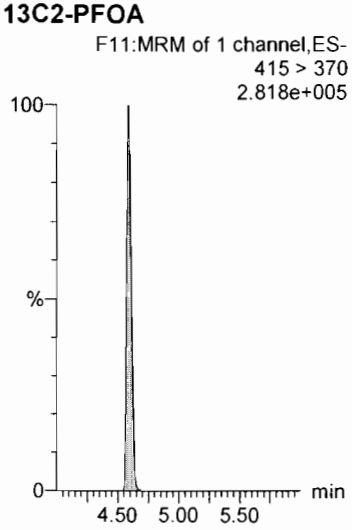

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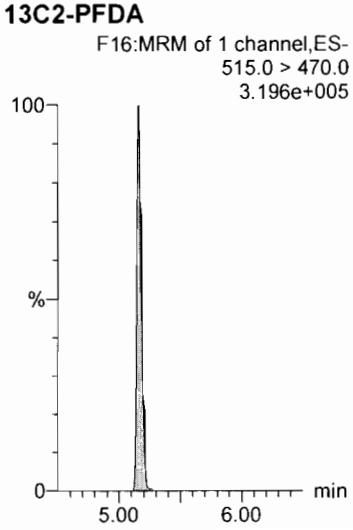
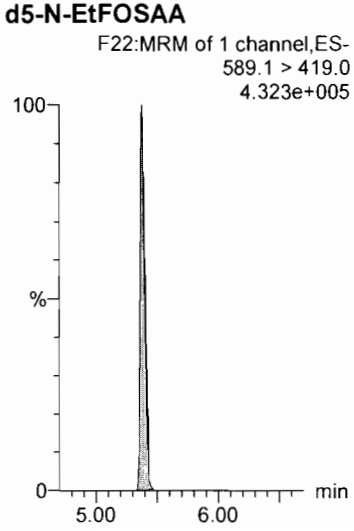


d5-N-EtFOSAA



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(PFHXA)","0.368","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","",
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"Charlie's Pasture-DW 031319","537","03/30/19","16:48","N","NA","DL1","355-46-4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","1.04","","TRG","Yes","Y","D","Y","0.0304","0.0500","0.100","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Charlie's Pasture-DW 031319","537","03/30/19","16:48","N","NA","DL1","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.807","","TRG","Yes","Y","D","Y","0.0304","0.0500","0.100","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0280","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","",
"","","","","","","",""
"Charlie's Pasture-DW 031319","537","03/30/19","16:48","N","NA","DL1","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","1.52","","TRG","Yes","Y","D","Y","0.0304","0.0500","0.100","UG_L","UG_L","","","","","","","","","","","","",
"","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","",
"","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","",
"","","","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","2991-50-6","EtFOSAA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","",
"","","","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","72629-94-

8","PFTrDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","",
"","","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","",
"","","","","","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","13C2-PFHxA","13C2-
PFHxA","98.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","98.8","98.8","","","","","","70","130","
","","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","13C2-PFDA","13C2-
PFDA","90.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","90.0","90.0","","","","","","70","130",""
,"","",""
"Charlie's Pasture-DW 031319","537","03/28/19","18:51","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","86.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","86.6","86.6","","","","","","70","130
","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","375-73-
5","PFBS","0.0444","","TRG","Yes","Y","","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","",
"","","","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID
(PFHXA)","0.401","","TRG","Yes","Y","","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","","
","","","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID
(PFHPA)","0.192","","TRG","Yes","Y","","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","",""
,"","","","","","","",""
"Dup-1","537","03/30/19","16:59","N","NA","DL1","355-46-4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","0.886","","TRG","Yes","Y","D","Y","0.0306","0.0502","0.101","UG_L","UG_L","","","","","","","","","","
","","","","","","",""
"Dup-1","537","03/30/19","16:59","N","NA","DL1","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.827","","TRG","Yes","Y","D","Y","0.0306","0.0502","0.101","UG_L","UG_L","","","","","","","","","","",
"","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0316","","TRG","Yes","Y","","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","",""
,"","","","","","","",""
"Dup-1","537","03/30/19","16:59","N","NA","DL1","1763-23-1","HEPTADECAFLUOROACTANESULFONIC
ACID SOLUTION
","1.38","","TRG","Yes","Y","D","Y","0.0306","0.0502","0.101","UG_L","UG_L","","","","","","","","","","","","","
","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","","","",""
,"","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","2355-31-
9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","",
"","","","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","2991-50-
6","EtFOSAA","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","","
","","","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","","","",
"","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","","","",
"","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","","",
"","","","","","","",""

"Dup-1","537","03/28/19","19:01","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00306","0.00502","0.0101","UG_L","UG_L","","","","","","","","",
"","","","","","","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","13C2-PFHxA","13C2-
PFHxA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","70","130","",
"","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","13C2-PFDA","13C2-
PFDA","100","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","100","100","","","","","","70","130","","
","",""
"Dup-1","537","03/28/19","19:01","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","95.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","95.2","95.2","","","","","","70","130
","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","375-73-
5","PFBS","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","","
","","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID
(PFHXA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","","
","","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID
(PFHPA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","",""
,"","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","",""
,"","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC
ACID SOLUTION
","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","","","","","
","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","",
"","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","2355-31-
9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","
","","","","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","2991-50-
6","EtFOSAA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","",
"","","","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","","
","","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","","","
","","","","","","",""
"Field Blank","537","03/28/19","19:12","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","","
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"Field Blank","537","03/28/19","19:12","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.00999","UG_L","UG_L","","","","","","","",""

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"Field Blank","537","03/28/19","19:12","N","NA","000","13C2-PFHxA","13C2-
PFHxA","105","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","105","105","","","","","","70","130","","
","","",""
","","
"Field Blank","537","03/28/19","19:12","N","NA","000","13C2-PFDA","13C2-
PFDA","99.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","99.0","99.0","","","","","","70","130","","
","","",""
","","
"Field Blank","537","03/28/19","19:12","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","97.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","97.6","97.6","","","","","","70","130
","","","","",""
","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","375-73-
5","PFBS","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID
(PFHXA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID
(PFHPA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","1763-23-
1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
","","","","","","","","","
","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","2355-31-
9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
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","","","","","","","","","
","","","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","2991-50-
6","EtFOSAA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
","","","","","","","","","
","","","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
","","","","","","","","","
","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
","","","","","","","","","
","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
","","","","","","","","","
","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","","","","","","","","","","
","","","","","","","","","
","","","","","","","
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","13C2-PFHxA","13C2-

PFHxA","105","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","105","105","","","","","","70","130","","","","",""
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","13C2-PFDA","13C2-PFDA","105","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","105","105","","","","","","70","130","","","","",""
"B9C0124-BLK1","537","03/28/19","18:30","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","94.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","94.1","94.1","","","","","","70","130","","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","375-73-5","PFBS","0.0713","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0708","0.0713","101","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.0850","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0850","106","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0819","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0819","102","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0736","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0728","0.0736","101","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.0832","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0832","104","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","0.0836","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0836","105","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.0701","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0740","0.0701","94.8","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","0.0766","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0766","95.7","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","2355-31-9","MeFOSAA","0.0770","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0770","96.3","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","2991-50-6","EtFOSAA","0.0769","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0769","96.2","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","0.0710","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0710","88.8","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","0.0696","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0696","87.0","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","72629-94-8","PFTrDA","0.0699","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0699","87.3","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","376-06-7","PFTeDA","0.0700","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0700","87.5","","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","13C2-PFHxA","13C2-PFHxA","109","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","109","109","","","","","","70","130","","","","",""

"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","13C2-PFDA","13C2-PFDA","95.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","95.5","95.5","","","","","","70","130","","","","",""
"B9C0124-BS1","537","03/30/19","16:37","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","97.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","97.2","97.2","","","","","","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","375-73-5","PFBS","0.0657","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0708","0.0657","92.9","","","","","","8.08","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.0751","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0751","93.9","","","","","","12.3","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0763","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0763","95.4","","","","","","7.12","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0660","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0728","0.0660","90.7","","","","","","10.9","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.0766","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0766","95.8","","","","","","8.18","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","0.0718","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0718","89.7","","","","","","15.2","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.0715","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0740","0.0715","96.6","","","","","","1.89","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","0.0755","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0755","94.4","","","","","","1.42","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","2355-31-9","MeFOSAA","0.0752","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0752","94.0","","","","","","2.34","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","2991-50-6","EtFOSAA","0.0728","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0728","91.0","","","","","","5.49","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","0.0733","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0733","91.6","","","","","","3.18","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","0.0695","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0695","86.8","","","","","","0.153","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","72629-94-8","PFTrDA","0.0691","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0691","86.4","","","","","","1.10","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","376-06-7","PFTeDA","0.0665","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0665","83.1","","","","","","5.21","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","13C2-PFHxA","13C2-PFHxA","94.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","94.4","94.4","","","","","","70","130","","","","",""
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","13C2-PFDA","13C2-PFDA","95.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","95.6","95.6","","","","","","70","130","","

,"","","","
","","
"B9C0124-BSD1","537","03/28/19","18:19","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","94.3","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","94.3","94.3","","","","","","70","130","","","","","","

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AMEC Foster Wheeler, Inc.
7376 SW Durham Road
Portland, OR 97224
Attn: Ms. Kimberly Shiroodi
Kimberly.Shiroodi@woodplc.com

May 23, 2019

SUBJECT: Former Chase Field, Data Validation

Dear Ms. Shiroodi,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on May 23, 2019. Attachment 1 is a summary of the samples that were reviewed for analysis.

LDC Project #45129:

SDG #	Fraction
1803982, 1804167 1900154, 1900478	Perfluorinated Alkyl Acids

The data validation was performed under Stage 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Initial Assessment of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances, Sites at Various Base Realignment and Closure Installations; June 2017
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017
- USEPA, National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
Pgeng@lab-data.com.
Project Manager/Senior Chemist

746 pages-ADV ASAP Attachment 1

90/10 EDD

LDC #45129 (Wood Environment & Infrastructure Solutions, OR / Chase Field, TO 008)

KMEA PO000936

LDC	SDG#	DATE REC'D	(1) DATE DUE	PFAs (537M)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	1803982	05/23/19	ASAP	3	0																																
B	1804167	05/23/19	ASAP	1	0																																
C	1900154	05/23/19	ASAP	1	0																																
D	1900478	05/23/19	ASAP	1	0																																
Total	T/PG			6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B review). These sample counts do not include DL, RE, MS, MSD, or DUP's.

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1803982

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
Big Field-DW-120618	1803982-01	Water	12/06/18
Behind the Base-DW-120618	1803982-03	Water	12/06/18
Shooting Range 1-DW-120618	1803982-05	Water	12/06/18
Shooting Range 1-DW-120618MS	1803982-05MS	Water	12/06/18
Shooting Range 1-DW-120618MSD	1803982-05MSD	Water	12/06/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537, Revision 1.1

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample Source Blank was identified as a source blank. No contaminants were found.

Sample Shooting Range 1-FB-120618 was identified as a field blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all drinking water samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within the QC limits for Shooting Range 1-DW-120618MS/MSD. No data were qualified since the parent sample results were greater than the spiked concentration

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
Shooting Range 1-DW-120618MS/MSD (Shooting Range 1-DW-120618)	PFOA	43 (≤30)	J (all detects)	A

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples Shooting Range 1-DW-120618 and DUP-1 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	Shooting Range 1-DW-120618	DUP-1				
PFBS	34.2	32.0	-	2.2 (≤10.6)	-	-
PFHxA	213	194	9 (≤30)	-	-	-
PHHpA	87.2	76.0	14 (≤30)	-	-	-
PFHxS	362	299	19 (≤30)	-	-	-

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	Shooting Range 1-DW-120618	DUP-1				
PFOA	246	185	28 (≤30)	-	-	-
PFNA	21.7	15.7	-	6 (≤10.6)	-	-
PFOS	375	268	33 (≤30)	-	J (all detects)	A

XI. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD RPD and field duplicate RPD, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1803982

Sample	Compound	Flag	A or P	Reason
Shooting Range 1-DW-120618	PFOA	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)
Shooting Range 1-DW-120618 DUP-1	PFOS	J (all detects)	A	Field duplicates (RPD)

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1803982

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1803982

No Sample Data Qualified in this SDG

LDC #: 45129A96 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/2/19
SDG #: 1803982 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer:
2nd Reviewer: JM

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537M, Rev.1.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	~~RSD~~ <20% r^2 True <30/50% (low) KK <30%
IV.	Continuing calibration /ISC	A	ccv/ISC <30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	SB=5. FB=4
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D=3+6
XI.	Labeled Compounds	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	Big Field-DW-120618	1803982-01	Water	12/06/18
2	Behind the Base-DW-120618	1803982-03	Water	12/06/18
3	Shooting Range 1-DW-120618	1803982-05	Water	12/06/18
~~4~~	~~Shooting Range 1-FB-120618~~	~~1803982-06~~	~~Water~~	~~12/06/18~~
~~5~~	~~Source Blank~~	~~1803982-07~~	~~Water~~	~~12/06/18~~
~~6~~	~~DUP 1~~	~~1803982-08~~	~~Water~~	~~12/06/18~~
7	Shooting Range 1-DW-120618MS	1803982-05MS	Water	12/06/18
8	Shooting Range 1-DW-120618MSD	1803982-05MSD	Water	12/06/18
9				
10				

Notes:

	BBL00T6-BK1						

LDC #: 45129A96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: JV

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			low ≤ 50% for drinking water
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the continuing calibration ≤ 30%?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			

LDC #: 45179A96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: MG

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
XII. Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

LDC #: 45292A96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JV6

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?
Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?
Y N N/A Were all duplicate sample relative percent differences (RPD) or differences within QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7/8	~~PFHpA~~	240 (50-150)	( )	( )	3 (dets)	No Qual (>1x)
			PFHxS	703 (↓)	187 (50-150)	( )		↓
			~~PFOA~~	1350 (↓)	420 (↓)	( )		
			~~PFNA~~	190 (↓)	(↓)	( )		
			~~PFOS~~	( )	378 (↓)	( )		
			~~PFHpA~~	( )	( )	50.7 (≤ 30)		~~Dets~~ No Qual (>4x)
			~~PFHxS~~	( )	( )	116 (↓)		↓
			~~PFOA~~	( )	( )	105 ( )		
			~~PFNA~~	( )	( )	35.3 ( )		~~Dets/A~~
			~~PFOS~~	( )	( )	102 (↓)		No Qual (>4x)
				( )	( )	( )		
			~~PFOA~~	( )	( )	43 (≤ 30)	3 (dets)	~~Dets~~/A
				( )	( )	(Recal using conc)		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC#: 45129A96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 9
2nd Reviewer: MC

METHOD: PFCs (EPA Method 537, Rev.1.1))

Compound	Concentration (ng/L)		(≤30) RPD	Difference	Limits	Qual
	3	6				
PFBS	34.2	32.0		2.2	≤10.6	
PFHxA	213	194	9			
PHHpA	87.2	76.0	14			
PFHxS	362	299	19			
PFOA	246	185	28			
PFNA	21.7	15.7		6	≤10.6	
PFOS	375	268	33			J+ (all detects) A

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2019\45129A96_WOOD.wpd

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/14/2018	PFOS	1	0.232	0.1988737
		2	0.464	0.3287097
		3	0.928	0.7292670
		4	1.860	1.2784472
		5	4.640	3.7459125
		6	9.240	7.2972533
		7	23.100	21.6975380
		8	46.200	43.6619180
		9	69.400	63.9538080
		10	92.500	80.7597070

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.89864913*	0.899774
Correlation Coefficient	*0.999427*	0.99745
Coefficient of Determination (r^2)	*0.998854*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/14/2018	PFOA	1	0.250	0.2171360
		2	0.500	0.0506222
		3	1.000	0.9565940
		4	2.000	1.7298860
		5	5.000	4.5899330
		6	10.000	9.5954070
		7	25.000	21.7876640
		8	50.000	48.7801400
		9	75.000	69.3161600
		10	100.000	89.8638830

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.91588519*	0.920346
Correlation Coefficient	*0.999562*	0.99867
Coefficient of Determination (r^2)	*0.999124*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/16/2018	PFOA	1	0.250	0.2255790
		2	0.500	0.5356500
		3	1.000	1.0843630
		4	2.000	1.9421290
		5	5.000	5.2501000
		6	10.000	10.1869490
		7	25.000	26.3859800
		8	50.000	53.8977810
		9	75.000	74.5942910
		10	100.000	103.2234300

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*1.02778311*	1.031910
Correlation Coefficient	*0.999669*	0.99911
Coefficient of Determination (r^2)	*0.999338*	

LDC #: 45129A96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: MG

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	18RIAP2.66	12/15/18	PFOA ($^{13}C_2$-PFOA)	10.0	9.63	9.63	3.7	3.7
			PFOS ($^{13}C_8$-PFOS)	9.24	7.75	7.75	16.1	16.1
2	18B1PP1_2	12/17/18	PFOA ($^{13}C_2$-PFOA)	2.00	2.18	2.18	9.1	9.1
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45278A90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JV6

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 7/8

Compound	Spike Added (ng/L)		Sample Concentration (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD (use for R)	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
PFOA	20.0	20.2	2.46	5.15	3.31	135 0	133 2	430 ~~405~~	421	105	106
PFOS	18.4	18.7	3.75	3.97	4.45	123	120	378	374	102	103

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 35279A96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: JM6

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BBL0076-BS1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFOA	20.0	NA	21.2	NA	106	106				
PFOS	18.5	↓	21.6	↓	117	117				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45798\96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: JW

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 3, PFOA

Conc. = $\frac{(2630)(2T9)(10.0)(1)}{(4862)(.08T)(0.920346)(0.239)}$

= 246.0 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	3	PFOA	246		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1804167

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PW2-122018-DW	1804167-01	Water	12/20/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537, Revision 1.1

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all drinking water samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1804167

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1804167

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1804167

No Sample Data Qualified in this SDG

LDC #: 45129B96 **VALIDATION COMPLETENESS WORKSHEET** Date: 1/23/19
SDG #: 1804167 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: JVG

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 ~~Mod~~ Rev. 1.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	RSD≤20%. r² Tm0≤30/50(low). ICV≤30%
IV.	Continuing calibration /18C	A	ccv≤30/30%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	cs
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Labeled Compounds	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	PW2-122018-DW	1804167-01	Water	12/20/18
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	BB40193-BK1						

LDC #: 45296B6

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: JVP

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			<50% for lowest std
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			for dioxins W
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the continuing calibration ≤ 30%?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			

LDC #: 45729B96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: DG

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
XII. Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

LDC: 45129B96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewwe: [illegible]
2nd Reviewer: JV6

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/30/2018	PFOA	1	0.250	0.2325030
		2	0.500	0.4798370
		3	1.000	0.9733980
		4	2.000	1.9247560
		5	5.000	5.2004250
		6	10.000	9.1517780
		7	25.000	24.118581
		8	50.000	53.590312
		9	75.000	81.475686
		10	100.000	109.05315

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*1.08160882*	1.064930
Correlation Coefficient	*0.999715*	0.99788
Coefficient of Determination (r^2)	*0.999431*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/30/2018	PFOS	1	0.232	0.0784112
		2	0.464	0.2796298
		3	0.928	0.9002042
		4	1.860	1.3489832
		5	4.640	3.3358268
		6	9.240	6.8112131
		7	23.10	18.209455
		8	46.20	40.303338
		9	69.40	56.077719
		10	92.50	78.913789

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.83926116*	0.830260
Correlation Coefficient	*0.999501*	0.99746
Coefficient of Determination (r^2)	*0.999003*	

LDC #: 45129B96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JVG

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	181304L-33	1/30/18	PFOA ($^{13}C_2$-PFOA)	10.0	864	8.64	~~13.73~~ 13.6	13.6
			PFOS ($^{13}C_8$-PFOS)	9.24	7.88	7.88	14.7	14.7
2			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45179B96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: MC

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BBL0193-BS1/BSD1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFOA	0.0400	0.0400	0.0403	0.0412	101	101	103	103	2.15	2.22
PFOS	0.0370	0.0370	0.0335	0.0403	90.6	90.5	109	109	18.2	18.4

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45129B96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: SV6

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
(Y) N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. NO, PFOA
B8L0193-BS1

Conc. = $\frac{693.22 \times 10.0}{6416.915 \times 10643 \times 0.35 \times 1000}$

= 0.0403 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	B8L0193-BS1	PFOA	0.0403		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1900154

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PW4-011719-DW	1900154-01	Water	01/17/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537, Revision 1.1

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all drinking water samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1900154

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1900154

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1900154

No Sample Data Qualified in this SDG

LDC #: 45129C96 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/3/19
SDG #: 1900154 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 1
2nd Reviewer: JM

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537~~(M)~~, Rev. 1.1.)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	RSD≤20% or r^2 TMO≤30/50%. ICV≤30%
IV.	Continuing calibration /BSC	A	CCV/LCS ≤30%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	LCS
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Labeled Compounds	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	PW4-011719-DW	1900154-01	Water	01/17/19
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	BAA0154-BK1						

LDC #: 45290B6

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: SVG

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			≤50% for lowest std (drinking W)
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the continuing calibration ≤ 30%?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
XII. Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data	✓			
Overall assessment of data was found to be acceptable.				

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/25/2019	PFOA	1	0.250	0.2101130
		2	0.500	0.4714000
		3	1.000	0.8984130
		4	2.000	1.8618960
		5	5.000	4.4924390
		6	10.000	9.3954590
		7	25.000	24.368296
		8	50.000	47.758120
		9	75.000	73.077953
		10	100.000	94.537468

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.95618300*	0.956545
Correlation Coefficient	*0.999903*	0.99969
Coefficient of Determination (r^2)	*0.999805*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/25/2019	PFOS	1	0.232	0.1832208
		2	0.464	0.4657522
		3	0.928	0.8556761
		4	1.860	1.6506001
		5	4.640	4.6646023
		6	9.240	9.4894971
		7	23.10	23.772614
		8	46.20	48.721777
		9	69.40	72.647365
		10	92.50	100.994340

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*1.07089390*	1.059870
Correlation Coefficient	*0.999772*	0.99909
Coefficient of Determination (r^2)	*0.999544*	

LDC #: 45529C96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: MV

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	190425HZ_33	1/25/19	PFOA ($^{13}C_2$-PFOA)	10.0	10.2	10.2	1.8	1.8
			PFOS ($^{13}C_8$-PFOS)	9.34	9.44	9.44	1.1	1.1
2			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45296e96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: JV6

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BRA0154-BS1

Compound	Spike Added (µg/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFOA	0.0800	NA	0.0767	NA	95.8	95.9				
PFOS	0.0740	V	0.0666	V	90.0	90.0				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45129c96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: JV6

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
(Y) N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. ND, PFOS BQA0154-BS1

Conc. = $\frac{(4001.65)(28.7)(\quad)(\quad)(\quad)}{(659.85)(1.0598)(250)(\quad)(\quad)}$

= 0.0666 MS/L

#	Sample ID	Compound	Reported Concentration (MBA)	Calculated Concentration ( )	Qualification
	BQA0154-BS1	PFOS	0.0666		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1900478

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
Charlie's Pasture-EW 031319	1900478-01	Water	03/13/19

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537, Revision 1.1

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample Field Blank was identified as a field blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all drinking water samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples Charlie's Pasture-EW 031319 and Dup-1 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	Charlie's Pasture-EW 031319	Dup-1				
PFBS	0.0424	0.0444	-	0.002 (≤0.0101)	-	-
PFHxA	0.368	0.401	9 (≤30)	-	-	-
PHHpA	0.183	0.192	5 (≤30)	-	-	-
PFHxS	1.04	0.886	16 (≤30)	-	-	-
PFOA	0.807	0.827	2 (≤30)	-	-	-
PFNA	0.0280	0.0316	-	0.0036 (≤0.0101)	-	-
PFOS	1.52	1.38	10 (≤30)	-	-	-

XI. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1900478

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1900478

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1900478

No Sample Data Qualified in this SDG

LDC #: 45129D96 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/23/19
SDG #: 1900478 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer:
2nd Reviewer: JVG

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤20% r² ICV=70-130% ICV=70-130%
IV.	Continuing calibration /CCB	A	CCV/CCB ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	FB=3
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	MS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D=1+2
XI.	Labeled Compounds	A	~~LCS/D~~
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	Charlie's Pasture-EW 031319	1900478-01	Water	03/13/19
2	~~Dup-1~~	~~1900478-02~~	~~Water~~	~~03/13/19~~
3	~~Field Blank~~	~~1900478-03~~	~~Water~~	~~03/13/19~~
4				
5				
6				
7				
8				
9				

Notes:

BK-0124-BK1							

LDC #: 45190 96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: JVG

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			≤50% for lowest std
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			for drinking W
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the continuing calibration < 30%?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check < 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
XII. Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

LDC#45129D96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 1
2nd Reviewer: MC

METHOD: PFCs (EPA Method 537, Rev.1.1))

Compound	Concentration (ng/L)		(≤30) RPD	Difference	Limits	Qual
	1	2				
PFBS	0.0424	0.0444		0.002	≤0.0101	
PFHxA	0.368	0.401	9			
PHHpA	0.183	0.192	5			
PFHxS	1.04	0.886	16			
PFOA	0.807	0.827	2			
PFNA	0.0280	0.0316		0.0036	≤0.0101	
PFOS	1.52	1.38	10			

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
3/28/2019	PFOA	1	0.250	0.3114790
		2	0.500	0.4559950
		3	1.000	0.9430580
		4	2.000	1.8980310
		5	5.000	4.8326870
		6	10.000	9.8324550
		7	25.000	23.5652720
		8	50.000	48.8485250
		9	75.000	72.3284030
		10	100.000	97.7633500

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.97244451*	0.970341
Correlation Coefficient	*0.999965*	0.99978
Coefficient of Determination (r^2)	*0.999929*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
3/28/2019	PFOS	1	0.232	0.2365741
		2	0.464	0.3770290
		3	0.928	0.6450009
		4	1.860	1.3866577
		5	4.640	3.7668348
		6	9.240	7.9072546
		7	23.10	18.761660
		8	46.20	40.878403
		9	69.40	62.960426
		10	92.50	80.724788

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.88238504*	0.875608
Correlation Coefficient	*0.999735*	0.99859
Coefficient of Determination (r^2)	*0.999469*	

LDC #: 45296D96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: MG

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	190328A-38	3/28/19	PFOA ($^{13}C_2$-PFOA)	10.0	10.1	10.1	0.6	0.8
			PFOS ($^{13}C_8$-PFOS)	9.24	8.71	8.69	5.8	5.9
2	190330A-2	3/30/19	PFOA ($^{13}C_2$-PFOA)	2.00	2.16	2.16	8	7.8
			PFOS ($^{13}C_8$-PFOS)	1.86	1.40	1.40	24.6	24.6
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45290096

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: SVG

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BJ90124-BS1/BSD1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFOA	0.0800	0.0800	0.0832	0.0766	104	104	95.8	95.8	8.18	8.26
PFOS	0.0740	0.0740	0.0701	0.0715	94.8	94.7	96.6	96.6	1.89	1.98

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 45129896

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: NC

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, PFOS:

Conc. = $\frac{(5.78e3)(28.7)(\quad)(\quad)(\quad)}{(4.97e2)(0.875608)(0.250)(1000)}$

= 1.52 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	1	PFOS	1.52		

INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE	LOCATION_TYPE_DESC	COORD_X*	COORD_Y*	SAMPLE_NAME	SAMPLE_MATRIX	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
CHASE_FIELD_NAS	TBC	CHARLIES_PASTURE	DW	Domestic Well	-97.674956	28.358511	CHARLIE'S PASTURE-DW 031319	WP	Drinking Water	13-Mar-19	Perfluoroalkyl Compounds	1900478
CHASE_FIELD_NAS	TBC	CHARLIES_PASTURE	DW	Domestic Well	-97.674956	28.358511	DUP-1_20190313	WG	Ground water	13-Mar-19	Perfluoroalkyl Compounds	1900478