Navy_CLEAN_PFAS_FOIA_request_covers.indd

NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 18-0316

Naval Air Station Willow Grove
Willow Grove, Pennsylvania

August 2019

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

N00158_000822
WILLOW_GROVE_NAS
SSIC 5000-33c

LABORATORY DATA PACKAGE, 18-0316 REVISION 01, NAWC WARMINSTER NAS WILLOW GROVE PA

05/24/2018

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Approved for public release: distribution unlimited.

Naval Air Station Joint Reserve Base Willow Grove, PA

Project No 100117920-WE04

PFAS in drinking water

DW

Batch 18-0316

Package DP-18-0117

Submitted to:
Tetra Tech
661 Anderson Drive Foster Plaza 7
Pittsburgh, PA 15220 USA

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

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Naval Air Station Joint Reserve Base Willow Grove, PA

Project No 100117920-WE04

PFAS in drinking water

DW

Batch 18-0316

Package DP-18-0117

Submitted to:
Tetra Tech
661 Anderson Drive Foster Plaza 7
Pittsburgh, PA 15220 USA

NELAP Accreditation Number: E87856 (Florida Department of Health)

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

Analyst Approval: schumitzd@battelle.org 2018.05.24 11:28:53 -04'00'

QC Chemist Approval: Digitally signed by devinec@battelle.org DN: cn=devinec@battelle.org Date: 2018.05.29 10:37:18 -04'00'

Project Manager Approval: Digitally signed by Jonathan Thorn Date: 2018.05.29 11:05:57 -04'00'

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Naval Air Station Joint Reserve Base Willow Grove, PA

Project No 100117920-WE04

PFAS in drinking water

DW

Batch 18-0316

Package DP-18-0117

1	***Work Plan*** Laboratory Work Plan, Addendums To Work Plan, Memos From Project Manager, Special Instructions, Chain-of-Custody Reports.	1
2	***Tables*** Analytical Data Tables, Qualifier Definitions.	18
3	***Miscellaneous Documentation*** Case Narrative, Miscellaneous Documentation Form, Quality Control Summary, Example Calculations, Internal Standard Recovery Report, Retention Time Window Report.	33
4	***Sample Preparation Records*** Sample Preparation Records, Dilution Worksheets, Standard Preparation Records, Certificates Of Analysis, GPC Check Report.	138
5	***Analytical Calibrations*** Analytical Sequence, Analytical Method, Tune Report, Initial Calibration, Pesticide Degradation Report, RF Summary, Calibration Verifications, Independent Calibration Verification Check.	151
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Signature Page

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Signature Page

Name (Printed)	Signature	Initials	Date
Jonathan Thorn		JRT	4/4/2018
Robert Lizotte, Jr.		BL	4.4 2018
FRANCO PALA			4-4-2018
Carla Devine		CRD	4/4/18
Denise Schumitz		DMS	4/4/18
Candice Penn McCoy		CPM	4/4/2018
Rich Rostucci		RR	4/4/2018
Michael Mears			4/4/2018
Christie Usher		cu	4/4/18
Kevin McInerney			4/4/18
Stephanie Schultz		SAS	4/4/18
Jordan Tower		JCT	4/4/18
KRISTEN NICHOLS		KN	4/4/18
Clinton H Brown		CB	4/4/18
Matt Schumitz		MS	4-4-18
Sam Guimaraes		SG	4-4-18
Lauren Griffith		LMG	4.4.18

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Signature Page

Name (Printed)	Signature	Initials	Date
KAVITHA DASU		KD	04/04/18
Kayla Lamarre		KAL	04/04/18
Weidong Li		W.L	04/04/18
Tracy W Stenner		TWS	04/04/18
Ellyn M Fitch		EMF	12-April-2018
Gail DeRuzzo		GD	4/18/18
Zachary Willenberg		ZJW	4/20/18

Work Plan

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WORK/QUALITY ASSURANCE PROJECT PLAN

1.0 GENERAL PROJECT INFORMATION

Project Title:	WE04 PFAS Analysis
Project Number:	100117920-WE04
Client:	Tetra Tech 661 Anderson Drive Foster Plaza 7 Pittsburgh, PA 15220 USA
Client Contact Information:	Andrew Frebowitz Project Manager (610) 382-1170(V) NA andy.frebowitz@tetratech.com
Effective Date of QAPP:	5/4/2018
Version Number:	100117920-WE04(L)-01
Project Manager:	Thorn, Jonathan
Laboratory Task Manager:	Thorn, Jonathan
Deliverable Due Date:	5/22/2018

2.0 SCOPE OF WORK

Overview:	Analysis of drinking water samples collected at Naval Air Station Joint Reserve Base Willow Grove.
Matrix:	Water

2.1 TECHNICAL APPROACH

2.1.1 Sample Receipt, Storage, and Handling

The list of samples for this project plan are presented in Attachment 1.

Storage Directions:	Store refrigerated.
Sub_Sampling:	None
Procedures:	NA
Contact:	NA
Comment:	NA
Archiving:	Store for six months after delivery of final data. Notify client prior to disposal of samples.
Disposal:	Dispose of samples in the proper waste stream.

2.1.2 Sample Preparation

Up to 150 field samples and 150 field reagent blanks (FRB) per quarter. FRB samples will only be analyzed if the corresponding sample has detected levels of any PFAS analyte at or above the LOQ.

Samples Expected:	Samples Per Batch:	Batches Expected:
300	20	15

Batch quality control samples are defined in Table 1.

Target samples are presented in Attachment 1.

Table 1: Quality Control Samples

Type:	*Description:*	*Count:*	*Rgt:*	*Reference:*	*Comment:*
PB	Laboratory control reagent blank.	1 per batch	--	NA	Millipore water with Trizma
LCS	Laboratory Control Sample	1 per batch	No	NA	Millipore water with Trizma
MS	Spiked field sample for determining method accuracy in the presence of matrix.	1 per batch	--	NA	MS/MSD indicated on COC
MSD	Spiked field sample for determining method accuracy and precision in the presence of matrix.	1 per batch	--	NA	MS/MSD indicated on COC

2.1.3 Extraction/Preparation

2.1.3.1 Extraction

SOP No.-Rev:	**5-371-03**
SOP Title:	*ANALYSIS OF POLY AND PERFLUOROALKYL SUBSTANCES IN DRINKING WATER SAMPLES BY LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS) FOLLOWING EPA METHOD 537.1*
Sample Size:	250 ml
SIS and LCS/MS Compounds:	Defined in Table 2.
Deviations:	None
Comments:	• MQO requirements per SOP 5-371 (EPA Method 537 Version 1.1). • FRB samples will only be analyzed if associated field sample has hits above the LOQ for any individual analyte.

Table 2: SIS and LCS/MS Spiking Level

Standard Type	Standard Contents		Spike Amount (ng)	Volume (uL)	Comment
PFAS - 537.1 Surrogate Solution	JV60	SIS	~ 0.100 - 0.40 ng	50 uL	NA
PFAS - 537.1 Second Source LCS/MS Solution	JV41	LCS/MS	~ 2.00 - 2.50	50 uL	LCS samples - vary each batch (50, 75, 100, 150 µL spikes)
PFAS - 537.1 Second Source LCS/MS Solution	JV41	LCS/MS	~ 3.00 - 3.8 ng	75 uL	MS/MSD samples - vary each batch (75, 100, 150 µL spikes)

2.1.3.2 Cleanup

None.

RIS spiking levels are presented in Table 3.

Extract PIV (uL): 1000

Table 3: RIS Spiking Level

Standard Type	Standard Contents		Spike Amount (ng)	Volume (uL)	Comment
PFAS - 537.1 Internal Standard Solution	JV59	RIS	~ 0.100 - 0.40 ng	50 uL	NA

2.1.4 Instrumental Analysis

The list of analytes along with data quality criteria are presented in Attachment 2.

1) SOP_No-Rev: **5-371-03**

SOP_Title: *ANALYSIS OF POLY AND PERFLUOROALKYL SUBSTANCES IN DRINKING WATER SAMPLES BY LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS) FOLLOWING EPA METHOD 537.1*

Deviations: None

Comments:
- MQO requirements per SOP 5-371 (EPA Method 537 Version 1.1).
- FRB samples will only be analyzed if associated field sample has hits above the LOQ for any individual analyte.

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WORK/QUALITY ASSURANCE PROJECT PLAN

2.2. DELIVERABLES

Deliverables Due:	5/22/2018
LIMS Reports:	*Yes*
Histograms:	*No*
Excel Tables:	*Yes*
EICs:	*No*
Chromatograms:	*No*
EDDs:	*Yes*
Comments:	Each data set will be due 21 days from receipt of samples Full QSM data package showing all aspects of Table B-15 Tetra Tech EDD format

3.0 QUALITY

The Method Quality Objectives are defined in Attachment 3.

4.0 ORGANIZATION AND COMMUNICATION

4.1 ORGANIZATION

The project team is defined in Table 4. Supervisors may make substitutions with Project Manager concurrence.

Table 4: Project Team and Roles

Staff Member	Role	Comment
Jonathan R. Thorn	Project Manager	NA
Stephanie A. Schultz	Sample Preparation	NA
Denise M. Schumitz	LC-MS/MS Analysis	NA
Matt D. Schumitz	Sample Custody	NA
Carla R. Devine	Quality Control Officer	NA
Zachary J. Willenberg	Quality Assurance Officer	NA

4.2 COMMUNICATION

A kick-off meeting will be held to discuss project scope and goals.

5.0 SCHEDULE

The project schedule is presented in Table 5.

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WORK/QUALITY ASSURANCE PROJECT PLAN

Table 5. Schedule of Laboratory Activities

Activity:	Start Date:	End Date:	TAT (days):	Comment:
Sample Receipt	05/01/2018	12/31/2018	244	NA
Sample Preparation	05/04/2018	01/31/2019	272	NA
Instrument Analysis	05/07/2018	01/31/2019	269	NA
Quality Control Review	05/14/2018	01/31/2019	262	NA
Final Data Reporting	05/18/2018	01/31/2019	258	NA
Quality Assurance Review	05/21/2018	01/31/2019	255	NA

6.0 BUDGET

The labor budget for the analytical task is presented in Table 6.

Table 6. Labor Budget (Laboratory Analytical Task)

Labor Activity:	Hours/ Batch:	Batches:	Total Hours:	Comment:
Sample Receipt	2	1	2	All labor hours are based on a batch of 20 field samples.
Sample Preparation	8	1	8	All labor hours are based on a batch of 20 field samples.
Instrument Analysis	8	1	8	All labor hours are based on a batch of 20 field samples.
Quality Control Review	3	1	3	All labor hours are based on a batch of 20 field samples.
Final Data Reporting	1	1	1	All labor hours are based on a batch of 20 field samples.
Quality Assurance Review	1	1	1	All labor hours are based on a batch of 20 field samples.

7.0 STAFF DEVELOPMENT

None anticipated

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 1: Target Samples

Shipment: **SHP-180501-01**

Status: Approved

Description: WE04

Range: J5964-J5969

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J5964	WGNA-043018-RW-3103	04/30/2018 10:10 am	DW	R0118 (NA)			MSMSD
2	J5965	WGNA-043018-FRB-3103	04/30/2018 10:05 am	DW	R0118 (NA)			
3	J5966	NAWC-043018-RW-207	04/30/2018 10:40 am	DW	R0118 (NA)			
4	J5967	NAWC-043018-FRB-207	04/30/2018 10:35 am	DW	R0118 (NA)			
5	J5968	WGNA-043018-RW-3409	04/30/2018 1:40 pm	DW	R0118 (NA)			
6	J5969	WGNA-043018-FRB-3409	04/30/2018 1:35 pm	DW	R0118 (NA)			

Shipment: **SHP-180502-02**

Status: Approved

Description: WE04

Range: J5970-J5977

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J5970	WGNA-050118-RW-3385	05/01/2018 9:10 am	DW	R0118 (NA)			
2	J5971	WGNA-050118-FRB-3385	05/01/2018 9:05 am	DW	R0118 (NA)			
3	J5972	WGNA-050118-RW-3178	05/01/2018 9:40 am	DW	R0118 (NA)			
4	J5973	WGNA-050118-FRB-3178	05/01/2018 9:35 am	DW	R0118 (NA)			
5	J5974	NAWC-050118-RW-304	05/01/2018 10:10 am	DW	R0118 (NA)			
6	J5975	NAWC-050118-FRB-304	05/01/2018 10:05 am	DW	R0118 (NA)			
7	J5976	NAWC-050118-RW-098	05/01/2018 10:40 am	DW	R0118 (NA)			
8	J5977	NAWC-050118-FRB-098	05/01/2018 10:35 am	DW	R0118 (NA)			

Shipment: **SHP-180508-02**

Status: Pending

Description: WE04

Range: J6148-J6170

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6148	NAWC-050718-RW-316	05/07/2018 10:10 am	DW	R0118 (NA)			
2	J6149	NAWC-050718-FRB-316	05/07/2018 10:05 am	DW	R0118 (NA)			
3	J6150	NAWC-050718-RW-180	05/07/2018 10:40 am	DW	R0118 (NA)			
4	J6151	NAWC-050718-FRB-180	05/07/2018 10:35 am	DW	R0118 (NA)			
5	J6152	NAWC-050718-RW-275	05/07/2018 11:10 am	DW	R0118 (NA)			
6	J6153	NAWC-050718-FRB-275	05/07/2018 11:05 am	DW	R0118 (NA)			
7	J6154	NAWC-050718-RW-145	05/07/2018 12:40 pm	DW	R0118 (NA)			

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WORK/QUALITY ASSURANCE PROJECT PLAN

Shipment: **SHP-180508-02**

Status: Pending

Description: WE04

Range: J6148-J6170

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
8	J6155	NAWC-050718-FRB-145	05/07/2018 12:35 pm	DW	R0118 (NA)			
9	J6156	NAWC-050718-RW-357	05/07/2018 1:10 pm	DW	R0118 (NA)			
10	J6157	NAWC-050718-FRB-357	05/07/2018 1:05 pm	DW	R0118 (NA)			
11	J6158	NAWC-050718-RW-162	05/07/2018 1:40 pm	DW	R0118 (NA)			
12	J6159	NAWC-050718-FRB-162	05/07/2018 1:35 pm	DW	R0118 (NA)			
13	J6160	WGNA-050718-RW-0800	05/07/2018 2:10 pm	DW	R0118 (NA)			
14	J6161	WGNA-050718-FRB-0800	05/07/2018 2:05 pm	DW	R0118 (NA)			
15	J6162	WGNA-050718-RW-0335	05/07/2018 2:40 pm	DW	R0118 (NA)			
16	J6163	WGNA-050718-FRB-0335	05/07/2018 2:35 pm	DW	R0118 (NA)			
17	J6164	WGNA-050718-RW-3556	05/07/2018 3:10 pm	DW	R0118 (NA)			
18	J6165	WGNA-050718-FRB-3556	05/07/2018 3:05 pm	DW	R0118 (NA)			
19	J6166	NAWC-050718-RW-356	05/07/2018 3:40 pm	DW	R0118 (NA)			
20	J6167	NAWC-050718-FRB-356	05/07/2018 3:35 pm	DW	R0118 (NA)			
21	J6168	NAWC-050718-RW-289	05/07/2018 4:10 pm	DW	R0118 (NA)			
22	J6169	NAWC-050718-FRB-289	05/07/2018 4:05 pm	DW	R0118 (NA)			
23	J6170	WGNA-050718-DUP-35	05/07/2018 7:00 am	DW	R0118 (NA)			

Shipment: **SHP-180511-02**

Status: Pending

Description: WE04

Range: J6204-J6212

Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	J6204	NAWC-051018-RW-303	05/10/2018 9:10 am	DW	R0118 (NA)			
2	J6205	NAWC-051018-FRB-303	05/10/2018 9:05 am	DW	R0118 (NA)			
3	J6206	WGNA-051018-RW-3220	05/10/2018 9:40 am	DW	R0118 (NA)			
4	J6207	WGNA-051018-FRB-3220	05/10/2018 9:35 am	DW	R0118 (NA)			
5	J6208	NAWC-051018-RW-177	05/10/2018 10:40 am	DW	R0118 (NA)			
6	J6209	NAWC-051018-FRB-177	05/10/2018 10:35 am	DW	R0118 (NA)			
7	J6210	WGNA-051018-RW-3295	05/10/2018 3:10 pm	DW	R0118 (NA)			
8	J6211	WGNA-051018-FRB-3295	05/10/2018 3:05 pm	DW	R0118 (NA)			
9	J6212	WGNA-051018-DUP-36	05/10/2018 7:00 am	DW	R0118 (NA)			

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name:	Master_371
SOP Reference:	5-371 - ANALYSIS OF POLY AND PERFLUOROALKYL SUBSTANCES IN DRINKING WATER SAMPLES BY LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS) FOLLOWING EPA METHOD 537.1
Description:	PFAS in drinking water
Matrix:	L - Liquid Samples, like water or sea water, prepared and anlyzed under the same class of detection limits.
Detection Limit Study:	5-371
Instrument:	LC-MS/MS
MQO Criteria	Universal_LC
Standard Report:	Standard Result Report

Method Specific Reporting				Holding Times (days)		Data Flags	
Result Units:	ng/L	***Unit Conversion:***	(none)	***Sample:***	14	***DL_Flag:***	U
Weight Basis:	Liquid	***Result Format:***	Fixed Digits	***Frozen:***	40	***RL_Flag:***	J
Standard Basis:	RIS	***# of Figures/Digits:***	2	***Extract:***	28	***PB_Flag:***	B
Oil Weight Basis:	No	***Oil Weight Source:***	Oil Weight			***DIL_Flag:***	D
U-Value Substition:	U-Flag=MD	***Histograms:***	No			***HT_Flag:***	T
ECD_Reporting:	No						

No:	Analyte:	Report Name:	Type	RIS	SIS	Hidden:	Graph:
1	Perfluoro-n-hexanoic acid	PFHxA	T	13C2-PFOA		No	No
2	Perfluoro-n-heptanoic Acid	PFHpA	T	13C2-PFOA		No	No
3	Perfluoro-n-octanoic Acid	PFOA	T	13C2-PFOA		No	No
4	Perfluorononanoic Acid	PFNA	T	13C2-PFOA		No	No
5	Perfluoro-n-decanoic Acid	PFDA	T	13C2-PFOA		No	No
6	Perfluoro-n-undecanoic acid	PFUnA	T	13C2-PFOA		No	No
7	Perfluoro-n-dodecanoic acid	PFDoA	T	13C2-PFOA		No	No
8	Perfluoro-n-tridecanoic acid	PFTrDA	T	13C2-PFOA		No	No
9	Perfluoro-n-tetradecanoic acid	PFTeDA	T	13C2-PFOA		No	No
10	N-methylperfluoro-1-octanesulfonamidoacetic acid	NMeFOSAA	T	d3-MeFOSAA		No	No
11	N-ethylperfluoro-octanesulfonamidoacetic acid	NEtFOSAA	T	d3-MeFOSAA		No	No
12	Perfluoro-1-butanesulfonate	PFBS	T	13C4-PFOS		No	No
13	Perfluoro-1-octanesulfonate	PFOS	T	13C4-PFOS		No	No
14	Perfluoro-1-hexanesulfonate	PFHxS	T	13C4-PFOS		No	No
1	13C2-PFHxA	13C2-PFHxA	SIS			No	No
2	13C2-PFDA	13C2-PFDA	SIS			No	No

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name: Master_371

No:	Analyte:	Report Name:	Type	RIS	SIS	Hidden:	Graph:
3	d5-EtFOSAA	d5-EtFOSAA	SIS			No	No

Total Analytes: 17

Subtract Peaks:

None

Sum Peaks:

None

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name: Master_371

ICAL Acceptance Criteria:

Curve Fit:	Limit Mean(%):	Mean Qual:	Limit Ind.:	Ind. Qual:	Min Points:	Points Qual:	Comments:
Linear	NA	NA	0.995	N	5	N	NA
Average RF	15	N	25	N	5	N	NA
Linear (0,0)	NA	NA	0.995	N	5	N	NA
Quadratic	NA	NA	0.995	N	6	N	NA
Quadratic (0,0)	NA	NA	0.995	N	6	N	NA

Continuing Calibration Verification Criteria:

CCV Name: Standard

Frequency Hrs:	Mean PD(%):	Individual PD(%):	RIS/SIS RT Window (min):	Area Limit Low(%):	Area Limit High(%):	Comment:
12 (N)	20 (N)	25 (N)	0.07 (N)	-50	100 (N)	Lab Default Continuing Calibration Verfication Criteria

Independent Calibration Verification:

ICC Name: Standard

Mean PD Limit(%):	Ind. PD Limit(%):	RIS/SIS Window Limit (Secs):	Area Limit High(%):	Area Limit Low(%):	Comment:
15 (N)	20 (N)	0.07 (N)	-50	100 (N)	Standard laboratory criteria for ICCs

Mass Discrimination Criteria:

None

Degredation Check Criteria:

None

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 3: Method Quality Objectives

MQO Application	***Universal_LC***		
MQO:	**Acceptance Criteria**	**Qual:**	**Corrective Action:**
Procedural Blank	Samples must be greater than five times the blank concentration (>5xPB).	B	Review with Project Manager; re-analyze or justify results in project records.
PB Measurement Quality Objective	Organic results in the Procedural Blank are less than 1/2 times the LOQ (<1/2xLOQ)	N	Review with Project Manager; re-analyze or justify results in project records.
Laboratory Control Sample	Recovery values 70-130%.	N	Review with project manager; re-analyze or justify reporting the results in project records.
Matrix Spike / Matrix Spike Duplicate Recovery	Organics 70-130%. Analyte concentration in MS/MSD must be greater than five times reported background concentration.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the Original	n	
Matrix Spike/Spike Duplicate Precision	Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration in MS/MSD must be greater than five times reported background concentration.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the Original	n	
Standard Reference Material Accuracy	Organics Percent Difference less than 30% from a range of certified values on average. Analyte concentration must be greater than five times the Method Detection Limit (>5xMDL).	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the MDL	n	
Analytical Duplicate Precision	Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration must be > 5x MDL.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Original is less than 5 times the MDL	n	

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WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 3: Method Quality Objectives

MQO Application	***Universal_LC***		
MQO:	**Acceptance Criteria**	**Qual:**	**Corrective Action:**
Analytical Triplicate Precision	Organics results less than 30% Relative Standard Deviation (RSD). Analyte concentration must be > 5x MDL.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Original is less than 5 times the MDL	n	
Surrogate Compound Recovery	Recovery results between 50% and 150%.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
Control Oil	RPD < 30% for at least 90% of analytes	N	Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented.
Instrument Calibration	5-371-3: R-squared greater than or equal to 0.995 Mean RSD less than or equal to 15%, Individual RSD less than or equal to 25%	N	Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented.
Independent Calibration Check Solution	5-371-3: Individual PD less than or equal to 20%. Mean Percent Difference less than or equal to 15%.	N	Review with Project Manager; re-analyze or justify in project records.
Continuing Calibration Verification	5-371-3: Individual PD less than or equal to 25%. Mean Percent Difference less than or equal to 20%.	N	Review with Project Manager; re-analyze or justify in project records.

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ShpNo SHP-180508-02

Battelle Project No:

Sample Receipt Form

Approved: ☐ Authorized ☐

Project Number: 112G08005-WE04 **Client:** Tetratech

Received by: Schumitz, Matt **Date/Time Received:** Tuesday, May 08, 2018 10:30 AM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** Fed Ex

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal	Container	Therm.	Temp C	Smps
1 of 2	Cooler	7721 6462 7174	Custody Seals	Intact	Intact	Therm_1	0.9	12
2 of 2	Cooler	7721 6462 7152	Custody Seals	Intact	Intact	Therm_1	1.2	11

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.2 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Custody: Refrigerator - R0118 (NA) **BDO IDs Assigned:** J6148 - J6170

Samples logged in by: Schumitz, Matt **Date/Time:** 05/08/2018 10:30 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

BATTELLE

It can be done

ShpNo SHP-180508-02

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: 112G08005-WE04 **Client:** Tetratech

Received by: Schumitz, Matt **Date/Time Received:** Tuesday, May 08, 2018 10:30 AM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
J6148	NAWC-050718-RW-316	05/07/18 10:10	05/08/18 12:33	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6149	NAWC-050718-FRB-316	05/07/18 10:05	05/08/18 12:34	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6150	NAWC-050718-RW-180	05/07/18 10:40	05/08/18 12:34	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6151	NAWC-050718-FRB-180	05/07/18 10:35	05/08/18 12:34	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6152	NAWC-050718-RW-275	05/07/18 11:10	05/08/18 12:34	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6153	NAWC-050718-FRB-275	05/07/18 11:05	05/08/18 12:35	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6154	NAWC-050718-RW-145	05/07/18 12:40	05/08/18 12:35	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6155	NAWC-050718-FRB-145	05/07/18 12:35	05/08/18 12:36	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6156	NAWC-050718-RW-357	05/07/18 13:10	05/08/18 12:36	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6157	NAWC-050718-FRB-357	05/07/18 13:05	05/08/18 12:36	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6158	NAWC-050718-RW-162	05/07/18 13:40	05/08/18 12:37	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6159	NAWC-050718-FRB-162	05/07/18 13:35	05/08/18 12:37	2	DW	0.9	NA	NA	NA	R0118 (NA)			
J6160	WGNA-050718-RW-0800	05/07/18 14:10	05/08/18 12:38	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6161	WGNA-050718-FRB-0800	05/07/18 14:05	05/08/18 12:38	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6162	WGNA-050718-RW-0335	05/07/18 14:40	05/08/18 12:38	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6163	WGNA-050718-FRB-0335	05/07/18 14:35	05/08/18 12:39	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6164	WGNA-050718-RW-3556	05/07/18 15:10	05/08/18 12:39	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6165	WGNA-050718-FRB-3556	05/07/18 15:05	05/08/18 12:40	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6166	NAWC-050718-RW-356	05/07/18 15:40	05/08/18 12:40	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6167	NAWC-050718-FRB-356	05/07/18 15:35	05/08/18 12:41	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6168	NAWC-050718-RW-289	05/07/18 16:10	05/08/18 12:41	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6169	NAWC-050718-FRB-289	05/07/18 16:05	05/08/18 12:41	2	DW	1.2	NA	NA	NA	R0118 (NA)			
J6170	WGNA-050718-DUP-35	05/07/18 7:00	05/08/18 12:42	2	DW	1.2	NA	NA	NA	R0118 (NA)			

Total Samples: 23

Battelle

The Business of Innovation

Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days

Project Name: WE04
Project No.: 112G08005-WE04

Normal ☑
Priority ☐
RUSH ☐

Time Zone: Eastern

Sampling Site: WE04

Site Information: NAS JRB Willow Grove/NAWC Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservativ: Trizma	Analysis: PFAS EPA 537 14 analytes	Receipt Comments:
NAWC-050718-RW-316 J6148	5/7/2018	10:10	G	DW	2		X	
NAWC-050718-FRB-316 J6149	5/7/2018	10:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-180 J6150	5/7/2018	10:40	G	DW	2		X	
NAWC-050718-FRB-180 J6151	5/7/2018	10:35	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-275 J6152	5/7/2018	11:10	G	DW	2		X	
NAWC-050718-FRB-275 J6153	5/7/2018	11:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-145 J6154	5/7/2018	12:40	G	DW	2		X	
NAWC-050718-FRB-145 J6155	5/7/2018	12:35	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-357 J6156	5/7/2018	13:10	G	DW	2		X	
NAWC-050718-FRB-357 J6157	5/7/2018	13:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-162 J6158	5/7/2018	13:40	G	DW	2		X	
NAWC-050718-FRB-162 J6159	5/7/2018	13:35	G	DW	2		X	Field Reagent Blank
WGNA-050718-RW-0800 J6160	5/7/2018	14:10	G	DW	2		X	
WGNA-050718-FRB-0800 J6161	5/7/2018	14:05	G	DW	2		X	Field Reagent Blank
WGNA-050718-RW-0335 J6162	5/7/2018	14:40	G	DW	2		X	
WGNA-050718-FRB-0335 J6163	5/7/2018	14:35	G	DW	2		X	Field Reagent Blank
WGNA-050718-RW-3556 J6164	5/7/2018	15:10	G	DW	2		X	
WGNA-050718-FRB-3556 J6165	5/7/2018	15:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-356 J6166	5/7/2018	15:40	G	DW	2		X	
NAWC-050718-FRB-356 J6167	5/7/2018	15:35	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-289 J6168	5/7/2018	16:10	G	DW	2		X	
NAWC-050718-FRB-289 J6169	5/7/2018	16:05	G	DW	2		X	Field Reagent Blank
WGNA-050718-DUP-35 J6170	5/7/2018	7:00	G	DW	2		X	Duplicate

Receipt Temperature:(°C): 0.9 , 1.2

Samples Intact: (Yes) - No

Samples on Ice: (Yes) - No

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	05/07/2018 16:00	Matt Schmitz	Battelle	5/8/18 1030

Comments: FedEx Tracking #7721 6462 7152


FedEx
MPS# 0263 7721 6462 7174
TUE – 08 MAY 10:30A
PRIORITY OVERNIGHT
EM XPUA 0.9
02061
MA–US BOS
#112573 05/07 552J2/782B/DCA5
RT 246
ST 2.2
1
10:30
B
7174
05.08
Therm-1
MDS
5/18/18
10:30


FedEx
TRK# 0201 7721 6462 7152
TUE – 08 MAY 10:30A
PRIORITY OVERNIGHT
EM XPUA 1.2
02061
MA–US BOS
#112573 05/07 552J2/782B/DCA5
Therm-1
MDS
5/18
1030
RT 246
ST 2.2
B
7152
05.08

Data Tables

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-316				
Battelle ID	J6149-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.255				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.49	U	0.22	0.49	2.45
PFHpA	0.98	U	0.33	0.98	2.45
PFOA	0.98	U	0.37	0.98	2.45
PFNA	0.98	U	0.36	0.98	2.45
PFDA	0.98	U	0.38	0.98	2.45
PFUnA	0.98	U	0.37	0.98	2.45
PFDoA	0.98	U	0.41	0.98	2.45
PFTrDA	0.98	U	0.41	0.98	2.45
PFTeDA	1.47	U	0.72	1.47	2.45
NMeFOSAA	0.98	U	0.41	0.98	2.45
NEtFOSAA	0.98	U	0.43	0.98	2.45
PFBS	0.49	U	0.21	0.49	2.45
PFHxS	0.98	U	0.33	0.98	2.45
PFOS	0.98	U	0.29	0.98	2.45
Surrogate Recoveries (%)					
13C2-PFHxA	110				
13C2-PFDA	94				
d5-EtFOSAA	103				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-180				
Battelle ID	J6151-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	117				
13C2-PFDA	103				
d5-EtFOSAA	90				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-275				
Battelle ID	J6153-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	113				
13C2-PFDA	103				
d5-EtFOSAA	102				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-145				
Battelle ID	J6155-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	79				
13C2-PFDA	90				
d5-EtFOSAA	93				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-357				
Battelle ID	J6157-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	108				
13C2-PFDA	103				
d5-EtFOSAA	101				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-162				
Battelle ID	J6159-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	113				
13C2-PFDA	98				
d5-EtFOSAA	87				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0800			
Battelle ID	J6161-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.255			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.49 U	0.22	0.49	2.45
PFHpA	0.98 U	0.33	0.98	2.45
PFOA	0.98 U	0.37	0.98	2.45
PFNA	0.98 U	0.36	0.98	2.45
PFDA	0.98 U	0.38	0.98	2.45
PFUnA	0.98 U	0.37	0.98	2.45
PFDoA	0.98 U	0.41	0.98	2.45
PFTrDA	0.98 U	0.41	0.98	2.45
PFTeDA	1.47 U	0.72	1.47	2.45
NMeFOSAA	0.98 U	0.41	0.98	2.45
NEtFOSAA	0.98 U	0.43	0.98	2.45
PFBS	0.49 U	0.21	0.49	2.45
PFHxS	0.98 U	0.33	0.98	2.45
PFOS	0.98 U	0.29	0.98	2.45
Surrogate Recoveries (%)				
13C2-PFHxA	109			
13C2-PFDA	100			
d5-EtFOSAA	103			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0335			
Battelle ID	J6163-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	107			
d5-EtFOSAA	85			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-3556			
Battelle ID	J6165-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.50 U	0.22	0.50	2.50
PFHpA	1.00 U	0.34	1.00	2.50
PFOA	1.00 U	0.38	1.00	2.50
PFNA	1.00 U	0.37	1.00	2.50
PFDA	1.00 U	0.39	1.00	2.50
PFUnA	1.00 U	0.38	1.00	2.50
PFDoA	1.00 U	0.42	1.00	2.50
PFTrDA	1.00 U	0.42	1.00	2.50
PFTeDA	1.50 U	0.73	1.50	2.50
NMeFOSAA	1.00 U	0.42	1.00	2.50
NEtFOSAA	1.00 U	0.44	1.00	2.50
PFBS	0.50 U	0.21	0.50	2.50
PFHxS	1.00 U	0.34	1.00	2.50
PFOS	1.00 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	90			
13C2-PFDA	91			
d5-EtFOSAA	100			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-356				
Battelle ID	J6167-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	116				
13C2-PFDA	98				
d5-EtFOSAA	85				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-289				
Battelle ID	J6169-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	105				
13C2-PFDA	94				
d5-EtFOSAA	95				

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Procedural Blank				
Battelle ID	CQ774PB-FS				
Sample Type	PB				
Collection Date	05/15/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	WATER				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.50	U	0.22	0.50	2.50
PFHpA	1.00	U	0.34	1.00	2.50
PFOA	1.00	U	0.38	1.00	2.50
PFNA	1.00	U	0.37	1.00	2.50
PFDA	1.00	U	0.39	1.00	2.50
PFUnA	1.00	U	0.38	1.00	2.50
PFDoA	1.00	U	0.42	1.00	2.50
PFTrDA	1.00	U	0.42	1.00	2.50
PFTeDA	1.50	U	0.73	1.50	2.50
NMeFOSAA	1.00	U	0.42	1.00	2.50
NEtFOSAA	1.00	U	0.44	1.00	2.50
PFBS	0.50	U	0.21	0.50	2.50
PFHxS	1.00	U	0.34	1.00	2.50
PFOS	1.00	U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	111
13C2-PFDA	108
d5-EtFOSAA	110

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Laboratory Control Sample					
Battelle ID	CQ775LCS-FS					
Sample Type	LCS					
Collection Date	05/15/2018					
Extraction Date	05/15/2018					
Analysis Date	05/17/2018					
Analytical Instrument	Sciex 5500 LC/MS/MS					
% Moisture	NA					
Matrix	WATER					
Sample Size	0.250					
Size Unit-Basis	L				Control Limits	
Units	ng/L	Target	Recovery	Qual	Lower	Upper
PFHxA	13.47	15.00	90		70	130
PFHpA	13.02	15.00	87		70	130
PFOA	12.71	15.00	85		70	130
PFNA	13.05	15.00	87		70	130
PFDA	12.77	15.00	85		70	130
PFUnA	12.54	15.00	84		70	130
PFDoA	12.83	15.00	86		70	130
PFTrDA	13.89	15.00	93		70	130
PFTeDA	18.68	15.00	125		70	130
NMeFOSAA	14.87	15.00	99		70	130
NEtFOSAA	14.56	15.00	97		70	130
PFBS	12.17	13.28	92		70	130
PFHxS	12.13	14.18	86		70	130
PFOS	11.63	14.33	81		70	130

Surrogate Recoveries (%)

13C2-PFHxA	106
13C2-PFDA	104
d5-EtFOSAA	116

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highers concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the Limit of Quantitation (LOQ)
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported

Miscellaneous Documentation

Norwell Operations
141 Longwater Drive, Suite 202
Norwell, Massachusetts 02061
Telephone: 781-681-5400

July 13th, 2018

This data package has been revised to include the following updates to the reporting format:

- Use of LOD values for non-detected values (in place of the MDL value that was used in the original report).
- Use of sample specific MDL, LOD, and LOQ values (adjusted for dilution and sample size variations as compared to the MDL, LOD, and LOQ studies)

In addition to non-detect ("U" qualified) data changing to use the sample specific LOD value (not included in the table below), the information in the following table changed from the original report to the new report. The reason for these changes is the variation in sample size for individual samples when using sample specific values. This table includes information on all SDG updated and resubmitted on 7/13/2018.

SDG	Lab Sample ID	Client ID	Analyte	New Result	New Qual	Old Result	Old Qual
18-0299	J5972-FS	WGNA-050118-RW-3178	PFHpA	2.25		2.25	J
18-0313	J6148-FS	NAWC-050718-RW-316	PFNA	2.26		2.26	J
18-0313	J6150-FS	NAWC-050718-RW-180	PFDA	0.37	J	0.39	U
18-0323	J6209-FS	NAWC-051018-FRB-177	PFOA	0.38	J	0.38	U
18-0343	J6264-FS	WGNA-052918-RW-3978	PFNA	2.34		2.34	J
18-0343	J6273-FS	NAWC-053018-RW-231	PFHxS	37.20	JD	37.20	D
18-0343	J6275-FS	WGNA-053018-RW-3933	PFNA	2.35		2.35	J
18-0343	J6285-FS	NAWC-053018-RW-196	PFHxS	2.31		2.31	J
18-0360	J6583-FS	NAWC-060418-FRB-230	PFHxS	0.33	J	1.00	U
18-0360	J6643-FS	WGNA-060718-FRB-0626	PFOS	2.48	B	2.48	J

The original data tables have been moved to the unused data section of this complete data package. For SDG 18-0313, the original MQO report and case narrative were moved to the unused data section of the full data package.

QA/QC Summary
Batch 18-0316

Project:	CTO-WE04 Naval Air Station Joint Reserve Base Willow Grove
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	DW
Data Set:	DP-18-0117
Analytical SOP:	5-371
Method Reference:	USEPA 537 rev. 1.1, QSM 5.1

Sample Custody

Collection Date	Receipt Date	Temp (°C)
5/7/2018	5/8/2018	0.9, 1.2

Corrective Actions	None
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	Field samples related to these FRB samples reported in SDG 18-0313

METHOD SUMMARIES

Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with methanol. Extracts were split and concentrated to dryness under nitrogen with a water bath set between 60 °C and 65 °C, reconstituted with 96:4 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.	
Prep comments	None.	
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.	
Analysis Comments	Samples analyzed on the Sciex 5500. Individual ion ratios were outside of the 50% RPD criteria for the following samples and analytes, however, all hits were below the detection limits: Procedural Blank (CQ774PB) - PFOA NAWC-050718-FRB-180 (J6151) - PFOA NAWC-050718-FRB-145 (J6155) - PFOA NAWC-050718-FRB-357 (J6157) – PFOA, PFNA NAWC-050718-FRB-162 (J6159) - PFNA WGNA-050718-FRB-0800 (J6161) - PFOA WGNA-050718-FRB-3556 (J6165) - PFOA NAWC-050718-FRB-356 (J6167) - PFOA NAWC-050718-FRB-289 (J6169) - PFOA	
Holding Times	Extraction Date(s)	Analysis Date(s)
	5/15/2018	5/17/2018

QA/QC Summary
Batch 18-0316

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ 1/3 the MRL	No exceedances noted.
	No comments.
Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
70-130% of true value	No exceedances noted.
	No comments.

Surrogates Standard Analytes	Labelled surrogate compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
70-130% of true value	No exceedances noted.
	No Comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
ICal high and low points RPD ≤20%, 50-150% of average area of the ICAL and 70-140% of most recent CCV	No exceedances noted.
	No Comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
R^2 >0.99 Target and SIS compounds +/- 30% of true value, Low point 50-150% of true value	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
Target and SIS compounds +/- 30% of true value	No exceedances noted.
	No comments.
Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.

QA/QC Summary
Batch 18-0316

Target and SIS compounds +/- 30% of true value Low point 50-150% of true value	No exceedances noted.
	No comments.

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Number: 100117920-WE04
Preparation Batch: 18-0316
Data Set: DP-18-0117
Test Code: Master_371

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	0	None
Matrix Spike / Matrix Spike Duplicate Recovery	NA	None
Matrix Spike / Matrix Spike Duplicate Precision	NA	None
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	NA	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	Naval Air Station Joint Reserve Base Wi	**Data Set Number:**	DP-18-0117
Project Number:	100117920-WE04	**Prep Batch Number:**	18-0316
Entered By:	Denise Schumitz	**Entered On:**	05/24/2018
Test Code (Matrix Type):	Master_371(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
DMS 6/24/2018

JV64 is not being used in the calibration curve for PFBS and NMeFOSAA. There is no impact on the data once this point is removed from the calibration.
DMS 6/23/2018

JV65 is not being used in the calibration curve for NMeFOSAA. There is no impact on the data once this point is removed from the calibration.
DMS 6/23/2018

Ion ratios greater than 50% for PFOA are noted in samples CQ774PB, J6151, J6155, J6157, J6161, J6165, J6167 and J6169.
DMS 6/23/2018

Ion ratios greater than 50% for PFNA are noted in samples J6157 and J6159.
DMS 6/23/2018

Ion ratio greater than 50% for PFDA is noted in JV66.
DMS 6/23/2018

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.05.29 11:07:31 -04'00'

Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

Sample ID:	Laboratory Control Spike Sample
Client Sample ID:	CQ775LCS-FS(0)
Sample Size:	0.25
Units:	L
Dilution Factor:	1
PIV (L):	0.001
Target Analyte:	PFTrDA
MRM Transition:	663.0 / 619.0
Data file:	18-0315.wiff
Result table:	18-0316Base
Area:	989,642.61
IS Name:	13C2-PFOA
IS Area:	25,000.07
IS Amount (ng/L):	100
y-intercept	-0.00563
slope	1.14025

$$\text{Concentration} = \frac{[(989642.61/25000.07) - -0.00563]}{1.14025} * 100 * 0.001 * 1 / 0.25$$

ng/L = 13.89

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0316
Data Set: DP-18-0117

	CQ774PB-FS (Procedural Blank)	CQ775LCS-FS (Laboratory Control Sample)	J6149-FS (NAWC-050718-FRB-316)	J6151-FS (NAWC-050718-FRB-180)	J6153-FS (NAWC-050718-FRB-275)	J6155-FS (NAWC-050718-FRB-145)
PFHxA	-	L	-	-	-	-
PFHpA	-	L	-	-	-	-
PFOA	-	L	-	-	-	-
PFNA	-	L	-	-	-	-
PFDA	-	L	-	-	-	-
PFUnA	-	L	-	-	-	-
PFDoA	-	L	-	-	-	-
PFTrDA	-	L	-	-	-	-
PFTeDA	-	L	-	-	-	-
NMeFOSAA	-	L	-	-	-	-
NEtFOSAA	-	L	-	-	-	-
PFBS	-	L	-	-	-	-
PFHxS	-	L	-	-	-	-
PFOS	-	L/Br	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0316
Data Set: DP-18-0

	J6157-FS (NAWC-050718-FRB-357)	J6159-FS (NAWC-050718-FRB-162)	J6161-FS (WGNA-050718-FRB-0800)	J6163-FS (WGNA-050718-FRB-0335)	J6165-FS (WGNA-050718-FRB-3556)	J6167-FS (NAWC-050718-FRB-356)	J6169-FS (NAWC-050718-FRB-289)
PFHxA	-	-	-	-	-	-	-
PFHpA	-	-	-	-	-	-	-
PFOA	-	-	-	-	-	-	-
PFNA	-	-	-	-	-	-	-
PFDA	-	-	-	-	-	-	-
PFUnA	-	-	-	-	-	-	-
PFDoA	-	-	-	-	-	-	-
PFTrDA	-	-	-	-	-	-	-
PFTeDA	-	-	-	-	-	-	-
NMeFOSAA	-	-	-	-	-	-	-
NEtFOSAA	-	-	-	-	-	-	-
PFBS	-	-	-	-	-	-	-
PFHxS	-	-	-	-	-	-	-
PFOS	-	-	-	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/17/18 9:20	13C4-PFOS	106,482.72	-	
JV65	L2	5/17/18 9:29	13C4-PFOS	119,997.89	-	
JV66	L3	5/17/18 9:38	13C4-PFOS	122,253.98	-	
JV67	L4	5/17/18 9:47	13C4-PFOS	102,094.68	-	
JV68	L5	5/17/18 9:56	13C4-PFOS	111,836.08	-	
JV69	L6	5/17/18 10:05	13C4-PFOS	114,992.54	-	
JV70	L7	5/17/18 10:14	13C4-PFOS	110,302.85	-	
JV71	L8	5/17/18 10:23	13C4-PFOS	100,136.69	-	
JV72	L9	5/17/18 10:31	13C4-PFOS	115,397.28	8.0	PASS

Average	Lower	Upper
111,499.41	55,749.71	167,249.12

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/17/18 9:20	13C4-PFOS	106,482.72	55,749.71	167,249.12		78,285.26	156,570.51	
JV65	L2	5/17/18 9:29	13C4-PFOS	119,997.89	55,749.71	167,249.12		78,285.26	156,570.51	
JV66	L3	5/17/18 9:38	13C4-PFOS	122,253.98	55,749.71	167,249.12		78,285.26	156,570.51	
JV67	L4	5/17/18 9:47	13C4-PFOS	102,094.68	55,749.71	167,249.12		78,285.26	156,570.51	
JV68	L5	5/17/18 9:56	13C4-PFOS	111,836.08	55,749.71	167,249.12		78,285.26	156,570.51	
JV69	L6	5/17/18 10:05	13C4-PFOS	114,992.54	55,749.71	167,249.12		78,285.26	156,570.51	
JV70	L7	5/17/18 10:14	13C4-PFOS	110,302.85	55,749.71	167,249.12		78,285.26	156,570.51	
JV71	L8	5/17/18 10:23	13C4-PFOS	100,136.69	55,749.71	167,249.12		78,285.26	156,570.51	
JV72	L9	5/17/18 10:31	13C4-PFOS	115,397.28	55,749.71	167,249.12		78,285.26	156,570.51	
JV63 ICC	ICC	5/17/18 10:40	13C4-PFOS	113,811.02	55,749.71	167,249.12		78,285.26	156,570.51	
CQ774PB-FS(0)	Procedural Blank	5/17/18 14:35	13C4-PFOS	105,807.87	55,749.71	167,249.12		78,285.26	156,570.51	
CQ775LCS-FS(0)	Laboratory Control Sample	5/17/18 14:44	13C4-PFOS	84,608.36	55,749.71	167,249.12		78,285.26	156,570.51	
J6149-FS(0)	NAWC-050718-FRB-316	5/17/18 14:53	13C4-PFOS	95,906.86	55,749.71	167,249.12		78,285.26	156,570.51	
J6151-FS(0)	NAWC-050718-FRB-180	5/17/18 15:02	13C4-PFOS	82,833.06	55,749.71	167,249.12		78,285.26	156,570.51	
J6153-FS(0)	NAWC-050718-FRB-275	5/17/18 15:11	13C4-PFOS	89,739.14	55,749.71	167,249.12		78,285.26	156,570.51	
J6155-FS(0)	NAWC-050718-FRB-145	5/17/18 15:20	13C4-PFOS	83,891.29	55,749.71	167,249.12		78,285.26	156,570.51	
J6157-FS(0)	NAWC-050718-FRB-357	5/17/18 15:29	13C4-PFOS	87,652.64	55,749.71	167,249.12		78,285.26	156,570.51	
J6159-FS(0)	NAWC-050718-FRB-162	5/17/18 15:38	13C4-PFOS	99,454.46	55,749.71	167,249.12		78,285.26	156,570.51	
JV70 CCV	CCV	5/17/18 15:47	13C4-PFOS	114,163.67	55,749.71	167,249.12		78,285.26	156,570.51	
J6161-FS(0)	WGNA-050718-FRB-0800	5/17/18 16:04	13C4-PFOS	109,563.37	55,749.71	167,249.12		79,914.57	159,829.14	
J6163-FS(0)	WGNA-050718-FRB-0335	5/17/18 16:13	13C4-PFOS	94,266.70	55,749.71	167,249.12		79,914.57	159,829.14	
J6165-FS(0)	WGNA-050718-FRB-3556	5/17/18 16:22	13C4-PFOS	84,277.54	55,749.71	167,249.12		79,914.57	159,829.14	
J6167-FS(0)	NAWC-050718-FRB-356	5/17/18 16:31	13C4-PFOS	98,363.28	55,749.71	167,249.12		79,914.57	159,829.14	
J6169-FS(0)	NAWC-050718-FRB-289	5/17/18 16:40	13C4-PFOS	85,338.73	55,749.71	167,249.12		79,914.57	159,829.14	
JV69 CCV	CCV	5/17/18 16:49	13C4-PFOS	121,671.75	55,749.71	167,249.12		79,914.57	159,829.14	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/17/18 9:20	13C2-PFOA	28,448.80	-	
JV65	L2	5/17/18 9:29	13C2-PFOA	30,346.55	-	
JV66	L3	5/17/18 9:38	13C2-PFOA	31,920.71	-	
JV67	L4	5/17/18 9:47	13C2-PFOA	28,765.39	-	
JV68	L5	5/17/18 9:56	13C2-PFOA	33,859.37	-	
JV69	L6	5/17/18 10:05	13C2-PFOA	32,336.53	-	
JV70	L7	5/17/18 10:14	13C2-PFOA	32,706.57	-	
JV71	L8	5/17/18 10:23	13C2-PFOA	29,031.43	-	
JV72	L9	5/17/18 10:31	13C2-PFOA	33,993.78	17.8	PASS

Average	Lower	Upper
31,267.68	15,633.84	46,901.52

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/17/18 9:20	13C2-PFOA	28,448.80	15,633.84	46,901.52		23,701.56	47,403.12	
JV65	L2	5/17/18 9:29	13C2-PFOA	30,346.55	15,633.84	46,901.52		23,701.56	47,403.12	
JV66	L3	5/17/18 9:38	13C2-PFOA	31,920.71	15,633.84	46,901.52		23,701.56	47,403.12	
JV67	L4	5/17/18 9:47	13C2-PFOA	28,765.39	15,633.84	46,901.52		23,701.56	47,403.12	
JV68	L5	5/17/18 9:56	13C2-PFOA	33,859.37	15,633.84	46,901.52		23,701.56	47,403.12	
JV69	L6	5/17/18 10:05	13C2-PFOA	32,336.53	15,633.84	46,901.52		23,701.56	47,403.12	
JV70	L7	5/17/18 10:14	13C2-PFOA	32,706.57	15,633.84	46,901.52		23,701.56	47,403.12	
JV71	L8	5/17/18 10:23	13C2-PFOA	29,031.43	15,633.84	46,901.52		23,701.56	47,403.12	
JV72	L9	5/17/18 10:31	13C2-PFOA	33,993.78	15,633.84	46,901.52		23,701.56	47,403.12	
JV63 ICC	ICC	5/17/18 10:40	13C2-PFOA	35,067.86	15,633.84	46,901.52		23,701.56	47,403.12	
CQ774PB-FS(0)	Procedural Blank	5/17/18 14:35	13C2-PFOA	29,243.16	15,633.84	46,901.52		23,701.56	47,403.12	
CQ775LCS-FS(0)	Laboratory Control Sample	5/17/18 14:44	13C2-PFOA	25,000.07	15,633.84	46,901.52		23,701.56	47,403.12	
J6149-FS(0)	NAWC-050718-FRB-316	5/17/18 14:53	13C2-PFOA	29,366.38	15,633.84	46,901.52		23,701.56	47,403.12	
J6151-FS(0)	NAWC-050718-FRB-180	5/17/18 15:02	13C2-PFOA	23,903.88	15,633.84	46,901.52		23,701.56	47,403.12	
J6153-FS(0)	NAWC-050718-FRB-275	5/17/18 15:11	13C2-PFOA	25,373.77	15,633.84	46,901.52		23,701.56	47,403.12	
J6155-FS(0)	NAWC-050718-FRB-145	5/17/18 15:20	13C2-PFOA	24,418.17	15,633.84	46,901.52		23,701.56	47,403.12	
J6157-FS(0)	NAWC-050718-FRB-357	5/17/18 15:29	13C2-PFOA	24,844.34	15,633.84	46,901.52		23,701.56	47,403.12	
J6159-FS(0)	NAWC-050718-FRB-162	5/17/18 15:38	13C2-PFOA	27,428.30	15,633.84	46,901.52		23,701.56	47,403.12	
JV70 CCV	CCV	5/17/18 15:47	13C2-PFOA	31,530.88	15,633.84	46,901.52		23,701.56	47,403.12	
J6161-FS(0)	WGNA-050718-FRB-0800	5/17/18 16:04	13C2-PFOA	30,018.42	15,633.84	46,901.52		22,071.62	44,143.23	
J6163-FS(0)	WGNA-050718-FRB-0335	5/17/18 16:13	13C2-PFOA	25,903.21	15,633.84	46,901.52		22,071.62	44,143.23	
J6165-FS(0)	WGNA-050718-FRB-3556	5/17/18 16:22	13C2-PFOA	25,672.65	15,633.84	46,901.52		22,071.62	44,143.23	
J6167-FS(0)	NAWC-050718-FRB-356	5/17/18 16:31	13C2-PFOA	27,021.98	15,633.84	46,901.52		22,071.62	44,143.23	
J6169-FS(0)	NAWC-050718-FRB-289	5/17/18 16:40	13C2-PFOA	24,296.54	15,633.84	46,901.52		22,071.62	44,143.23	
JV69 CCV	CCV	5/17/18 16:49	13C2-PFOA	33,798.22	15,633.84	46,901.52		22,071.62	44,143.23	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/17/18 9:20	d3-MeFOSAA	16,123.52	-	
JV65	L2	5/17/18 9:29	d3-MeFOSAA	17,769.57	-	
JV66	L3	5/17/18 9:38	d3-MeFOSAA	19,084.74	-	
JV67	L4	5/17/18 9:47	d3-MeFOSAA	17,771.51	-	
JV68	L5	5/17/18 9:56	d3-MeFOSAA	18,199.88	-	
JV69	L6	5/17/18 10:05	d3-MeFOSAA	17,045.59	-	
JV70	L7	5/17/18 10:14	d3-MeFOSAA	18,272.74	-	
JV71	L8	5/17/18 10:23	d3-MeFOSAA	15,851.69	-	
JV72	L9	5/17/18 10:31	d3-MeFOSAA	18,290.15	12.6	PASS

Average	Lower	Upper
17,601.04	8,800.52	26,401.56

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/17/18 9:20	d3-MeFOSAA	16,123.52	8,800.52	26,401.56		12,739.92	25,479.83	
JV65	L2	5/17/18 9:29	d3-MeFOSAA	17,769.57	8,800.52	26,401.56		12,739.92	25,479.83	
JV66	L3	5/17/18 9:38	d3-MeFOSAA	19,084.74	8,800.52	26,401.56		12,739.92	25,479.83	
JV67	L4	5/17/18 9:47	d3-MeFOSAA	17,771.51	8,800.52	26,401.56		12,739.92	25,479.83	
JV68	L5	5/17/18 9:56	d3-MeFOSAA	18,199.88	8,800.52	26,401.56		12,739.92	25,479.83	
JV69	L6	5/17/18 10:05	d3-MeFOSAA	17,045.59	8,800.52	26,401.56		12,739.92	25,479.83	
JV70	L7	5/17/18 10:14	d3-MeFOSAA	18,272.74	8,800.52	26,401.56		12,739.92	25,479.83	
JV71	L8	5/17/18 10:23	d3-MeFOSAA	15,851.69	8,800.52	26,401.56		12,739.92	25,479.83	
JV72	L9	5/17/18 10:31	d3-MeFOSAA	18,290.15	8,800.52	26,401.56		12,739.92	25,479.83	
JV63 ICC	ICC	5/17/18 10:40	d3-MeFOSAA	18,230.15	8,800.52	26,401.56		12,739.92	25,479.83	
CQ774PB-FS(0)	Procedural Blank	5/17/18 14:35	d3-MeFOSAA	16,567.01	8,800.52	26,401.56		12,739.92	25,479.83	
CQ775LCS-FS(0)	Laboratory Control Sample	5/17/18 14:44	d3-MeFOSAA	13,002.05	8,800.52	26,401.56		12,739.92	25,479.83	
J6149-FS(0)	NAWC-050718-FRB-316	5/17/18 14:53	d3-MeFOSAA	15,391.10	8,800.52	26,401.56		12,739.92	25,479.83	
J6151-FS(0)	NAWC-050718-FRB-180	5/17/18 15:02	d3-MeFOSAA	13,679.60	8,800.52	26,401.56		12,739.92	25,479.83	
J6153-FS(0)	NAWC-050718-FRB-275	5/17/18 15:11	d3-MeFOSAA	14,186.77	8,800.52	26,401.56		12,739.92	25,479.83	
J6155-FS(0)	NAWC-050718-FRB-145	5/17/18 15:20	d3-MeFOSAA	13,091.39	8,800.52	26,401.56		12,739.92	25,479.83	
J6157-FS(0)	NAWC-050718-FRB-357	5/17/18 15:29	d3-MeFOSAA	14,843.43	8,800.52	26,401.56		12,739.92	25,479.83	
J6159-FS(0)	NAWC-050718-FRB-162	5/17/18 15:38	d3-MeFOSAA	17,200.62	8,800.52	26,401.56		12,739.92	25,479.83	
JV70 CCV	CCV	5/17/18 15:47	d3-MeFOSAA	17,173.89	8,800.52	26,401.56		12,739.92	25,479.83	
J6161-FS(0)	WGNA-050718-FRB-0800	5/17/18 16:04	d3-MeFOSAA	17,311.56	8,800.52	26,401.56		12,021.72	24,043.45	
J6163-FS(0)	WGNA-050718-FRB-0335	5/17/18 16:13	d3-MeFOSAA	16,167.71	8,800.52	26,401.56		12,021.72	24,043.45	
J6165-FS(0)	WGNA-050718-FRB-3556	5/17/18 16:22	d3-MeFOSAA	12,300.76	8,800.52	26,401.56		12,021.72	24,043.45	
J6167-FS(0)	NAWC-050718-FRB-356	5/17/18 16:31	d3-MeFOSAA	17,743.88	8,800.52	26,401.56		12,021.72	24,043.45	
J6169-FS(0)	NAWC-050718-FRB-289	5/17/18 16:40	d3-MeFOSAA	13,101.61	8,800.52	26,401.56		12,021.72	24,043.45	
JV69 CCV	CCV	5/17/18 16:49	d3-MeFOSAA	17,006.92	8,800.52	26,401.56		12,021.72	24,043.45	

BATTELLE

Summary Asymmetry Report

Created with Analyst Reporter
Printed: 24/05/2018 10:52:17 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 10:14:08 AM	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.44	1.49	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.71	1.34	0.8 – 1.5

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 24/05/2018 10:50:50 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 10:14:08 AM	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.44	40	>10
PFBS_2	298.9 / 99.0	1.43	74	>10
PFHxA_1	313.0 / 269.0	1.71	34	>10
PFHxA_2	313.0 / 119.0	1.71	52	>10
PFHpA_1	363.0 / 319.0	2.06	25	>10
PFHpA_2	363.0 / 169.0	2.06	28	>10
PFHxS_1	399.0 / 80.0	2.07	59	>10
PFHxS_2	399.0 / 99.0	2.07	41	>10
PFOA_1	413.0 / 369.0	2.43	33	>10
PFOA_2	413.0 / 169.0	2.43	34	>10
PFNA_1	463.0 / 419.0	2.80	30	>10
PFNA_2	463.0 / 219.0	2.80	30	>10
PFOS_1	499.0 / 80.0	2.80	59	>10
PFOS_2	499.0 / 99.0	2.80	51	>10
PFDA_1	513.0 / 469.0	3.15	56	>10
PFDA_2	513.0 / 219.0	3.15	38	>10
PFUnA_1	563.0 / 519.0	3.47	58	>10
PFUnA_2	563.0 / 269.0	3.47	28	>10
PFDoA_1	613.0 / 569.0	3.76	52	>10
PFDoA_2	613.0 / 319.0	3.76	36	>10
PFTrDA_1	663.0 / 619.0	4.01	59	>10
PFTrDA_2	663.0 / 169.0	4.01	44	>10
PFTeDA_1	713.0 / 669.0	4.23	62	>10
PFTeDA_2	713.0 / 169.0	4.23	57	>10
NMeFOSAA_1	570.0 / 419.0	3.30	48	>10
NMeFOSAA_2	570.0 / 512.0	3.30	52	>10
NEtFOSAA_1	584.0 / 419.0	3.46	37	>10
NEtFOSAA_2	584.0 / 483.0	3.46	40	>10

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 24/05/2018 10:51:26 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 10:14:08 AM	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFHxA	315.0 / 270.0	1.69	47	>10
13C2-PFDA	515.0 / 470.0	3.14	38	>10
d5-EtFOSAA	589.0 / 419.0	3.46	34	>10

BATTELLE
It can be done

Precision and Bias at the LOQ for PFAS in Drinking Water

Analyte	CAS No.	Average (ng/L)	ST DEV	3 Sigma	n
PFHxA	307-24-4	10.85	1.18	3.54	10
PFHpA	375-85-9	11.32	1.25	3.75	10
PFOA	335-67-1	11.36	1.21	3.63	10
PFNA	375-95-1	11.19	1.18	3.54	10
PFDA	335-76-2	11.20	1.25	3.75	10
PFUnA	2058-94-8	11.01	1.52	4.56	10
PFDoA	307-55-1	10.77	1.77	5.31	10
PFTrDA	72629-94-8	10.72	1.69	5.07	10
PFTeDA	376-06-7	11.83	1.43	4.29	10
NMeFOSAA	2355-31-9	10.84	0.95	2.85	10
NEtFOSAA	2991-50-6	10.16	1.00	3.00	10
PFBS	375-73-5	9.01	1.35	4.05	10
PFHxS	355-46-4	10.58	1.28	3.84	10
PFOS	1763-23-1	9.81	1.25	3.75	10

BATTELLE DETECTION LIMITS FOR PFAS IN DRINKING WATER

Battelle SOP 5-371 (EPA Method 537 Version 1.1)

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)	MRL (ng/L)
PFHxA	307-24-4	0.22	0.5	2.5	2.5
PFHpA	375-85-9	0.34	1.0	2.5	2.5
PFOA	335-67-1	0.38	1.0	2.5	2.5
PFNA	375-95-1	0.37	1.0	2.5	2.5
PFDA	335-76-2	0.39	1.0	2.5	2.5
PFUnA	2058-94-8	0.38	1.0	2.5	2.5
PFDoA	307-55-1	0.42	1.0	2.5	2.5
PFTrDA	72629-94-8	0.42	1.0	2.5	2.5
PFTeDA	376-06-7	0.73	1.5	2.5	2.5
NMeFOSAA	2355-31-9	0.42	1.0	2.5	2.5
NEtFOSAA	2991-50-6	0.44	1.0	2.5	2.5
PFBS	375-73-5	0.21	0.5	2.5	2.5
PFHxS	3871-99-6	0.34	1.0	2.5	2.5
PFOS	1763-23-1	0.30	1.0	2.5	2.5

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

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ID 626 04/18

Analytical Transitions for PFAS in drinking water

SOP 5-371 (EPA 537 Version 1.1)

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFBS	375-73-5	Target	298.9.0 / 80.0	298.9.0 / 99.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
13C2-PFHxA	NA	SIS	315.0 / 270.0	NA
13C2-PFDA	NA	SIS	515.0 / 470.0	NA
d5-EtFOSAA	NA	SIS	589.0 / 419.0	NA
$^{13}C_2$-PFOA	NA	IS	415.0 / 270.0	NA
$^{13}C_4$-PFOS	NA	IS	503.0 / 80.0	NA
d3-MeFOSAA	NA	IS	573.0 / 419.0	NA

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	22-Feb-2017

Request ID:	3683
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____
_____
_____
_____

Performed By: Kaustubh Dhayagude **Date:** 22-Feb-2017

Approved By :_____ **Date:** _____

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.5	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.9	Read Only
☑ CAD Medium	2.4	Read Only
☑ CAD High	3.4	Read Only
☑ CAD 12	3.4	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.64 e6	Read Only	0.8095	Read Only
Q1 500.380	2.40 e7	Read Only	0.8592	Read Only
Q1 906.673	2.86 e7	Read Only	0.9633	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.26 e6	Read Only	0.6252	Read Only
Q3 500.380	2.19 e7	Read Only	0.7275	Read Only
Q3 906.673	3.02 e7	Read Only	0.7662	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__19.51%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.43 e7	Read Only	0.9981	Read Only
MS/MS 195.1	1.45 e7	Read Only	0.6582	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.43 e7	Read Only	0.7330	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.22 e7	Read Only	0.8138	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.35 e6	Read Only	0.6495	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	2.1	Read Only
☑ CAD Medium	2.6	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.94 e6	≥1.2^{e}6	0.6933	0.6 to 0.8
Q1 500.380	2.25 e7	≥9.0^{e}6	0.7444	0.6 to 0.8
Q1 906.673	2.74 e7	≥1.4^{e}7	0.7347	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7656	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	4.54 e6	≥1.2^{e}6	0.6390	0.6 to 0.8
Q3 500.380	2.13 e7	≥9.0^{e}6	0.7008	0.6 to 0.8
Q3 906.673	3.04 e7	≥1.4^{e}7	0.7683	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.51 e8	≥6.8^{e}7	0.7118	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 16.93% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.74 e7	N/A	0.7667	Read Only
MS/MS 195.1	9.72 e6	N/A	0.6751	Read Only

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LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.31 e7	≥1.0^e7	0.6895	0.6 to 0.8
Q1 933.636	1000	50	6.32 e7	≥4.0^e7	0.6740	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.70 e7	≥8.0^e6	0.7665	0.6 to 0.8
Q3 933.636	1000	50	7.41 e7	≥4.0^e7	0.7292	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.08 e6	≥7.2 ^e6	0.1302	<0.35
ER 922.010	0.05	3.89 e7	≥2.8 ^e6	0.2603	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.55 e7	≥2.4 ^e7	0.3740	<0.65
ER 922.010	0.05	2.37 e8	≥6.8 ^e7	0.5407	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.05 e8	≥4.4 ^e7	0.1840	<0.35
ER 601.978	0.05	7.74 e7	≥5.6 ^e7	0.1849	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.43 e8	≥1.2 ^e8	0.4382	<0.65
ER 601.978	0.05	2.55 e8	≥1.6 ^e8	0.6205	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.5 e6	≥2.0 e6	> 4.0 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.2 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	1.19 e8	Fragment Intensity	> 4.4 e6	≥1.6x 10e6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

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BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☐

Standard Laboratory ID Number: JV35

Description: PFAS - 537.1 Internal Standard Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-01	EPA-537IS	Neat	~2.666666	12/13/22	---	---	1000 uL	1	10	~0.3000

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: JV35

Description: PFAS - 537.1 Internal Standard Stock

Stock Id: 180425-01

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	1000	1.00	1	100.000	1	10	0.10000
13C4-PFOS	1000	2.87	1	100.000	1	10	0.28700
d3-MeFOSAA	1000	4.00	1	100.000	1	10	0.40000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFOA	.10000
13C4-PFOS	.28700
d3-MeFOSAA	.40000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-01	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☐

Standard Laboratory ID Number: JV37

Description: PFAS - 537.1 Surrogate Standard Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-02	EPA-537SS	Neat	~2.000000	11/08/22	---	---	1000 uL	1	10	~0.2000

Solution Prepared By: Schultz, Stephanie		**Date Prepared:**	5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**		**Refrigerator/Freezer No:**	LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: JV37

Description: PFAS - 537.1 Surrogate Standard Stock

Stock Id: 180425-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	1000	1.00	1	100.000	1	10	0.10000
13C2-PFHxA	1000	1.00	1	100.000	1	10	0.10000
d5-EtFOSAA	1000	4.00	1	100.000	1	10	0.40000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.10000
13C2-PFHxA	.10000
d5-EtFOSAA	.40000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-02	Pipette	C0982448K

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: _____ **Date:** _____

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV41

Description: PFAS - 537.1 Second Source LCS/MS Solution

Assigned Lab ID (from receipt log)	Chemical Name:.	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-04	EPA-537PDS-L (second source)	Neat	~2.000000	03/05/23	---	---	500 uL	1	20	~0.0500

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 mL X 1 Vials	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:26:00 AM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV41

Description: PFAS - 537.1 Second Source LCS/MS Solution

Stock Id: 180425-04

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	500	2.00	1	100.000	1	20	0.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-1-butanesulfonate	500	1.77	1	100.000	1	20	0.04425
Perfluoro-1-hexanesulfonate	500	1.89	1	100.000	1	20	0.04725
Perfluoro-1-octanesulfonate	500	1.91	1	100.000	1	20	0.04775
Perfluoro-n-decanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-dodecanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-heptanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-hexanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-octanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluorononanoic Acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-tetradecanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-tridecanoic acid	500	2.00	1	100.000	1	20	0.05000
Perfluoro-n-undecanoic acid	500	2.00	1	100.000	1	20	0.05000

Final Concentrations:

Analyte:	Conc (ug/mL):
N-ethylperfluoro-octanesulfonamidoacetic acid	.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.05000
Perfluoro-1-butanesulfonate	.04425
Perfluoro-1-hexanesulfonate	.04725
Perfluoro-1-octanesulfonate	.04775
Perfluoro-n-decanoic Acid	.05000
Perfluoro-n-dodecanoic acid	.05000
Perfluoro-n-heptanoic Acid	.05000
Perfluoro-n-hexanoic acid	.05000
Perfluoro-n-octanoic Acid	.05000
Perfluorononanoic Acid	.05000
Perfluoro-n-tetradecanoic acid	.05000
Perfluoro-n-tridecanoic acid	.05000
Perfluoro-n-undecanoic acid	.05000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-04	Pipette	B1100330B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:26:00 AM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV42

Description: PFAS - 537.1 High ICAL Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-03	EPA-537PDS (calibration)	Neat	~2.000000	03/05/23	---	---	250 uL	1	10	~0.0500

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV42

Description: PFAS - 537.1 High ICAL Stock

Stock Id: 180425-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	10	0.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-1-butanesulfonate	250	1.77	1	100.000	1	10	0.04425
Perfluoro-1-hexanesulfonate	250	1.82	1	100.000	1	10	0.04560
Perfluoro-1-octanesulfonate	250	1.85	1	100.000	1	10	0.04628
Perfluoro-n-decanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-dodecanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-heptanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-hexanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-nonanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-octanoic Acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-tetradecanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-tridecanoic acid	250	2.00	1	100.000	1	10	0.05000
Perfluoro-n-undecanoic acid	250	2.00	1	100.000	1	10	0.05000

Final Concentrations:

Analyte:	Conc (ug/mL):
N-ethylperfluoro-octanesulfonamidoacetic acid	.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.05000
Perfluoro-1-butanesulfonate	.04425
Perfluoro-1-hexanesulfonate	.04560
Perfluoro-1-octanesulfonate	.04628
Perfluoro-n-decanoic Acid	.05000
Perfluoro-n-dodecanoic acid	.05000
Perfluoro-n-heptanoic Acid	.05000
Perfluoro-n-hexanoic acid	.05000
Perfluoro-n-nonanoic Acid	.05000
Perfluoro-n-octanoic Acid	.05000
Perfluoro-n-tetradecanoic acid	.05000
Perfluoro-n-tridecanoic acid	.05000
Perfluoro-n-undecanoic acid	.05000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-03	Pipette	B1100330B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV43

Description: PFAS - 537.1 Low ICAL Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
180425-03	EPA-537PDS (calibration)	Neat	~2.000000	03/05/23	---	---	250 uL	1	100	~0.0050

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 mL X 4 Vials	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV43

Description: PFAS - 537.1 Low ICAL Stock

Stock Id: 180425-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	100	0.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-1-butanesulfonate	250	1.77	1	100.000	1	100	0.00443
Perfluoro-1-hexanesulfonate	250	1.82	1	100.000	1	100	0.00456
Perfluoro-1-octanesulfonate	250	1.85	1	100.000	1	100	0.00463
Perfluoro-n-decanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-dodecanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-heptanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-hexanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-nonanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-octanoic Acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-tetradecanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-tridecanoic acid	250	2.00	1	100.000	1	100	0.00500
Perfluoro-n-undecanoic acid	250	2.00	1	100.000	1	100	0.00500

Final Concentrations:

Analyte:	Conc (ug/mL):
N-ethylperfluoro-octanesulfonamidoacetic acid	.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00500
Perfluoro-1-butanesulfonate	.00443
Perfluoro-1-hexanesulfonate	.00456
Perfluoro-1-octanesulfonate	.00463
Perfluoro-n-decanoic Acid	.00500
Perfluoro-n-dodecanoic acid	.00500
Perfluoro-n-heptanoic Acid	.00500
Perfluoro-n-hexanoic acid	.00500
Perfluoro-n-nonanoic Acid	.00500
Perfluoro-n-octanoic Acid	.00500
Perfluoro-n-tetradecanoic acid	.00500
Perfluoro-n-tridecanoic acid	.00500
Perfluoro-n-undecanoic acid	.00500

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
180425-03	Pipette	B1100330B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 4 Vials **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV59

Description: PFAS - 537.1 Internal Standard Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV35	PFAS - 537.1 Internal Standard Stock	Solution	~0	05/02/19	---	---	500 uL	1	25	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV59

Description: PFAS - 537.1 Internal Standard Solution

Stock Id: JV35

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	500	0.10	---	---	1	25	0.00200
13C4-PFOS	500	0.29	---	---	1	25	0.00574
d3-MeFOSAA	500	0.40	---	---	1	25	0.00800

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFOA	.00200
13C4-PFOS	.00574
d3-MeFOSAA	.00800

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV35	Pipette	I0400533B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV60

Description: PFAS - 537.1 Surrogate Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV37	PFAS - 537.1 Surrogate Standard Stock	Solution	~0	05/02/19	---	---	500 uL	1	25	~0.0000

Solution Prepared By: Schultz, Stephanie	**Date Prepared:** 5/2/2018	**Expiration Date:**	5/2/2019
Solution Volume 40 **mL X** 1 **Vials**	**Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107		

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV60

Description: PFAS - 537.1 Surrogate Solution

Stock Id: JV37

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	500	0.10	---	---	1	25	0.00200
13C2-PFHxA	500	0.10	---	---	1	25	0.00200
d5-EtFOSAA	500	0.40	---	---	1	25	0.00800

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00200
13C2-PFHxA	.00200
d5-EtFOSAA	.00800

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV37	Pipette	I0400533B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Thorn, Jonathan **Date:** 5/3/2018 8:27:00 AM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV61

Description: PFAS - 537.1 Internal Standard Calibration Stock Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV35	PFAS - 537.1 Internal Standard Stock	Solution	~0	05/02/19	---	---	1000 uL	1	5	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV61

Description: PFAS - 537.1 Internal Standard Calibration Stock Solution

Stock Id: JV35

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	1000	0.10	---	---	1	5	0.02000
13C4-PFOS	1000	0.29	---	---	1	5	0.05740
d3-MeFOSAA	1000	0.40	---	---	1	5	0.08000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFOA	.02000
13C4-PFOS	.05740
d3-MeFOSAA	.08000

Syringes/Pipettes:

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV62

Description: PFAS - 537.1 Surrogate Calibration Stock Solution

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV37	PFAS - 537.1 Surrogate Standard Stock	Solution	~0	05/02/19	---	---	1000 uL	1	5	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV62

Description: PFAS - 537.1 Surrogate Calibration Stock Solution

Stock Id: JV37

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	1000	0.10	---	---	1	5	0.02000
13C2-PFHxA	1000	0.10	---	---	1	5	0.02000
d5-EtFOSAA	1000	0.40	---	---	1	5	0.08000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.02000
13C2-PFHxA	.02000
d5-EtFOSAA	.08000

Syringes/Pipettes:

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV63

Description: PFAS - 537.1 ICC

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV41	PFAS - 537.1 Second Source LCS/MS Solution	Solution	~0	05/02/19	---	---	200 uL	1	10	~0.0000
JV59	PFAS - 537.1 Internal Standard Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV60	PFAS - 537.1 Surrogate Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV63

Description: PFAS - 537.1 ICC

Stock Id: JV41

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.05	---	---	1	10	0.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-1-butanesulfonate	200	0.04	---	---	1	10	0.00089
Perfluoro-1-hexanesulfonate	200	0.05	---	---	1	10	0.00095
Perfluoro-1-octanesulfonate	200	0.05	---	---	1	10	0.00095
Perfluoro-n-decanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-dodecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-heptanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-hexanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-octanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluorononanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-tetradecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-tridecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-undecanoic acid	200	0.05	---	---	1	10	0.00100

Stock Id: JV59

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.00	---	---	1	10	0.00001
13C4-PFOS	50	0.01	---	---	1	10	0.00003
d3-MeFOSAA	50	0.01	---	---	1	10	0.00004

Stock Id: JV60

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.00	---	---	1	10	0.00001
13C2-PFHxA	50	0.00	---	---	1	10	0.00001
d5-EtFOSAA	50	0.01	---	---	1	10	0.00004

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00001
13C2-PFHxA	.00001
13C2-PFOA	.00001
13C4-PFOS	.00003
d3-MeFOSAA	.00004
d5-EtFOSAA	.00004

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV63

Description: PFAS - 537.1 ICC

N-ethylperfluoro-octanesulfonamidoacetic acid	.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00100
Perfluoro-1-butanesulfonate	.00089
Perfluoro-1-hexanesulfonate	.00095
Perfluoro-1-octanesulfonate	.00095
Perfluoro-n-decanoic Acid	.00100
Perfluoro-n-dodecanoic acid	.00100
Perfluoro-n-heptanoic Acid	.00100
Perfluoro-n-hexanoic acid	.00100
Perfluoro-n-octanoic Acid	.00100
Perfluorononanoic Acid	.00100
Perfluoro-n-tetradecanoic acid	.00100
Perfluoro-n-tridecanoic acid	.00100
Perfluoro-n-undecanoic acid	.00100

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV41	Pipette	G0792979B
JV59	Pipette	I0793912B
JV60	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:23:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV64

Description: PFAS - 537.1 ICAL L1

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie | **Date Prepared:** 5/2/2018 | **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV64

Description: PFAS - 537.1 ICAL L1

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	50	0.01	---	---	1	10	0.00003
N-methylperfluoro-1-octanesulfonamidoacetic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-1-butanesulfonate	50	0.00	---	---	1	10	0.00002
Perfluoro-1-hexanesulfonate	50	0.00	---	---	1	10	0.00002
Perfluoro-1-octanesulfonate	50	0.00	---	---	1	10	0.00002
Perfluoro-n-decanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-dodecanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-heptanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-hexanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-nonanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-octanoic Acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-tetradecanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-tridecanoic acid	50	0.01	---	---	1	10	0.00003
Perfluoro-n-undecanoic acid	50	0.01	---	---	1	10	0.00003

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV64

Description: PFAS - 537.1 ICAL L1

N-ethylperfluoro-octanesulfonamidoacetic acid	.00003
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00003
Perfluoro-1-butanesulfonate	.00002
Perfluoro-1-hexanesulfonate	.00002
Perfluoro-1-octanesulfonate	.00002
Perfluoro-n-decanoic Acid	.00003
Perfluoro-n-dodecanoic acid	.00003
Perfluoro-n-heptanoic Acid	.00003
Perfluoro-n-hexanoic acid	.00003
Perfluoro-n-nonanoic Acid	.00003
Perfluoro-n-octanoic Acid	.00003
Perfluoro-n-tetradecanoic acid	.00003
Perfluoro-n-tridecanoic acid	.00003
Perfluoro-n-undecanoic acid	.00003

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV43	Pipette	I0793912B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV65

Description: PFAS - 537.1 ICAL L2

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	100 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie | **Date Prepared:** 5/2/2018 | **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV65

Description: PFAS - 537.1 ICAL L2

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	100	0.01	---	---	1	10	0.00005
N-methylperfluoro-1-octanesulfonamidoacetic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-1-butanesulfonate	100	0.00	---	---	1	10	0.00004
Perfluoro-1-hexanesulfonate	100	0.00	---	---	1	10	0.00005
Perfluoro-1-octanesulfonate	100	0.00	---	---	1	10	0.00005
Perfluoro-n-decanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-dodecanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-heptanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-hexanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-nonanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-octanoic Acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-tetradecanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-tridecanoic acid	100	0.01	---	---	1	10	0.00005
Perfluoro-n-undecanoic acid	100	0.01	---	---	1	10	0.00005

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV65

Description: PFAS - 537.1 ICAL L2

N-ethylperfluoro-octanesulfonamidoacetic acid	.00005
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00005
Perfluoro-1-butanesulfonate	.00004
Perfluoro-1-hexanesulfonate	.00005
Perfluoro-1-octanesulfonate	.00005
Perfluoro-n-decanoic Acid	.00005
Perfluoro-n-dodecanoic acid	.00005
Perfluoro-n-heptanoic Acid	.00005
Perfluoro-n-hexanoic acid	.00005
Perfluoro-n-nonanoic Acid	.00005
Perfluoro-n-octanoic Acid	.00005
Perfluoro-n-tetradecanoic acid	.00005
Perfluoro-n-tridecanoic acid	.00005
Perfluoro-n-undecanoic acid	.00005

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV43	Pipette	I0793912B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV66

Description: PFAS - 537.1 ICAL L3

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	200 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE
It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV66

Description: PFAS - 537.1 ICAL L3

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.01	---	---	1	10	0.00010
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-1-butanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-1-hexanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-1-octanesulfonate	200	0.00	---	---	1	10	0.00009
Perfluoro-n-decanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-dodecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-heptanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-hexanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-nonanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-octanoic Acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-tetradecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-tridecanoic acid	200	0.01	---	---	1	10	0.00010
Perfluoro-n-undecanoic acid	200	0.01	---	---	1	10	0.00010

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV66

Description: PFAS - 537.1 ICAL L3

N-ethylperfluoro-octanesulfonamidoacetic acid	.00010
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00010
Perfluoro-1-butanesulfonate	.00009
Perfluoro-1-hexanesulfonate	.00009
Perfluoro-1-octanesulfonate	.00009
Perfluoro-n-decanoic Acid	.00010
Perfluoro-n-dodecanoic acid	.00010
Perfluoro-n-heptanoic Acid	.00010
Perfluoro-n-hexanoic acid	.00010
Perfluoro-n-nonanoic Acid	.00010
Perfluoro-n-octanoic Acid	.00010
Perfluoro-n-tetradecanoic acid	.00010
Perfluoro-n-tridecanoic acid	.00010
Perfluoro-n-undecanoic acid	.00010

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV43	Pipette	G0792979B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV67

Description: PFAS - 537.1 ICAL L4

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	500 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV67

Description: PFAS - 537.1 ICAL L4

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	500	0.01	---	---	1	10	0.00025
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-1-butanesulfonate	500	0.00	---	---	1	10	0.00022
Perfluoro-1-hexanesulfonate	500	0.00	---	---	1	10	0.00023
Perfluoro-1-octanesulfonate	500	0.00	---	---	1	10	0.00023
Perfluoro-n-decanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-dodecanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-heptanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-hexanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-nonanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-octanoic Acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-tetradecanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-tridecanoic acid	500	0.01	---	---	1	10	0.00025
Perfluoro-n-undecanoic acid	500	0.01	---	---	1	10	0.00025

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV67

Description: PFAS - 537.1 ICAL L4

N-ethylperfluoro-octanesulfonamidoacetic acid	.00025
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00025
Perfluoro-1-butanesulfonate	.00022
Perfluoro-1-hexanesulfonate	.00023
Perfluoro-1-octanesulfonate	.00023
Perfluoro-n-decanoic Acid	.00025
Perfluoro-n-dodecanoic acid	.00025
Perfluoro-n-heptanoic Acid	.00025
Perfluoro-n-hexanoic acid	.00025
Perfluoro-n-nonanoic Acid	.00025
Perfluoro-n-octanoic Acid	.00025
Perfluoro-n-tetradecanoic acid	.00025
Perfluoro-n-tridecanoic acid	.00025
Perfluoro-n-undecanoic acid	.00025

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV43	Pipette	I0400533B
JV61	Pipette	D1075429B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV68

Description: PFAS - 537.1 ICAL L5

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV43	PFAS - 537.1 Low ICAL Stock	Solution	~0	05/02/19	---	---	1000 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV68

Description: PFAS - 537.1 ICAL L5

Stock Id: JV43

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.01	---	---	1	10	0.00050
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-1-butanesulfonate	1000	0.00	---	---	1	10	0.00044
Perfluoro-1-hexanesulfonate	1000	0.00	---	---	1	10	0.00046
Perfluoro-1-octanesulfonate	1000	0.00	---	---	1	10	0.00046
Perfluoro-n-decanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-dodecanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-heptanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-hexanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-nonanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-octanoic Acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-tetradecanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-tridecanoic acid	1000	0.01	---	---	1	10	0.00050
Perfluoro-n-undecanoic acid	1000	0.01	---	---	1	10	0.00050

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV68

Description: PFAS - 537.1 ICAL L5

N-ethylperfluoro-octanesulfonamidoacetic acid	.00050
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00050
Perfluoro-1-butanesulfonate	.00044
Perfluoro-1-hexanesulfonate	.00046
Perfluoro-1-octanesulfonate	.00046
Perfluoro-n-decanoic Acid	.00050
Perfluoro-n-dodecanoic acid	.00050
Perfluoro-n-heptanoic Acid	.00050
Perfluoro-n-hexanoic acid	.00050
Perfluoro-n-nonanoic Acid	.00050
Perfluoro-n-octanoic Acid	.00050
Perfluoro-n-tetradecanoic acid	.00050
Perfluoro-n-tridecanoic acid	.00050
Perfluoro-n-undecanoic acid	.00050

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV43	Pipette	I0400533B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV69

Description: PFAS - 537.1 ICAL L6

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	200 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV69

Description: PFAS - 537.1 ICAL L6

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.05	---	---	1	10	0.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-1-butanesulfonate	200	0.04	---	---	1	10	0.00089
Perfluoro-1-hexanesulfonate	200	0.05	---	---	1	10	0.00091
Perfluoro-1-octanesulfonate	200	0.05	---	---	1	10	0.00093
Perfluoro-n-decanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-dodecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-heptanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-hexanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-nonanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-octanoic Acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-tetradecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-tridecanoic acid	200	0.05	---	---	1	10	0.00100
Perfluoro-n-undecanoic acid	200	0.05	---	---	1	10	0.00100

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV69

Description: PFAS - 537.1 ICAL L6

N-ethylperfluoro-octanesulfonamidoacetic acid	.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00100
Perfluoro-1-butanesulfonate	.00089
Perfluoro-1-hexanesulfonate	.00091
Perfluoro-1-octanesulfonate	.00093
Perfluoro-n-decanoic Acid	.00100
Perfluoro-n-dodecanoic acid	.00100
Perfluoro-n-heptanoic Acid	.00100
Perfluoro-n-hexanoic acid	.00100
Perfluoro-n-nonanoic Acid	.00100
Perfluoro-n-octanoic Acid	.00100
Perfluoro-n-tetradecanoic acid	.00100
Perfluoro-n-tridecanoic acid	.00100
Perfluoro-n-undecanoic acid	.00100

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV42	Pipette	G0792979B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV70

Description: PFAS - 537.1 ICAL L7

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	500 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID:

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV70

Description: PFAS - 537.1 ICAL L7

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	500	0.05	---	---	1	10	0.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-1-butanesulfonate	500	0.04	---	---	1	10	0.00221
Perfluoro-1-hexanesulfonate	500	0.05	---	---	1	10	0.00228
Perfluoro-1-octanesulfonate	500	0.05	---	---	1	10	0.00231
Perfluoro-n-decanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-dodecanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-heptanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-hexanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-nonanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-octanoic Acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-tetradecanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-tridecanoic acid	500	0.05	---	---	1	10	0.00250
Perfluoro-n-undecanoic acid	500	0.05	---	---	1	10	0.00250

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV70

Description: PFAS - 537.1 ICAL L7

N-ethylperfluoro-octanesulfonamidoacetic acid	.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00250
Perfluoro-1-butanesulfonate	.00221
Perfluoro-1-hexanesulfonate	.00228
Perfluoro-1-octanesulfonate	.00231
Perfluoro-n-decanoic Acid	.00250
Perfluoro-n-dodecanoic acid	.00250
Perfluoro-n-heptanoic Acid	.00250
Perfluoro-n-hexanoic acid	.00250
Perfluoro-n-nonanoic Acid	.00250
Perfluoro-n-octanoic Acid	.00250
Perfluoro-n-tetradecanoic acid	.00250
Perfluoro-n-tridecanoic acid	.00250
Perfluoro-n-undecanoic acid	.00250

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV42	Pipette	I0400533B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV71

Description: PFAS - 537.1 ICAL L8

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	1000 uL	1	10	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	50 uL	1	10	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV71

Description: PFAS - 537.1 ICAL L8

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.05	---	---	1	10	0.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-1-butanesulfonate	1000	0.04	---	---	1	10	0.00443
Perfluoro-1-hexanesulfonate	1000	0.05	---	---	1	10	0.00456
Perfluoro-1-octanesulfonate	1000	0.05	---	---	1	10	0.00463
Perfluoro-n-decanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-dodecanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-heptanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-hexanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-nonanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-octanoic Acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-tetradecanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-tridecanoic acid	1000	0.05	---	---	1	10	0.00500
Perfluoro-n-undecanoic acid	1000	0.05	---	---	1	10	0.00500

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	50	0.02	---	---	1	10	0.00010
13C4-PFOS	50	0.06	---	---	1	10	0.00029
d3-MeFOSAA	50	0.08	---	---	1	10	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	50	0.02	---	---	1	10	0.00010
13C2-PFHxA	50	0.02	---	---	1	10	0.00010
d5-EtFOSAA	50	0.08	---	---	1	10	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV71

Description: PFAS - 537.1 ICAL L8

N-ethylperfluoro-octanesulfonamidoacetic acid	.00500
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00500
Perfluoro-1-butanesulfonate	.00443
Perfluoro-1-hexanesulfonate	.00456
Perfluoro-1-octanesulfonate	.00463
Perfluoro-n-decanoic Acid	.00500
Perfluoro-n-dodecanoic acid	.00500
Perfluoro-n-heptanoic Acid	.00500
Perfluoro-n-hexanoic acid	.00500
Perfluoro-n-nonanoic Acid	.00500
Perfluoro-n-octanoic Acid	.00500
Perfluoro-n-tetradecanoic acid	.00500
Perfluoro-n-tridecanoic acid	.00500
Perfluoro-n-undecanoic acid	.00500

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV42	Pipette	I0400533B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:22:00 PM

BATTELLE

It can be done

Standard Solution Prep Form II

Approved: ☑

Standard Laboratory ID Number: JV72

Description: PFAS - 537.1 ICAL L9

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
JV42	PFAS - 537.1 High ICAL Stock	Solution	~0	05/02/19	---	---	1000 uL	1	5	~0.0000
JV61	PFAS - 537.1 Internal Standard Calibration Stock Solution	Solution	~0	05/02/19	---	---	25 uL	1	5	~0.0000
JV62	PFAS - 537.1 Surrogate Calibration Stock Solution	Solution	~0	05/02/19	---	---	25 uL	1	5	~0.0000

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 mL X 1 Vials **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Balance ID: _____

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE

It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV72

Description: PFAS - 537.1 ICAL L9

Stock Id: JV42

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.05	---	---	1	5	0.01000
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-1-butanesulfonate	1000	0.04	---	---	1	5	0.00885
Perfluoro-1-hexanesulfonate	1000	0.05	---	---	1	5	0.00912
Perfluoro-1-octanesulfonate	1000	0.05	---	---	1	5	0.00925
Perfluoro-n-decanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-dodecanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-heptanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-hexanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-nonanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-octanoic Acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-tetradecanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-tridecanoic acid	1000	0.05	---	---	1	5	0.01000
Perfluoro-n-undecanoic acid	1000	0.05	---	---	1	5	0.01000

Stock Id: JV61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	25	0.02	---	---	1	5	0.00010
13C4-PFOS	25	0.06	---	---	1	5	0.00029
d3-MeFOSAA	25	0.08	---	---	1	5	0.00040

Stock Id: JV62

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	25	0.02	---	---	1	5	0.00010
13C2-PFHxA	25	0.02	---	---	1	5	0.00010
d5-EtFOSAA	25	0.08	---	---	1	5	0.00040

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.00010
13C2-PFHxA	.00010
13C2-PFOA	.00010
13C4-PFOS	.00029
d3-MeFOSAA	.00040
d5-EtFOSAA	.00040

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE
It can be done

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: JV72

Description: PFAS - 537.1 ICAL L9

N-ethylperfluoro-octanesulfonamidoacetic acid	.01000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.01000
Perfluoro-1-butanesulfonate	.00885
Perfluoro-1-hexanesulfonate	.00912
Perfluoro-1-octanesulfonate	.00925
Perfluoro-n-decanoic Acid	.01000
Perfluoro-n-dodecanoic acid	.01000
Perfluoro-n-heptanoic Acid	.01000
Perfluoro-n-hexanoic acid	.01000
Perfluoro-n-nonanoic Acid	.01000
Perfluoro-n-octanoic Acid	.01000
Perfluoro-n-tetradecanoic acid	.01000
Perfluoro-n-tridecanoic acid	.01000
Perfluoro-n-undecanoic acid	.01000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
JV42	Pipette	I0400533B
JV61	Pipette	I0793912B
JV62	Pipette	I0793912B

Solution Prepared By: Schultz, Stephanie **Date Prepared:** 5/2/2018 **Expiration Date:** 5/2/2019

Solution Volume 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

Comment: 96/4 methanol/milli-q (RP-180502-2)

Approved By: Schumitz, Denise **Date:** 5/3/2018 3:21:00 PM

BATTELLE
It can be done

BDO Id: 180425-01

Reagent Receipt Report

Approved: ☐ **Authorized** ☐

Name:	EPA-537IS	**Received:**	4/25/2018
Vendor:	Wellington Laboratories	**Custodian:**	Schumitz, Matt
Catalogue No:	EPA-537IS	**Expires:**	12/13/2022
Type:	Solution	**Consumed:**	
Lot No:	537IS1217	**Stored In:**	AgChem Laboratory - R0124
Quantity:	1 ea mL **% Moisture:**		
Description:	EPA-537IS		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
d3-N-MeFOSAA	BDO-1838	4.0000	100.00	--	--	☐			
M2PFOA	BDO-1842	1.0000	100.00	--	--	☐			
MPFOS	BDO-1840	2.8700	100.00	--	--	☐			

Total Analytes: 3

Notes:

Approved by: _____ **Approved on:** _____

Authorized by: _____ **Authorized on:** _____

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-537IS

Internal Standard
Primary Dilution Standard

PRODUCT CODE:	EPA-537IS
LOT NUMBER:	537IS1217
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	12/13/2017
LAST TESTED: (mm/dd/yyyy)	12/13/2017
EXPIRY DATE: (mm/dd/yyyy)	12/13/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

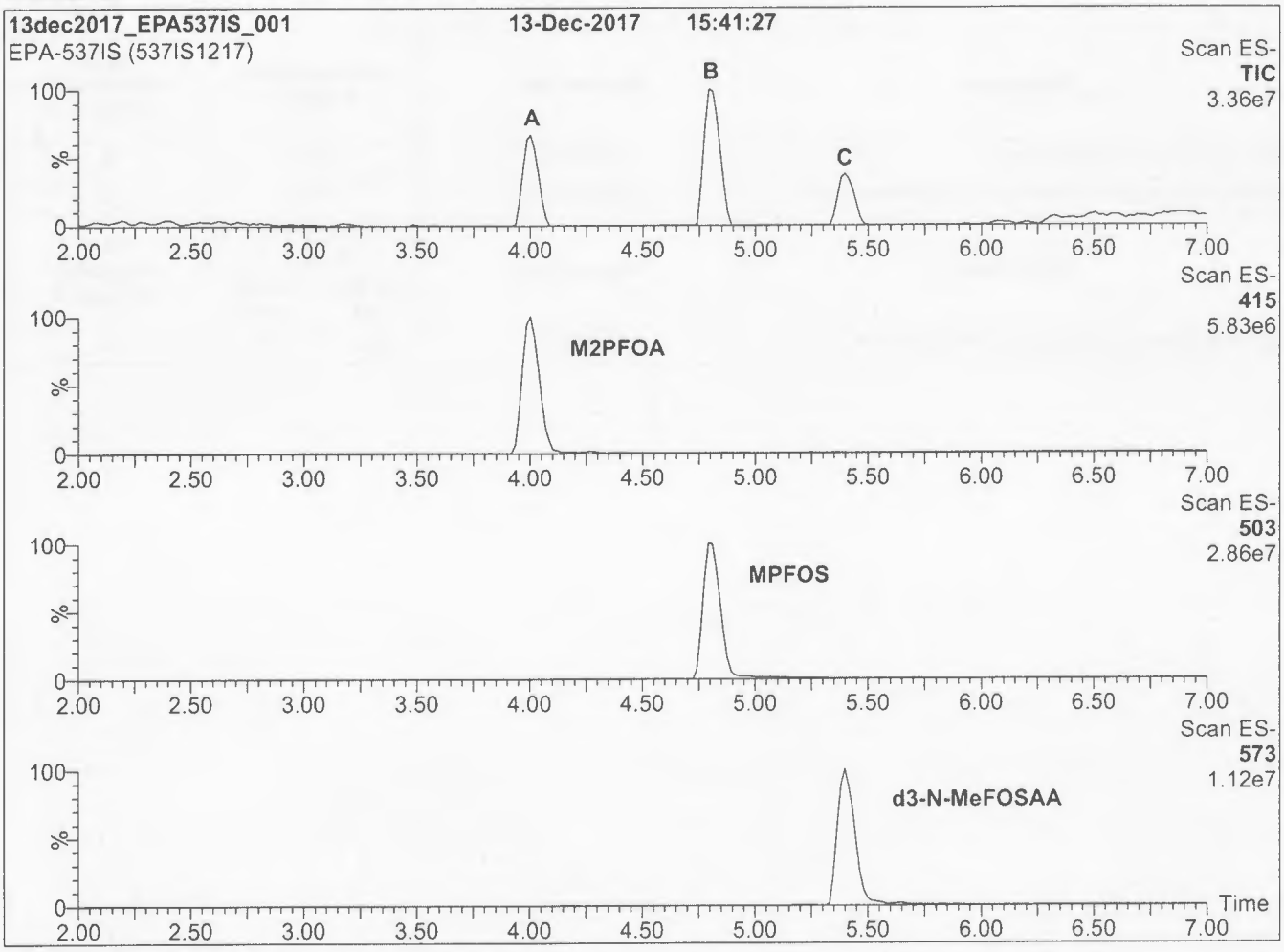
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-537IS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid	M2PFOA	1000		A
N-methyl-d_3-perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	4000		C
Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate	MPFOS	3000	2870	B

Certified By: _____ **Date:** 12/22/2017
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **EPA-537IS; LC/MS Data (Total Ion Current Chromatogram)**



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

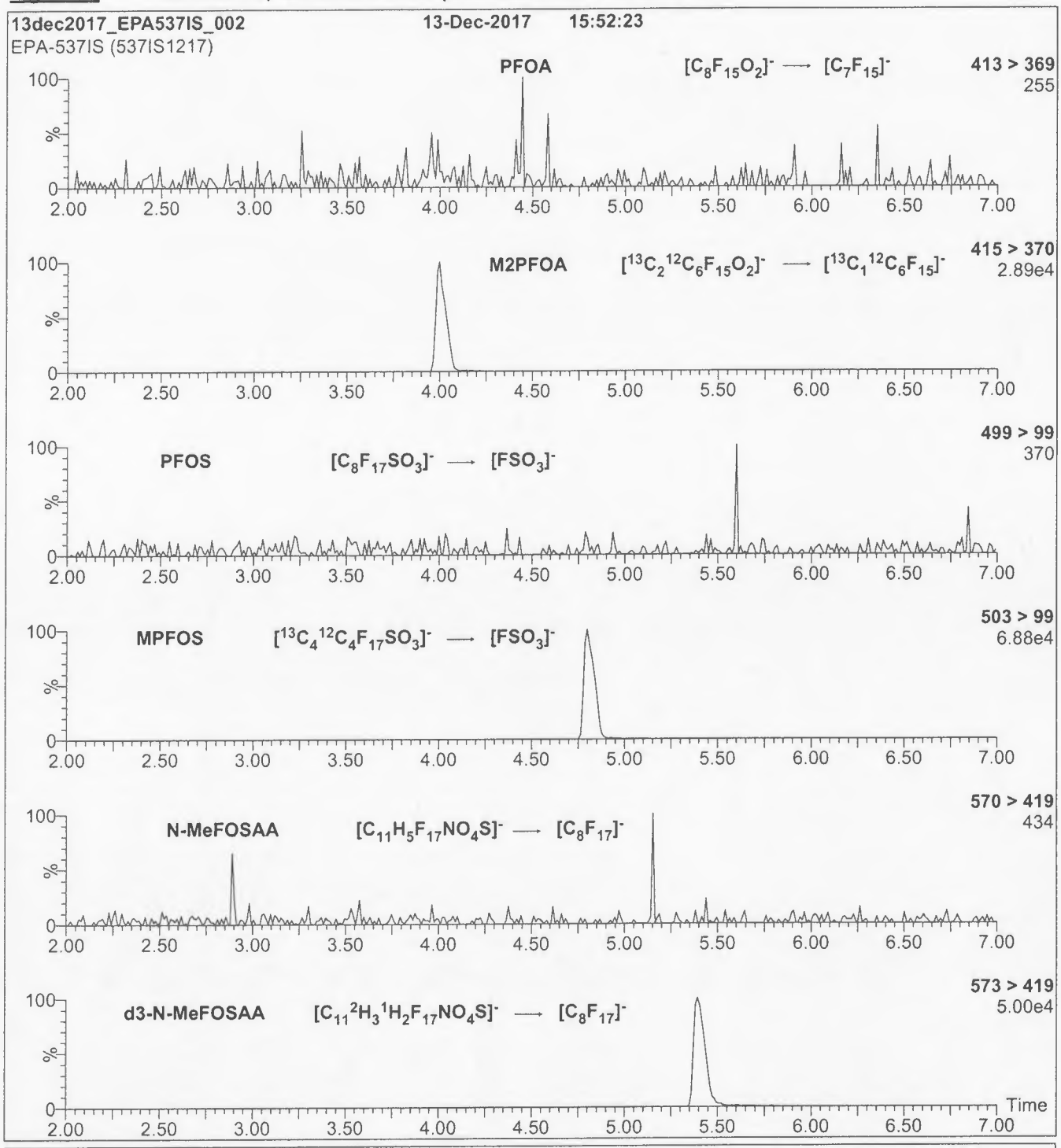
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537IS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537IS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3

Collision Energy (eV) = 11-40 (variable)

BATTELLE
It can be done

BDO Id: 180425-02

Reagent Receipt Report

Approved: ☑ **Authorized** ☐

Name:	EPA-537SS	**Received:**	4/25/2018
Vendor:	Wellington Laboratories	**Custodian:**	Schumitz, Matt
Catalogue No:	EPA-537SS	**Expires:**	11/8/2022
Type:	Solution	**Consumed:**	
Lot No:	537SS1117	**Stored In:**	AgChem Laboratory - R0124
Quantity:	1 ea ml **% Moisture:**		
Description:	EPA-537SS		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFDA	BDO-2110	1.0000	100.00	--	--	☐			
13C2-PFHxA	BDO-2106	1.0000	100.00	--	--	☐			
d5-EtFOSAA	BDO-1839	4.0000	100.00	--	--	☐			

Total Analytes: 3

Notes:

Approved by: Thorn, Jonathan **Approved on:** 5/2/2018 10:00:00 AM

Authorized by: **Authorized on:**

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-537SS

Surrogate Primary Dilution Standard

PRODUCT CODE:	EPA-537SS
LOT NUMBER:	537SS1117
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	11/06/2017
LAST TESTED: (mm/dd/yyyy)	11/08/2017
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (TIC)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

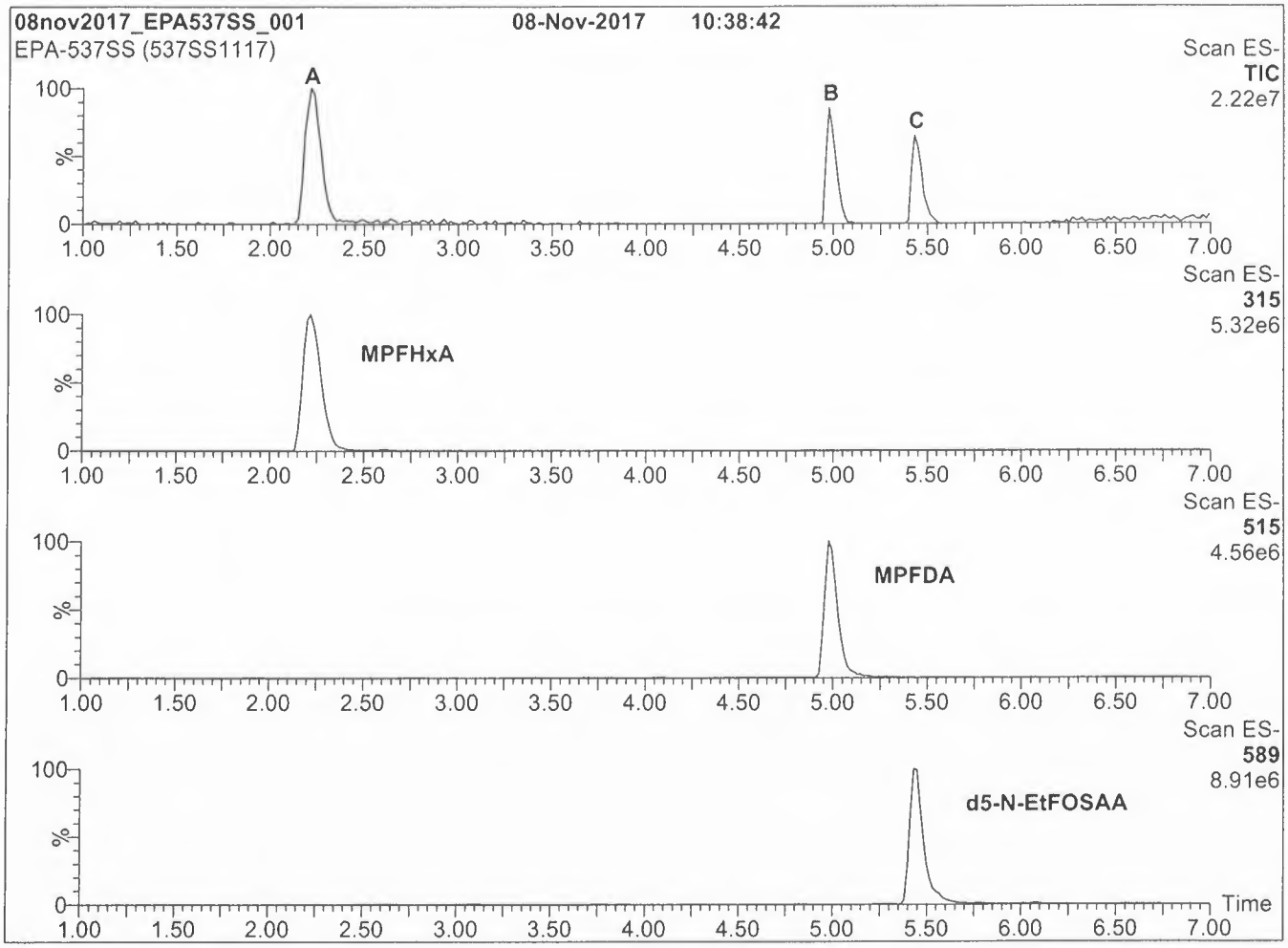
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-537SS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid	MPFHxA	1000	A
Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid	MPFDA	1000	B
N-ethyl-d_5-perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	4000	C

Certified By: _____ **Date:** 11/13/2017
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: EPA-537SS; LC/MS Data (Total Ion Current Chromatogram)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

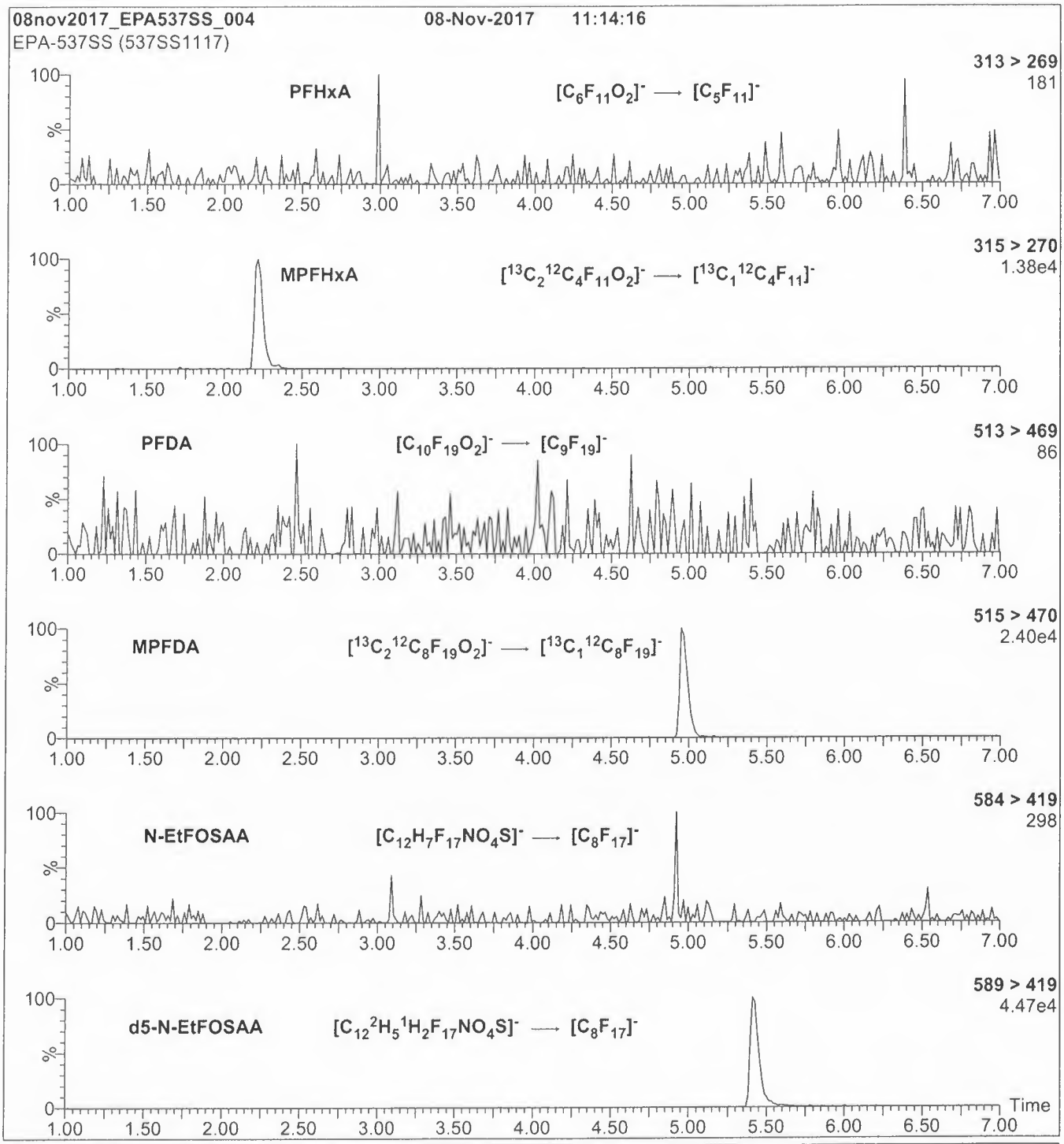
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537SS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537SS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3

Collision Energy (eV) = 9-40 (variable)

BATTELLE
It can be done

BDO Id: 180425-03

Reagent Receipt Report

Approved: ☑ **Authorized** ☐

Name: EPA-537PDS (calibration)
Vendor: Wellington Laboratories
Catalogue No: EPA-537PDS
Type: Solution
Lot No: 537PDS0318
Quantity: 1 ea ml **% Moisture:**
Description: EPA-537PDS

Received: 4/25/2018
Custodian: Schumitz, Matt
Expires: 3/5/2023
Consumed:
Stored In: AgChem Laboratory - R0124

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	2.0000	100.00	--	--	☐			1
N-methylperfluoro-1-octanesulfonami	2355-31-9	2.0000	100.00	--	--	☐			2
Perfluoro-1-butanesulfonate	375-73-5	1.7700	100.00	--	--	☐			3
Perfluoro-1-hexanesulfonate	355-46-4	1.8240	100.00	--	--	☐			4
Perfluoro-1-octanesulfonate	1763-23-1	1.8510	100.00	--	--	☐			5
Perfluoro-n-decanoic Acid	335-76-2	2.0000	100.00	--	--	☐			
Perfluoro-n-dodecanoic acid	307-55-1	2.0000	100.00	--	--	☐			
Perfluoro-n-heptanoic Acid	375-85-9	2.0000	100.00	--	--	☐			
Perfluoro-n-hexanoic acid	307-24-4	2.0000	100.00	--	--	☐			
Perfluoro-n-nonanoic Acid	375-95-1	2.0000	100.00	--	--	☐			
Perfluoro-n-octanoic Acid	335-67-1	2.0000	100.00	--	--	☐			
Perfluoro-n-tetradecanoic acid	376-06-7	2.0000	100.00	--	--	☐			
Perfluoro-n-tridecanoic acid	72629-94-8	2.0000	100.00	--	--	☐			
Perfluoro-n-undecanoic acid	2058-94-8	2.0000	100.00	--	--	☐			

Total Analytes: 14

Notes:

	Analyte:	Comment:
1	N-ethylperfluoro-octanesulfonamidoacetic acid	sum of branched and linear isomers
2	N-methylperfluoro-1-octanesulfonamidoacetic acid	sum of branched and linear isomers
3	Perfluoro-1-butanesulfonate	2000 ng/ml as the salt, 1770 ng/ml as the anion
4	Perfluoro-1-hexanesulfonate	1998 ng/ml as the salt, 1824 ng/ml as the anion. sum of branched and linear isomers.
5	Perfluoro-1-octanesulfonate	2002 ng/ml as the salt, 1851 ng/ml as the anion. sum of branched and linear isomers.

Approved by: Thorn, Jonathan **Approved on:** 5/2/2018 10:05:00 AM
Authorized by: **Authorized on:**

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-537PDS

Native PFAS Primary Dilution Standard Solution/Mixture

PRODUCT CODE:	EPA-537PDS
LOT NUMBER:	537PDS0318
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	03/02/2018
LAST TESTED: (mm/dd/yyyy)	03/05/2018
EXPIRY DATE: (mm/dd/yyyy)	03/05/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

for calibration
JNT 5/2/2018

DESCRIPTION:

EPA-537PDS is a solution/mixture of nine native linear perfluoroalkylcarboxylic acids (C_6-C_{14}), three native perfluoroalkylsulfonates (C_4 linear; C_6 and C_8 linear and branched), and two native perfluorooctanesulfonamidoacetic acids (linear and branched). The components and their concentrations are given in Table A.

The native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, and native perfluorooctanesulfonamidoacetic acids have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of N-MeFOSAA
Table C: Isomeric Components and Percent Composition of N-EtFOSAA
Table D: Isomeric Components and Percent Composition of PFHxSK
Table E: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Table A: **EPA-537PDS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration * (ng/ml)		Peak Assignment in Figure 1
Perfluoro-n-hexanoic acid	PFHxA	2000		B
Perfluoro-n-heptanoic acid	PFHpA	2000		C
Perfluoro-n-octanoic acid	PFOA	2000		F
Perfluoro-n-nonanoic acid	PFNA	2000		G
Perfluoro-n-decanoic acid	PFDA	2000		J
Perfluoro-n-undecanoic acid	PFUdA	2000		O
Perfluoro-n-dodecanoic acid	PFDoA	2000		P
Perfluoro-n-tridecanoic acid	PFTrDA	2000		Q
Perfluoro-n-tetradecanoic acid	PFTeDA	2000		R
N-methylperfluorooctanesulfonamidoacetic acid [a]	N-MeFOSAA: linear isomer	1520		L
	N-MeFOSAA: ∑ branched isomers	480		K
N-ethylperfluorooctanesulfonamidoacetic acid [b]	N-EtFOSAA: linear isomer	1550		N
	N-EtFOSAA: ∑ branched isomers	450		M
Compound	**Abbreviation**	**Concentration * (ng/ml)**		**Peak Assignment in Figure 1**
		as the salt	**as the anion**	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	A
Potassium perfluorohexanesulfonate [c]	PFHxSK: linear isomer	1620	1480	E
	PFHxSK: ∑ branched isomers	378	344	D
Potassium perfluorooctanesulfonate [d]	PFOSK: linear isomer	1580	1460	I
	PFOSK: ∑ branched isomers	422	391	H

[a] See Table B for percent composition of linear and branched N-MeFOSAA isomers.
[b] See Table C for percent composition of linear and branched N-EtFOSAA isomers.
[c] See Table D for percent composition of linear and branched PFHxSK isomers.
[d] See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

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

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7	24.0
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0	
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0	
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0	
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2	
7	Other Unidentified Isomers		1.1	

* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

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

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3	22.5
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	2.2	
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	5.4	
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$	10.4	
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	0.3	
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	0.3	
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	0.3	
9	Other Unidentified Isomers		1.3	

* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

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

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

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

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

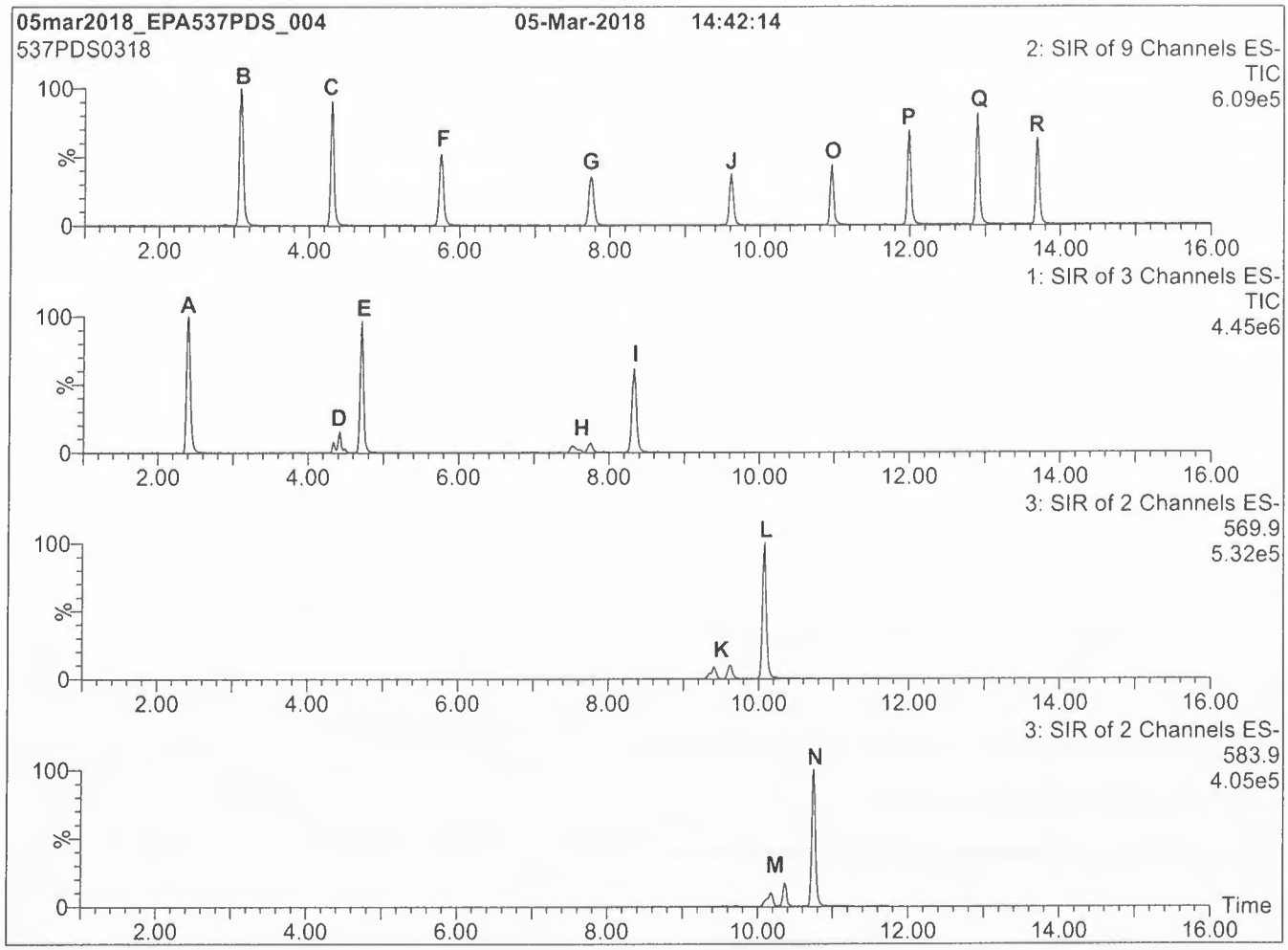
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate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

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

Certified By: _____ **Date:** 04/02/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-537PDS; LC/MS Data (SIR)**



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-60)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537PDS; LC/MS/MS Data (Selected MRM Transitions)

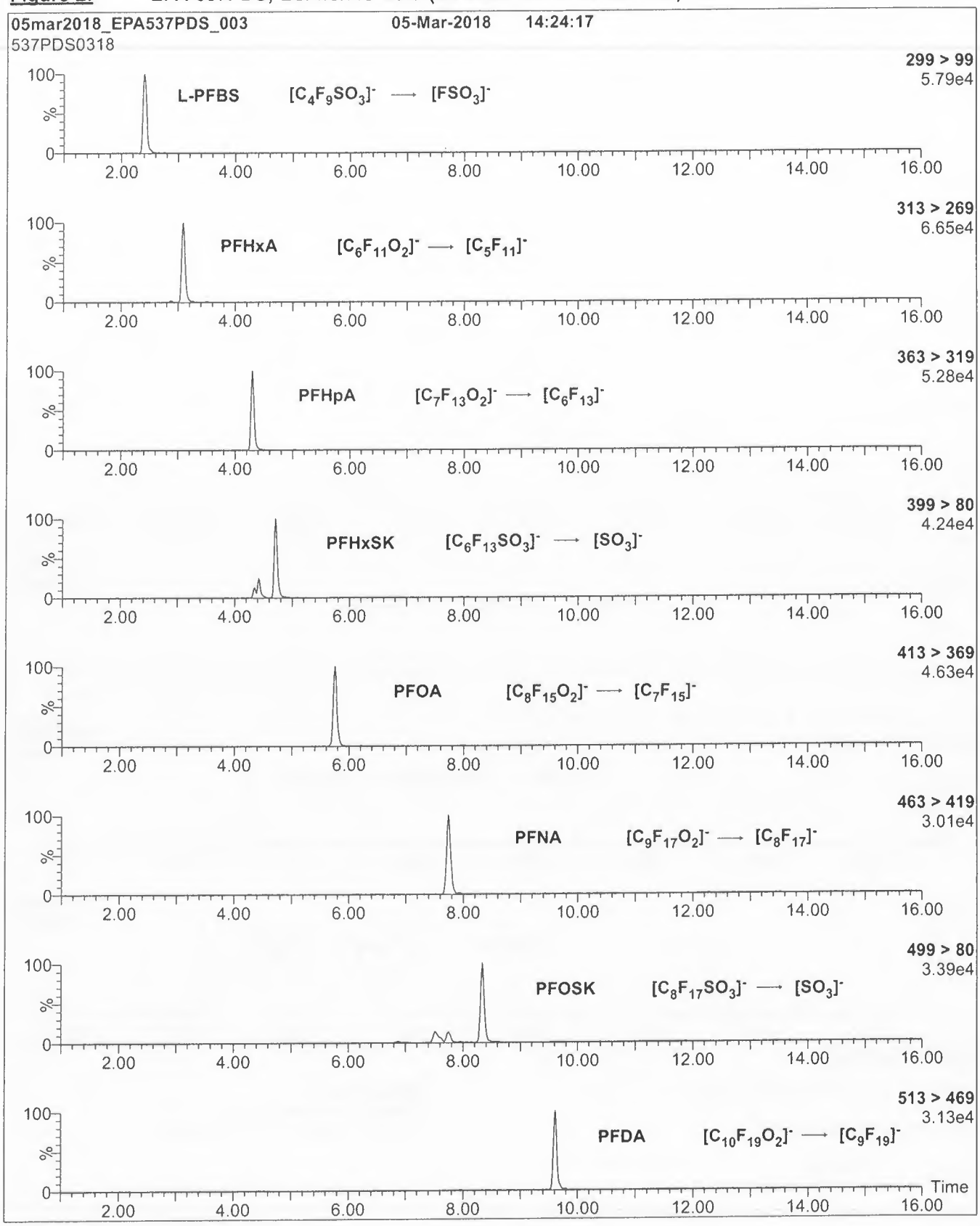
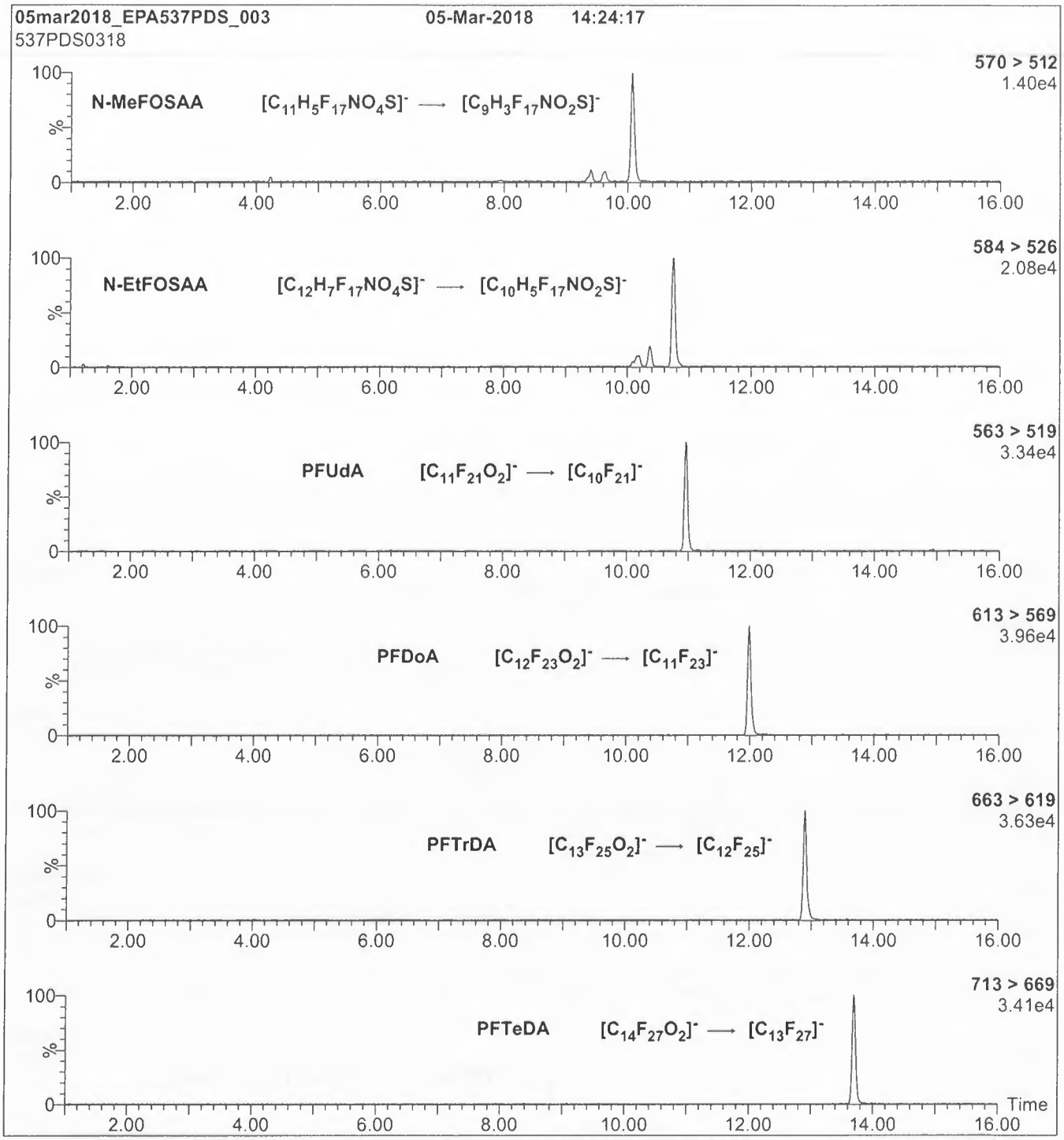


Figure 2: EPA-537PDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537PDS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.10e-3
Collision Energy (eV) = 10-40 (variable)

BATTELLE
It can be done

BDO Id: 180425-04

Reagent Receipt Report

Approved: ☐ **Authorized** ☐

Name: EPA-537PDS-L (second source)
Vendor: Wellington Laboratories
Catalogue No: EPA-537PDS-L
Type: Solution
Lot No: 537PDSL0318
Quantity: 1 ea ml **% Moisture:**
Description: EPA-537PDS-L

Received: 4/25/2018
Custodian: Schumitz, Matt
Expires: 3/5/2023
Consumed:
Stored In: AgChem Laboratory - R0124

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	2.0000	100.00	--	--	☐			
N-methylperfluoro-1-octanesulfonami	2355-31-9	2.0000	100.00	--	--	☐			
Perfluoro-1-butanesulfonic Acid	375-73-5	2.0000	100.00	--	--	☐			1
Perfluoro-n-decanoic Acid	335-76-2	2.0000	100.00	--	--	☐			
Perfluoro-n-dodecanoic acid	307-55-1	2.0000	100.00	--	--	☐			
Perfluoro-n-heptanoic Acid	375-85-9	2.0000	100.00	--	--	☐			
Perfluoro-n-hexanoic acid	307-24-4	2.0000	100.00	--	--	☐			
Perfluoro-n-octanoic Acid	335-67-1	2.0000	100.00	--	--	☐			
Perfluorononanoic Acid	375-95-1	2.0000	100.00	--	--	☐			
Perfluoro-n-tetradecanoic acid	376-06-7	2.0000	100.00	--	--	☐			
Perfluoro-n-tridecanoic acid	72629-94-8	2.0000	100.00	--	--	☐			
Perfluoro-n-undecanoic acid	2058-94-8	2.0000	100.00	--	--	☐			
Sodium perfluoro-1-hexanesulfonate	82382-12-5	1.8900	100.00	--	--	☐			2
Sodium perfluoro-1-octanesulfonate	4021-47-0	1.9100	100.00	--	--	☐			3

Total Analytes: 14

Notes:

	Analyte:	Comment:
1	Perfluoro-1-butanesulfonic Acid	2000 ng/ml as the salt, 1770 ng/ml as the anion
2	Sodium perfluoro-1-hexanesulfonate	2000 ng/ml as the salt, 1890 ng/ml as the anion
3	Sodium perfluoro-1-octanesulfonate	2000 ng/ml as the salt, 1910 ng/ml as the anion

Approved by: _____ **Approved on:** _____

Authorized by: _____ **Authorized on:** _____

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-537PDS-L

Native PFAS Linear Primary Dilution Standard Solution/Mixture

PRODUCT CODE:	EPA-537PDS-L
LOT NUMBER:	537PDSL0318
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	03/02/2018
LAST TESTED: (mm/dd/yyyy)	03/05/2018
EXPIRY DATE: (mm/dd/yyyy)	03/05/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

EPA-537PDS-L is a solution/mixture of native linear perfluoroalkylcarboxylic acids (C_6-C_{14}), native linear perfluoroalkylsulfonates (C_4, C_6, and C_8), and native linear perfluorooctanesulfonamidoacetic acids. The components and their concentrations are given in Table A.

The native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, and native perfluorooctanesulfonamidoacetic acids have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO17034 REFERENCE MATERIAL PRODUCER

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

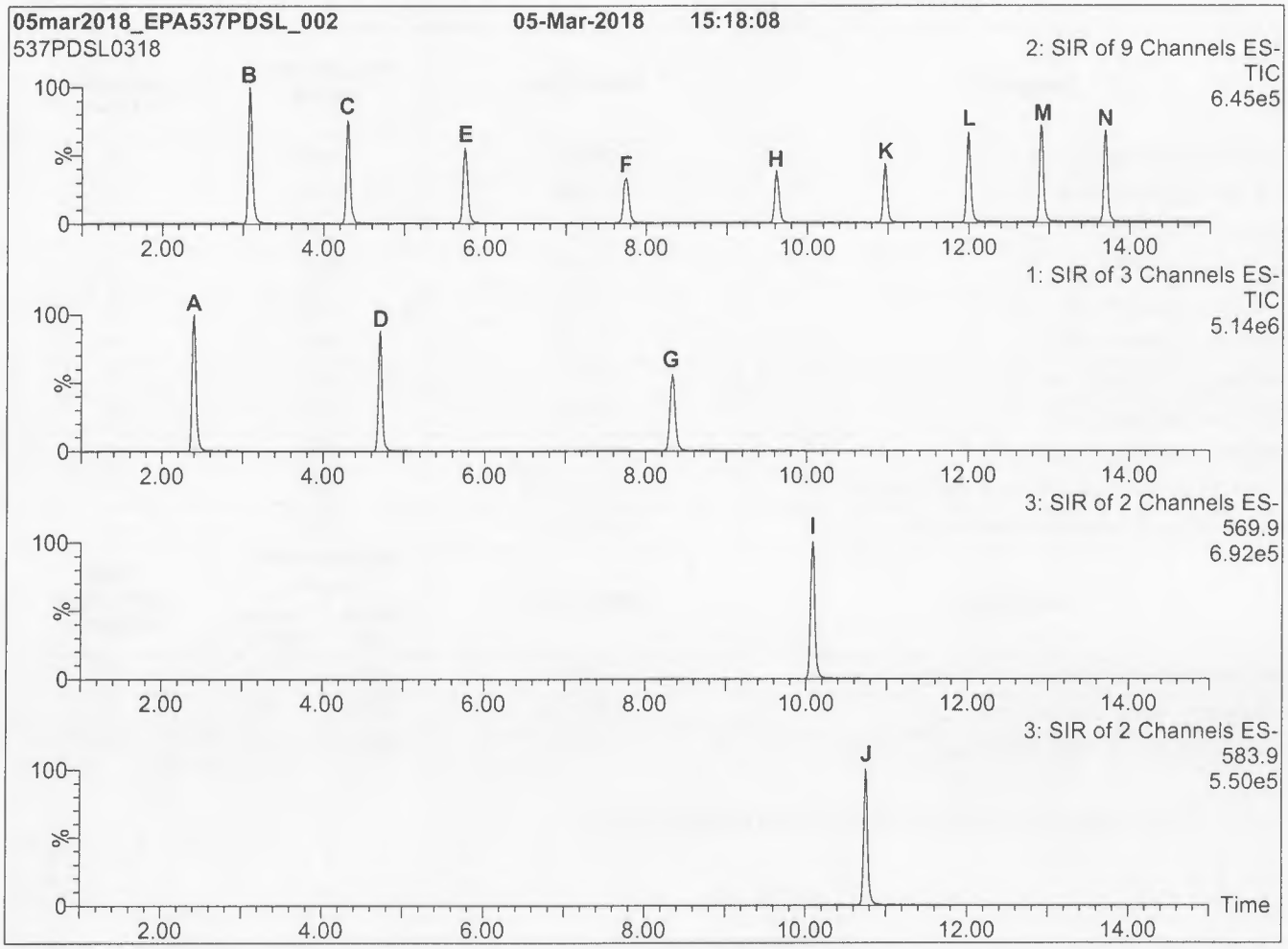
Table A: **EPA-537PDS-L; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

Compound	Abbreviation	Concentration * (ng/ml)		Peak Assignment in Figure 1
Perfluoro-n-hexanoic acid ✓	PFHxA	2000		B
Perfluoro-n-heptanoic acid ✓	PFHpA	2000		C
Perfluoro-n-octanoic acid ✓	PFOA	2000		E
Perfluoro-n-nonanoic acid ✓	PFNA	2000		F
Perfluoro-n-decanoic acid ✓	PFDA	2000		H
Perfluoro-n-undecanoic acid ✓	PFUdA	2000		K
Perfluoro-n-dodecanoic acid ✓	PFDoA	2000		L
Perfluoro-n-tridecanoic acid ✓	PFTrDA	2000		M
Perfluoro-n-tetradecanoic acid ✓	PFTeDA	2000		N
N-methylperfluoro-1-octanesulfonamidoacetic acid ✓	N-MeFOSAA	2000		I
N-ethylperfluoro-1-octanesulfonamidoacetic acid ✓	N-EtFOSAA	2000		J
Compound	**Abbreviation**	**Concentration (ng/ml)**		**Peak Assignment in Figure 1**
		as the salt	**as the anion**	
Potassium perfluoro-1-butanesulfonate ✓	L-PFBS	2000	1770	A
Sodium perfluoro-1-hexanesulfonate ✓	L-PFHxS	2000	1890	D
Sodium perfluoro-1-octanesulfonate ✓	L-PFOS	2000	1910	G

* Concentrations have been rounded to three significant figures.

Certified By: _____ **Date:** 04/02/2018
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **EPA-537PDS-L; LC/MS Data (SIR)**



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-60)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: EPA-537PDS-L; LC/MS/MS Data (Selected MRM Transitions)

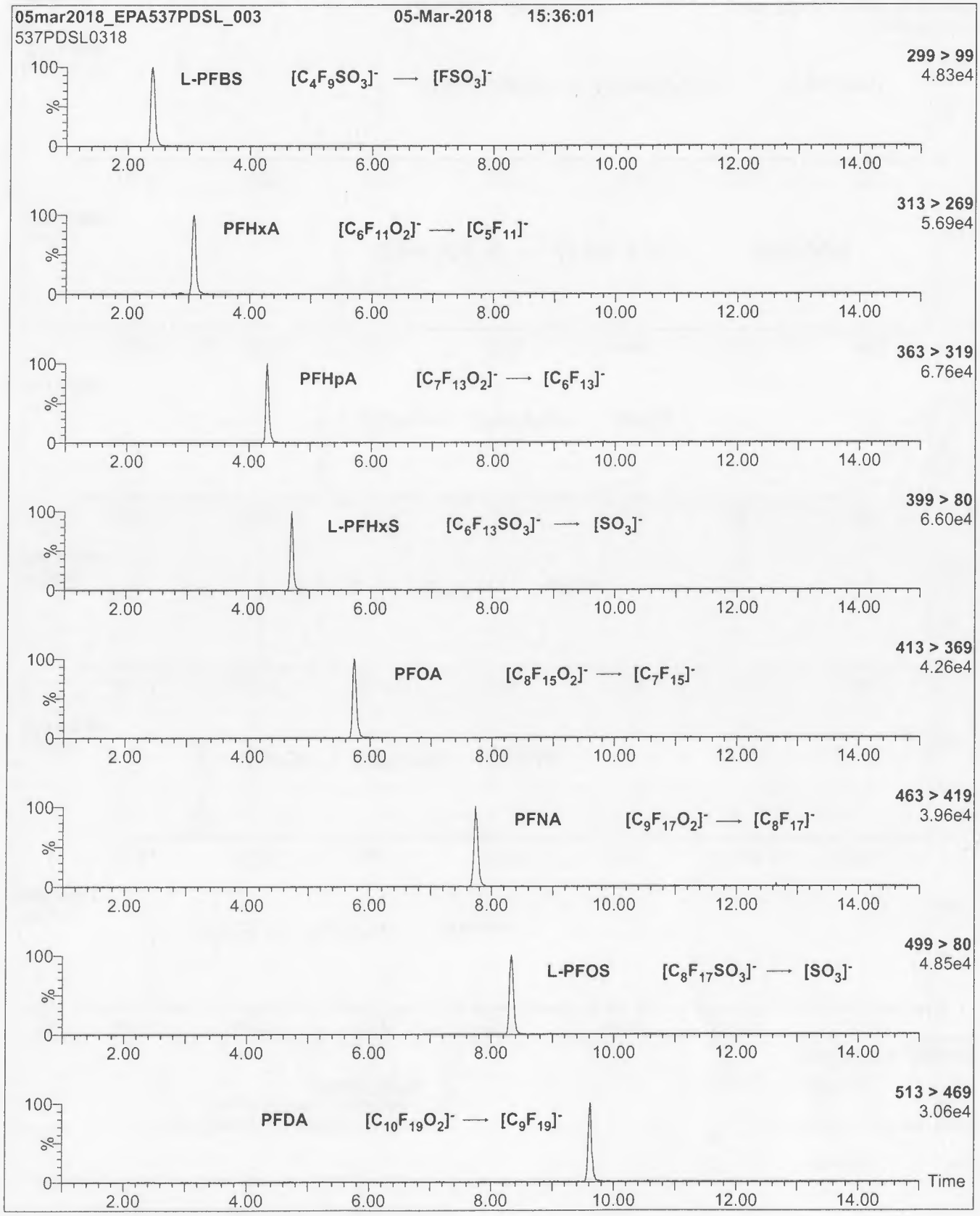
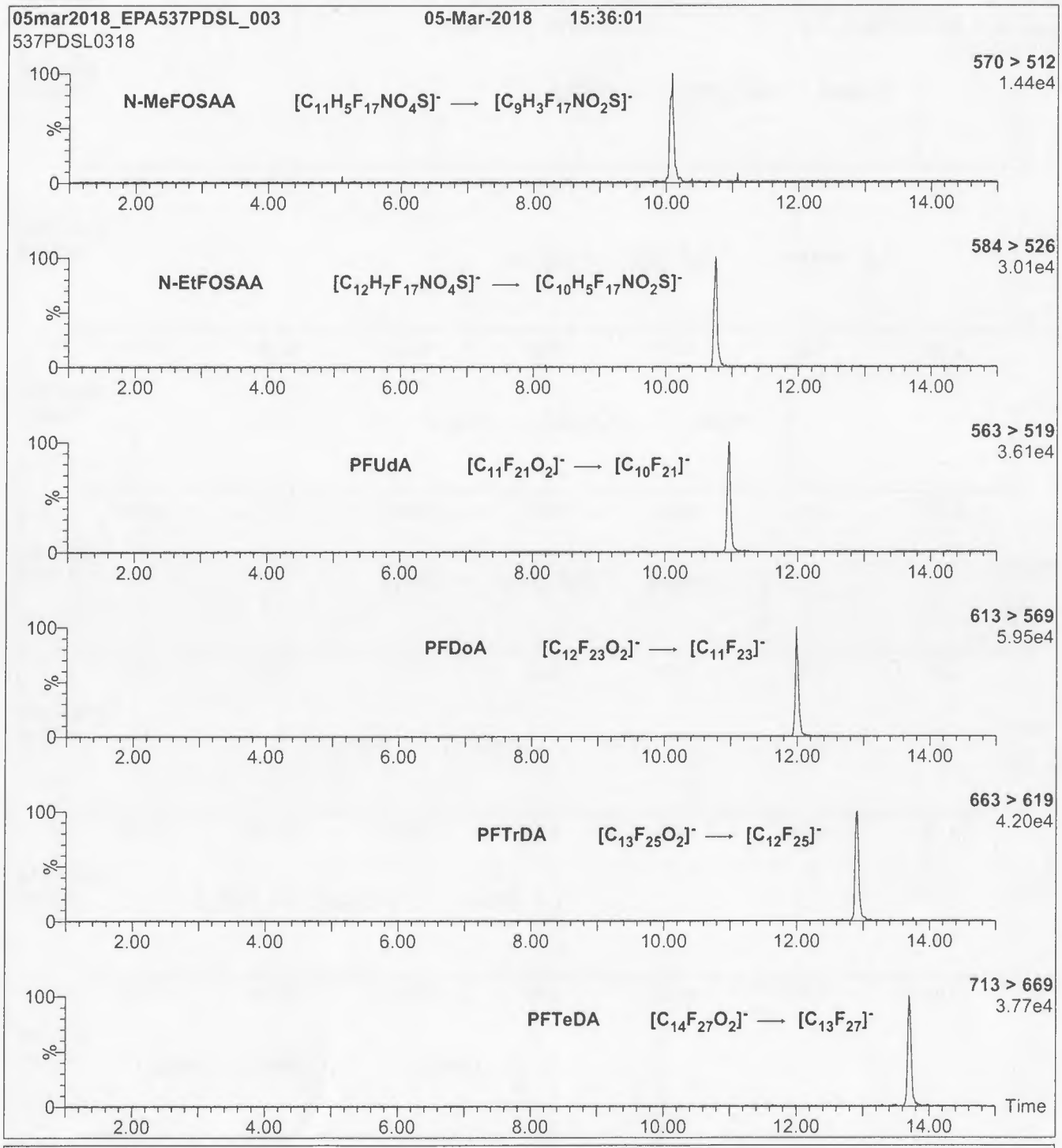


Figure 2: EPA-537PDS-L; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (EPA-537PDS-L)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3

Collision Energy (eV) = 10-40 (variable)

Sample Preparation

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0316

WE04 PFAS Analysis

DW

SOP Numbers (see workplan for modifications)

VOASOP No. 5-371

This Batch Contains The Following Samples:		
CQ774PB-FS	J6157-FS	J6169-FS
CQ775LCS-FS	J6159-FS	
J6149-FS	J6161-FS	
J6151-FS	J6163-FS	
J6153-FS	J6165-FS	
J6155-FS	J6167-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	05/21/2018	DMS

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SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Sample ID	Description
CQ774PB-FS	Procedural Blank
CQ775LCS-FS	Laboratory Control Sample
J6149-FS	NAWC-050718-FRB-316
J6151-FS	NAWC-050718-FRB-180
J6153-FS	NAWC-050718-FRB-275
J6155-FS	NAWC-050718-FRB-145
J6157-FS	NAWC-050718-FRB-357
J6159-FS	NAWC-050718-FRB-162
J6161-FS	WGNA-050718-FRB-0800
J6163-FS	WGNA-050718-FRB-0335
J6165-FS	WGNA-050718-FRB-3556
J6167-FS	NAWC-050718-FRB-356
J6169-FS	NAWC-050718-FRB-289

Samples Assigned By: Stephanie Schultz Date : May 15, 2018

Comments:

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BATTELLE - NORWELL OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316
WE04 PFAS Analysis
DW

Requested On/By:	05/15/2018 SAS	**Purpose:**	Sample Preparation
Relinquished On/By:	05/15/2018 SAS	**Last Activity:**	Transfer

Accepted On/By:	05/15/2018 SAS	**Returned On/To:**	
Stored In Facility:	Sample Preparation	**Returned To Facility:**	
Stored Until	05/15/2018		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	J6149	1	C	Consumed	NA
2	J6151	1	C	Consumed	NA
3	J6153	1	C	Consumed	NA
4	J6155	1	C	Consumed	NA
5	J6157	1	C	Consumed	NA
6	J6159	1	C	Consumed	NA
7	J6161	1	C	Consumed	NA
8	J6163	1	C	Consumed	NA
9	J6165	1	C	Consumed	NA
10	J6167	1	C	Consumed	NA
11	J6169	1	C	Consumed	NA

Total Samples 11 * "C" = Consumed Container

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LIQUID SAMPLE ID FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CQ774PB-FS	Procedural Blank	250.0	NA	--	05/15/18 SAS
CQ775LCS-FS	Laboratory Control Sample	250.0	NA	--	05/15/18 SAS
J6149-FS	NAWC-050718-FRB-316	255.0	1	C	05/16/18 SAS
J6151-FS	NAWC-050718-FRB-180	250.0	1	C	05/16/18 SAS
J6153-FS	NAWC-050718-FRB-275	250.0	1	C	05/16/18 SAS
J6155-FS	NAWC-050718-FRB-145	250.0	1	C	05/16/18 SAS
J6157-FS	NAWC-050718-FRB-357	250.0	1	C	05/16/18 SAS
J6159-FS	NAWC-050718-FRB-162	250.0	1	C	05/16/18 SAS
J6161-FS	WGNA-050718-FRB-0800	255.0	1	C	05/16/18 SAS
J6163-FS	WGNA-050718-FRB-0335	250.0	1	C	05/16/18 SAS
J6165-FS	WGNA-050718-FRB-3556	250.0	1	C	05/16/18 SAS
J6167-FS	NAWC-050718-FRB-356	250.0	1	C	05/16/18 SAS
J6169-FS	NAWC-050718-FRB-289	250.0	1	C	05/16/18 SAS

Comments:

Sample ID:	Comments:
CQ774PB-FS	1.23g Trizma(170526-01) weighed on BAL-009
CQ775LCS-FS	1.27g Trizma(170526-01) weighed on BAL-009

Samples Assigned By Stephanie Schultz Date : May 15, 2018

* - "C" = Sample is Consumed

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SURROGATE SPIKE FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316
WE04 PFAS Analysis
DW

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CQ774PB-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
CQ775LCS-FS	JV41	LCS/MS	1	75	05/15/18 SAS	JCT	NA
CQ775LCS-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6149-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6151-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6153-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6155-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6157-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6159-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6161-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6163-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6165-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6167-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA
J6169-FS	JV60	SIS	1	50	05/15/18 SAS	JCT	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV41	Pipette	I0793912B
JV60	Pipette	I0793912B

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BATTELLE - NORWELL OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Sample ID	1st Extraction	2nd Extraction	3rd Extraction	Conc. ID	Turbo °C	Turbo PSI	KD °C	Comment
CQ774PB-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
CQ775LCS-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6149-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6151-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6153-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6155-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6157-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6159-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6161-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6163-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6165-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6167-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6169-FS	05/15/18 SAS	NA	NA	NA	NA	NA	NA	NA

Solvents/Reagent Preparations:

Name	ID	Expires	Lot No	Procedure	Comments
Pre-packed SPE Column	RP-180515-8	05/16/18	S214-0065	Pre-packed SPE Column	

Solvents/Reagents:

Name	Lot No	Comments
Methanol (HPLC) (180227-02)	178212	

BATTELLE
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BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316
WE04 PFAS Analysis
DW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CQ774PB-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
CQ775LCS-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6149-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6151-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6153-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6155-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6157-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6159-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6161-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6163-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6165-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6167-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT
J6169-FS(0)	950	50	JV59	50	1	1000	1.000	05/17/18 SAS	JCT

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV59	Pipette	I0793912B

Extract Id:	Comments:
CQ774PB-FS	Samples reconstituted in 96/4 methanol/milli-q water (RP-180515-11)

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CQ774PB-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
CQ775LCS-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6149-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6151-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6153-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6155-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6157-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6159-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6161-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6163-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6165-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6167-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS
J6169-FS	0	--	5/15/2018 3:00:00 PM	NA		NA	NA	1.000	1.000	05/15/18 SAS

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316
WE04 PFAS Analysis
DW

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	May 17 2018 9:44AM SAS	**Received On/By:**	May 17 2018 3:46PM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CQ774PB-FS(0)	1000	1	Intact	NA
2	CQ775LCS-FS(0)	1000	1	Intact	NA
3	J6149-FS(0)	1000	1	Intact	NA
4	J6151-FS(0)	1000	1	Intact	NA
5	J6153-FS(0)	1000	1	Intact	NA
6	J6155-FS(0)	1000	1	Intact	NA
7	J6157-FS(0)	1000	1	Intact	NA
8	J6159-FS(0)	1000	1	Intact	NA
9	J6161-FS(0)	1000	1	Intact	NA
10	J6163-FS(0)	1000	1	Intact	NA
11	J6165-FS(0)	1000	1	Intact	NA
12	J6167-FS(0)	1000	1	Intact	NA
13	J6169-FS(0)	1000	1	Intact	NA

Total Extracts: 13

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MISCELLANEOUS DOCUMENTATION FORM

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Entered By:	**On:**

Task Leader Approval:	**On:**
SupervisorApproval:	**On:**
PM Approval:	**On:**

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SAMPLE SPECIFIC COMMENTS

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Sample ID:	Comment:	Date/Initials:
CQ774PB-FS	Sample extraction began at 3:00pm for all samples	05/15/18 SAS
CQ774PB-FS	Sample extraction ended at 3:29pm	05/15/18 SAS
CQ775LCS-FS	Sample extraction ended at 3:26pm	05/15/18 SAS
J6149-FS	Sample extraction ended at 3:27pm	05/15/18 SAS
J6151-FS	Sample extraction ended at 3:34pm	05/15/18 SAS
J6153-FS	Sample extraction ended at 3:26pm	05/15/18 SAS
J6155-FS	Sample extraction ended at 3:27pm	05/15/18 SAS
J6157-FS	Sample extraction ended at 3:35pm	05/15/18 SAS
J6159-FS	Sample extraction ended at 3:35pm	05/15/18 SAS
J6161-FS	Sample extraction ended at 3:26pm	05/15/18 SAS
J6163-FS	Sample extraction ended at 3:29pm	05/15/18 SAS
J6165-FS	Sample extraction ended at 3:35pm	05/15/18 SAS
J6167-FS	Sample extraction ended at 3:33pm	05/15/18 SAS
J6169-FS	Sample extraction ended at 3:35pm	05/15/18 SAS

Analytical Calibrations

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Sequence Report

Created with Analyst Reporter
Printed: 24/05/2018 11:06:41 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH		5/17/2018 9:11:38 AM	5-0371.dam	18-0287.wiff
2	JV64	L1	5/17/2018 9:20:34 AM	5-0371.dam	18-0287.wiff
3	JV65	L2	5/17/2018 9:29:29 AM	5-0371.dam	18-0287.wiff
4	JV66	L3	5/17/2018 9:38:24 AM	5-0371.dam	18-0287.wiff
5	JV67	L4	5/17/2018 9:47:21 AM	5-0371.dam	18-0287.wiff
6	JV68	L5	5/17/2018 9:56:17 AM	5-0371.dam	18-0287.wiff
7	JV69	L6	5/17/2018 10:05:12 AM	5-0371.dam	18-0287.wiff
8	JV70	L7	5/17/2018 10:14:08 AM	5-0371.dam	18-0287.wiff
9	JV71	L8	5/17/2018 10:23:03 AM	5-0371.dam	18-0287.wiff
10	JV72	L9	5/17/2018 10:31:58 AM	5-0371.dam	18-0287.wiff
11	JV63 ICC	ICC	5/17/2018 10:40:54 AM	5-0371.dam	18-0287.wiff
1	MeOH		5/17/2018 10:49:49 AM	5-0371.dam	18-0287.wiff
15	CQ774PB-FS(0)	Procedural Blank	5/17/2018 2:35:34 PM	5-0371.dam	18-0315.wiff
16	CQ775LCS-FS(0)	Laboratory Control Sample	5/17/2018 2:44:30 PM	5-0371.dam	18-0315.wiff
17	J6149-FS(0)	NAWC-050718-FRB-316	5/17/2018 2:53:26 PM	5-0371.dam	18-0315.wiff
18	J6151-FS(0)	NAWC-050718-FRB-180	5/17/2018 3:02:22 PM	5-0371.dam	18-0315.wiff
19	J6153-FS(0)	NAWC-050718-FRB-275	5/17/2018 3:11:18 PM	5-0371.dam	18-0315.wiff
20	J6155-FS(0)	NAWC-050718-FRB-145	5/17/2018 3:20:15 PM	5-0371.dam	18-0315.wiff
21	J6157-FS(0)	NAWC-050718-FRB-357	5/17/2018 3:29:12 PM	5-0371.dam	18-0315.wiff
22	J6159-FS(0)	NAWC-050718-FRB-162	5/17/2018 3:38:10 PM	5-0371.dam	18-0315.wiff
8	JV70 CCV	CCV	5/17/2018 3:47:06 PM	5-0371.dam	18-0315.wiff
1	MeOH		5/17/2018 3:56:03 PM	5-0371.dam	18-0315.wiff
23	J6161-FS(0)	WGNA-050718-FRB-0800	5/17/2018 4:04:58 PM	5-0371.dam	18-0315.wiff
24	J6163-FS(0)	WGNA-050718-FRB-0335	5/17/2018 4:13:55 PM	5-0371.dam	18-0315.wiff
25	J6165-FS(0)	WGNA-050718-FRB-3556	5/17/2018 4:22:52 PM	5-0371.dam	18-0315.wiff
26	J6167-FS(0)	NAWC-050718-FRB-356	5/17/2018 4:31:47 PM	5-0371.dam	18-0315.wiff
27	J6169-FS(0)	NAWC-050718-FRB-	5/17/2018 4:40:42	5-0371.dam	18-0315.wiff

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Sequence Report

Created with Analyst Reporter
Printed: 24/05/2018 11:06:41 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
		289	PM		
7	JV69 CCV	CCV	5/17/2018 4:49:36 PM	5-0371.dam	18-0315.wiff

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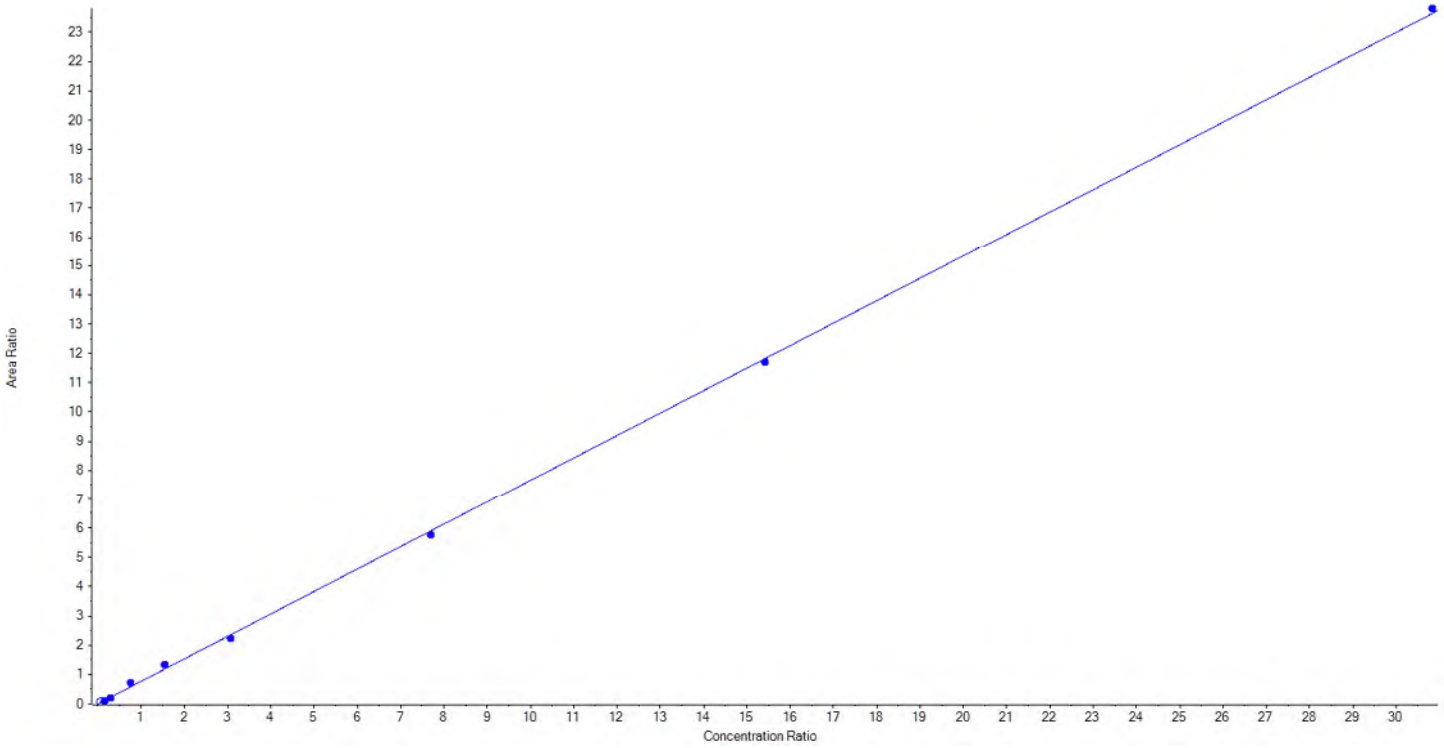
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFBS_1	**Data File**	18-0287.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.76645 x + -8.51923e-4 (r = 0.99924) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	22.15	23.483107	106.0
3	JV65	L2	True	44.30	38.690092	87.3
4	JV66	L3	True	88.60	77.119919	87.0
5	JV67	L4	True	221.50	270.479947	122.1
6	JV68	L5	True	443.00	494.830183	111.7
7	JV69	L6	True	885.00	836.047360	94.5
8	JV70	L7	True	2212.50	2161.273577	97.7
9	JV71	L8	True	4425.00	4377.980502	98.9
10	JV72	L9	True	8850.00	8913.478420	100.7



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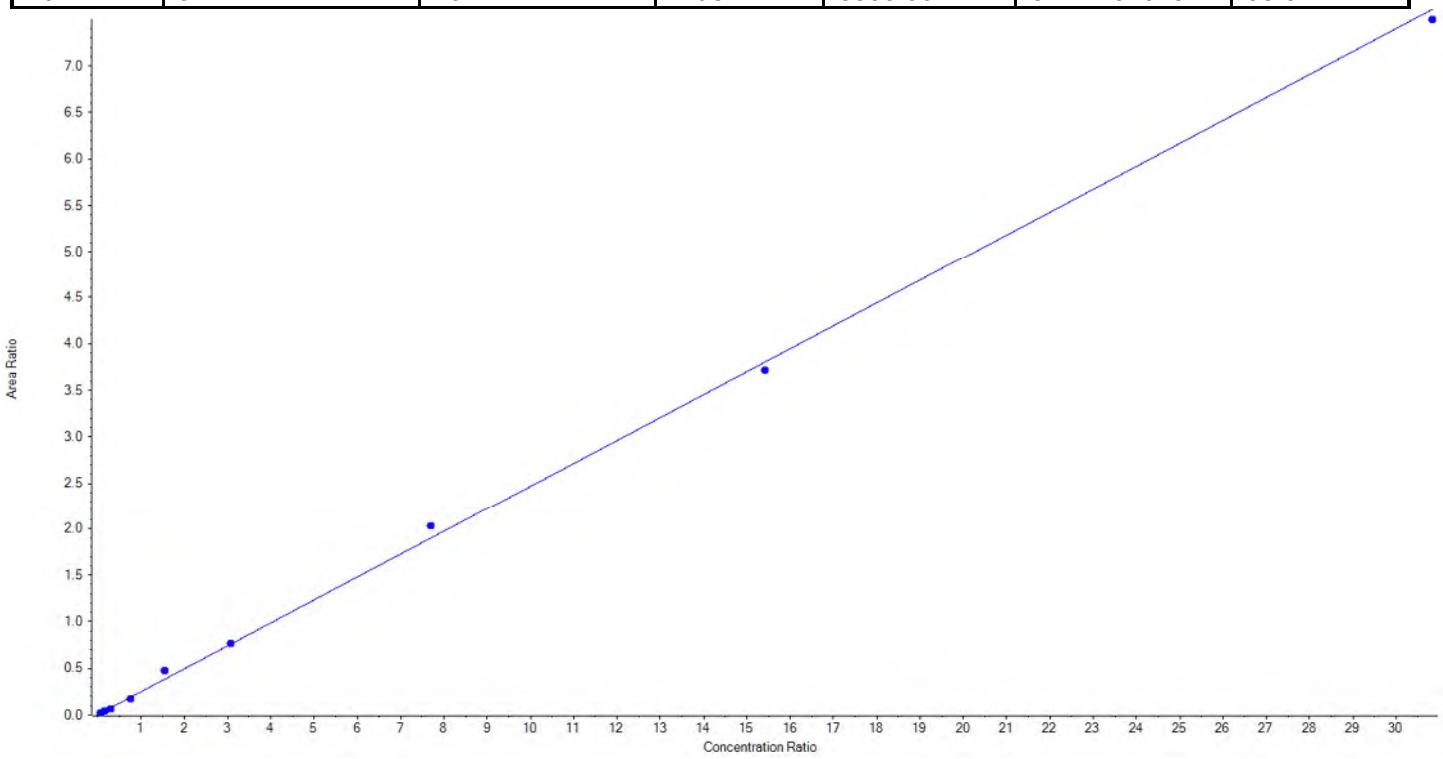
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFBS_2	**Data File**	18-0287.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.24667 x + 6.62243e-4 (r = 0.99862) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.15	18.520807	83.6
3	JV65	L2	True	44.30	49.623047	112.0
4	JV66	L3	True	88.60	77.085462	87.0
5	JV67	L4	True	221.50	198.376185	89.6
6	JV68	L5	True	443.00	551.358297	124.5
7	JV69	L6	True	885.00	888.633944	100.4
8	JV70	L7	True	2212.50	2357.741880	106.6
9	JV71	L8	True	4425.00	4327.956354	97.8
10	JV72	L9	True	8850.00	8722.754023	98.6



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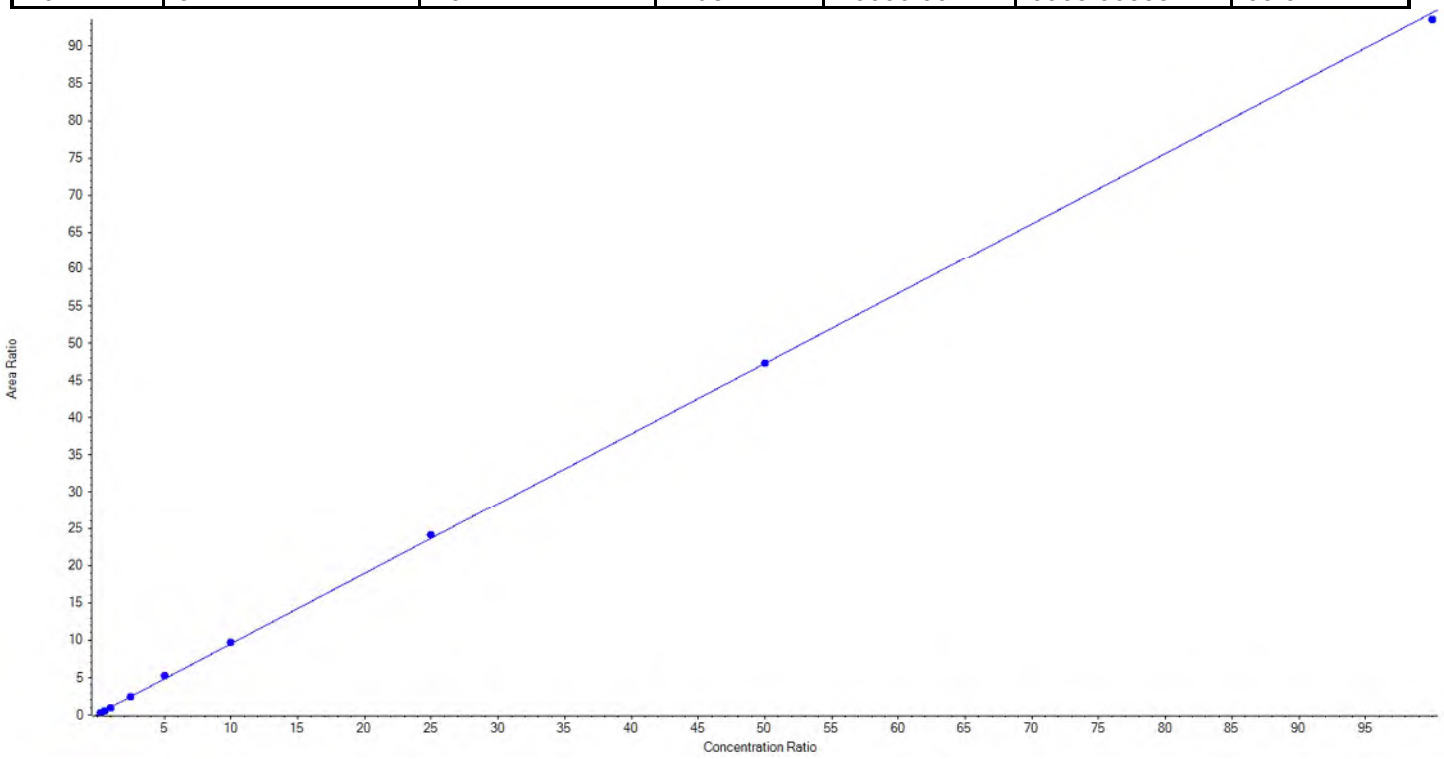
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHxA_1	**Data File**	18-0287.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.94368 x + 0.09434 (r = 0.99980) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.353288	101.4
3	JV65	L2	True	50.00	48.230678	96.5
4	JV66	L3	True	100.00	92.729568	92.7
5	JV67	L4	True	250.00	242.616322	97.1
6	JV68	L5	True	500.00	547.608857	109.5
7	JV69	L6	True	1000.00	1021.164999	102.1
8	JV70	L7	True	2500.00	2539.791620	101.6
9	JV71	L8	True	5000.00	5004.441317	100.1
10	JV72	L9	True	10000.00	9903.063352	99.0



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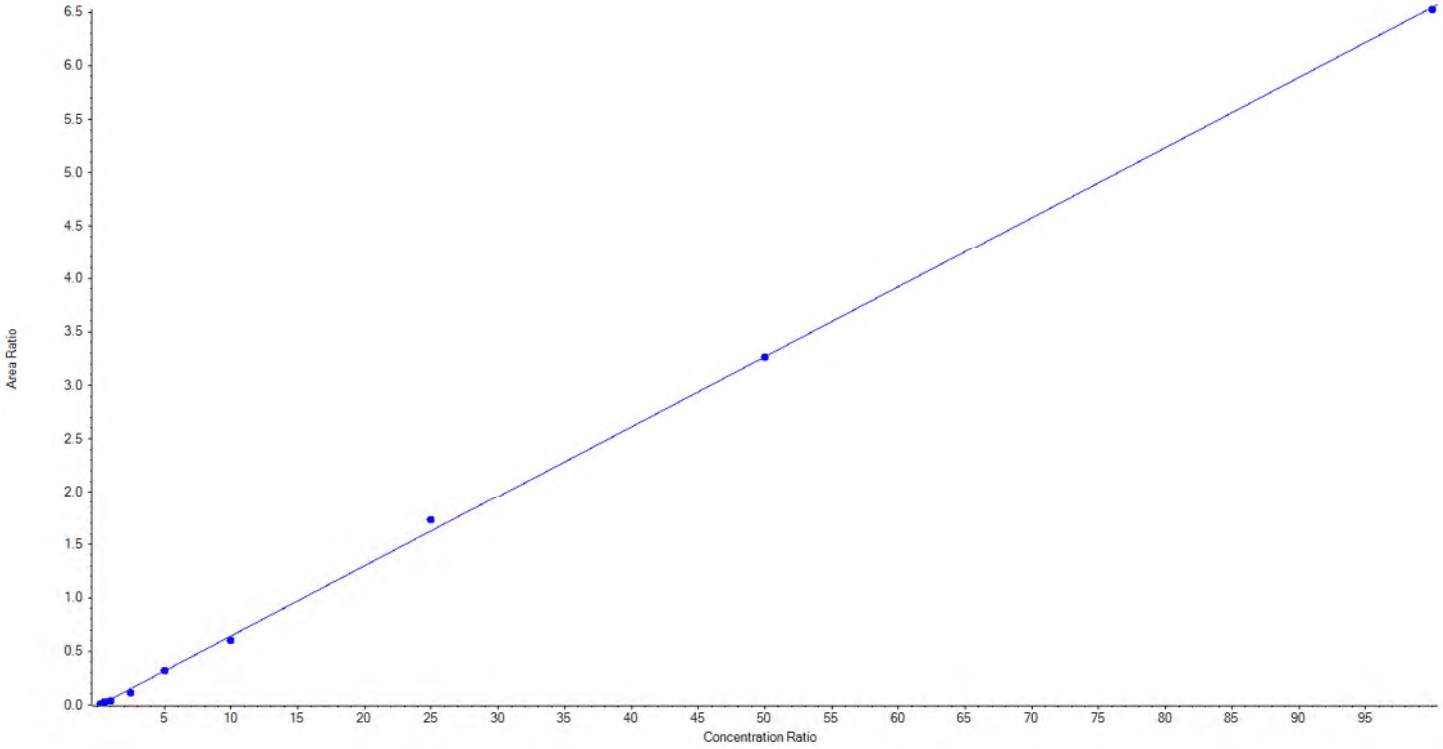
Calibration Summary Report

Created with Analyst Reporter
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Analyte Name	PFHxA_2	**Data File**	18-0287.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06557 x + -0.01141 (r = 0.99883) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	32.175804	128.7
3	JV65	L2	True	50.00	62.207726	124.4
4	JV66	L3	True	100.00	71.281276	71.3
5	JV67	L4	True	250.00	187.631333	75.1
6	JV68	L5	True	500.00	501.920797	100.4
7	JV69	L6	True	1000.00	939.982193	94.0
8	JV70	L7	True	2500.00	2662.599478	106.5
9	JV71	L8	True	5000.00	4998.914969	100.0
10	JV72	L9	True	10000.00	9968.286425	99.7



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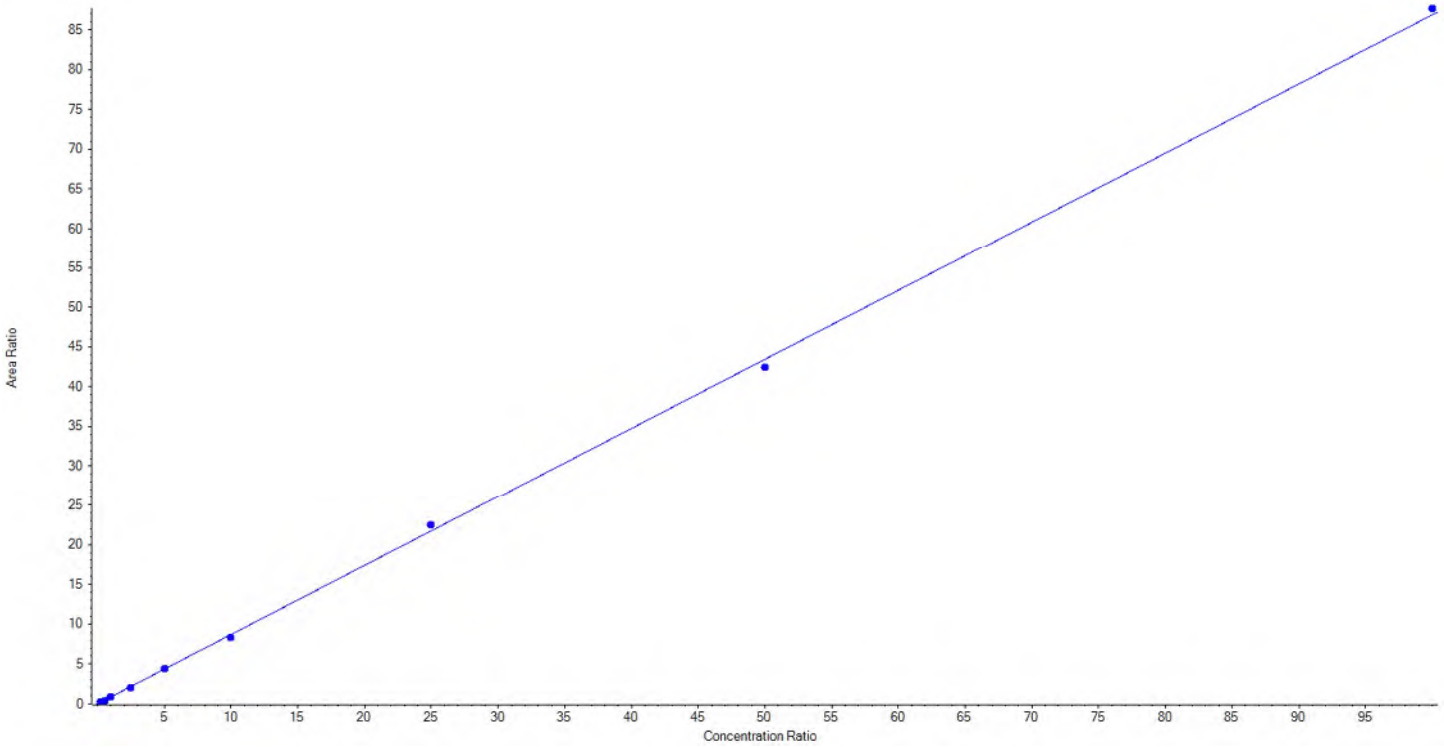
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHpA_1	**Data File**	18-0287.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.86846 x + 0.01868 (r = 0.99968) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	30.745121	123.0
3	JV65	L2	True	50.00	45.261637	90.5
4	JV66	L3	True	100.00	94.999992	95.0
5	JV67	L4	True	250.00	230.401025	92.2
6	JV68	L5	True	500.00	507.718530	101.5
7	JV69	L6	True	1000.00	958.469829	95.9
8	JV70	L7	True	2500.00	2585.103762	103.4
9	JV71	L8	True	5000.00	4881.799777	97.6
10	JV72	L9	True	10000.00	10090.500327	100.9



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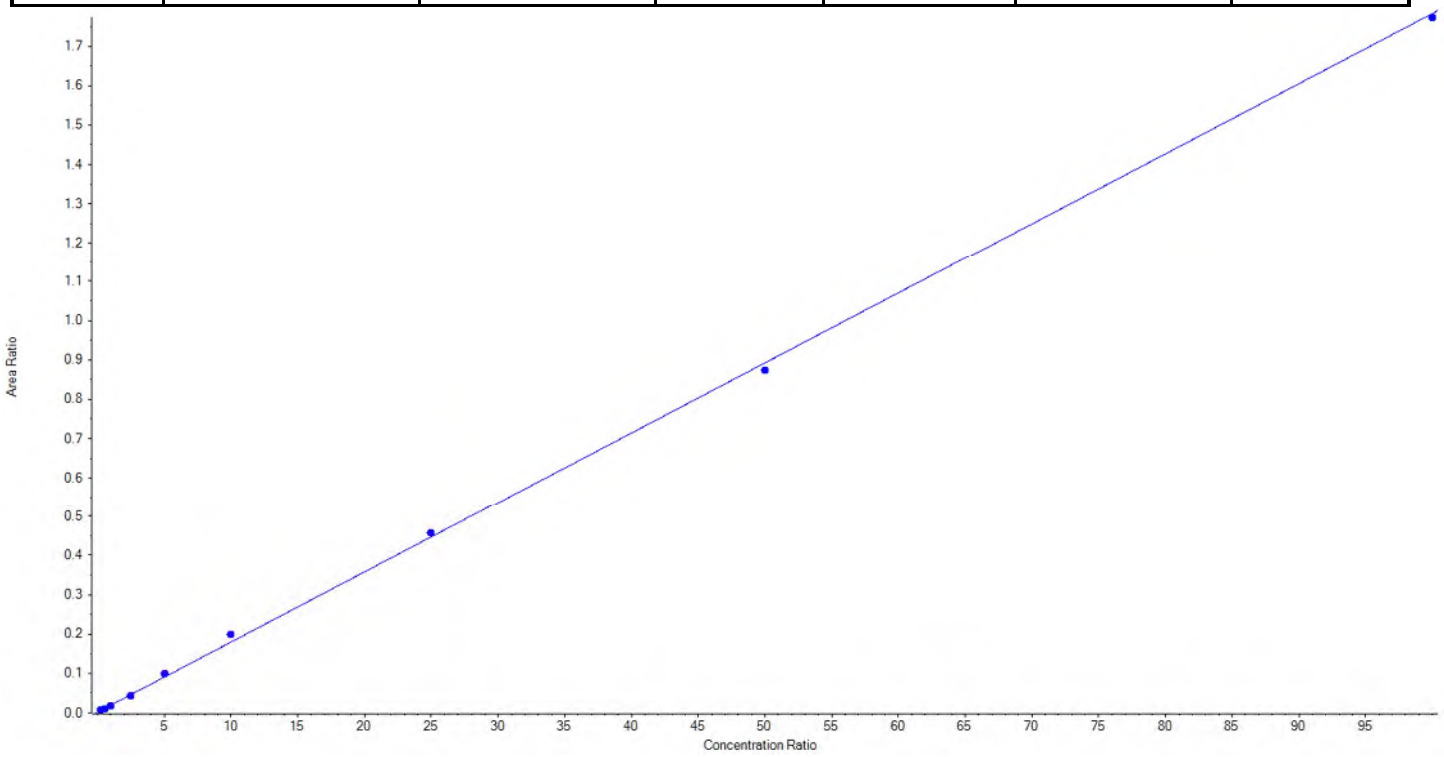
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHpA_2	**Data File**	18-0287.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.01781 x + 0.00179 (r = 0.99935) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	28.647339	114.6
3	JV65	L2	True	50.00	44.765389	89.5
4	JV66	L3	True	100.00	84.456300	84.5
5	JV67	L4	True	250.00	230.303823	92.1
6	JV68	L5	True	500.00	549.021210	109.8
7	JV69	L6	True	1000.00	1101.666841	110.2
8	JV70	L7	True	2500.00	2552.091209	102.1
9	JV71	L8	True	5000.00	4890.698476	97.8
10	JV72	L9	True	10000.00	9943.349413	99.4



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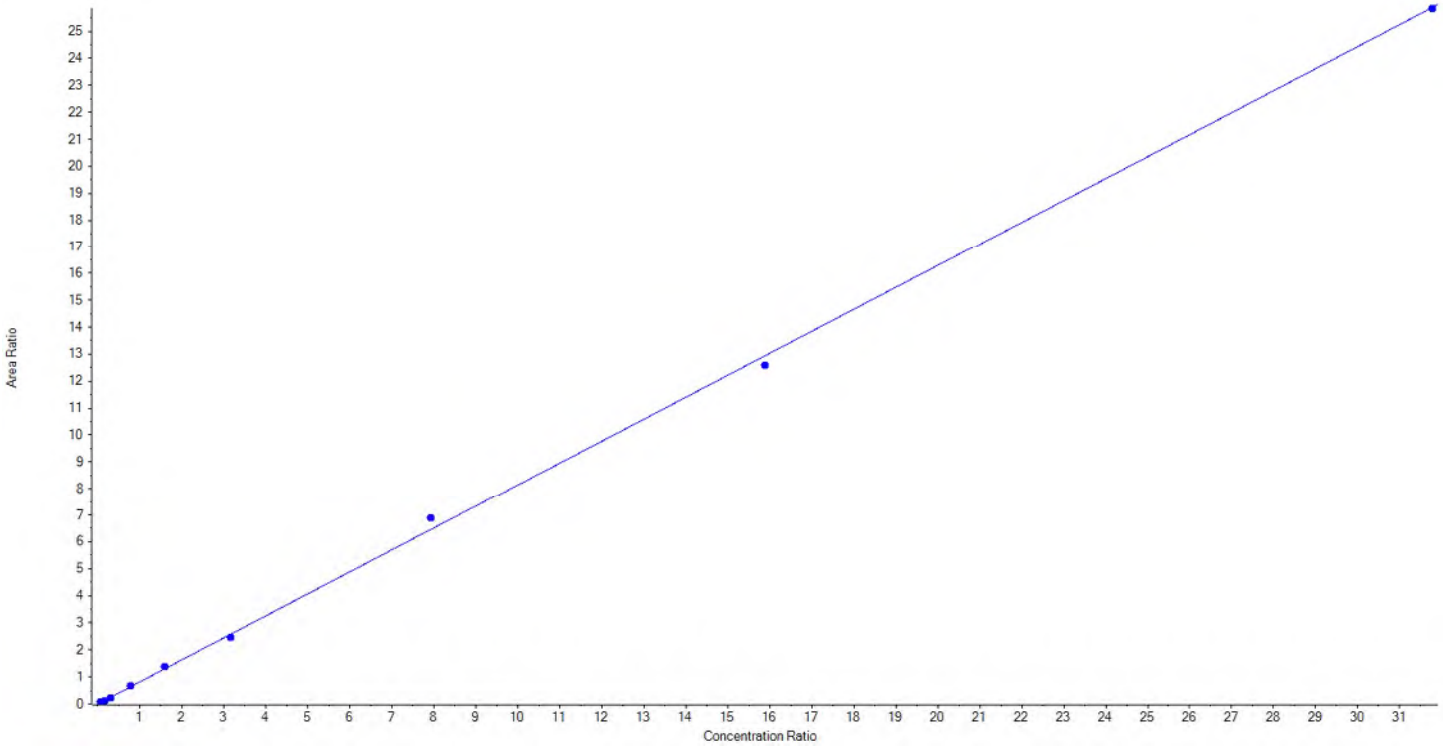
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHxS_1	**Data File**	18-0287.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.81452 x + -0.00421 (r = 0.99944) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.80	24.720628	108.4
3	JV65	L2	True	45.60	40.923316	89.7
4	JV66	L3	True	91.20	84.560191	92.7
5	JV67	L4	True	228.00	234.300477	102.8
6	JV68	L5	True	456.00	490.468001	107.6
7	JV69	L6	True	912.00	867.632050	95.1
8	JV70	L7	True	2280.00	2426.969740	106.5
9	JV71	L8	True	4560.00	4439.462493	97.4
10	JV72	L9	True	9120.00	9106.563104	99.9



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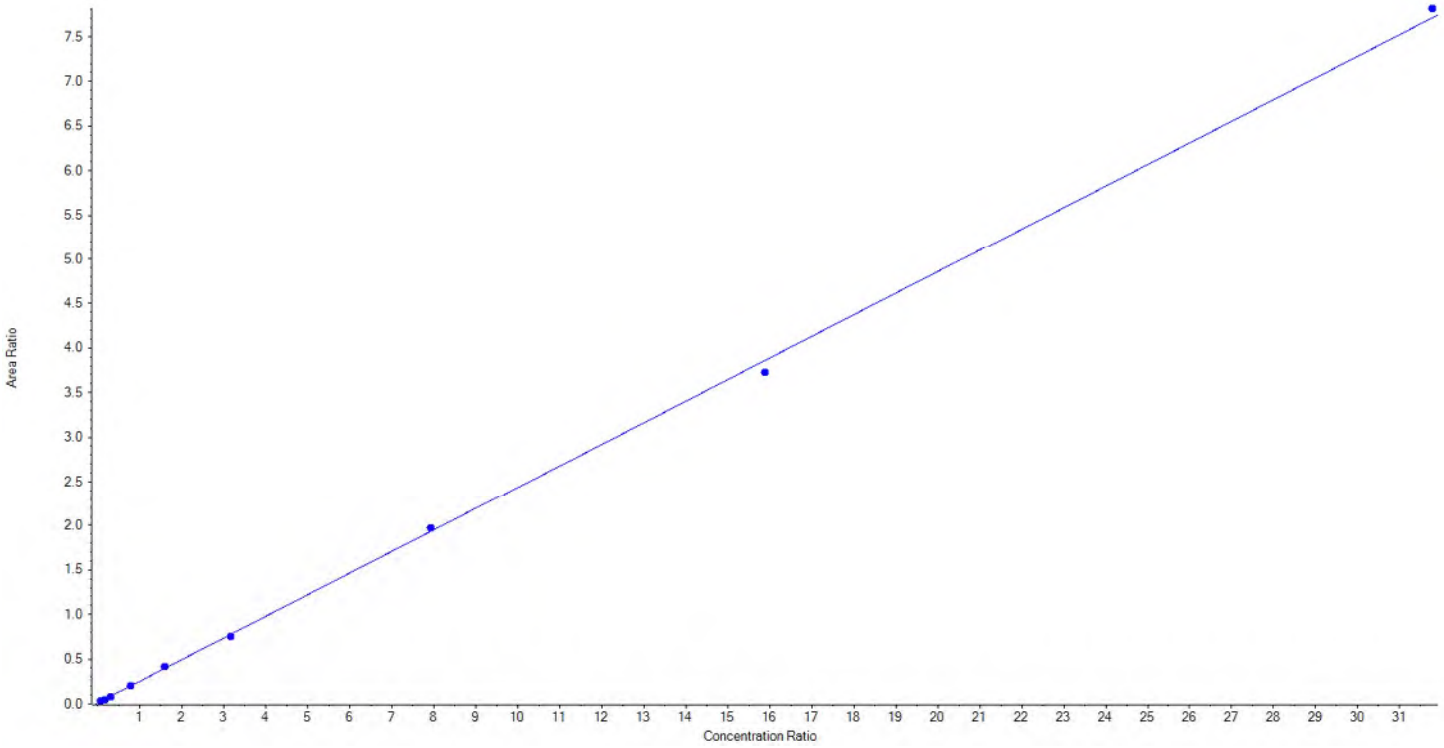
Calibration Summary Report

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Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHxS_2	**Data File**	18-0287.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.24236 x + 0.00960 (r = 0.99962) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.80	25.925035	113.7
3	JV65	L2	True	45.60	42.715296	93.7
4	JV66	L3	True	91.20	79.822448	87.5
5	JV67	L4	True	228.00	232.286071	101.9
6	JV68	L5	True	456.00	484.419318	106.2
7	JV69	L6	True	912.00	887.969901	97.4
8	JV70	L7	True	2280.00	2321.581504	101.8
9	JV71	L8	True	4560.00	4397.947134	96.5
10	JV72	L9	True	9120.00	9242.933292	101.4



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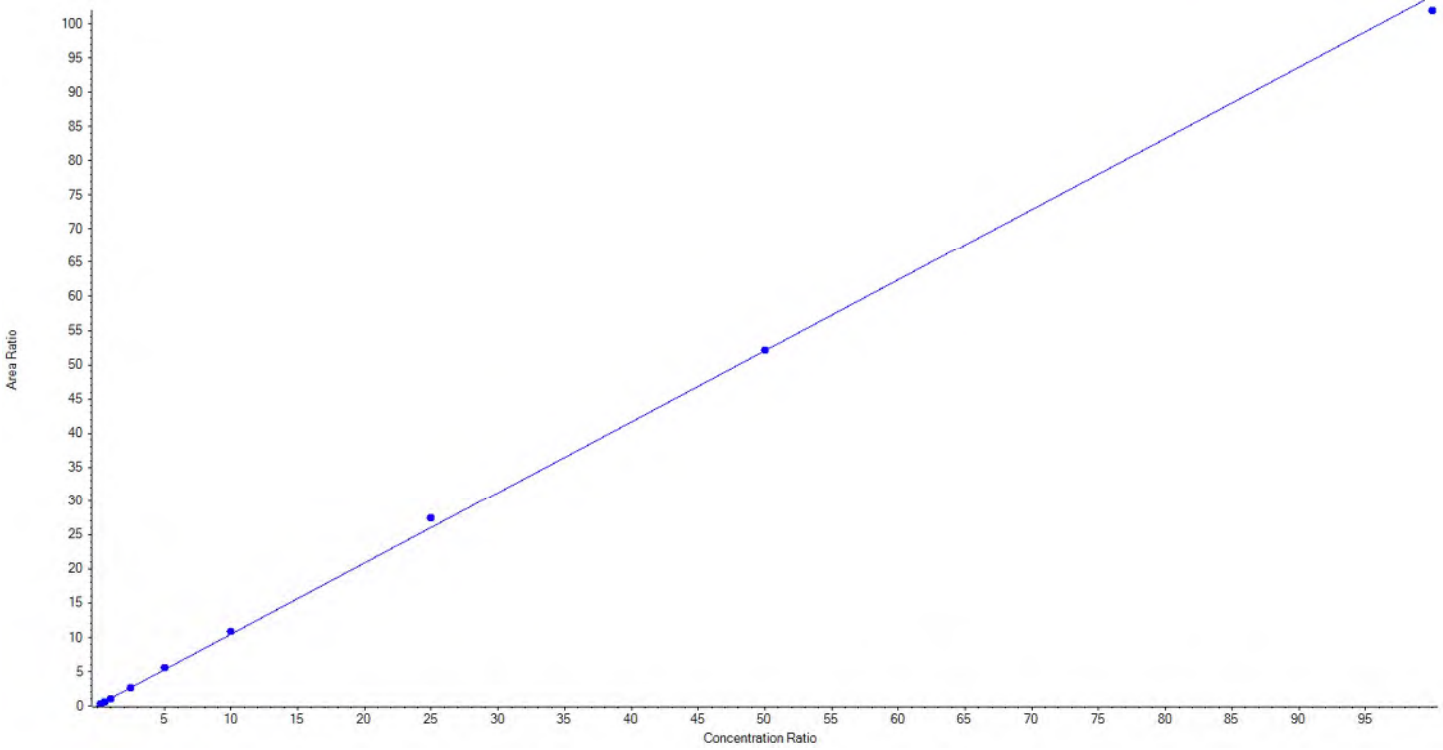
Calibration Summary Report

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Analyte Name	PFOA_1	**Data File**	18-0287.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.03975 x + 0.07616 (r = 0.99957) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	26.708862	106.8
3	JV65	L2	True	50.00	42.899544	85.8
4	JV66	L3	True	100.00	94.094405	94.1
5	JV67	L4	True	250.00	251.494624	100.6
6	JV68	L5	True	500.00	525.460651	105.1
7	JV69	L6	True	1000.00	1039.091021	103.9
8	JV70	L7	True	2500.00	2636.449272	105.5
9	JV71	L8	True	5000.00	5012.599247	100.3
10	JV72	L9	True	10000.00	9796.202374	98.0



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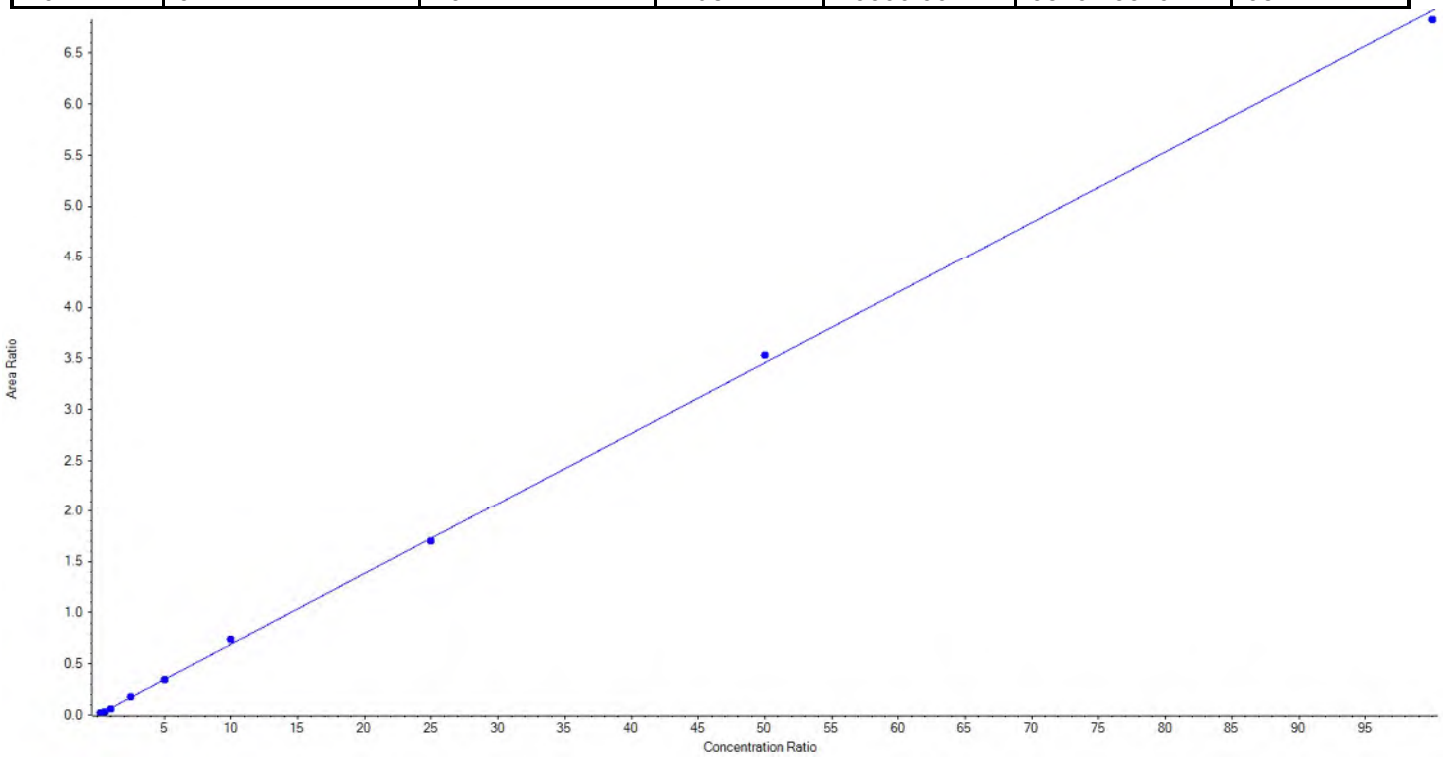
Calibration Summary Report

Created with Analyst Reporter
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Analyte Name	PFOA_2	**Data File**	18-0287.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06919 x + -6.10299e-4 (r = 0.99963) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	30.244231	121.0
3	JV65	L2	True	50.00	39.807292	79.6
4	JV66	L3	True	100.00	91.316603	91.3
5	JV67	L4	True	250.00	253.258834	101.3
6	JV68	L5	True	500.00	501.014564	100.2
7	JV69	L6	True	1000.00	1073.277778	107.3
8	JV70	L7	True	2500.00	2461.920179	98.5
9	JV71	L8	True	5000.00	5103.925253	102.1
10	JV72	L9	True	10000.00	9870.235267	98.7



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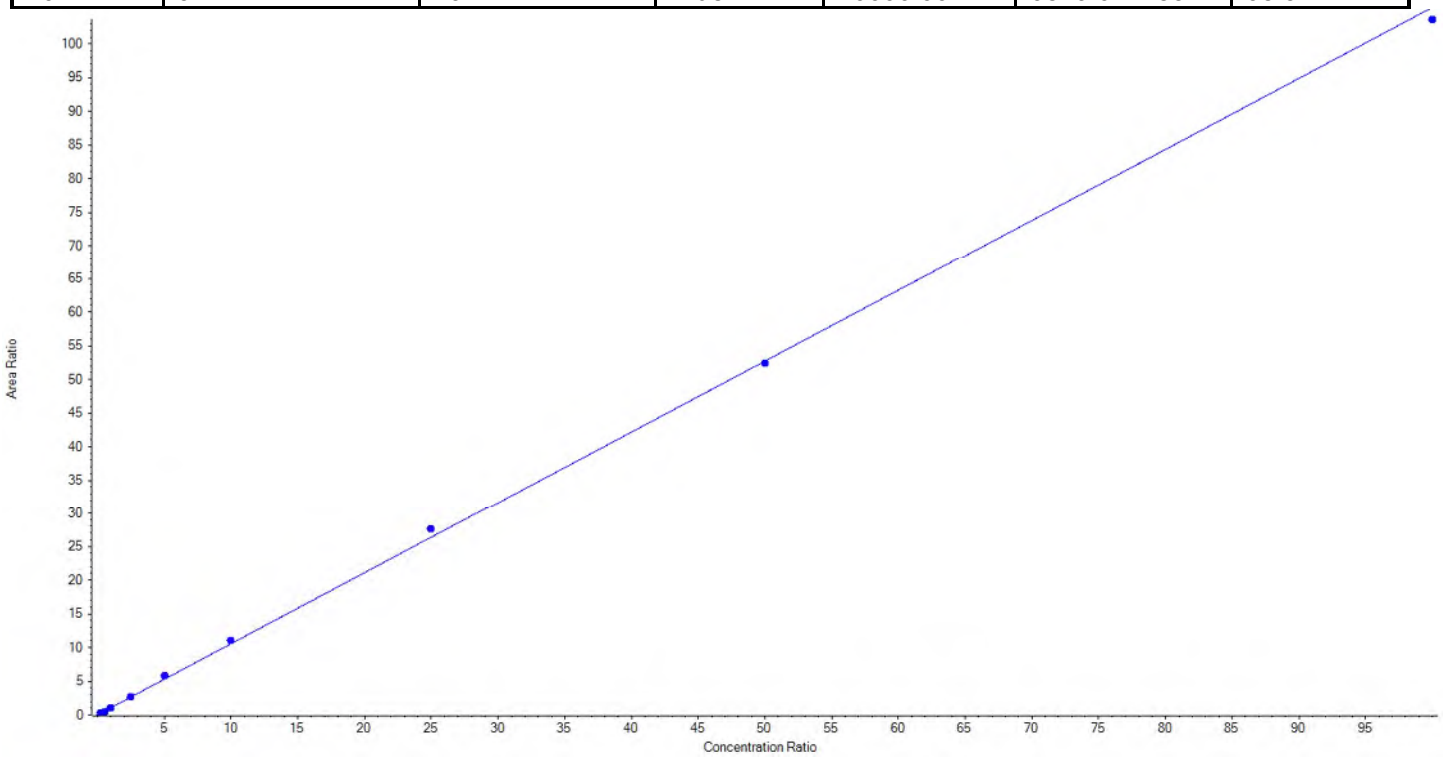
Calibration Summary Report

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Analyte Name	PFNA_1	**Data File**	18-0287.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.05388 x + 0.02887 (r = 0.99958) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	22.448588	89.8
3	JV65	L2	True	50.00	45.828516	91.7
4	JV66	L3	True	100.00	101.744372	101.7
5	JV67	L4	True	250.00	252.109959	100.8
6	JV68	L5	True	500.00	548.360364	109.7
7	JV69	L6	True	1000.00	1039.938157	104.0
8	JV70	L7	True	2500.00	2614.669594	104.6
9	JV71	L8	True	5000.00	4970.858264	99.4
10	JV72	L9	True	10000.00	9829.042185	98.3



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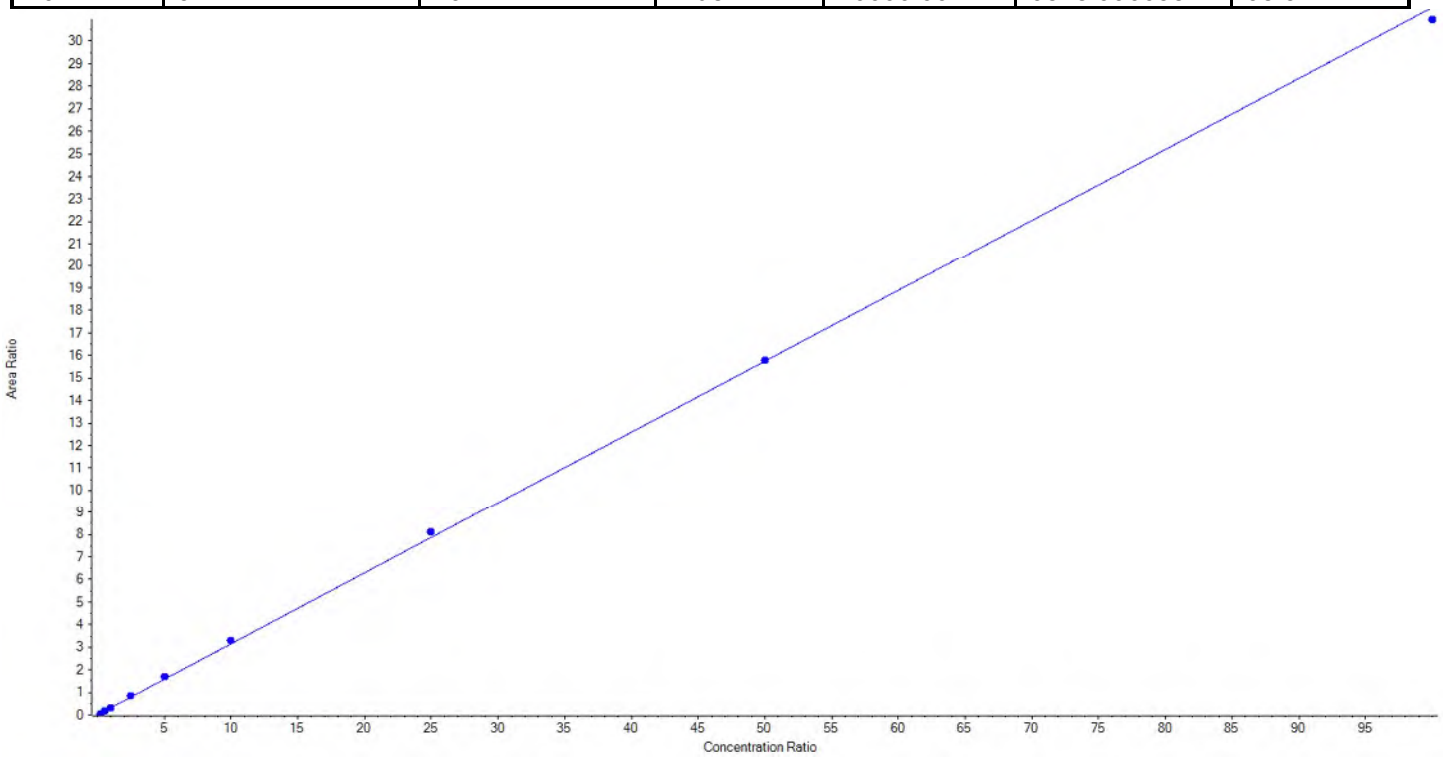
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Analyte Name	PFNA_2	**Data File**	18-0287.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.31494 x + 0.00205 (r = 0.99965) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	17.606402	70.4
3	JV65	L2	True	50.00	55.585100	111.2
4	JV66	L3	True	100.00	100.725248	100.7
5	JV67	L4	True	250.00	263.453692	105.4
6	JV68	L5	True	500.00	532.054934	106.4
7	JV69	L6	True	1000.00	1044.980309	104.5
8	JV70	L7	True	2500.00	2573.326453	102.9
9	JV71	L8	True	5000.00	5008.271225	100.2
10	JV72	L9	True	10000.00	9828.996638	98.3



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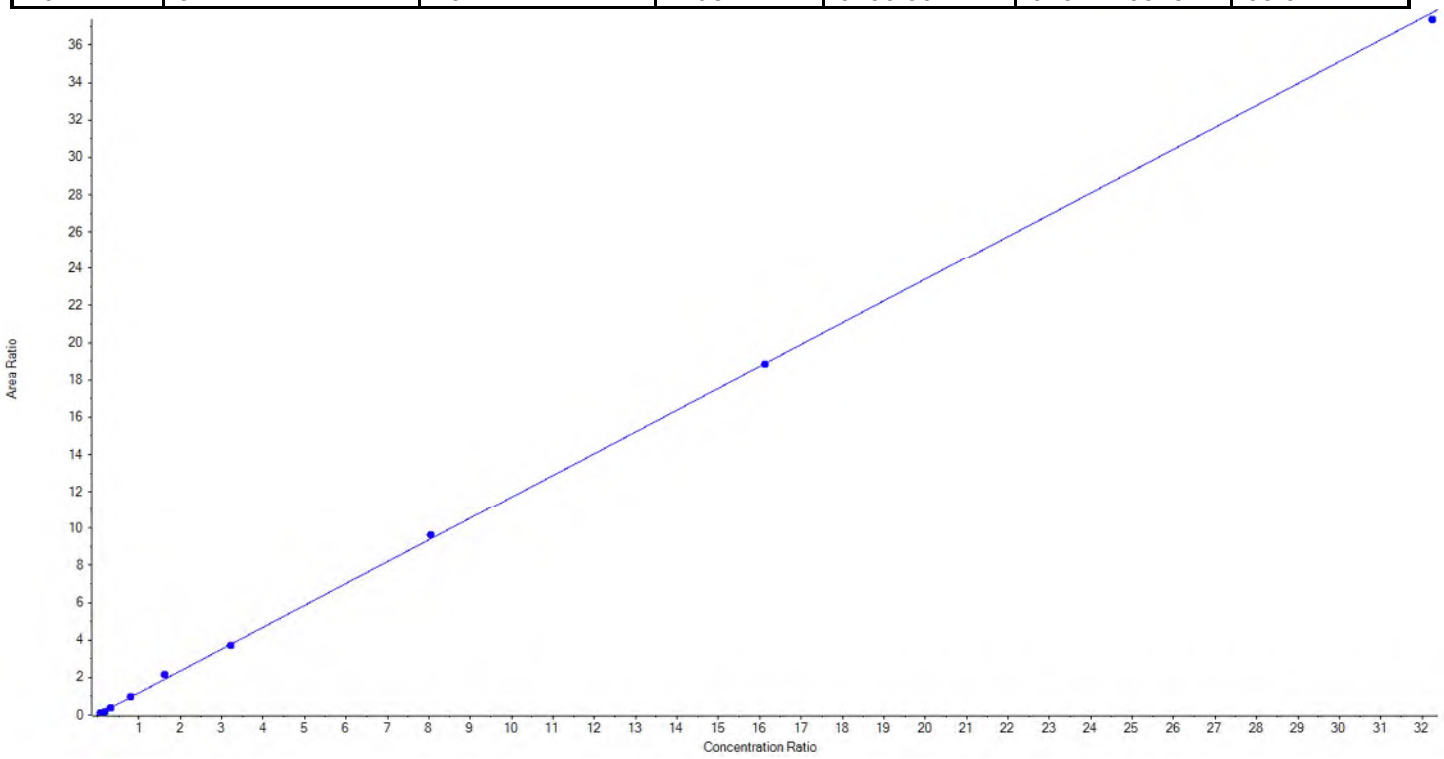
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Analyte Name	PFOS_1	**Data File**	18-0287.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.16999 x + 0.01017 (r = 0.99966) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	23.15	23.088724	99.7
3	JV65	L2	True	46.30	42.127787	91.0
4	JV66	L3	True	92.60	87.472091	94.5
5	JV67	L4	True	231.50	234.830537	101.4
6	JV68	L5	True	463.00	526.238813	113.7
7	JV69	L6	True	925.60	911.789563	98.5
8	JV70	L7	True	2314.00	2367.443455	102.3
9	JV71	L8	True	4628.00	4622.929105	99.9
10	JV72	L9	True	9256.00	9164.229925	99.0



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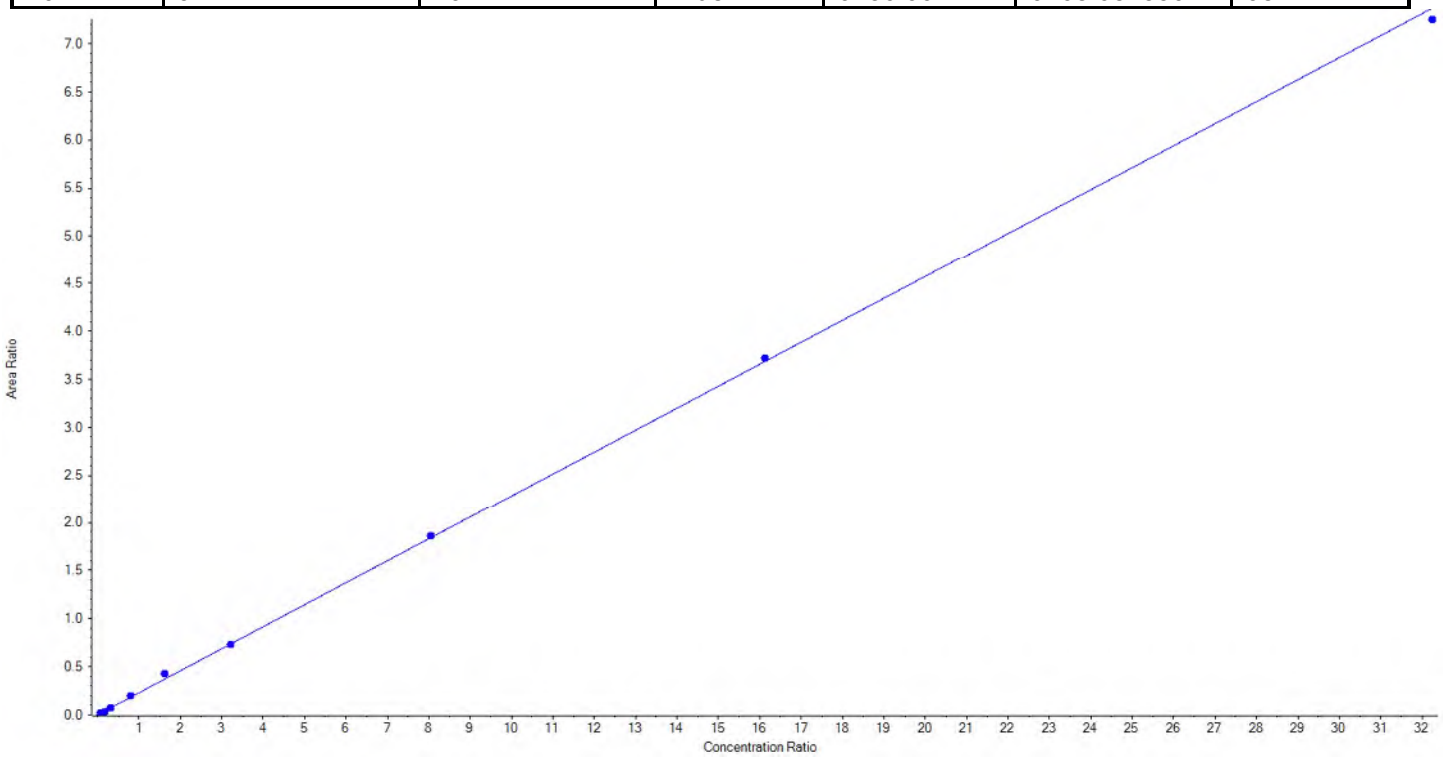
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Analyte Name	PFOS_2	**Data File**	18-0287.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.22845 x + 0.00142 (r = 0.99952) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	23.15	19.073086	82.4
3	JV65	L2	True	46.30	42.754548	92.3
4	JV66	L3	True	92.60	95.652663	103.3
5	JV67	L4	True	231.50	246.896117	106.7
6	JV68	L5	True	463.00	534.354893	115.4
7	JV69	L6	True	925.60	920.517935	99.5
8	JV70	L7	True	2314.00	2338.375483	101.1
9	JV71	L8	True	4628.00	4674.443945	101.0
10	JV72	L9	True	9256.00	9108.081330	98.4



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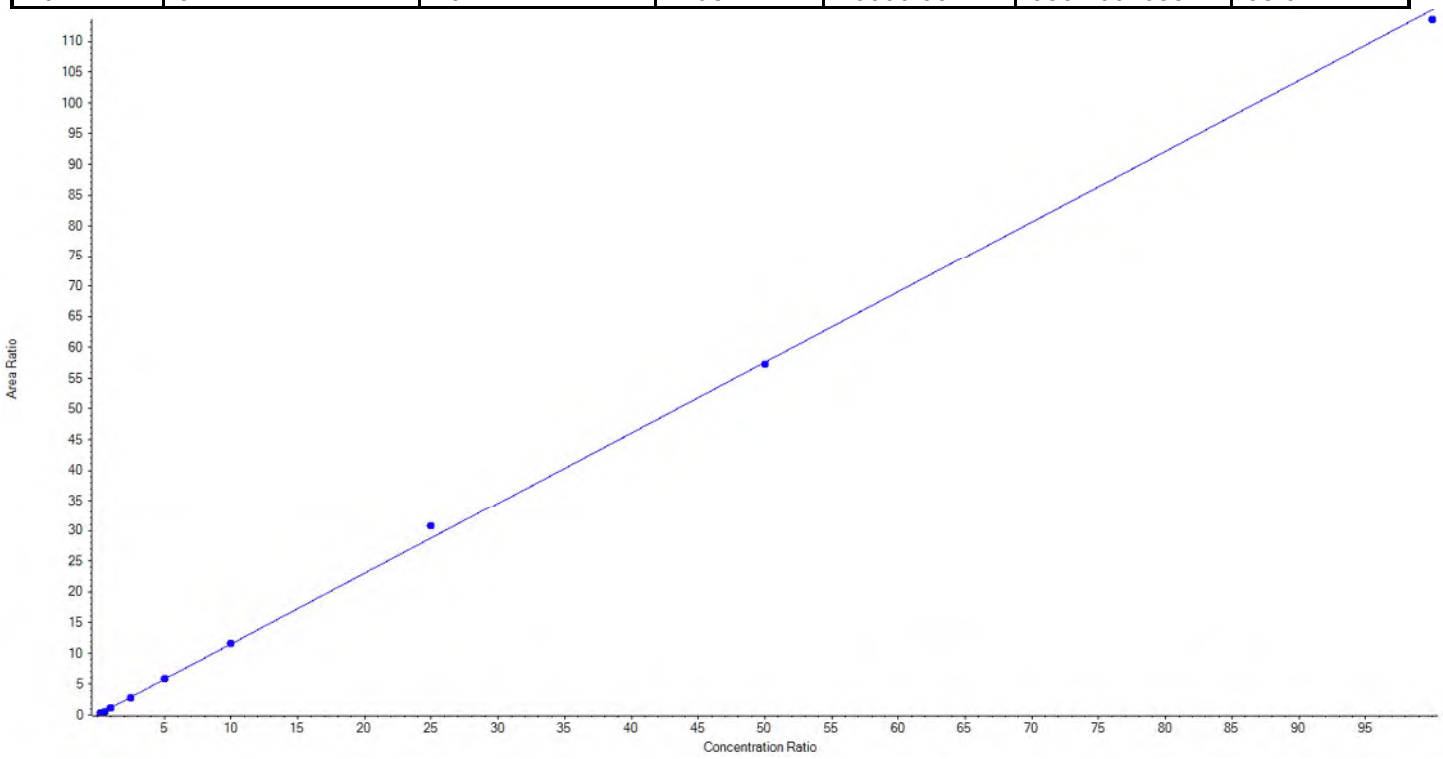
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Analyte Name	PFDA_1	**Data File**	18-0287.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.15138 x + 0.01830 (r = 0.99962) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.780783	103.1
3	JV65	L2	True	50.00	47.741972	95.5
4	JV66	L3	True	100.00	97.400854	97.4
5	JV67	L4	True	250.00	240.150008	96.1
6	JV68	L5	True	500.00	512.308119	102.5
7	JV69	L6	True	1000.00	1009.776029	101.0
8	JV70	L7	True	2500.00	2663.600645	106.5
9	JV71	L8	True	5000.00	4966.639934	99.3
10	JV72	L9	True	10000.00	9861.601655	98.6



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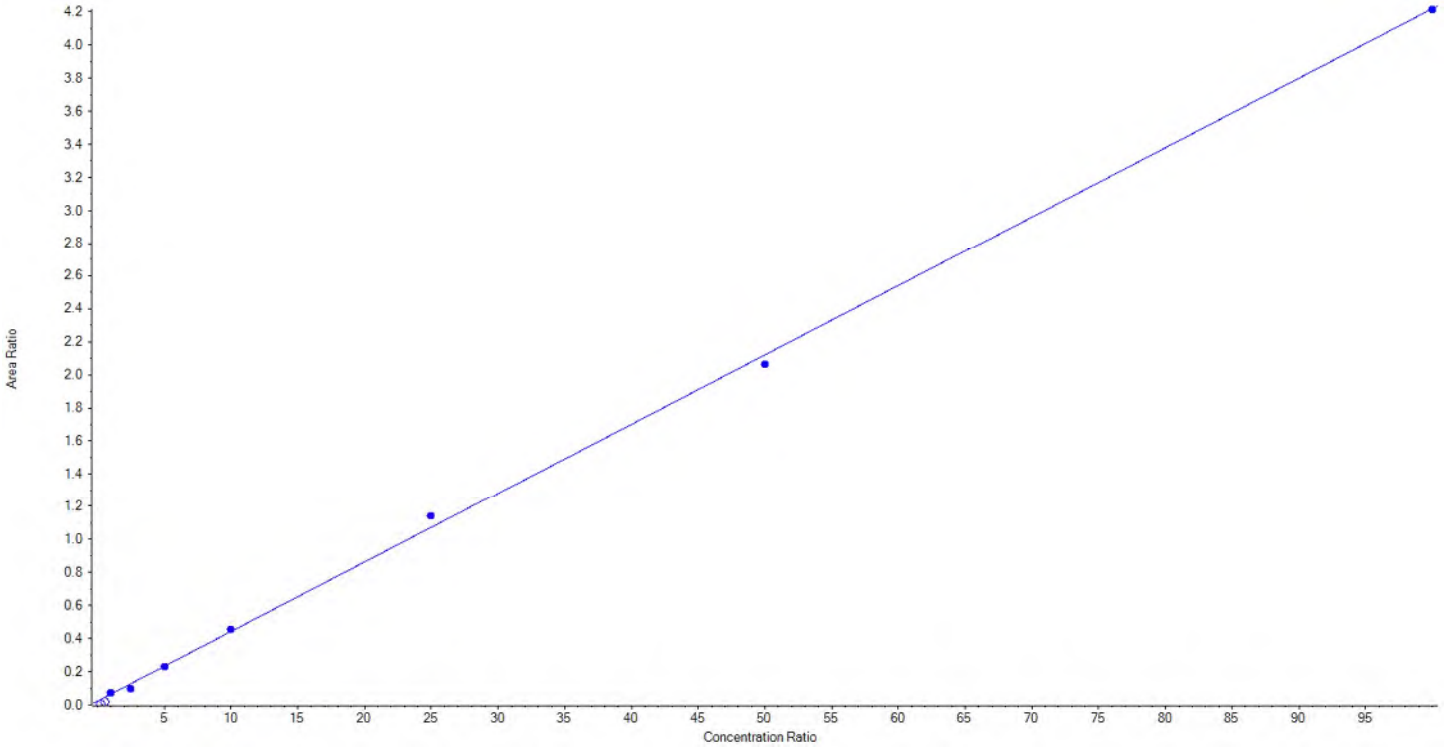
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Analyte Name	PFDA_2	**Data File**	18-0287.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.04195 x + 0.02344 (r = 0.99882) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	< 0	N/A
3	JV65	L2	False	50.00	< 0	N/A
4	JV66	L3	True	100.00	120.282787	120.3
5	JV67	L4	True	250.00	181.707950	72.7
6	JV68	L5	True	500.00	500.313071	100.1
7	JV69	L6	True	1000.00	1031.439826	103.1
8	JV70	L7	True	2500.00	2669.043842	106.8
9	JV71	L8	True	5000.00	4859.355694	97.2
10	JV72	L9	True	10000.00	9987.856830	99.9



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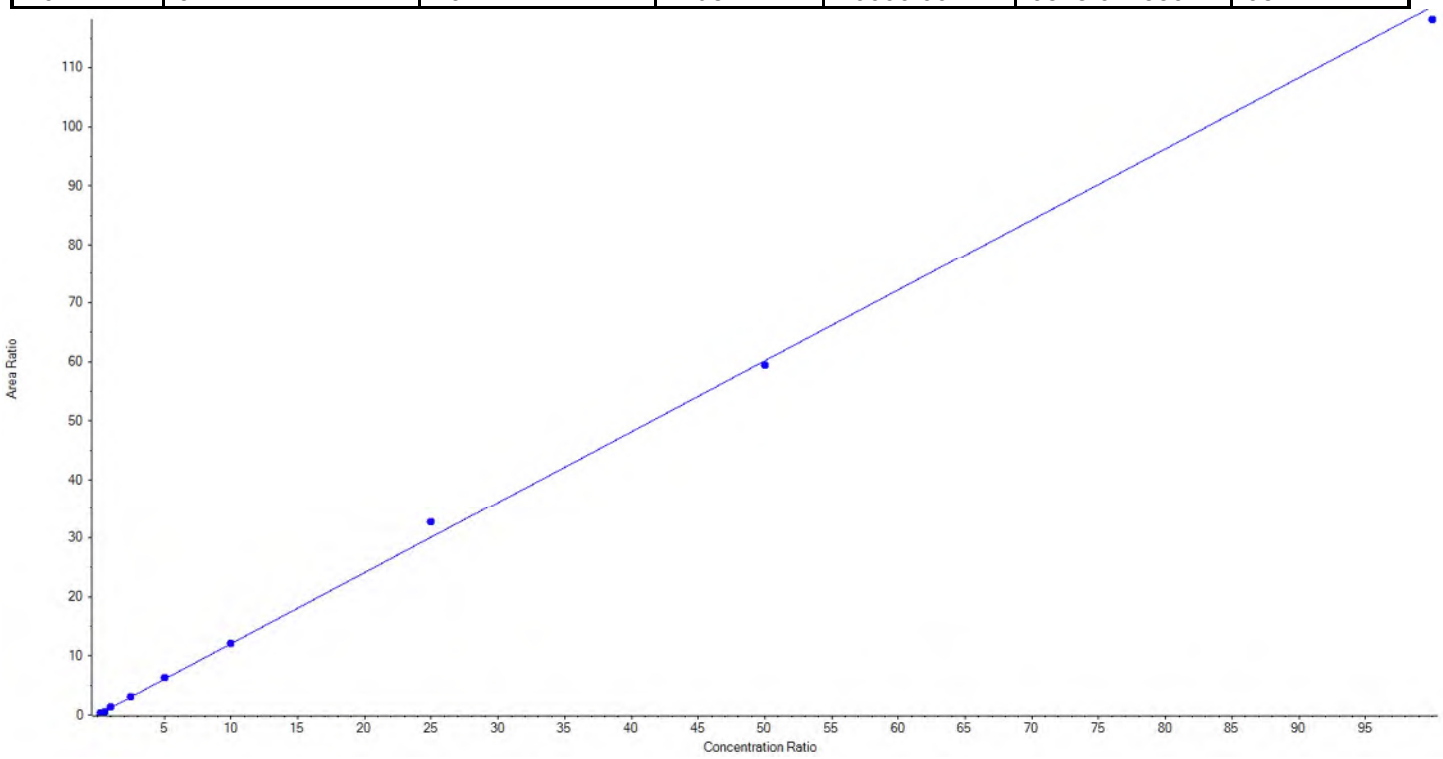
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Analyte Name	PFUnA_1	**Data File**	18-0287.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.20316 x + 0.01632 (r = 0.99933) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	21.476403	85.9
3	JV65	L2	True	50.00	46.942062	93.9
4	JV66	L3	True	100.00	105.088967	105.1
5	JV67	L4	True	250.00	259.283618	103.7
6	JV68	L5	True	500.00	528.597710	105.7
7	JV69	L6	True	1000.00	1005.384599	100.5
8	JV70	L7	True	2500.00	2708.602972	108.3
9	JV71	L8	True	5000.00	4930.949311	98.6
10	JV72	L9	True	10000.00	9818.674359	98.2



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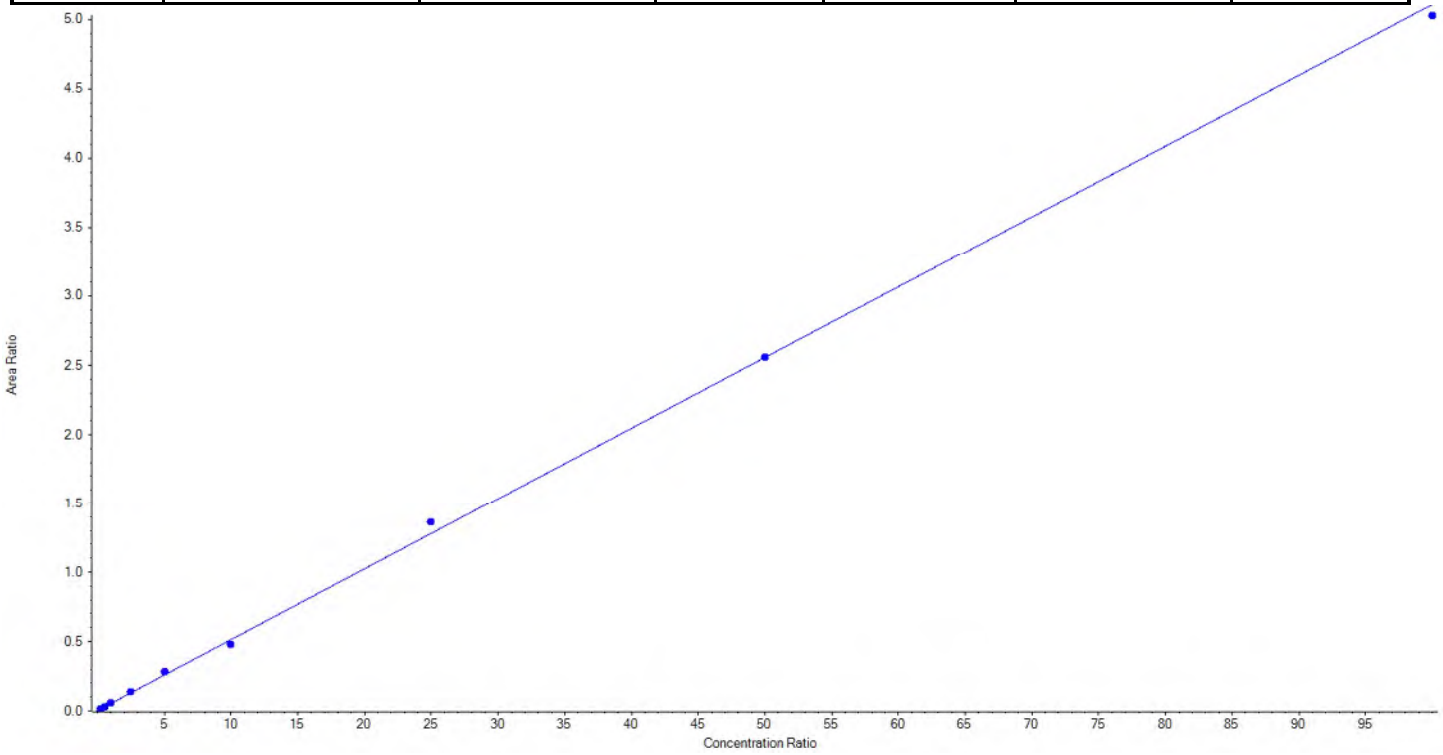
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Analyte Name	PFUnA_2	**Data File**	18-0287.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05105 x + 0.00264 (r = 0.99930) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	18.744641	75.0
3	JV65	L2	True	50.00	49.810694	99.6
4	JV66	L3	True	100.00	112.965030	113.0
5	JV67	L4	True	250.00	264.209742	105.7
6	JV68	L5	True	500.00	544.666363	108.9
7	JV69	L6	True	1000.00	929.274388	92.9
8	JV70	L7	True	2500.00	2660.578162	106.4
9	JV71	L8	True	5000.00	5001.977143	100.0
10	JV72	L9	True	10000.00	9842.773836	98.4



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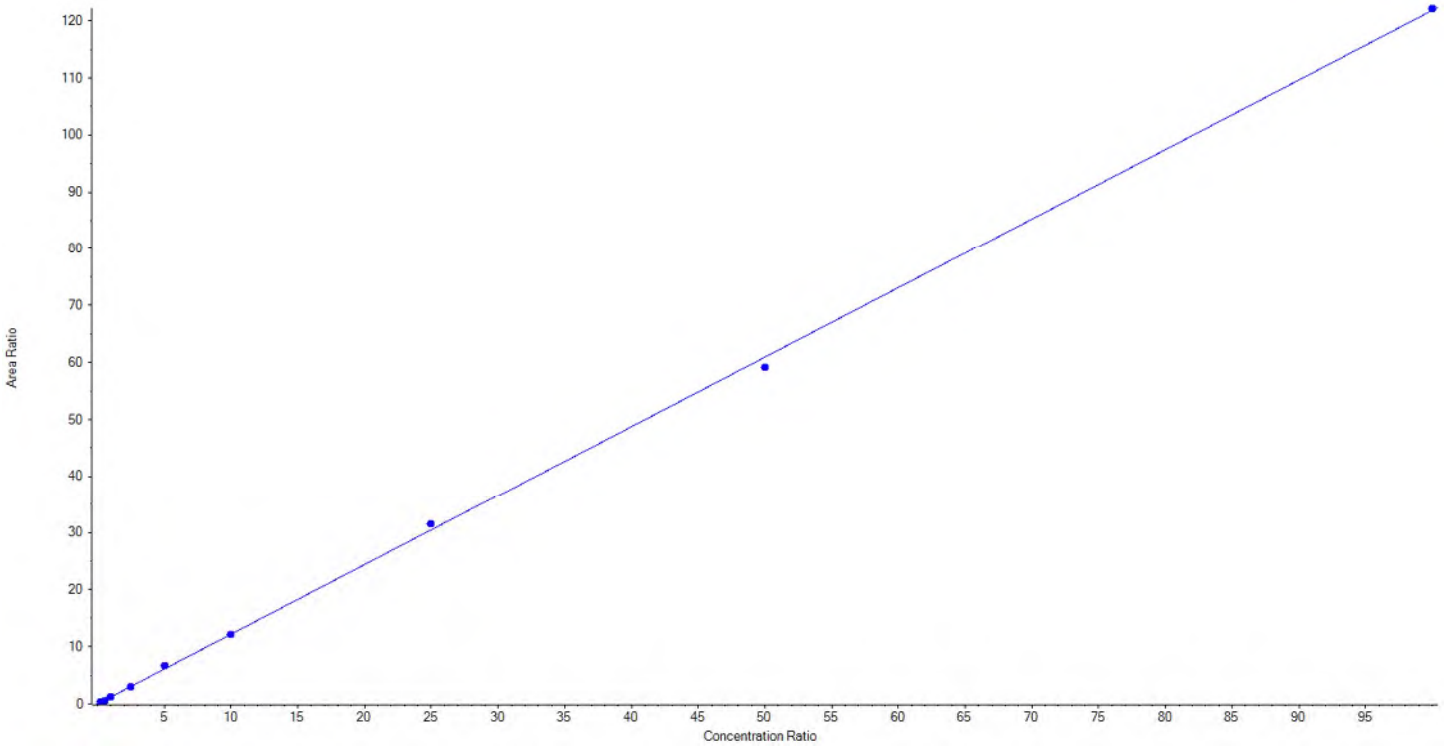
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Analyte Name	PFDoA_1	**Data File**	18-0287.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.21825 x + 0.01097 (r = 0.99971) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	22.899081	91.6
3	JV65	L2	True	50.00	49.230961	98.5
4	JV66	L3	True	100.00	100.630285	100.6
5	JV67	L4	True	250.00	251.821712	100.7
6	JV68	L5	True	500.00	543.205579	108.6
7	JV69	L6	True	1000.00	993.526410	99.4
8	JV70	L7	True	2500.00	2578.802928	103.2
9	JV71	L8	True	5000.00	4858.808287	97.2
10	JV72	L9	True	10000.00	10026.074758	100.3



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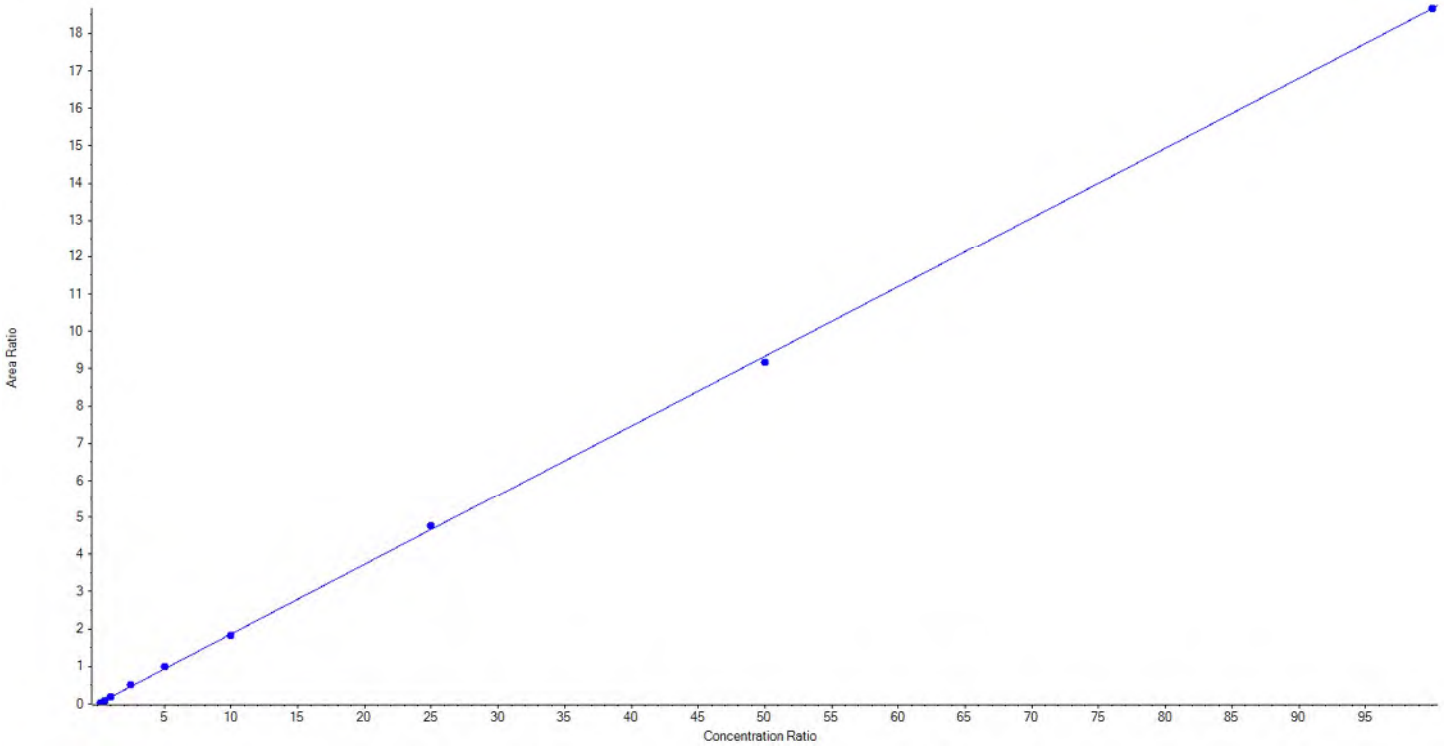
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Analyte Name	PFDoA_2	**Data File**	18-0287.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.18668 x + -5.27718e-4 (r = 0.99978) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	21.198571	84.8
3	JV65	L2	True	50.00	48.544516	97.1
4	JV66	L3	True	100.00	104.886111	104.9
5	JV67	L4	True	250.00	268.108635	107.2
6	JV68	L5	True	500.00	540.076896	108.0
7	JV69	L6	True	1000.00	977.473712	97.8
8	JV70	L7	True	2500.00	2546.512918	101.9
9	JV71	L8	True	5000.00	4918.186485	98.4
10	JV72	L9	True	10000.00	10000.012156	100.0



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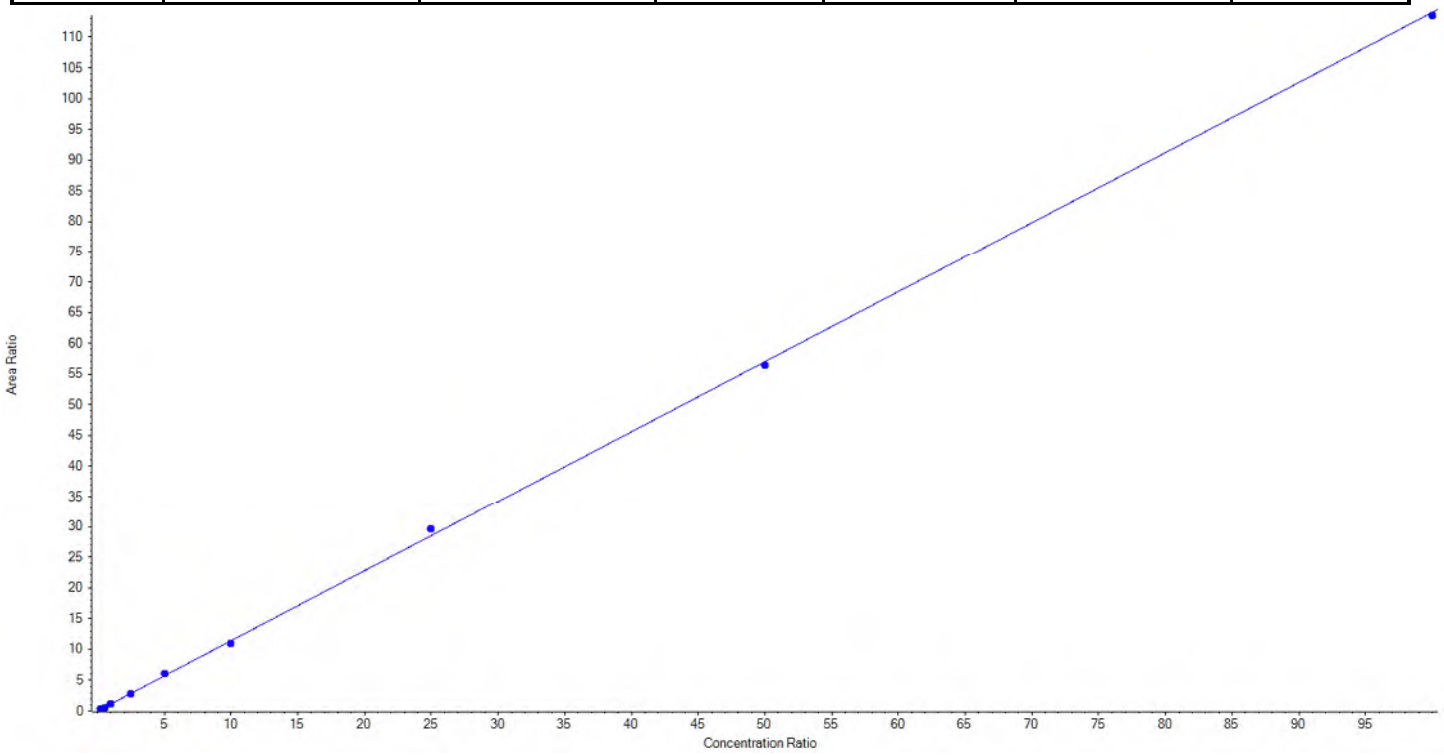
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFTrDA_1	**Data File**	18-0287.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.14025 x + -0.00563 (r = 0.99975) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	23.303615	93.2
3	JV65	L2	True	50.00	49.441089	98.9
4	JV66	L3	True	100.00	101.743185	101.7
5	JV67	L4	True	250.00	250.416518	100.2
6	JV68	L5	True	500.00	536.739235	107.4
7	JV69	L6	True	1000.00	961.587378	96.2
8	JV70	L7	True	2500.00	2599.762848	104.0
9	JV71	L8	True	5000.00	4947.640990	99.0
10	JV72	L9	True	10000.00	9954.365142	99.5



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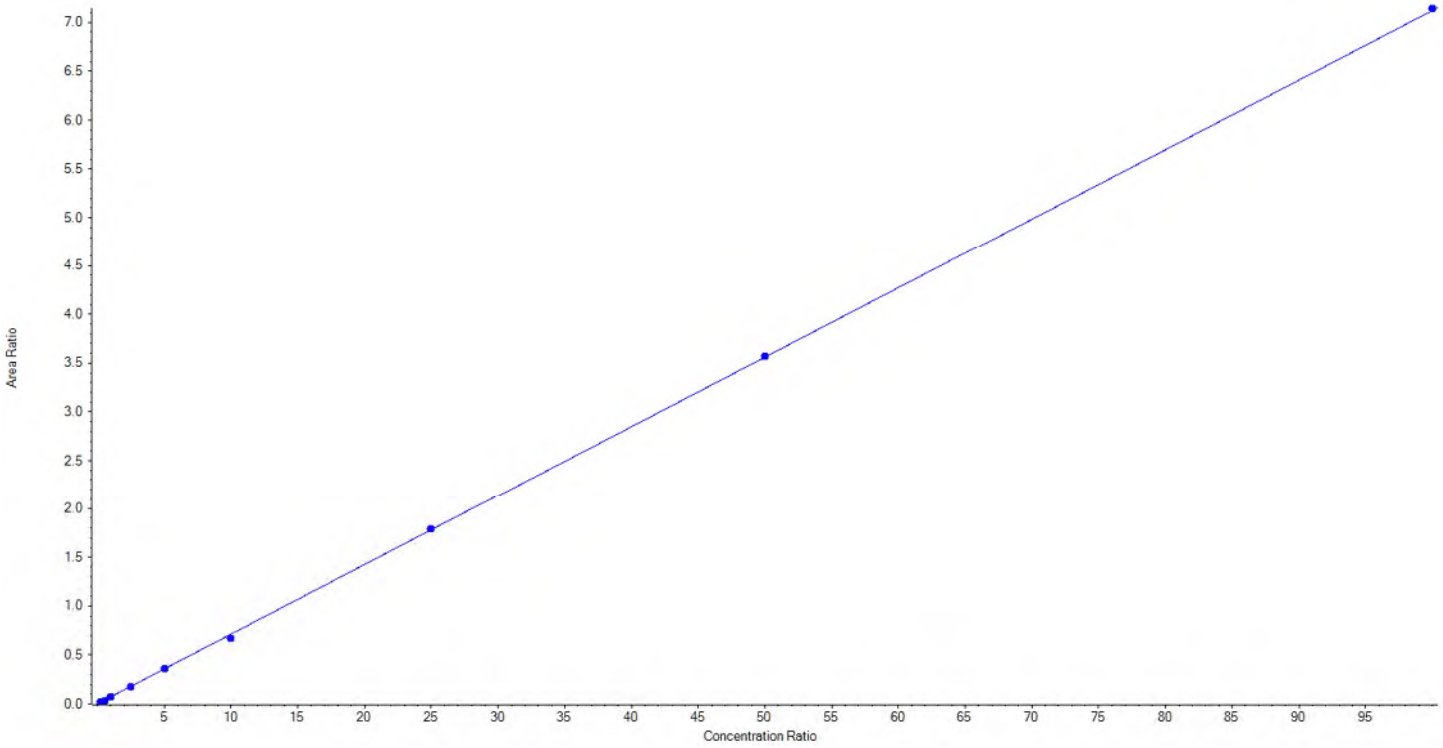
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFTrDA_2	**Data File**	18-0287.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.07119 x + 0.00179 (r = 0.99985) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	28.219861	112.9
3	JV65	L2	True	50.00	44.534197	89.1
4	JV66	L3	True	100.00	104.781408	104.8
5	JV67	L4	True	250.00	242.644756	97.1
6	JV68	L5	True	500.00	505.553916	101.1
7	JV69	L6	True	1000.00	939.542406	94.0
8	JV70	L7	True	2500.00	2511.903429	100.5
9	JV71	L8	True	5000.00	5019.349063	100.4
10	JV72	L9	True	10000.00	10028.470965	100.3



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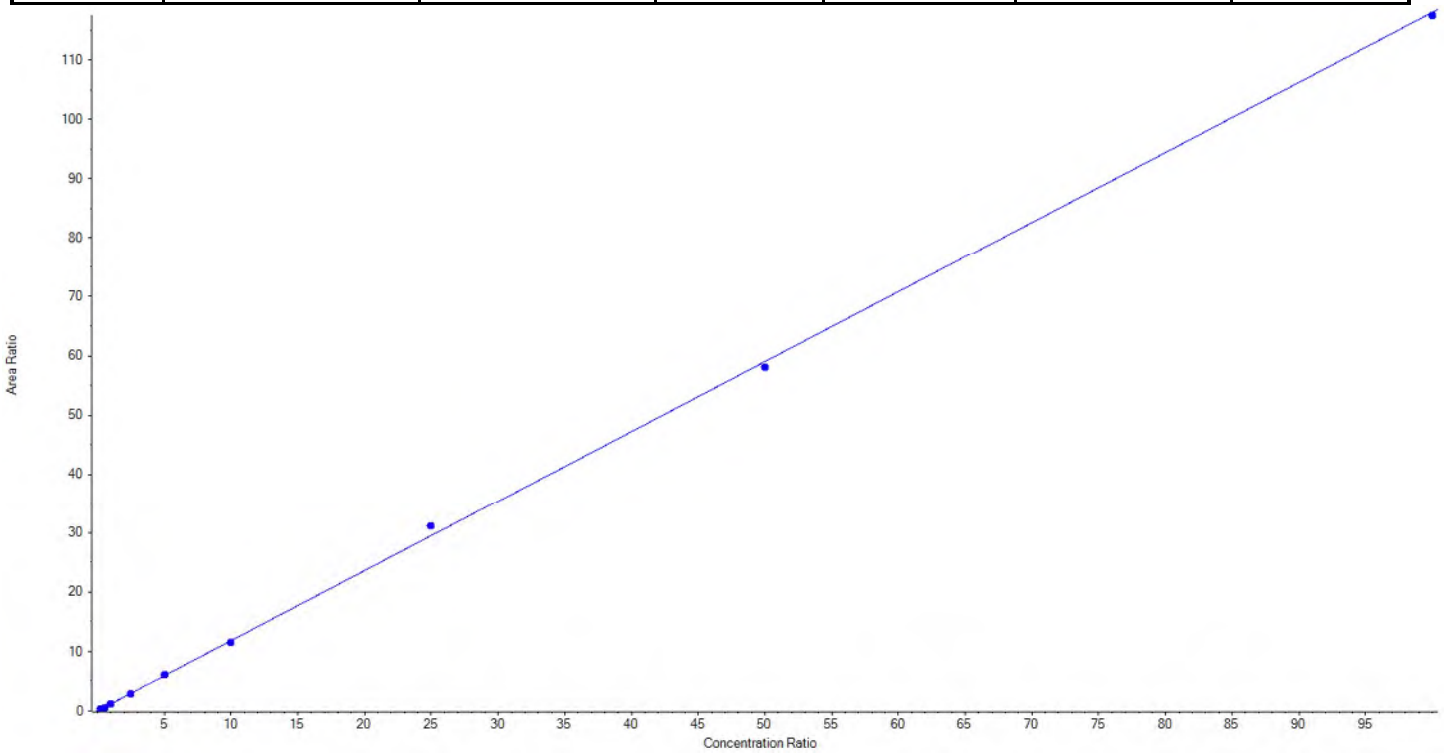
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFTeDA_1	**Data File**	18-0287.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.17996 x + 0.00995 (r = 0.99970) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	24.735841	98.9
3	JV65	L2	True	50.00	47.529454	95.1
4	JV66	L3	True	100.00	103.219818	103.2
5	JV67	L4	True	250.00	248.573936	99.4
6	JV68	L5	True	500.00	512.080787	102.4
7	JV69	L6	True	1000.00	972.640447	97.3
8	JV70	L7	True	2500.00	2644.160657	105.8
9	JV71	L8	True	5000.00	4918.111573	98.4
10	JV72	L9	True	10000.00	9953.947488	99.5



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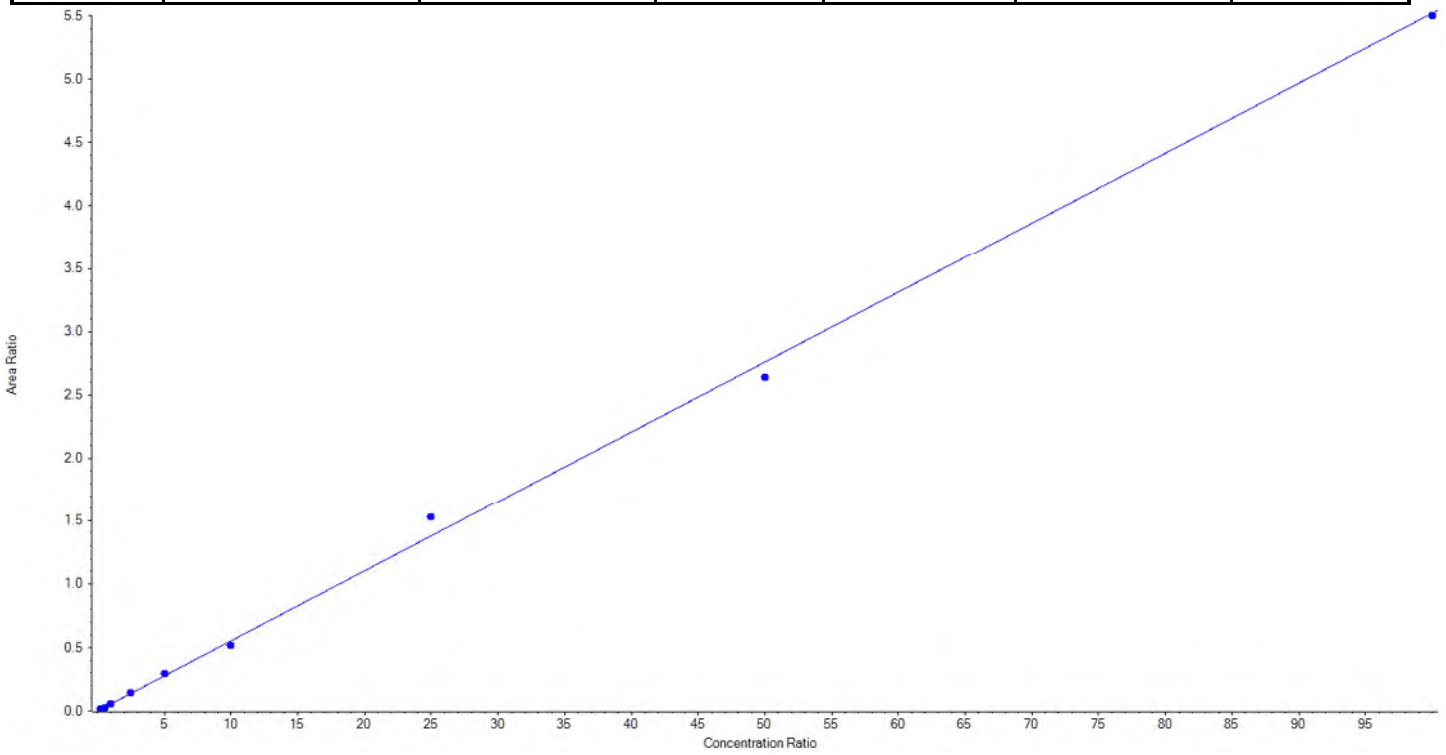
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Analyte Name	PFTeDA_2	**Data File**	18-0287.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05522 x + -2.53563e-4 (r = 0.99873) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.372335	101.5
3	JV65	L2	True	50.00	41.421057	82.8
4	JV66	L3	True	100.00	105.755853	105.8
5	JV67	L4	True	250.00	257.279859	102.9
6	JV68	L5	True	500.00	534.349917	106.9
7	JV69	L6	True	1000.00	939.252895	93.9
8	JV70	L7	True	2500.00	2771.350611	110.9
9	JV71	L8	True	5000.00	4784.927639	95.7
10	JV72	L9	True	10000.00	9965.289833	99.7



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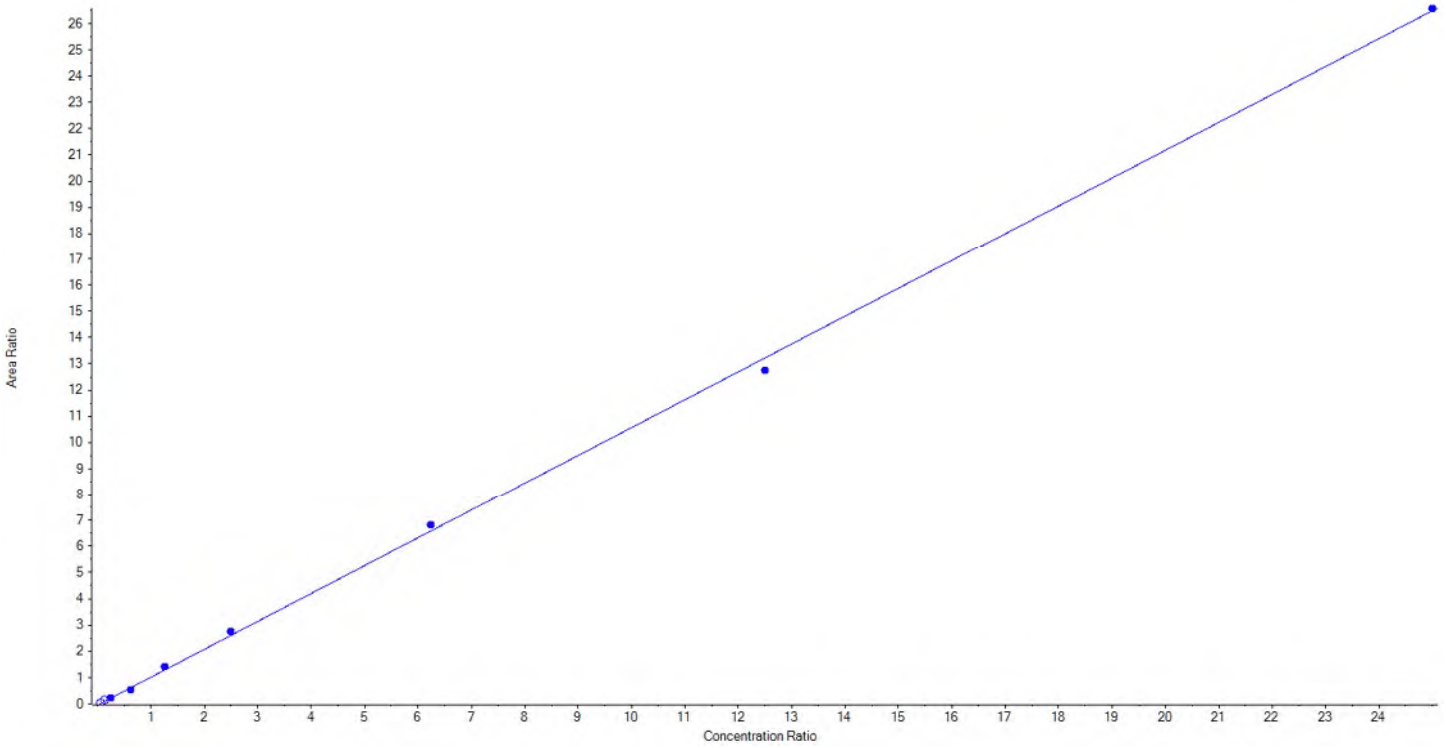
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NMeFOSAA_1	**Data File**	18-0287.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.06117 x + -0.04402 (r = 0.99943) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	33.804476	135.2
3	JV65	L2	False	50.00	75.638920	151.3
4	JV66	L3	True	100.00	96.476906	96.5
5	JV67	L4	True	250.00	223.748795	89.5
6	JV68	L5	True	500.00	543.743514	108.8
7	JV69	L6	True	1000.00	1052.710998	105.3
8	JV70	L7	True	2500.00	2582.869250	103.3
9	JV71	L8	True	5000.00	4818.449837	96.4
10	JV72	L9	True	10000.00	10032.000701	100.3



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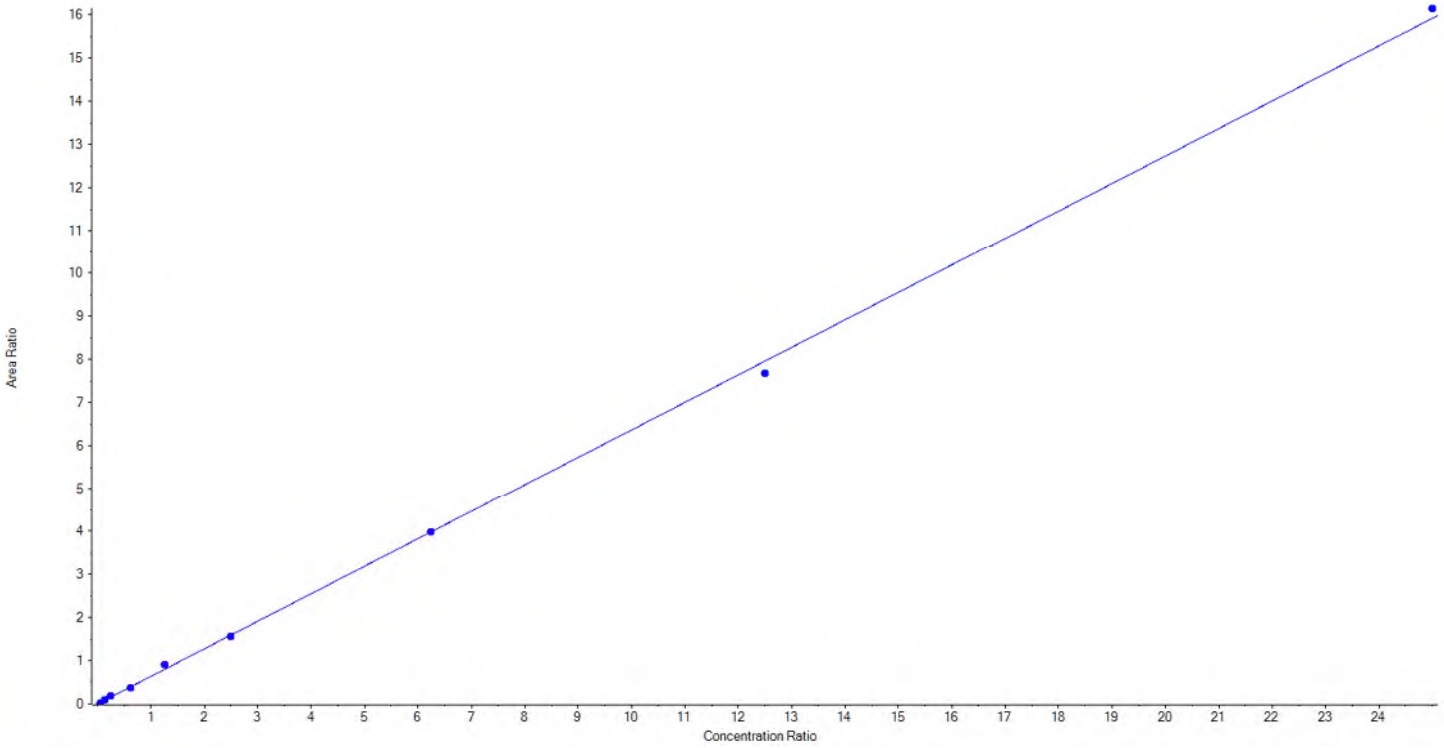
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NMeFOSAA_2	**Data File**	18-0287.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.63652 x + 2.66585e-4 (r = 0.99944) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	20.981286	83.9
3	JV65	L2	True	50.00	51.560465	103.1
4	JV66	L3	True	100.00	111.874753	111.9
5	JV67	L4	True	250.00	230.145813	92.1
6	JV68	L5	True	500.00	563.501107	112.7
7	JV69	L6	True	1000.00	984.601410	98.5
8	JV70	L7	True	2500.00	2502.038421	100.1
9	JV71	L8	True	5000.00	4817.598080	96.4
10	JV72	L9	True	10000.00	10142.698664	101.4



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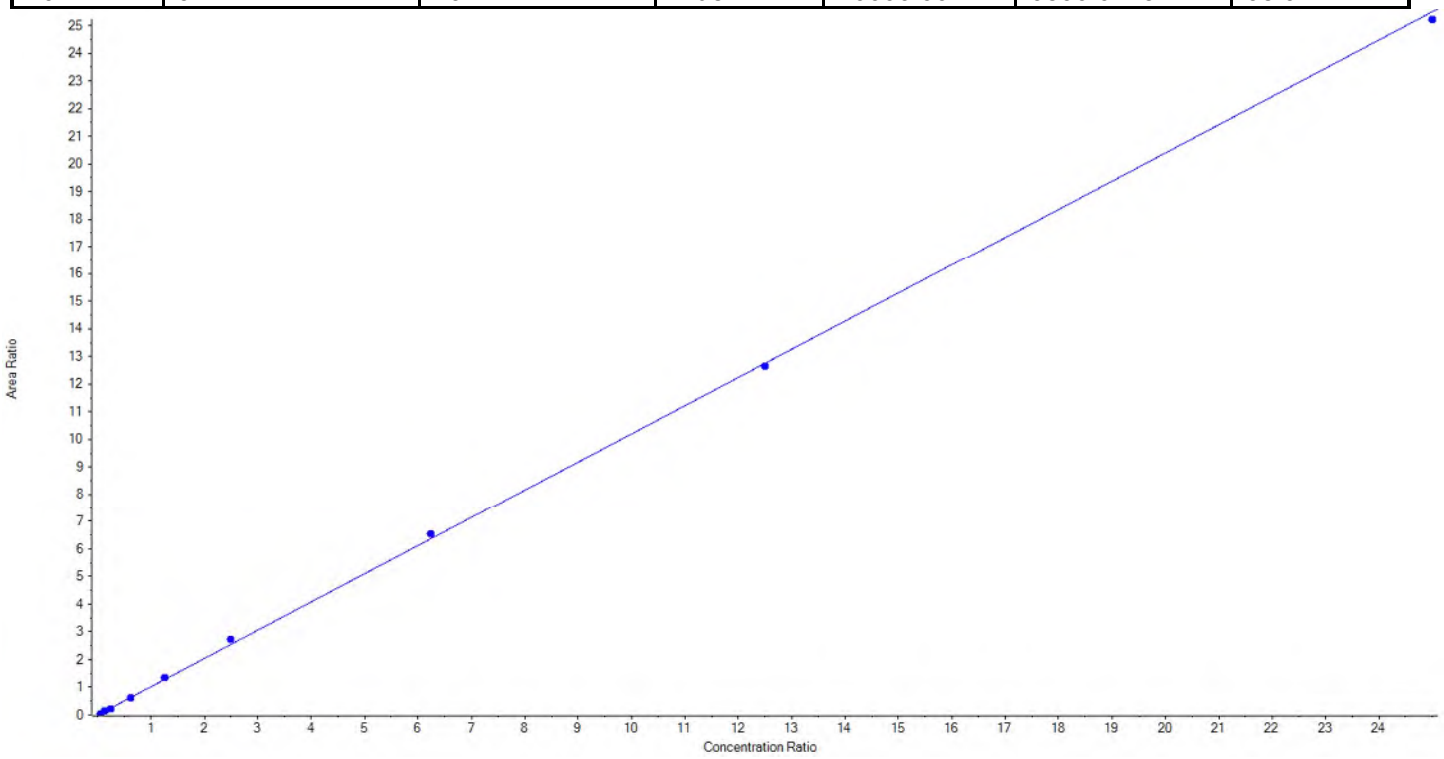
Calibration Summary Report

Created with Analyst Reporter
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Analyte Name	NEtFOSAA_1	**Data File**	18-0287.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.02015 x + -0.00244 (r = 0.99960) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	19.766835	79.1
3	JV65	L2	True	50.00	59.290846	118.6
4	JV66	L3	True	100.00	92.324906	92.3
5	JV67	L4	True	250.00	238.820153	95.5
6	JV68	L5	True	500.00	533.733349	106.8
7	JV69	L6	True	1000.00	1071.478343	107.2
8	JV70	L7	True	2500.00	2565.600521	102.6
9	JV71	L8	True	5000.00	4953.962734	99.1
10	JV72	L9	True	10000.00	9890.022314	98.9



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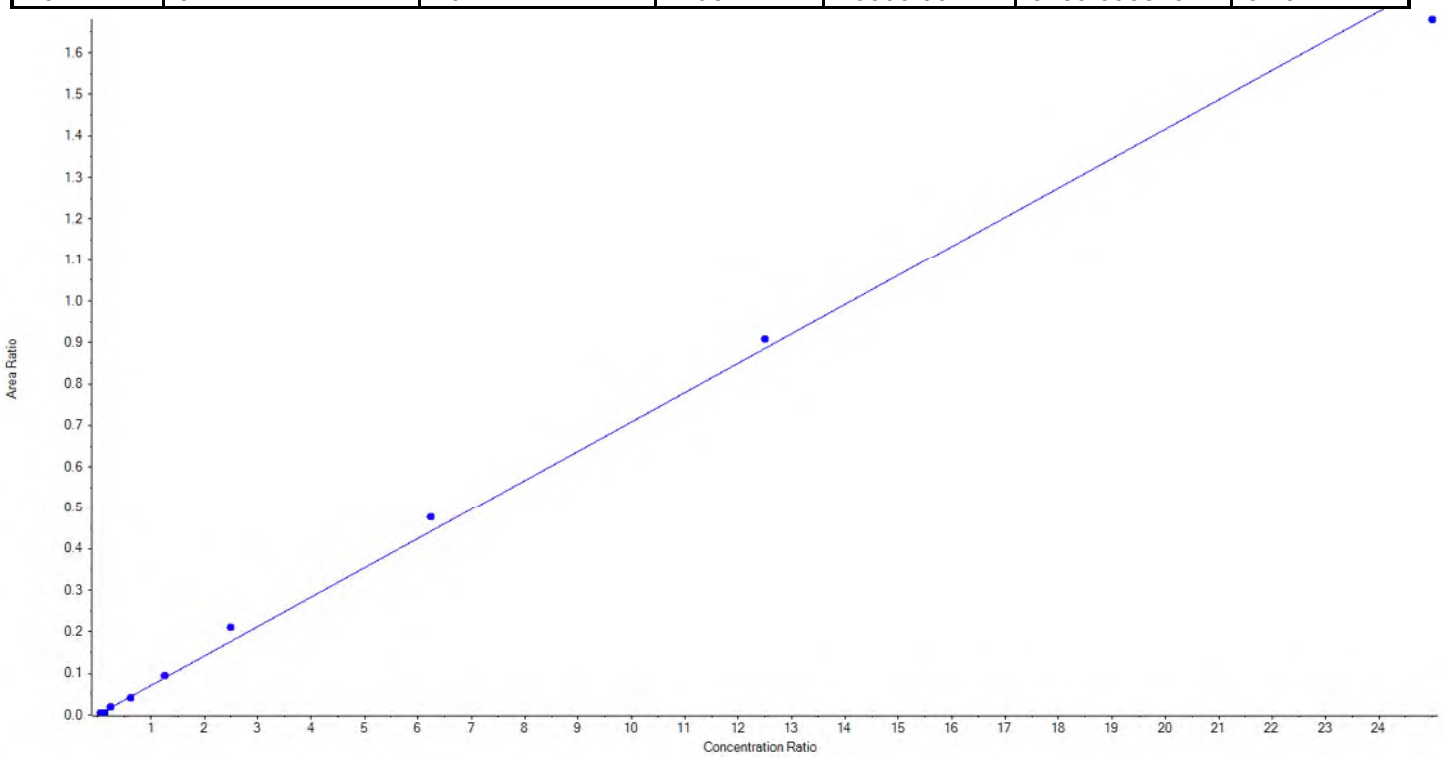
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NEtFOSAA_2	**Data File**	18-0287.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.07082 x + 4.14020e-5 (r = 0.99757) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.182661	100.7
3	JV65	L2	True	50.00	32.517054	65.0
4	JV66	L3	True	100.00	113.389105	113.4
5	JV67	L4	True	250.00	226.023527	90.4
6	JV68	L5	True	500.00	535.608828	107.1
7	JV69	L6	True	1000.00	1182.728888	118.3
8	JV70	L7	True	2500.00	2687.401954	107.5
9	JV71	L8	True	5000.00	5132.452168	102.7
10	JV72	L9	True	10000.00	9489.695816	94.9



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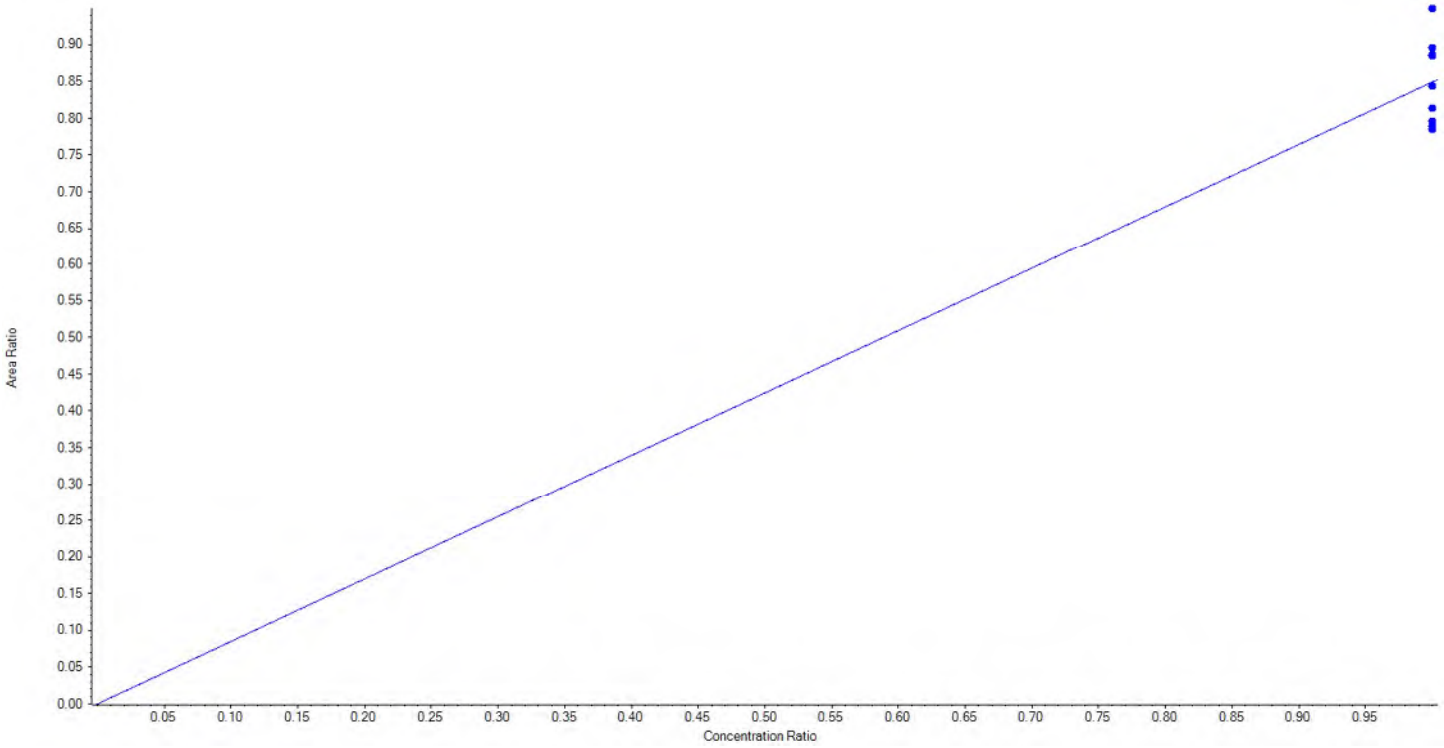
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:09:53 AM

Analyte Name	13C2-PFHxA	**Data File**	18-0287.wiff
MRM Transition	315.0 / 270.0	**Result Table**	18-0316_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.84916 x (std. dev. = 0.05787) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	100.00	111.746793	111.8
3	JV65	L2	True	100.00	95.838929	95.8
4	JV66	L3	True	100.00	105.483034	105.5
5	JV67	L4	True	100.00	104.231586	104.2
6	JV68	L5	True	100.00	93.650441	93.7
7	JV69	L6	True	100.00	92.877641	92.9
8	JV70	L7	True	100.00	104.393058	104.4
9	JV71	L8	True	100.00	99.366614	99.4
10	JV72	L9	True	100.00	92.411904	92.4



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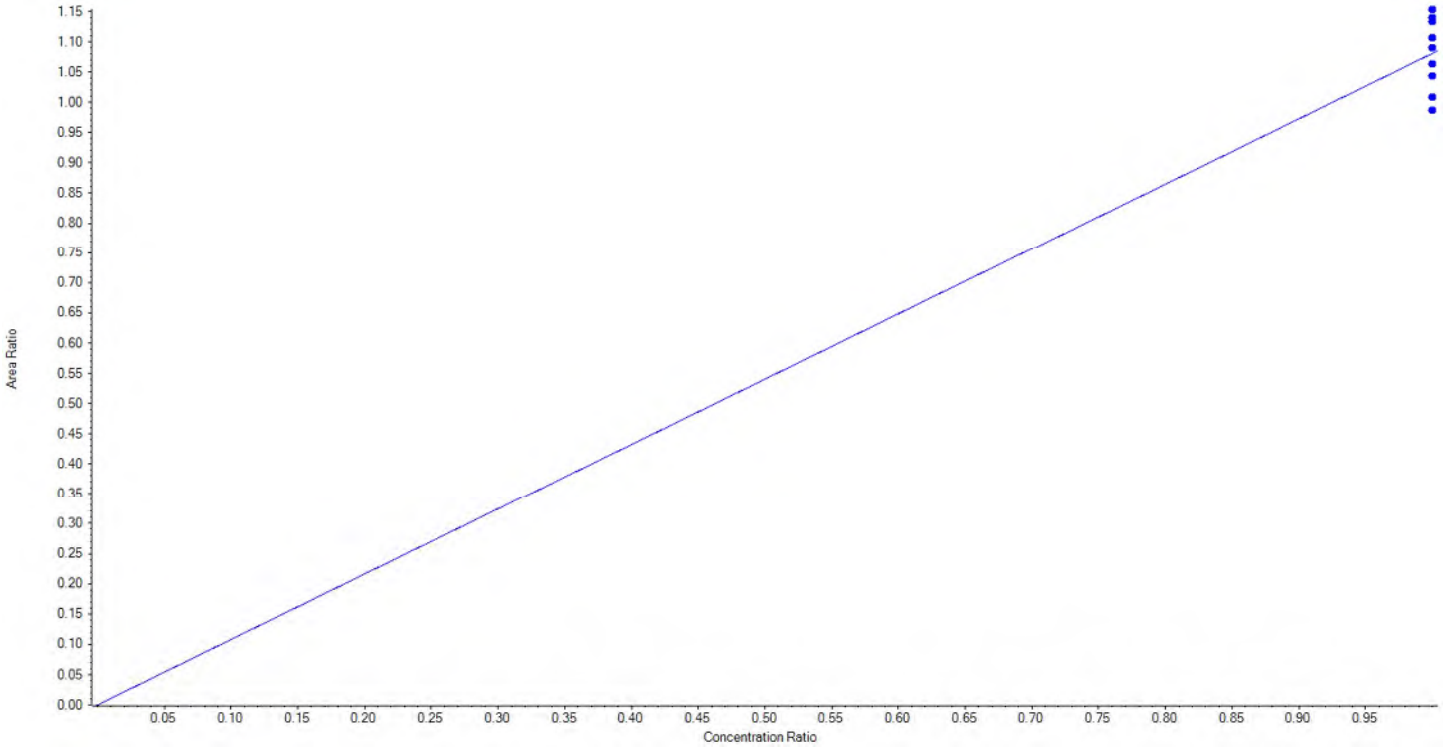
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:09:53 AM

Analyte Name	13C2-PFDA	**Data File**	18-0287.wiff
MRM Transition	515.0 / 470.0	**Result Table**	18-0316_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.08074 x (std. dev. = 0.05903) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	100.00	106.699195	106.7
3	JV65	L2	True	100.00	91.325285	91.3
4	JV66	L3	True	100.00	105.524896	105.5
5	JV67	L4	True	100.00	102.430908	102.4
6	JV68	L5	True	100.00	96.622279	96.6
7	JV69	L6	True	100.00	98.462314	98.5
8	JV70	L7	True	100.00	104.795543	104.8
9	JV71	L8	True	100.00	100.823460	100.8
10	JV72	L9	True	100.00	93.316120	93.3



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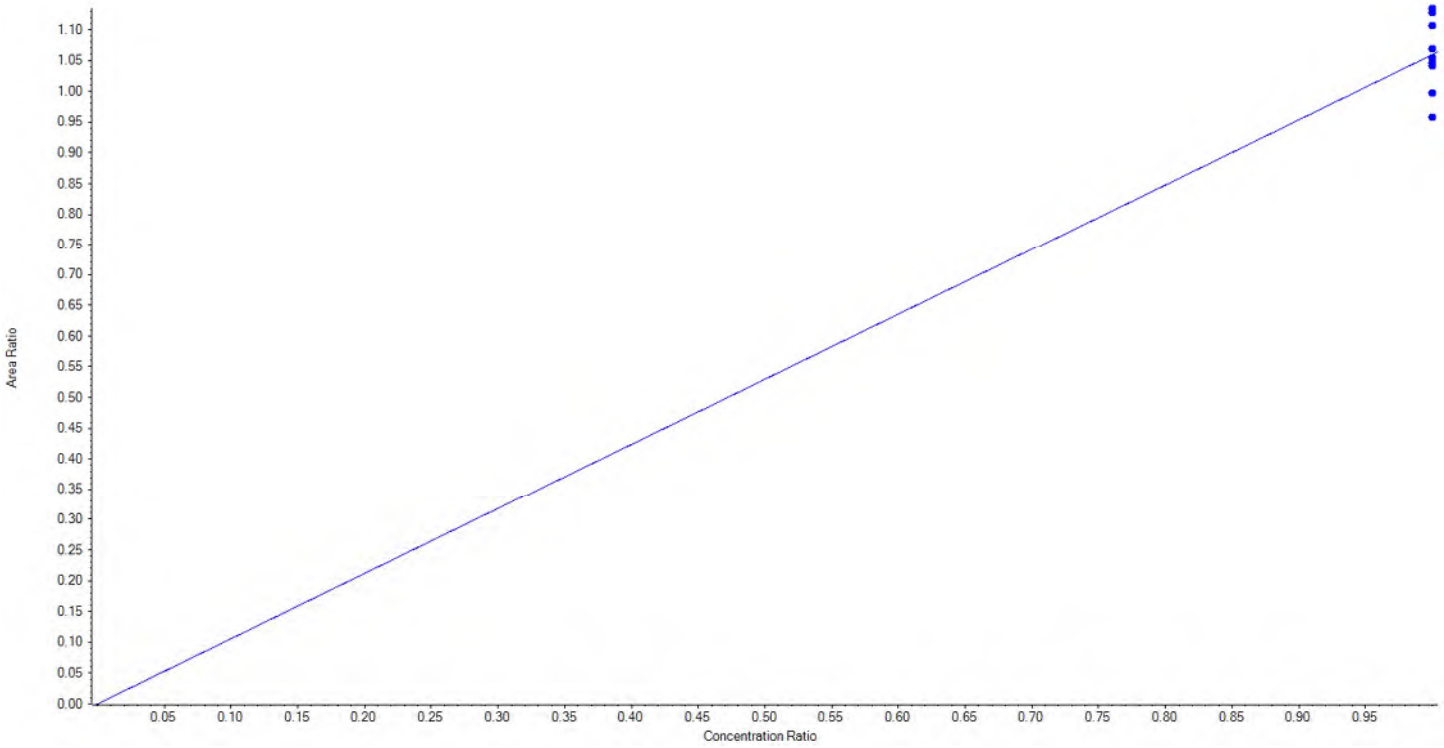
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:09:53 AM

Analyte Name	d5-EtFOSAA	**Data File**	18-0287.wiff
MRM Transition	589.0 / 419.0	**Result Table**	18-0316_SIS
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.05953 x (std. dev. = 0.05862) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	400.00	361.437578	90.4
3	JV65	L2	True	400.00	397.757980	99.4
4	JV66	L3	True	400.00	394.987994	98.8
5	JV67	L4	True	400.00	425.915366	106.5
6	JV68	L5	True	400.00	376.552713	94.1
7	JV69	L6	True	400.00	428.230011	107.1
8	JV70	L7	True	400.00	403.744212	100.9
9	JV71	L8	True	400.00	418.022073	104.5
10	JV72	L9	True	400.00	393.352073	98.3



	Drinking Water Calibration Curve Concentrations (ng/L)								
	JV64	**JV65**	**JV66**	**JV67**	**JV68**	**JV69**	**JV70**	**JV71**	**JV72**
PFHxA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFHpA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFOA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFNA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFUnA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDoA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTrDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTeDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NMeFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NEtFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFBS	22.15	44.30	88.60	221.50	443.00	885.00	2,212.50	4,425.00	8,850.00
PFHxS (branched)	22.80	45.60	91.20	228.00	456.00	912.00	2,280.00	4,560.00	9,120.00
PFOS (branched)	23.15	46.30	92.60	231.50	463.00	925.60	2,314.00	4,628.00	9,256.00
	Surrogates								
13C2-PFHxA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C2-PFDA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
d5-EtFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00
	Internal Standards								
13C2-PFOA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C4-PFOS	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
d3-MeFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00

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Summary Quant Report

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Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.46	6587.16	23.483107	180.4	true
PFBS_2	298.9 / 99.0	1.45	1765.50	18.520807	92.1	true
PFHxA_1	313.0 / 269.0	1.74	9490.23	25.353288	59.2	true
PFHxA_2	313.0 / 119.0	1.73	275.46	32.175804	10.9	true
PFHpA_1	363.0 / 319.0	2.08	8127.47	30.745121	25.7	true
PFHpA_2	363.0 / 169.0	2.08	196.14	28.647339	22.3	true
PFHxS_1	399.0 / 80.0	2.09	7022.59	24.720628	94.5	false
PFHxS_2	399.0 / 99.0	2.09	3353.31	25.925035	82.0	false
PFOA_1	413.0 / 369.0	2.45	10066.91	26.708862	38.3	true
PFOA_2	413.0 / 169.0	2.44	578.00	30.244231	21.0	true
PFNA_1	463.0 / 419.0	2.81	7551.62	22.448588	22.4	true
PFNA_2	463.0 / 219.0	2.82	1635.68	17.606402	19.2	true
PFOS_1	499.0 / 80.0	2.81	11105.44	23.088724	64.3	false
PFOS_2	499.0 / 99.0	2.81	1767.91	19.073086	55.4	false
PFDA_1	513.0 / 469.0	3.16	8965.17	25.780783	68.4	true
PFDA_2	513.0 / 219.0	3.19	209.98	< 0	13.9	true
PFUnA_1	563.0 / 519.0	3.48	7815.36	21.476403	39.2	true
PFUnA_2	563.0 / 269.0	3.46	347.39	18.744641	20.3	true
PFDoA_1	613.0 / 569.0	3.77	8248.40	22.899081	67.4	false
PFDoA_2	613.0 / 319.0	3.78	1110.78	21.198571	48.1	true
PFTrDA_1	663.0 / 619.0	4.03	7399.31	23.303615	68.9	false
PFTrDA_2	663.0 / 169.0	4.02	622.34	28.219861	26.4	false
PFTeDA_1	713.0 / 669.0	4.25	8586.36	24.735841	110.1	false
PFTeDA_2	713.0 / 169.0	4.25	391.35	25.372335	26.9	false
NMeFOSAA_1	570.0 / 419.0	3.34	736.20	33.804476	119.5	false
NMeFOSAA_2	570.0 / 512.0	3.34	542.62	20.981286	26.7	false
NEtFOSAA_1	584.0 / 419.0	3.48	773.42	19.766835	56.4	false
NEtFOSAA_2	584.0 / 483.0	3.48	72.56	25.182661	32.4	false

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Summary Quant Report

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Printed: 24/05/2018 11:11:49 AM

Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.71	26541.86	111.746793	646.3	false
13C2-PFDA	515.0 / 470.0	3.15	32254.40	106.699195	507.7	false
d5-EtFOSAA	589.0 / 419.0	3.47	14919.19	361.437578	192.8	false

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Summary Quant Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.47	12296.50	38.690092	378.3	true
PFBS_2	298.9 / 99.0	1.45	5197.27	49.623047	139.3	true
PFHxA_1	313.0 / 269.0	1.72	16674.77	48.230678	113.2	true
PFHxA_2	313.0 / 119.0	1.70	891.39	62.207726	25.2	true
PFHpA_1	363.0 / 319.0	2.07	12495.44	45.261637	36.7	true
PFHpA_2	363.0 / 169.0	2.06	296.35	44.765389	22.6	true
PFHxS_1	399.0 / 80.0	2.08	13431.91	40.923316	137.1	false
PFHxS_2	399.0 / 99.0	2.08	5480.32	42.715296	89.0	false
PFOA_1	413.0 / 369.0	2.44	15847.05	42.899544	65.0	true
PFOA_2	413.0 / 169.0	2.43	817.36	39.807292	34.6	true
PFNA_1	463.0 / 419.0	2.81	15532.62	45.828516	37.4	true
PFNA_2	463.0 / 219.0	2.80	5374.56	55.585100	44.8	true
PFOS_1	499.0 / 80.0	2.80	21828.63	42.127787	124.1	false
PFOS_2	499.0 / 99.0	2.82	4254.29	42.754548	76.5	false
PFDA_1	513.0 / 469.0	3.16	17236.55	47.741972	85.9	false
PFDA_2	513.0 / 219.0	3.19	533.93	< 0	27.6	true
PFUnA_1	563.0 / 519.0	3.48	17634.69	46.942062	82.3	false
PFUnA_2	563.0 / 269.0	3.48	851.85	49.810694	43.2	false
PFDoA_1	613.0 / 569.0	3.77	18533.41	49.230961	97.3	false
PFDoA_2	613.0 / 319.0	3.77	2734.01	48.544516	72.2	false
PFTrDA_1	663.0 / 619.0	4.02	16937.17	49.441089	107.1	false
PFTrDA_2	663.0 / 169.0	4.01	1016.30	44.534197	63.0	false
PFTeDA_1	713.0 / 669.0	4.24	17320.97	47.529454	169.6	false
PFTeDA_2	713.0 / 169.0	4.24	686.38	41.421057	76.8	false
NMeFOSAA_1	570.0 / 419.0	3.32	2783.50	75.638920	156.8	false
NMeFOSAA_2	570.0 / 512.0	3.32	1462.69	51.560465	120.4	false
NEtFOSAA_1	584.0 / 419.0	3.48	2643.58	59.290846	130.7	true
NEtFOSAA_2	584.0 / 483.0	3.51	103.04	32.517054	24.0	true

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Summary Quant Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	27122.17	95.838929	844.9	false
13C2-PFDA	515.0 / 470.0	3.15	32893.12	91.325285	365.0	false
d5-EtFOSAA	589.0 / 419.0	3.47	19317.89	397.757980	272.0	false

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Summary Quant Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.48	25074.55	77.119919	589.6	false
PFBS_2	298.9 / 99.0	1.47	8180.53	77.085462	168.5	true
PFHxA_1	313.0 / 269.0	1.72	30944.07	92.729568	157.8	false
PFHxA_2	313.0 / 119.0	1.72	1127.53	71.281276	19.0	true
PFHpA_1	363.0 / 319.0	2.07	26932.05	94.999992	56.8	true
PFHpA_2	363.0 / 169.0	2.08	537.40	84.456300	37.4	true
PFHxS_1	399.0 / 80.0	2.08	28824.80	84.560191	186.7	false
PFHxS_2	399.0 / 99.0	2.09	9414.23	79.822448	128.6	false
PFOA_1	413.0 / 369.0	2.44	33660.41	94.094405	95.8	false
PFOA_2	413.0 / 169.0	2.45	1997.47	91.316603	71.6	true
PFNA_1	463.0 / 419.0	2.81	35148.70	101.744372	71.9	true
PFNA_2	463.0 / 219.0	2.81	10191.35	100.725248	68.8	true
PFOS_1	499.0 / 80.0	2.81	44837.90	87.472091	162.4	false
PFOS_2	499.0 / 99.0	2.81	9481.95	95.652663	145.0	false
PFDA_1	513.0 / 469.0	3.16	36381.73	97.400854	106.7	false
PFDA_2	513.0 / 219.0	3.17	2358.96	120.282787	134.9	false
PFUnA_1	563.0 / 519.0	3.48	40881.26	105.088967	119.7	false
PFUnA_2	563.0 / 269.0	3.48	1925.19	112.965030	84.7	false
PFDoA_1	613.0 / 569.0	3.77	39482.60	100.630285	130.7	false
PFDoA_2	613.0 / 319.0	3.77	6233.13	104.886111	109.5	false
PFTrDA_1	663.0 / 619.0	4.02	36852.47	101.743185	142.0	false
PFTrDA_2	663.0 / 169.0	4.02	2438.08	104.781408	95.7	false
PFTeDA_1	713.0 / 669.0	4.24	39195.25	103.219818	244.0	false
PFTeDA_2	713.0 / 169.0	4.24	1855.92	105.755853	117.3	false
NMeFOSAA_1	570.0 / 419.0	3.31	4044.55	96.476906	209.5	true
NMeFOSAA_2	570.0 / 512.0	3.32	3402.66	111.874753	139.4	false
NEtFOSAA_1	584.0 / 419.0	3.48	4447.11	92.324906	171.2	false
NEtFOSAA_2	584.0 / 483.0	3.53	383.93	113.389105	37.7	false

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Summary Quant Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.71	30125.90	105.483034	848.0	false
13C2-PFDA	515.0 / 470.0	3.15	38356.94	105.524896	719.6	false
d5-EtFOSAA	589.0 / 419.0	3.47	21673.95	394.987994	273.4	false

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Summary Quant Report

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Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.47	73659.62	270.479947	1157.5	false
PFBS_2	298.9 / 99.0	1.46	17474.41	198.376185	250.0	true
PFHxA_1	313.0 / 269.0	1.73	68572.40	242.616322	249.6	false
PFHxA_2	313.0 / 119.0	1.72	3210.49	187.631333	49.5	false
PFHpA_1	363.0 / 319.0	2.07	58095.29	230.401025	63.3	true
PFHpA_2	363.0 / 169.0	2.07	1231.58	230.303823	55.2	true
PFHxS_1	399.0 / 80.0	2.09	67458.85	234.300477	203.5	false
PFHxS_2	399.0 / 99.0	2.09	21006.40	232.286071	153.1	false
PFOA_1	413.0 / 369.0	2.44	77409.58	251.494624	180.7	false
PFOA_2	413.0 / 169.0	2.45	5023.34	253.258834	162.2	false
PFNA_1	463.0 / 419.0	2.81	77257.84	252.109959	115.1	false
PFNA_2	463.0 / 219.0	2.81	23926.15	263.453692	147.2	false
PFOS_1	499.0 / 80.0	2.81	98775.14	234.830537	214.3	false
PFOS_2	499.0 / 99.0	2.81	20209.41	246.896117	233.1	false
PFDA_1	513.0 / 469.0	3.16	80063.84	240.150008	169.6	false
PFDA_2	513.0 / 219.0	3.16	2867.05	181.707950	134.9	false
PFUnA_1	563.0 / 519.0	3.48	90206.15	259.283618	158.8	false
PFUnA_2	563.0 / 269.0	3.48	3955.91	264.209742	155.6	false
PFDoA_1	613.0 / 569.0	3.77	88562.30	251.821712	170.5	false
PFDoA_2	613.0 / 319.0	3.76	14381.70	268.108635	142.2	false
PFTrDA_1	663.0 / 619.0	4.02	81974.15	250.416518	192.4	false
PFTrDA_2	663.0 / 169.0	4.02	5020.23	242.644756	160.5	false
PFTeDA_1	713.0 / 669.0	4.24	84656.77	248.573936	321.1	false
PFTeDA_2	713.0 / 169.0	4.23	4079.18	257.279859	240.2	false
NMeFOSAA_1	570.0 / 419.0	3.31	9766.67	223.748795	218.2	false
NMeFOSAA_2	570.0 / 512.0	3.31	6513.19	230.145813	177.6	false
NEtFOSAA_1	584.0 / 419.0	3.48	10780.86	238.820153	210.5	false
NEtFOSAA_2	584.0 / 483.0	3.45	711.92	226.023527	100.5	false

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Summary Quant Report

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Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.71	25460.04	104.231586	820.4	false
13C2-PFDA	515.0 / 470.0	3.15	31843.62	102.430908	529.1	false
d5-EtFOSAA	589.0 / 419.0	3.46	20049.34	425.915366	398.8	false

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Summary Quant Report

Created with Analyst Reporter
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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.44	147693.65	494.830183	1713.7	true
PFBS_2	298.9 / 99.0	1.44	53069.94	551.358297	370.2	false
PFHxA_1	313.0 / 269.0	1.71	178167.88	547.608857	345.1	false
PFHxA_2	313.0 / 119.0	1.71	10756.39	501.920797	82.5	false
PFHpA_1	363.0 / 319.0	2.06	149930.12	507.718530	114.3	false
PFHpA_2	363.0 / 169.0	2.06	3371.92	549.021210	99.3	false
PFHxS_1	399.0 / 80.0	2.08	155202.00	490.468001	265.0	false
PFHxS_2	399.0 / 99.0	2.08	46822.34	484.419318	222.3	false
PFOA_1	413.0 / 369.0	2.44	187568.20	525.460651	270.3	false
PFOA_2	413.0 / 169.0	2.43	11717.55	501.014564	219.3	false
PFNA_1	463.0 / 419.0	2.80	196651.95	548.360364	184.6	false
PFNA_2	463.0 / 219.0	2.80	56805.99	532.054934	215.0	false
PFOS_1	499.0 / 80.0	2.80	241056.91	526.238813	293.7	false
PFOS_2	499.0 / 99.0	2.80	47727.40	534.354893	261.9	false
PFDA_1	513.0 / 469.0	3.16	200343.08	512.308119	268.6	false
PFDA_2	513.0 / 219.0	3.16	7900.53	500.313071	293.5	false
PFUnA_1	563.0 / 519.0	3.47	215894.68	528.597710	206.8	false
PFUnA_2	563.0 / 269.0	3.47	9504.30	544.666363	204.6	false
PFDoA_1	613.0 / 569.0	3.76	224438.68	543.205579	205.6	false
PFDoA_2	613.0 / 319.0	3.76	34118.86	540.076896	187.4	false
PFTrDA_1	663.0 / 619.0	4.02	207034.75	536.739235	269.2	false
PFTrDA_2	663.0 / 169.0	4.02	12246.48	505.553916	224.8	false
PFTeDA_1	713.0 / 669.0	4.23	204926.16	512.080787	409.5	false
PFTeDA_2	713.0 / 169.0	4.23	9981.69	534.349917	352.9	false
NMeFOSAA_1	570.0 / 419.0	3.31	25452.41	543.743514	347.5	false
NMeFOSAA_2	570.0 / 512.0	3.30	16324.63	563.501107	360.2	false
NEtFOSAA_1	584.0 / 419.0	3.47	24729.60	533.733349	303.9	false
NEtFOSAA_2	584.0 / 483.0	3.48	1726.68	535.608828	112.5	false

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Summary Quant Report

Created with Analyst Reporter
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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	29823.84	93.650441	780.2	false
13C2-PFDA	515.0 / 470.0	3.14	39161.79	96.622279	461.5	false
d5-EtFOSAA	589.0 / 419.0	3.46	22228.92	376.552713	219.1	false

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:12:58 AM

Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.44	256648.42	836.047360	1823.6	true
PFBS_2	298.9 / 99.0	1.44	87901.29	888.633944	399.8	false
PFHxA_1	313.0 / 269.0	1.71	314661.45	1021.164999	486.1	false
PFHxA_2	313.0 / 119.0	1.71	19560.37	939.982193	119.0	false
PFHpA_1	363.0 / 319.0	2.06	269771.72	958.469829	169.5	false
PFHpA_2	363.0 / 169.0	2.06	6403.47	1101.666841	168.4	false
PFHxS_1	399.0 / 80.0	2.08	282671.49	867.632050	323.0	false
PFHxS_2	399.0 / 99.0	2.08	87331.04	887.969901	281.1	false
PFOA_1	413.0 / 369.0	2.43	351824.24	1039.091021	347.5	false
PFOA_2	413.0 / 169.0	2.43	23995.03	1073.277778	307.7	false
PFNA_1	463.0 / 419.0	2.80	355330.64	1039.938157	264.0	false
PFNA_2	463.0 / 219.0	2.80	106487.88	1044.980309	291.7	false
PFOS_1	499.0 / 80.0	2.80	428599.63	911.789563	313.6	false
PFOS_2	499.0 / 99.0	2.80	84421.10	920.517935	348.4	false
PFDA_1	513.0 / 469.0	3.15	376548.09	1009.776029	342.1	false
PFDA_2	513.0 / 219.0	3.15	14750.48	1031.439826	515.7	false
PFUnA_1	563.0 / 519.0	3.47	391684.03	1005.384599	294.7	false
PFUnA_2	563.0 / 269.0	3.47	15425.99	929.274388	279.7	false
PFDoA_1	613.0 / 569.0	3.76	391743.16	993.526410	239.1	false
PFDoA_2	613.0 / 319.0	3.76	58987.54	977.473712	247.1	false
PFTrDA_1	663.0 / 619.0	4.01	354372.22	961.587378	303.0	false
PFTrDA_2	663.0 / 169.0	4.01	21686.17	939.542406	265.4	false
PFTeDA_1	713.0 / 669.0	4.23	371439.10	972.640447	466.1	false
PFTeDA_2	713.0 / 169.0	4.23	16762.41	939.252895	371.8	false
NMeFOSAA_1	570.0 / 419.0	3.31	46854.05	1052.710998	350.2	false
NMeFOSAA_2	570.0 / 512.0	3.31	26711.43	984.601410	307.0	false
NEtFOSAA_1	584.0 / 419.0	3.47	46538.40	1071.478343	410.9	false
NEtFOSAA_2	584.0 / 483.0	3.45	3570.16	1182.728888	235.3	false

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:12:04 AM

Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	27094.04	92.877641	766.7	false
13C2-PFDA	515.0 / 470.0	3.14	36556.47	98.462314	456.4	false
d5-EtFOSAA	589.0 / 419.0	3.46	21918.56	428.230011	241.1	false

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:13:01 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.44	636555.35	2161.273577	3039.8	true
PFBS_2	298.9 / 99.0	1.43	223589.38	2357.741880	560.3	false
PFHxA_1	313.0 / 269.0	1.71	786977.75	2539.791620	716.3	true
PFHxA_2	313.0 / 119.0	1.71	56725.00	2662.599478	224.7	false
PFHpA_1	363.0 / 319.0	2.06	734894.99	2585.103762	276.6	false
PFHpA_2	363.0 / 169.0	2.06	14926.71	2552.091209	343.6	false
PFHxS_1	399.0 / 80.0	2.07	759285.72	2426.969740	428.2	false
PFHxS_2	399.0 / 99.0	2.07	217304.34	2321.581504	308.0	false
PFOA_1	413.0 / 369.0	2.43	899057.48	2636.449272	424.0	false
PFOA_2	413.0 / 169.0	2.43	55696.26	2461.920179	396.0	false
PFNA_1	463.0 / 419.0	2.80	902185.58	2614.669594	351.4	false
PFNA_2	463.0 / 219.0	2.80	265135.72	2573.326453	364.7	false
PFOS_1	499.0 / 80.0	2.80	1065674.79	2367.443455	377.0	false
PFOS_2	499.0 / 99.0	2.80	205466.10	2338.375483	419.7	false
PFDA_1	513.0 / 469.0	3.15	1003649.62	2663.600645	444.9	false
PFDA_2	513.0 / 219.0	3.15	37389.28	2669.043842	362.9	false
PFUnA_1	563.0 / 519.0	3.47	1066405.64	2708.602972	361.8	false
PFUnA_2	563.0 / 269.0	3.47	44510.12	2660.578162	340.4	false
PFDoA_1	613.0 / 569.0	3.76	1027874.00	2578.802928	313.3	false
PFDoA_2	613.0 / 319.0	3.76	155460.49	2546.512918	315.2	false
PFTrDA_1	663.0 / 619.0	4.01	969363.64	2599.762848	384.8	false
PFTrDA_2	663.0 / 169.0	4.01	58544.53	2511.903429	401.1	false
PFTeDA_1	713.0 / 669.0	4.23	1020767.69	2644.160657	535.7	false
PFTeDA_2	713.0 / 169.0	4.23	50041.16	2771.350611	484.8	false
NMeFOSAA_1	570.0 / 419.0	3.30	124403.61	2582.869250	414.9	false
NMeFOSAA_2	570.0 / 512.0	3.30	72757.45	2502.038421	362.7	false
NEtFOSAA_1	584.0 / 419.0	3.46	119518.50	2565.600521	375.9	false
NEtFOSAA_2	584.0 / 483.0	3.46	8695.19	2687.401954	309.2	false

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Summary Quant Report

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Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.69	31020.95	104.393058	957.5	false
13C2-PFDA	515.0 / 470.0	3.14	39633.08	104.795543	461.8	false
d5-EtFOSAA	589.0 / 419.0	3.46	20969.46	403.744212	257.7	false

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Summary Quant Report

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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.45	1170682.66	4377.980502	3696.2	false
PFBS_2	298.9 / 99.0	1.44	372545.79	4327.956354	666.0	false
PFHxA_1	313.0 / 269.0	1.71	1373770.04	5004.441317	916.2	false
PFHxA_2	313.0 / 119.0	1.71	94822.55	4998.914969	245.3	false
PFHpA_1	363.0 / 319.0	2.07	1231376.46	4881.799777	348.1	false
PFHpA_2	363.0 / 169.0	2.06	25342.89	4890.698476	333.3	false
PFHxS_1	399.0 / 80.0	2.08	1261240.93	4439.462493	379.4	false
PFHxS_2	399.0 / 99.0	2.08	372855.67	4397.947134	369.0	false
PFOA_1	413.0 / 369.0	2.44	1515282.98	5012.599247	579.9	false
PFOA_2	413.0 / 169.0	2.44	102510.99	5103.925253	608.6	false
PFNA_1	463.0 / 419.0	2.81	1521697.83	4970.858264	422.0	false
PFNA_2	463.0 / 219.0	2.80	457974.56	5008.271225	410.7	false
PFOS_1	499.0 / 80.0	2.80	1888190.03	4622.929105	401.7	false
PFOS_2	499.0 / 99.0	2.80	372732.08	4674.443945	392.1	false
PFDA_1	513.0 / 469.0	3.16	1660691.79	4966.639934	385.4	false
PFDA_2	513.0 / 219.0	3.15	59864.77	4859.355694	488.1	false
PFUnA_1	563.0 / 519.0	3.47	1722832.63	4930.949311	366.1	false
PFUnA_2	563.0 / 269.0	3.47	74210.12	5001.977143	398.9	false
PFDoA_1	613.0 / 569.0	3.76	1718754.28	4858.808287	349.9	false
PFDoA_2	613.0 / 319.0	3.76	266523.71	4918.186485	329.0	false
PFTrDA_1	663.0 / 619.0	4.01	1637660.03	4947.640990	417.2	false
PFTrDA_2	663.0 / 169.0	4.01	103788.13	5019.349063	364.4	false
PFTeDA_1	713.0 / 669.0	4.23	1685027.17	4918.111573	558.6	false
PFTeDA_2	713.0 / 169.0	4.23	76696.41	4784.927639	548.5	false
NMeFOSAA_1	570.0 / 419.0	3.31	201934.61	4818.449837	378.4	false
NMeFOSAA_2	570.0 / 512.0	3.31	121526.80	4817.598080	344.1	false
NEtFOSAA_1	584.0 / 419.0	3.47	200239.16	4953.962734	444.3	false
NEtFOSAA_2	584.0 / 483.0	3.46	14405.40	5132.452168	372.8	false

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Summary Quant Report

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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	26295.86	99.366614	799.0	false
13C2-PFDA	515.0 / 470.0	3.14	33957.84	100.823460	444.7	false
d5-EtFOSAA	589.0 / 419.0	3.46	17552.03	418.022073	222.8	false

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Summary Quant Report

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Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.44	2746825.30	8913.478420	5512.5	false
PFBS_2	298.9 / 99.0	1.44	865194.63	8722.754023	938.2	false
PFHxA_1	313.0 / 269.0	1.71	3180025.35	9903.063352	1194.7	false
PFHxA_2	313.0 / 119.0	1.71	221790.71	9968.286425	331.4	false
PFHpA_1	363.0 / 319.0	2.06	2979586.00	10090.500327	426.0	false
PFHpA_2	363.0 / 169.0	2.06	60269.26	9943.349413	455.1	false
PFHxS_1	399.0 / 80.0	2.08	2981939.82	9106.563104	421.7	false
PFHxS_2	399.0 / 99.0	2.08	901811.25	9242.933292	416.9	false
PFOA_1	413.0 / 369.0	2.44	3465054.28	9796.202374	533.4	false
PFOA_2	413.0 / 169.0	2.44	232145.85	9870.235267	598.4	false
PFNA_1	463.0 / 419.0	2.80	3522257.33	9829.042185	469.8	false
PFNA_2	463.0 / 219.0	2.80	1052364.40	9828.996638	511.1	false
PFOS_1	499.0 / 80.0	2.80	4312317.40	9164.229925	409.1	false
PFOS_2	499.0 / 99.0	2.80	836787.85	9108.081330	465.3	false
PFDA_1	513.0 / 469.0	3.16	3860432.18	9861.601655	420.9	false
PFDA_2	513.0 / 219.0	3.16	143236.53	9987.856830	402.1	false
PFUnA_1	563.0 / 519.0	3.48	4016400.54	9818.674359	395.1	false
PFUnA_2	563.0 / 269.0	3.47	170902.81	9842.773836	345.7	false
PFDoA_1	613.0 / 569.0	3.76	4152451.41	10026.074758	332.6	false
PFDoA_2	613.0 / 319.0	3.76	634563.59	10000.012156	338.8	false
PFTrDA_1	663.0 / 619.0	4.01	3858264.53	9954.365142	427.7	false
PFTrDA_2	663.0 / 169.0	4.01	242749.13	10028.470965	407.7	false
PFTeDA_1	713.0 / 669.0	4.23	3992981.47	9953.947488	563.7	false
PFTeDA_2	713.0 / 169.0	4.23	187043.38	9965.289833	597.9	false
NMeFOSAA_1	570.0 / 419.0	3.31	485972.69	10032.000701	463.0	false
NMeFOSAA_2	570.0 / 512.0	3.31	295208.43	10142.698664	391.3	false
NEtFOSAA_1	584.0 / 419.0	3.47	461293.33	9890.022314	386.3	false
NEtFOSAA_2	584.0 / 483.0	3.46	30731.61	9489.695816	380.7	false

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:12:16 AM

Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	29740.00	92.411904	929.5	false
13C2-PFDA	515.0 / 470.0	3.14	38220.93	93.316120	436.1	false
d5-EtFOSAA	589.0 / 419.0	3.46	19817.78	393.352073	193.8	false

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Summary Ion Ratio Report

Created with Analyst Reporter
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Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.46	PFBS			
PFBS_2	298.9 / 99.0	1.45	PFBS	0.268	0.327	ü
PFHxA_1	313.0 / 269.0	1.74	PFHxA			
PFHxA_2	313.0 / 119.0	1.73	PFHxA	0.029	0.056	ü
PFHpA_1	363.0 / 319.0	2.08	PFHpA			
PFHpA_2	363.0 / 169.0	2.08	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.09	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.478	0.335	ü
PFOA_1	413.0 / 369.0	2.45	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.057	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.82	PFNA	0.217	0.294	ü
PFOS_1	499.0 / 80.0	2.81	PFOS			
PFOS_2	499.0 / 99.0	2.81	PFOS	0.159	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.19	PFDA	0.023	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.46	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.78	PFDoA	0.135	0.152	ü
PFTrDA_1	663.0 / 619.0	4.03	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.084	0.064	ü
PFTeDA_1	713.0 / 669.0	4.25	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.25	PFTeDA	0.046	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.34	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.34	NMeFOSAA	0.737	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.48	NEtFOSSA	0.094	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.45	PFBS	0.423	0.327	ü
PFHxA_1	313.0 / 269.0	1.72	PFHxA			
PFHxA_2	313.0 / 119.0	1.70	PFHxA	0.054	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.408	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.052	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.346	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.82	PFOS	0.195	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.19	PFDA	0.031	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.48	PFUnA	0.048	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.77	PFDoA	0.148	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.060	0.064	ü
PFTeDA_1	713.0 / 669.0	4.24	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.24	PFTeDA	0.040	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.32	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.32	NMeFOSAA	0.526	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.51	NEtFOSSA	0.039	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.48	PFBS			
PFBS_2	298.9 / 99.0	1.47	PFBS	0.326	0.327	ü
PFHxA_1	313.0 / 269.0	1.72	PFHxA			
PFHxA_2	313.0 / 119.0	1.72	PFHxA	0.036	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.08	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.327	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.45	PFOA	0.059	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.81	PFNA	0.290	0.294	ü
PFOS_1	499.0 / 80.0	2.81	PFOS			
PFOS_2	499.0 / 99.0	2.81	PFOS	0.212	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.17	PFDA	0.065	0.041	
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.48	PFUnA	0.047	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.77	PFDoA	0.158	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.066	0.064	ü
PFTeDA_1	713.0 / 669.0	4.24	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.24	PFTeDA	0.047	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.32	NMeFOSAA	0.841	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSSA	0.086	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.46	PFBS	0.237	0.327	ü
PFHxA_1	313.0 / 269.0	1.73	PFHxA			
PFHxA_2	313.0 / 119.0	1.72	PFHxA	0.047	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.07	PFHpA	0.021	0.022	ü
PFHxS_1	399.0 / 80.0	2.09	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.311	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.45	PFOA	0.065	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.81	PFNA	0.310	0.294	ü
PFOS_1	499.0 / 80.0	2.81	PFOS			
PFOS_2	499.0 / 99.0	2.81	PFOS	0.205	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.16	PFDA	0.036	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.48	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.162	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.061	0.064	ü
PFTeDA_1	713.0 / 669.0	4.24	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.048	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.667	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.45	NEtFOSSA	0.066	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.359	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.060	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.023	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.302	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.063	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.289	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.198	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.16	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.152	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.059	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.049	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.30	NMeFOSAA	0.641	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.48	NEtFOSSA	0.070	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.343	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.062	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.309	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.068	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.300	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.197	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.039	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.151	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.061	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.045	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.570	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.45	NEtFOSSA	0.077	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.43	PFBS	0.351	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.072	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.07	PFHxS			
PFHxS_2	399.0 / 99.0	2.07	PFHxS	0.286	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.062	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.294	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.193	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.037	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.042	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.151	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.060	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.049	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.30	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.30	NMeFOSAA	0.585	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.46	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.073	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.45	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.318	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.069	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.021	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.296	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.068	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.301	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.197	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.036	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.043	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.155	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.063	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.046	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.602	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.072	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.315	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.070	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.302	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.067	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.299	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.194	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.16	PFDA	0.037	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.043	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.153	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.063	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.047	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.608	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.067	0.071	ü

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Summary Internal Standard Report

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Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.46	13C4-PFOS	503.0 / 80.0	106482.72	287.00
PFBS_2	298.9 / 99.0	1.45	13C4-PFOS	503.0 / 80.0	106482.72	287.00
PFHxA_1	313.0 / 269.0	1.74	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFHxA_2	313.0 / 119.0	1.73	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFHpA_1	363.0 / 319.0	2.08	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFHpA_2	363.0 / 169.0	2.08	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFHxS_1	399.0 / 80.0	2.09	13C4-PFOS	503.0 / 80.0	106482.72	287.00
PFHxS_2	399.0 / 99.0	2.09	13C4-PFOS	503.0 / 80.0	106482.72	287.00
PFOA_1	413.0 / 369.0	2.45	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFNA_2	463.0 / 219.0	2.82	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFOS_1	499.0 / 80.0	2.81	13C4-PFOS	503.0 / 80.0	106482.72	287.00
PFOS_2	499.0 / 99.0	2.81	13C4-PFOS	503.0 / 80.0	106482.72	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFDA_2	513.0 / 219.0	3.19	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFUnA_1	563.0 / 519.0	3.48	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFUnA_2	563.0 / 269.0	3.46	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFDoA_1	613.0 / 569.0	3.77	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFDoA_2	613.0 / 319.0	3.78	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFTrDA_1	663.0 / 619.0	4.03	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFTrDA_2	663.0 / 169.0	4.02	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFTeDA_1	713.0 / 669.0	4.25	13C2-PFOA	415.0 / 370.0	28448.80	100.00
PFTeDA_2	713.0 / 169.0	4.25	13C2-PFOA	415.0 / 370.0	28448.80	100.00
NMeFOSAA_1	570.0 / 419.0	3.34	d3-MeFOSAA	573.0 / 419.0	16123.52	400.00
NMeFOSAA_2	570.0 / 512.0	3.34	d3-MeFOSAA	573.0 / 419.0	16123.52	400.00
NEtFOSAA_1	584.0 / 419.0	3.48	d3-MeFOSAA	573.0 / 419.0	16123.52	400.00
NEtFOSAA_2	584.0 / 483.0	3.48	d3-MeFOSAA	573.0 / 419.0	16123.52	400.00

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Summary Internal Standard Report

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Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	27970.91	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	27970.91	100.00
d5-EtFOSAA	589.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	15583.30	400.00

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Summary Internal Standard Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.47	13C4-PFOS	503.0 / 80.0	119997.89	287.00
PFBS_2	298.9 / 99.0	1.45	13C4-PFOS	503.0 / 80.0	119997.89	287.00
PFHxA_1	313.0 / 269.0	1.72	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFHxA_2	313.0 / 119.0	1.70	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	119997.89	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	119997.89	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	119997.89	287.00
PFOS_2	499.0 / 99.0	2.82	13C4-PFOS	503.0 / 80.0	119997.89	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFDA_2	513.0 / 219.0	3.19	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFUnA_1	563.0 / 519.0	3.48	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFUnA_2	563.0 / 269.0	3.48	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFDoA_1	613.0 / 569.0	3.77	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFDoA_2	613.0 / 319.0	3.77	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFTrDA_1	663.0 / 619.0	4.02	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFTeDA_1	713.0 / 669.0	4.24	13C2-PFOA	415.0 / 370.0	30346.55	100.00
PFTeDA_2	713.0 / 169.0	4.24	13C2-PFOA	415.0 / 370.0	30346.55	100.00
NMeFOSAA_1	570.0 / 419.0	3.32	d3-MeFOSAA	573.0 / 419.0	17769.57	400.00
NMeFOSAA_2	570.0 / 512.0	3.32	d3-MeFOSAA	573.0 / 419.0	17769.57	400.00
NEtFOSAA_1	584.0 / 419.0	3.48	d3-MeFOSAA	573.0 / 419.0	17769.57	400.00
NEtFOSAA_2	584.0 / 483.0	3.51	d3-MeFOSAA	573.0 / 419.0	17769.57	400.00

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Summary Internal Standard Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	33326.75	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	33326.75	100.00
d5-EtFOSAA	589.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	18335.31	400.00

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Summary Internal Standard Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.48	13C4-PFOS	503.0 / 80.0	122253.98	287.00
PFBS_2	298.9 / 99.0	1.47	13C4-PFOS	503.0 / 80.0	122253.98	287.00
PFHxA_1	313.0 / 269.0	1.72	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFHxA_2	313.0 / 119.0	1.72	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFHpA_2	363.0 / 169.0	2.08	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	122253.98	287.00
PFHxS_2	399.0 / 99.0	2.09	13C4-PFOS	503.0 / 80.0	122253.98	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFOA_2	413.0 / 169.0	2.45	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFNA_2	463.0 / 219.0	2.81	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFOS_1	499.0 / 80.0	2.81	13C4-PFOS	503.0 / 80.0	122253.98	287.00
PFOS_2	499.0 / 99.0	2.81	13C4-PFOS	503.0 / 80.0	122253.98	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFDA_2	513.0 / 219.0	3.17	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFUnA_1	563.0 / 519.0	3.48	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFUnA_2	563.0 / 269.0	3.48	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFDoA_1	613.0 / 569.0	3.77	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFDoA_2	613.0 / 319.0	3.77	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFTrDA_1	663.0 / 619.0	4.02	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFTrDA_2	663.0 / 169.0	4.02	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFTeDA_1	713.0 / 669.0	4.24	13C2-PFOA	415.0 / 370.0	31920.71	100.00
PFTeDA_2	713.0 / 169.0	4.24	13C2-PFOA	415.0 / 370.0	31920.71	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	19084.74	400.00
NMeFOSAA_2	570.0 / 512.0	3.32	d3-MeFOSAA	573.0 / 419.0	19084.74	400.00
NEtFOSAA_1	584.0 / 419.0	3.48	d3-MeFOSAA	573.0 / 419.0	19084.74	400.00
NEtFOSAA_2	584.0 / 483.0	3.53	d3-MeFOSAA	573.0 / 419.0	19084.74	400.00

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Summary Internal Standard Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	33633.17	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	33633.17	100.00
d5-EtFOSAA	589.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	20715.80	400.00

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Summary Internal Standard Report

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Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.47	13C4-PFOS	503.0 / 80.0	102094.68	287.00
PFBS_2	298.9 / 99.0	1.46	13C4-PFOS	503.0 / 80.0	102094.68	287.00
PFHxA_1	313.0 / 269.0	1.73	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFHxA_2	313.0 / 119.0	1.72	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFHpA_2	363.0 / 169.0	2.07	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFHxS_1	399.0 / 80.0	2.09	13C4-PFOS	503.0 / 80.0	102094.68	287.00
PFHxS_2	399.0 / 99.0	2.09	13C4-PFOS	503.0 / 80.0	102094.68	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFOA_2	413.0 / 169.0	2.45	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFNA_2	463.0 / 219.0	2.81	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFOS_1	499.0 / 80.0	2.81	13C4-PFOS	503.0 / 80.0	102094.68	287.00
PFOS_2	499.0 / 99.0	2.81	13C4-PFOS	503.0 / 80.0	102094.68	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFDA_2	513.0 / 219.0	3.16	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFUnA_1	563.0 / 519.0	3.48	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFUnA_2	563.0 / 269.0	3.48	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFDoA_1	613.0 / 569.0	3.77	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFTrDA_1	663.0 / 619.0	4.02	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFTrDA_2	663.0 / 169.0	4.02	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFTeDA_1	713.0 / 669.0	4.24	13C2-PFOA	415.0 / 370.0	28765.39	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	28765.39	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	17771.51	400.00
NMeFOSAA_2	570.0 / 512.0	3.31	d3-MeFOSAA	573.0 / 419.0	17771.51	400.00
NEtFOSAA_1	584.0 / 419.0	3.48	d3-MeFOSAA	573.0 / 419.0	17771.51	400.00
NEtFOSAA_2	584.0 / 483.0	3.45	d3-MeFOSAA	573.0 / 419.0	17771.51	400.00

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Summary Internal Standard Report

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Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	28765.39	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	28765.39	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	17771.51	400.00

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Summary Internal Standard Report

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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.44	13C4-PFOS	503.0 / 80.0	111836.08	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	111836.08	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFHpA_1	363.0 / 319.0	2.06	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	111836.08	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	111836.08	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	111836.08	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	111836.08	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFDA_2	513.0 / 219.0	3.16	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFTrDA_1	663.0 / 619.0	4.02	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFTrDA_2	663.0 / 169.0	4.02	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	33859.37	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	33859.37	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	18199.88	400.00
NMeFOSAA_2	570.0 / 512.0	3.30	d3-MeFOSAA	573.0 / 419.0	18199.88	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	18199.88	400.00
NEtFOSAA_2	584.0 / 483.0	3.48	d3-MeFOSAA	573.0 / 419.0	18199.88	400.00

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Summary Internal Standard Report

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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	37502.84	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	37502.84	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	22286.41	400.00

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Summary Internal Standard Report

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Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.44	13C4-PFOS	503.0 / 80.0	114992.54	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	114992.54	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFHpA_1	363.0 / 319.0	2.06	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	114992.54	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	114992.54	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	114992.54	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	114992.54	287.00
PFDA_1	513.0 / 469.0	3.15	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	32336.53	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	32336.53	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	17045.59	400.00
NMeFOSAA_2	570.0 / 512.0	3.31	d3-MeFOSAA	573.0 / 419.0	17045.59	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	17045.59	400.00
NEtFOSAA_2	584.0 / 483.0	3.45	d3-MeFOSAA	573.0 / 419.0	17045.59	400.00

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Summary Internal Standard Report

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Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	34353.66	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	34353.66	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	19323.36	400.00

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Summary Internal Standard Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:01 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.44	13C4-PFOS	503.0 / 80.0	110302.85	287.00
PFBS_2	298.9 / 99.0	1.43	13C4-PFOS	503.0 / 80.0	110302.85	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFHpA_1	363.0 / 319.0	2.06	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFHxS_1	399.0 / 80.0	2.07	13C4-PFOS	503.0 / 80.0	110302.85	287.00
PFHxS_2	399.0 / 99.0	2.07	13C4-PFOS	503.0 / 80.0	110302.85	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	110302.85	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	110302.85	287.00
PFDA_1	513.0 / 469.0	3.15	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	32706.57	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	32706.57	100.00
NMeFOSAA_1	570.0 / 419.0	3.30	d3-MeFOSAA	573.0 / 419.0	18272.74	400.00
NMeFOSAA_2	570.0 / 512.0	3.30	d3-MeFOSAA	573.0 / 419.0	18272.74	400.00
NEtFOSAA_1	584.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	18272.74	400.00
NEtFOSAA_2	584.0 / 483.0	3.46	d3-MeFOSAA	573.0 / 419.0	18272.74	400.00

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Summary Internal Standard Report

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Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.69	13C2-PFOA	415.0 / 370.0	34994.02	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	34994.02	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	19607.78	400.00

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Summary Internal Standard Report

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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.45	13C4-PFOS	503.0 / 80.0	100136.69	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	100136.69	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	100136.69	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	100136.69	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	100136.69	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	100136.69	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	29031.43	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	29031.43	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	15851.69	400.00
NMeFOSAA_2	570.0 / 512.0	3.31	d3-MeFOSAA	573.0 / 419.0	15851.69	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	15851.69	400.00
NEtFOSAA_2	584.0 / 483.0	3.46	d3-MeFOSAA	573.0 / 419.0	15851.69	400.00

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Summary Internal Standard Report

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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	31164.30	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	31164.30	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	15851.69	400.00

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Summary Internal Standard Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:07 AM

Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.44	13C4-PFOS	503.0 / 80.0	115397.28	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	115397.28	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFHpA_1	363.0 / 319.0	2.06	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	115397.28	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	115397.28	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	115397.28	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	115397.28	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFDA_2	513.0 / 219.0	3.16	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFUnA_1	563.0 / 519.0	3.48	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	33993.78	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	33993.78	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	18290.15	400.00
NMeFOSAA_2	570.0 / 512.0	3.31	d3-MeFOSAA	573.0 / 419.0	18290.15	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	18290.15	400.00
NEtFOSAA_2	584.0 / 483.0	3.46	d3-MeFOSAA	573.0 / 419.0	18290.15	400.00

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Summary Internal Standard Report

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Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	37898.63	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	37898.63	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	19020.46	400.00

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:41 AM

Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.44	901.851676	885.00	101.90
PFBS_2	298.9 / 99.0	1.44	918.307737	885.00	103.76
PFHxA_1	313.0 / 269.0	1.71	951.549680	1000.00	95.15
PFHxA_2	313.0 / 119.0	1.71	942.165072	1000.00	94.22
PFHpA_1	363.0 / 319.0	2.06	872.686188	1000.00	87.27
PFHpA_2	363.0 / 169.0	2.06	946.636265	1000.00	94.66
PFHxS_1	399.0 / 80.0	2.08	896.220615	912.00	98.27
PFHxS_2	399.0 / 99.0	2.08	883.956996	912.00	96.93
PFOA_1	413.0 / 369.0	2.43	898.740895	1000.00	89.87
PFOA_2	413.0 / 169.0	2.43	903.113647	1000.00	90.31
PFNA_1	463.0 / 419.0	2.80	933.155583	1000.00	93.32
PFNA_2	463.0 / 219.0	2.80	912.518493	1000.00	91.25
PFOS_1	499.0 / 80.0	2.80	877.977513	925.60	94.85
PFOS_2	499.0 / 99.0	2.80	949.188735	925.60	102.55
PFDA_1	513.0 / 469.0	3.15	935.035030	1000.00	93.50
PFDA_2	513.0 / 219.0	3.15	853.902376	1000.00	85.39
PFUnA_1	563.0 / 519.0	3.47	899.041959	1000.00	89.90
PFUnA_2	563.0 / 269.0	3.47	921.161237	1000.00	92.12
PFDoA_1	613.0 / 569.0	3.76	939.203264	1000.00	93.92
PFDoA_2	613.0 / 319.0	3.76	933.405461	1000.00	93.34
PFTrDA_1	663.0 / 619.0	4.01	907.522118	1000.00	90.75
PFTrDA_2	663.0 / 169.0	4.01	881.226616	1000.00	88.12
PFTeDA_1	713.0 / 669.0	4.23	878.562702	1000.00	87.86
PFTeDA_2	713.0 / 169.0	4.23	896.542887	1000.00	89.65
NMeFOSAA_1	570.0 / 419.0	3.31	1037.863357	1000.00	103.79
NMeFOSAA_2	570.0 / 512.0	3.31	978.255006	1000.00	97.83
NEtFOSAA_1	584.0 / 419.0	3.47	1101.385563	1000.00	110.14
NEtFOSAA_2	584.0 / 483.0	3.46	760.930454	1000.00	76.09

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:15:10 AM

Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	95.781622	100.00	95.78
13C2-PFDA	515.0 / 470.0	3.14	96.598799	100.00	96.60
d5-EtFOSAA	589.0 / 419.0	3.46	454.100896	400.00	113.53

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:44 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.45	2389.280653	2212.50	107.99
PFBS_2	298.9 / 99.0	1.44	2336.102989	2212.50	105.59
PFHxA_1	313.0 / 269.0	1.71	2895.179038	2500.00	115.81
PFHxA_2	313.0 / 119.0	1.71	2757.167581	2500.00	110.29
PFHpA_1	363.0 / 319.0	2.07	2689.724123	2500.00	107.59
PFHpA_2	363.0 / 169.0	2.07	2957.239736	2500.00	118.29
PFHxS_1	399.0 / 80.0	2.08	2362.465731	2280.00	103.62
PFHxS_2	399.0 / 99.0	2.08	2385.168075	2280.00	104.61
PFOA_1	413.0 / 369.0	2.44	2782.126442	2500.00	111.29
PFOA_2	413.0 / 169.0	2.44	2852.993105	2500.00	114.12
PFNA_1	463.0 / 419.0	2.81	2907.125755	2500.00	116.29
PFNA_2	463.0 / 219.0	2.81	2920.415932	2500.00	116.82
PFOS_1	499.0 / 80.0	2.80	2507.720205	2314.00	108.37
PFOS_2	499.0 / 99.0	2.80	2473.922064	2314.00	106.91
PFDA_1	513.0 / 469.0	3.15	2773.485338	2500.00	110.94
PFDA_2	513.0 / 219.0	3.15	3034.005413	2500.00	121.36
PFUnA_1	563.0 / 519.0	3.47	2679.223951	2500.00	107.17
PFUnA_2	563.0 / 269.0	3.47	2779.161095	2500.00	111.17
PFDoA_1	613.0 / 569.0	3.76	2772.264301	2500.00	110.89
PFDoA_2	613.0 / 319.0	3.76	2887.210254	2500.00	115.49
PFTrDA_1	663.0 / 619.0	4.01	2674.074282	2500.00	106.96
PFTrDA_2	663.0 / 169.0	4.01	2725.782470	2500.00	109.03
PFTeDA_1	713.0 / 669.0	4.23	2609.373592	2500.00	104.37
PFTeDA_2	713.0 / 169.0	4.23	2706.104274	2500.00	108.24
NMeFOSAA_1	570.0 / 419.0	3.31	2597.213173	2500.00	103.89
NMeFOSAA_2	570.0 / 512.0	3.30	2695.202915	2500.00	107.81
NEtFOSAA_1	584.0 / 419.0	3.47	2612.985642	2500.00	104.52
NEtFOSAA_2	584.0 / 483.0	3.46	2545.488986	2500.00	101.82

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:15:35 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	110.534591	100.00	110.53
13C2-PFDA	515.0 / 470.0	3.14	110.333291	100.00	110.33
d5-EtFOSAA	589.0 / 419.0	3.46	439.232673	400.00	109.81

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:47 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.45	847.605926	885.00	95.77
PFBS_2	298.9 / 99.0	1.45	870.715187	885.00	98.39
PFHxA_1	313.0 / 269.0	1.72	1022.006730	1000.00	102.20
PFHxA_2	313.0 / 119.0	1.72	930.277456	1000.00	93.03
PFHpA_1	363.0 / 319.0	2.07	933.467426	1000.00	93.35
PFHpA_2	363.0 / 169.0	2.07	1082.067179	1000.00	108.21
PFHxS_1	399.0 / 80.0	2.08	827.092317	912.00	90.69
PFHxS_2	399.0 / 99.0	2.08	833.132346	912.00	91.35
PFOA_1	413.0 / 369.0	2.44	958.563866	1000.00	95.86
PFOA_2	413.0 / 169.0	2.44	1030.464497	1000.00	103.05
PFNA_1	463.0 / 419.0	2.80	980.054277	1000.00	98.01
PFNA_2	463.0 / 219.0	2.80	1003.390952	1000.00	100.34
PFOS_1	499.0 / 80.0	2.80	903.095244	925.60	97.57
PFOS_2	499.0 / 99.0	2.80	917.814249	925.60	99.16
PFDA_1	513.0 / 469.0	3.15	999.131055	1000.00	99.91
PFDA_2	513.0 / 219.0	3.15	948.230292	1000.00	94.82
PFUnA_1	563.0 / 519.0	3.47	970.375319	1000.00	97.04
PFUnA_2	563.0 / 269.0	3.47	907.593320	1000.00	90.76
PFDoA_1	613.0 / 569.0	3.76	959.999246	1000.00	96.00
PFDoA_2	613.0 / 319.0	3.76	919.087660	1000.00	91.91
PFTrDA_1	663.0 / 619.0	4.01	919.035872	1000.00	91.90
PFTrDA_2	663.0 / 169.0	4.01	939.185778	1000.00	93.92
PFTeDA_1	713.0 / 669.0	4.22	893.932506	1000.00	89.39
PFTeDA_2	713.0 / 169.0	4.23	916.714584	1000.00	91.67
NMeFOSAA_1	570.0 / 419.0	3.31	985.067572	1000.00	98.51
NMeFOSAA_2	570.0 / 512.0	3.30	1057.975878	1000.00	105.80
NEtFOSAA_1	584.0 / 419.0	3.46	978.433968	1000.00	97.84
NEtFOSAA_2	584.0 / 483.0	3.46	695.333625	1000.00	69.53

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:15:50 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.71	104.338054	100.00	104.34
13C2-PFDA	515.0 / 470.0	3.14	101.559171	100.00	101.56
d5-EtFOSAA	589.0 / 419.0	3.45	417.852873	400.00	104.46

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:18:53 AM

Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.44	274012.00	901.851676	1809.9	false
PFBS_2	298.9 / 99.0	1.44	89900.70	918.307737	416.6	false
PFHxA_1	313.0 / 269.0	1.71	318202.01	951.549680	446.6	false
PFHxA_2	313.0 / 119.0	1.71	21262.75	942.165072	117.9	false
PFHpA_1	363.0 / 319.0	2.06	266432.72	872.686188	163.4	false
PFHpA_2	363.0 / 169.0	2.06	5975.96	946.636265	189.9	false
PFHxS_1	399.0 / 80.0	2.08	289001.24	896.220615	462.0	false
PFHxS_2	399.0 / 99.0	2.08	86048.06	883.956996	324.1	false
PFOA_1	413.0 / 369.0	2.43	330367.28	898.740895	327.8	false
PFOA_2	413.0 / 169.0	2.43	21892.74	903.113647	325.8	false
PFNA_1	463.0 / 419.0	2.80	345880.16	933.155583	255.4	false
PFNA_2	463.0 / 219.0	2.80	100853.00	912.518493	336.2	false
PFOS_1	499.0 / 80.0	2.80	408508.27	877.977513	331.3	false
PFOS_2	499.0 / 99.0	2.80	86151.06	949.188735	318.8	false
PFDA_1	513.0 / 469.0	3.15	378175.79	935.035030	354.8	false
PFDA_2	513.0 / 219.0	3.15	13384.48	853.902376	371.1	false
PFUnA_1	563.0 / 519.0	3.47	379899.50	899.041959	298.5	false
PFUnA_2	563.0 / 269.0	3.47	16583.71	921.161237	293.4	false
PFDoA_1	613.0 / 569.0	3.76	401624.56	939.203264	286.7	false
PFDoA_2	613.0 / 319.0	3.76	61085.13	933.405461	285.0	false
PFTrDA_1	663.0 / 619.0	4.01	362685.98	907.522118	319.9	false
PFTrDA_2	663.0 / 169.0	4.01	22062.08	881.226616	286.9	false
PFTeDA_1	713.0 / 669.0	4.23	363885.07	878.562702	496.1	false
PFTeDA_2	713.0 / 169.0	4.23	17351.25	896.542887	403.8	false
NMeFOSAA_1	570.0 / 419.0	3.31	49392.01	1037.863357	507.2	false
NMeFOSAA_2	570.0 / 512.0	3.31	28383.59	978.255006	402.3	false
NEtFOSAA_1	584.0 / 419.0	3.47	51163.01	1101.385563	374.3	false
NEtFOSAA_2	584.0 / 483.0	3.46	2456.82	760.930454	140.3	false

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:16:39 AM

Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	28522.07	95.781622	719.5	false
13C2-PFDA	515.0 / 470.0	3.14	36610.21	96.598799	483.8	false
d5-EtFOSAA	589.0 / 419.0	3.46	21927.79	454.100896	259.1	false

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:18:56 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.45	728351.27	2389.280653	3564.5	false
PFBS_2	298.9 / 99.0	1.44	229292.25	2336.102989	570.8	false
PFHxA_1	313.0 / 269.0	1.71	864434.20	2895.179038	696.9	false
PFHxA_2	313.0 / 119.0	1.71	56641.02	2757.167581	188.8	false
PFHpA_1	363.0 / 319.0	2.07	737126.81	2689.724123	286.5	false
PFHpA_2	363.0 / 169.0	2.07	16665.64	2957.239736	277.9	false
PFHxS_1	399.0 / 80.0	2.08	764962.78	2362.465731	380.8	false
PFHxS_2	399.0 / 99.0	2.08	231040.55	2385.168075	364.5	false
PFOA_1	413.0 / 369.0	2.44	914498.72	2782.126442	484.9	false
PFOA_2	413.0 / 169.0	2.44	62226.50	2852.993105	506.8	false
PFNA_1	463.0 / 419.0	2.81	966937.42	2907.125755	388.1	false
PFNA_2	463.0 / 219.0	2.81	290072.29	2920.415932	395.7	false
PFOS_1	499.0 / 80.0	2.80	1168260.66	2507.720205	373.3	false
PFOS_2	499.0 / 99.0	2.80	224975.36	2473.922064	386.0	false
PFDA_1	513.0 / 469.0	3.15	1007464.69	2773.485338	448.4	false
PFDA_2	513.0 / 219.0	3.15	40873.00	3034.005413	432.1	false
PFUnA_1	563.0 / 519.0	3.47	1016926.80	2679.223951	352.0	false
PFUnA_2	563.0 / 269.0	3.47	44818.96	2779.161095	404.0	false
PFDoA_1	613.0 / 569.0	3.76	1065238.83	2772.264301	343.9	false
PFDoA_2	613.0 / 319.0	3.76	169925.86	2887.210254	348.0	false
PFTrDA_1	663.0 / 619.0	4.01	961235.84	2674.074282	432.4	false
PFTrDA_2	663.0 / 169.0	4.01	61240.93	2725.782470	391.7	false
PFTeDA_1	713.0 / 669.0	4.23	971132.28	2609.373592	510.3	false
PFTeDA_2	713.0 / 169.0	4.23	47106.40	2706.104274	533.2	false
NMeFOSAA_1	570.0 / 419.0	3.31	117576.00	2597.213173	373.3	false
NMeFOSAA_2	570.0 / 512.0	3.30	73661.05	2695.202915	361.9	false
NEtFOSAA_1	584.0 / 419.0	3.47	114406.60	2612.985642	342.0	false
NEtFOSAA_2	584.0 / 483.0	3.46	7740.78	2545.488986	287.3	false

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:16:59 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.70	31615.57	110.534591	705.3	false
13C2-PFDA	515.0 / 470.0	3.14	40164.37	110.333291	522.8	false
d5-EtFOSAA	589.0 / 419.0	3.46	20776.31	439.232673	251.3	false

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:18:59 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.45	275311.31	847.605926	2075.7	false
PFBS_2	298.9 / 99.0	1.45	91133.13	870.715187	422.7	false
PFHxA_1	313.0 / 269.0	1.72	329153.36	1022.006730	410.4	false
PFHxA_2	313.0 / 119.0	1.72	20229.49	930.277456	106.4	false
PFHpA_1	363.0 / 319.0	2.07	274627.22	933.467426	192.9	false
PFHpA_2	363.0 / 169.0	2.07	6574.93	1082.067179	208.2	false
PFHxS_1	399.0 / 80.0	2.08	285091.36	827.092317	353.8	false
PFHxS_2	399.0 / 99.0	2.08	86769.21	833.132346	285.0	false
PFOA_1	413.0 / 369.0	2.44	339428.97	958.563866	379.6	false
PFOA_2	413.0 / 169.0	2.44	24078.40	1030.464497	315.3	false
PFNA_1	463.0 / 419.0	2.80	350062.32	980.054277	303.9	false
PFNA_2	463.0 / 219.0	2.80	106874.44	1003.390952	334.5	false
PFOS_1	499.0 / 80.0	2.80	449181.87	903.095244	338.0	false
PFOS_2	499.0 / 99.0	2.80	89062.76	917.814249	366.3	false
PFDA_1	513.0 / 469.0	3.15	389426.51	999.131055	392.5	false
PFDA_2	513.0 / 219.0	3.15	14237.38	948.230292	381.2	false
PFUnA_1	563.0 / 519.0	3.47	395152.64	970.375319	311.3	false
PFUnA_2	563.0 / 269.0	3.47	15749.19	907.593320	296.0	false
PFDoA_1	613.0 / 569.0	3.76	395646.23	959.999246	289.3	false
PFDoA_2	613.0 / 319.0	3.76	57970.17	919.087660	276.5	false
PFTrDA_1	663.0 / 619.0	4.01	353992.00	919.035872	381.8	false
PFTrDA_2	663.0 / 169.0	4.01	22657.86	939.185778	345.7	false
PFTeDA_1	713.0 / 669.0	4.22	356840.00	893.932506	492.2	false
PFTeDA_2	713.0 / 169.0	4.23	17099.49	916.714584	384.4	false
NMeFOSAA_1	570.0 / 419.0	3.31	43695.81	985.067572	450.4	false
NMeFOSAA_2	570.0 / 512.0	3.30	28636.57	1057.975878	340.2	false
NEtFOSAA_1	584.0 / 419.0	3.46	42397.11	978.433968	359.1	false
NEtFOSAA_2	584.0 / 483.0	3.46	2094.45	695.333625	150.3	true

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:17:12 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
13C2-PFHxA	315.0 / 270.0	1.71	29945.12	104.338054	837.6	false
13C2-PFDA	515.0 / 470.0	3.14	37096.60	101.559171	342.8	false
d5-EtFOSAA	589.0 / 419.0	3.45	18823.55	417.852873	280.4	false

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/05/2018 9:40:08 AM

Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.328	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.067	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.022	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.298	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.066	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.292	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.211	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.035	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.152	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.061	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.048	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.575	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.048	0.071	ü

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/05/2018 9:40:11 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.45	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.315	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.066	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.07	PFHpA	0.023	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.302	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.068	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.81	PFNA	0.300	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.193	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.160	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.064	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.049	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.30	NMeFOSAA	0.627	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.068	0.071	ü

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/05/2018 9:40:14 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.45	PFBS			
PFBS_2	298.9 / 99.0	1.45	PFBS	0.331	0.327	ü
PFHxA_1	313.0 / 269.0	1.72	PFHxA			
PFHxA_2	313.0 / 119.0	1.72	PFHxA	0.062	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.07	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.304	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.071	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.305	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.198	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.037	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.040	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.147	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.064	0.064	ü
PFTeDA_1	713.0 / 669.0	4.22	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.048	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.30	NMeFOSAA	0.655	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.46	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.049	0.071	ü

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 24/05/2018 11:19:51 AM

Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.44	13C4-PFOS	503.0 / 80.0	113811.02	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	113811.02	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFHpA_1	363.0 / 319.0	2.06	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFHpA_2	363.0 / 169.0	2.06	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	113811.02	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	113811.02	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	113811.02	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	113811.02	287.00
PFDA_1	513.0 / 469.0	3.15	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	35067.86	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	35067.86	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	18230.15	400.00
NMeFOSAA_2	570.0 / 512.0	3.31	d3-MeFOSAA	573.0 / 419.0	18230.15	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	18230.15	400.00
NEtFOSAA_2	584.0 / 483.0	3.46	d3-MeFOSAA	573.0 / 419.0	18230.15	400.00

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Summary Internal Standard Report

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Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	35067.86	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	35067.86	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	18230.15	400.00

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Summary Internal Standard Report

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Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.45	13C4-PFOS	503.0 / 80.0	114163.67	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	114163.67	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFHpA_2	363.0 / 169.0	2.07	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	114163.67	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	114163.67	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFNA_2	463.0 / 219.0	2.81	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	114163.67	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	114163.67	287.00
PFDA_1	513.0 / 469.0	3.15	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	31530.88	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	31530.88	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	17173.89	400.00
NMeFOSAA_2	570.0 / 512.0	3.30	d3-MeFOSAA	573.0 / 419.0	17173.89	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	17173.89	400.00
NEtFOSAA_2	584.0 / 483.0	3.46	d3-MeFOSAA	573.0 / 419.0	17173.89	400.00

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Summary Internal Standard Report

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Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	33683.19	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	33683.19	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	17857.53	400.00

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Summary Internal Standard Report

Created with Analyst Reporter
Printed: 24/05/2018 11:19:56 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.45	13C4-PFOS	503.0 / 80.0	121671.75	287.00
PFBS_2	298.9 / 99.0	1.45	13C4-PFOS	503.0 / 80.0	121671.75	287.00
PFHxA_1	313.0 / 269.0	1.72	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFHxA_2	313.0 / 119.0	1.72	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFHpA_2	363.0 / 169.0	2.07	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFHxS_1	399.0 / 80.0	2.08	13C4-PFOS	503.0 / 80.0	121671.75	287.00
PFHxS_2	399.0 / 99.0	2.08	13C4-PFOS	503.0 / 80.0	121671.75	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	121671.75	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	121671.75	287.00
PFDA_1	513.0 / 469.0	3.15	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFUnA_1	563.0 / 519.0	3.47	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFTrDA_1	663.0 / 619.0	4.01	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFTrDA_2	663.0 / 169.0	4.01	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFTeDA_1	713.0 / 669.0	4.22	13C2-PFOA	415.0 / 370.0	33798.22	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	33798.22	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	17006.92	400.00
NMeFOSAA_2	570.0 / 512.0	3.30	d3-MeFOSAA	573.0 / 419.0	17006.92	400.00
NEtFOSAA_1	584.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	17006.92	400.00
NEtFOSAA_2	584.0 / 483.0	3.46	d3-MeFOSAA	573.0 / 419.0	17006.92	400.00

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Summary Internal Standard Report

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Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	33798.22	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	33798.22	100.00
d5-EtFOSAA	589.0 / 419.0	3.45	d3-MeFOSAA	573.0 / 419.0	17006.92	400.00

Raw Analytical Data

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:00:58 AM

Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.44	3108.65	2.899542	35.4	true
PFOA_2	413.0 / 169.0	2.43	335.25	17.450043	18.8	true
PFNA_1	463.0 / 419.0	2.81	2056.80	3.934844	24.2	true
PFNA_2	463.0 / 219.0	2.80	826.58	8.325302	22.8	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:03:10 AM

Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	111.219275	100.00	111.22
13C2-PFDA	515.0 / 470.0	3.15	108.476891	100.00	108.48
d5-EtFOSAA	589.0 / 419.0	3.46	440.272282	400.00	110.07

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:01:00 AM

Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.45	687382.01	3042.472408	2859.1	false
PFBS_2	298.9 / 99.0	1.44	219943.92	3023.860840	582.1	false
PFHxA_1	313.0 / 269.0	1.71	796631.22	3366.705335	627.3	false
PFHxA_2	313.0 / 119.0	1.71	59931.83	3673.640867	246.9	false
PFHpA_1	363.0 / 319.0	2.07	706970.40	3254.032470	288.1	false
PFHpA_2	363.0 / 169.0	2.07	15174.79	3397.606834	282.4	false
PFHxS_1	399.0 / 80.0	2.09	727746.23	3032.212236	418.1	false
PFHxS_2	399.0 / 99.0	2.09	208850.90	2911.752663	406.4	false
PFOA_1	413.0 / 369.0	2.44	827852.27	3177.484670	508.8	false
PFOA_2	413.0 / 169.0	2.44	57202.47	3307.627911	440.0	false
PFNA_1	463.0 / 419.0	2.81	860204.52	3262.170195	356.3	false
PFNA_2	463.0 / 219.0	2.80	263388.17	3344.582639	432.8	false
PFOS_1	499.0 / 80.0	2.80	1004053.72	2908.508956	367.0	false
PFOS_2	499.0 / 99.0	2.80	220103.78	3266.398677	385.4	false
PFDA_1	513.0 / 469.0	3.16	919567.42	3193.061222	411.7	false
PFDA_2	513.0 / 219.0	3.15	36560.20	3429.974155	569.3	false
PFUnA_1	563.0 / 519.0	3.48	943258.52	3134.562531	297.2	false
PFUnA_2	563.0 / 269.0	3.47	45487.17	3558.874927	262.0	false
PFDoA_1	613.0 / 569.0	3.76	977320.42	3208.032255	297.2	false
PFDoA_2	613.0 / 319.0	3.76	150284.11	3220.494410	264.2	false
PFTrDA_1	663.0 / 619.0	4.02	989642.61	3472.149527	374.6	false
PFTrDA_2	663.0 / 169.0	4.02	60501.64	3396.959977	352.0	false
PFTeDA_1	713.0 / 669.0	4.23	1377952.56	4670.345184	676.1	false
PFTeDA_2	713.0 / 169.0	4.23	64965.79	4706.661225	642.7	false
NMeFOSAA_1	570.0 / 419.0	3.31	127616.67	3716.320775	397.3	false
NMeFOSAA_2	570.0 / 512.0	3.31	69938.07	3380.100602	405.4	false
NEtFOSAA_1	584.0 / 419.0	3.47	120687.37	3640.489197	338.3	false
NEtFOSAA_2	584.0 / 483.0	3.47	6690.81	2906.210457	365.8	false

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:03:12 AM

Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	105.998639	100.00	106.00
13C2-PFDA	515.0 / 470.0	3.14	104.094441	100.00	104.09
d5-EtFOSAA	589.0 / 419.0	3.46	465.648108	400.00	116.41

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:01:03 AM

Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.43	2247.67	0.036856	22.6	true
PFOA_2	413.0 / 169.0	2.42	178.30	9.656512	12.1	true
PFNA_1	463.0 / 419.0	2.81	2378.72	4.947036	21.9	true
PFNA_2	463.0 / 219.0	2.79	476.08	4.497914	22.5	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	109.706110	100.00	109.71
13C2-PFDA	515.0 / 470.0	3.14	93.858782	100.00	93.86
d5-EtFOSAA	589.0 / 419.0	3.46	413.511675	400.00	103.38

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Summary Quant Report

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Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.44	1893.42	0.293744	19.5	true
PFOA_2	413.0 / 169.0	2.48	314.58	19.901257	22.0	true
PFNA_1	463.0 / 419.0	2.80	2349.82	6.588723	22.2	true
PFNA_2	463.0 / 219.0	2.80	663.66	8.165851	23.1	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.71	117.287126	100.00	117.29
13C2-PFDA	515.0 / 470.0	3.15	103.389030	100.00	103.39
d5-EtFOSAA	589.0 / 419.0	3.46	360.674165	400.00	90.17

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Summary Quant Report

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Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.43	2485.19	2.095461	32.8	true
PFOA_2	413.0 / 169.0	2.42	221.11	13.475432	18.1	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	112.848840	100.00	112.85
13C2-PFDA	515.0 / 470.0	3.15	102.722395	100.00	102.72
d5-EtFOSAA	589.0 / 419.0	3.46	409.333471	400.00	102.33

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Summary Quant Report

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Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.44	1823.42	< 0	18.2	true
PFOA_2	413.0 / 169.0	2.42	254.74	15.958900	15.1	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	79.467995	100.00	79.47
13C2-PFDA	515.0 / 470.0	3.14	89.591047	100.00	89.59
d5-EtFOSAA	589.0 / 419.0	3.46	370.322267	400.00	92.58

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Summary Quant Report

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Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.43	2944.21	4.073184	24.6	true
PFOA_2	413.0 / 169.0	2.43	320.29	19.513250	22.1	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	2.80	549.14	6.368570	26.1	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	107.554049	100.00	107.55
13C2-PFDA	515.0 / 470.0	3.14	102.899255	100.00	102.90
d5-EtFOSAA	589.0 / 419.0	3.46	404.348054	400.00	101.09

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Summary Quant Report

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Printed: 24/05/2018 11:01:17 AM

Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.43	3022.81	3.275044	24.6	true
PFOA_2	413.0 / 169.0	2.40	239.83	13.518625	12.1	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	2.81	584.42	6.115833	20.5	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Printed: 24/05/2018 11:03:26 AM

Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	113.078586	100.00	113.08
13C2-PFDA	515.0 / 470.0	3.15	97.604735	100.00	97.60
d5-EtFOSAA	589.0 / 419.0	3.46	346.497321	400.00	86.62

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:01:19 AM

Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.43	2944.44	2.109393	24.2	true
PFOA_2	413.0 / 169.0	2.45	74.17	4.452662	9.1	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Printed: 24/05/2018 11:03:30 AM

Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	108.939071	100.00	108.94
13C2-PFDA	515.0 / 470.0	3.15	99.813477	100.00	99.81
d5-EtFOSAA	589.0 / 419.0	3.46	410.399916	400.00	102.60

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:01:22 AM

Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.42	1597.17	< 0	20.6	true
PFOA_2	413.0 / 169.0	2.48	51.72	3.767696	7.1	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Printed: 24/05/2018 11:03:32 AM

Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	114.539763	100.00	114.54
13C2-PFDA	515.0 / 470.0	3.14	106.811027	100.00	106.81
d5-EtFOSAA	589.0 / 419.0	3.45	338.683055	400.00	84.67

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Summary Quant Report

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Printed: 24/05/2018 11:01:24 AM

Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.45	2895.03	3.521179	27.0	true
PFOA_2	413.0 / 169.0	2.44	304.89	18.045262	22.9	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

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Printed: 24/05/2018 11:03:35 AM

Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.71	89.941569	100.00	89.94
13C2-PFDA	515.0 / 470.0	3.14	90.868578	100.00	90.87
d5-EtFOSAA	589.0 / 419.0	3.46	400.400403	400.00	100.10

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Summary Quant Report

Created with Analyst Reporter
Printed: 24/05/2018 11:01:27 AM

Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.43	3968.52	6.800394	37.8	true
PFOA_2	413.0 / 169.0	2.41	516.62	28.511845	38.2	true
PFNA_1	463.0 / 419.0	2.80	4911.56	14.507961	38.0	true
PFNA_2	463.0 / 219.0	2.80	944.24	10.445566	28.4	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:03:37 AM

Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	116.455903	100.00	116.46
13C2-PFDA	515.0 / 470.0	3.14	97.555226	100.00	97.56
d5-EtFOSAA	589.0 / 419.0	3.46	341.937484	400.00	85.48

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Summary Quant Report

Created with Analyst Reporter
Printed: 29/05/2018 9:27:16 AM

Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	true
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	true
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	true
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	true
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	true
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	true
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	true
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	true
PFOA_1	413.0 / 369.0	2.44	2715.17	3.423485	31.2	true
PFOA_2	413.0 / 169.0	2.45	147.55	9.658617	16.7	true
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	true
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	true
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	true
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	true
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:03:39 AM

Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.71	105.293144	100.00	105.29
13C2-PFDA	515.0 / 470.0	3.14	93.721651	100.00	93.72
d5-EtFOSAA	589.0 / 419.0	3.46	379.183648	400.00	94.80

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Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/05/2018 9:40:57 AM

Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.108	0.062	
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.402	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.45	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.320	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.075	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.07	PFHpA	0.022	0.022	ü
PFHxS_1	399.0 / 80.0	2.09	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.287	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.069	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.306	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.219	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.040	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.048	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.154	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.061	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.047	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.548	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.47	NEtFOSSA	0.055	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.42	PFOA	0.079	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.79	PFNA	0.200	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.48	PFOA	0.166	0.062	
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.282	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.42	PFOA	0.089	0.062	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.42	PFOA	0.140	0.062	
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.109	0.062	
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	N/A	0.294	
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.40	PFOA	0.079	0.062	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	2.81	PFNA	N/A	0.294	
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.45	PFOA	0.025	0.062	
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.42	PFOA			
PFOA_2	413.0 / 169.0	2.48	PFOA	0.032	0.062	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.45	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.105	0.062	
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.41	PFOA	0.130	0.062	
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.192	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Ion Ratio Report

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Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.327	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.056	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.45	PFOA	0.054	0.062	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.294	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.194	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.044	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.152	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.064	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.046	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.642	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSSA	N/A	0.071	ü

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Summary Internal Standard Report

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Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	105807.87	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	105807.87	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	105807.87	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	105807.87	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	105807.87	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	105807.87	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	29243.16	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	16567.01	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	16567.01	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	16567.01	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	16567.01	400.00

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Summary Internal Standard Report

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Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	29243.16	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	29243.16	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	16567.01	400.00

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Summary Internal Standard Report

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Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	1.45	13C4-PFOS	503.0 / 80.0	84608.36	287.00
PFBS_2	298.9 / 99.0	1.44	13C4-PFOS	503.0 / 80.0	84608.36	287.00
PFHxA_1	313.0 / 269.0	1.71	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFHxA_2	313.0 / 119.0	1.71	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFHpA_1	363.0 / 319.0	2.07	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFHpA_2	363.0 / 169.0	2.07	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFHxS_1	399.0 / 80.0	2.09	13C4-PFOS	503.0 / 80.0	84608.36	287.00
PFHxS_2	399.0 / 99.0	2.09	13C4-PFOS	503.0 / 80.0	84608.36	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFOS_1	499.0 / 80.0	2.80	13C4-PFOS	503.0 / 80.0	84608.36	287.00
PFOS_2	499.0 / 99.0	2.80	13C4-PFOS	503.0 / 80.0	84608.36	287.00
PFDA_1	513.0 / 469.0	3.16	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFDA_2	513.0 / 219.0	3.15	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFUnA_1	563.0 / 519.0	3.48	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFUnA_2	563.0 / 269.0	3.47	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFDoA_1	613.0 / 569.0	3.76	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFDoA_2	613.0 / 319.0	3.76	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFTrDA_1	663.0 / 619.0	4.02	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFTrDA_2	663.0 / 169.0	4.02	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFTeDA_1	713.0 / 669.0	4.23	13C2-PFOA	415.0 / 370.0	25000.07	100.00
PFTeDA_2	713.0 / 169.0	4.23	13C2-PFOA	415.0 / 370.0	25000.07	100.00
NMeFOSAA_1	570.0 / 419.0	3.31	d3-MeFOSAA	573.0 / 419.0	13002.05	400.00
NMeFOSAA_2	570.0 / 512.0	3.31	d3-MeFOSAA	573.0 / 419.0	13002.05	400.00
NEtFOSAA_1	584.0 / 419.0	3.47	d3-MeFOSAA	573.0 / 419.0	13002.05	400.00
NEtFOSAA_2	584.0 / 483.0	3.47	d3-MeFOSAA	573.0 / 419.0	13002.05	400.00

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Summary Internal Standard Report

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Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	25000.07	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	25000.07	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	12587.57	400.00

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Summary Internal Standard Report

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Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	95906.86	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	95906.86	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	95906.86	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	95906.86	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFOA_2	413.0 / 169.0	2.42	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFNA_1	463.0 / 419.0	2.81	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFNA_2	463.0 / 219.0	2.79	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	95906.86	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	95906.86	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	29366.38	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	15391.10	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	15391.10	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	15391.10	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	15391.10	400.00

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Summary Internal Standard Report

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Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	29366.38	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	29366.38	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	15391.10	400.00

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Summary Internal Standard Report

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Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	82833.06	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	82833.06	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	82833.06	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	82833.06	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFOA_2	413.0 / 169.0	2.48	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	82833.06	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	82833.06	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	23903.88	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13679.60	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	13679.60	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13679.60	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	13679.60	400.00

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Summary Internal Standard Report

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Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	23144.05	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	23144.05	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	13679.60	400.00

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Summary Internal Standard Report

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Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	89739.14	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	89739.14	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	89739.14	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	89739.14	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFOA_2	413.0 / 169.0	2.42	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFNA_2	463.0 / 219.0	2.81	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	89739.14	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	89739.14	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25373.77	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14186.77	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14186.77	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14186.77	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14186.77	400.00

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Summary Internal Standard Report

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Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	25373.77	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	25373.77	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	14186.77	400.00

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Summary Internal Standard Report

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Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	83891.29	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	83891.29	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	83891.29	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	83891.29	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFOA_2	413.0 / 169.0	2.42	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	83891.29	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	83891.29	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24418.17	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13091.39	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	13091.39	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13091.39	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	13091.39	400.00

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Summary Internal Standard Report

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Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	24256.71	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	24256.71	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	13032.02	400.00

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Summary Internal Standard Report

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Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	87652.64	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	87652.64	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	87652.64	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	87652.64	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFOA_2	413.0 / 169.0	2.43	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	87652.64	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	87652.64	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24844.34	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14843.43	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	14843.43	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	14843.43	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	14843.43	400.00

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Summary Internal Standard Report

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Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	24844.34	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	24844.34	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	14843.43	400.00

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Summary Internal Standard Report

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Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	99454.46	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	99454.46	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	99454.46	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	99454.46	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFOA_2	413.0 / 169.0	2.40	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFNA_2	463.0 / 219.0	2.81	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	99454.46	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	99454.46	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	27428.30	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	17200.62	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	17200.62	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	17200.62	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	17200.62	400.00

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Summary Internal Standard Report

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Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	27428.30	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	27428.30	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	17200.62	400.00

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Summary Internal Standard Report

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Printed: 24/05/2018 11:05:42 AM

Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	109563.37	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	109563.37	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	109563.37	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	109563.37	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFOA_2	413.0 / 169.0	2.45	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	109563.37	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	109563.37	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	30018.42	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	17311.56	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	17311.56	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	17311.56	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	17311.56	400.00

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Summary Internal Standard Report

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Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	30018.42	100.00
13C2-PFDA	515.0 / 470.0	3.15	13C2-PFOA	415.0 / 370.0	30018.42	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	17311.56	400.00

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Summary Internal Standard Report

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Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	94266.70	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	94266.70	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	94266.70	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	94266.70	287.00
PFOA_1	413.0 / 369.0	2.42	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFOA_2	413.0 / 169.0	2.48	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	94266.70	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	94266.70	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25903.21	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	16167.71	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	16167.71	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	16167.71	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	16167.71	400.00

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Summary Internal Standard Report

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Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	25520.19	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	25520.19	100.00
d5-EtFOSAA	589.0 / 419.0	3.45	d3-MeFOSAA	573.0 / 419.0	16167.71	400.00

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Summary Internal Standard Report

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Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	84277.54	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	84277.54	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	84277.54	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	84277.54	287.00
PFOA_1	413.0 / 369.0	2.45	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFOA_2	413.0 / 169.0	2.44	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	84277.54	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	84277.54	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	25672.65	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	12300.76	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	12300.76	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	12300.76	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	12300.76	400.00

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Summary Internal Standard Report

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Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	25672.65	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	25672.65	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	12218.56	400.00

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Summary Internal Standard Report

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Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	98363.28	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	98363.28	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	98363.28	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	98363.28	287.00
PFOA_1	413.0 / 369.0	2.43	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFOA_2	413.0 / 169.0	2.41	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFNA_1	463.0 / 419.0	2.80	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFNA_2	463.0 / 219.0	2.80	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	98363.28	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	98363.28	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	27021.98	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	17743.88	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	17743.88	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	17743.88	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	17743.88	400.00

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Summary Internal Standard Report

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Printed: 29/05/2018 12:22:32 PM

Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.70	13C2-PFOA	415.0 / 370.0	27021.98	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	27021.98	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	17743.88	400.00

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Summary Internal Standard Report

Created with Analyst Reporter
Printed: 24/05/2018 11:05:52 AM

Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
PFBS_1	298.9 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	85338.73	287.00
PFBS_2	298.9 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	85338.73	287.00
PFHxA_1	313.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFHxA_2	313.0 / 119.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFHpA_1	363.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFHpA_2	363.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFHxS_1	399.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	85338.73	287.00
PFHxS_2	399.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	85338.73	287.00
PFOA_1	413.0 / 369.0	2.44	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFOA_2	413.0 / 169.0	2.86	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFNA_1	463.0 / 419.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFNA_2	463.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFOS_1	499.0 / 80.0	N/A	13C4-PFOS	503.0 / 80.0	85338.73	287.00
PFOS_2	499.0 / 99.0	N/A	13C4-PFOS	503.0 / 80.0	85338.73	287.00
PFDA_1	513.0 / 469.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFDA_2	513.0 / 219.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFUnA_1	563.0 / 519.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFUnA_2	563.0 / 269.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFDoA_1	613.0 / 569.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFDoA_2	613.0 / 319.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFTrDA_1	663.0 / 619.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFTrDA_2	663.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFTeDA_1	713.0 / 669.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
PFTeDA_2	713.0 / 169.0	N/A	13C2-PFOA	415.0 / 370.0	24296.54	100.00
NMeFOSAA_1	570.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13101.61	400.00
NMeFOSAA_2	570.0 / 512.0	N/A	d3-MeFOSAA	573.0 / 419.0	13101.61	400.00
NEtFOSAA_1	584.0 / 419.0	N/A	d3-MeFOSAA	573.0 / 419.0	13101.61	400.00
NEtFOSAA_2	584.0 / 483.0	N/A	d3-MeFOSAA	573.0 / 419.0	13101.61	400.00

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Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/05/2018 12:22:34 PM

Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	IS	IS MRM Transition	IS Area	IS Conc. (ng/L)
13C2-PFHxA	315.0 / 270.0	1.71	13C2-PFOA	415.0 / 370.0	24296.54	100.00
13C2-PFDA	515.0 / 470.0	3.14	13C2-PFOA	415.0 / 370.0	24296.54	100.00
d5-EtFOSAA	589.0 / 419.0	3.46	d3-MeFOSAA	573.0 / 419.0	13101.61	400.00

Chromatograms

BATTELLE

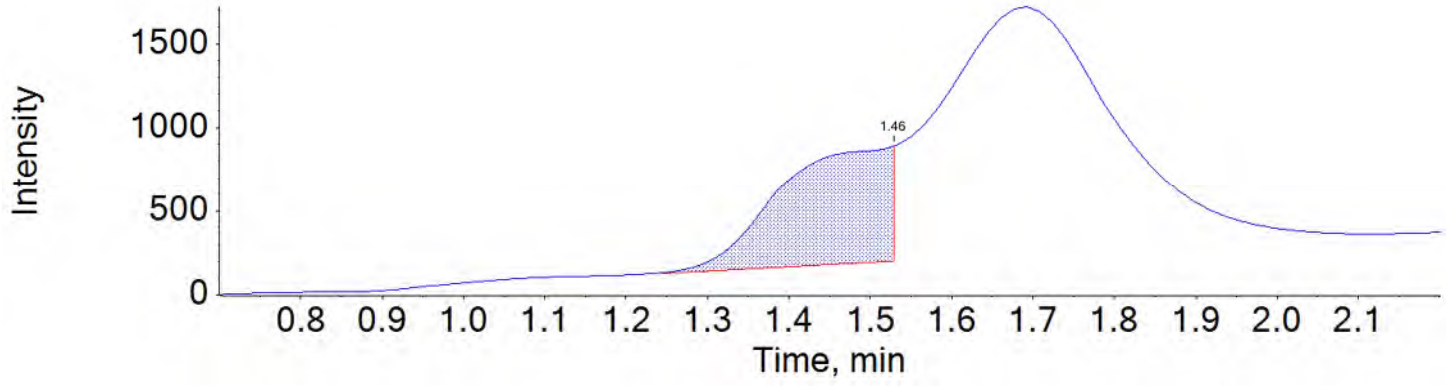
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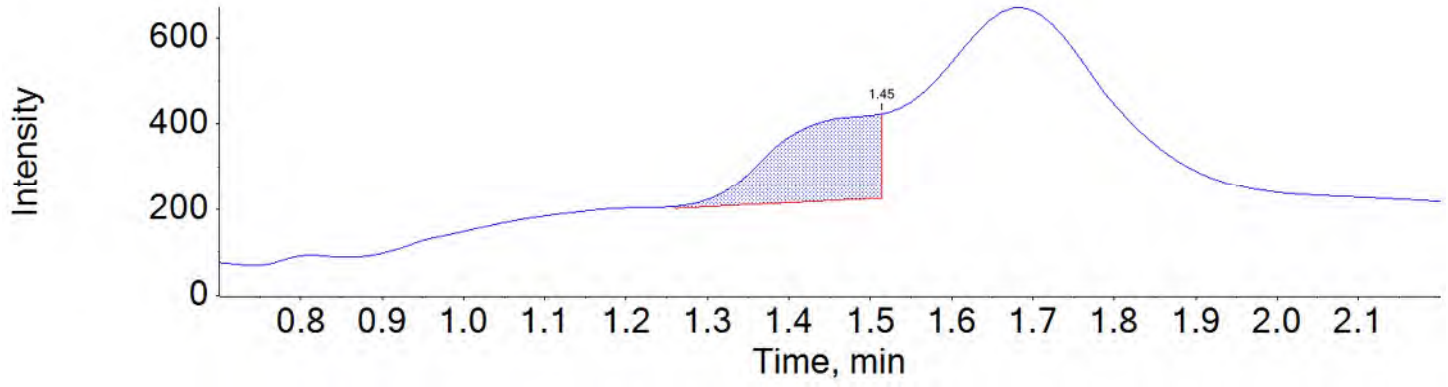
Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

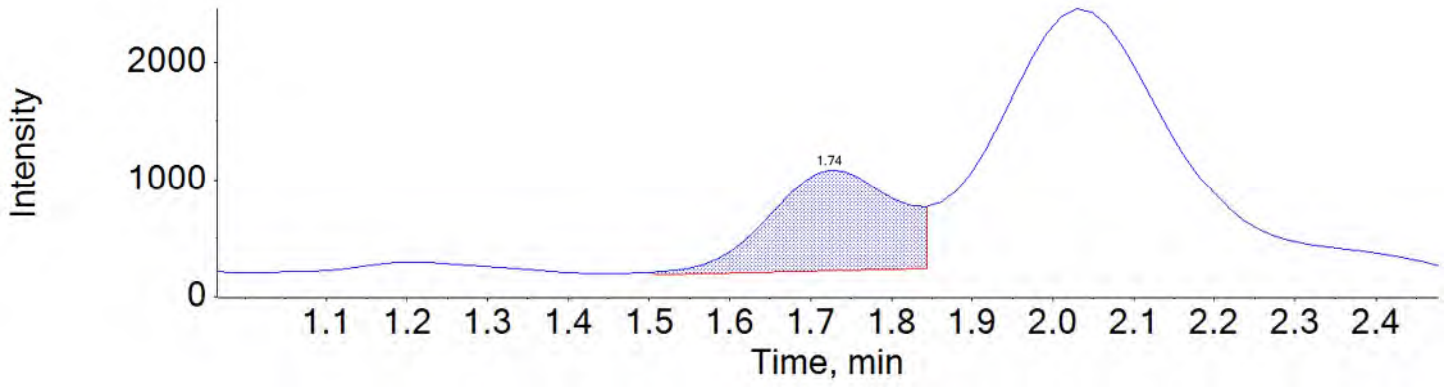


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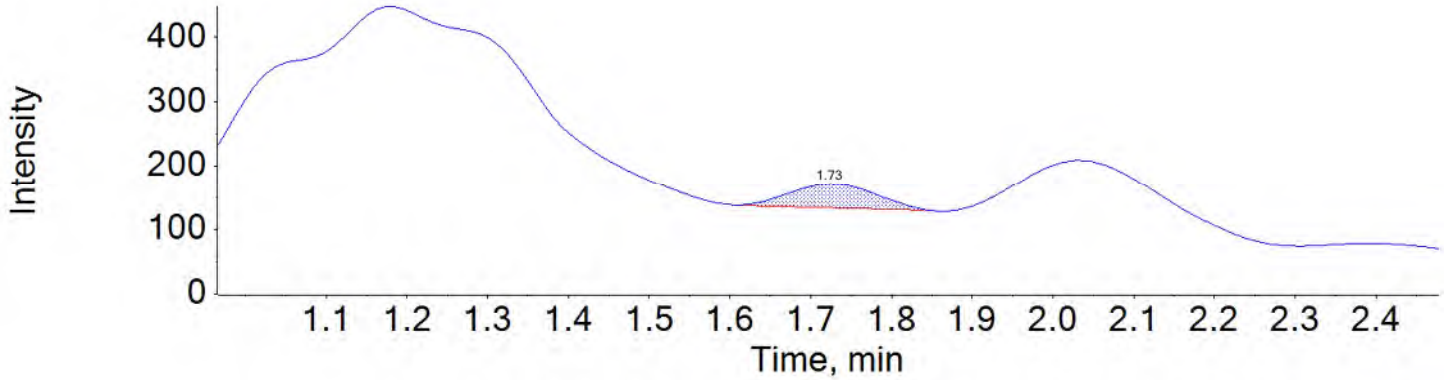
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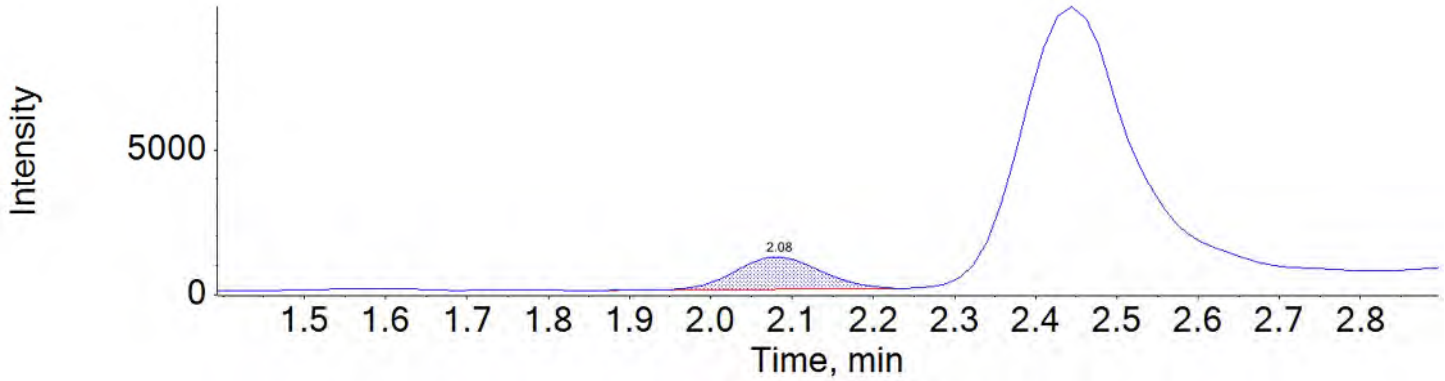
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

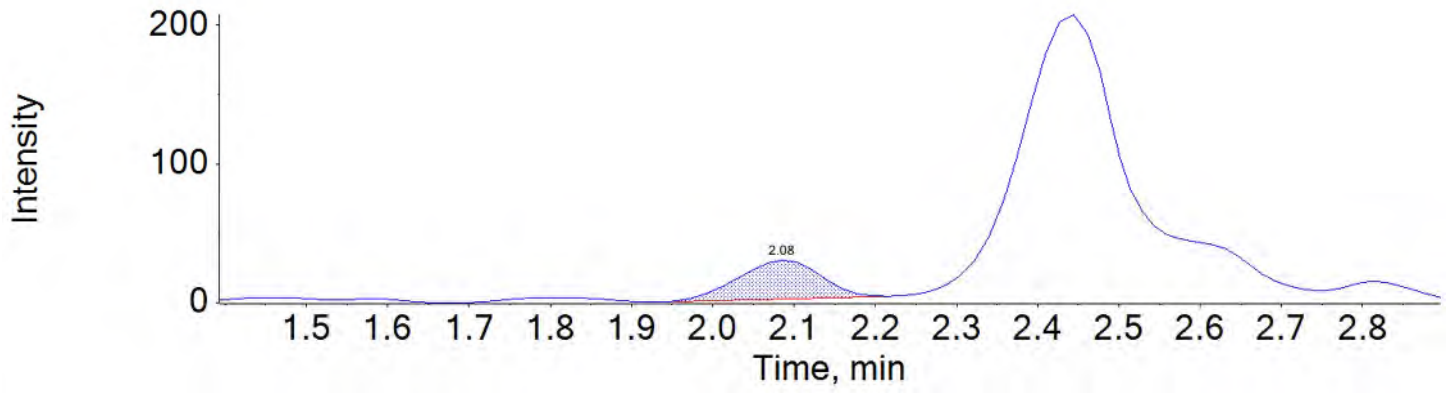


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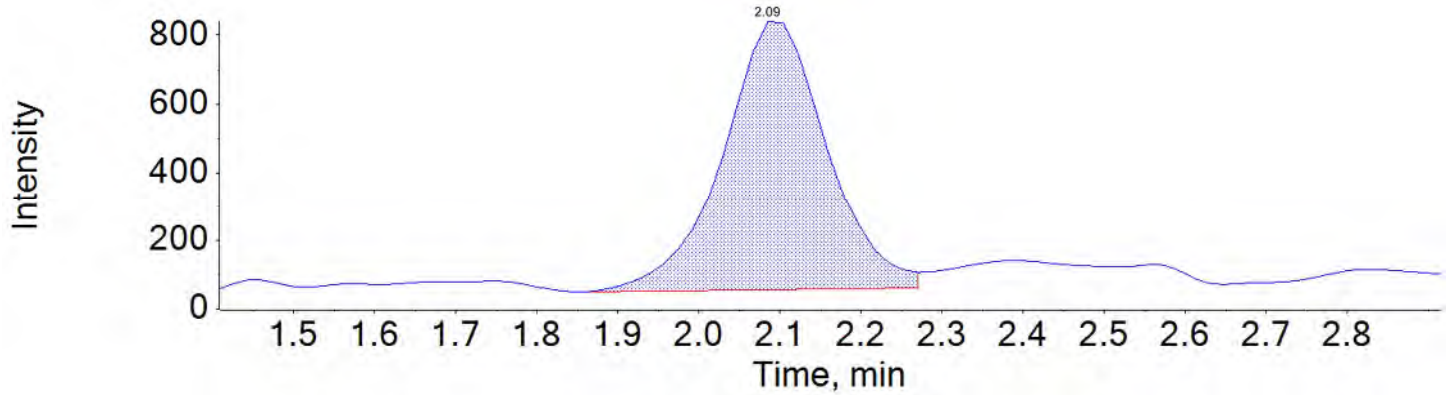
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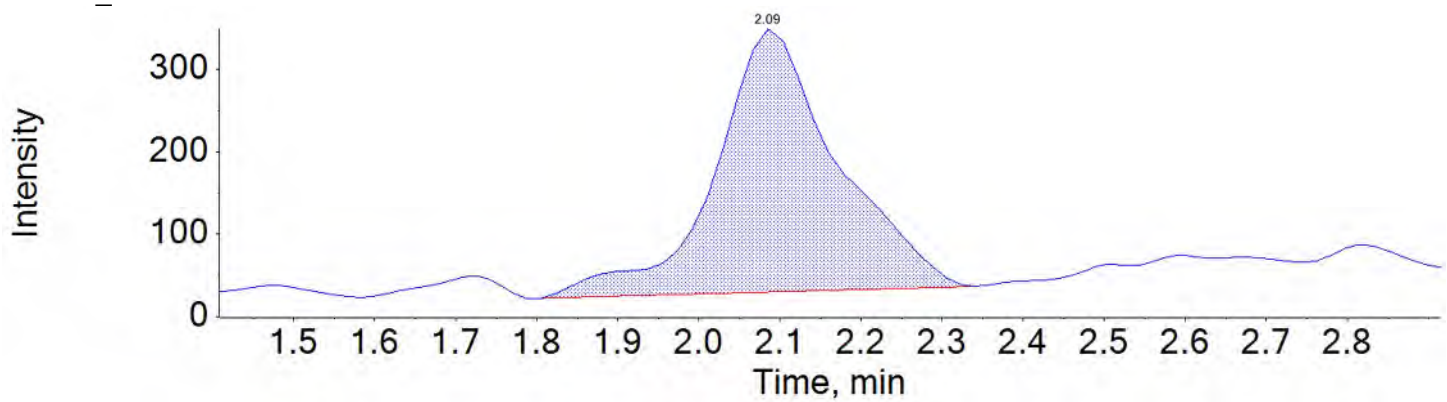
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

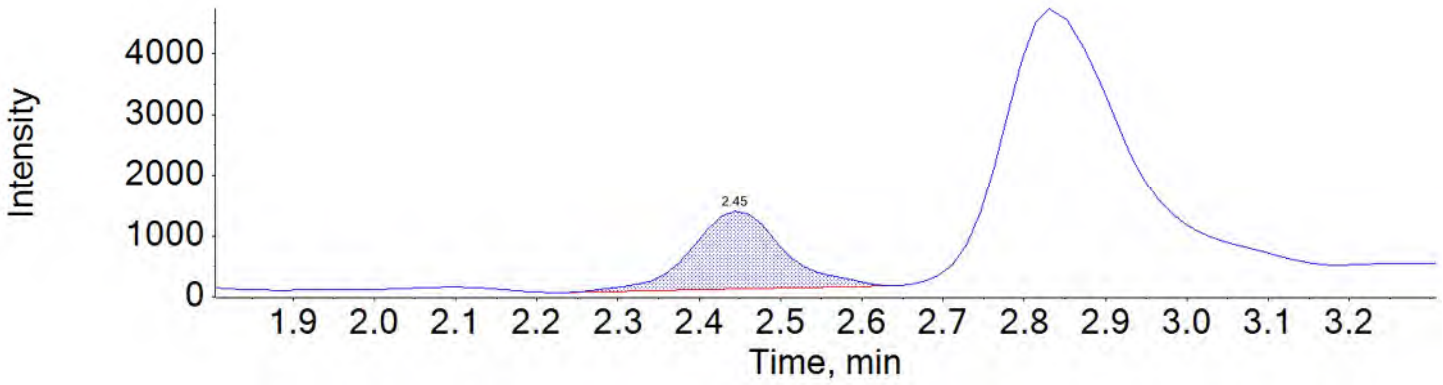


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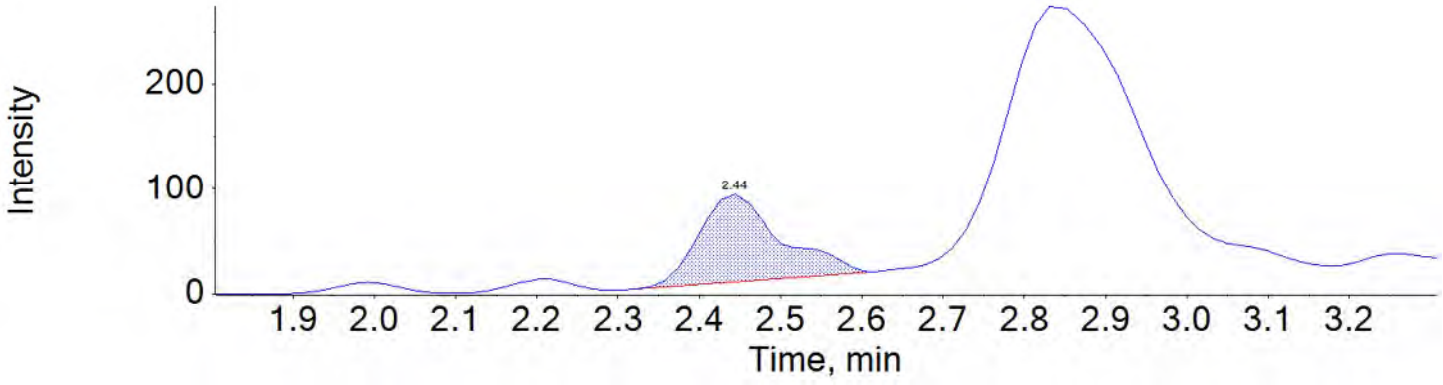
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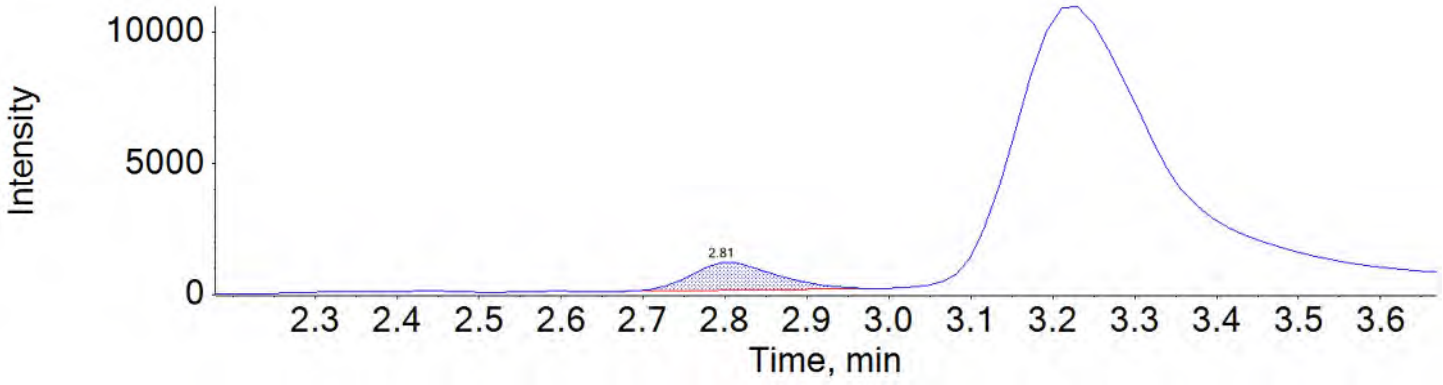
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

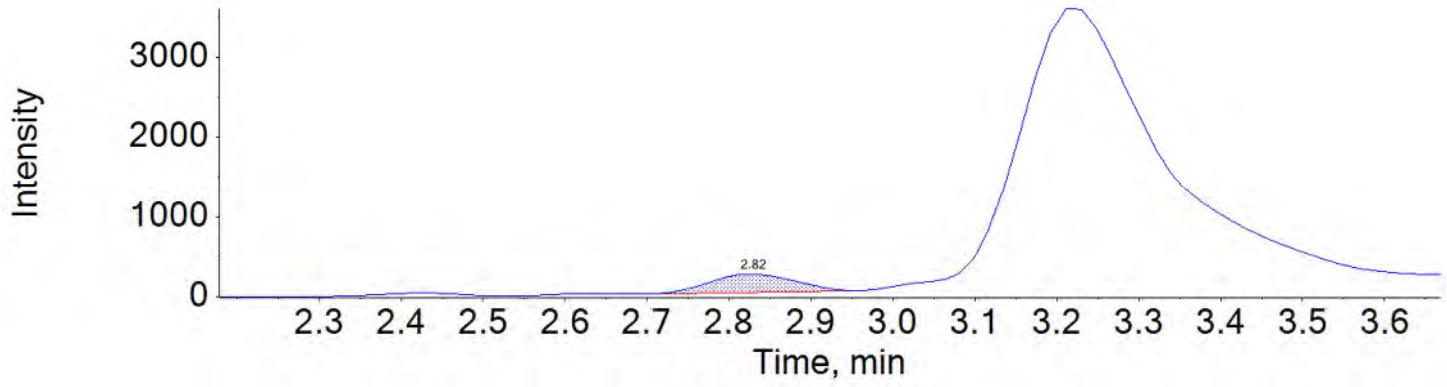


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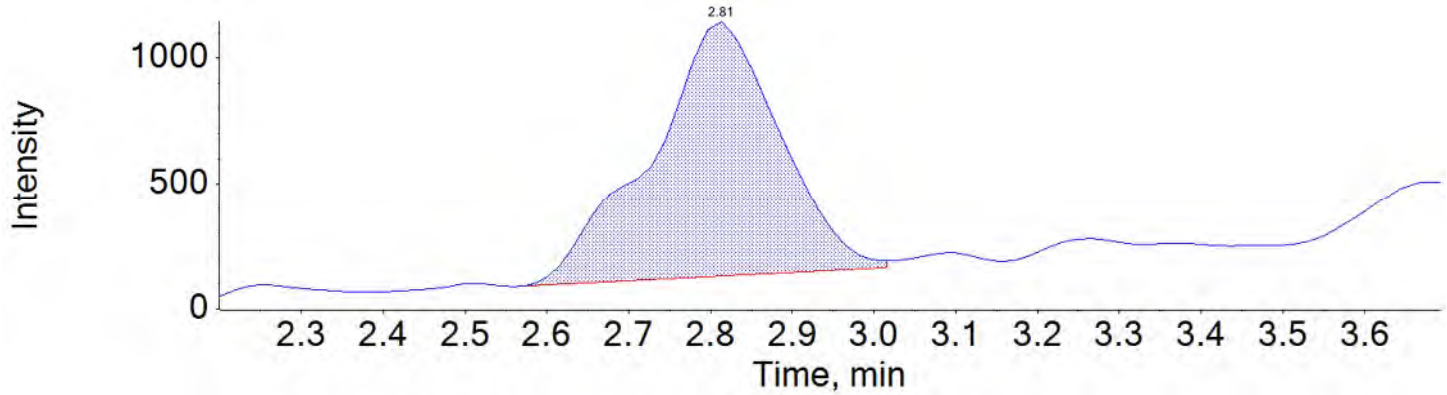
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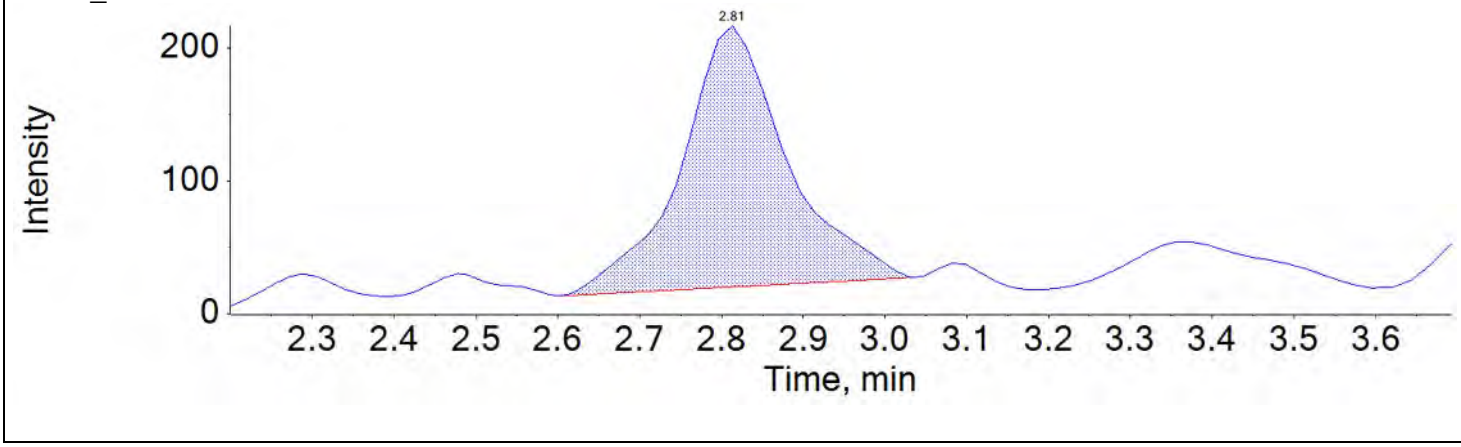
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

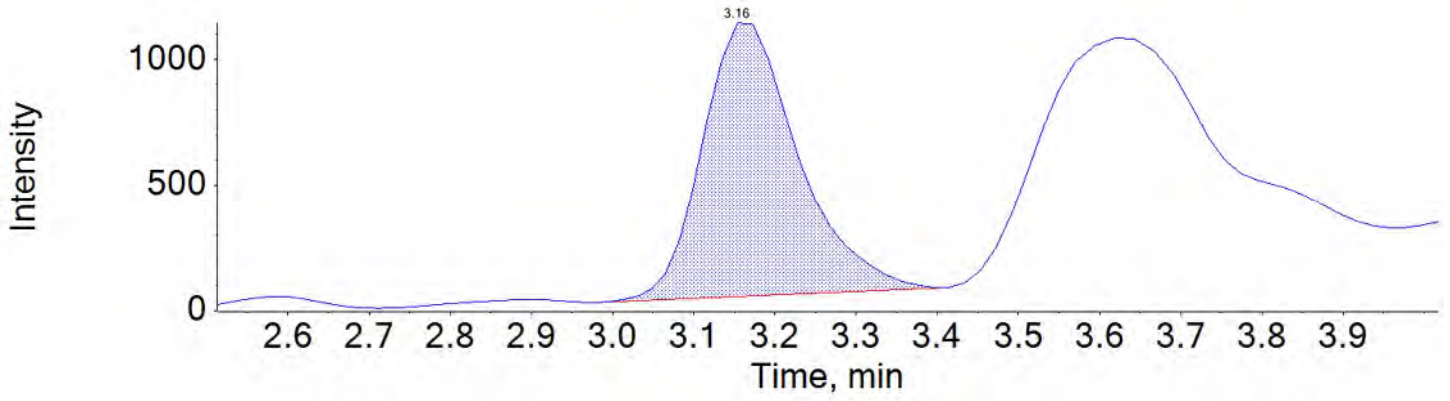


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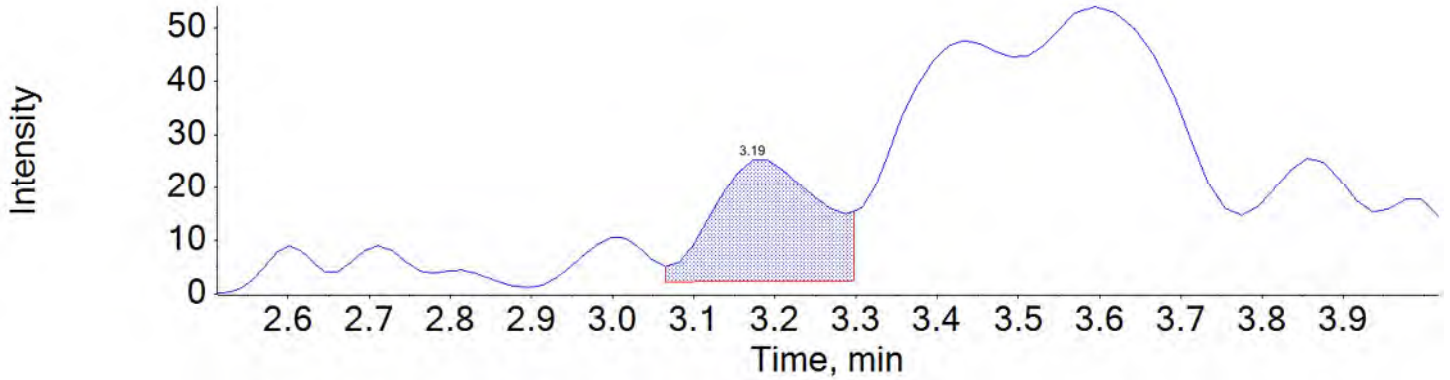
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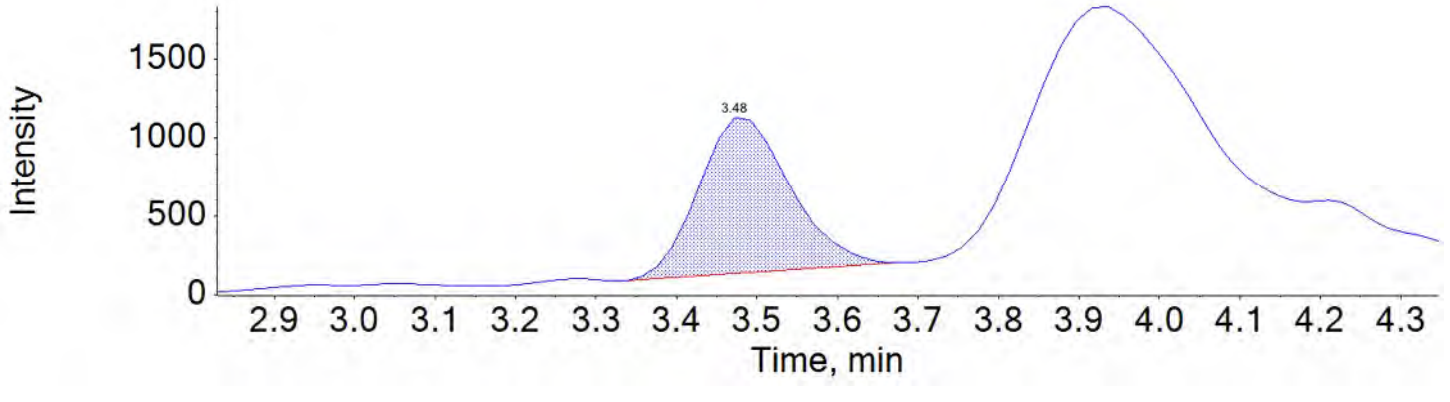
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

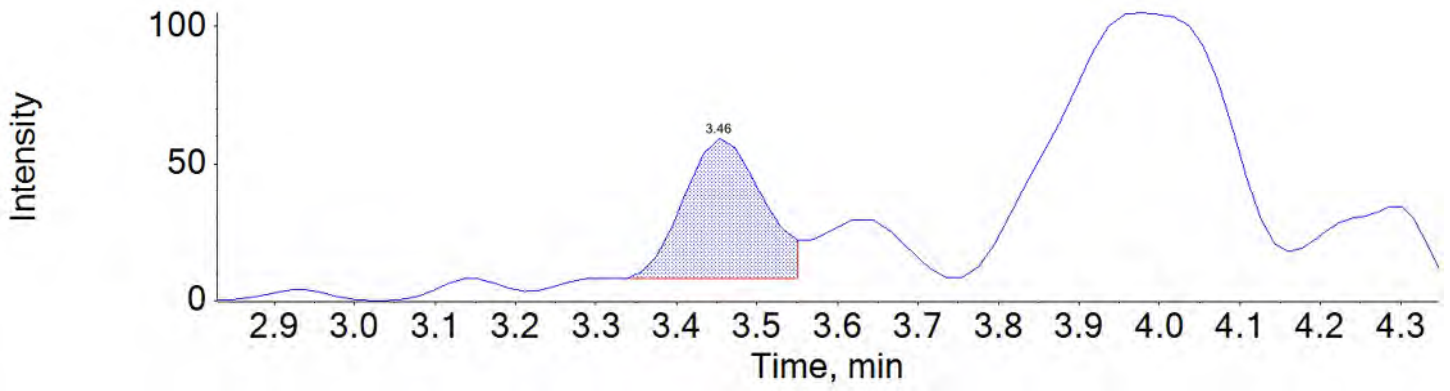


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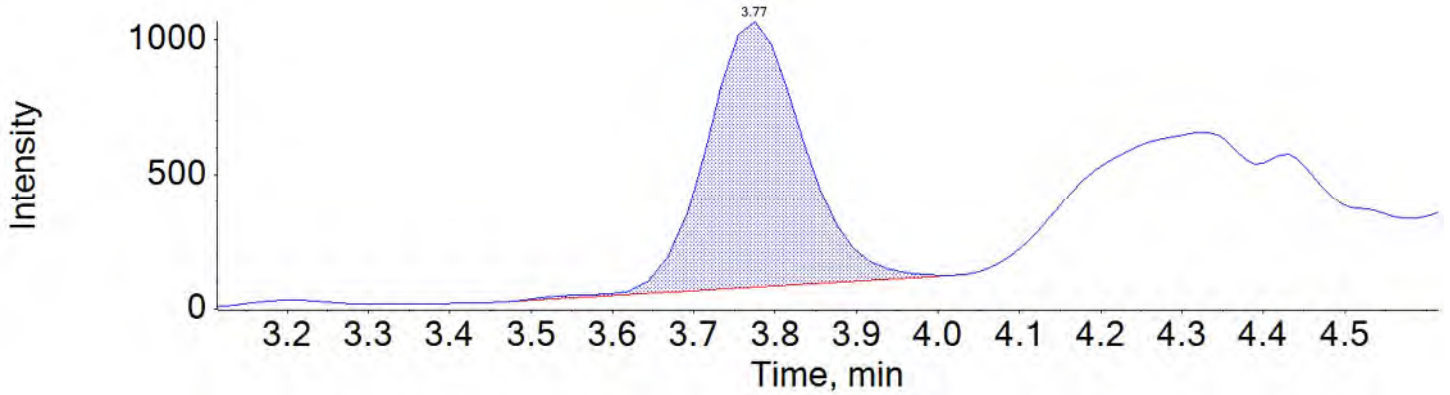
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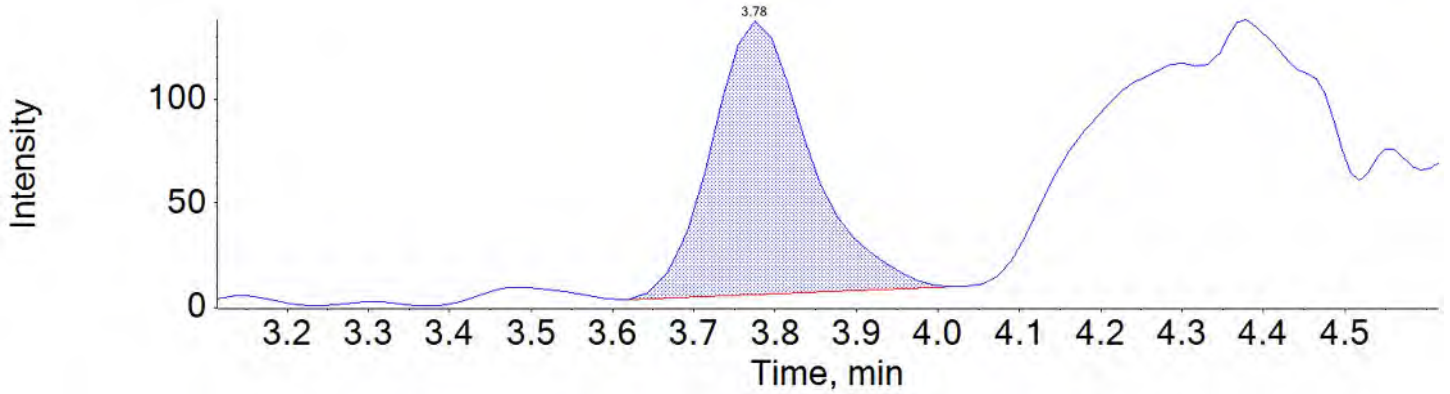
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

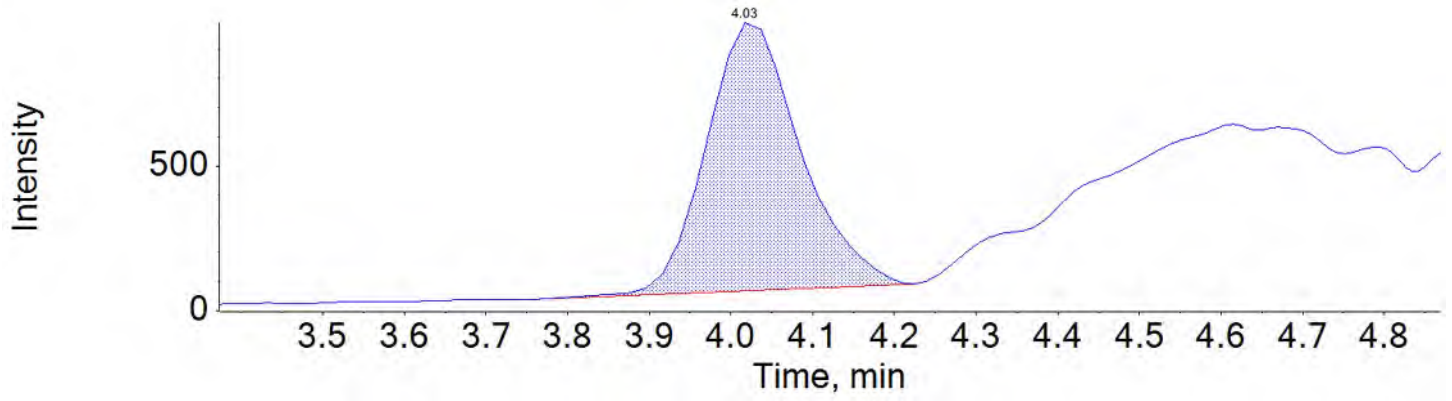


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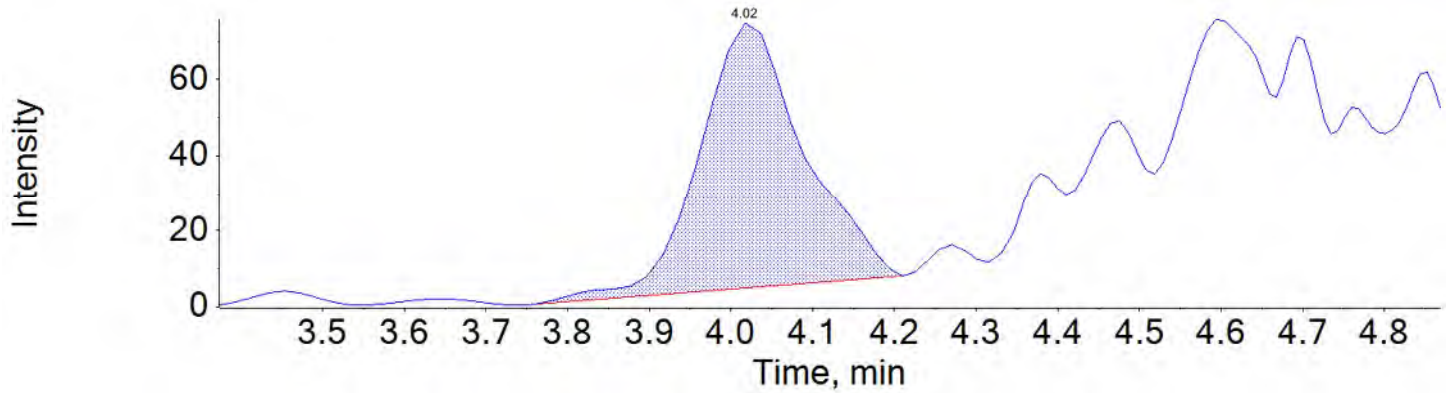
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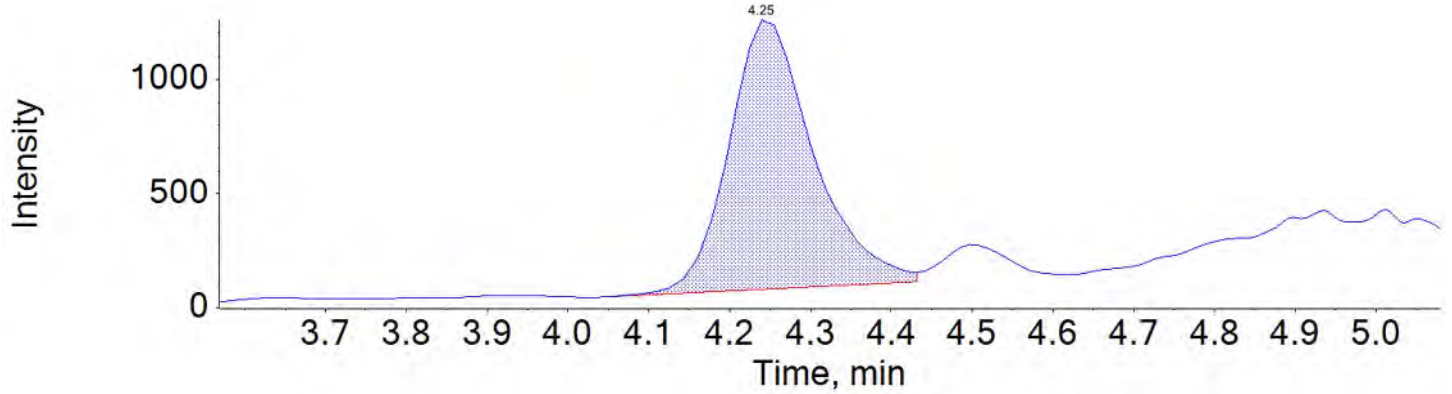
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PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

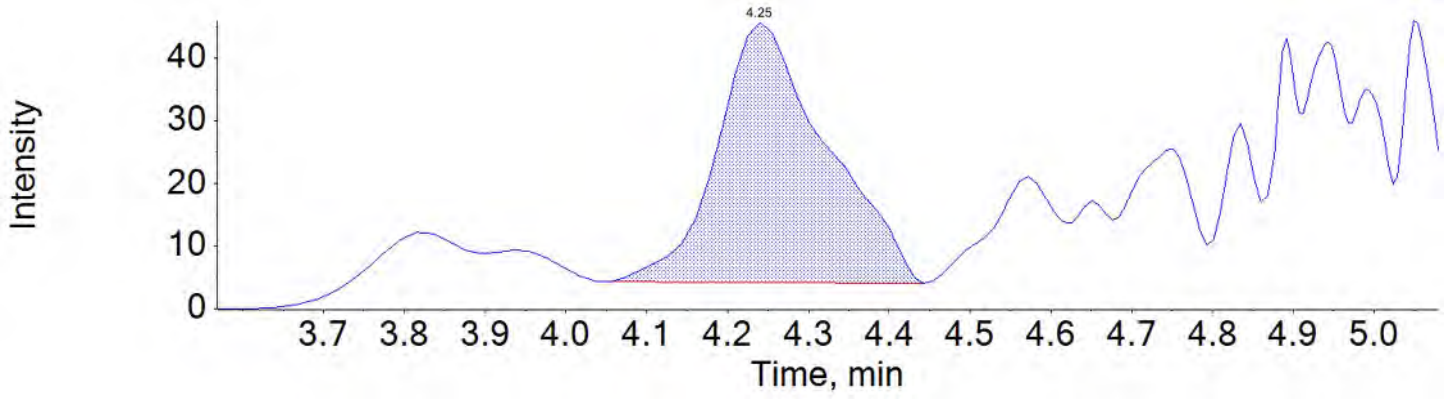


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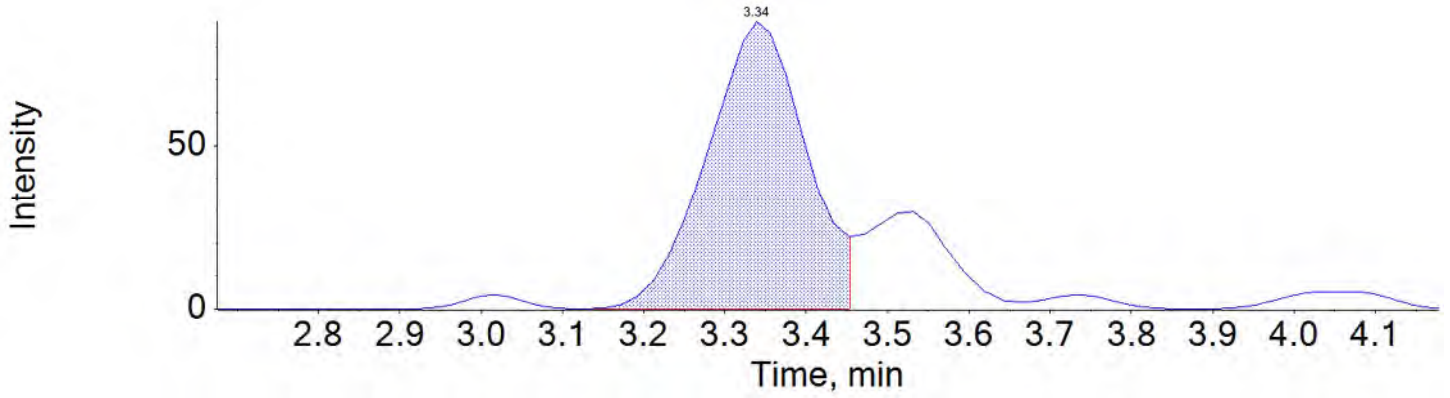
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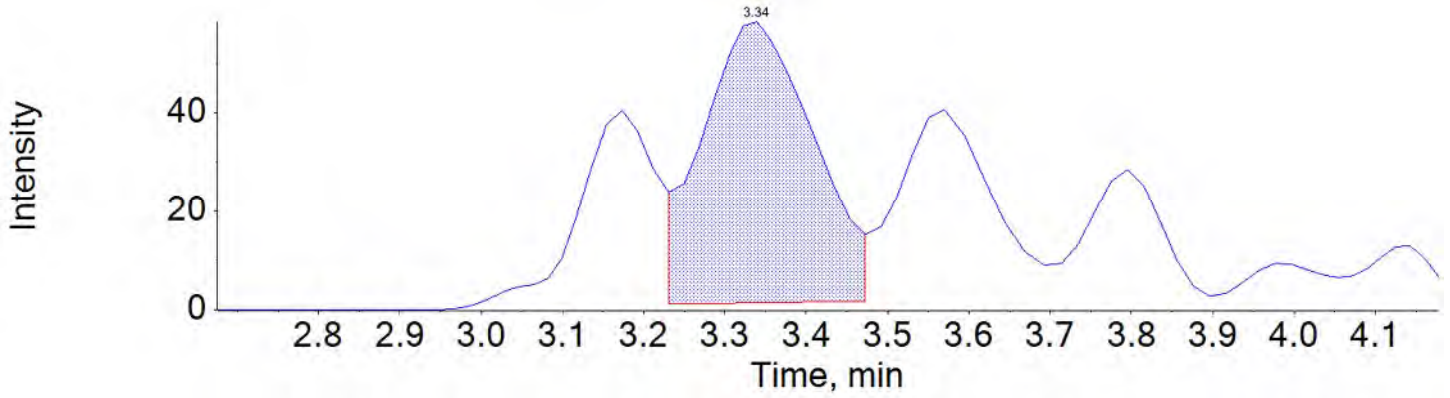
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

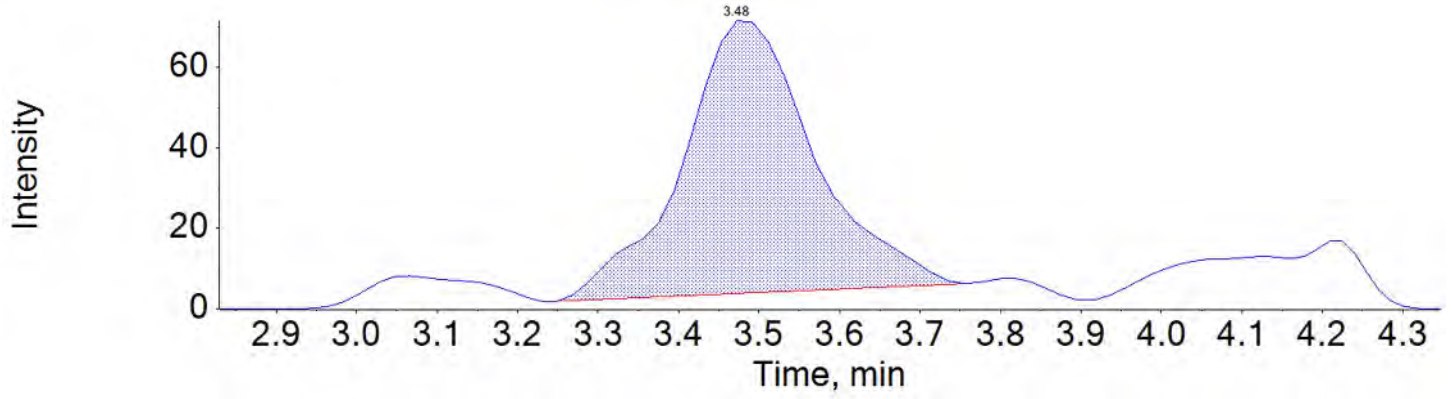


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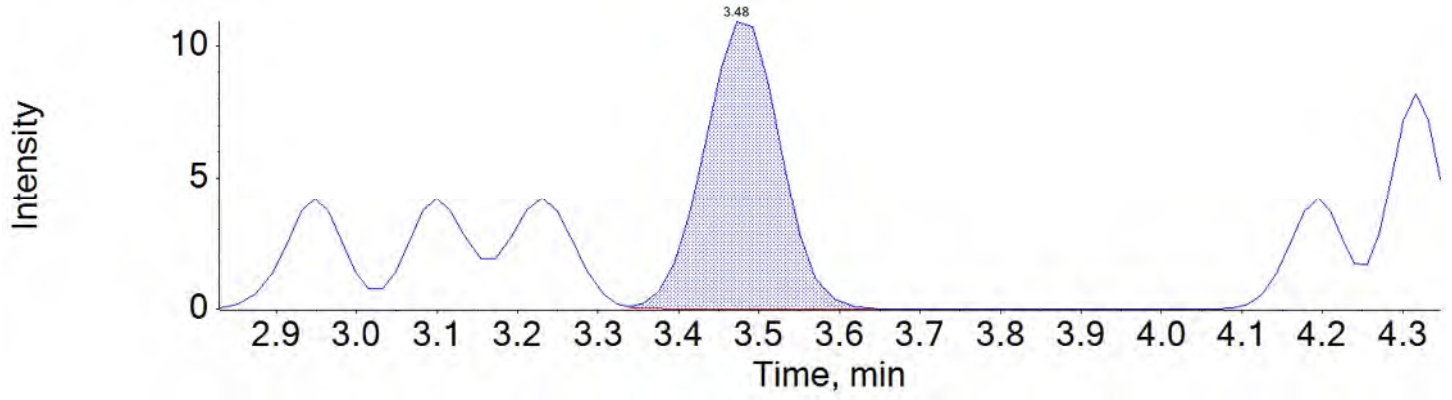
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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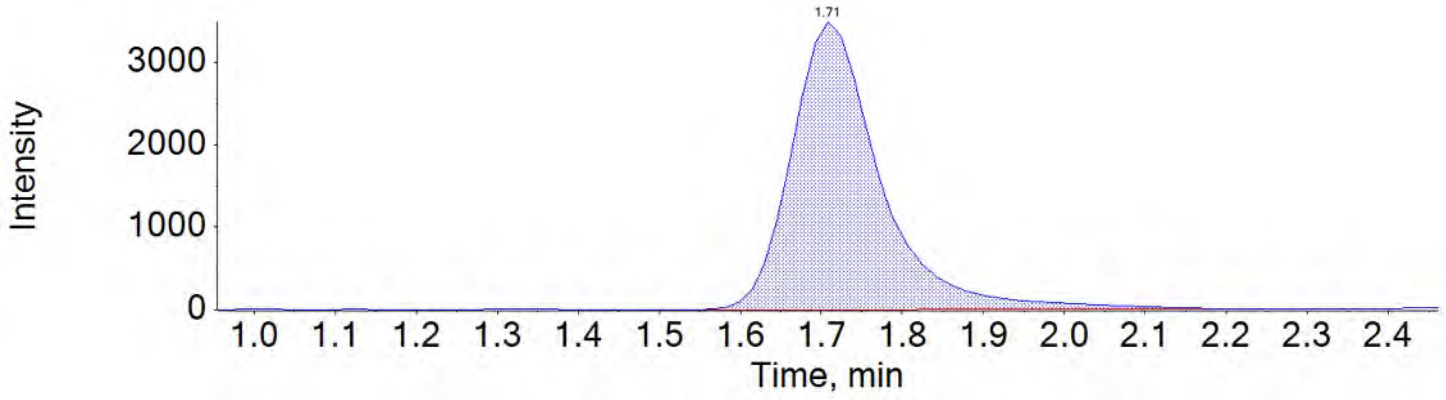
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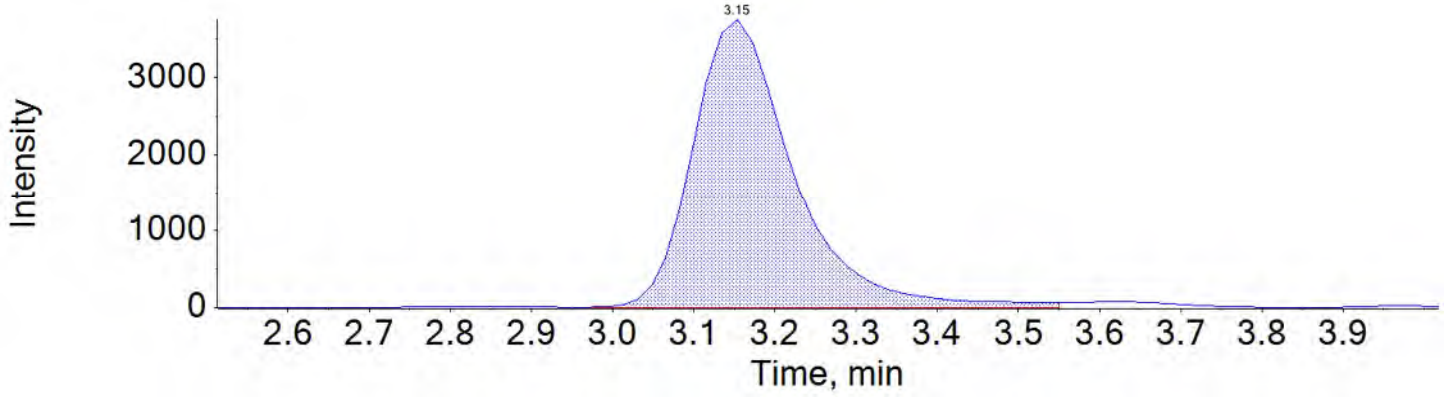
Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

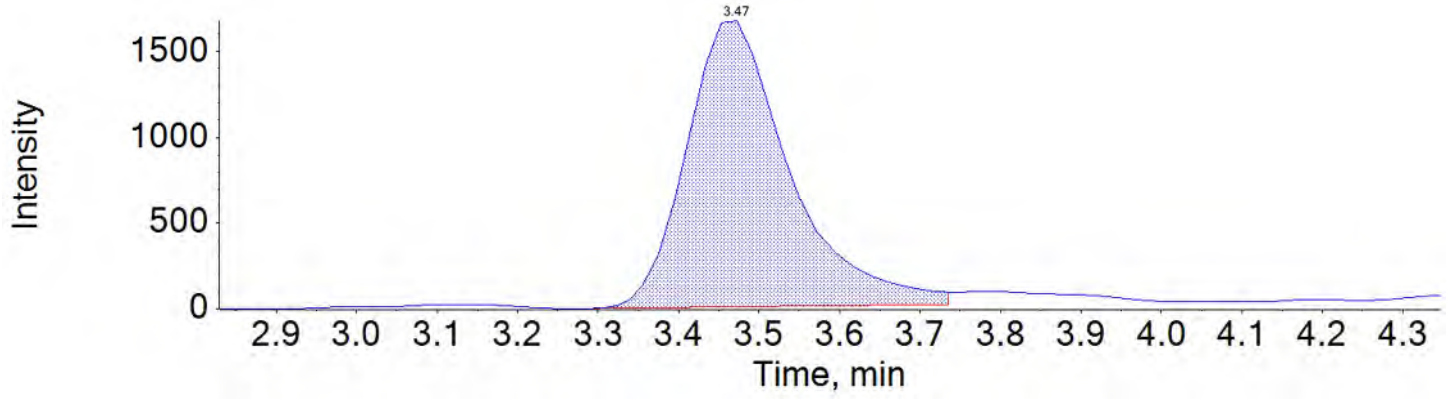


BATTELLE

Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:54:57 AM

d5-EtFOSAA 589.0 / 419.0



BATTELLE

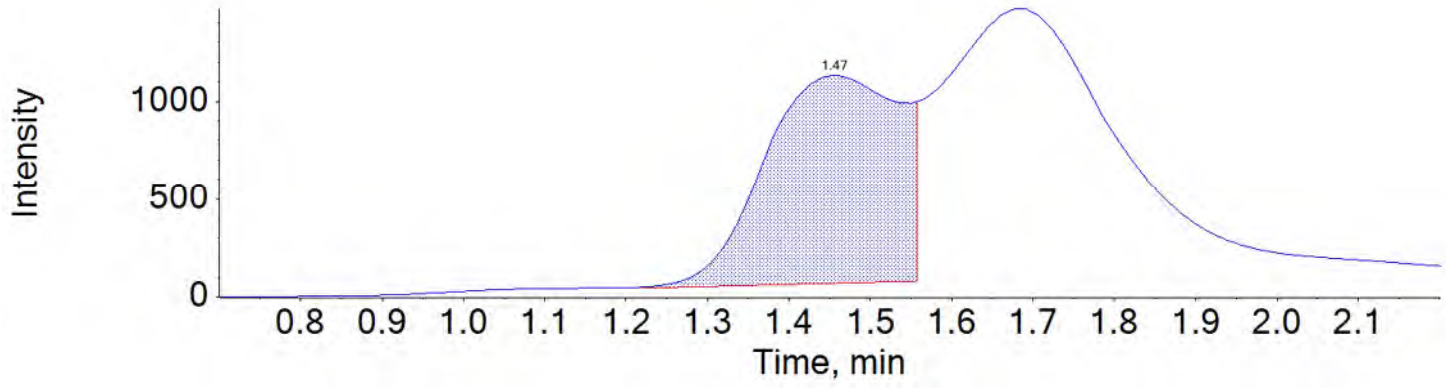
Chromatogram Report

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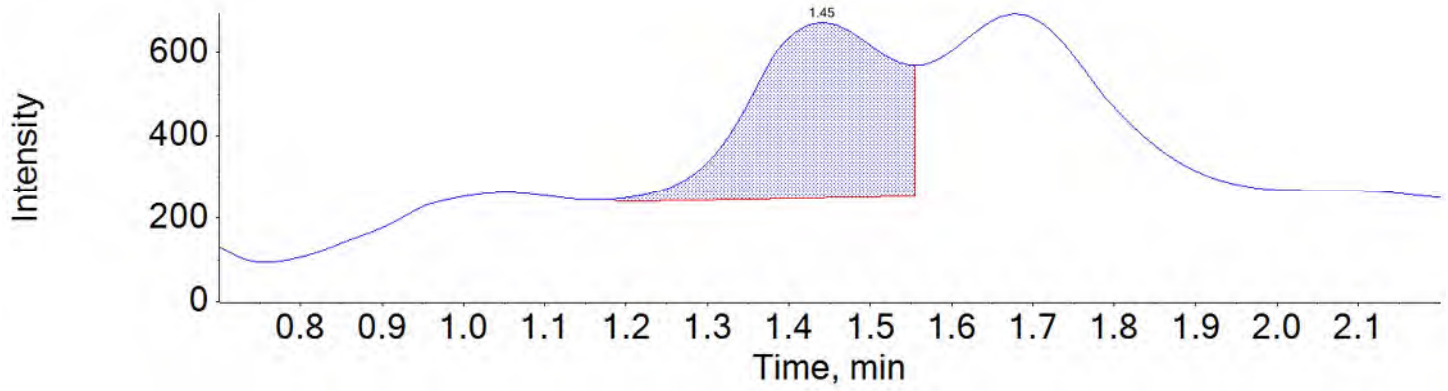
Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

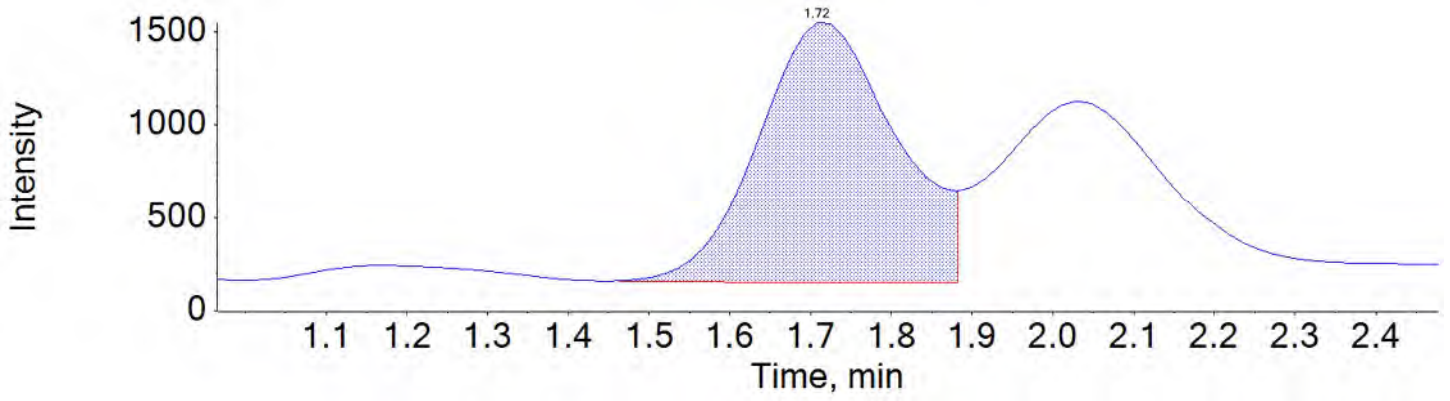


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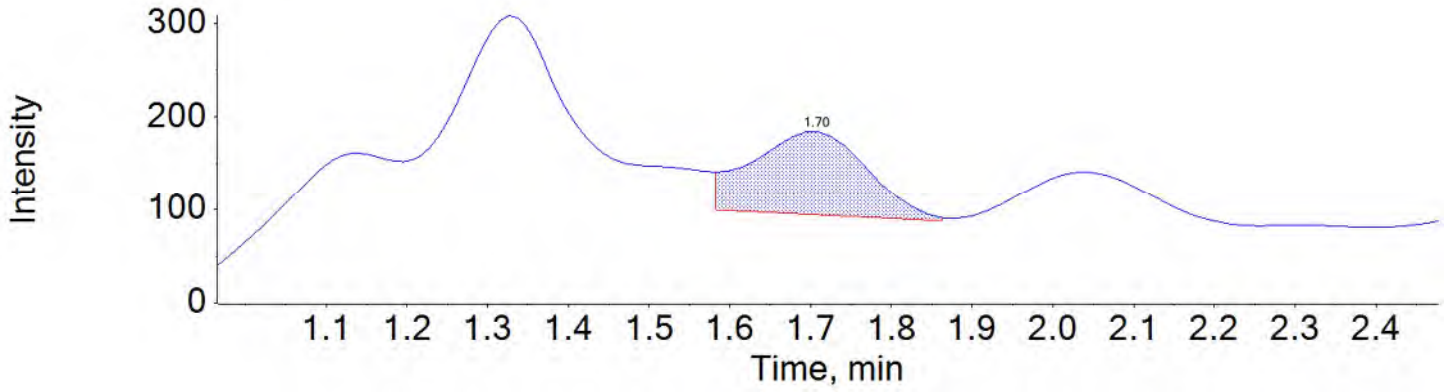
Chromatogram Report

Created with Analyst Reporter
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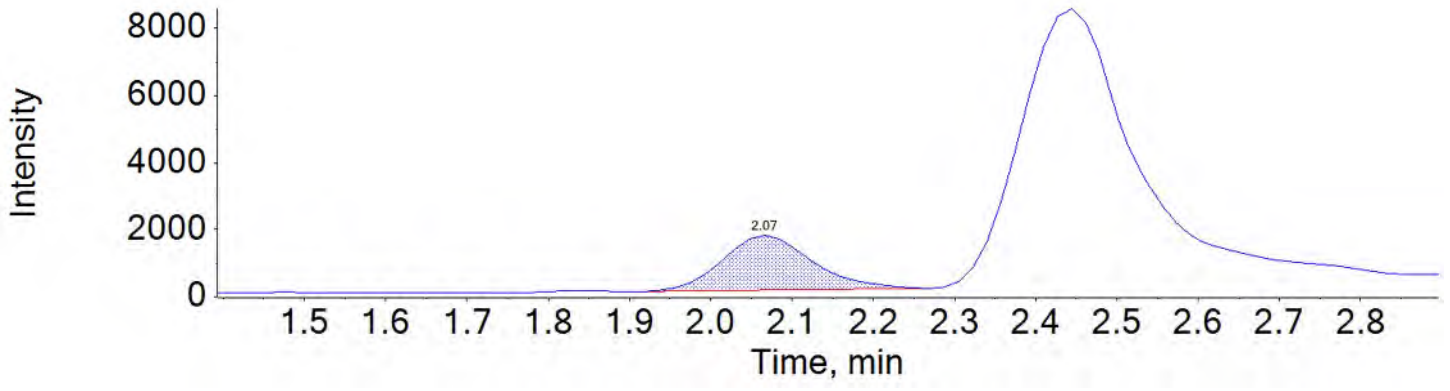
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

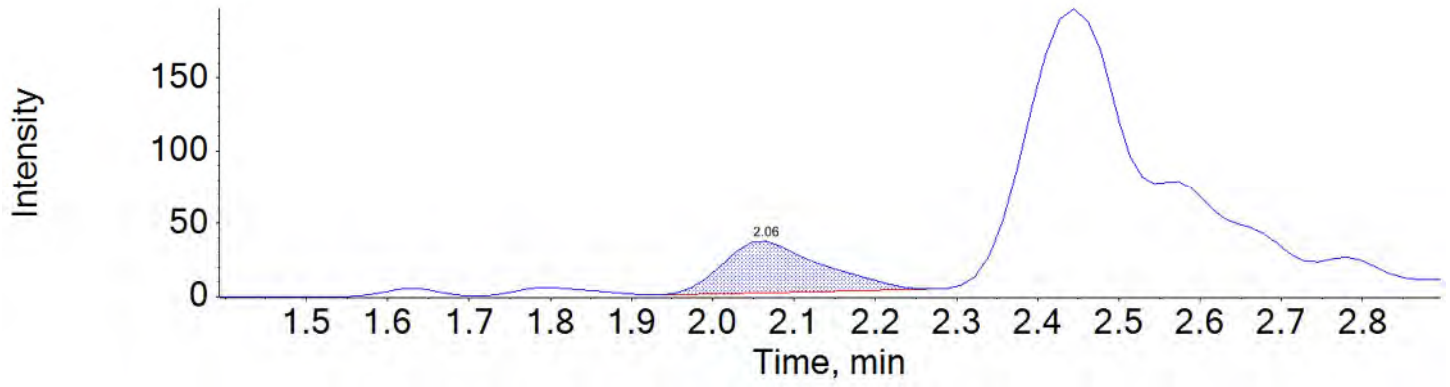


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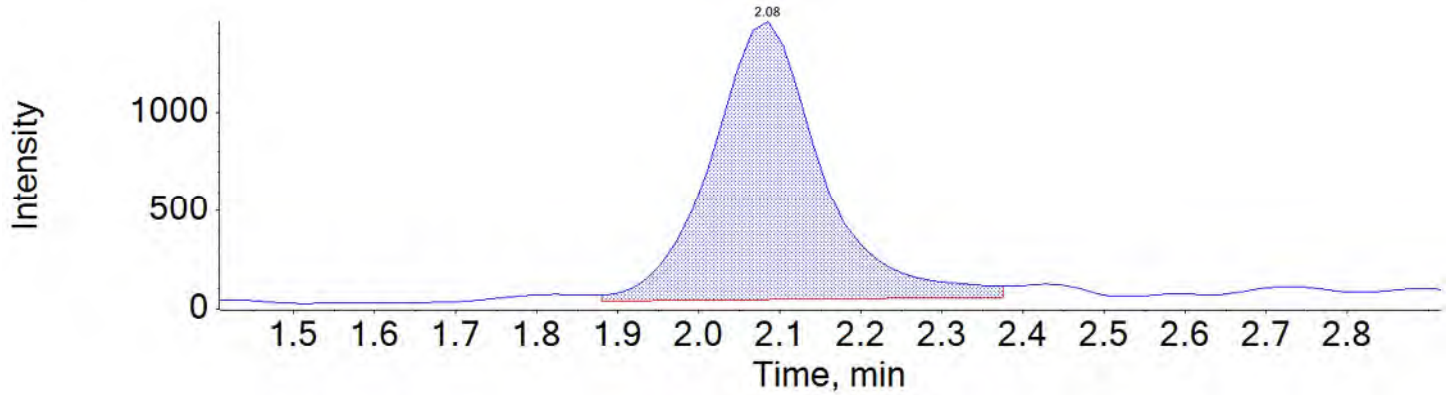
Chromatogram Report

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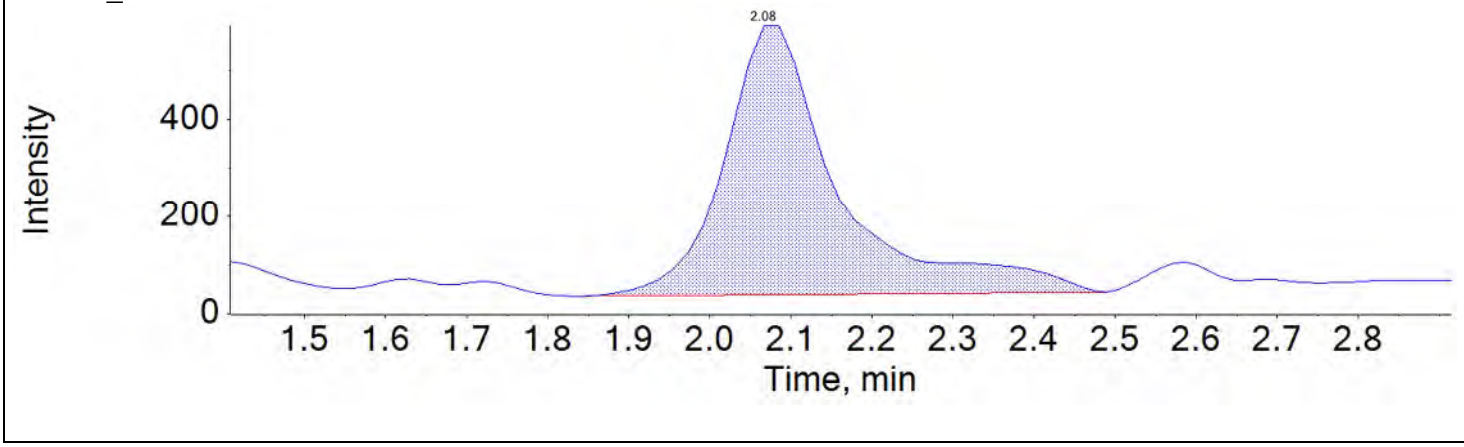
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

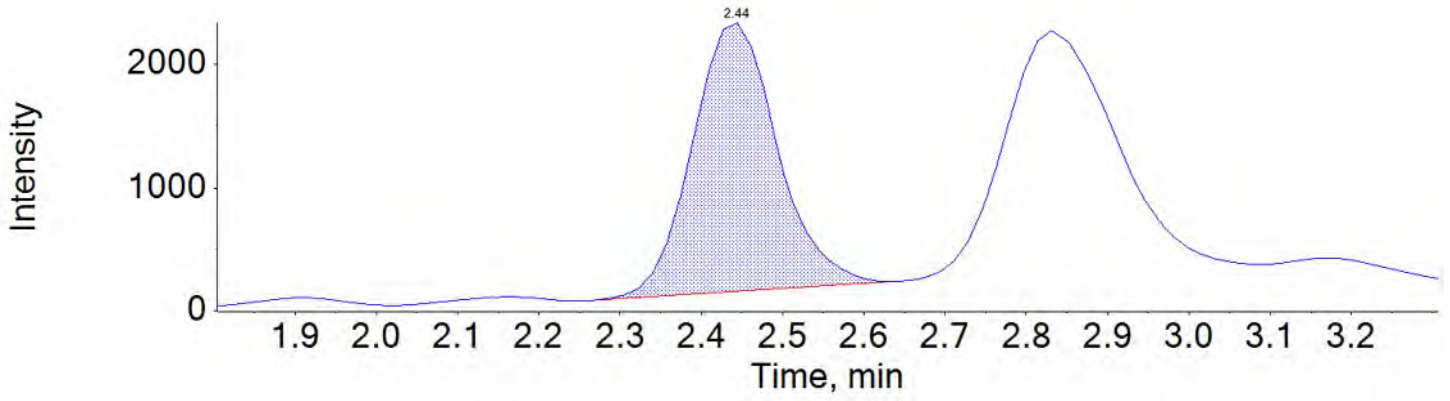


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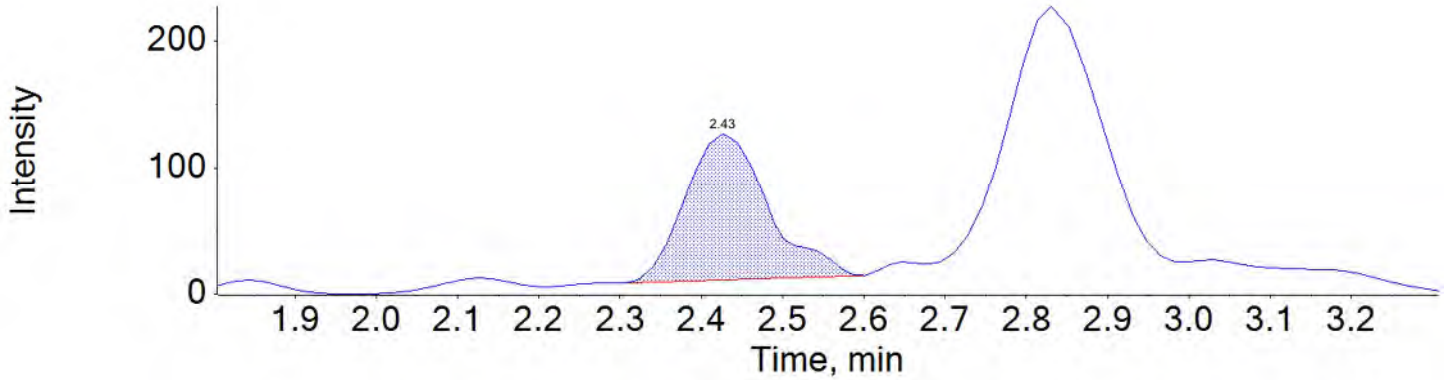
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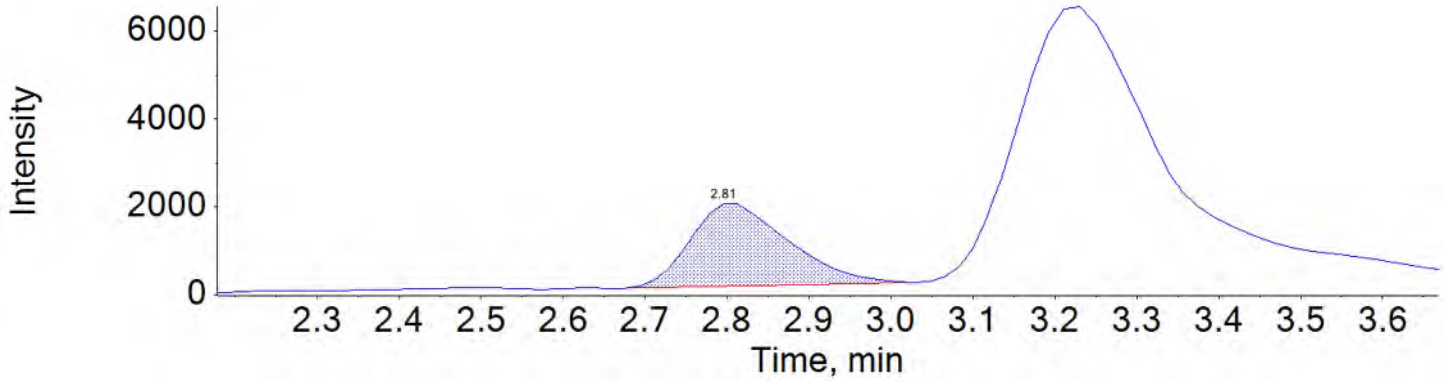
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

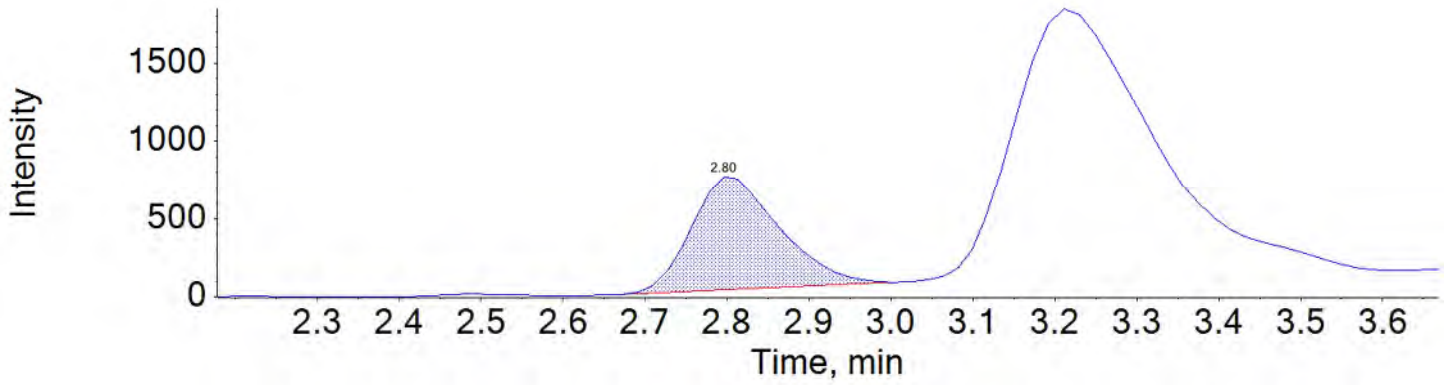


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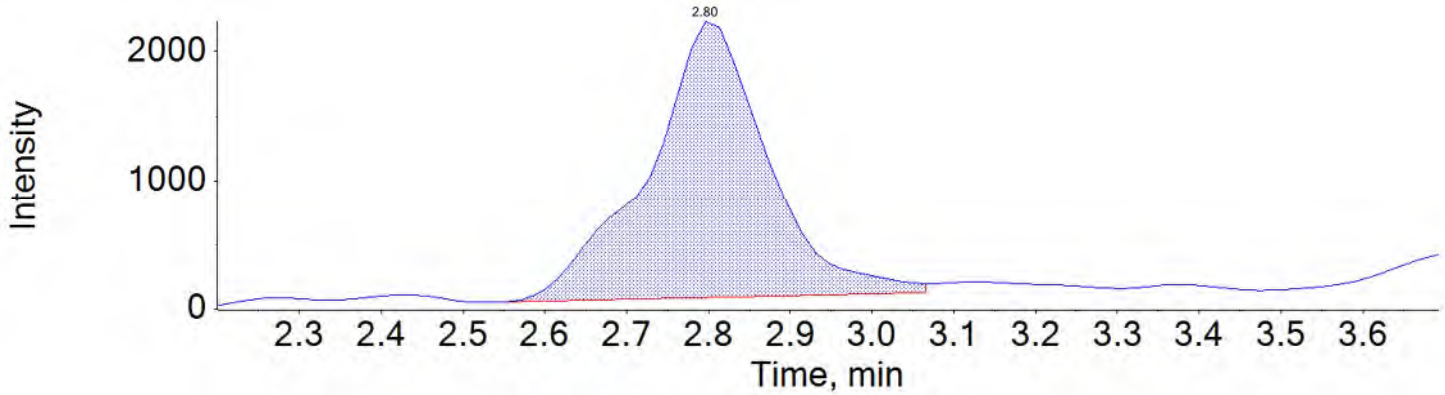
Chromatogram Report

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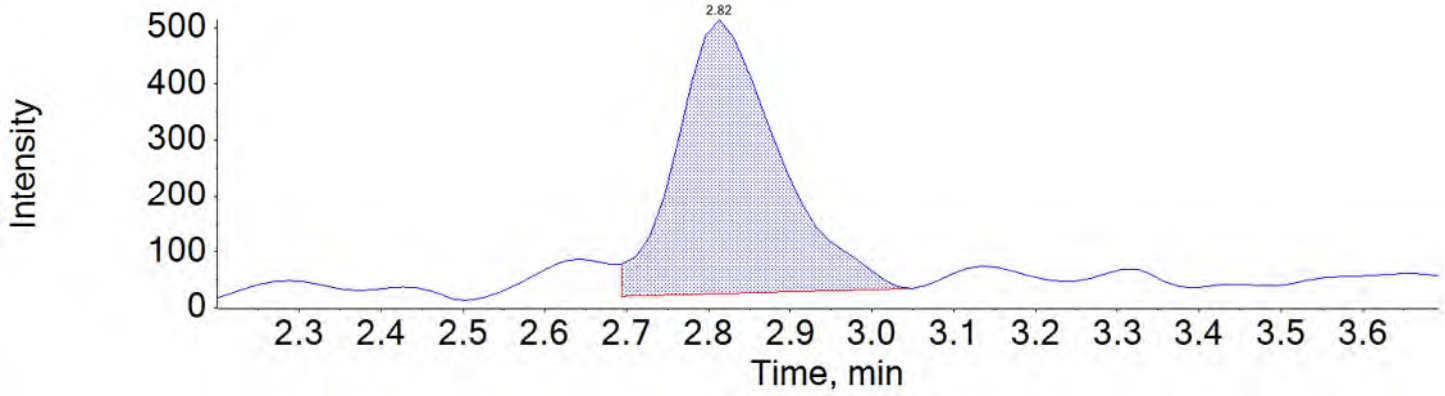
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

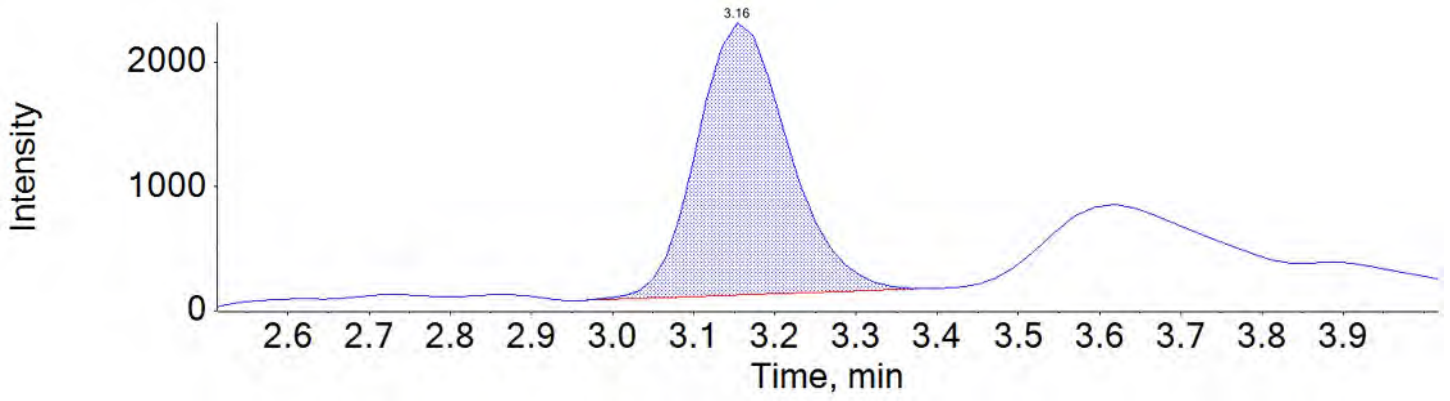


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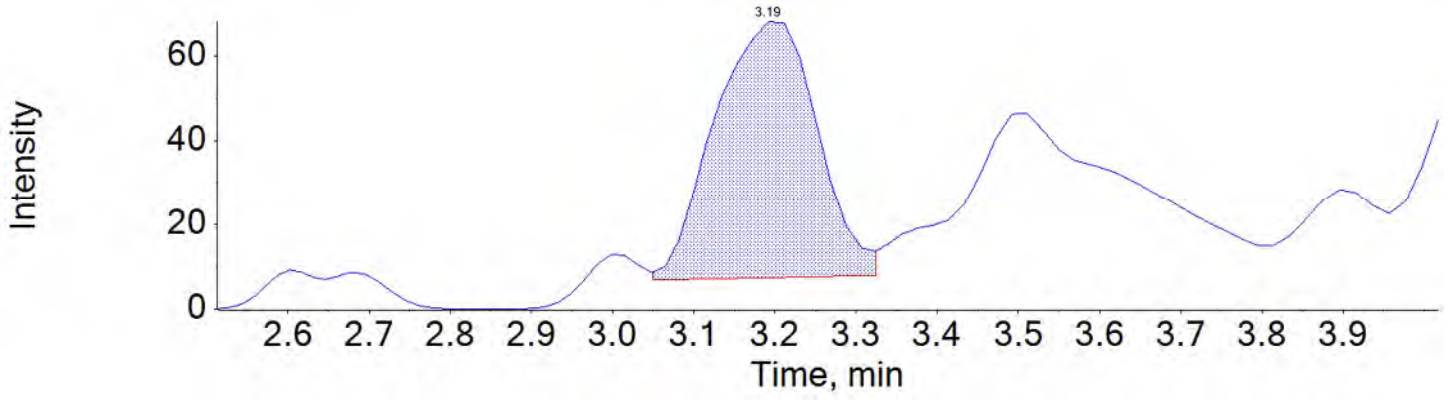
Chromatogram Report

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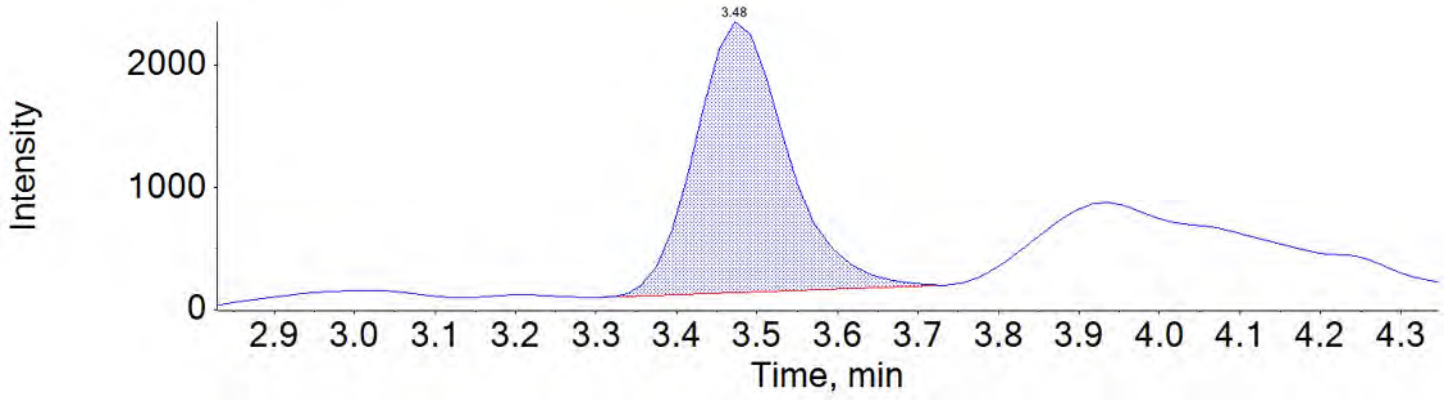
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

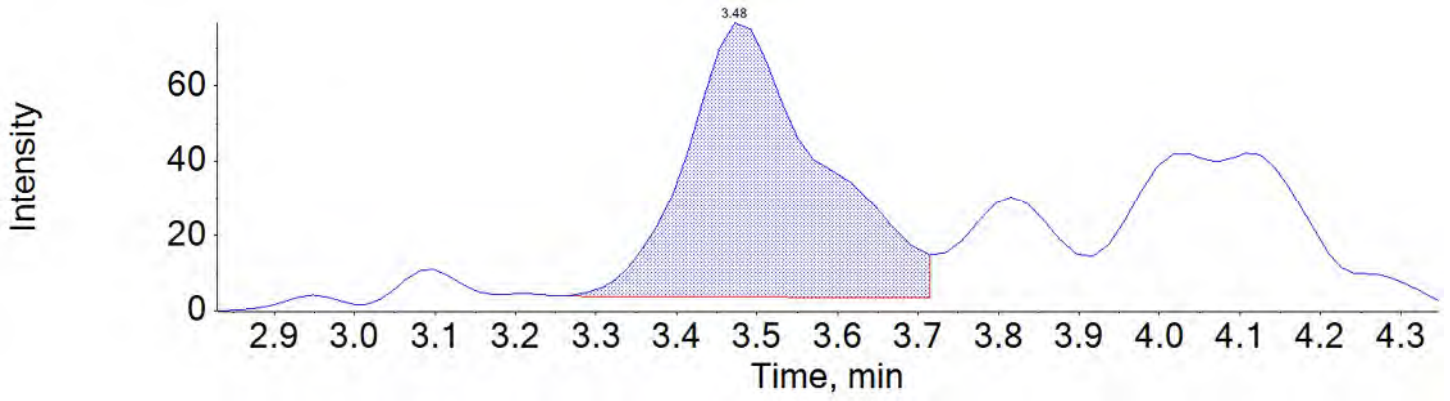


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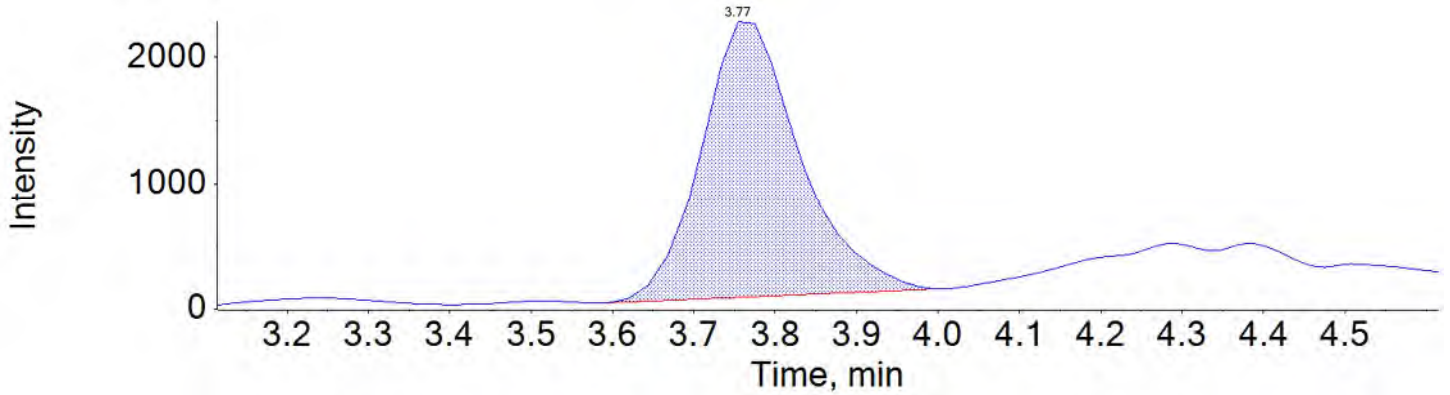
Chromatogram Report

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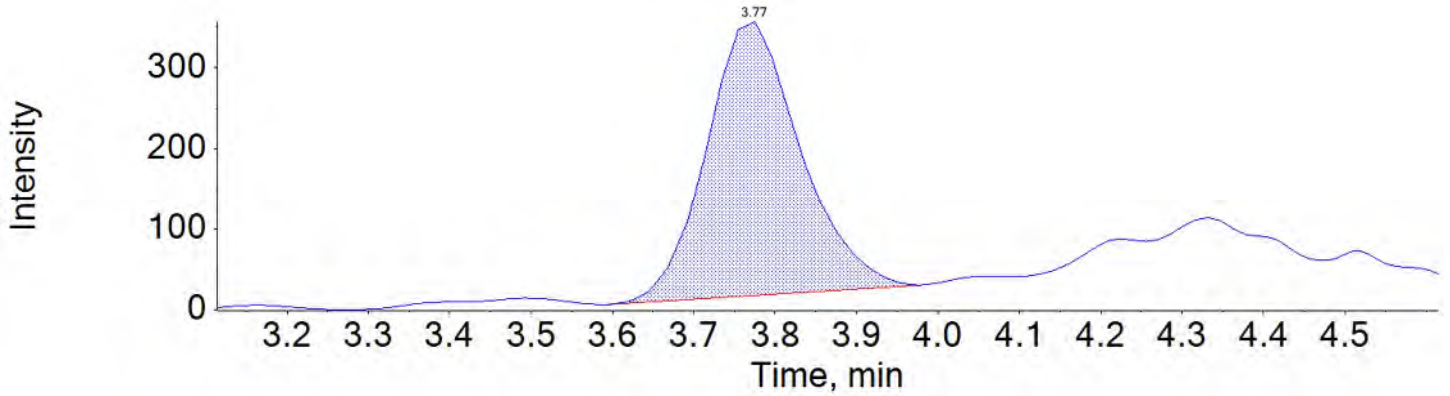
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

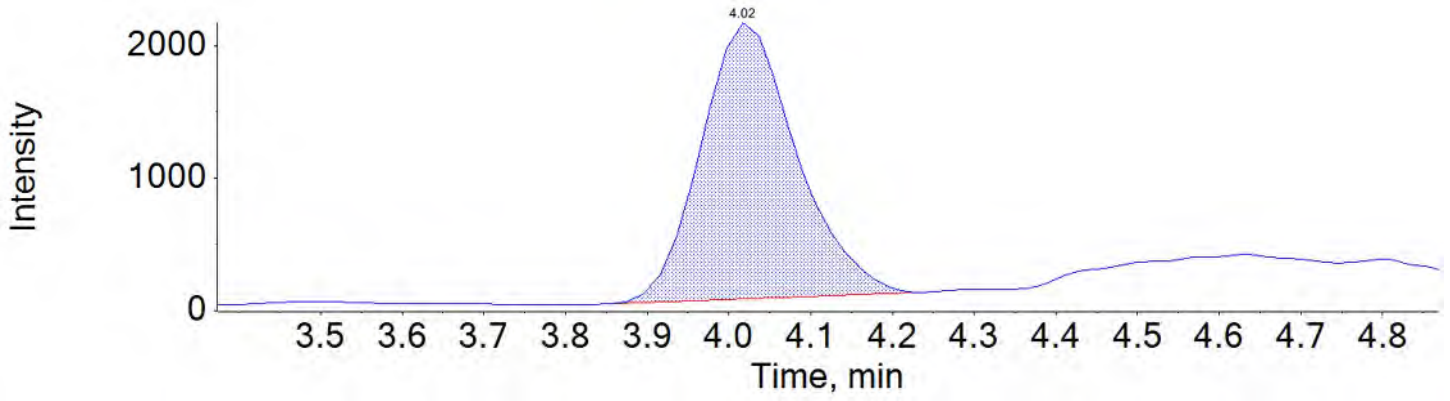


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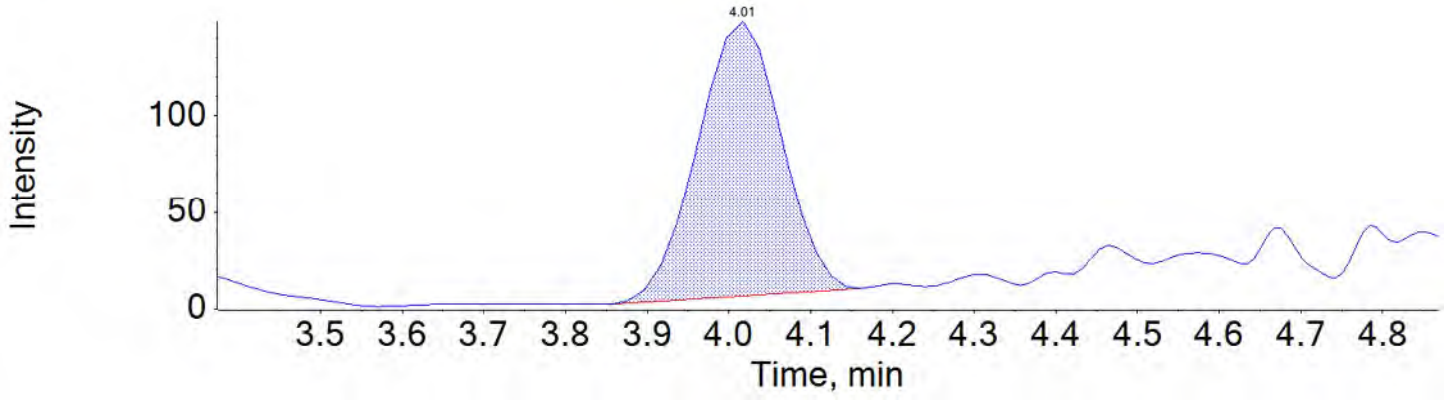
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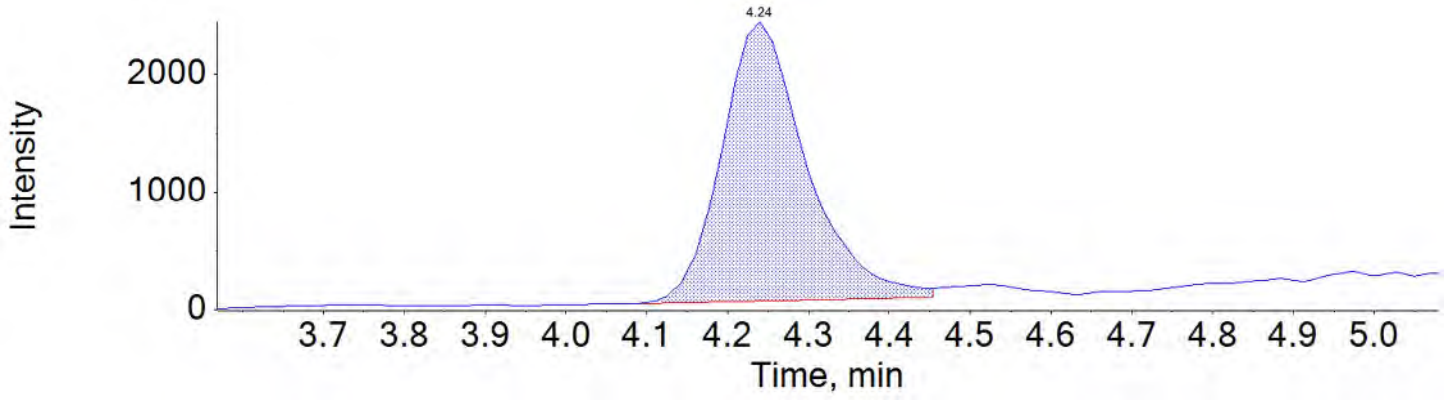
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

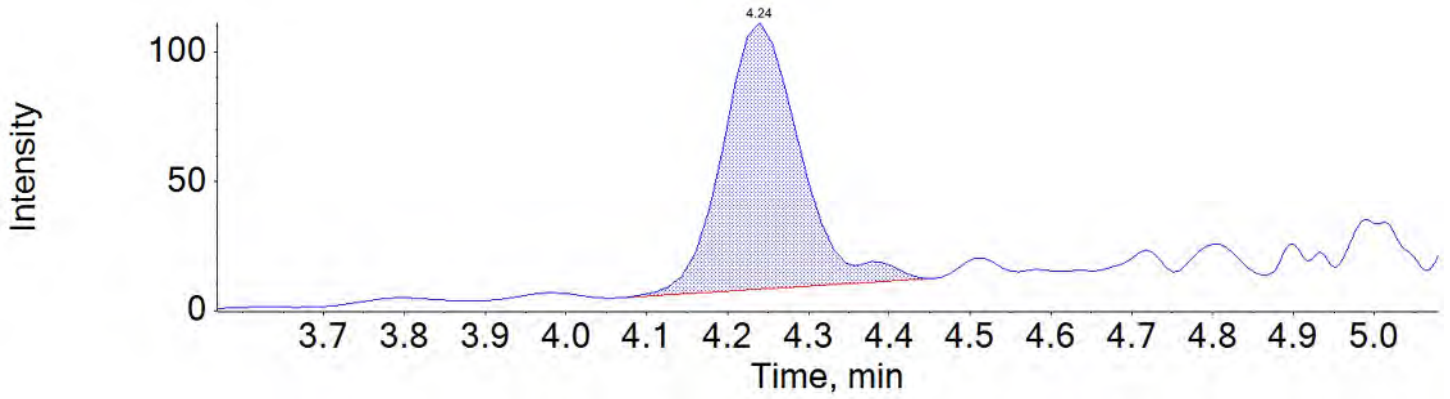


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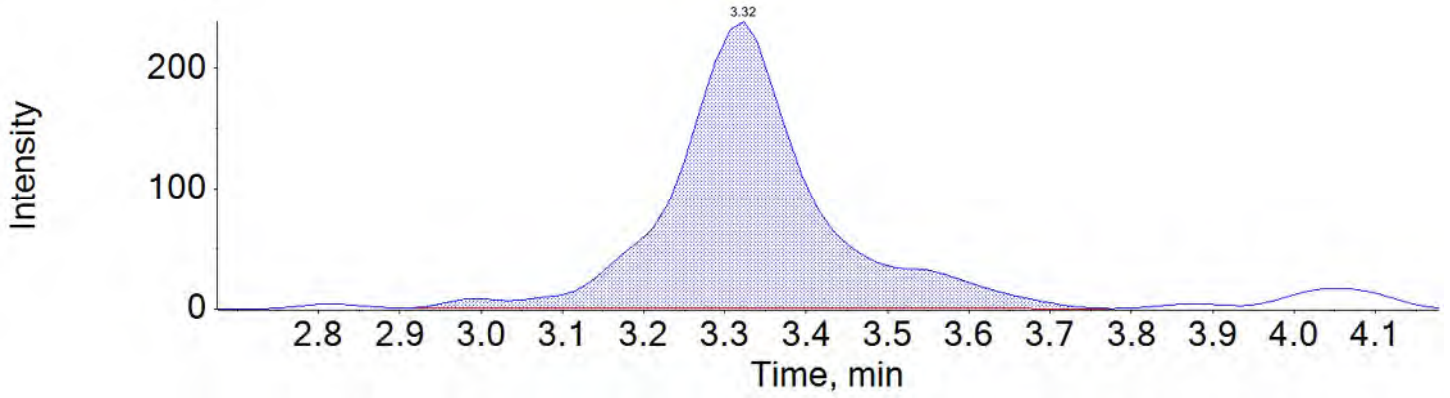
Chromatogram Report

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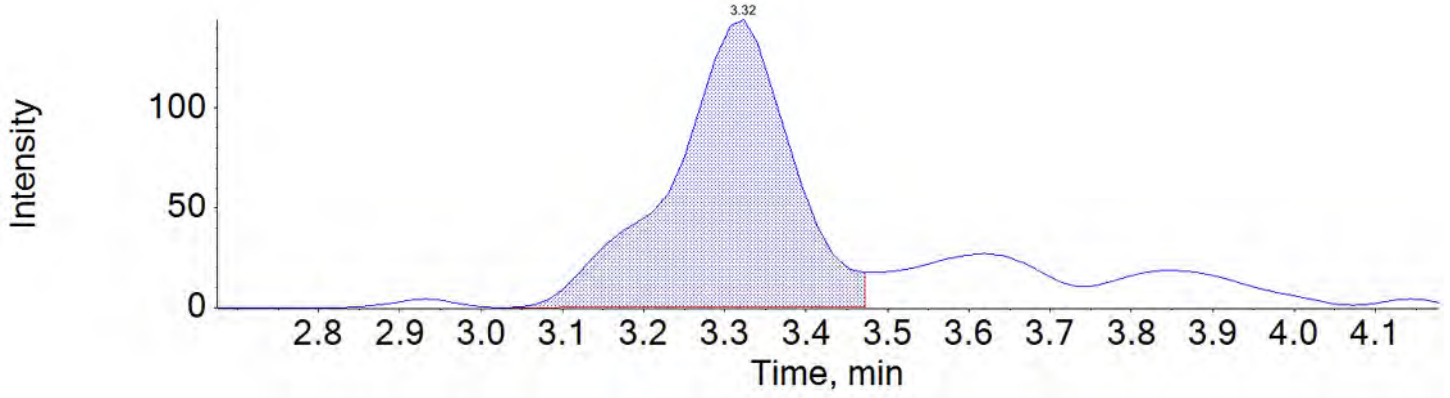
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

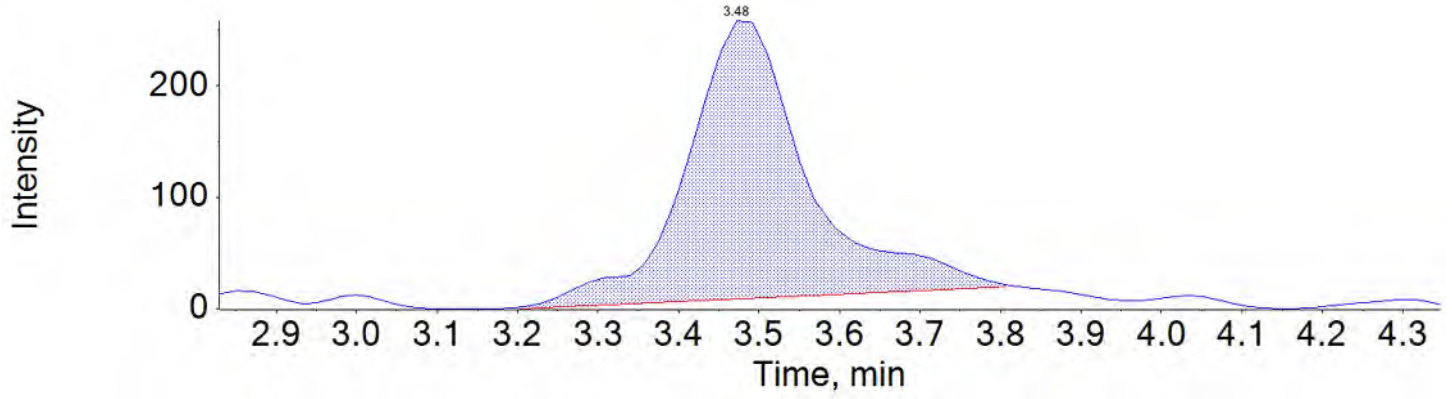


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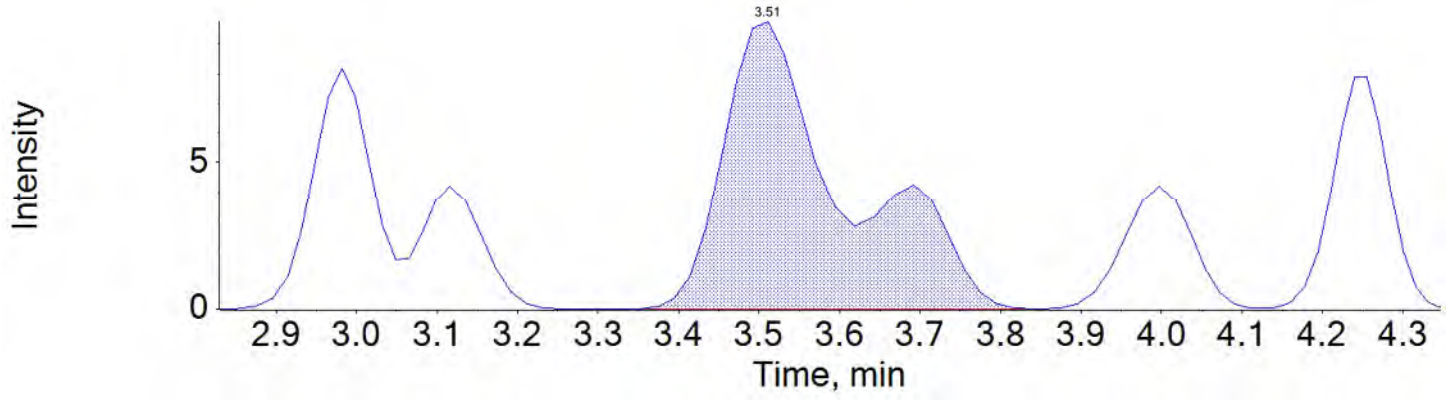
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:53:26 AM

NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

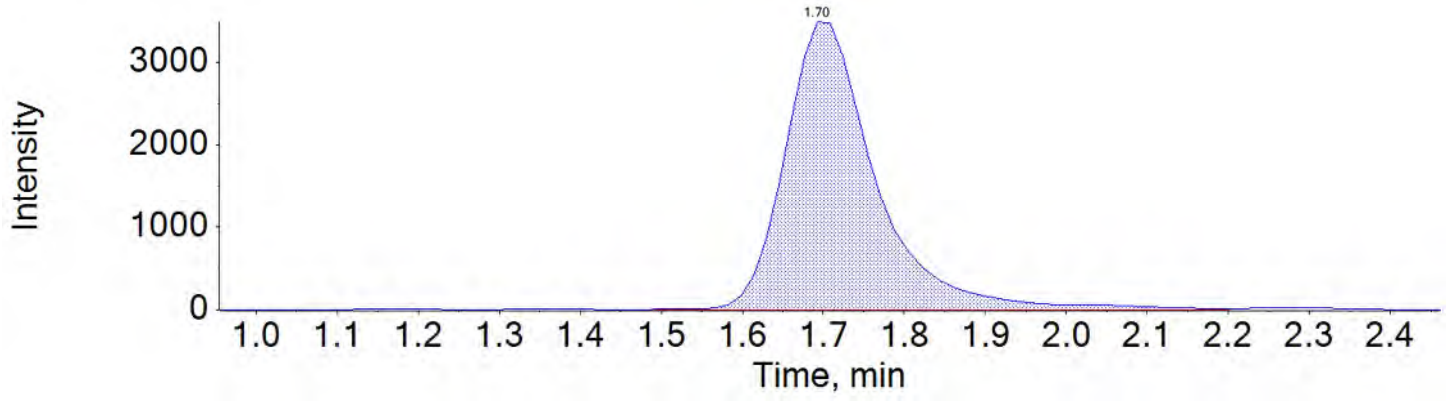
Chromatogram Report

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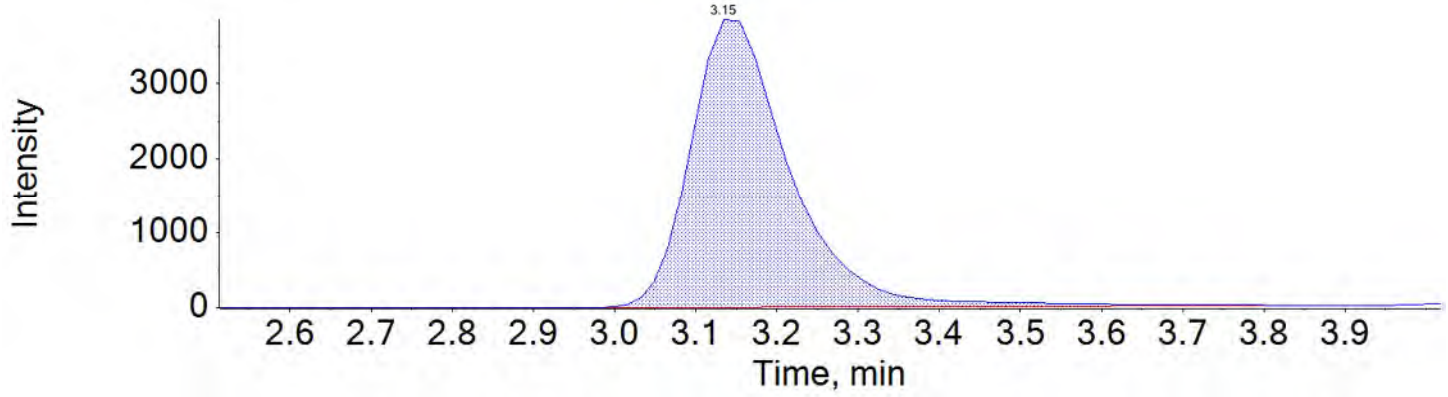
Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

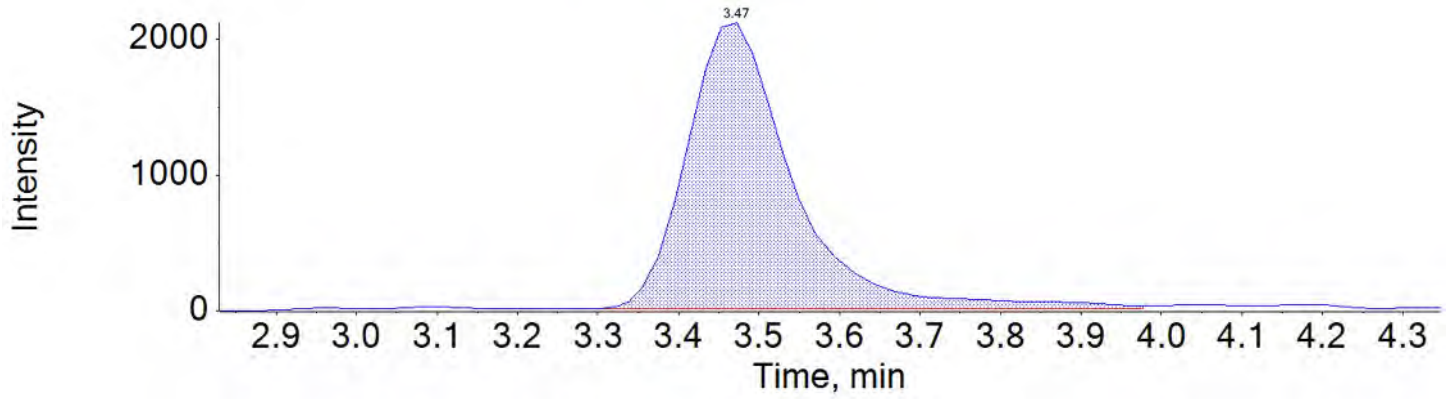


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Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



BATTELLE

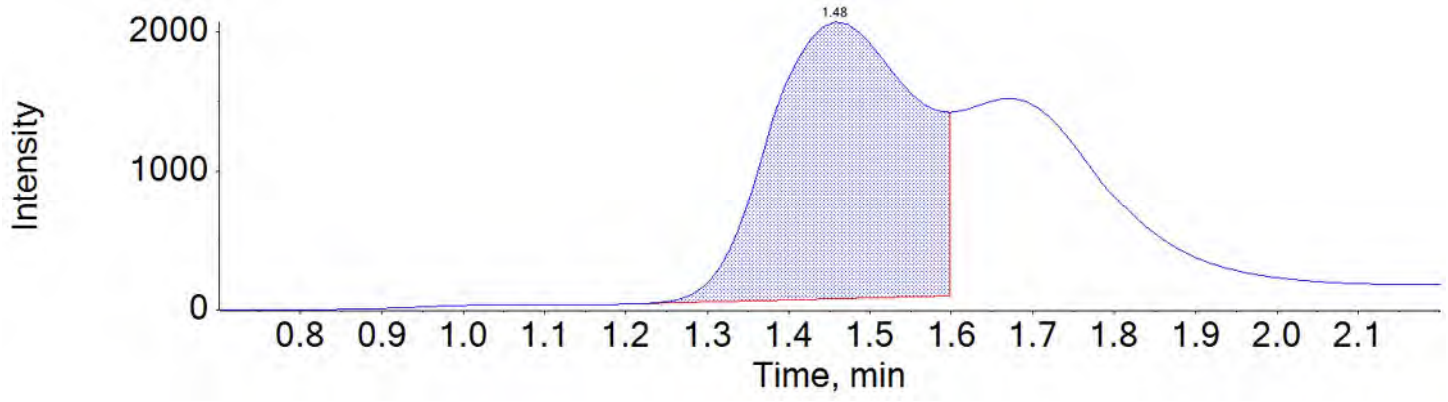
Chromatogram Report

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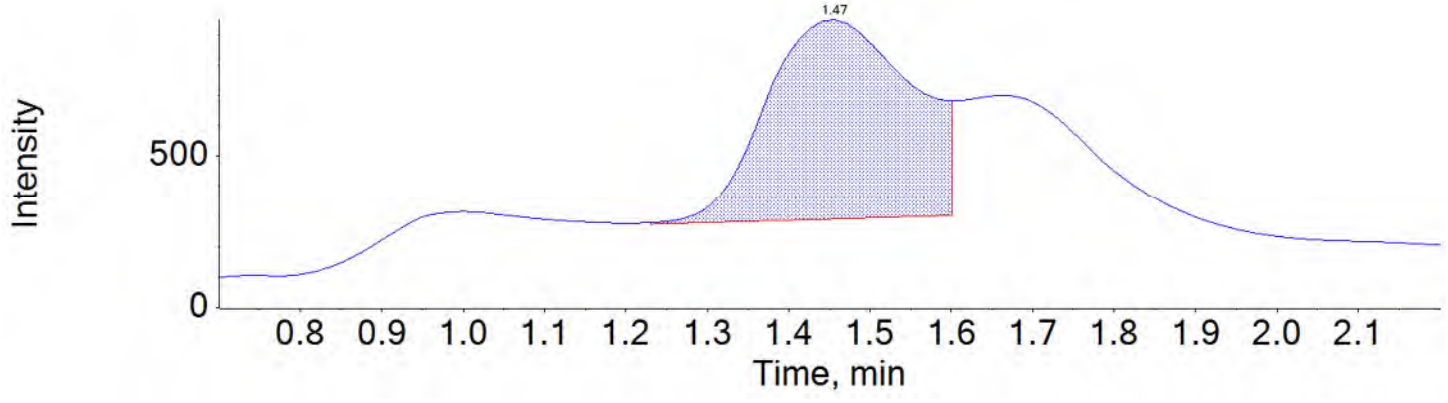
Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

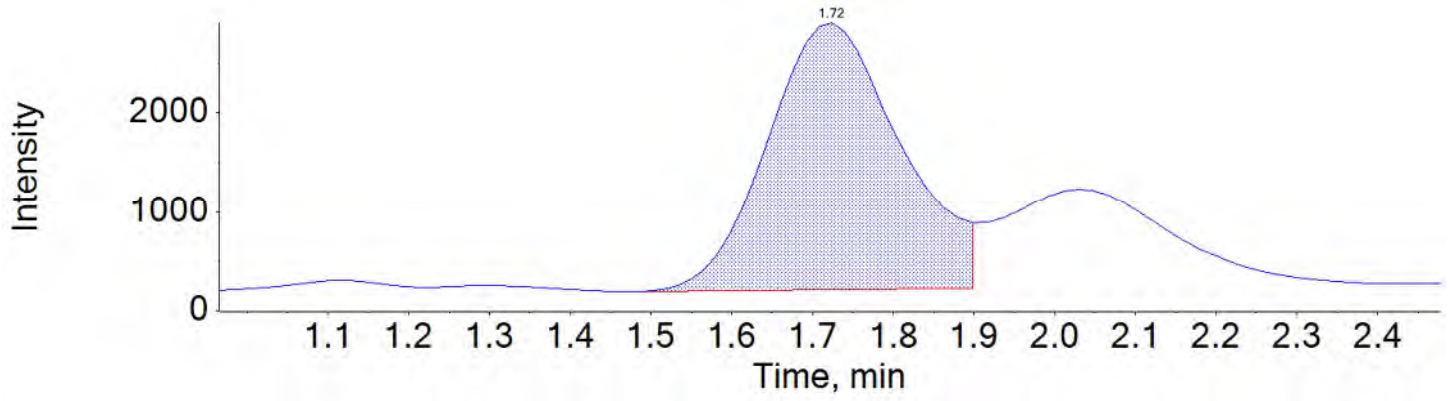


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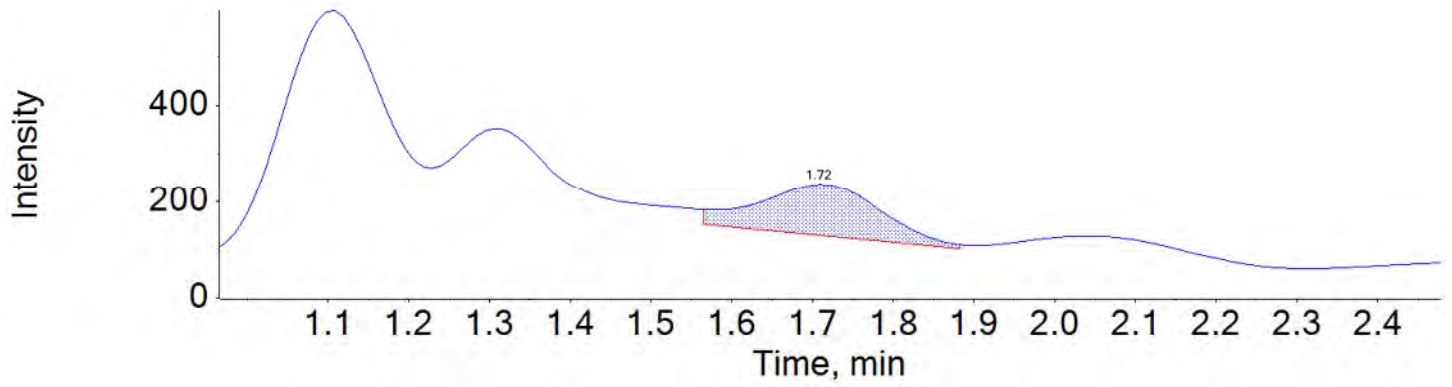
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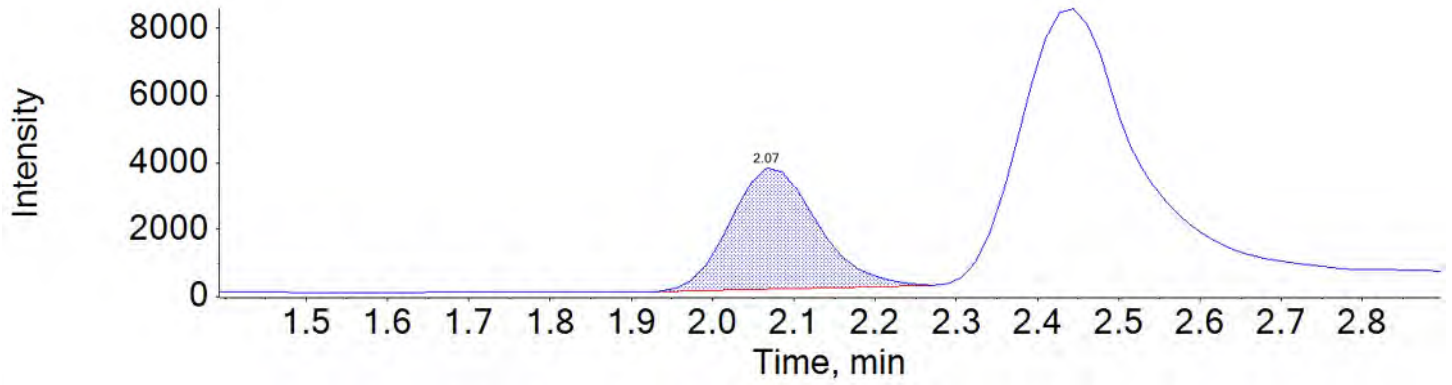
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

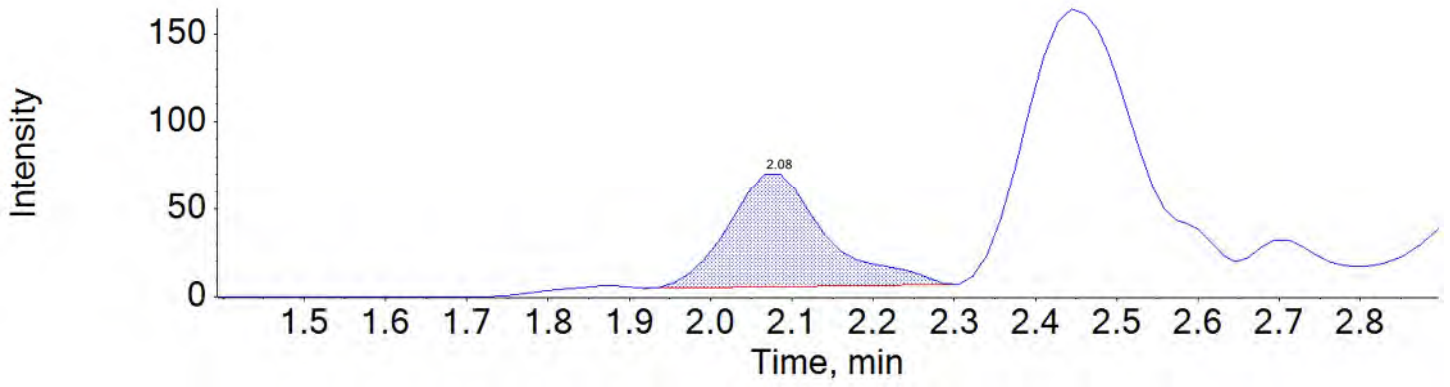


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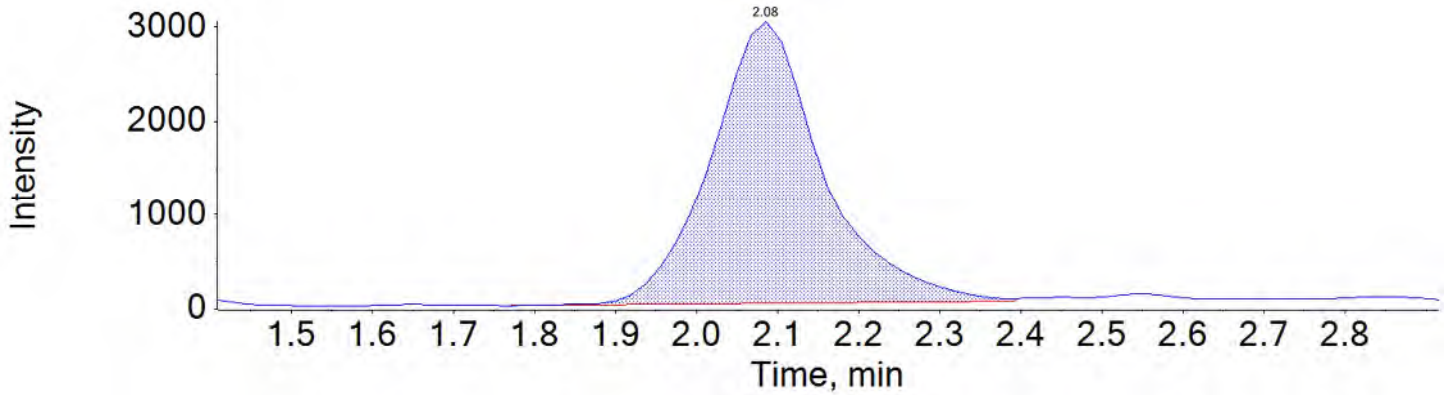
Chromatogram Report

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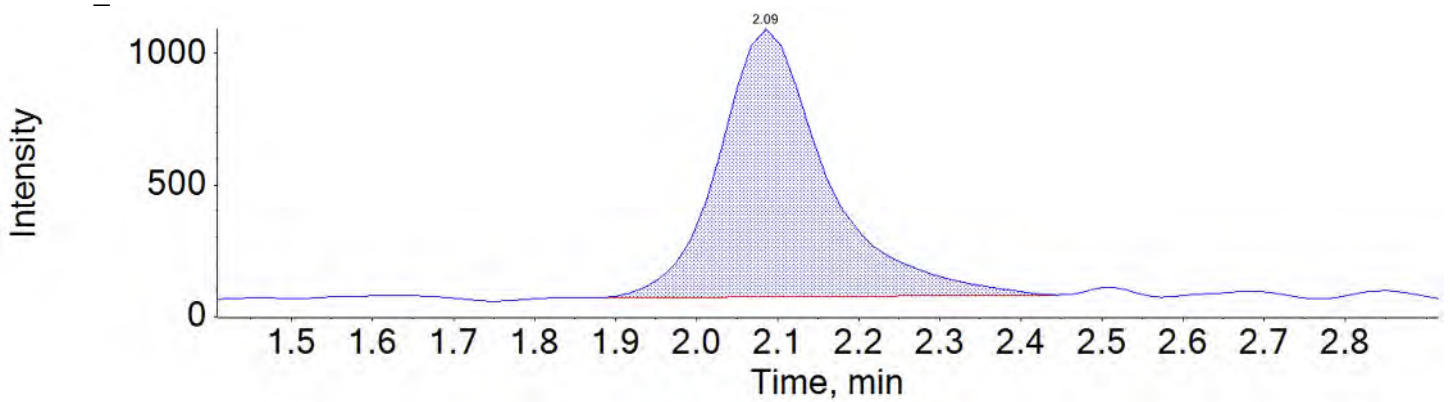
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

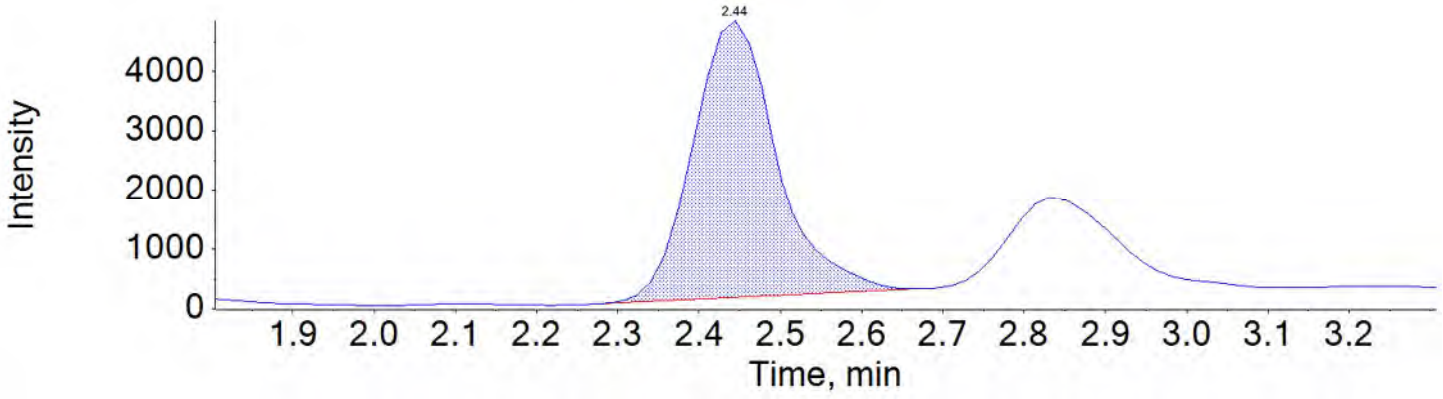


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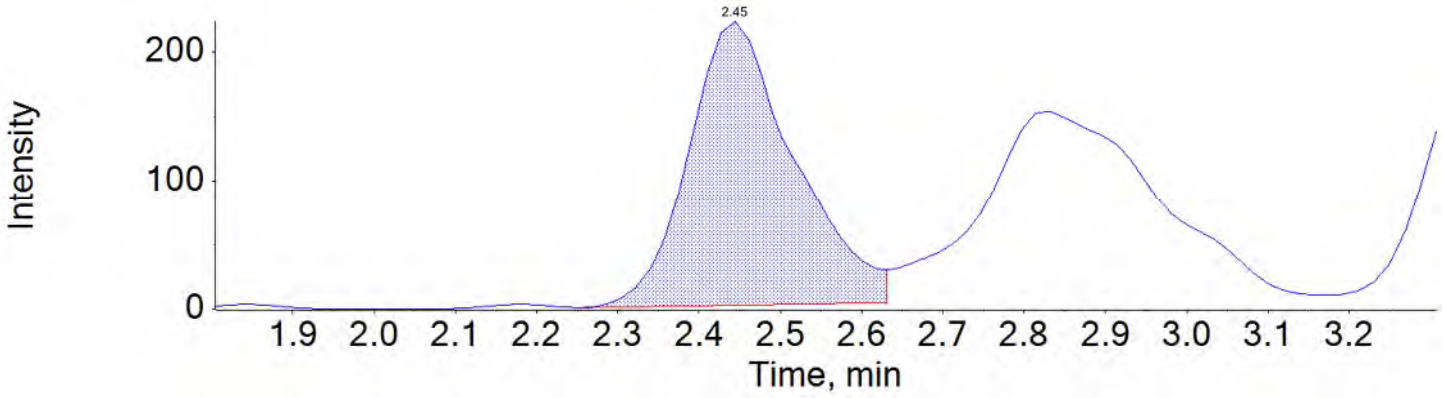
Chromatogram Report

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Printed: 24/05/2018 10:53:32 AM

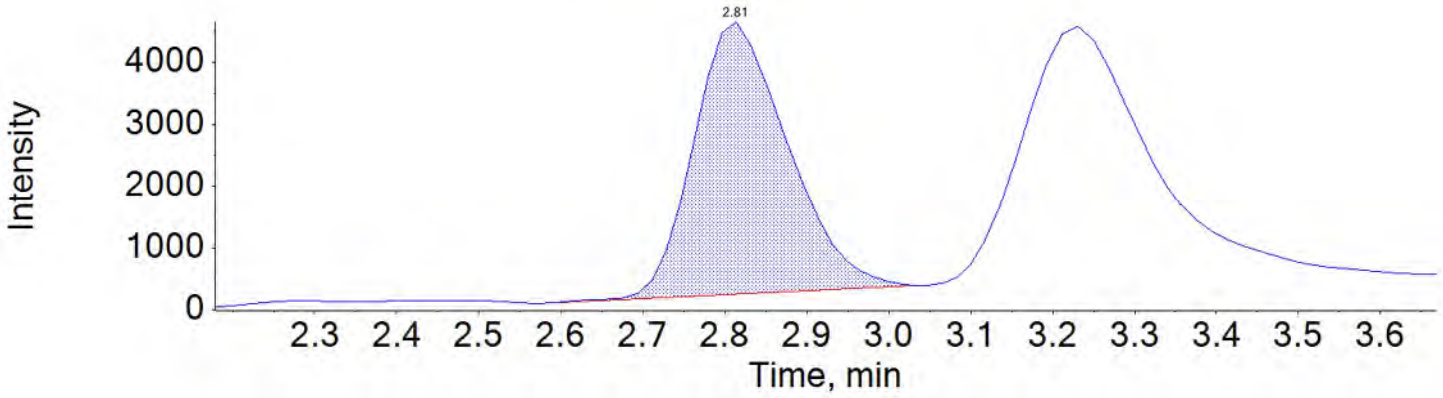
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

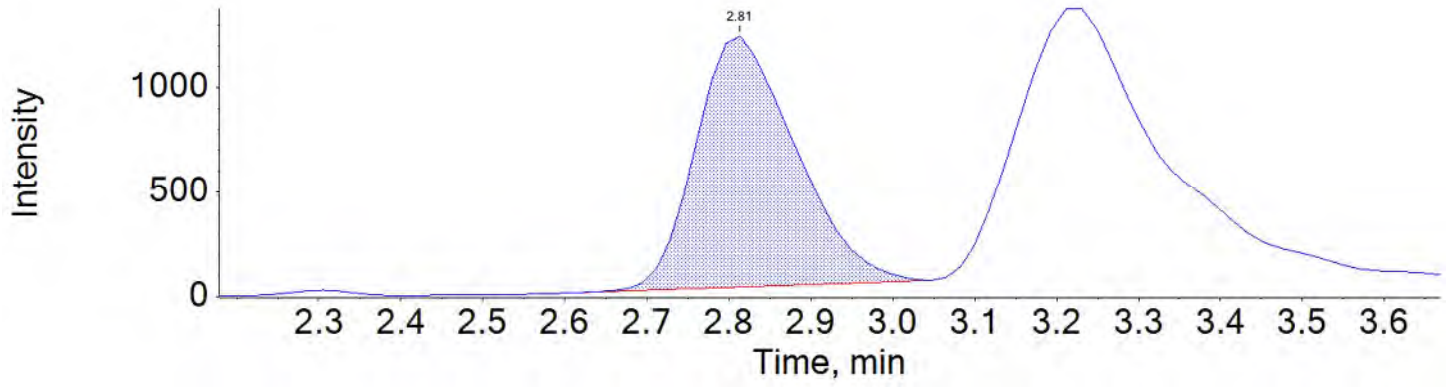


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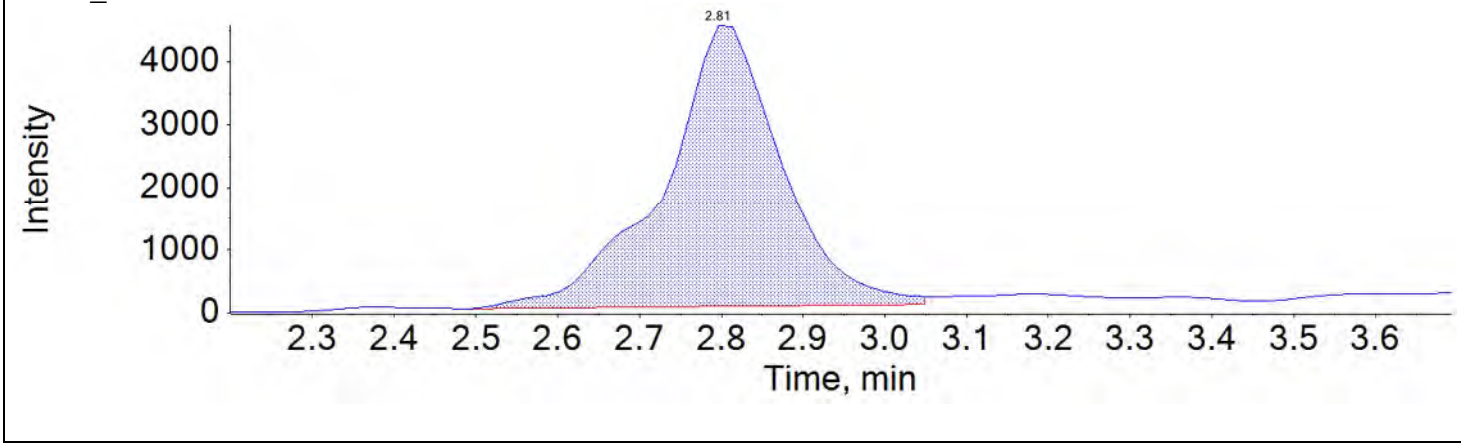
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:53:32 AM

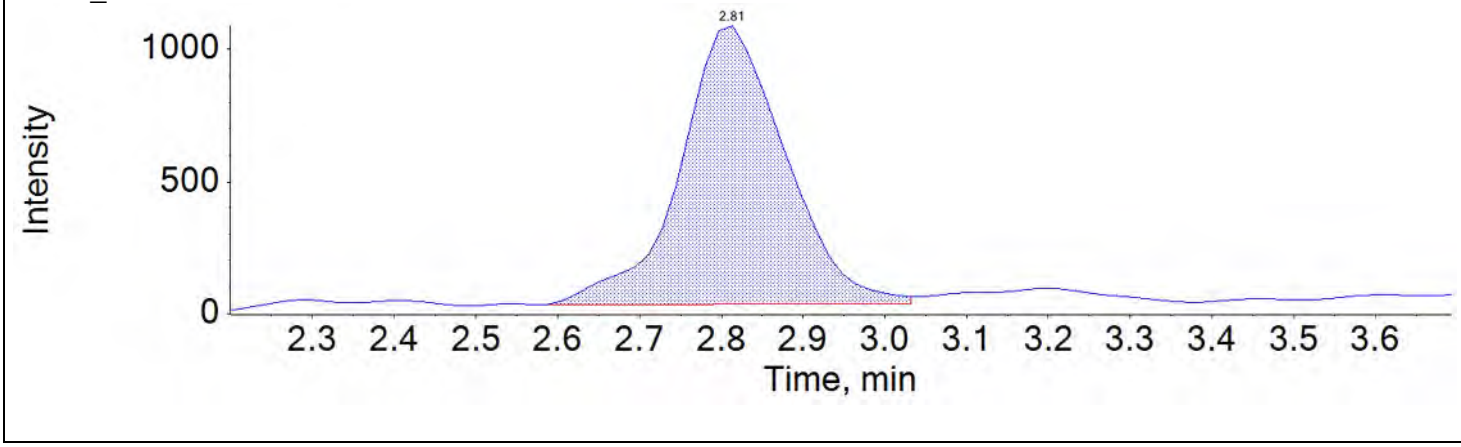
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

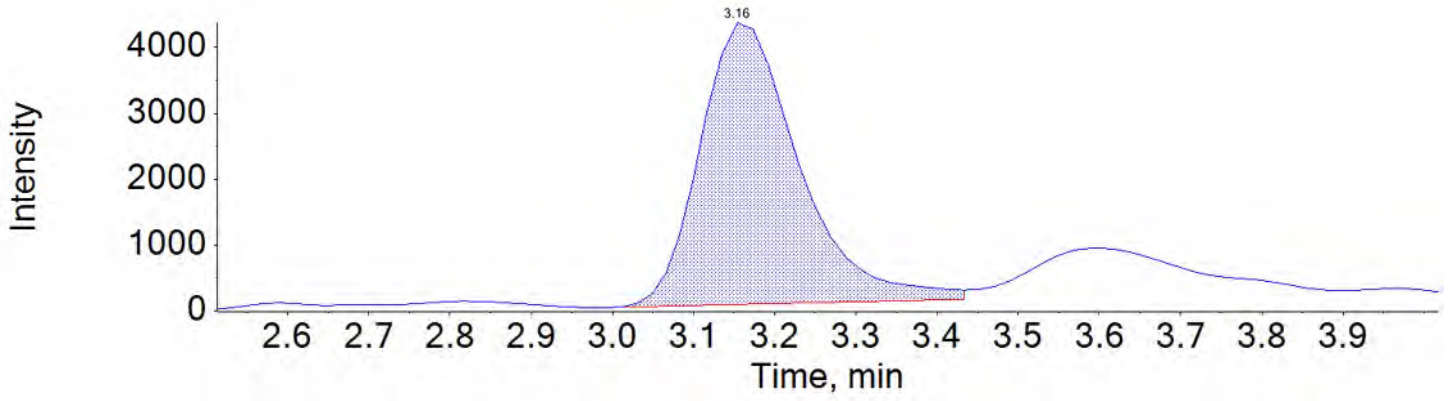


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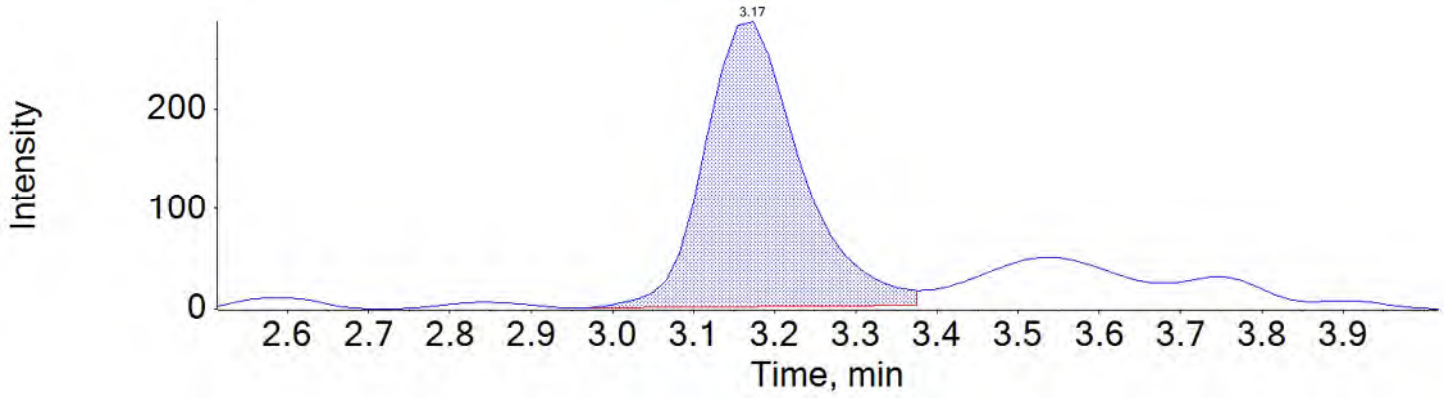
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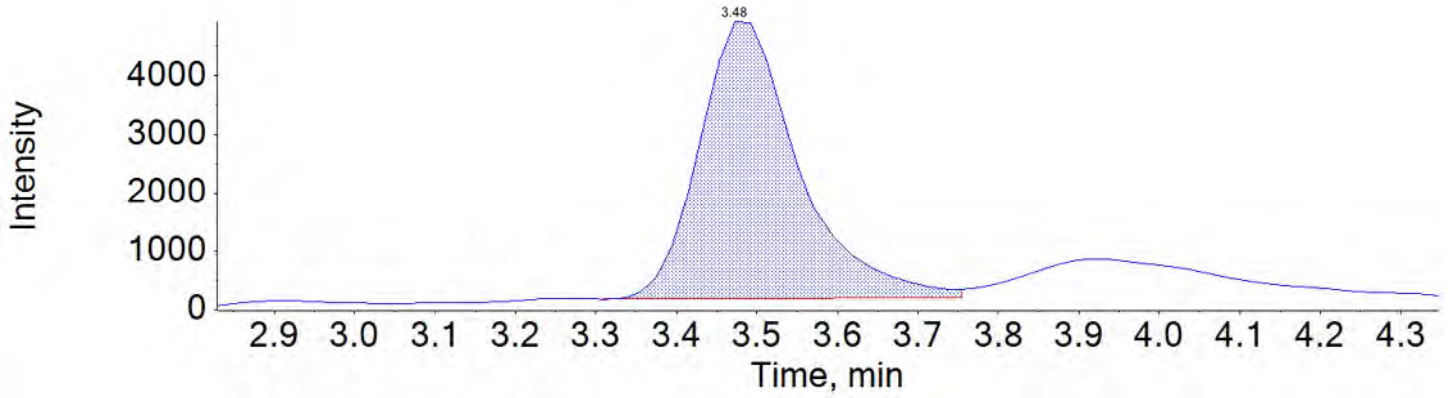
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

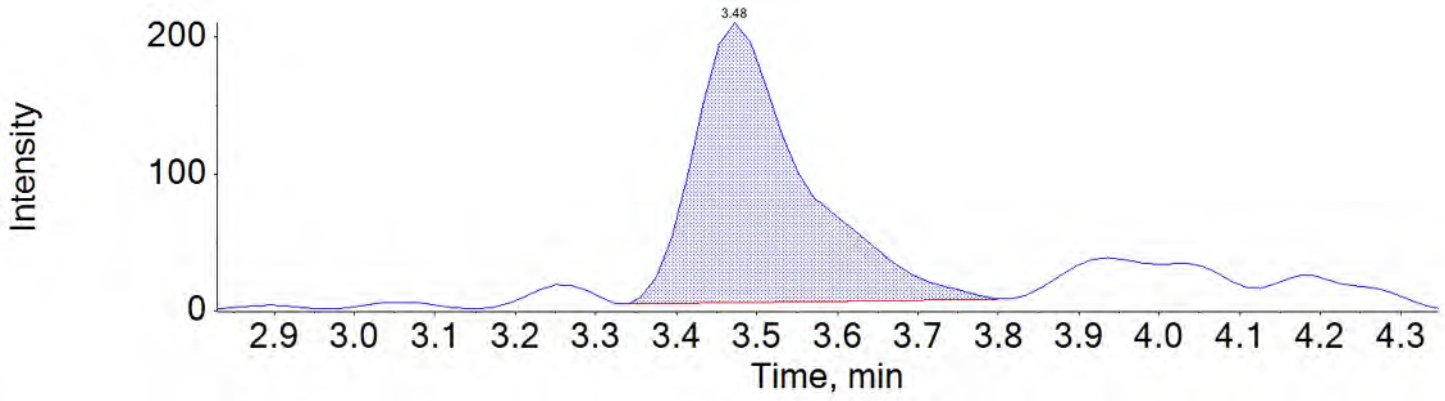


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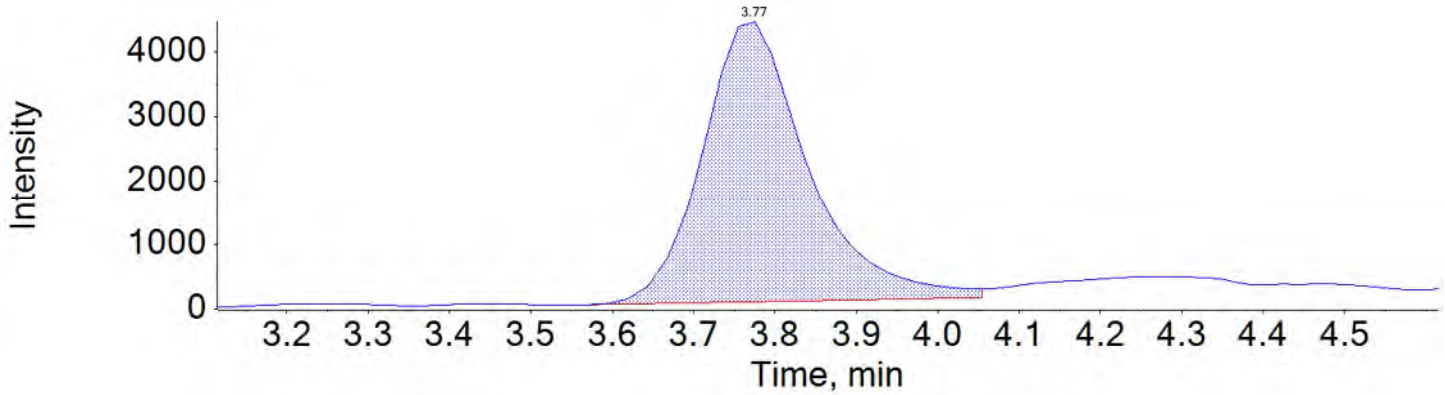
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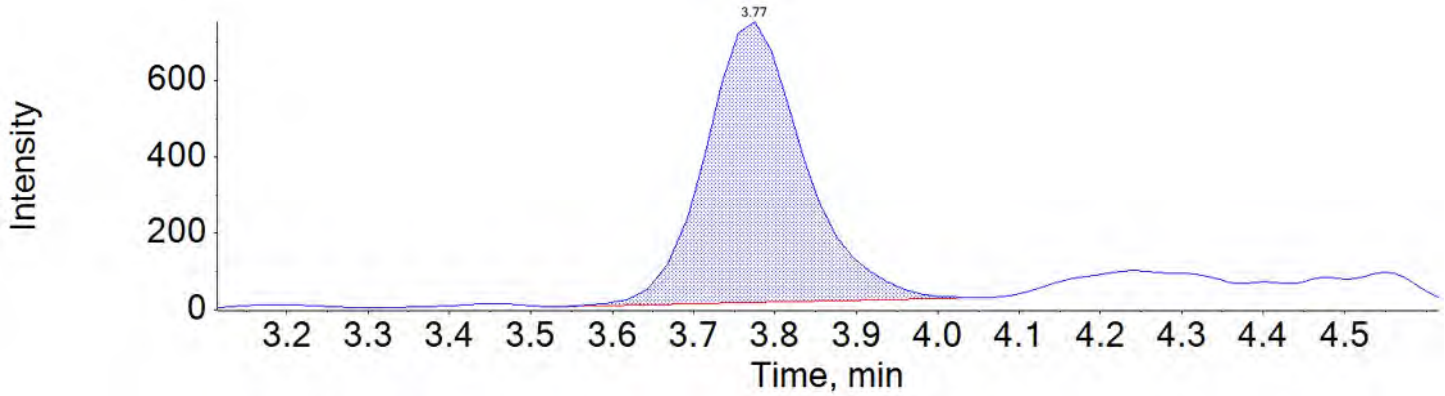
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

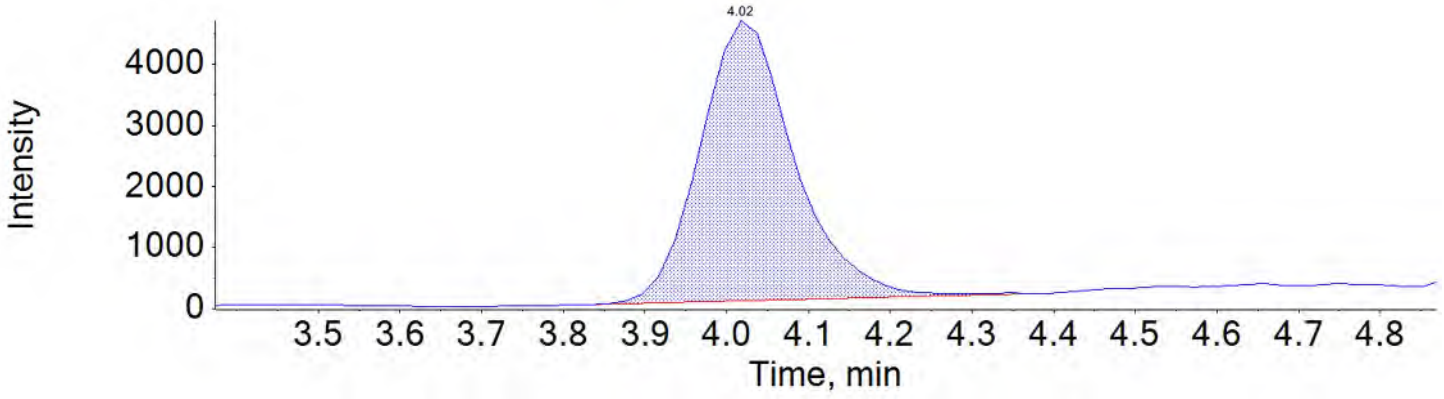


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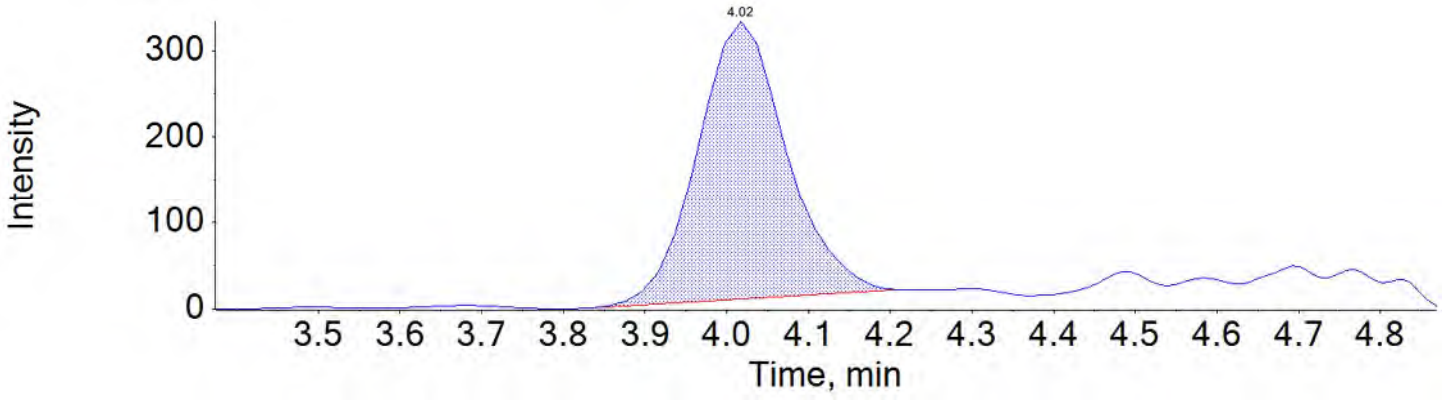
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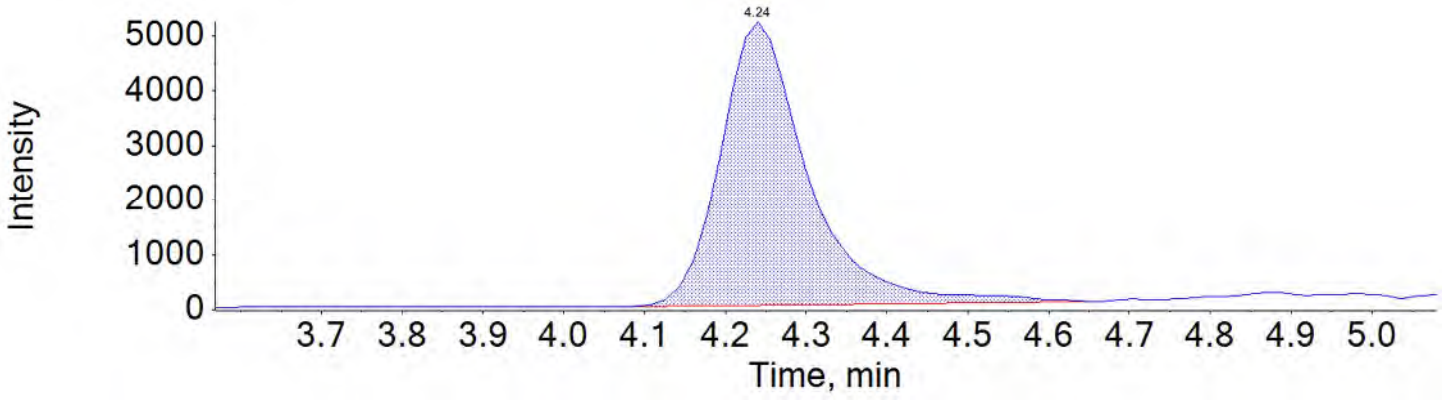
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

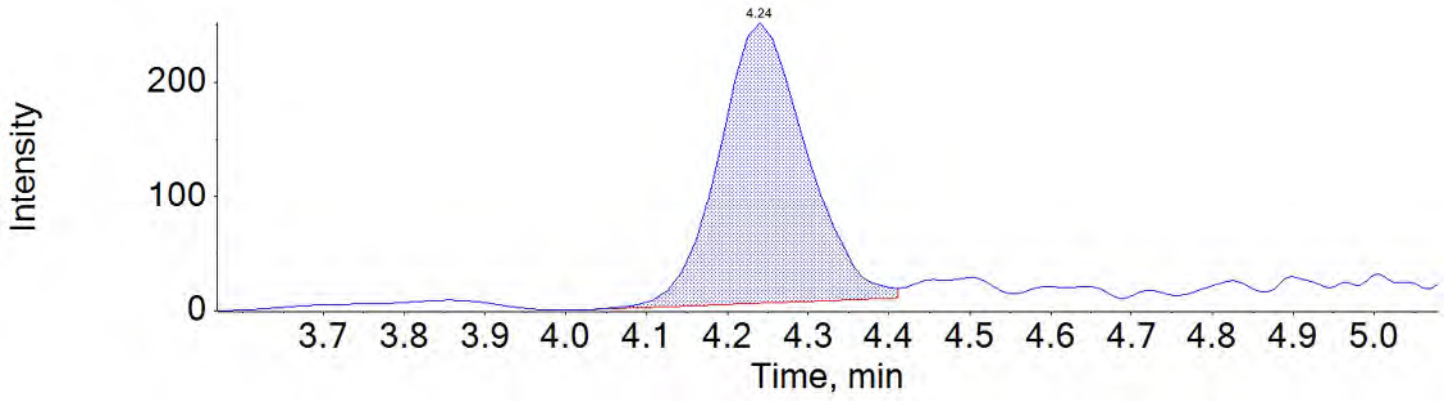


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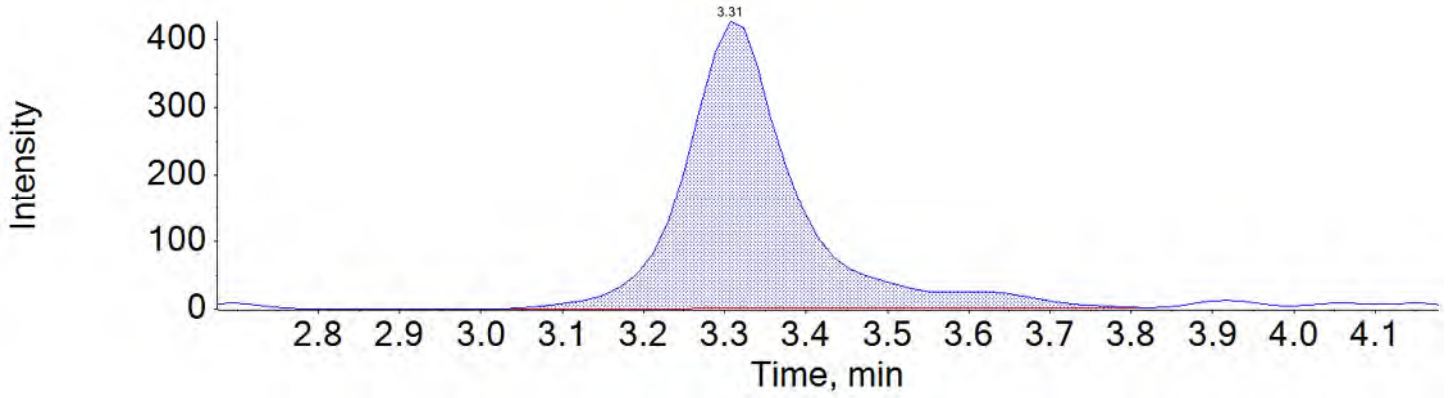
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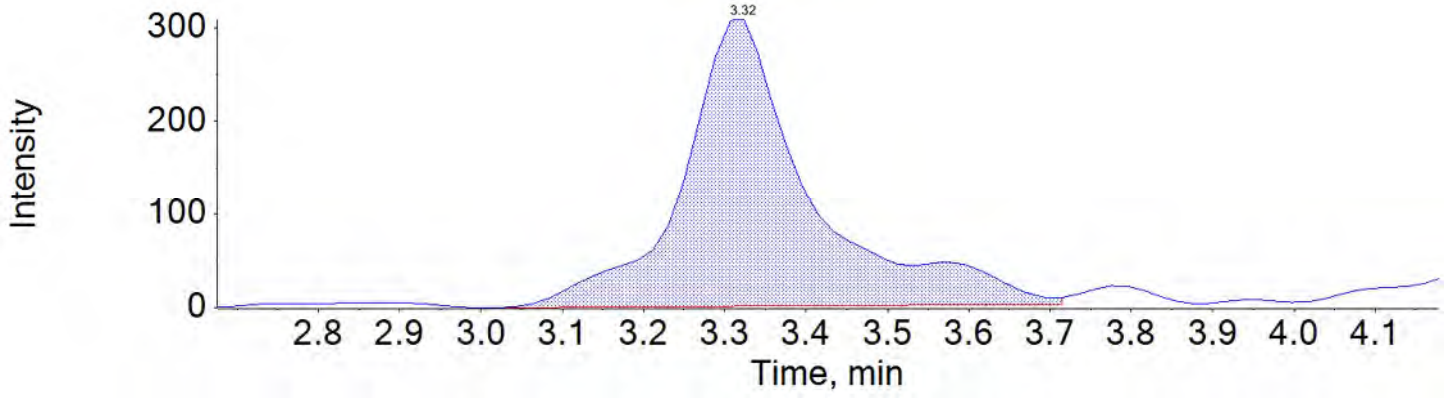
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

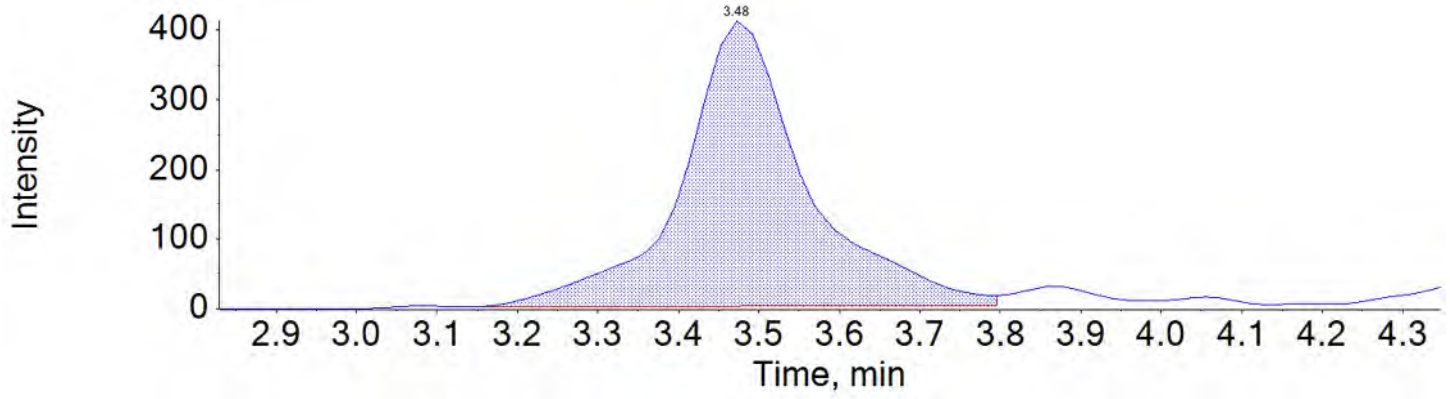


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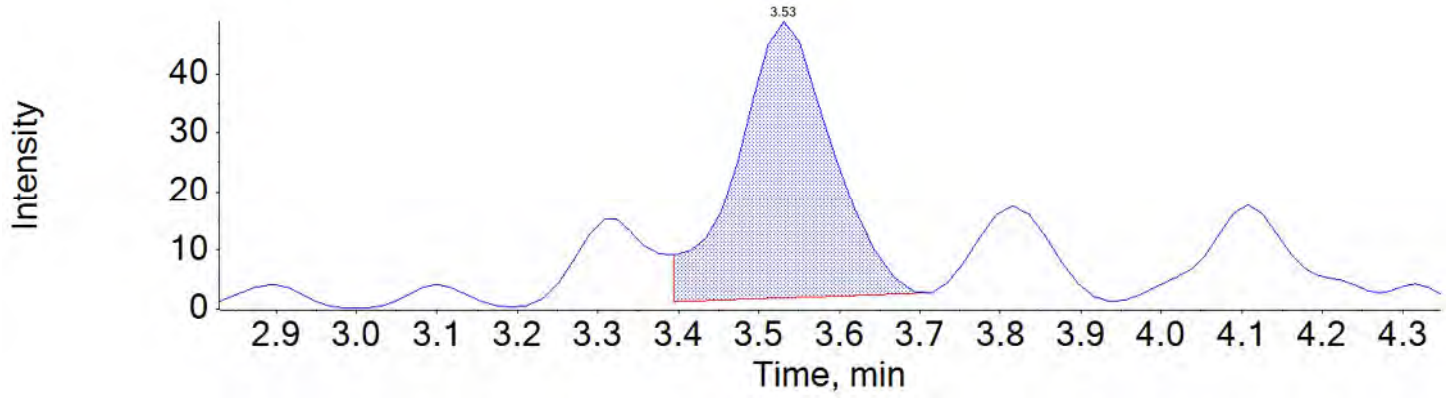
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

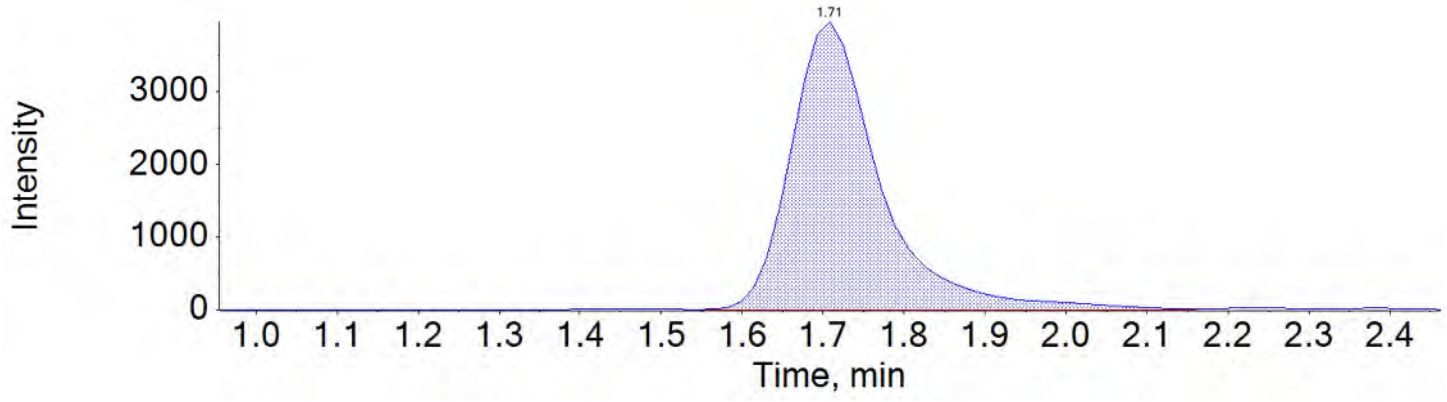
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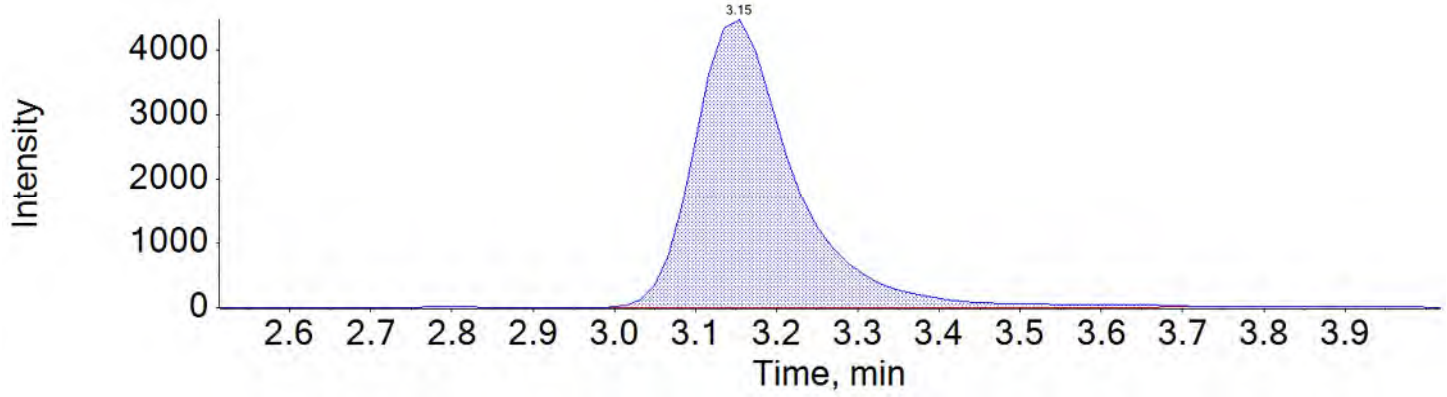
Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

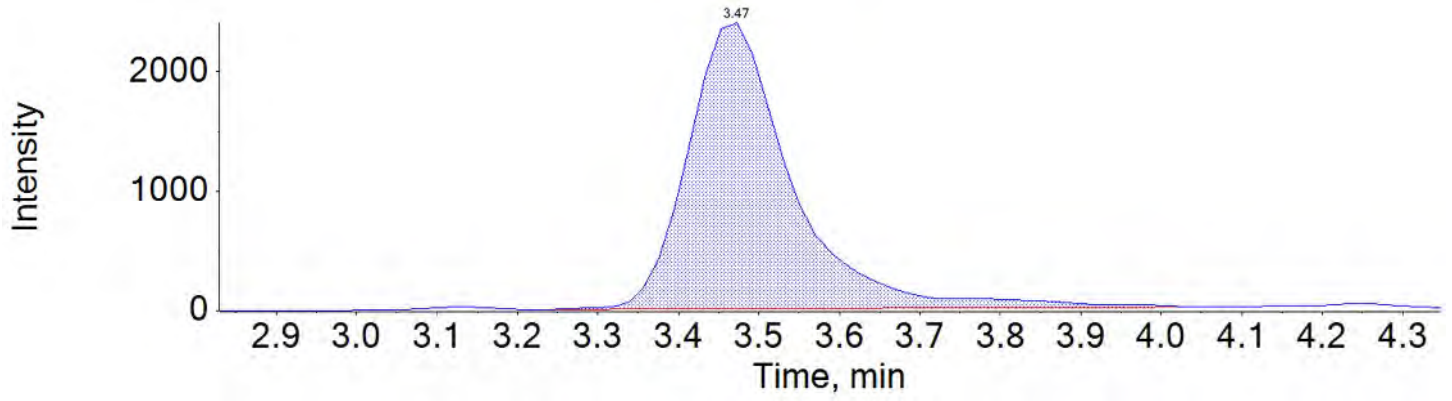


BATTELLE

Chromatogram Report

Created with Analyst Reporter
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d5-EtFOSAA 589.0 / 419.0



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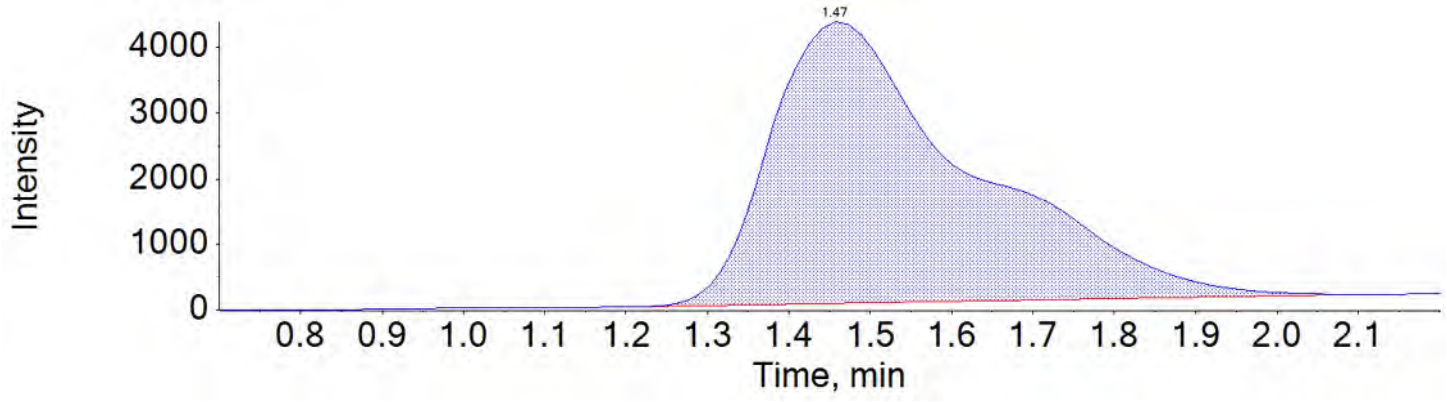
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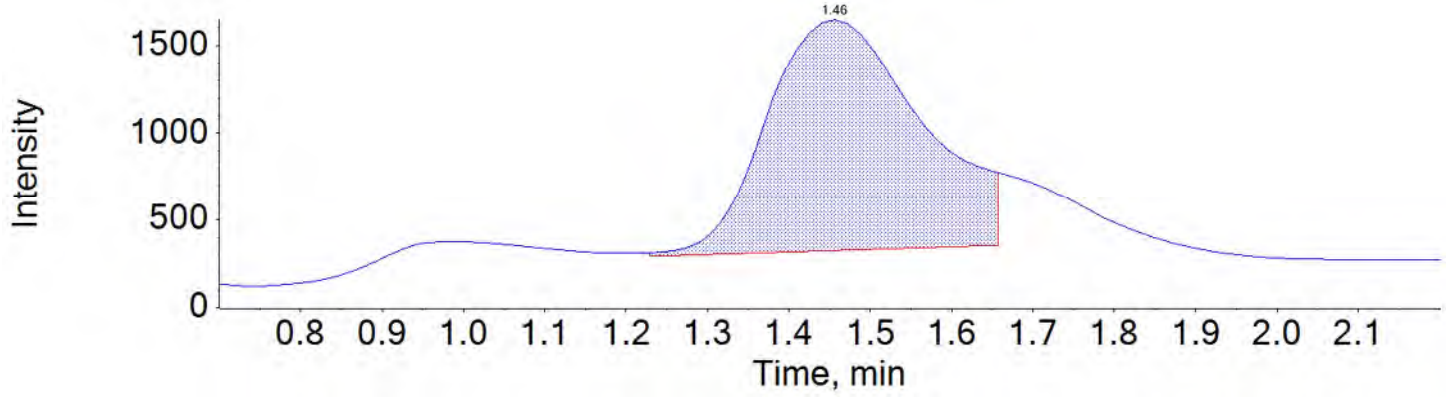
Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

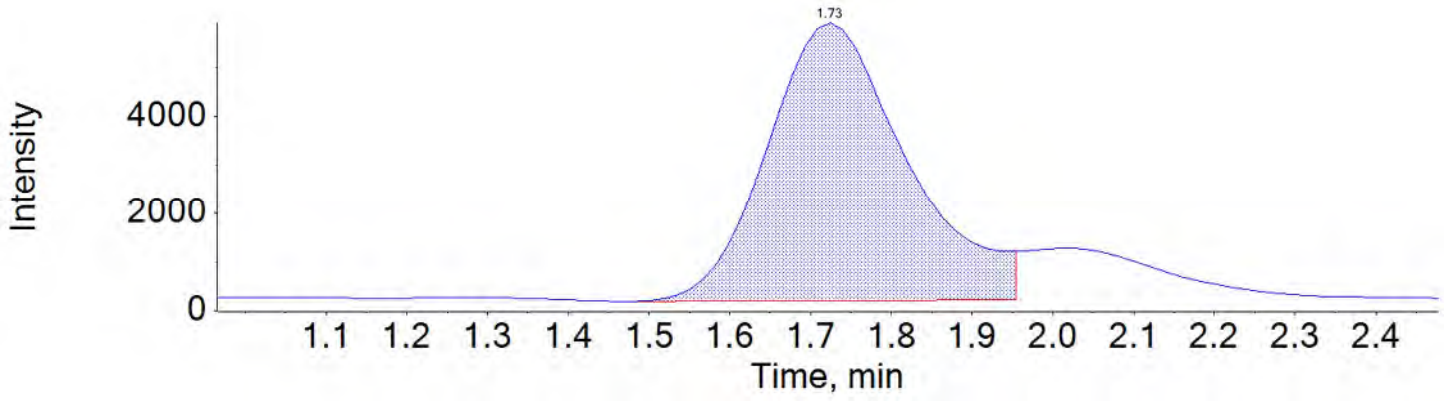


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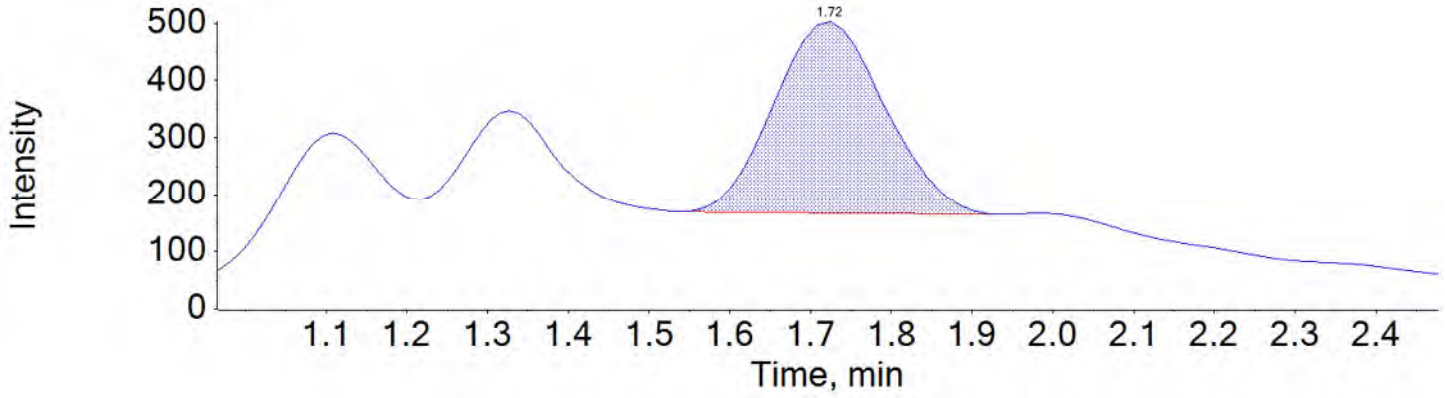
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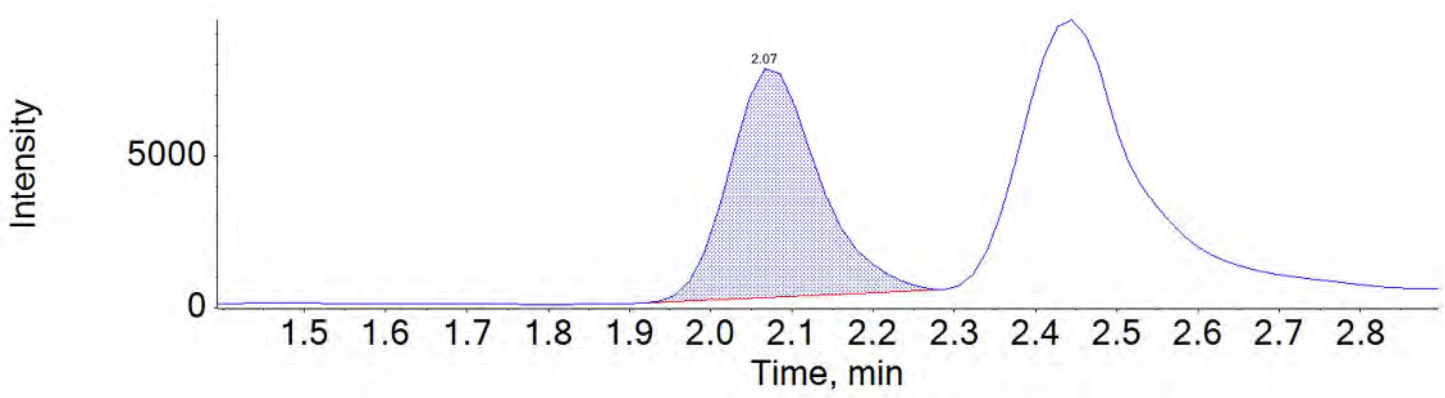
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

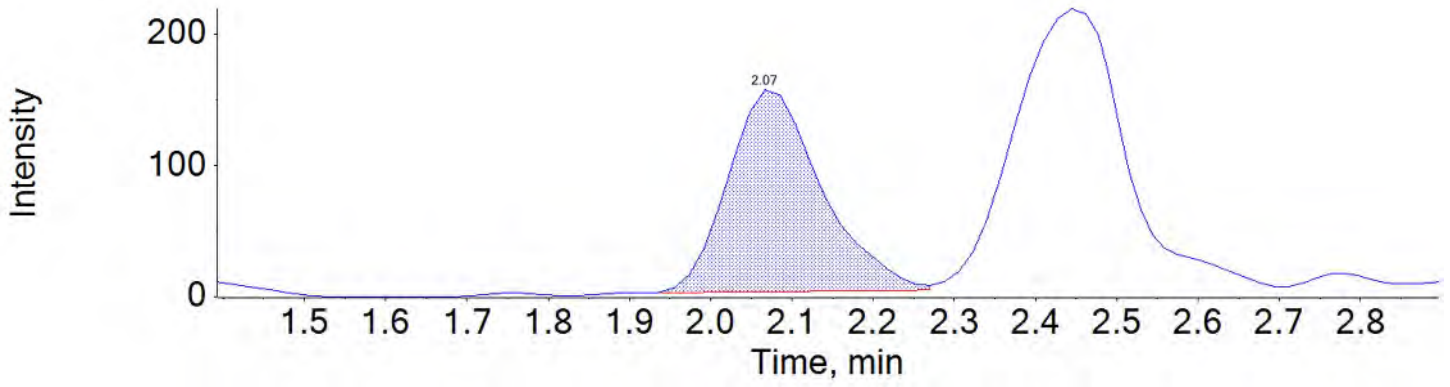


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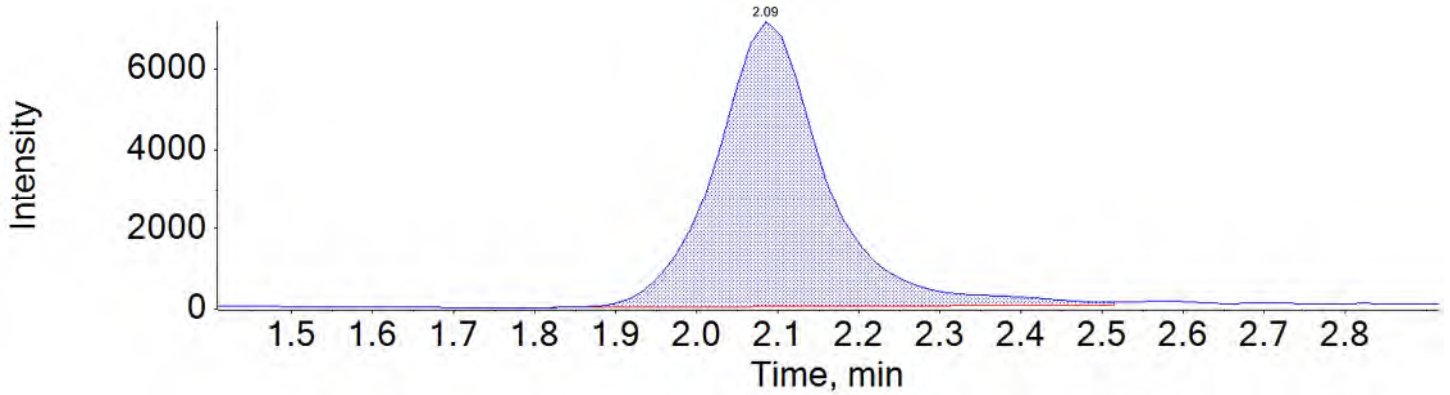
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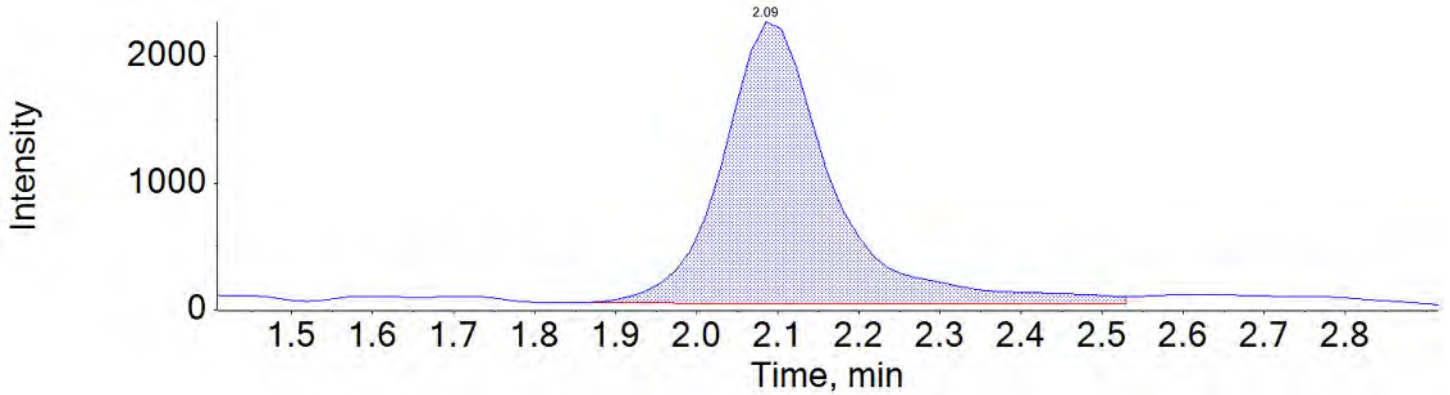
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

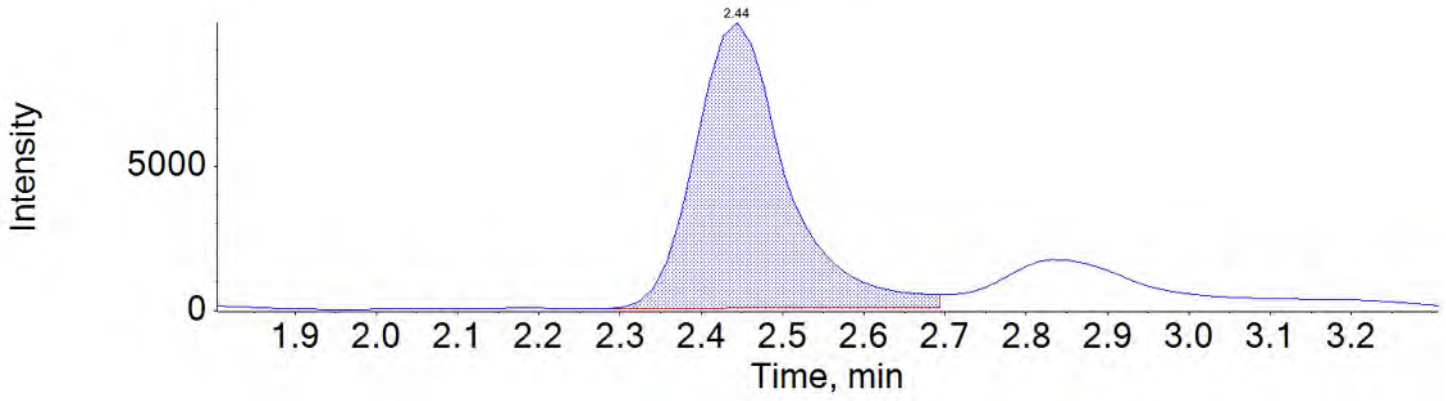


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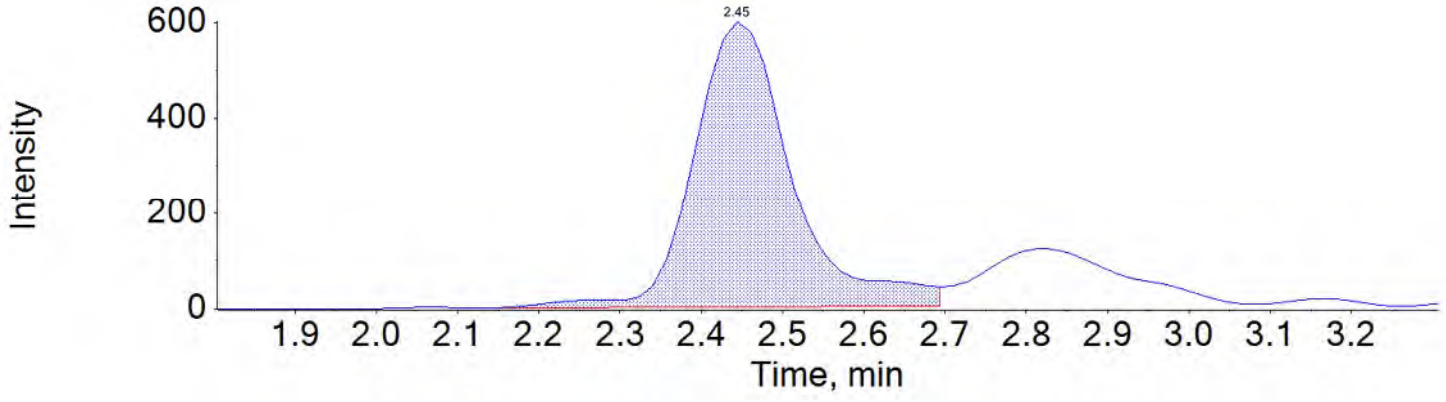
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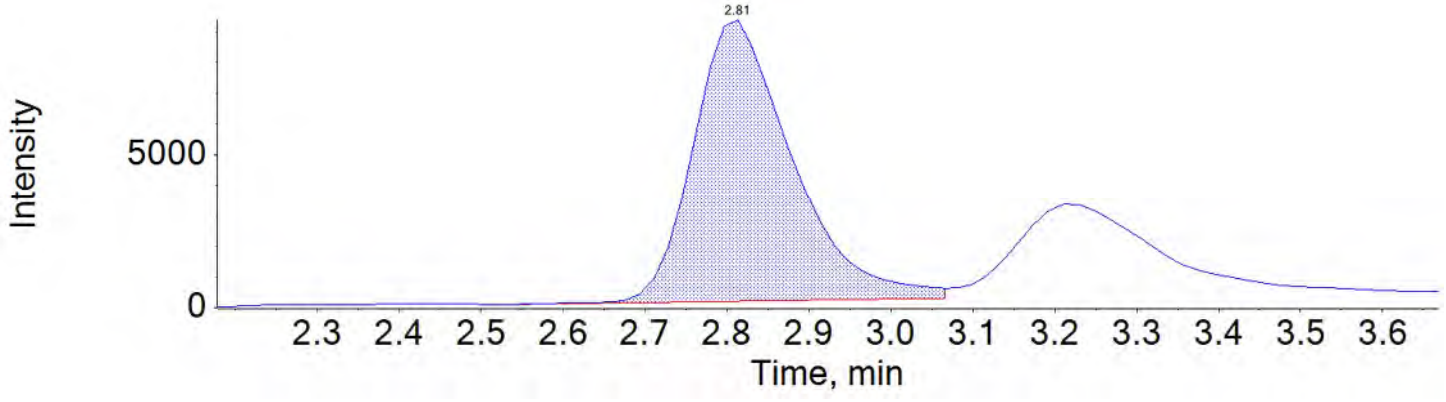
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

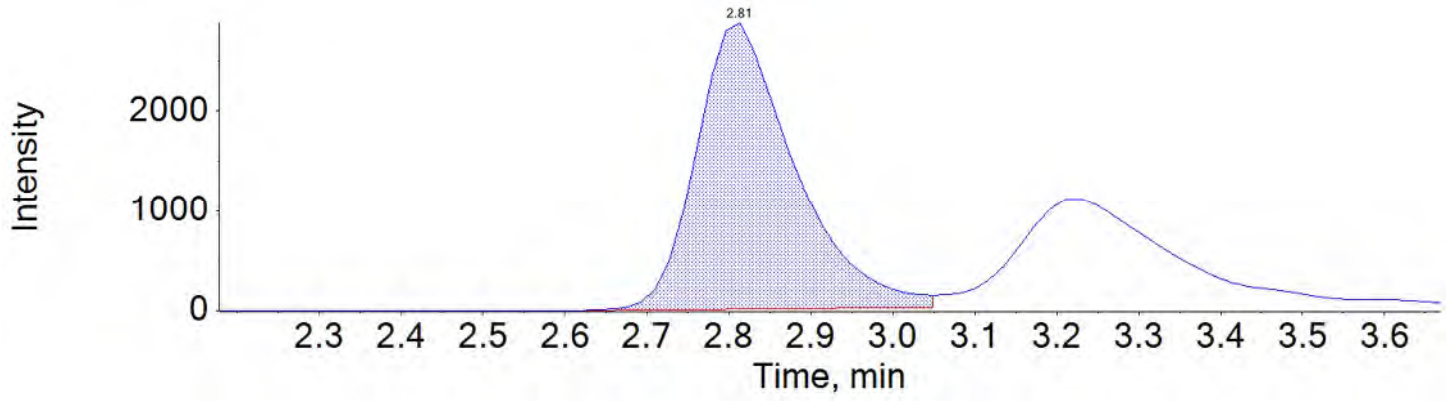


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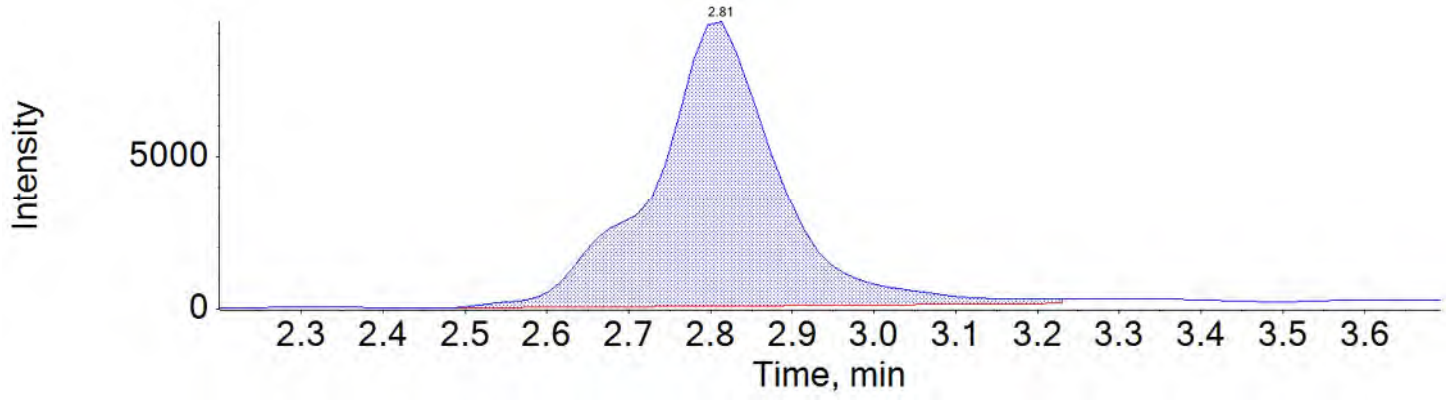
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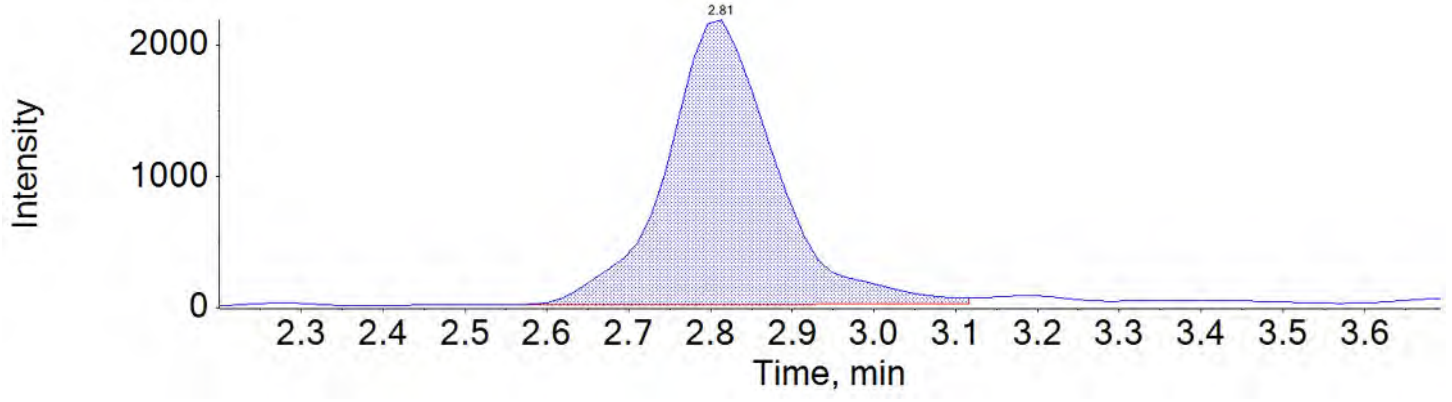
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

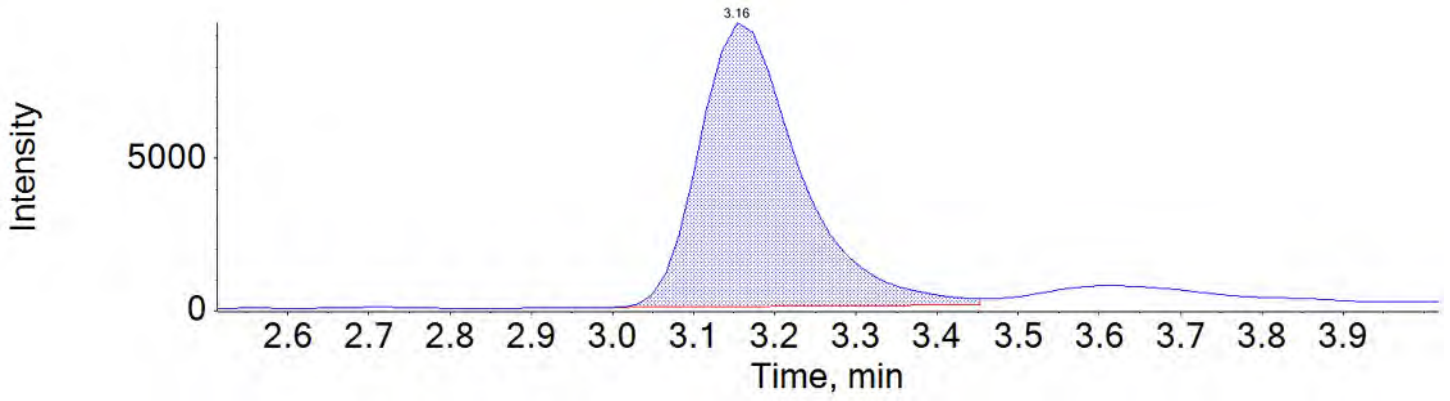


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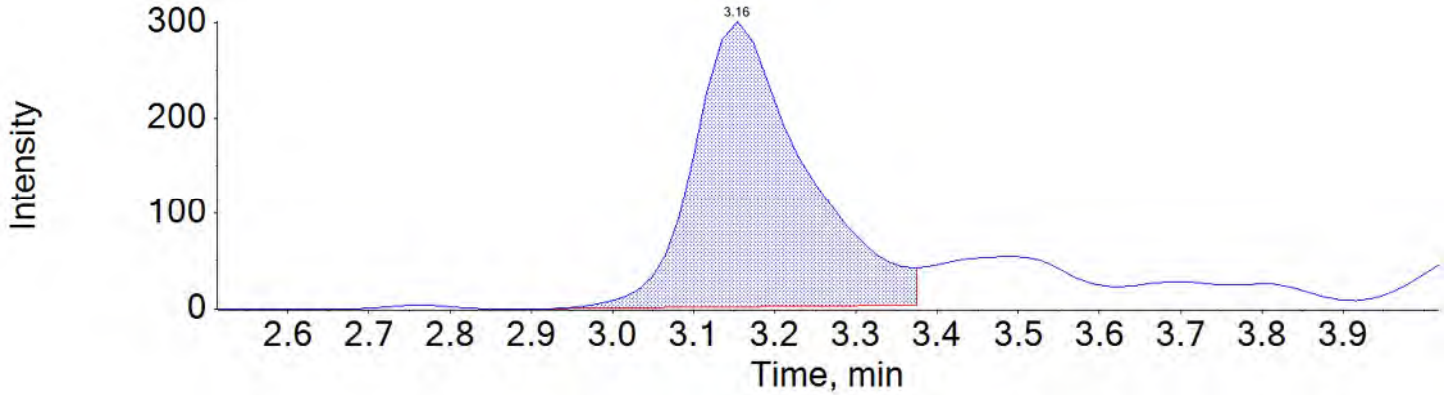
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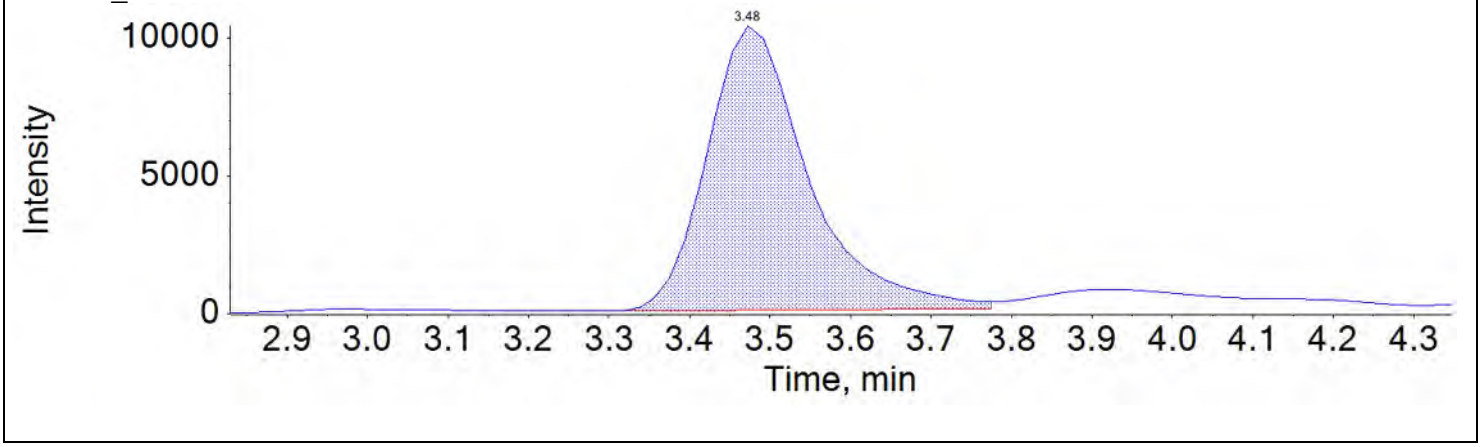
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

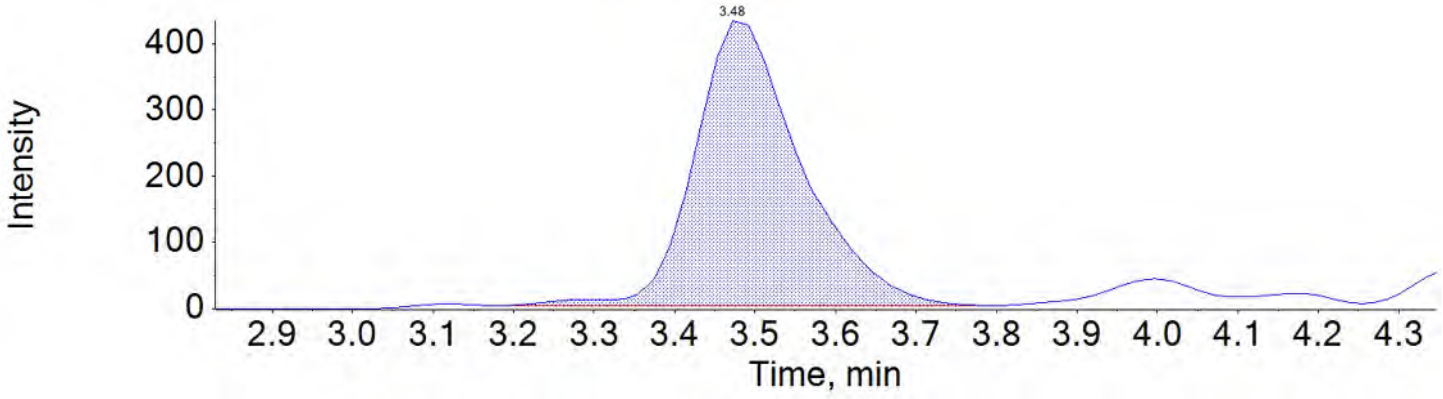


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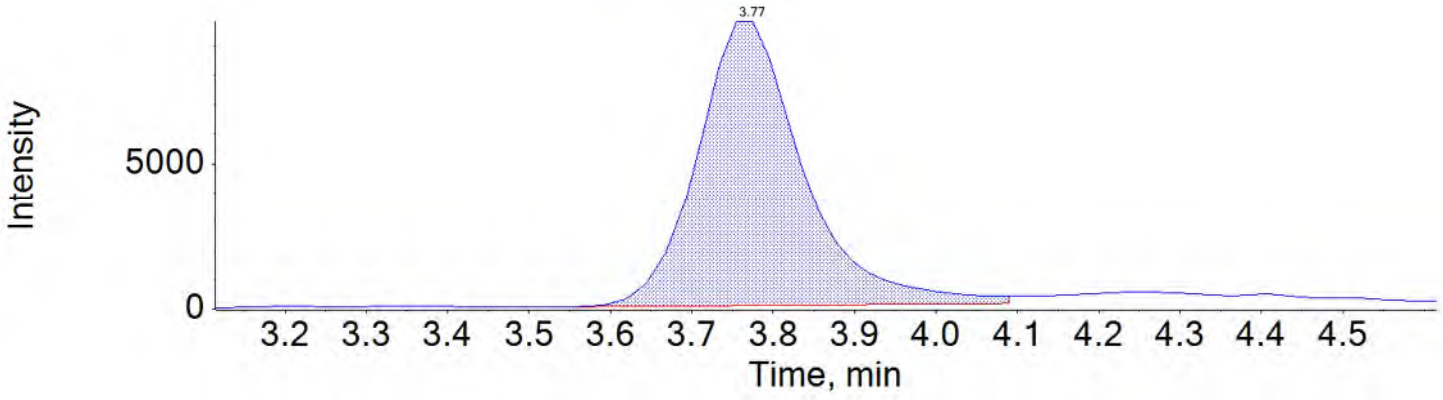
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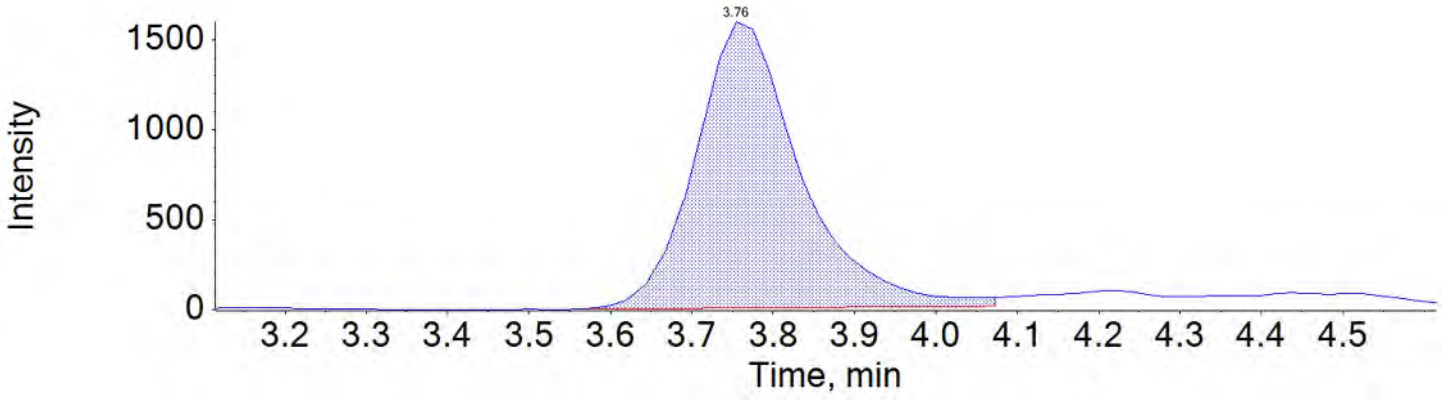
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

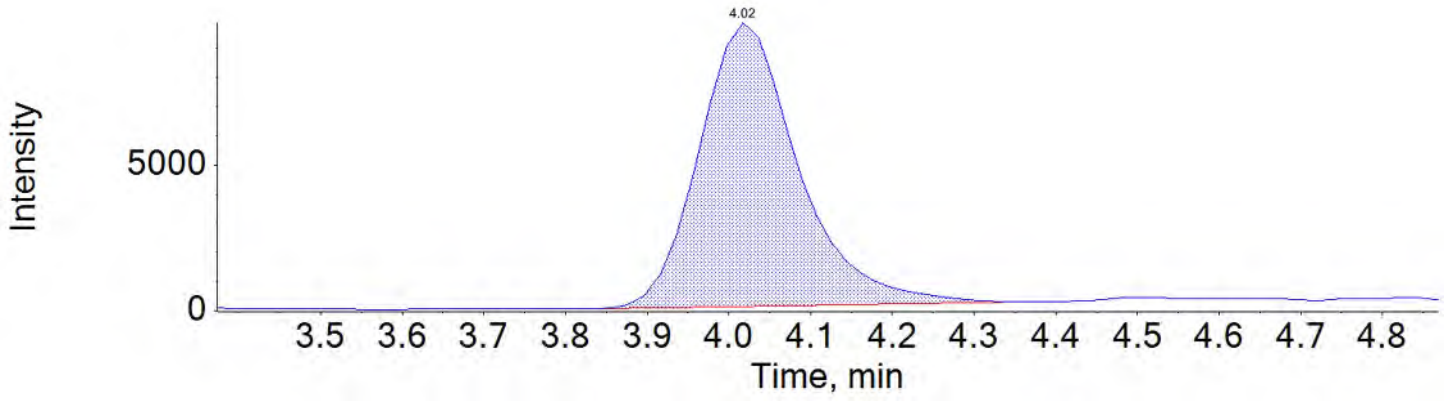


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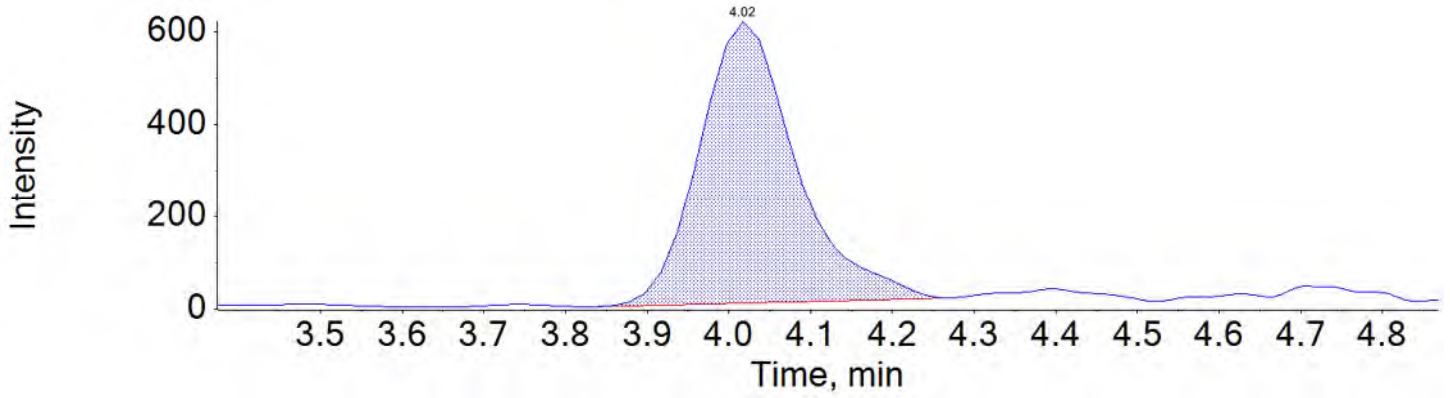
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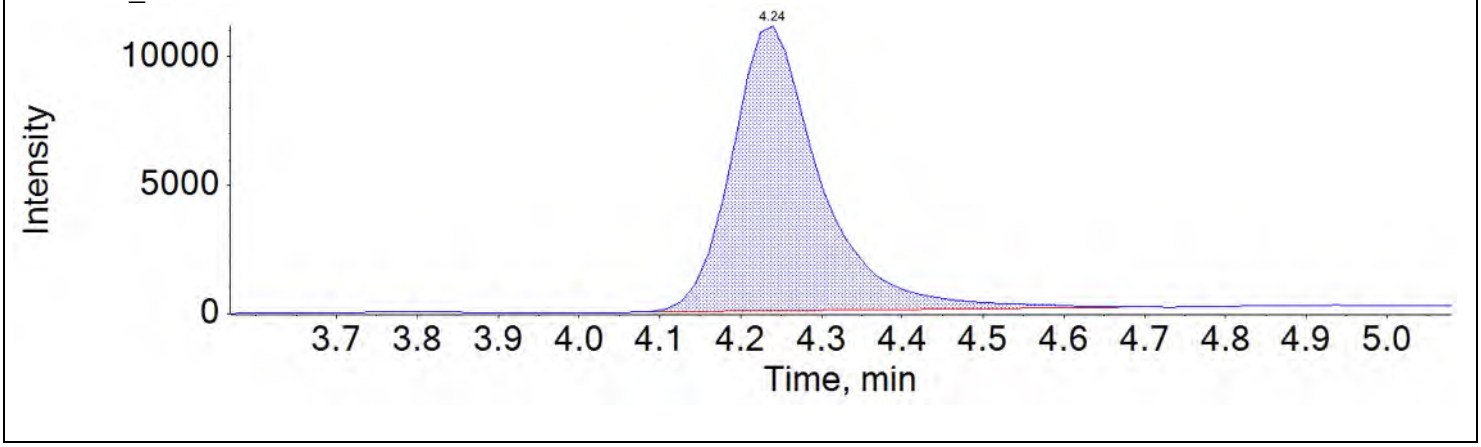
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

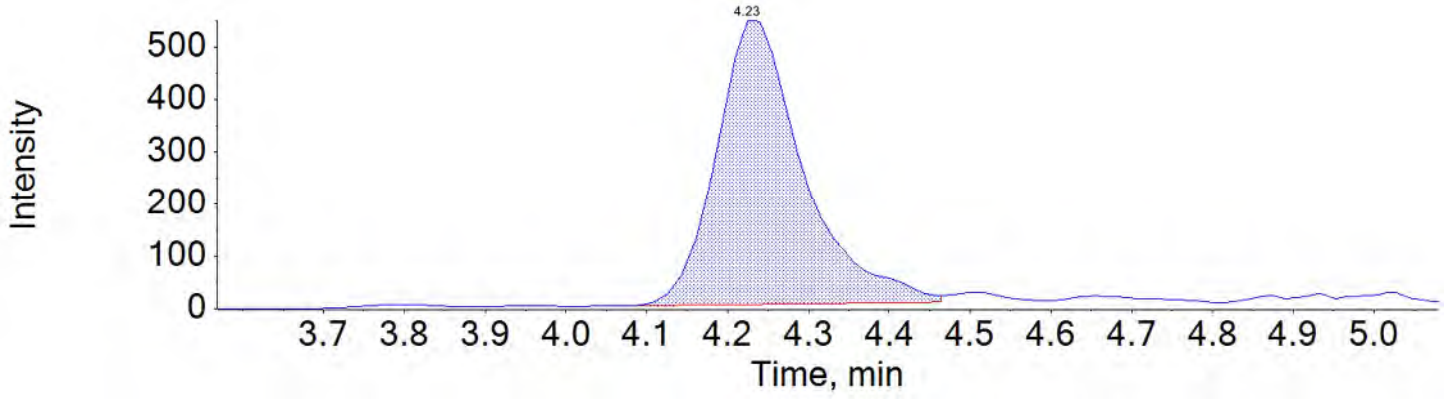


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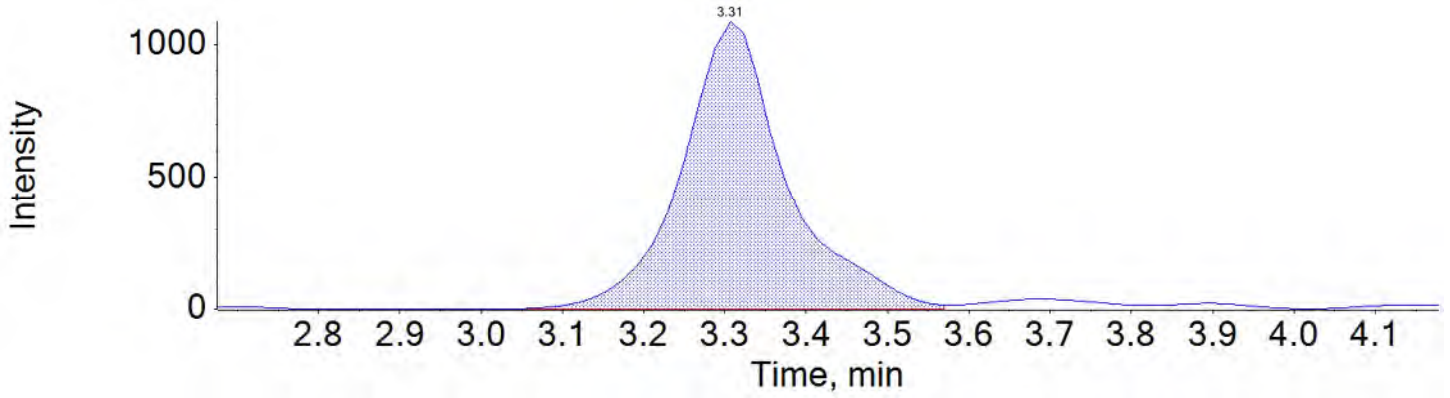
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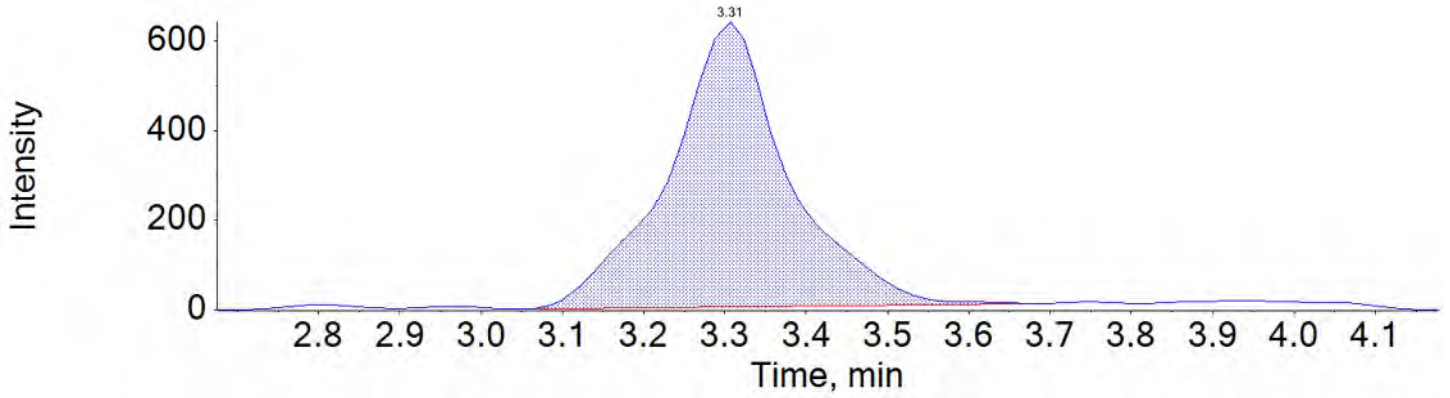
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

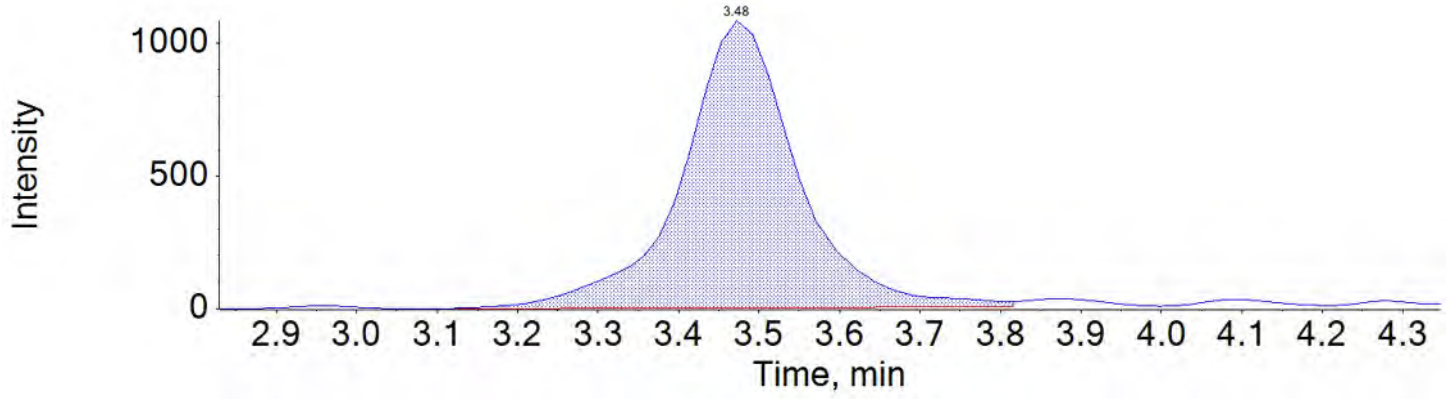


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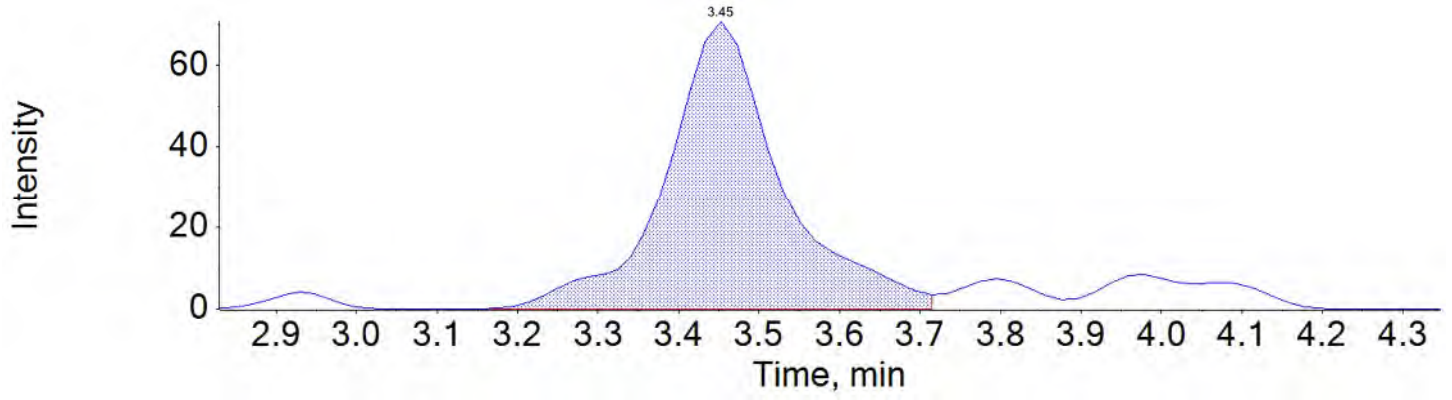
Chromatogram Report

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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

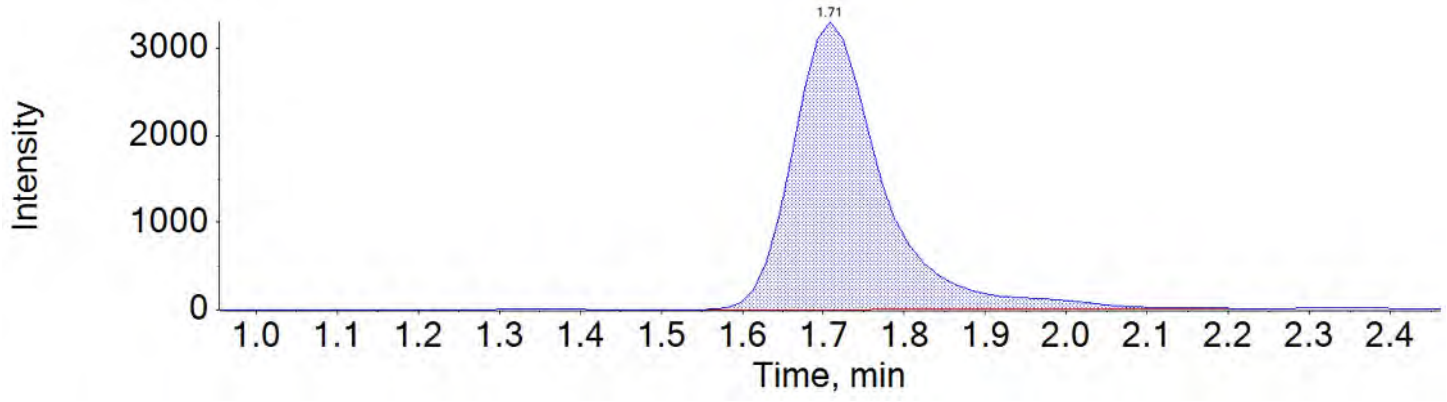
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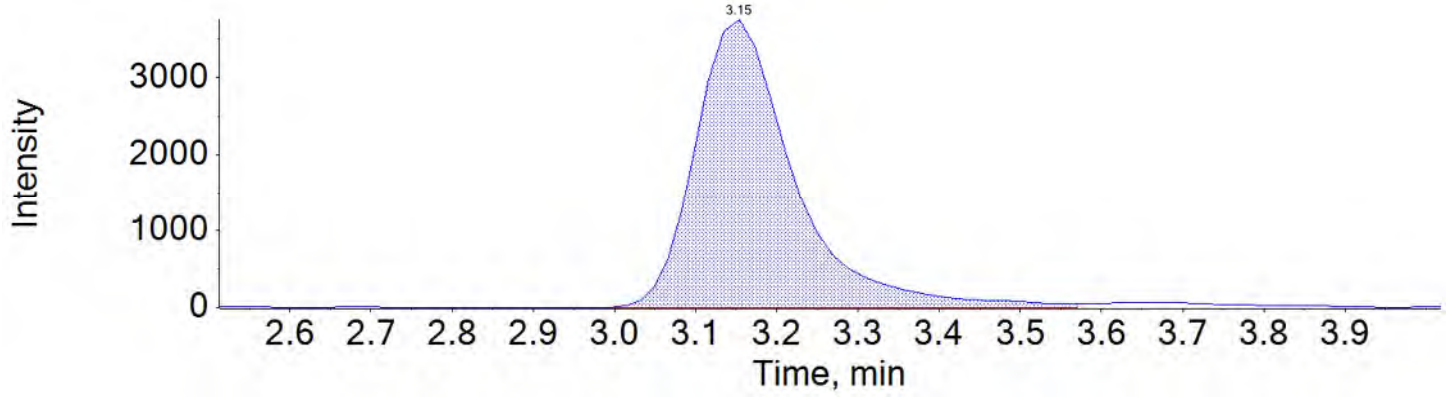
Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

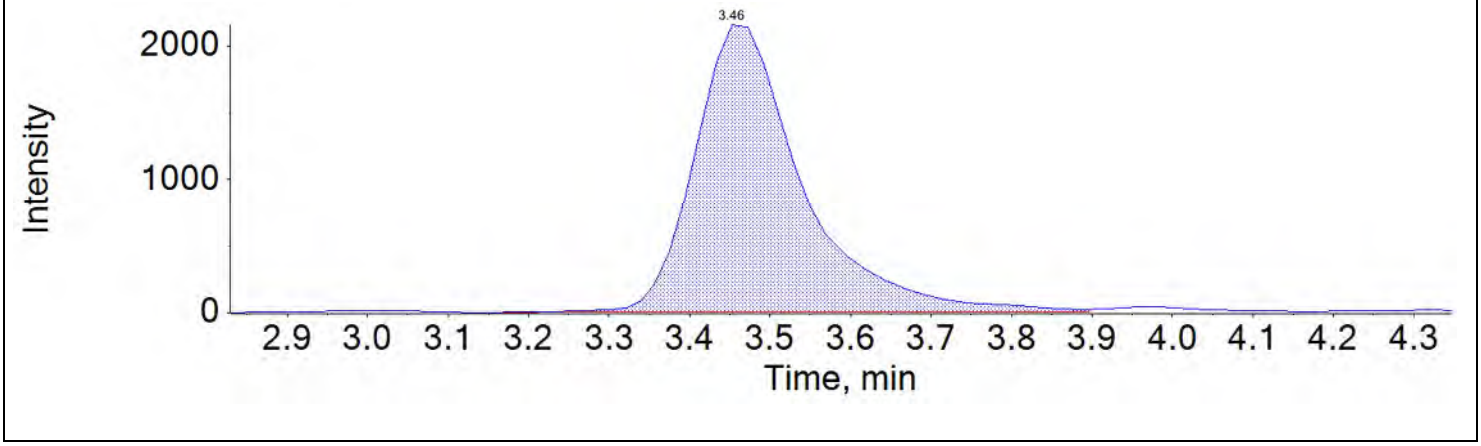


BATTELLE

Chromatogram Report

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Printed: 24/05/2018 10:55:05 AM

d5-EtFOSAA 589.0 / 419.0



BATTELLE

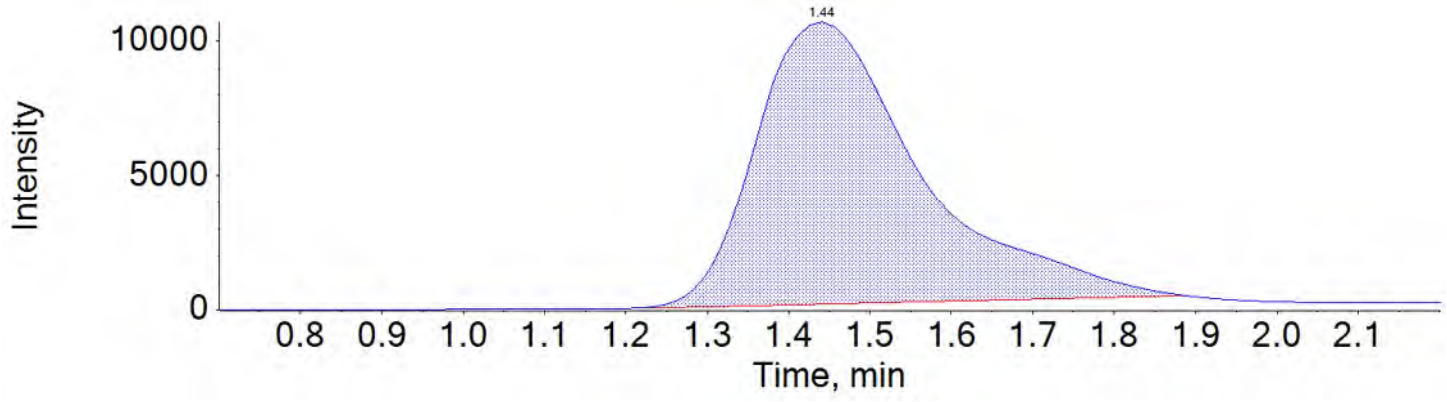
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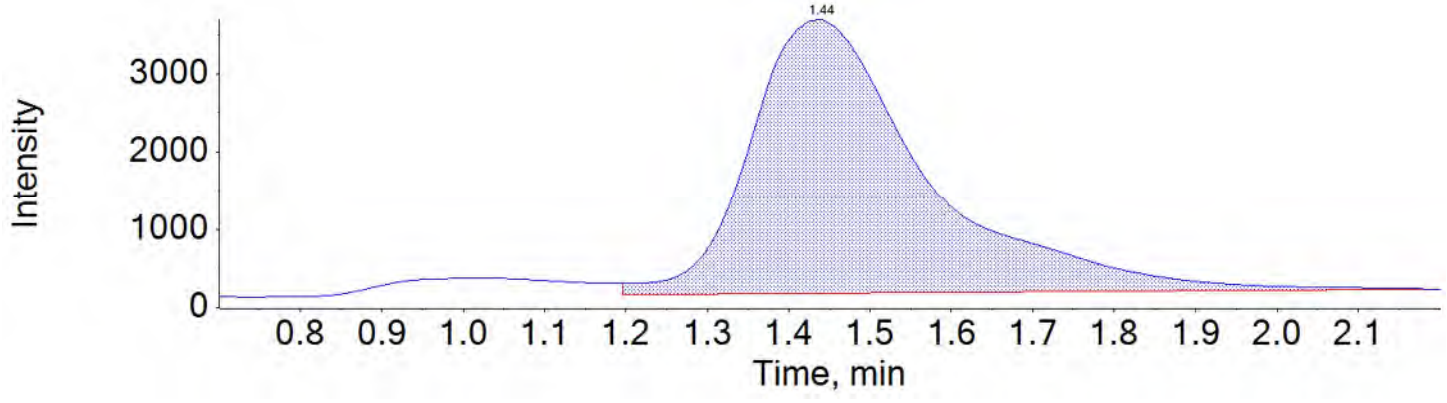
Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

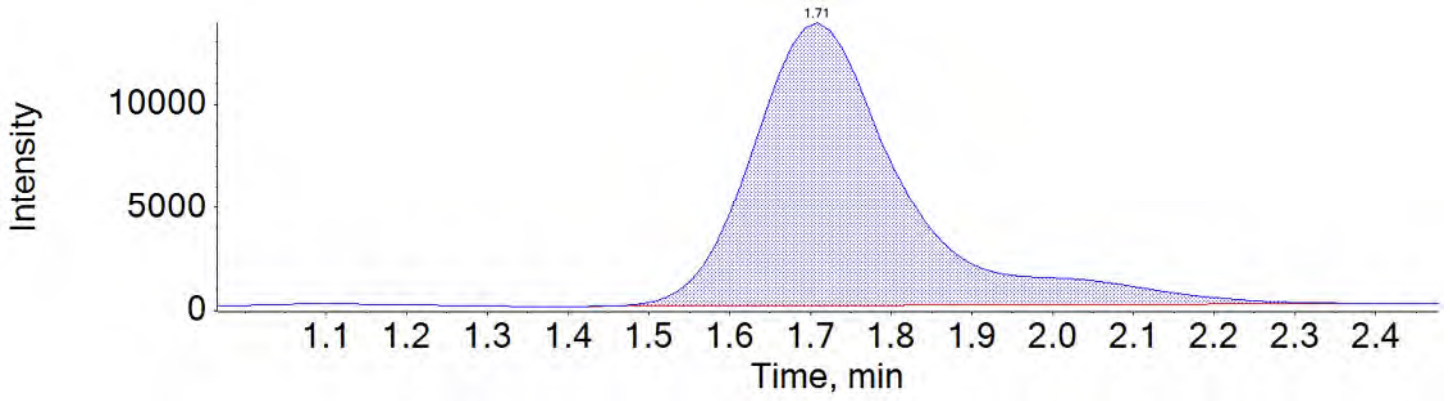


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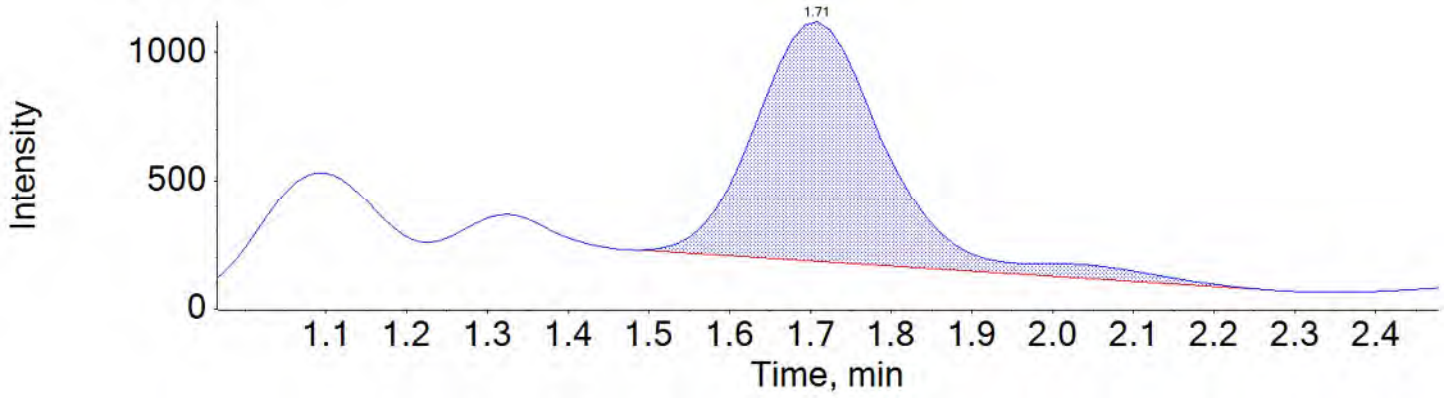
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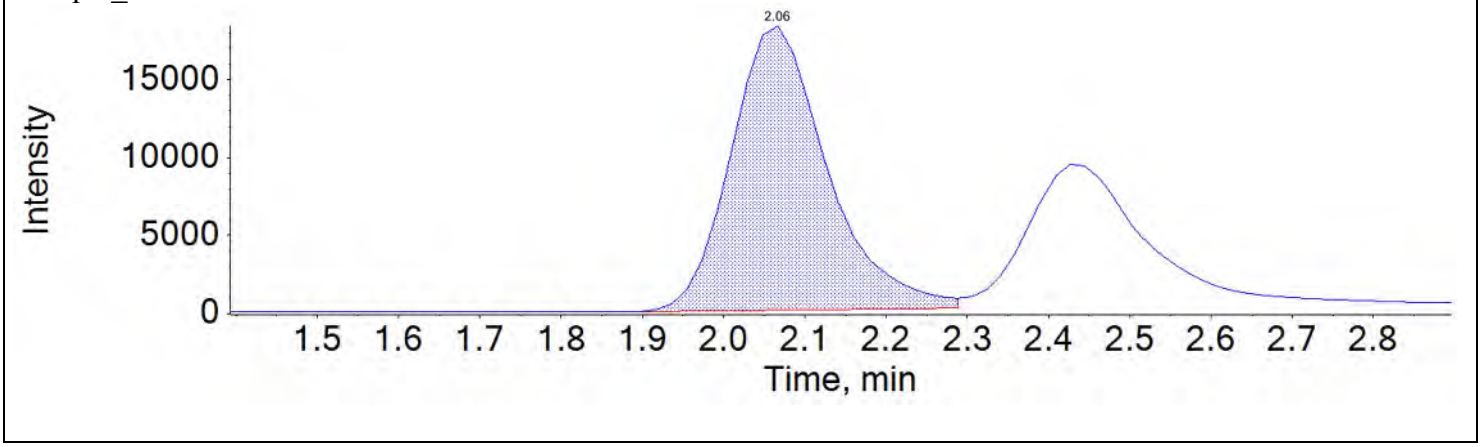
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

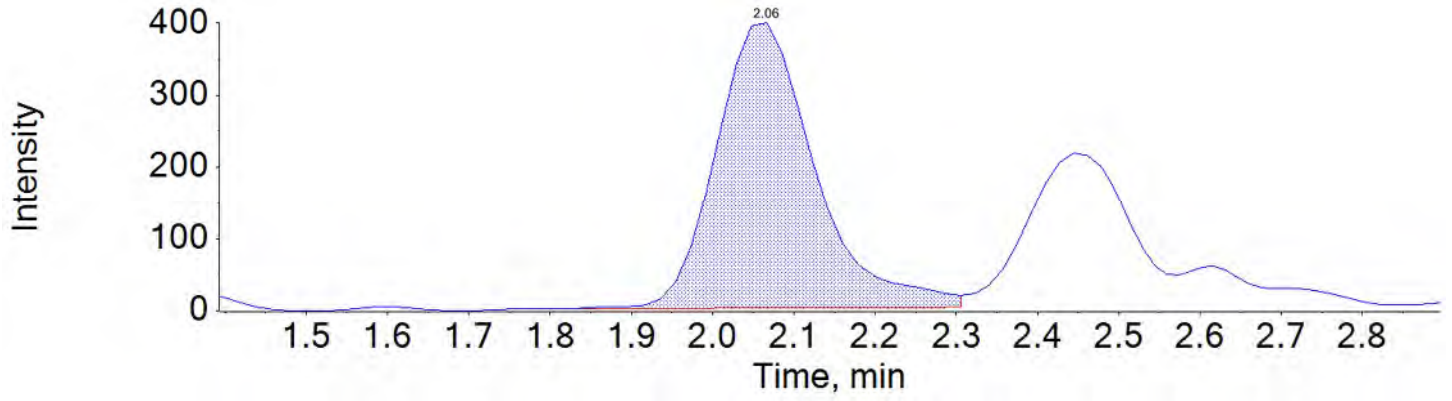


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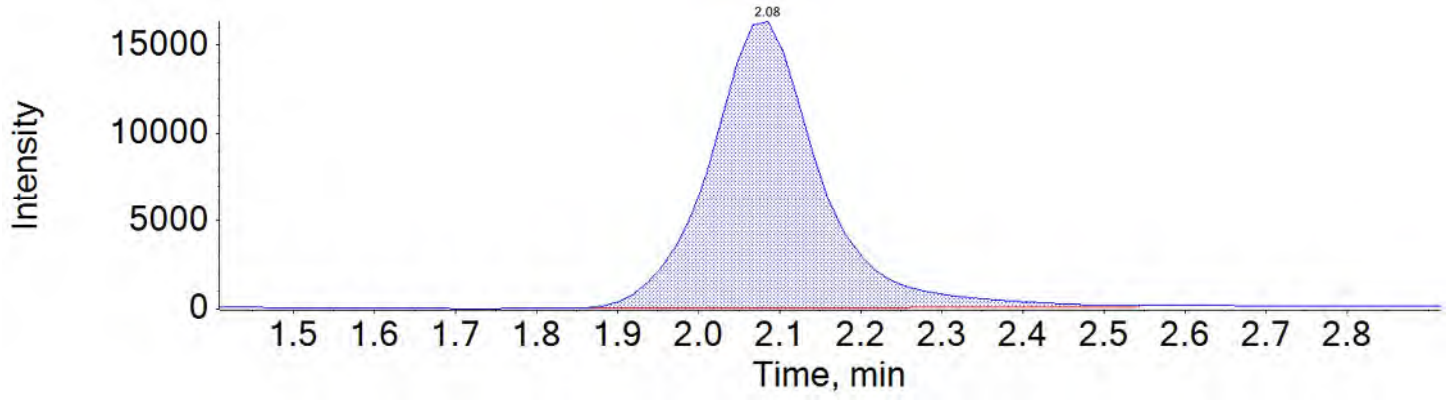
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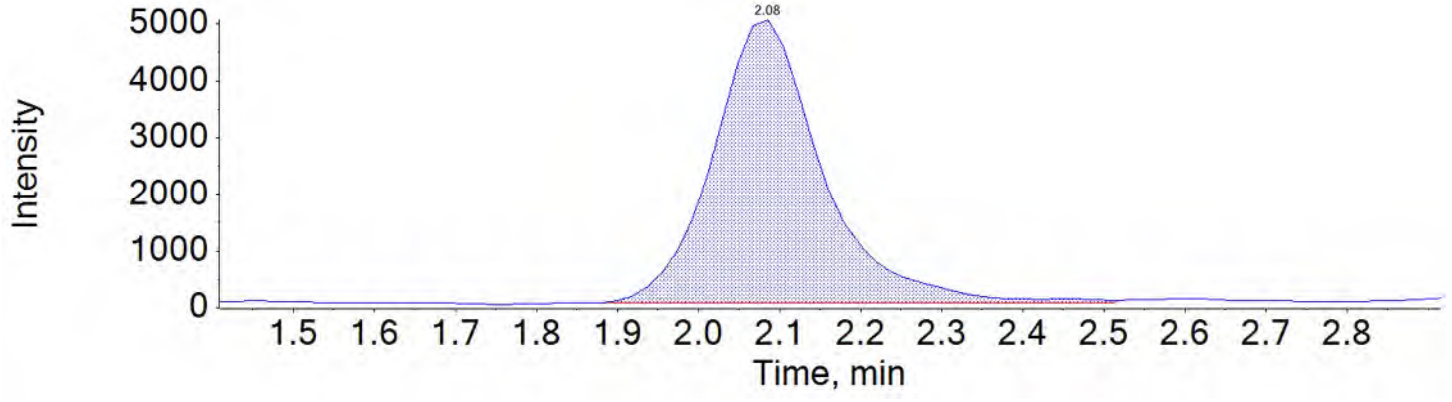
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

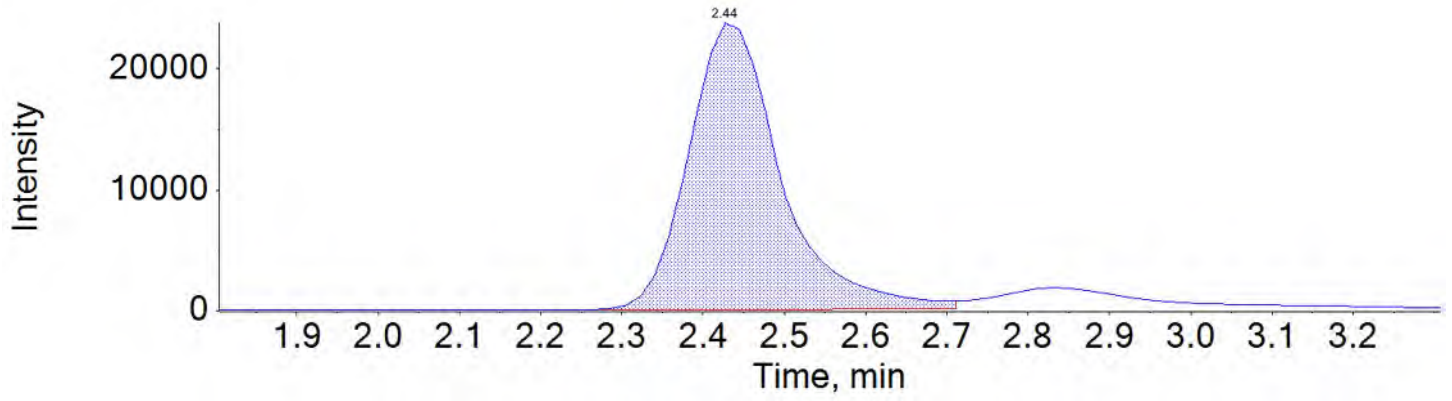


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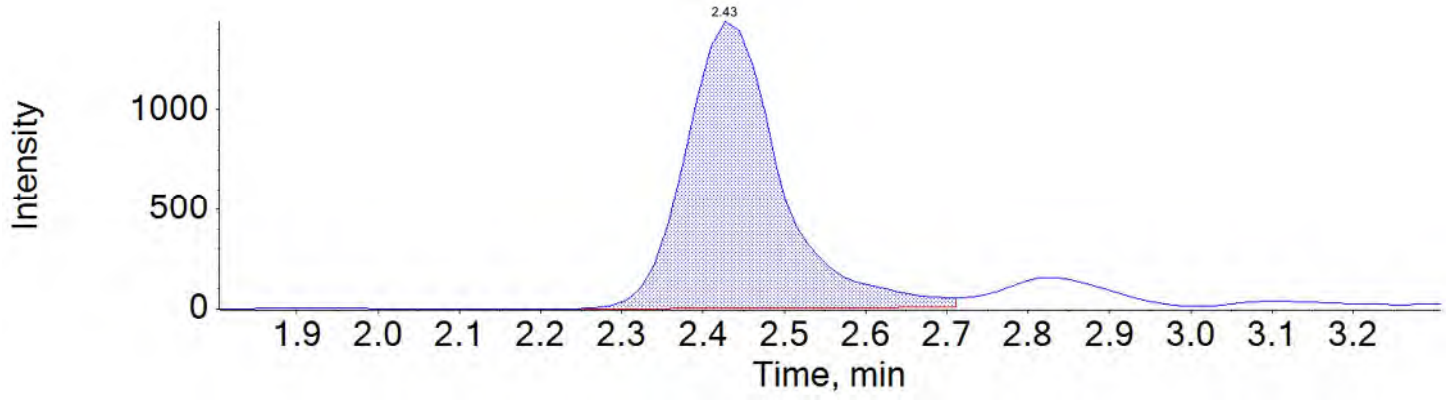
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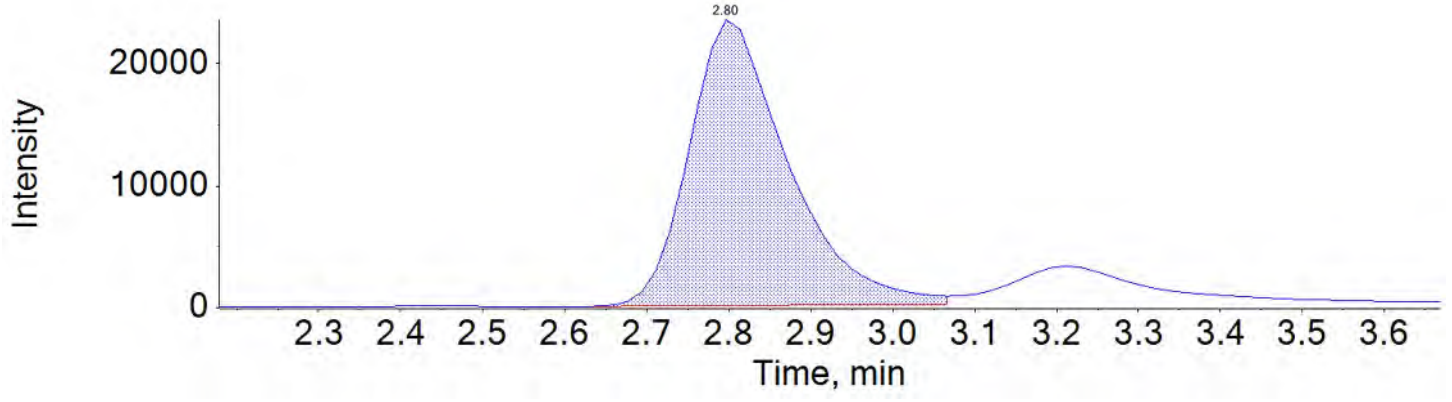
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

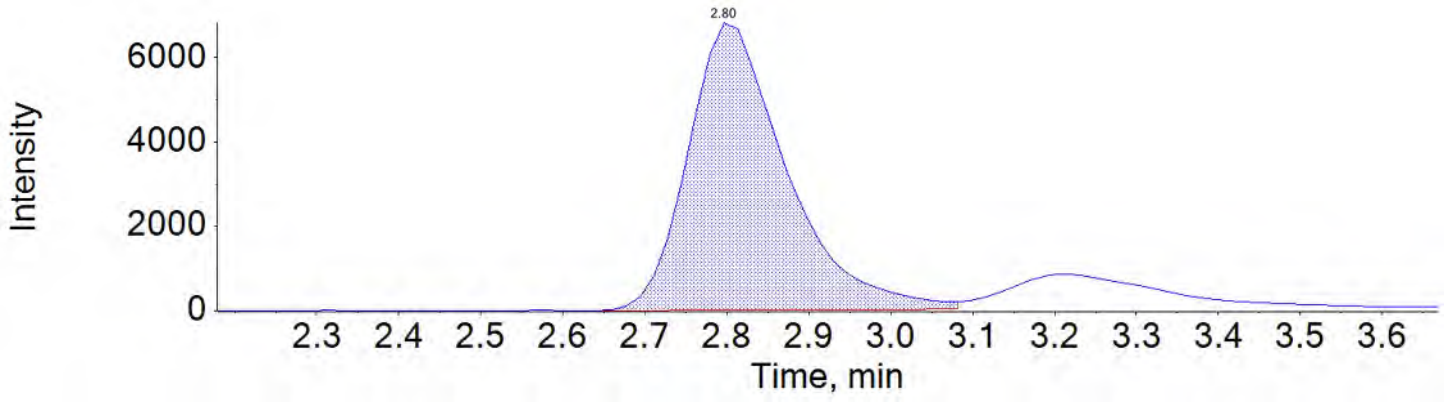


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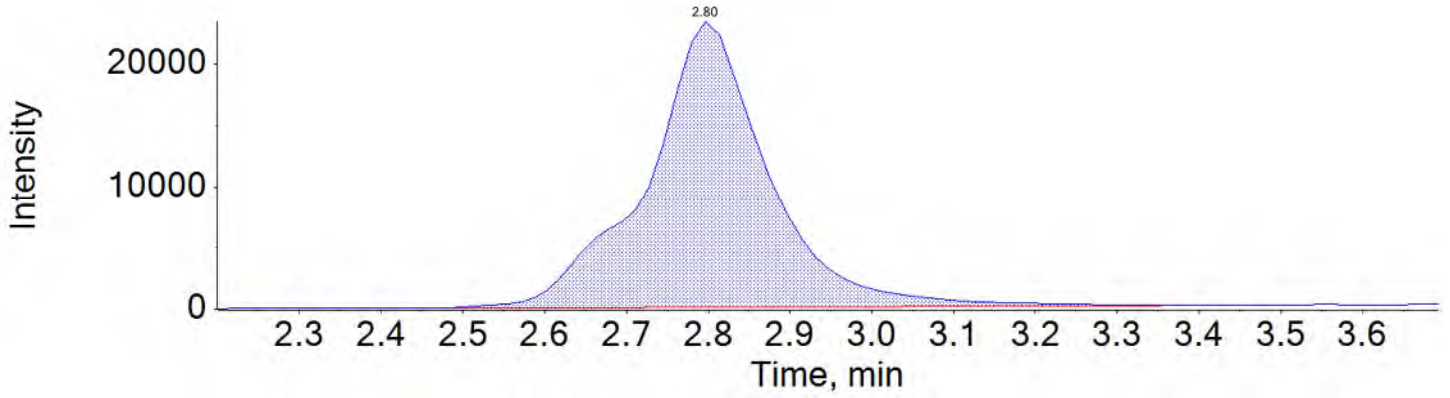
Chromatogram Report

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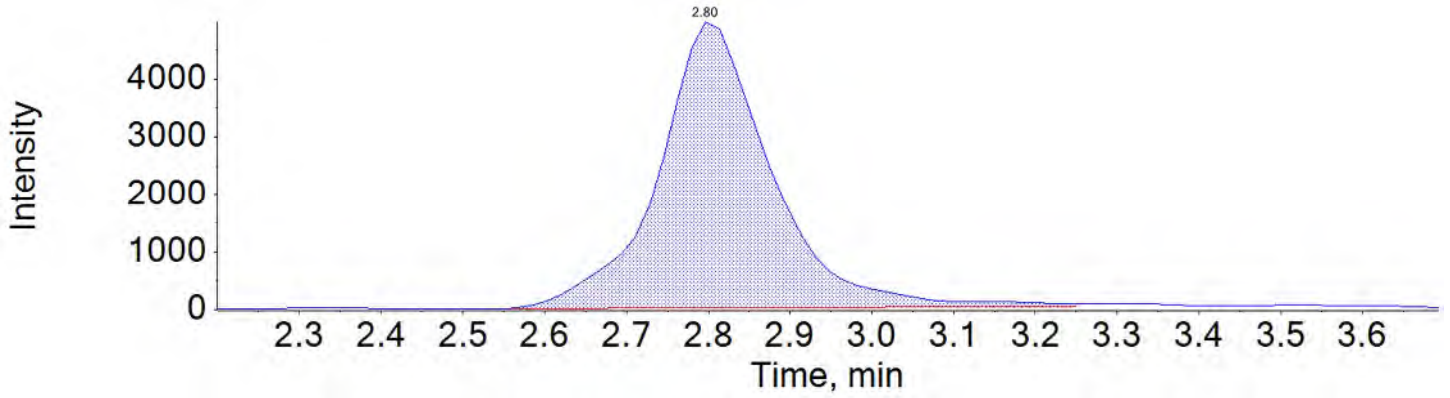
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

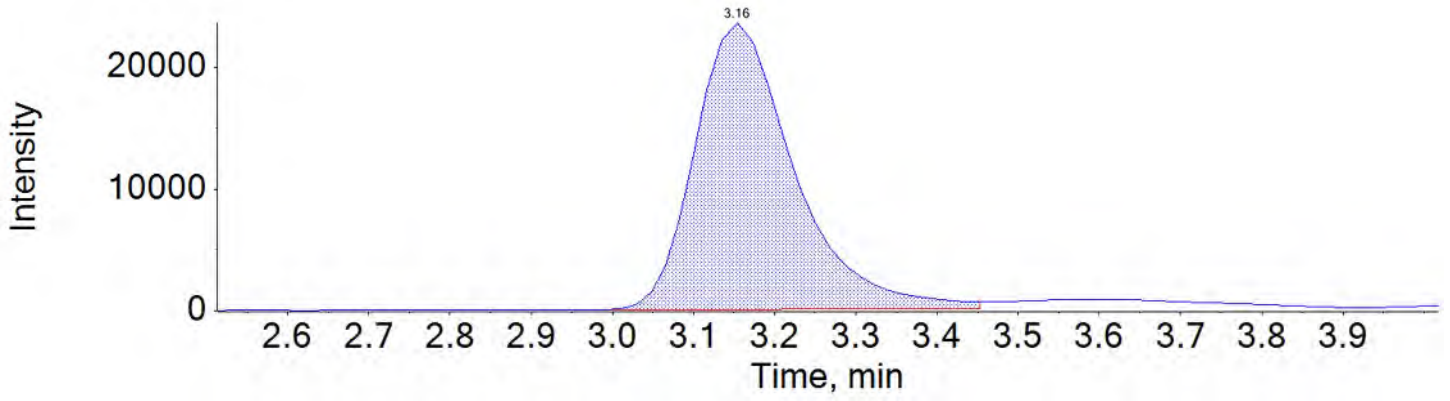


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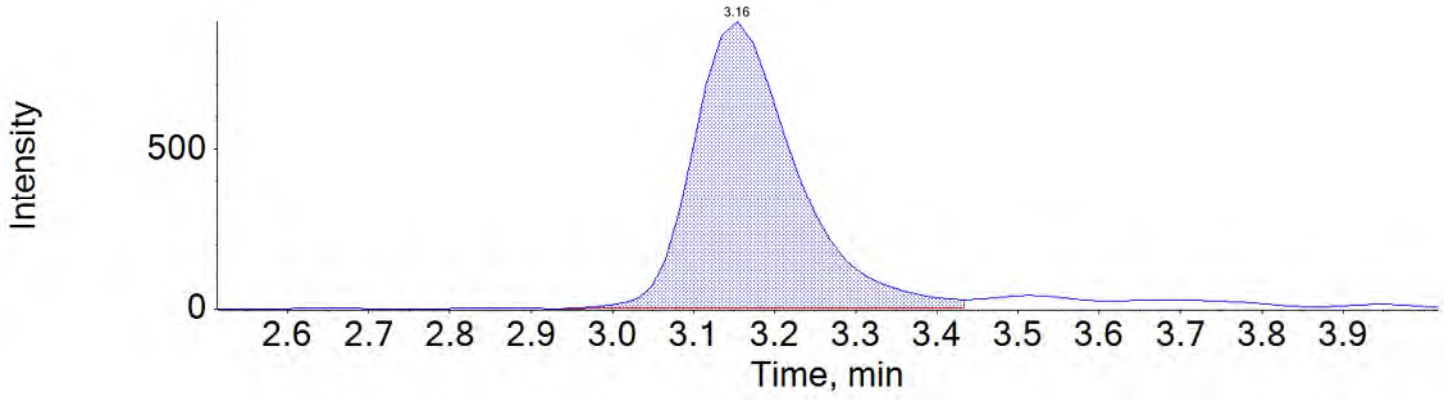
Chromatogram Report

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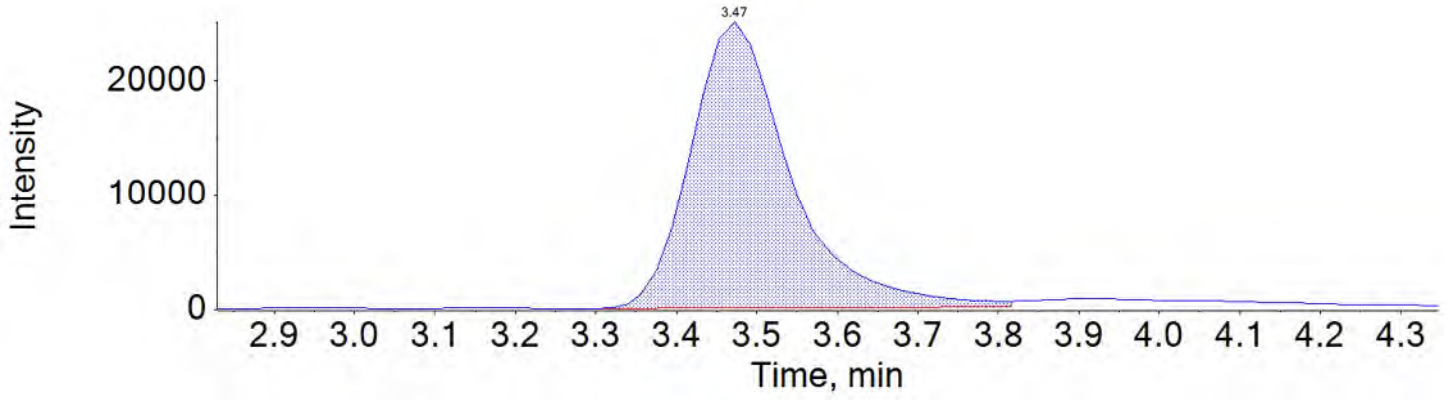
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

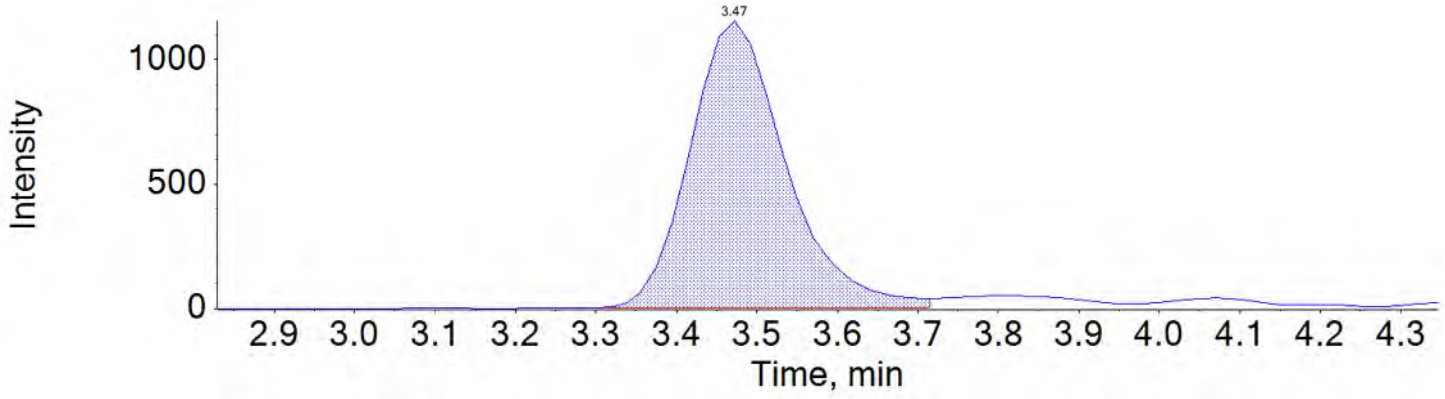


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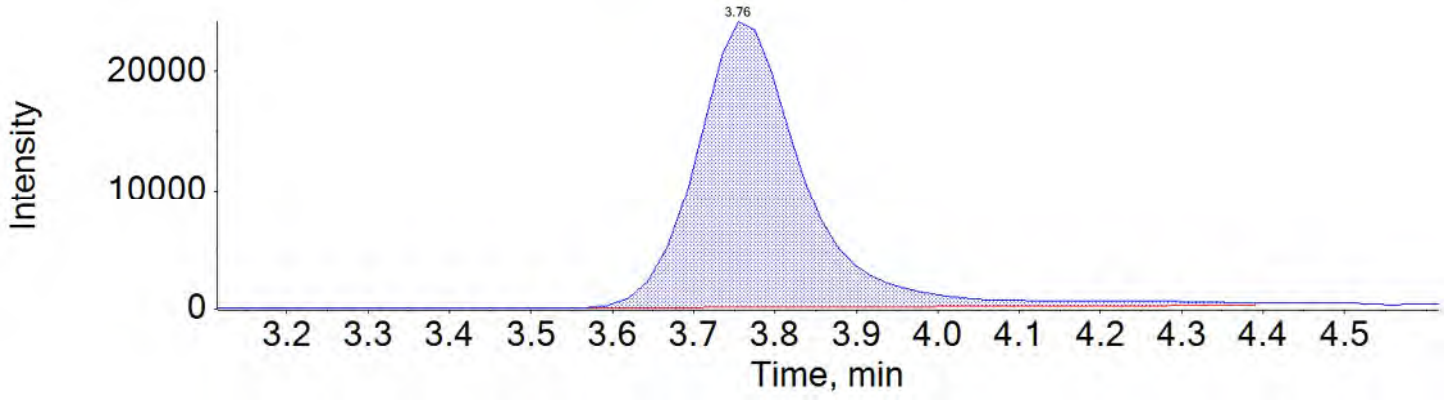
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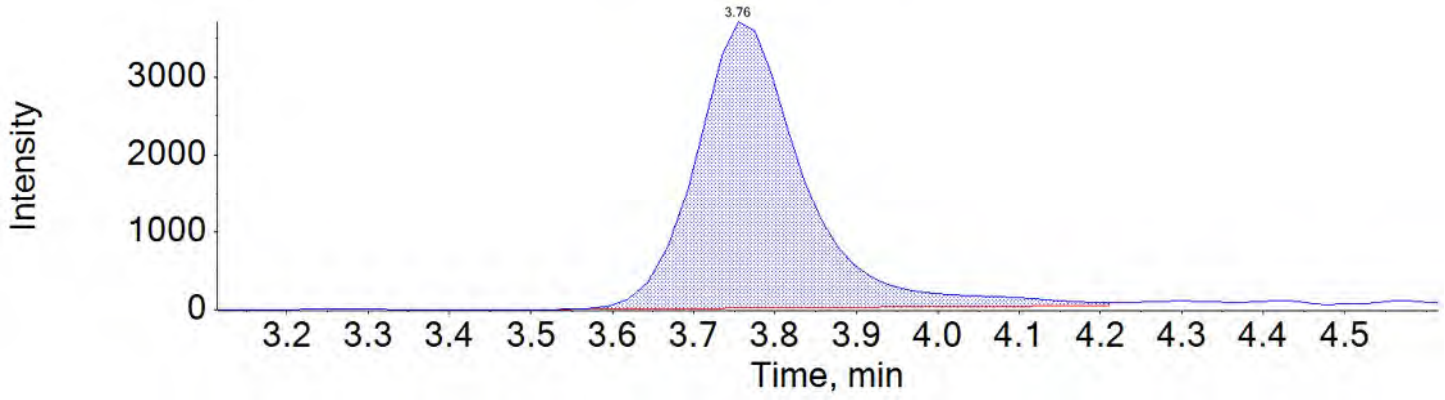
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

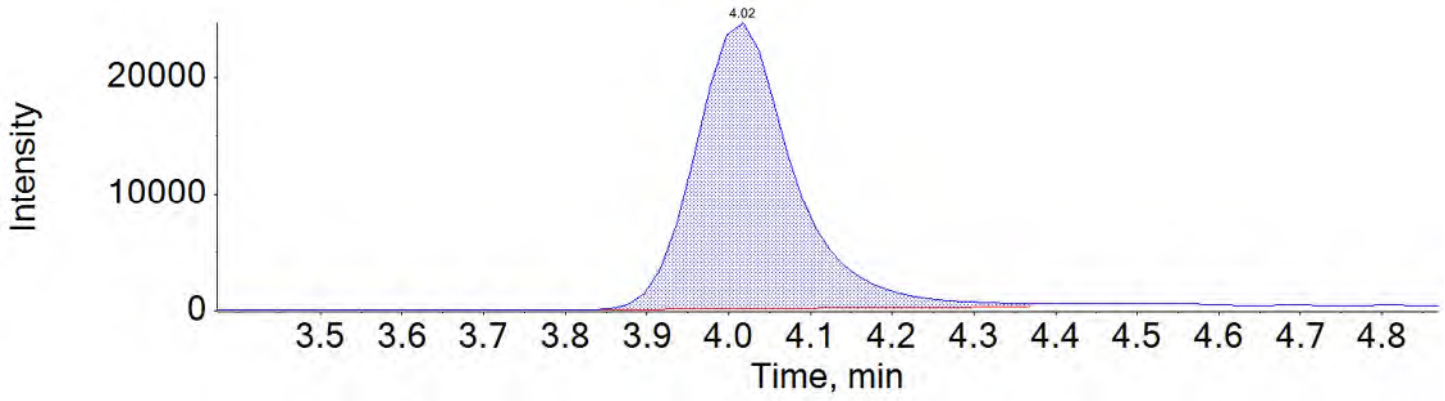


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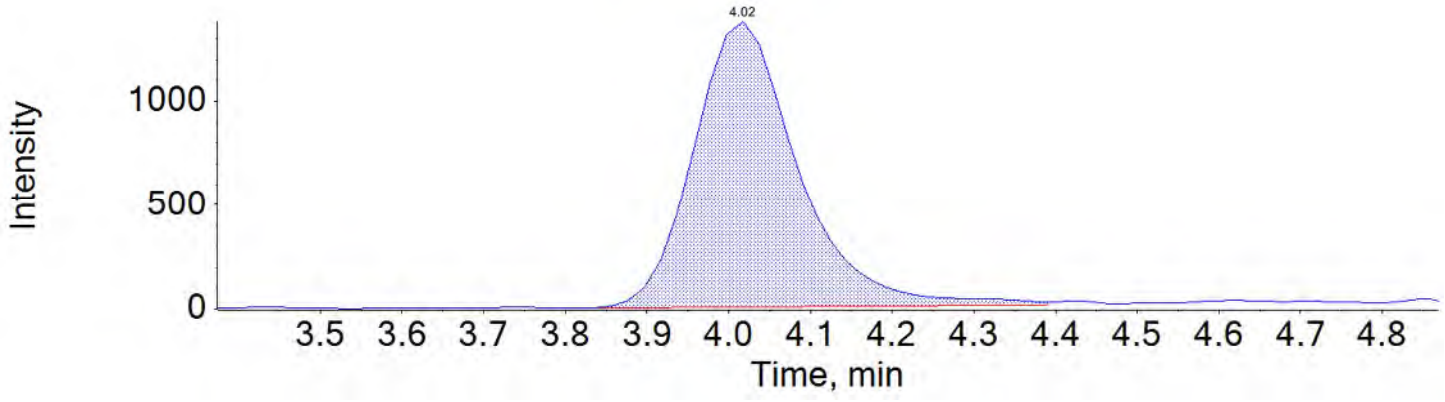
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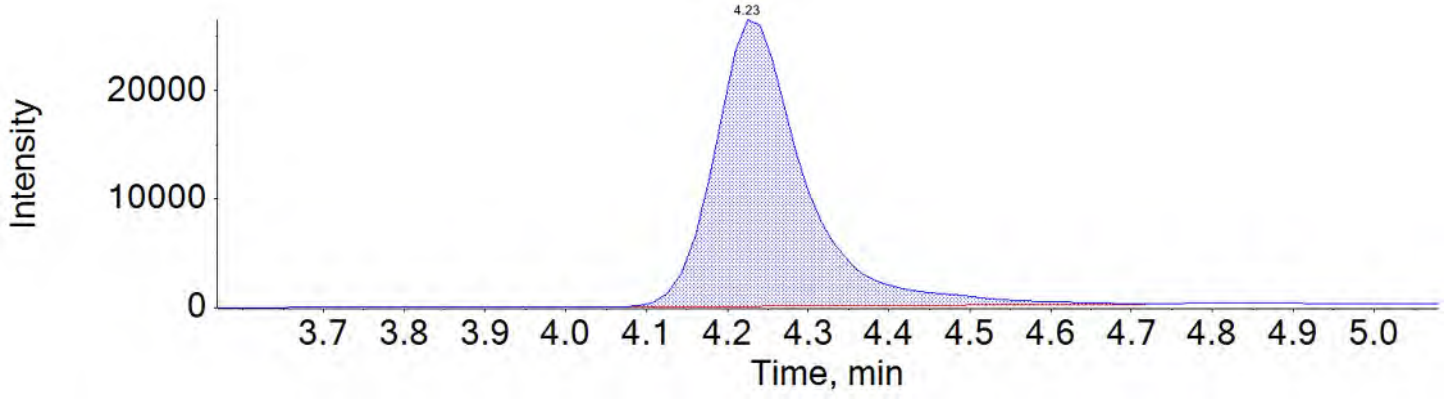
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

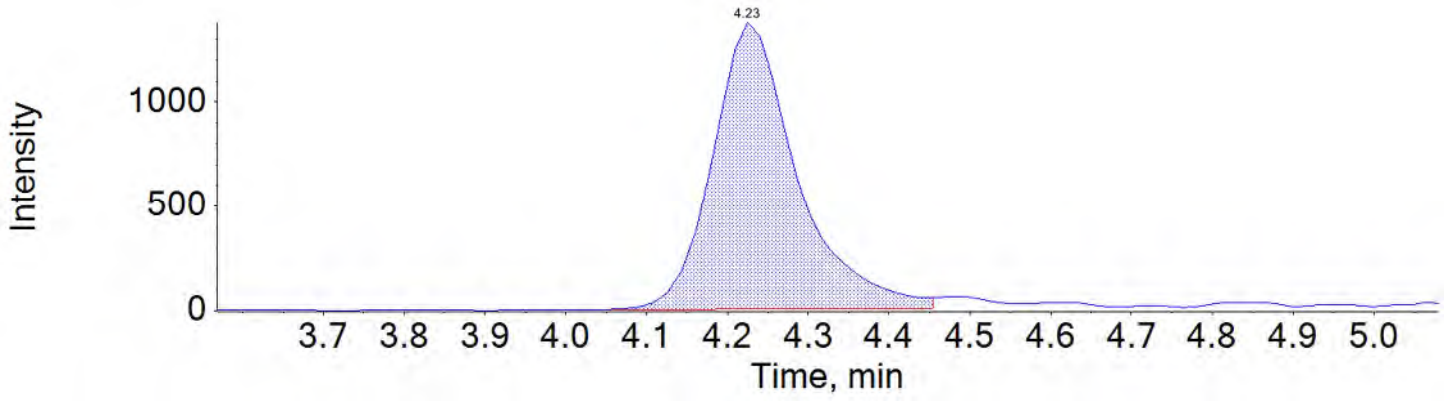


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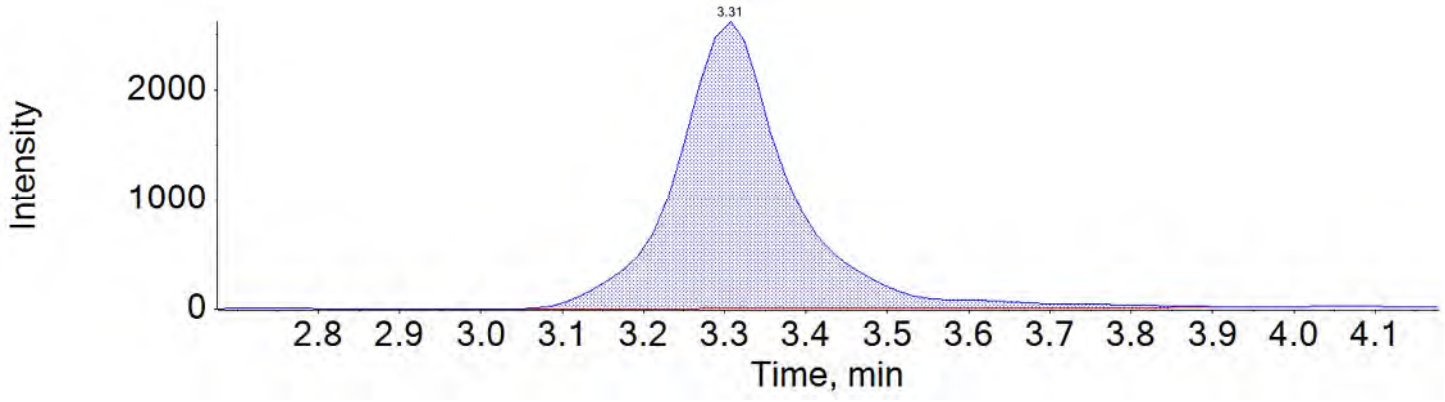
Chromatogram Report

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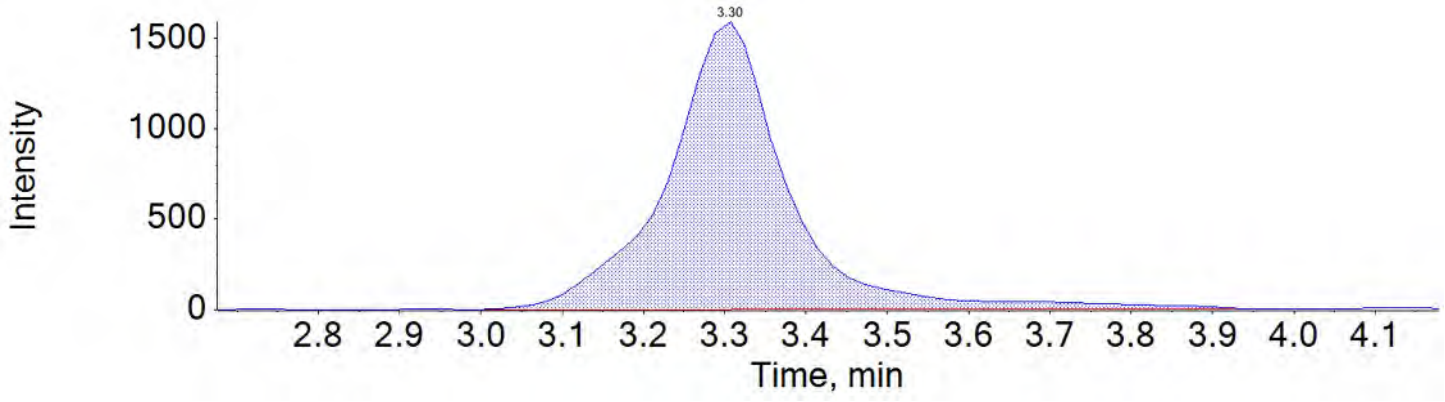
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

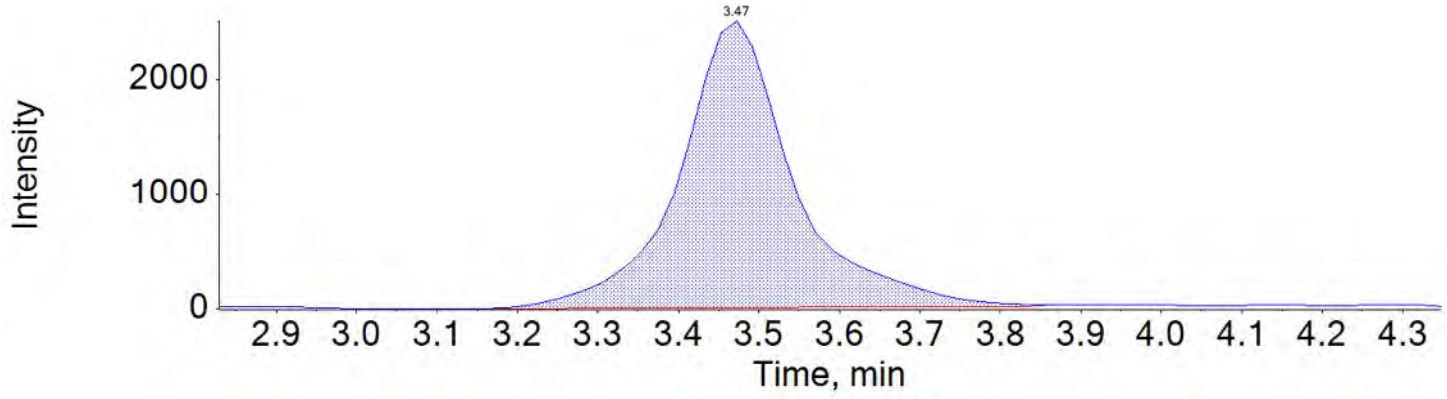


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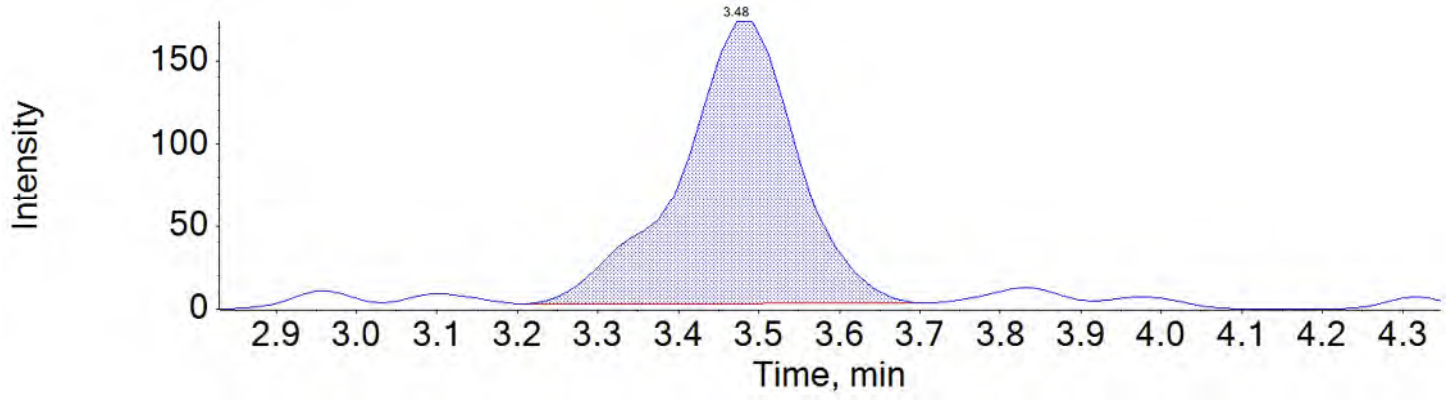
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:53:44 AM

NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

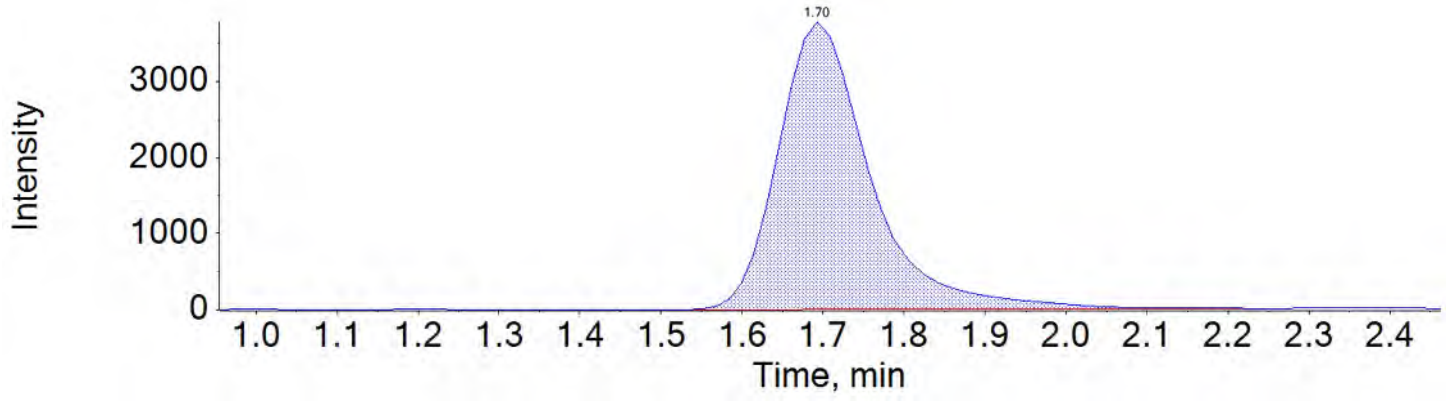
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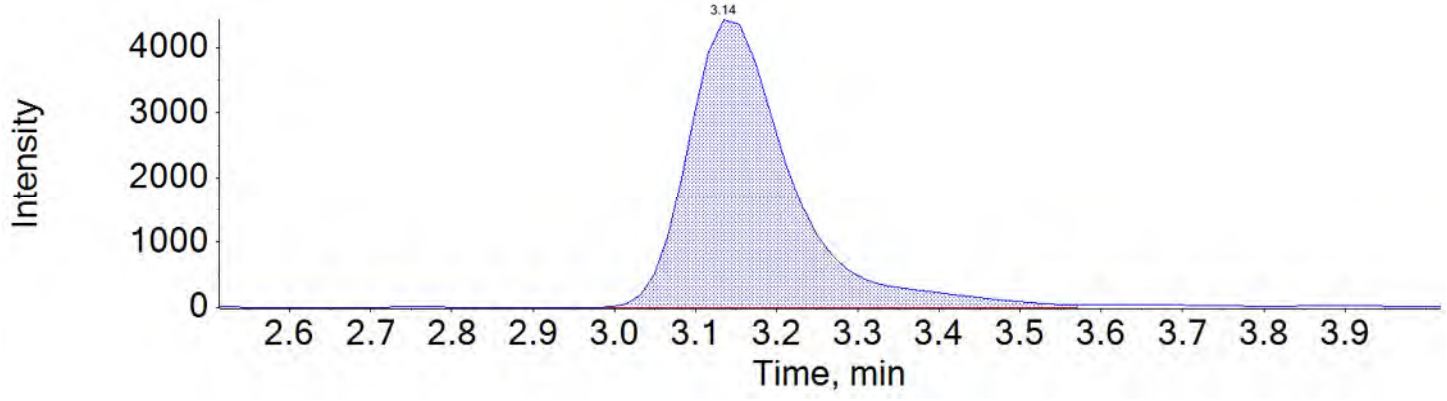
Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

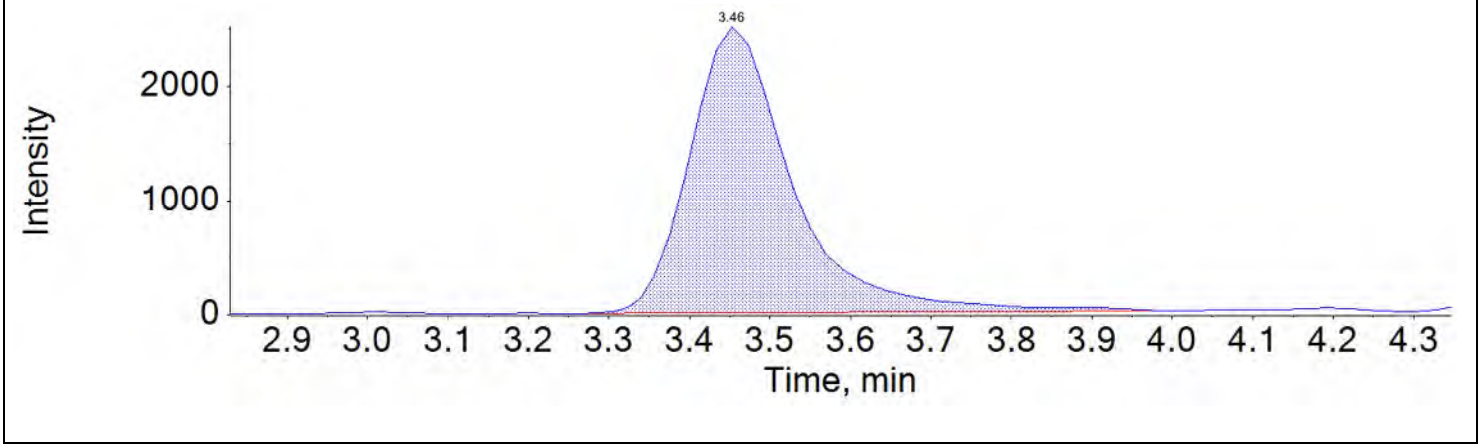


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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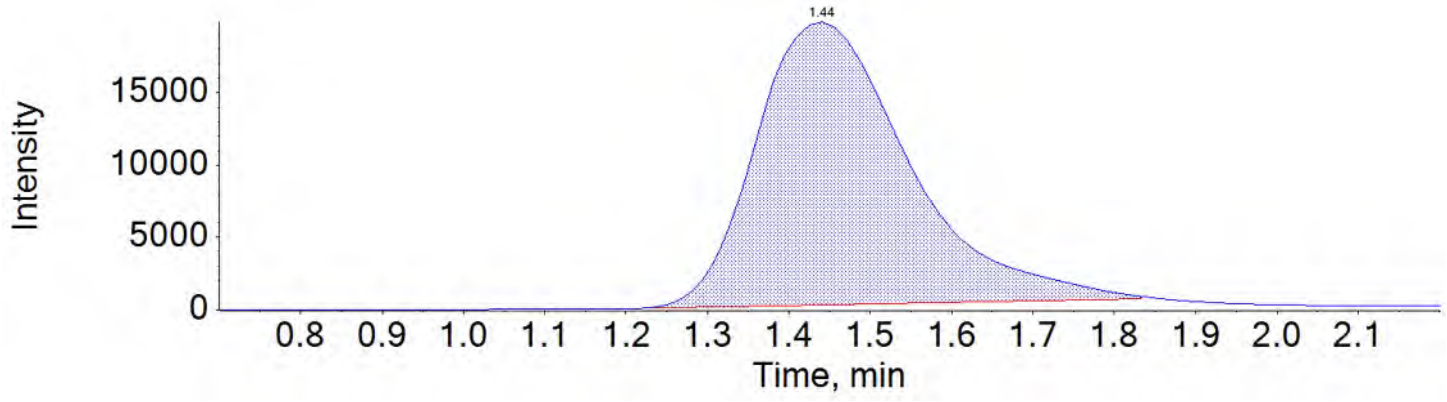
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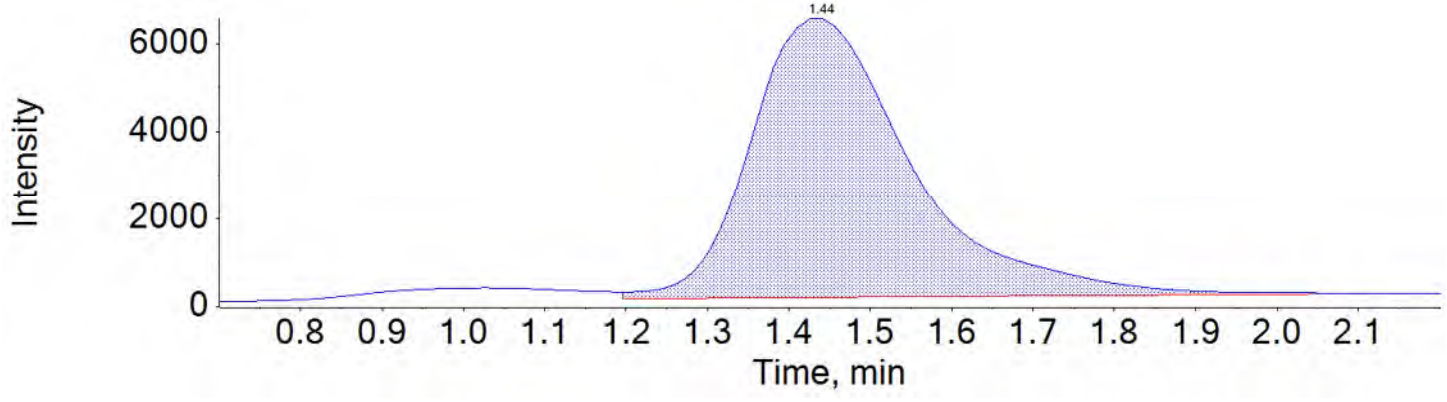
Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

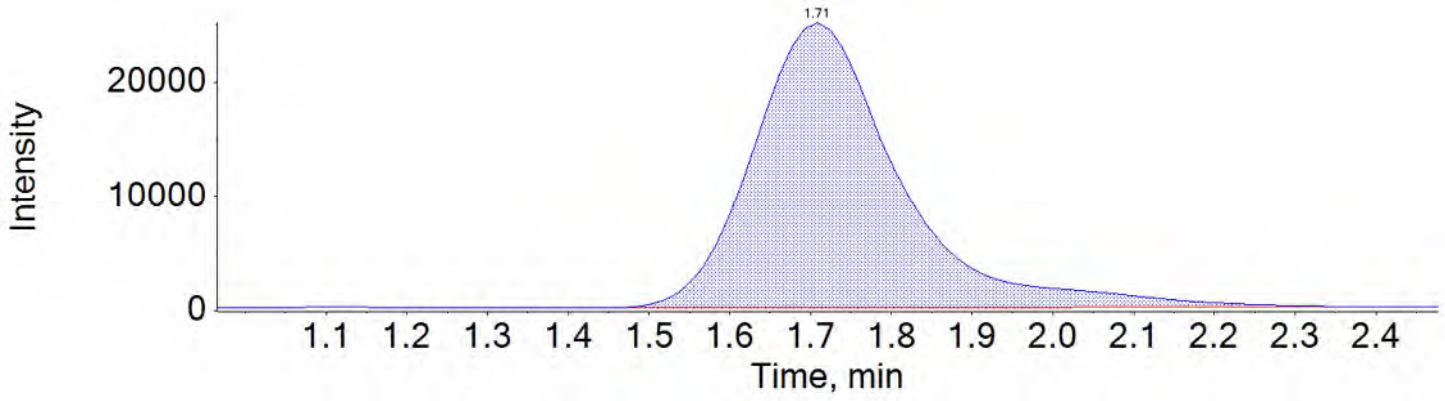


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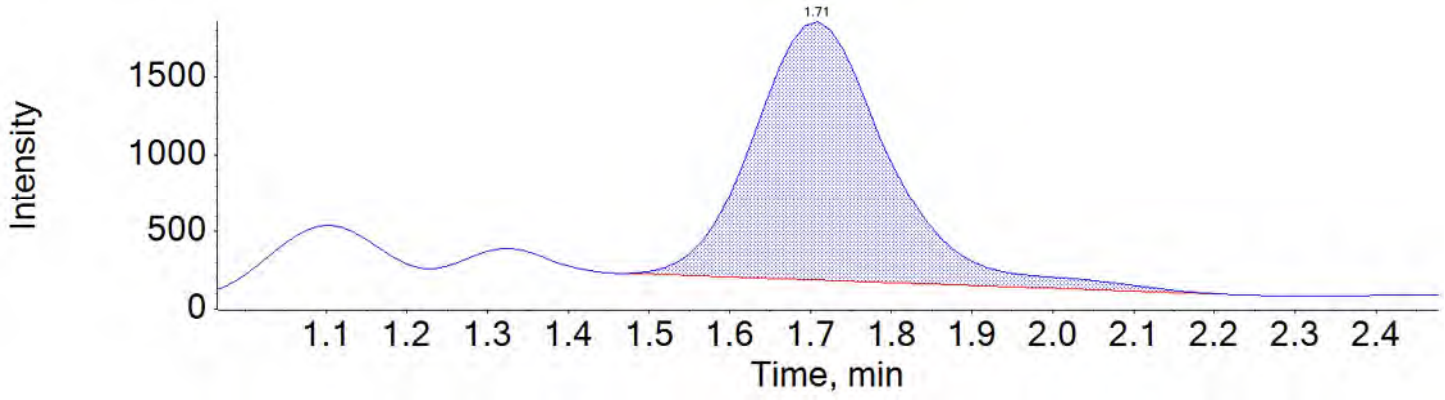
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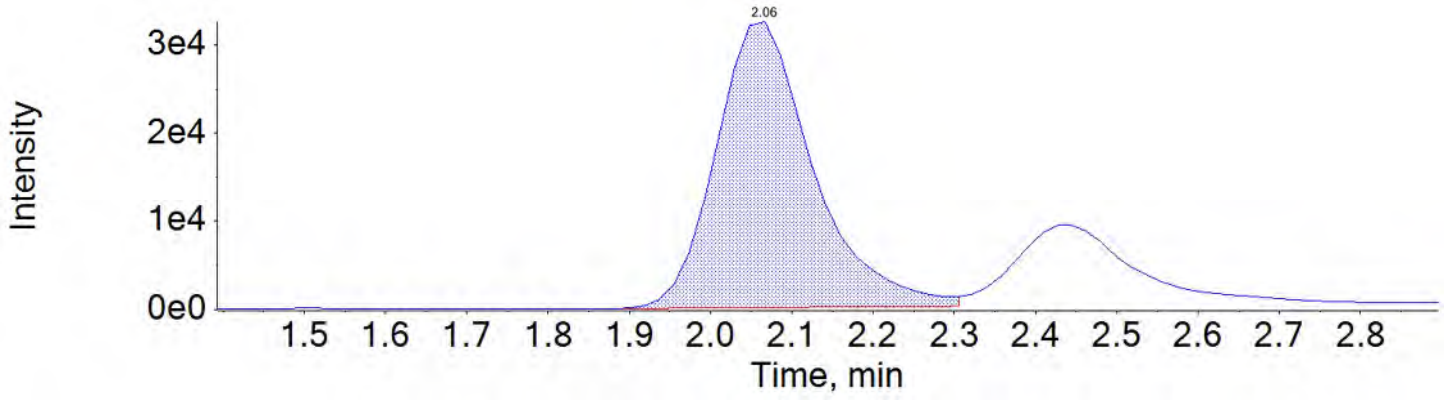
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

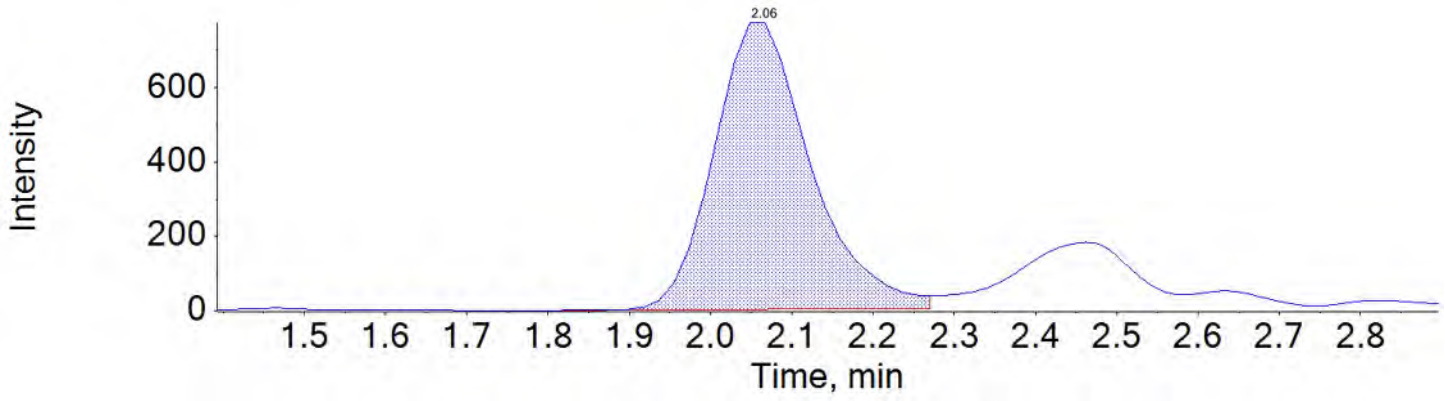


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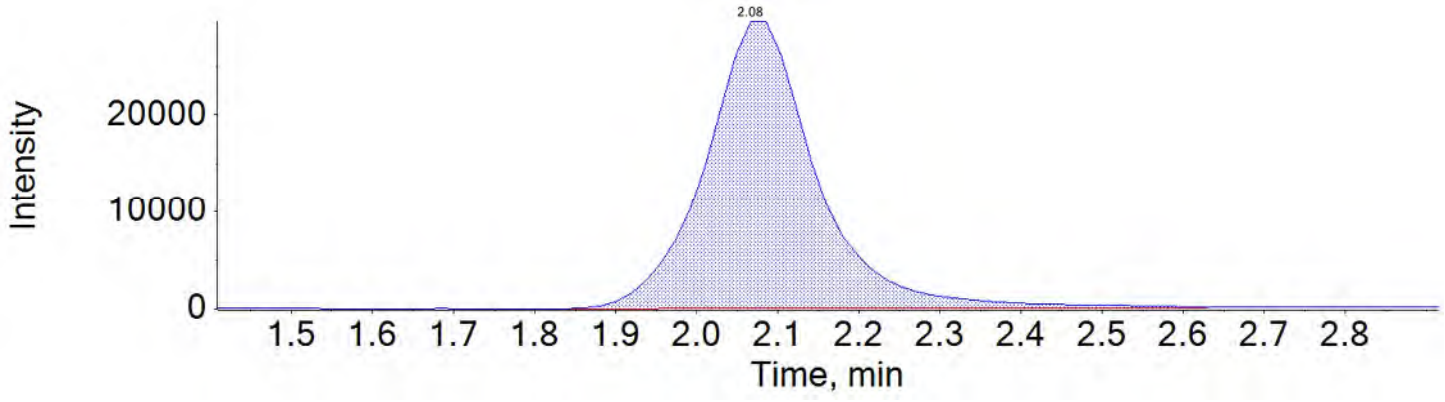
Chromatogram Report

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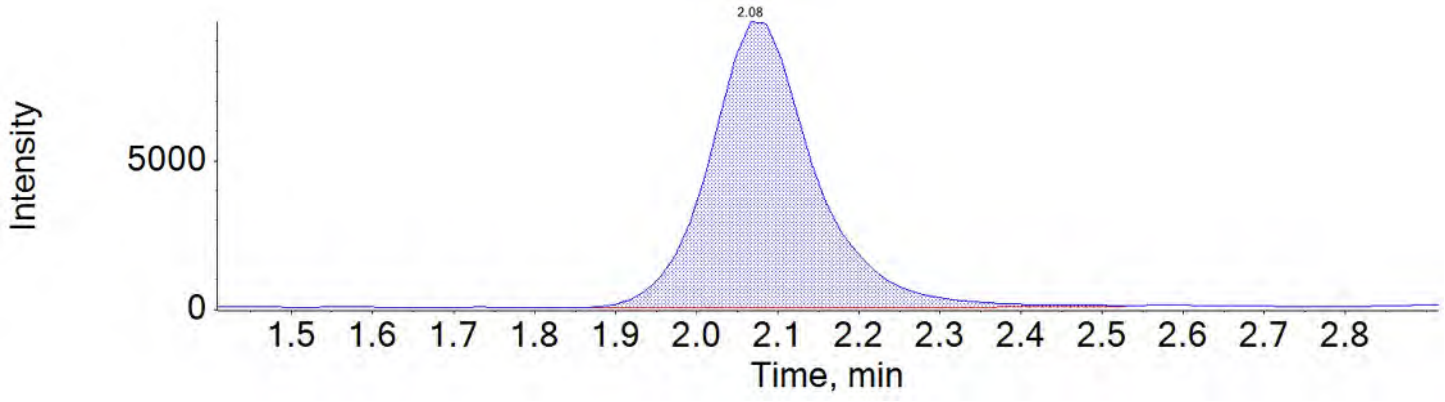
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

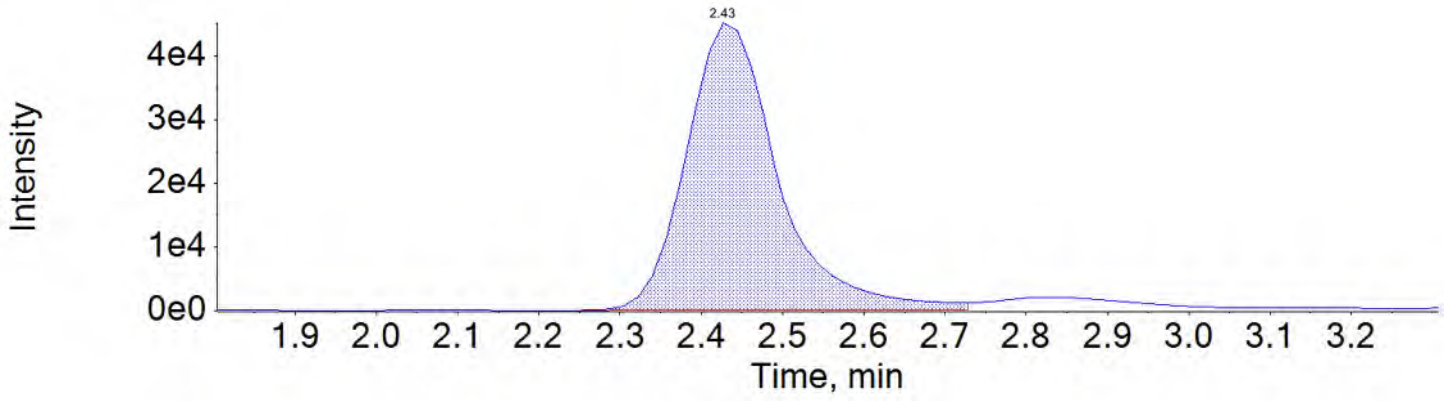


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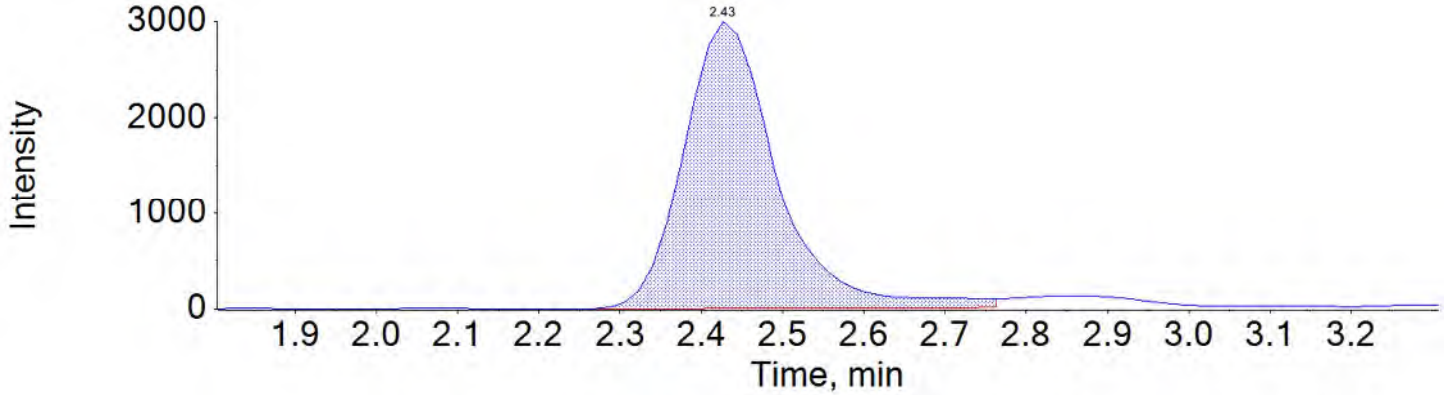
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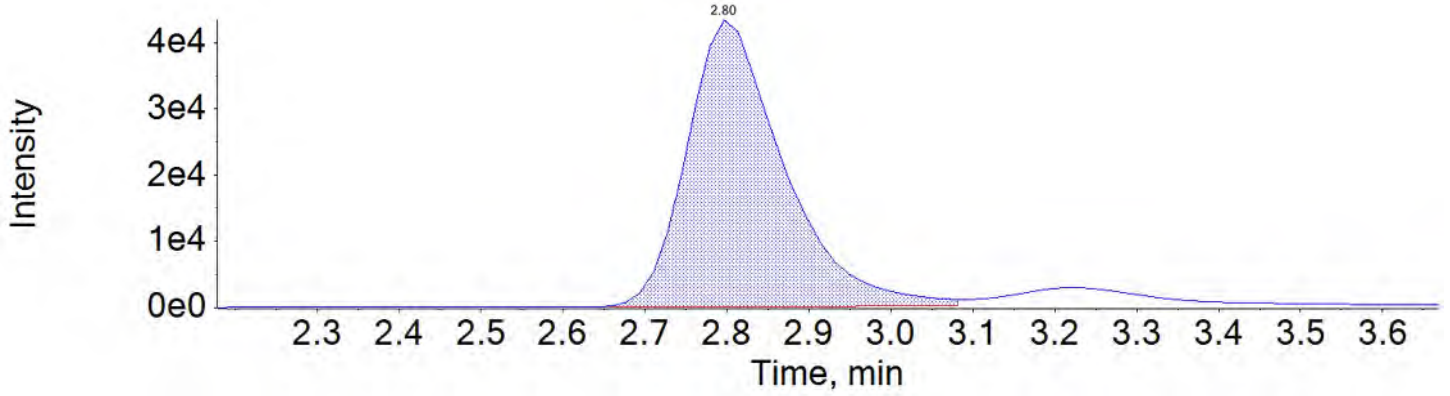
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

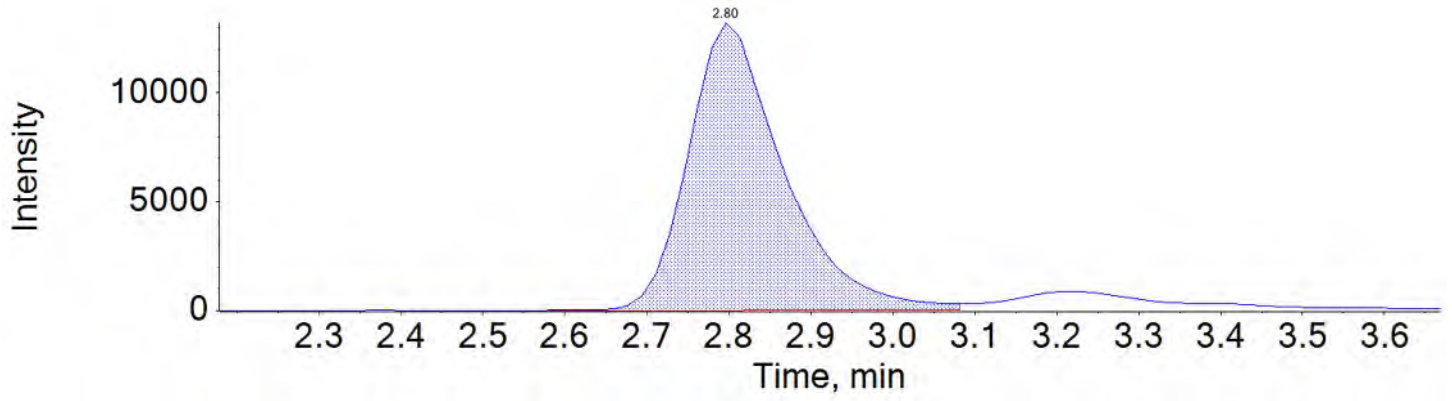


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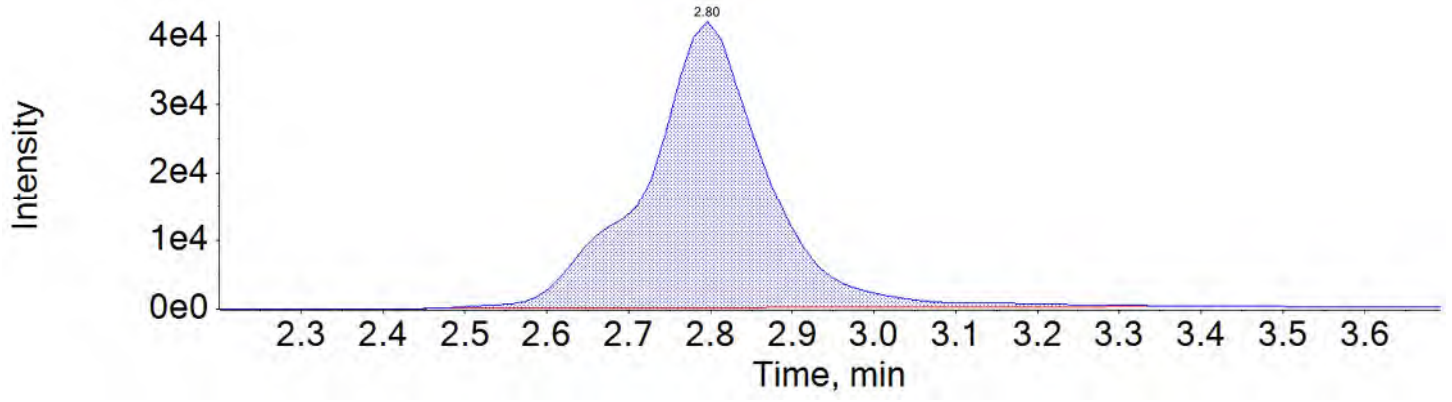
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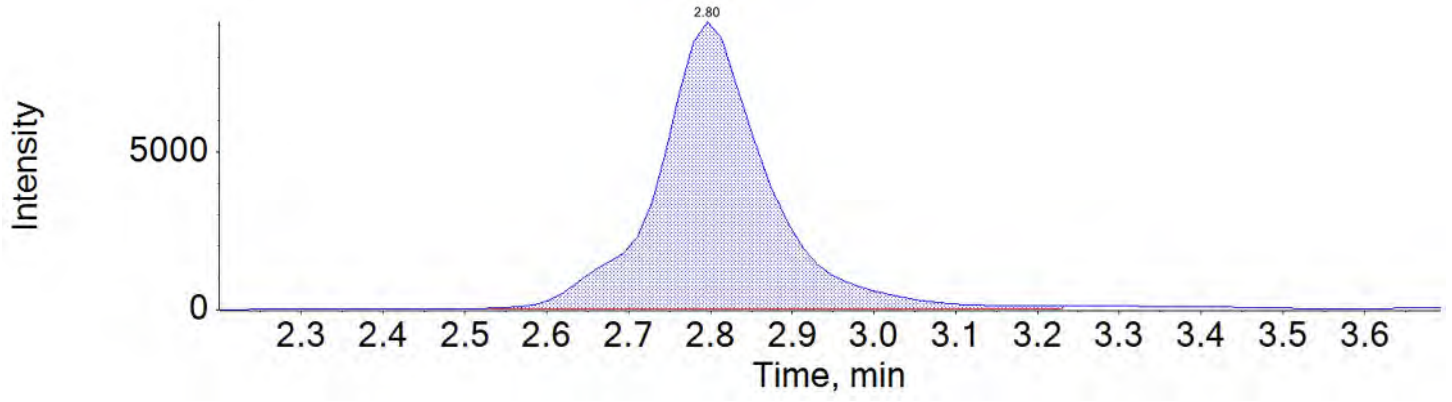
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

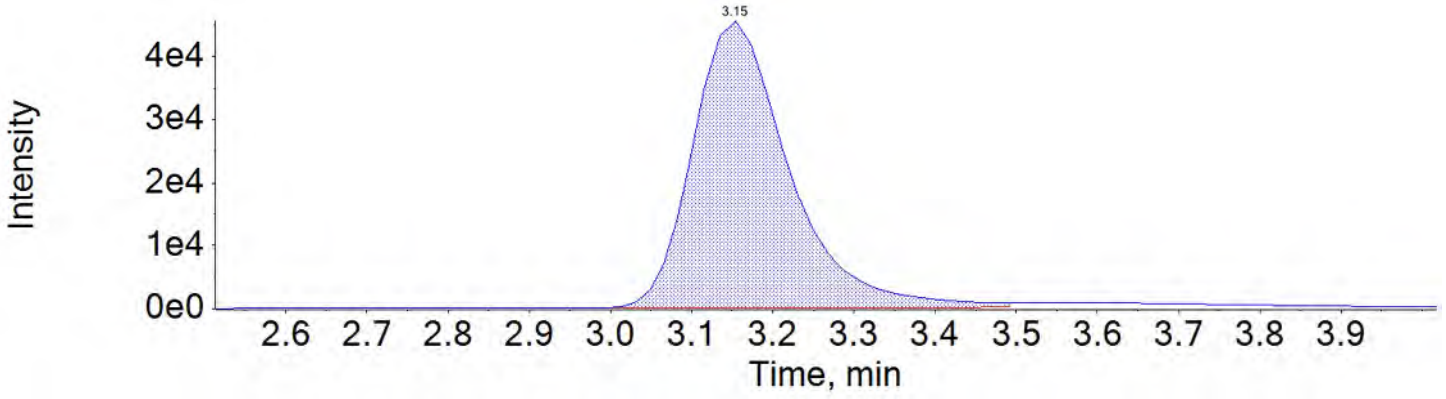


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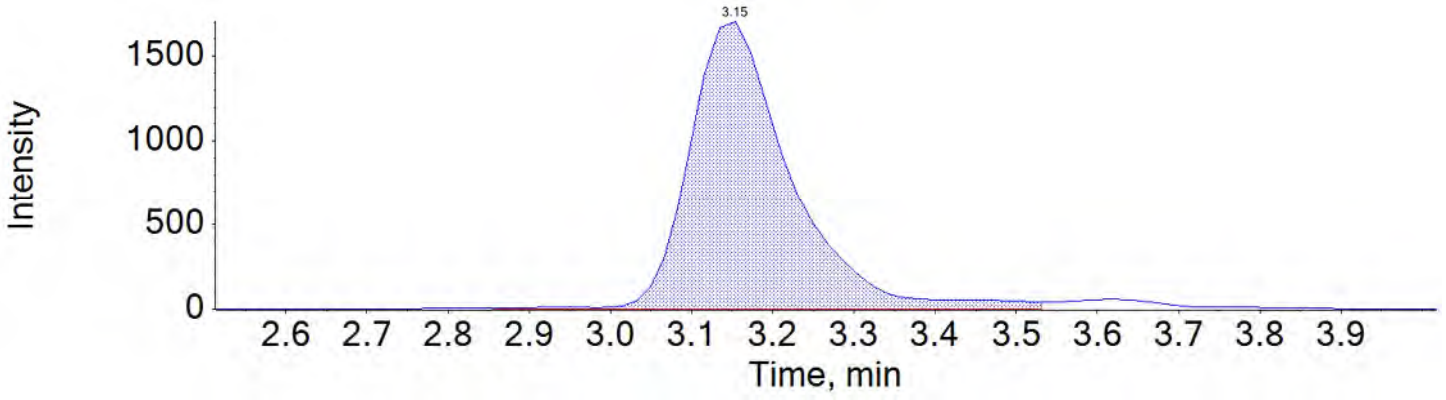
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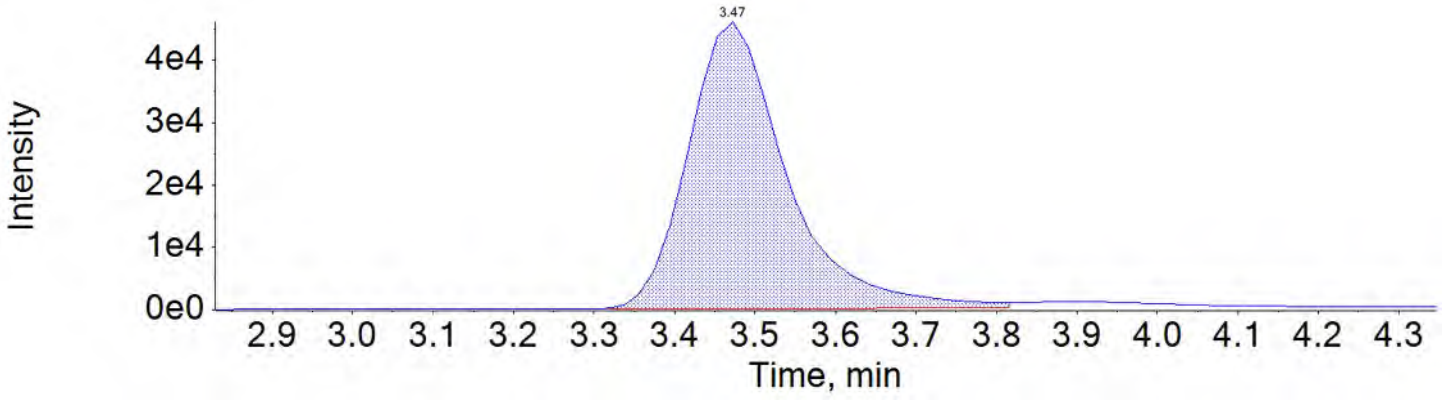
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

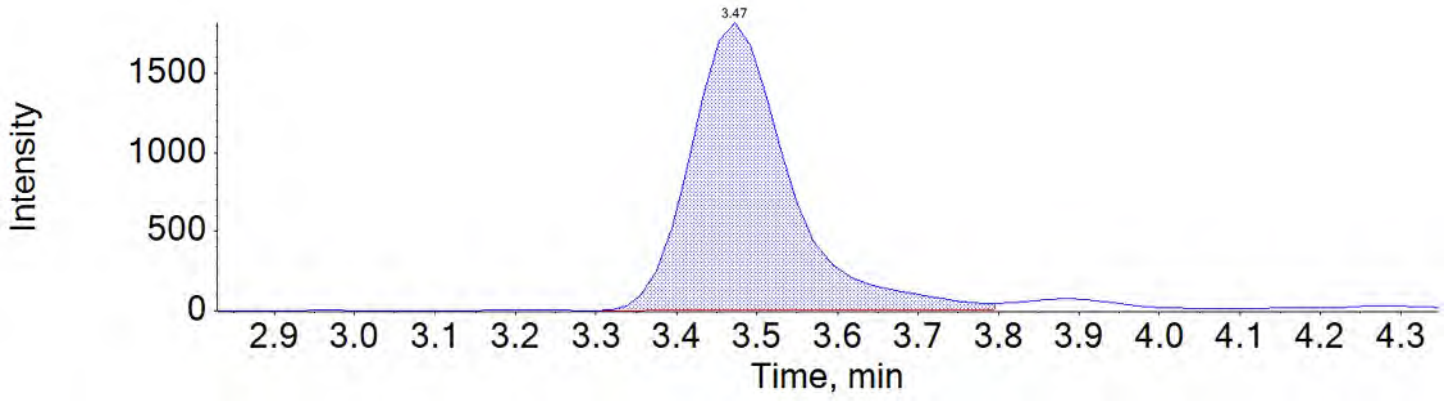


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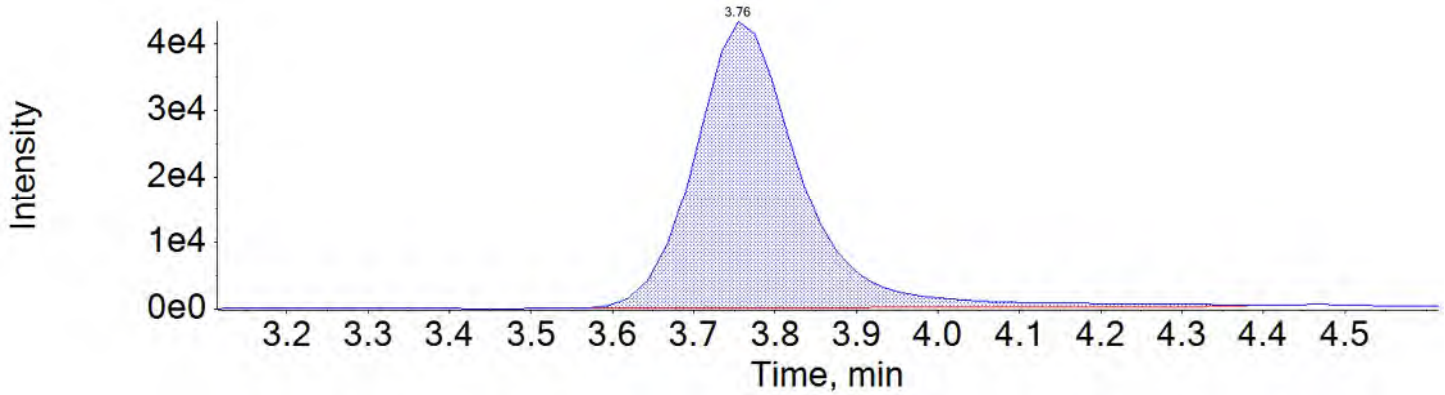
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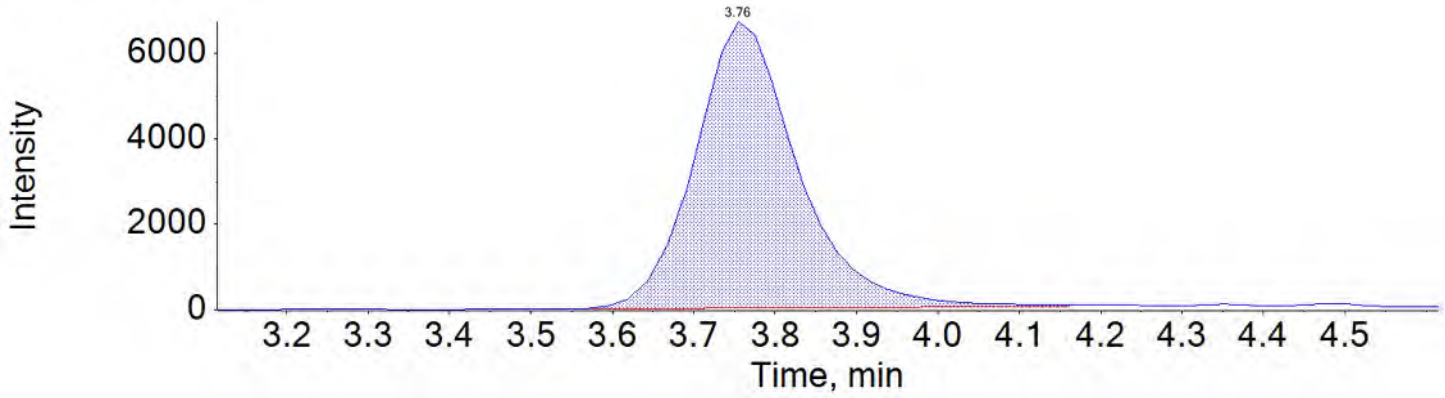
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

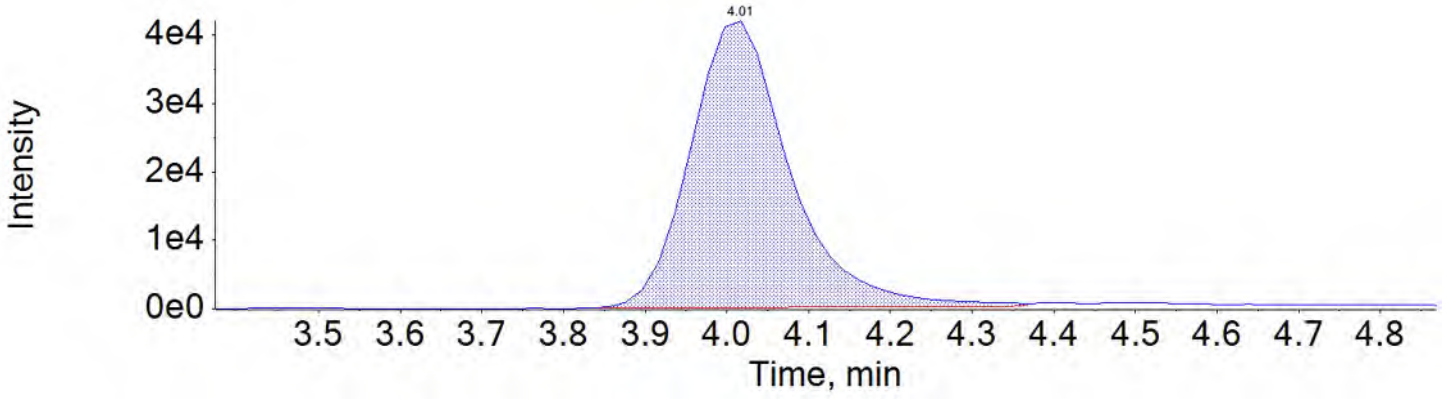


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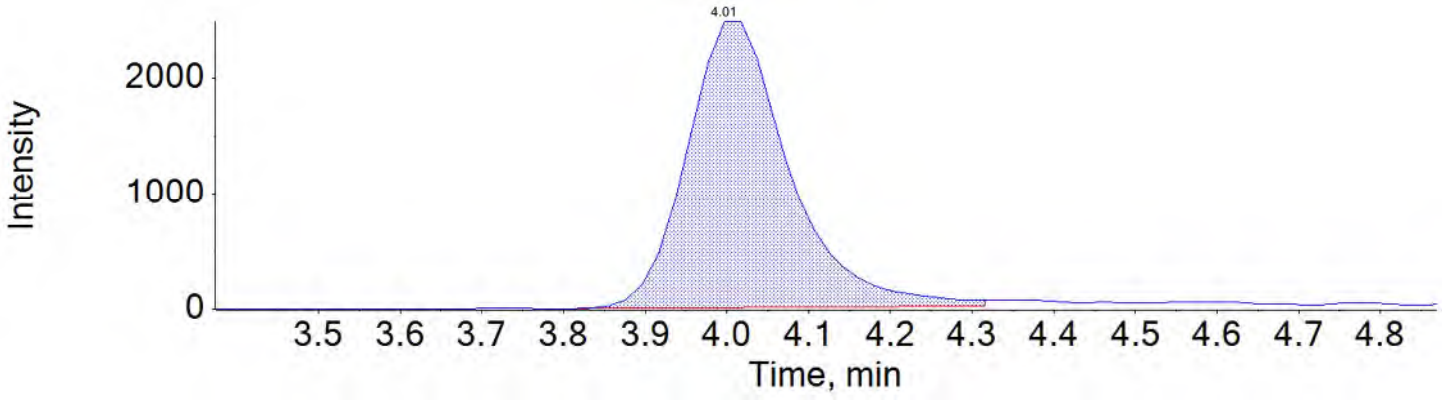
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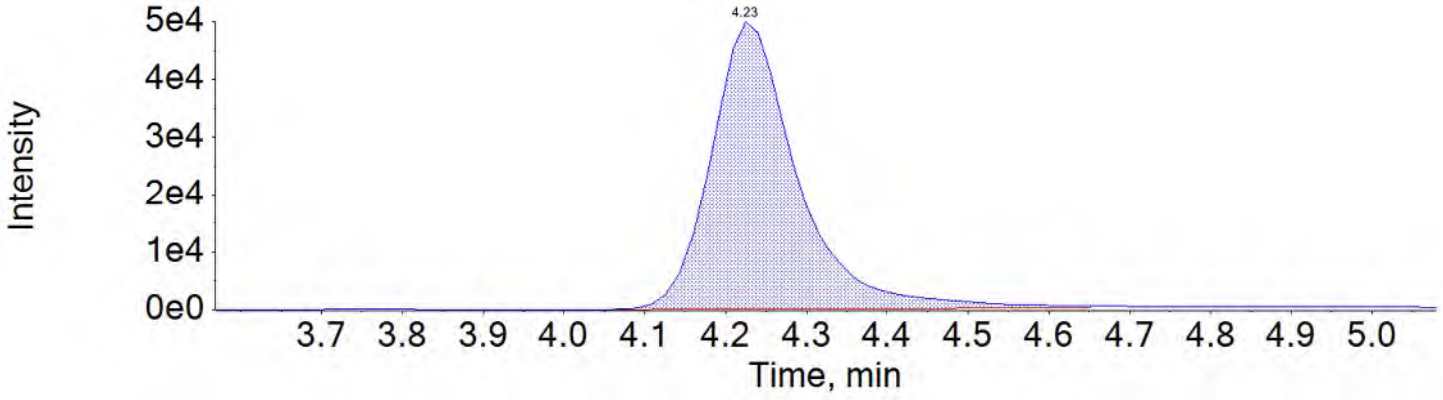
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

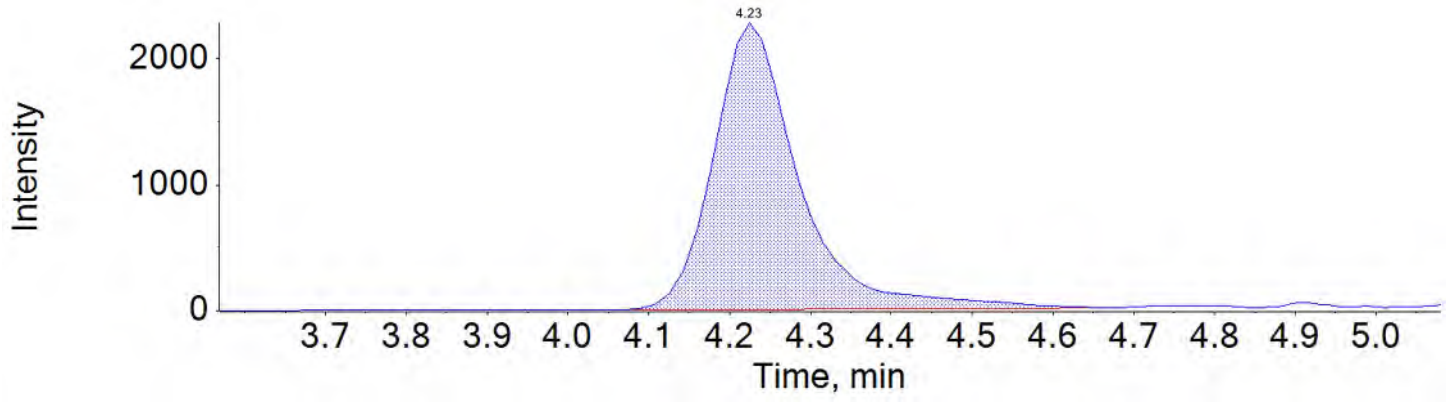


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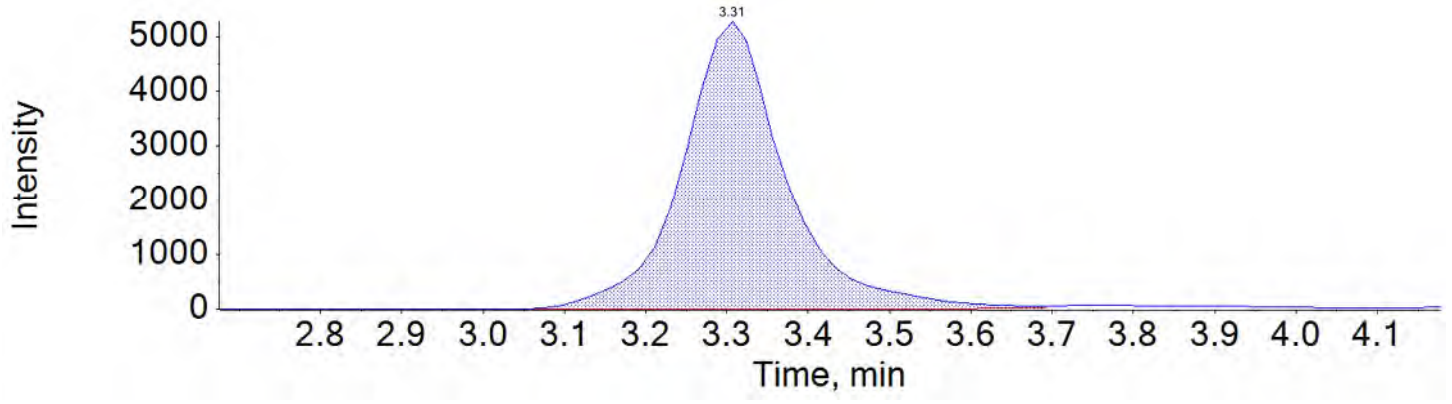
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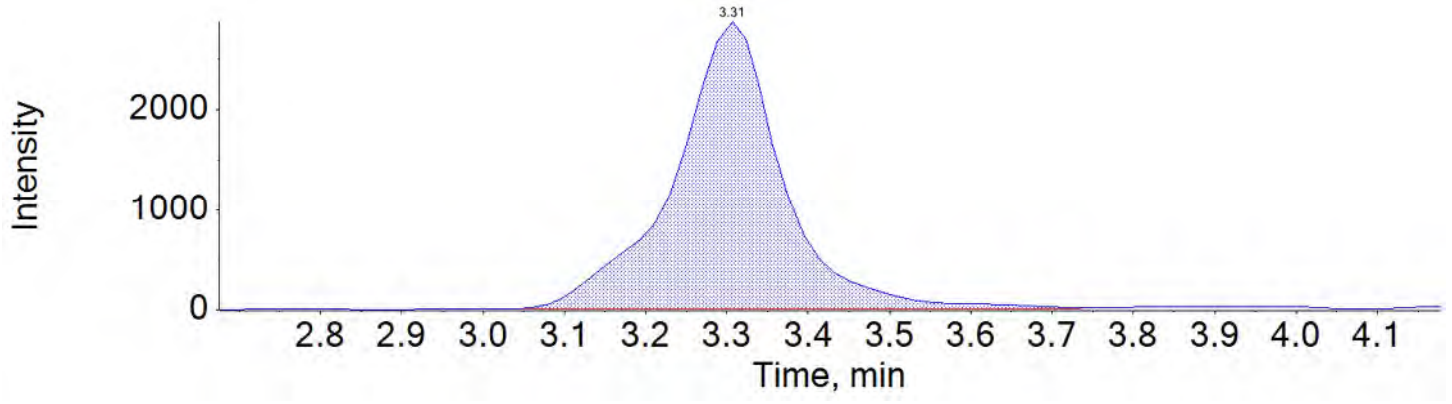
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

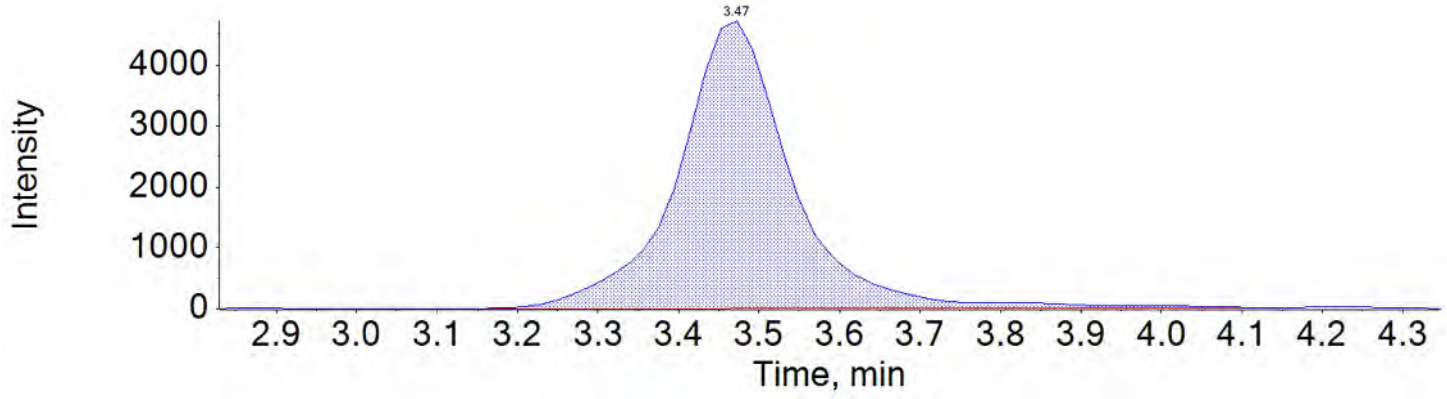


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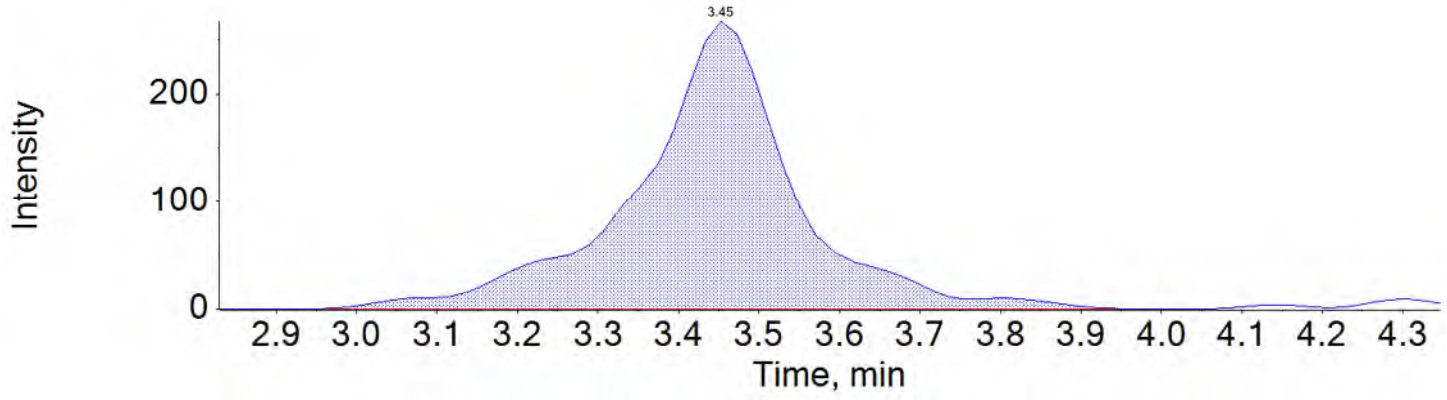
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

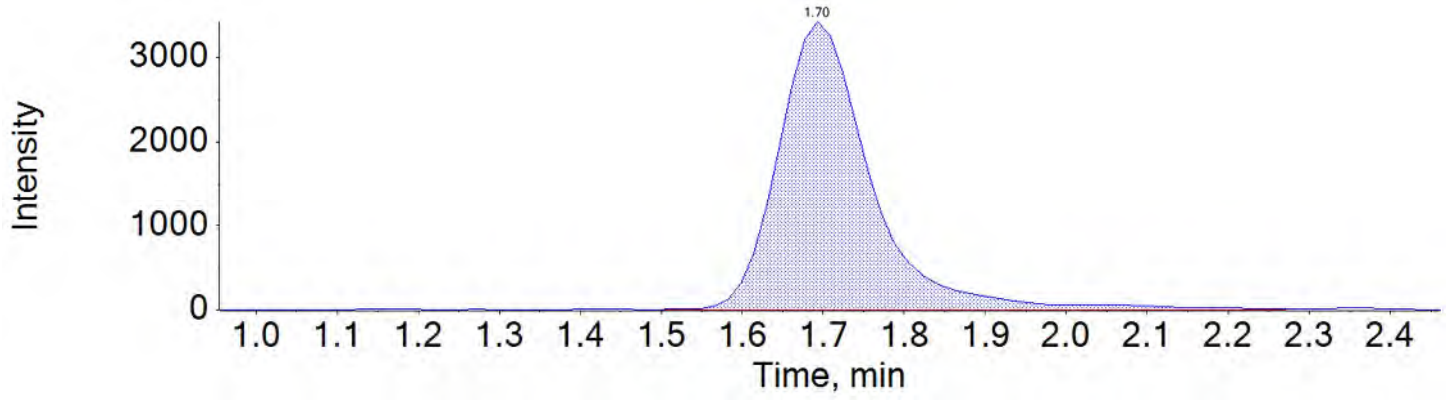
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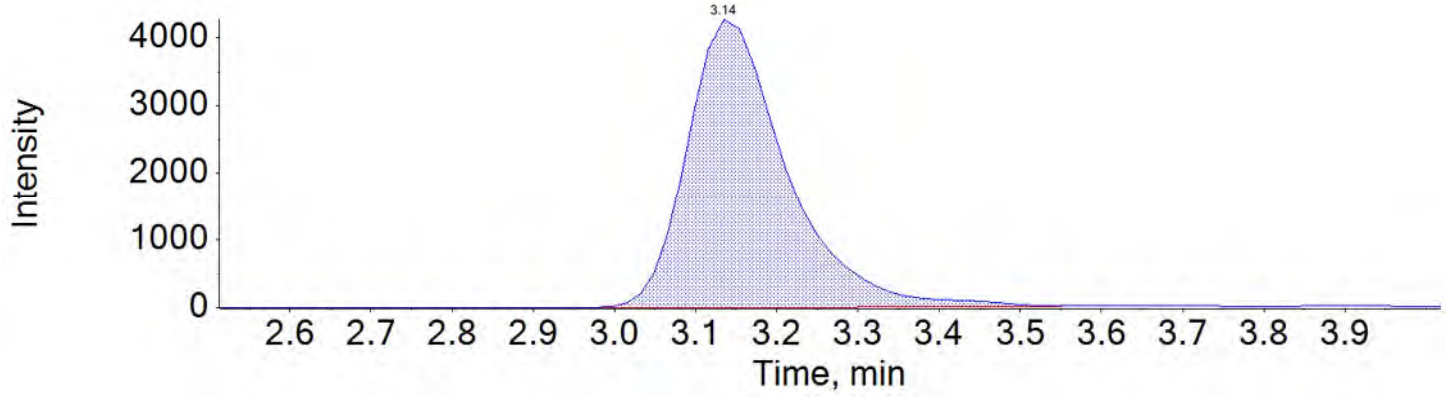
Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

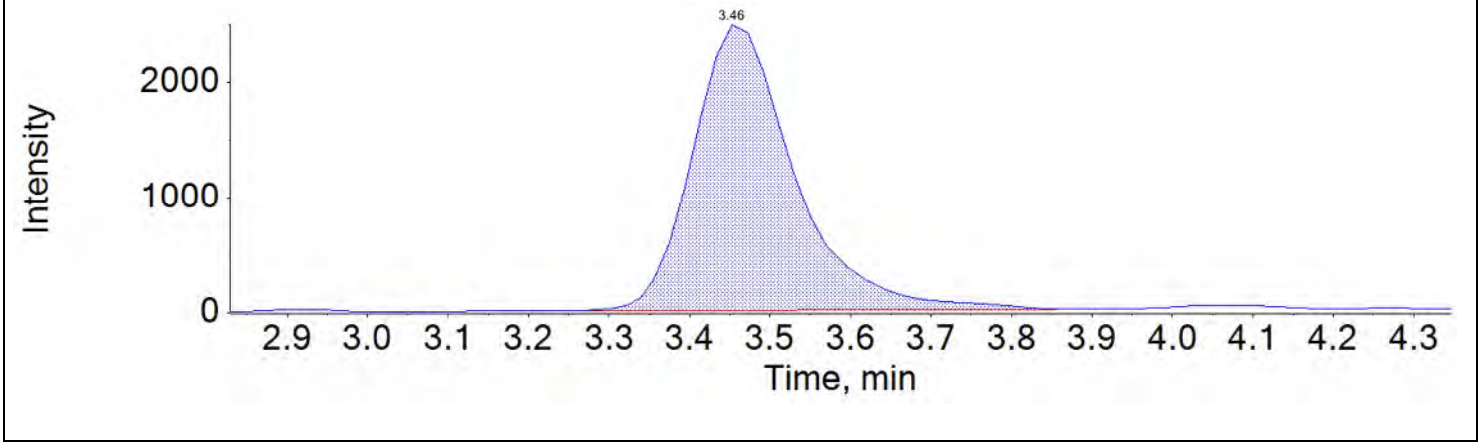


BATTELLE

Chromatogram Report

Created with Analyst Reporter
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d5-EtFOSAA 589.0 / 419.0



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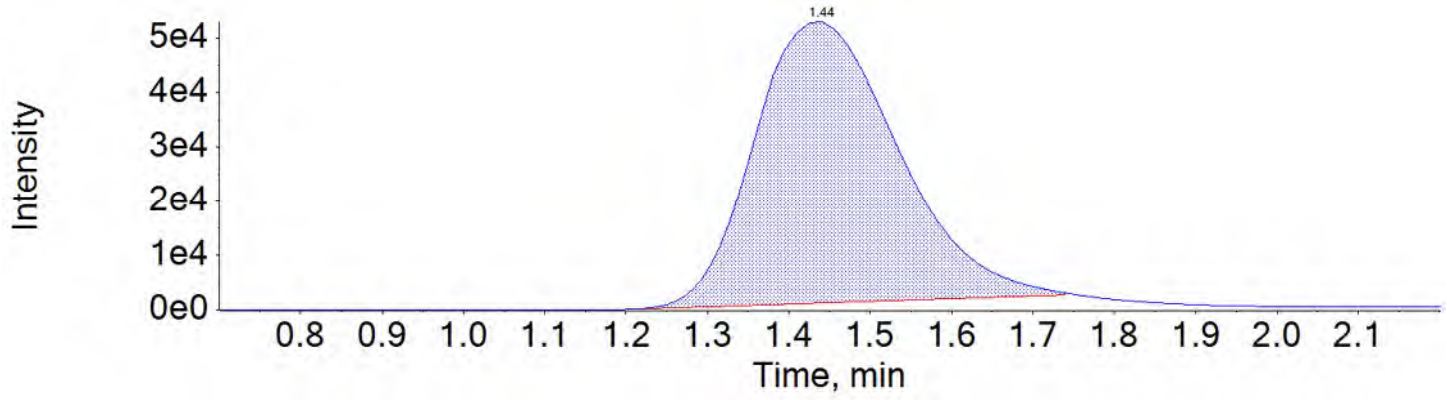
Chromatogram Report

Created with Analyst Reporter
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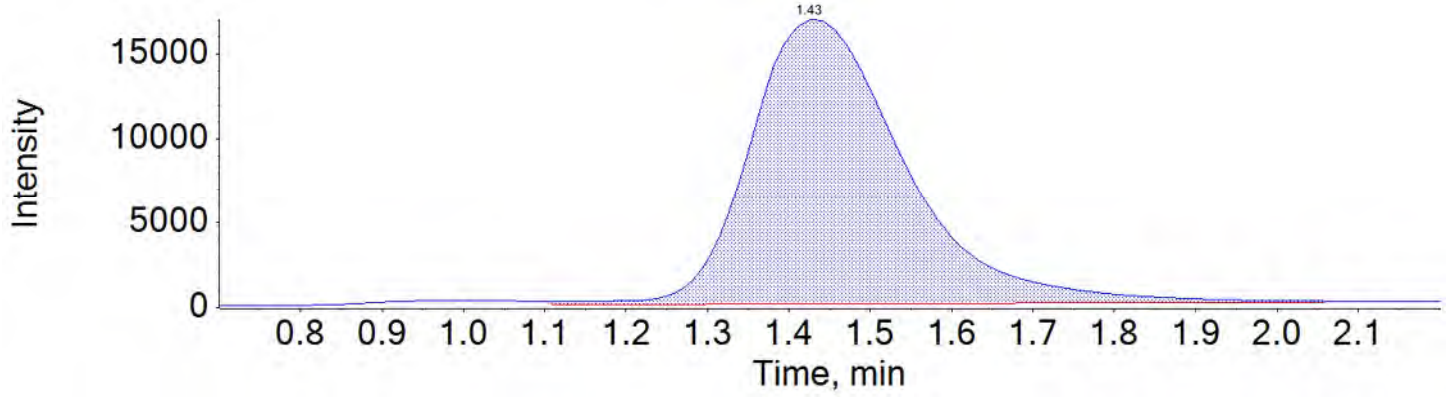
Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

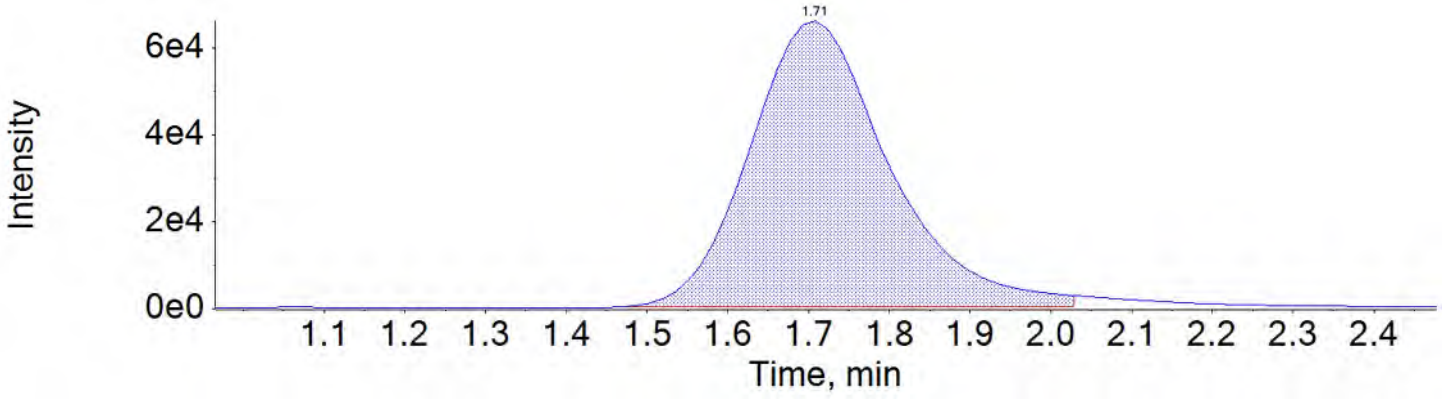


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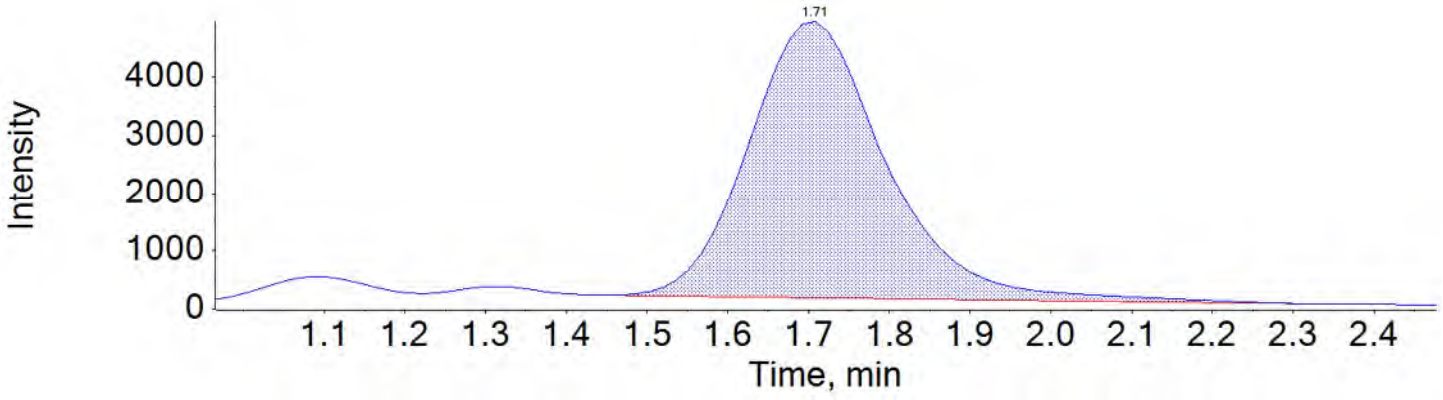
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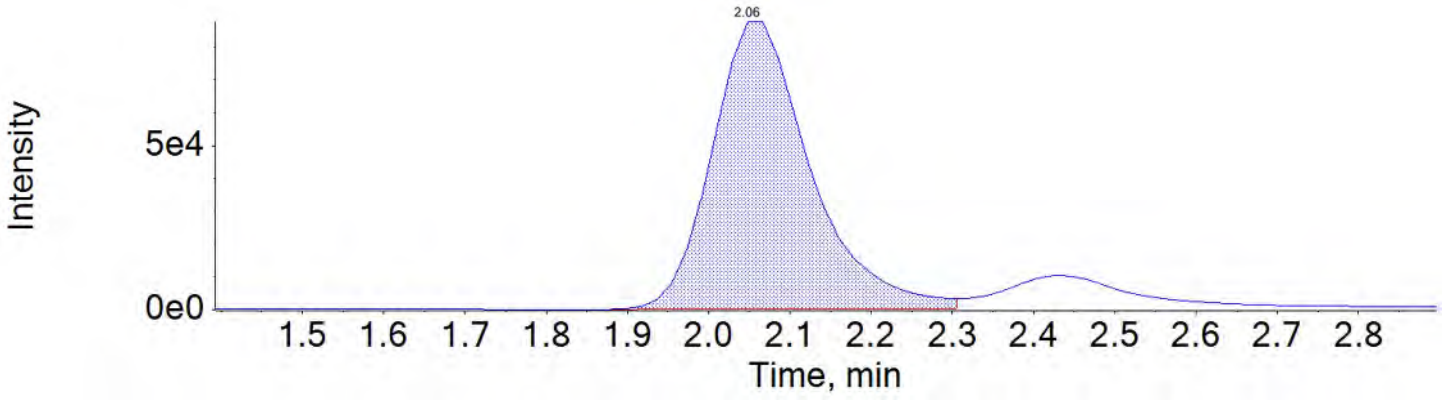
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

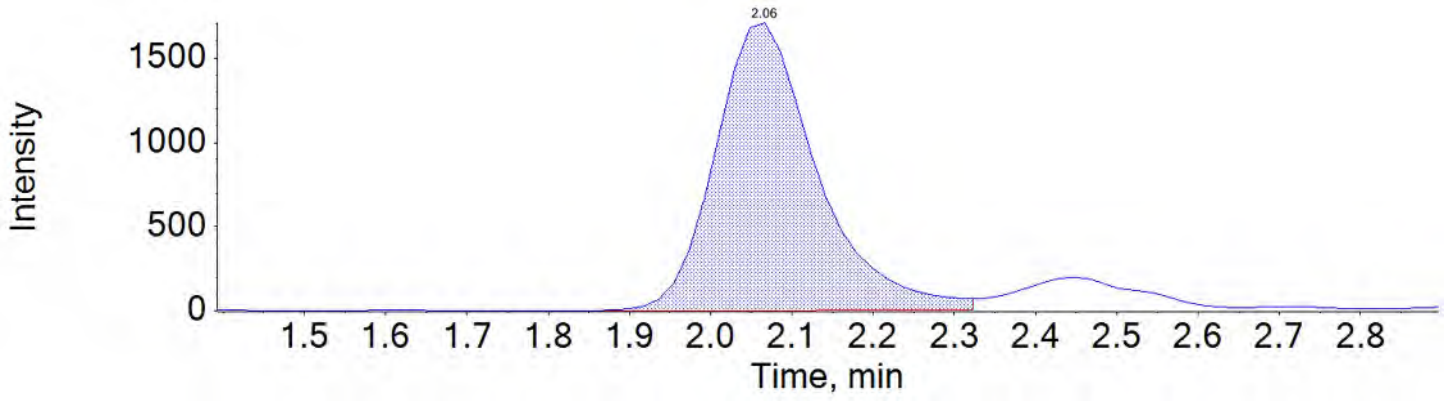


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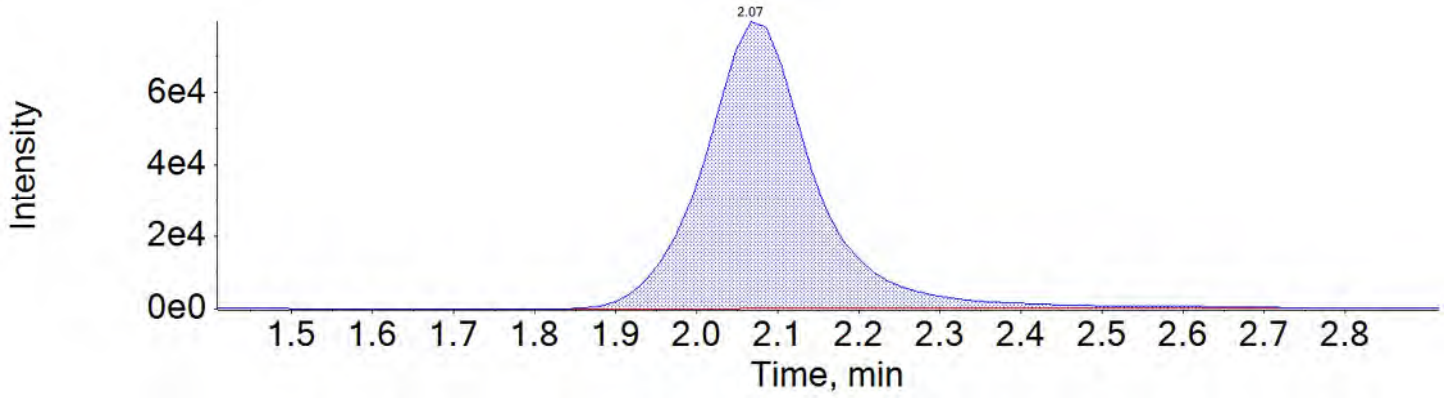
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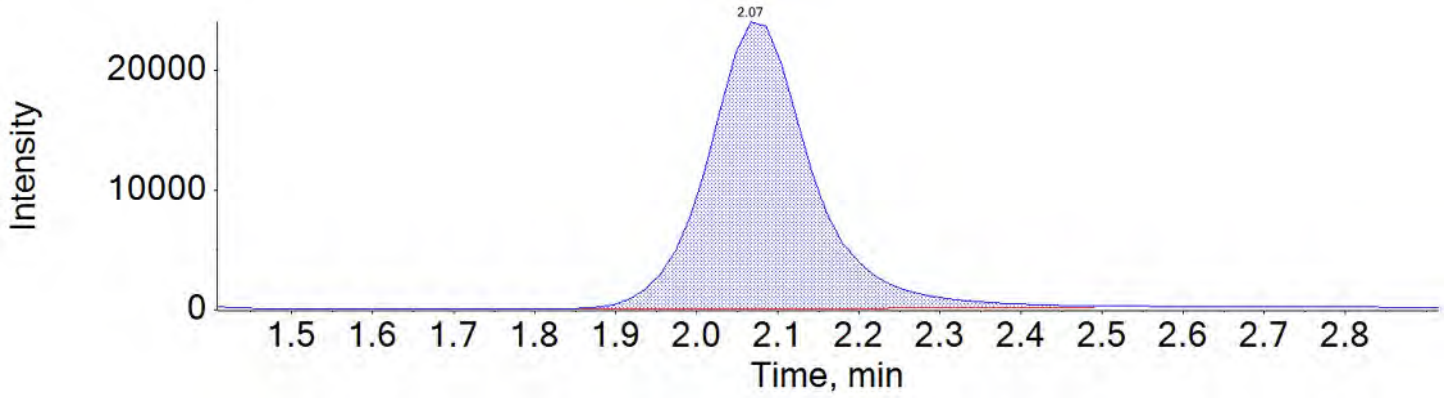
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

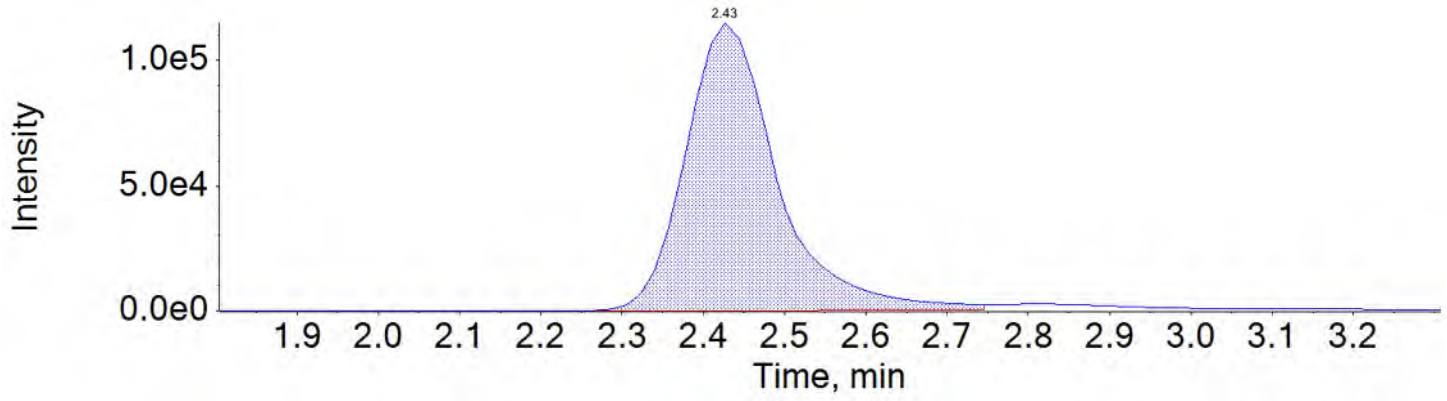


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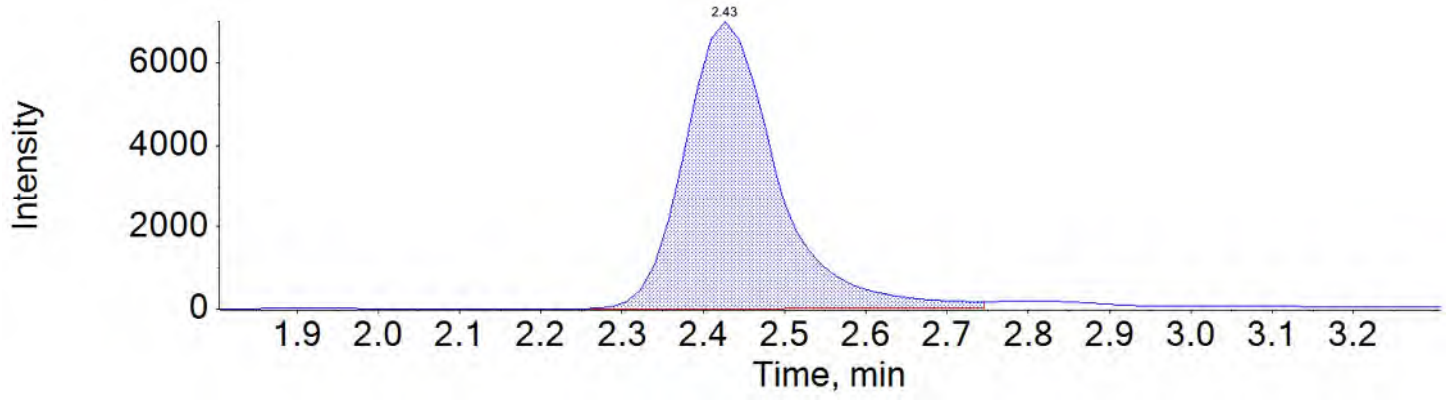
Chromatogram Report

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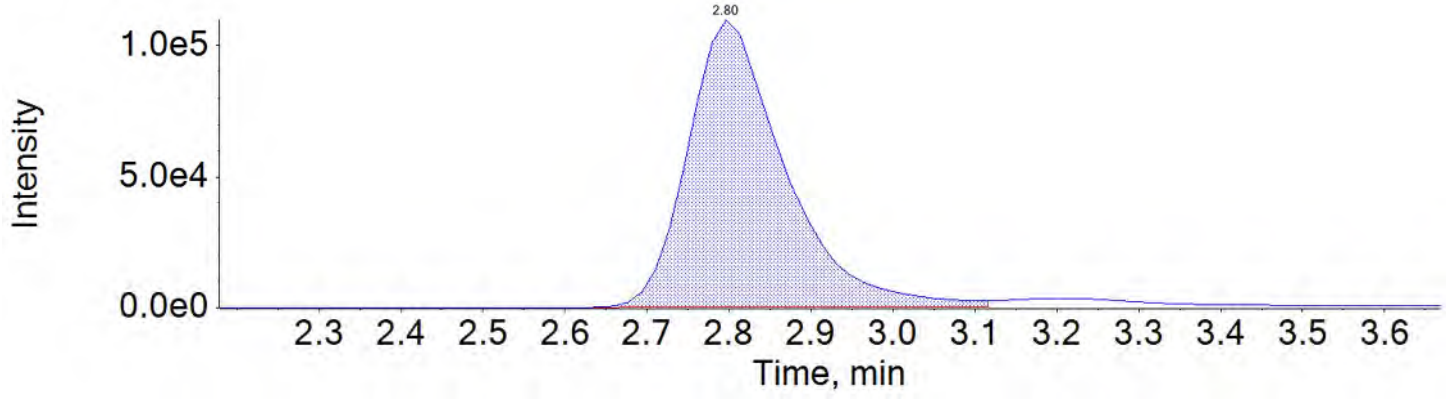
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

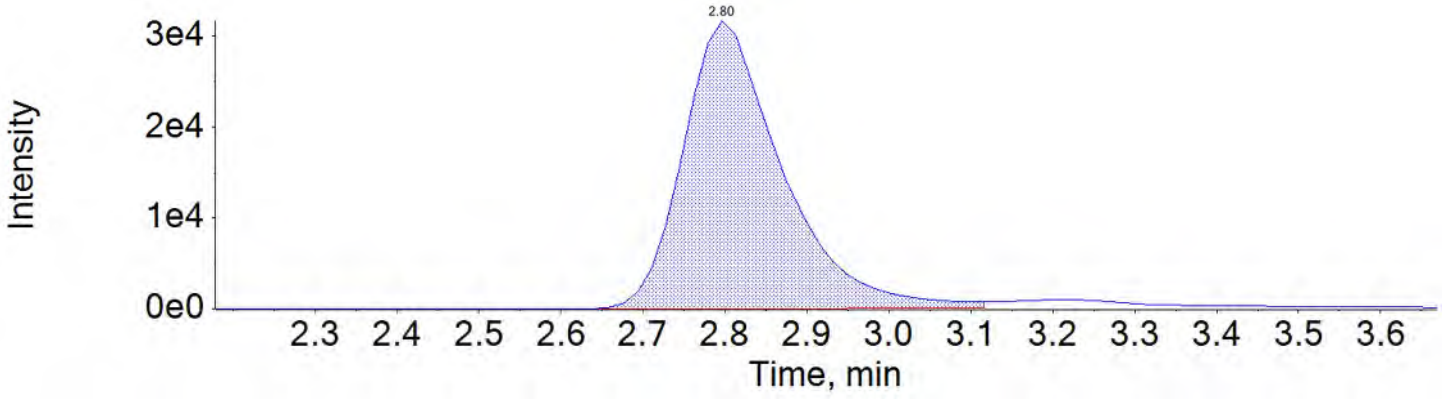


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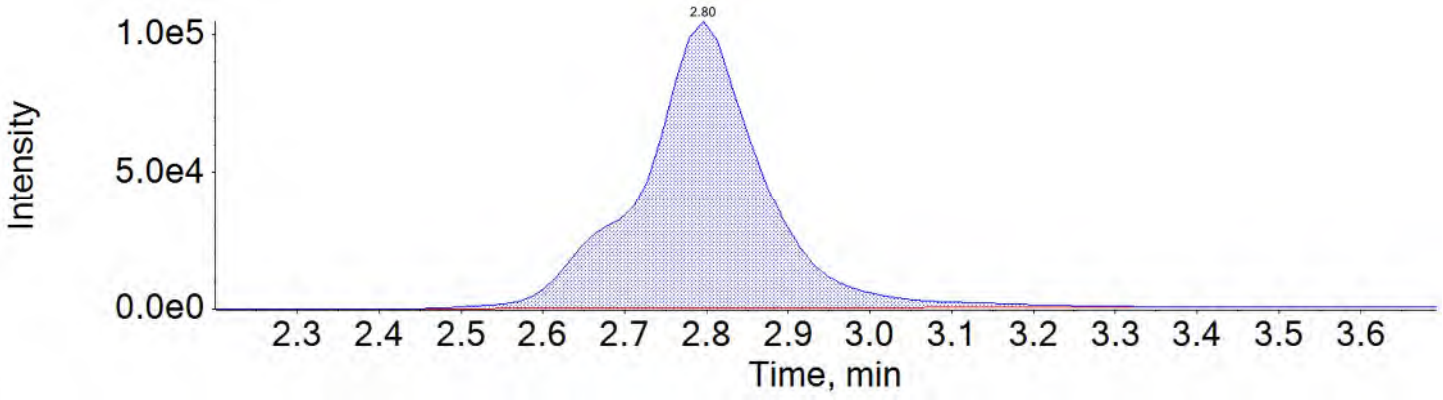
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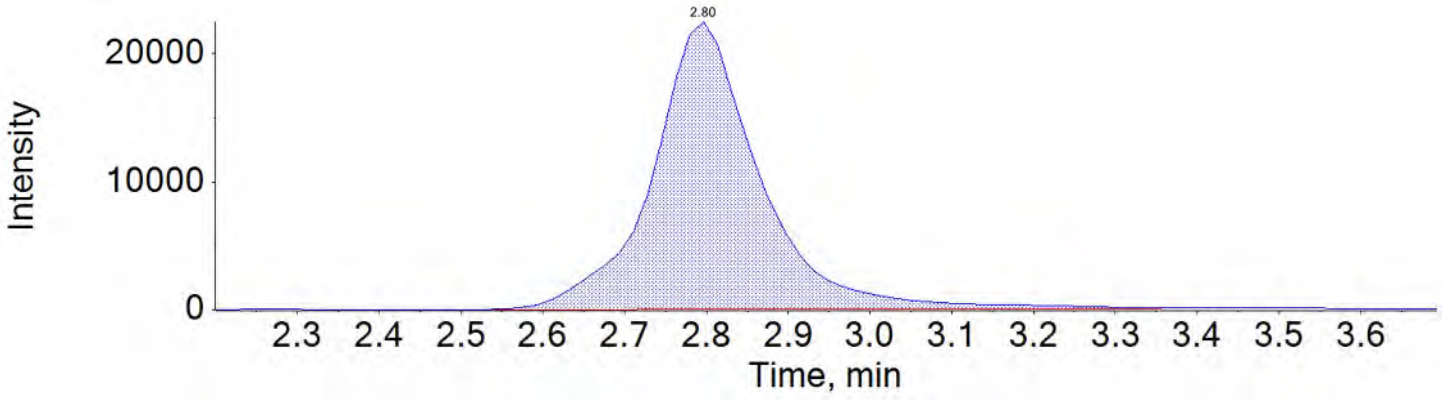
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

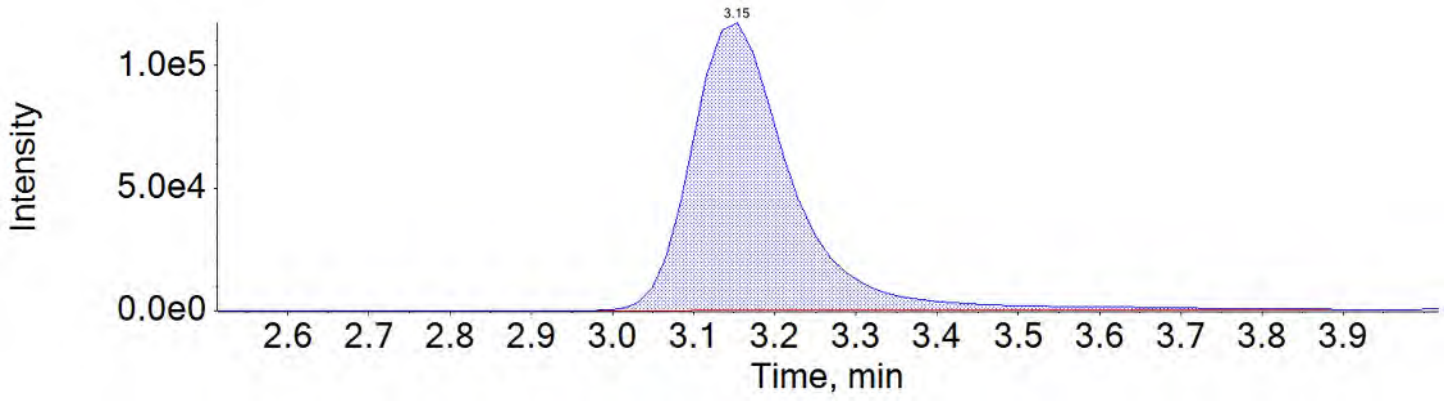


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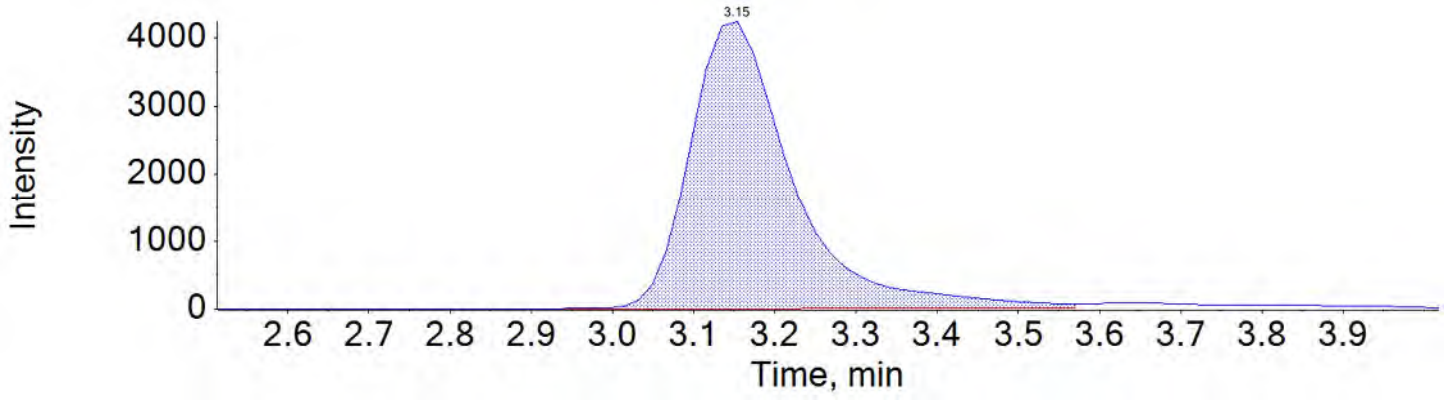
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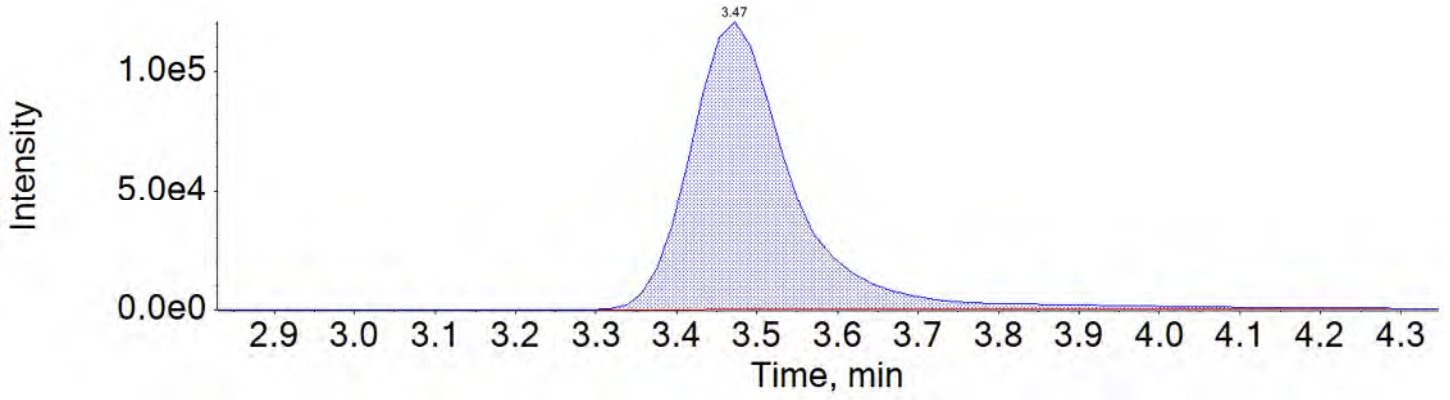
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

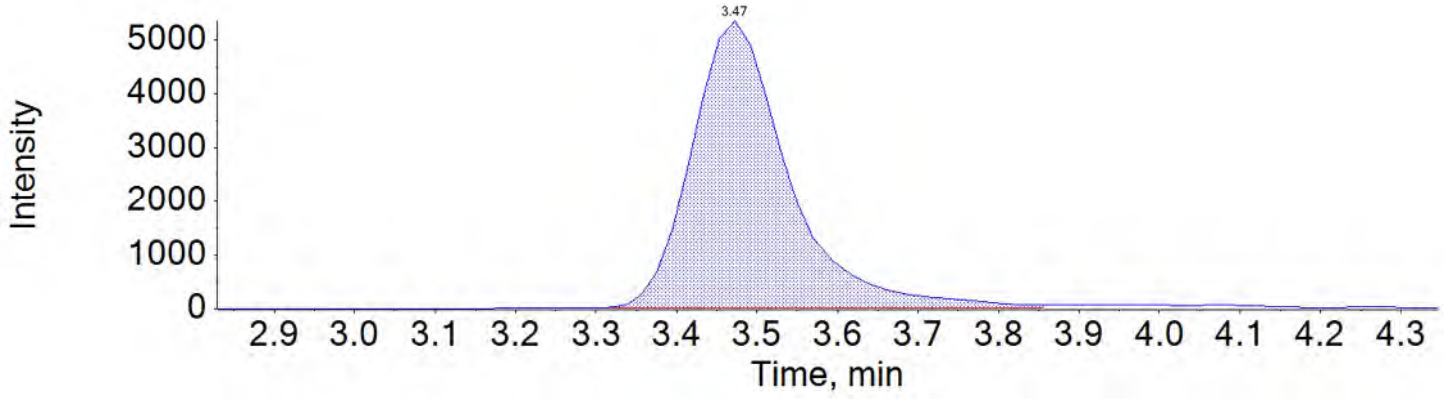


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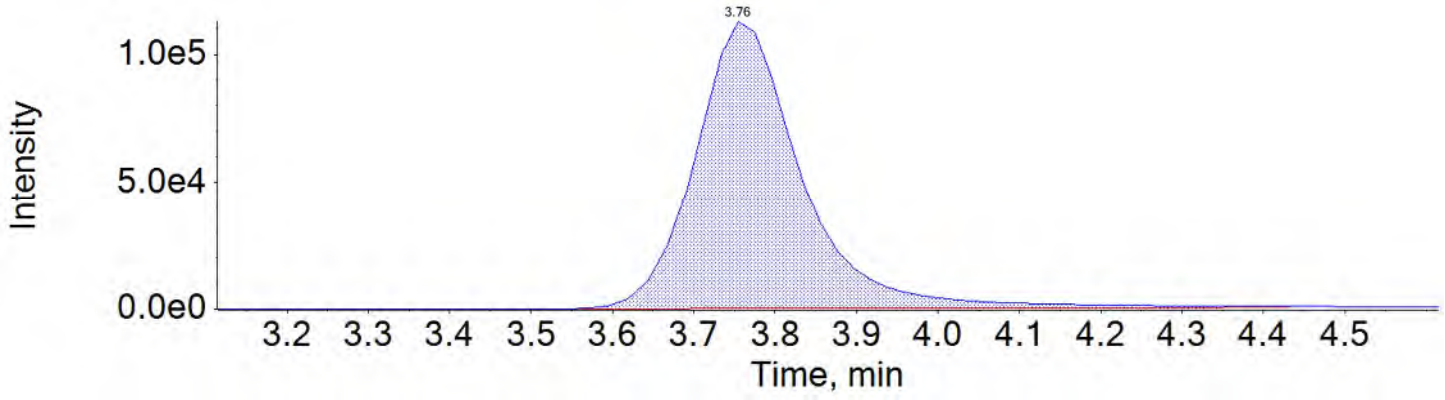
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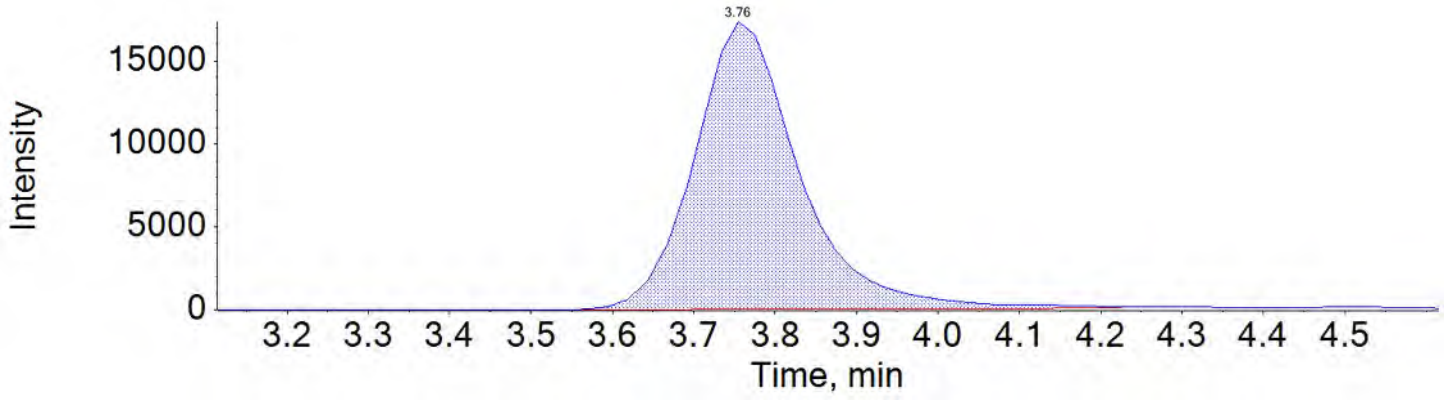
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

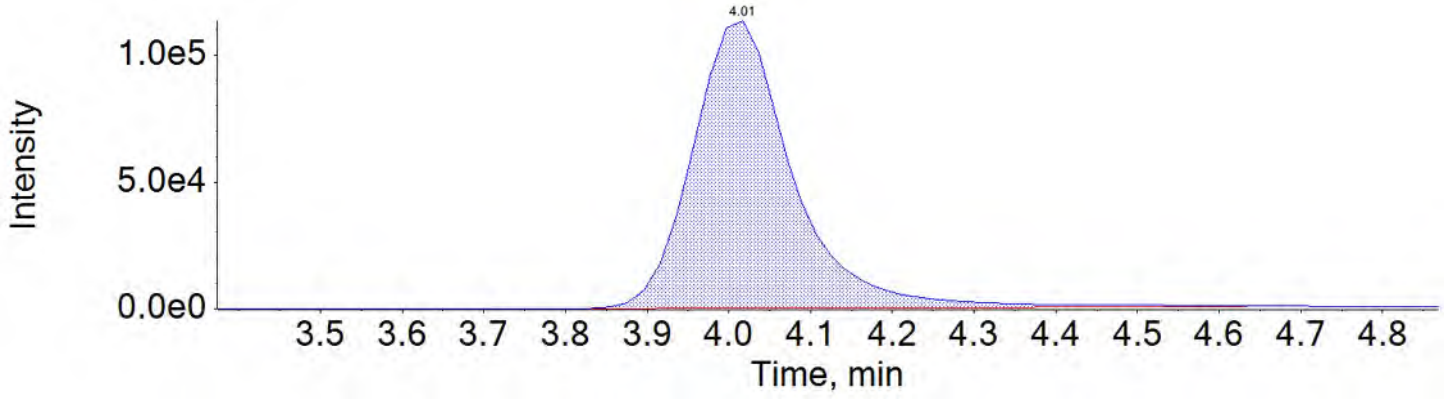


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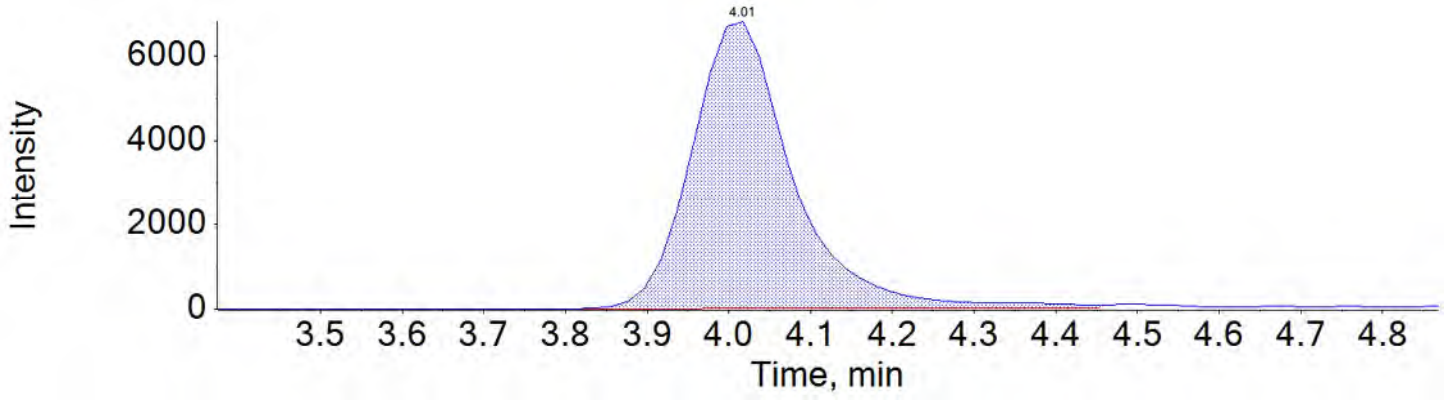
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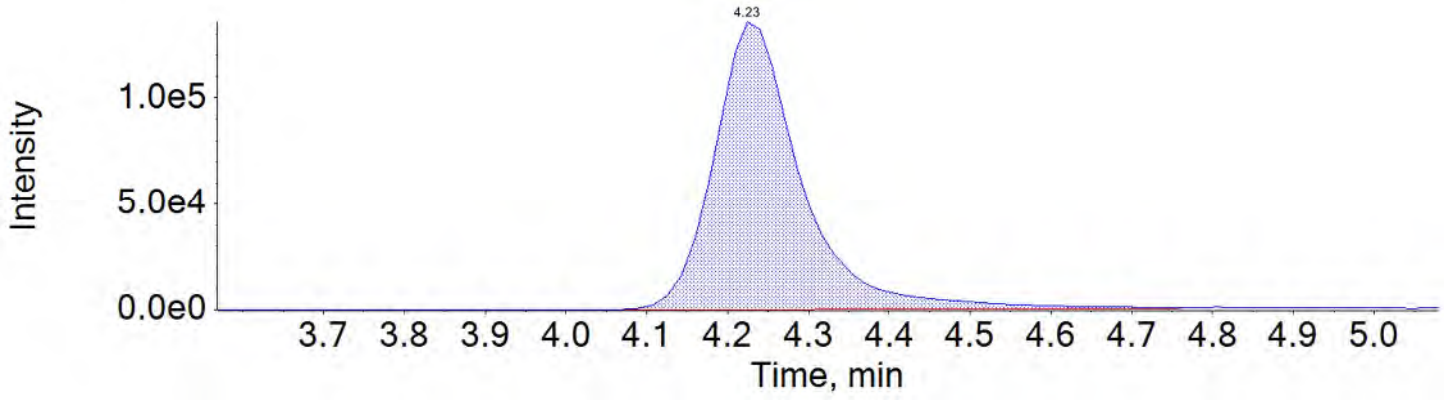
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

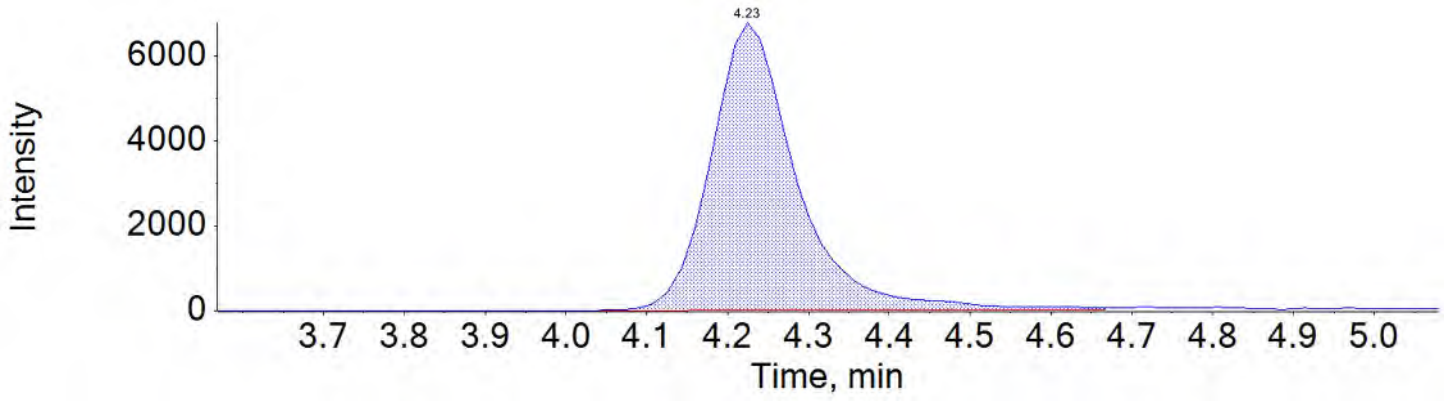


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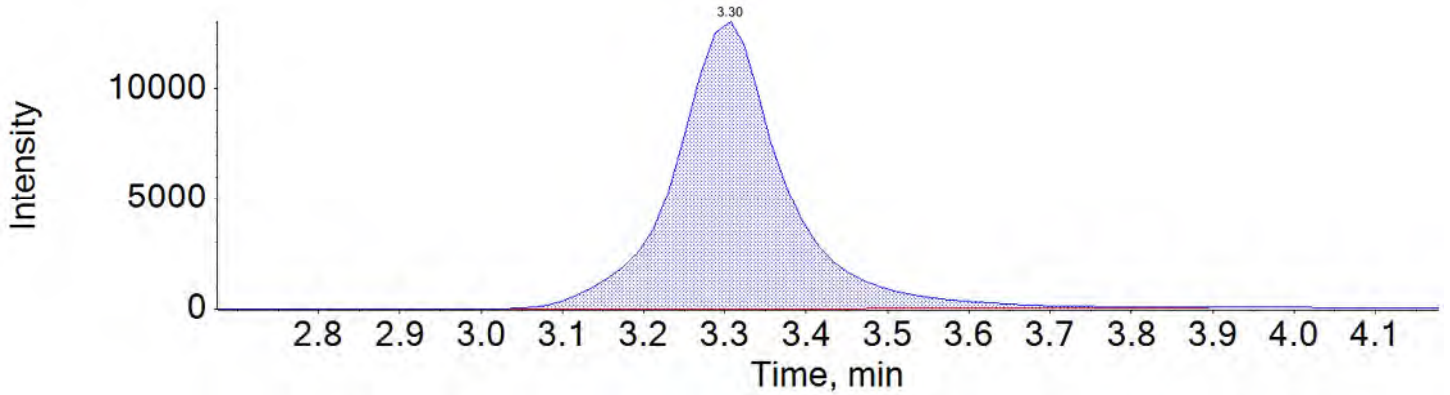
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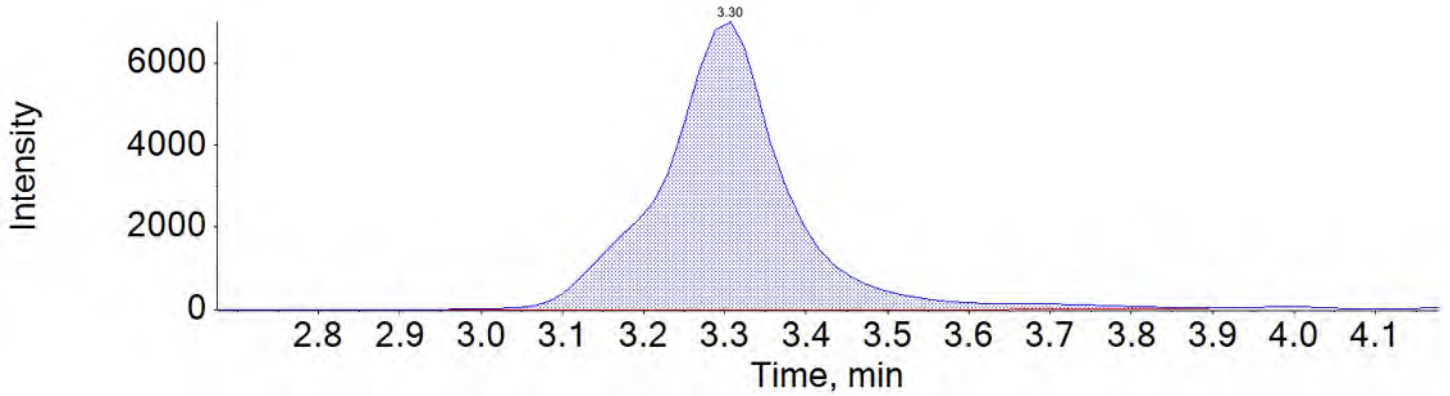
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

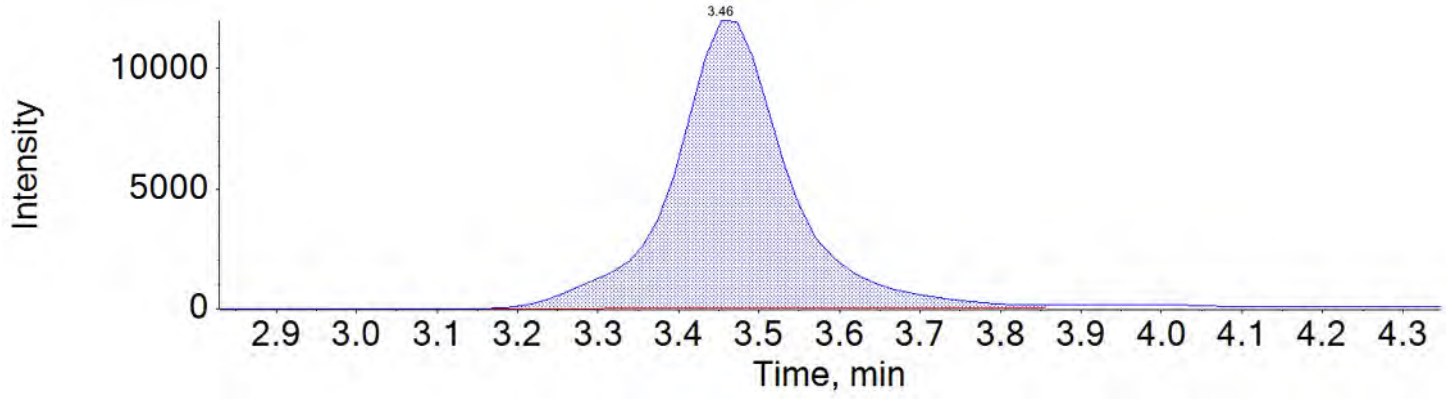


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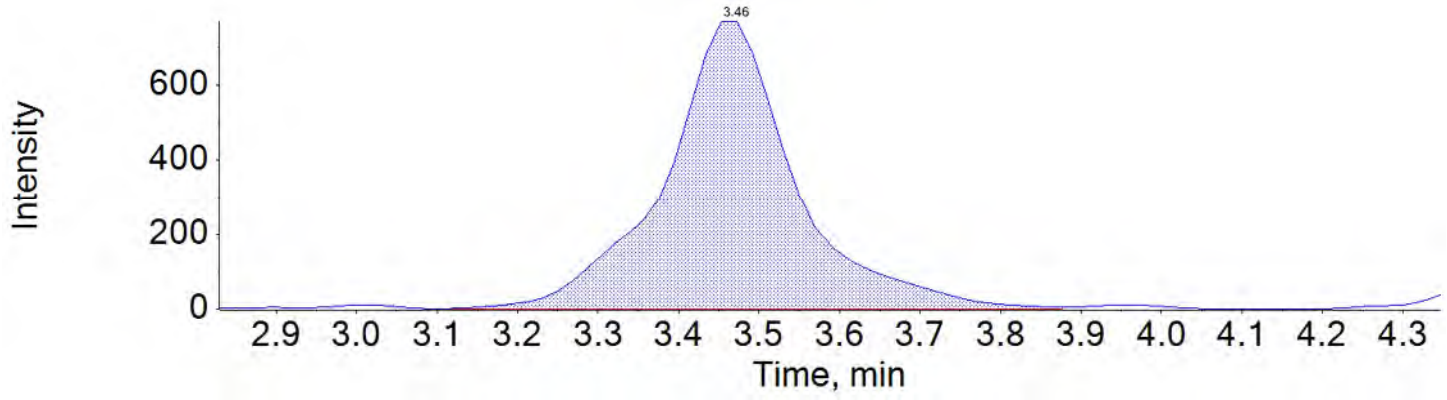
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

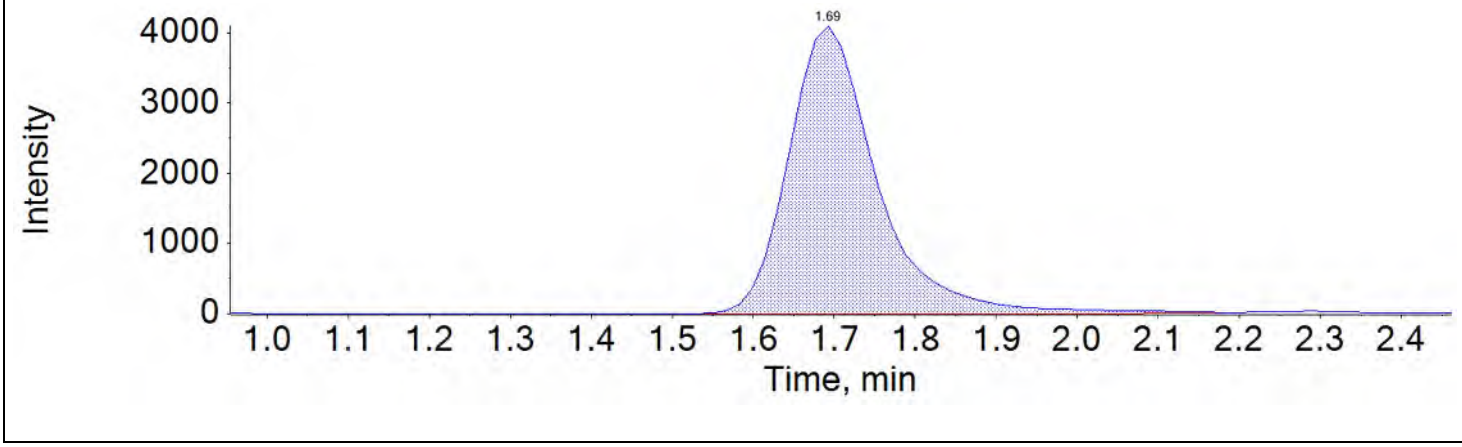
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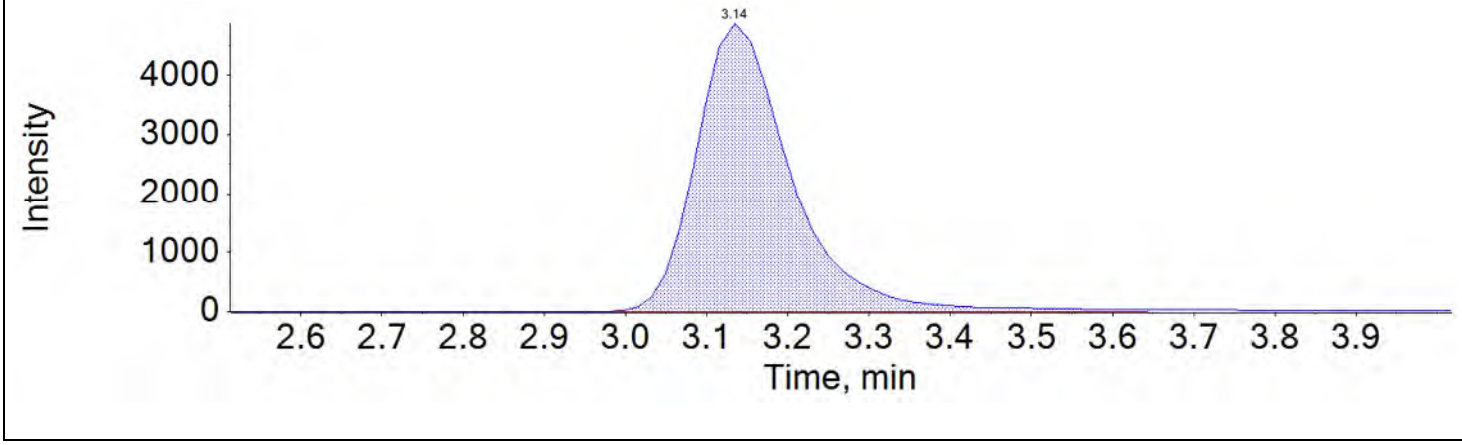
Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

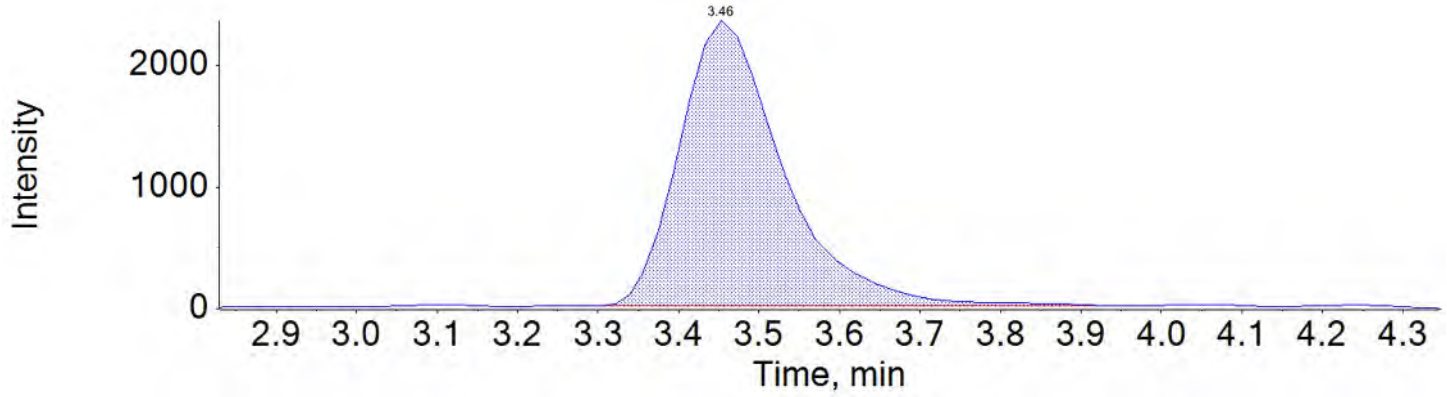


BATTELLE

Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:55:12 AM

d5-EtFOSAA 589.0 / 419.0



BATTELLE

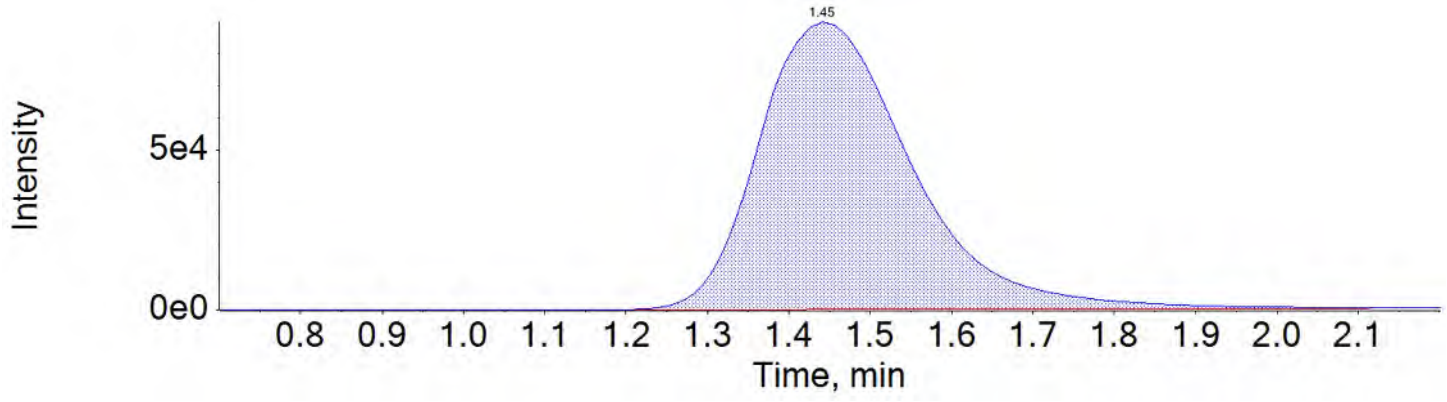
Chromatogram Report

Created with Analyst Reporter
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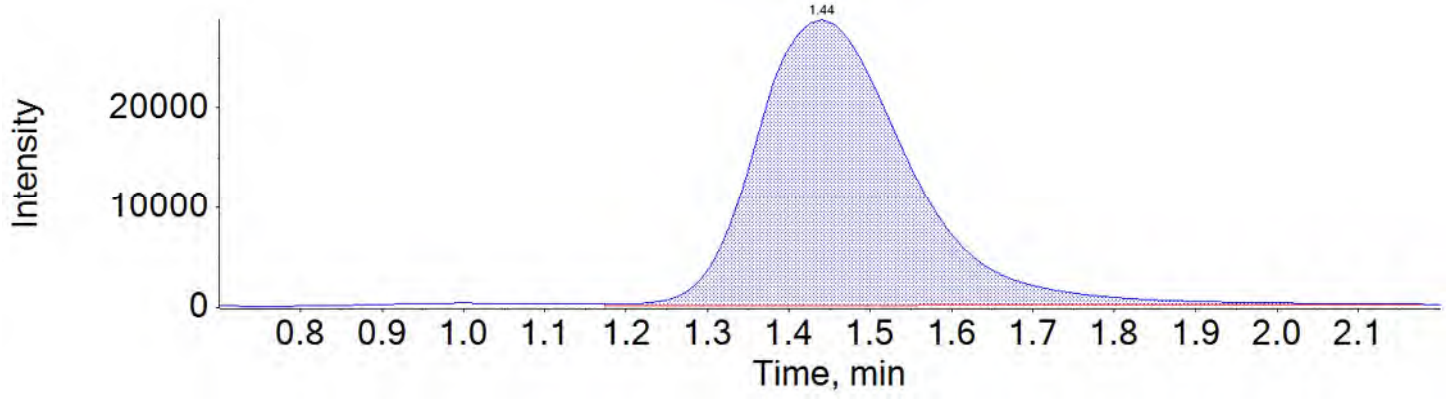
Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

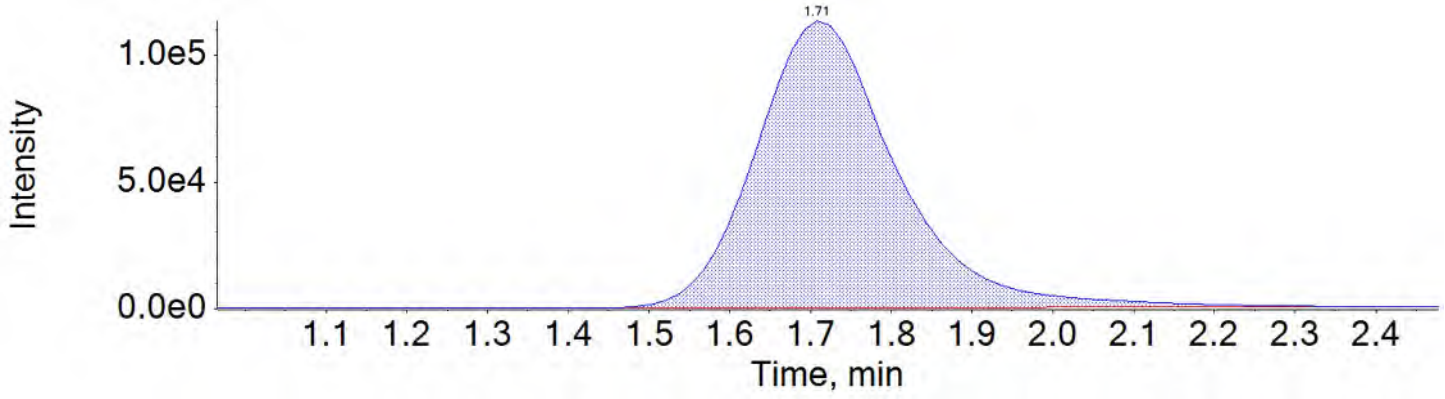


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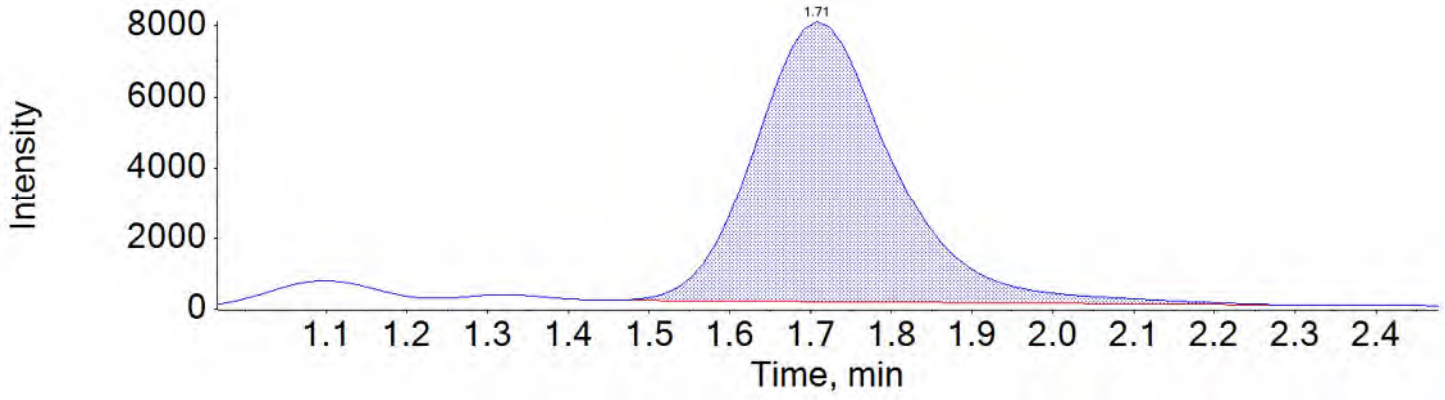
Chromatogram Report

Created with Analyst Reporter
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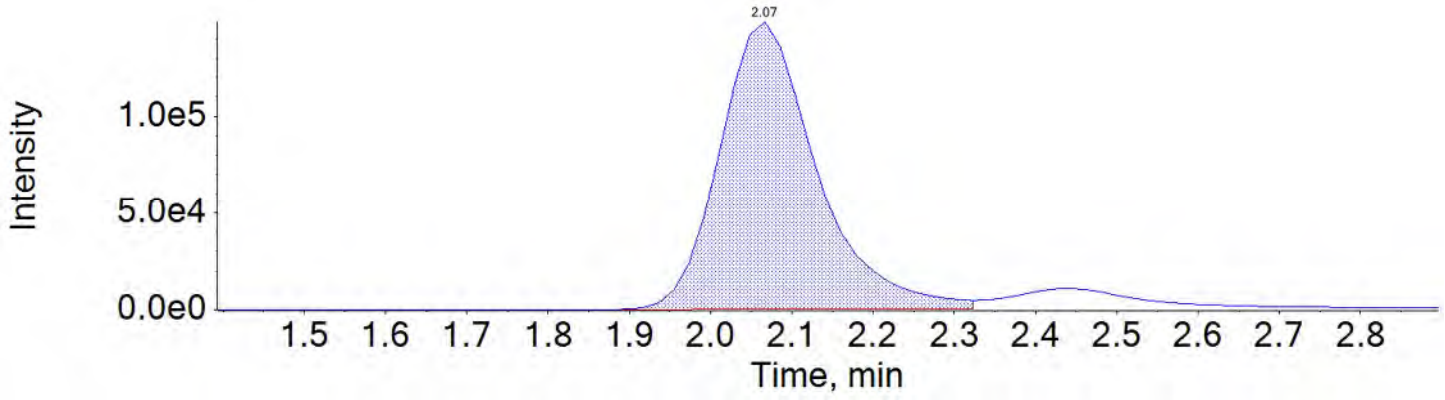
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

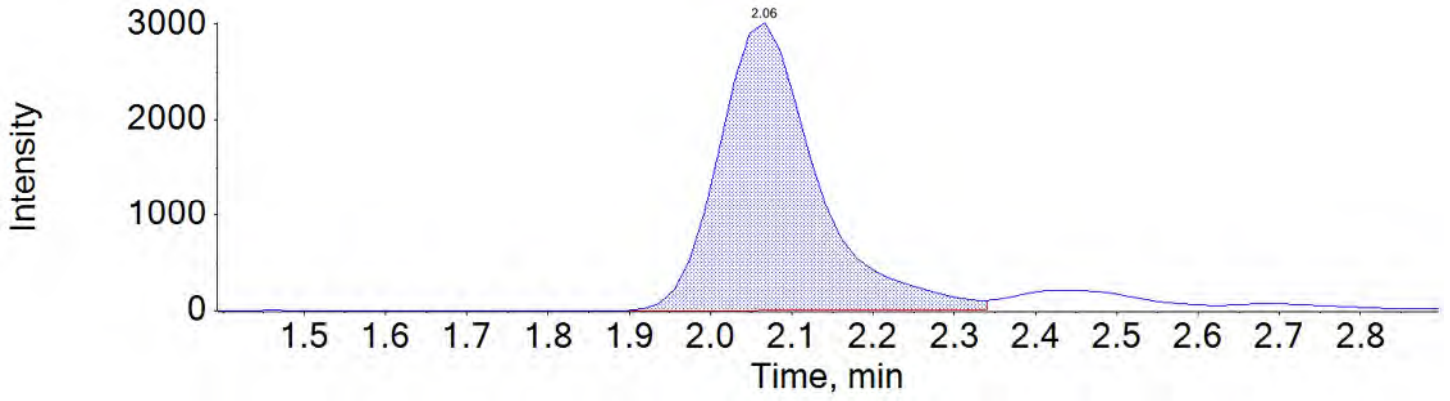


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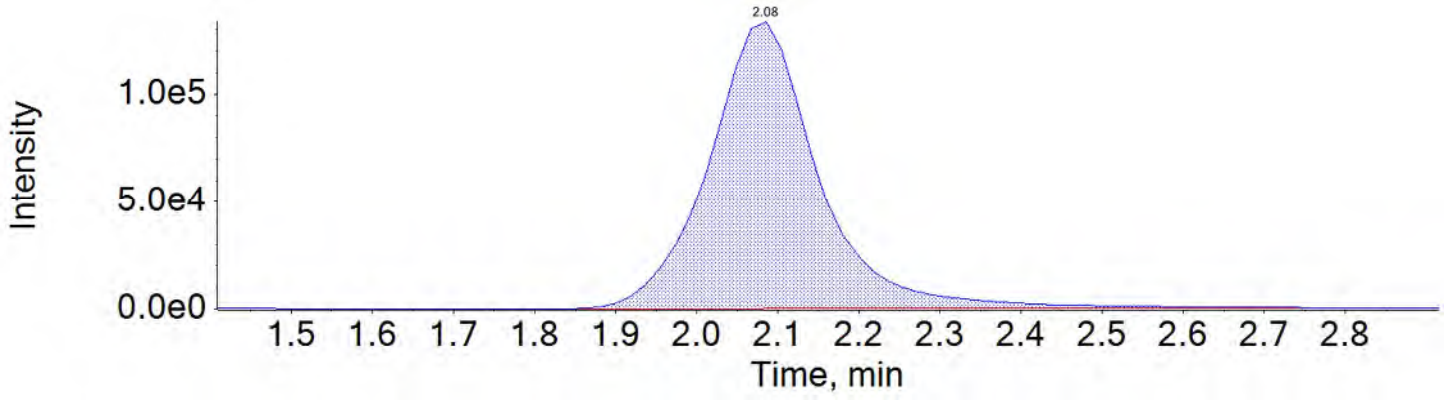
Chromatogram Report

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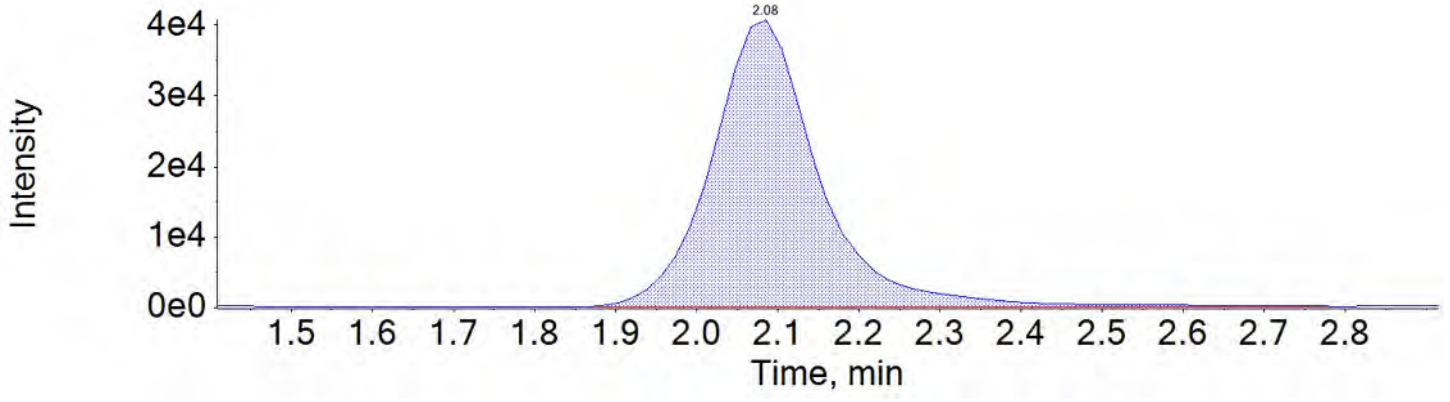
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

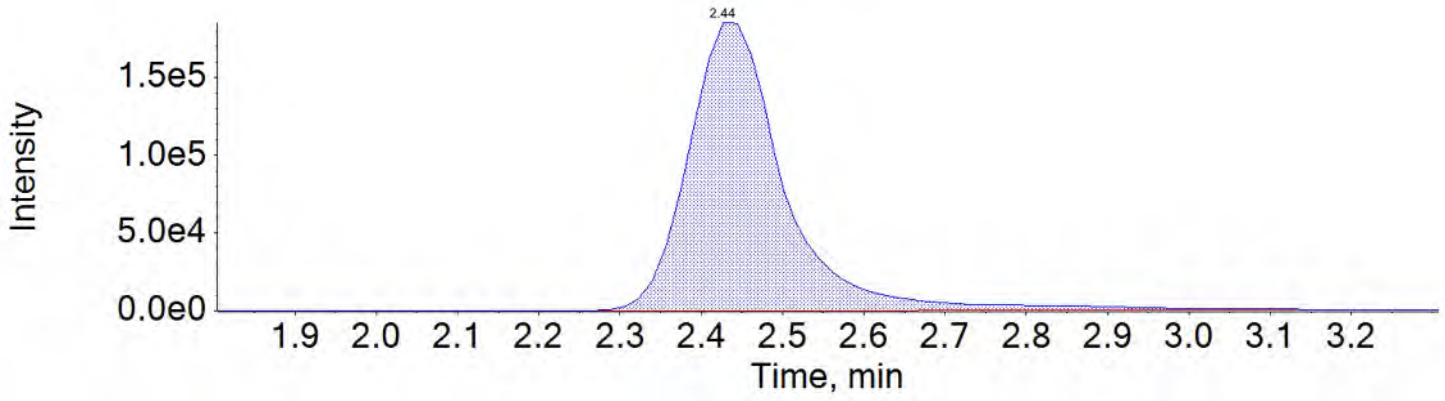


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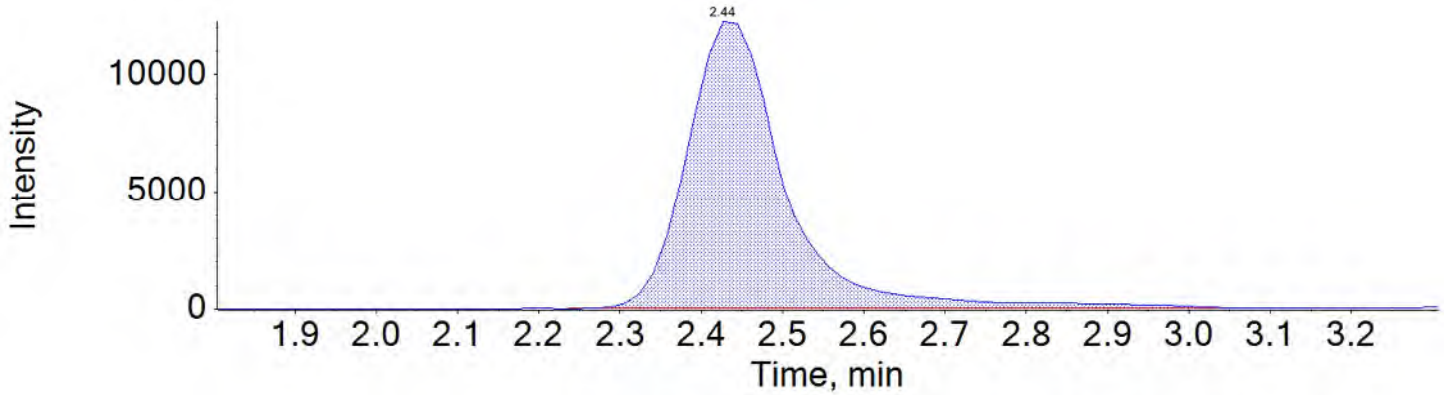
Chromatogram Report

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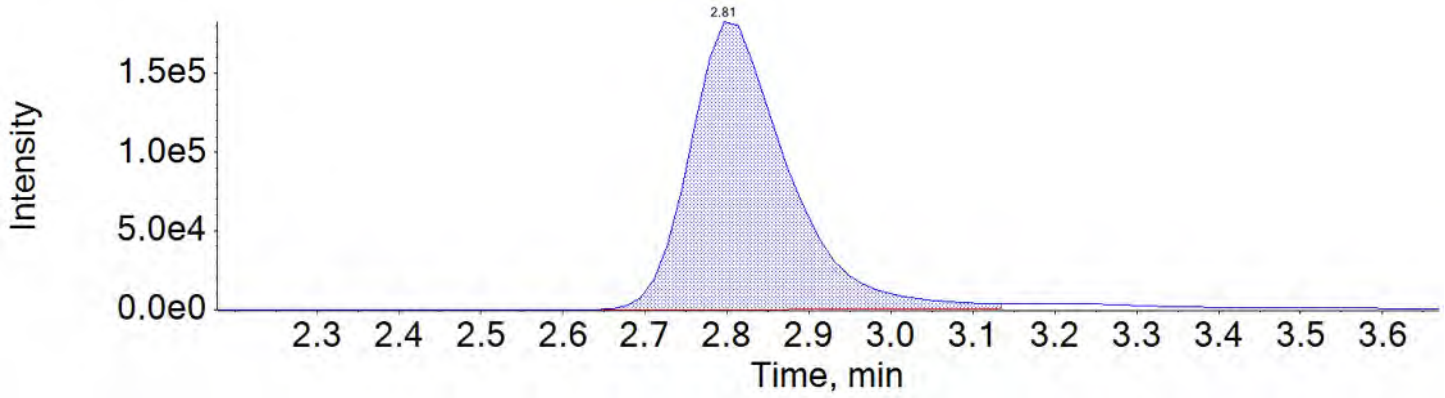
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

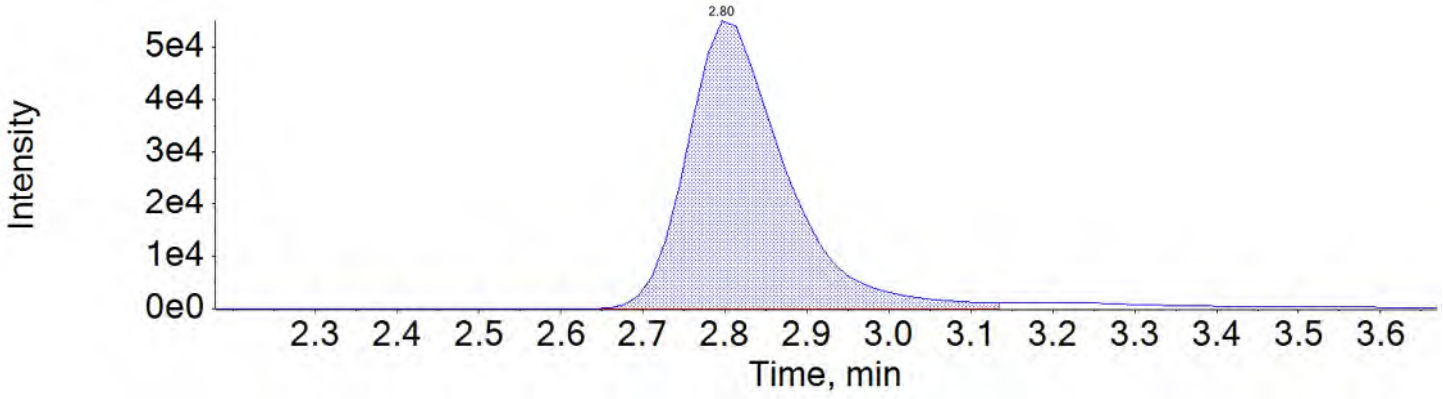


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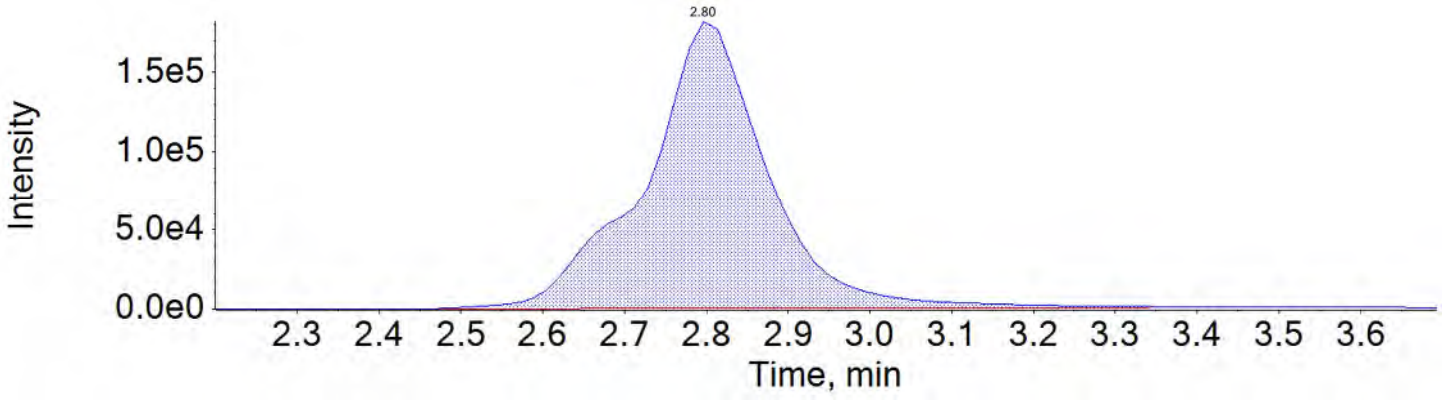
Chromatogram Report

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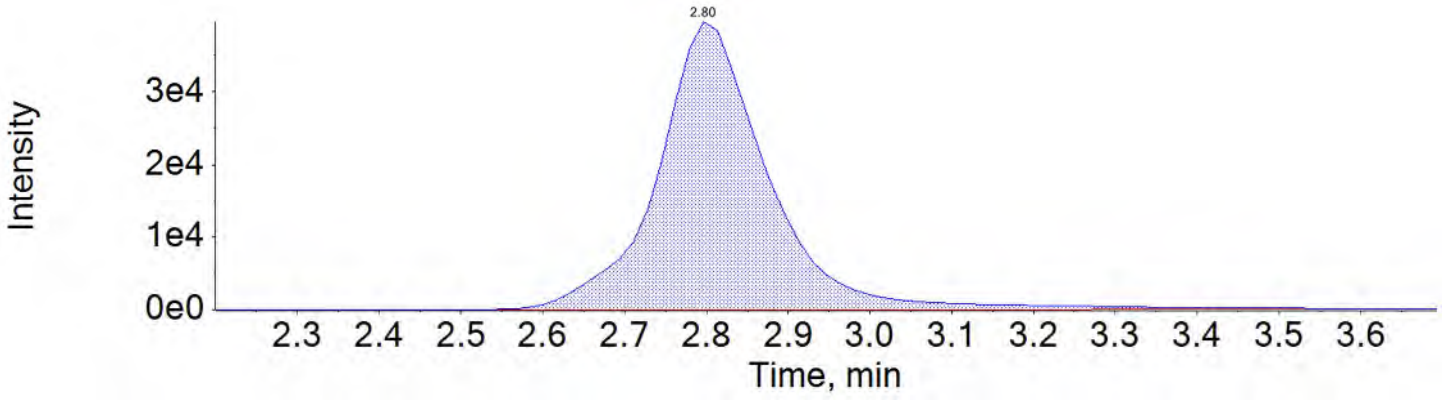
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

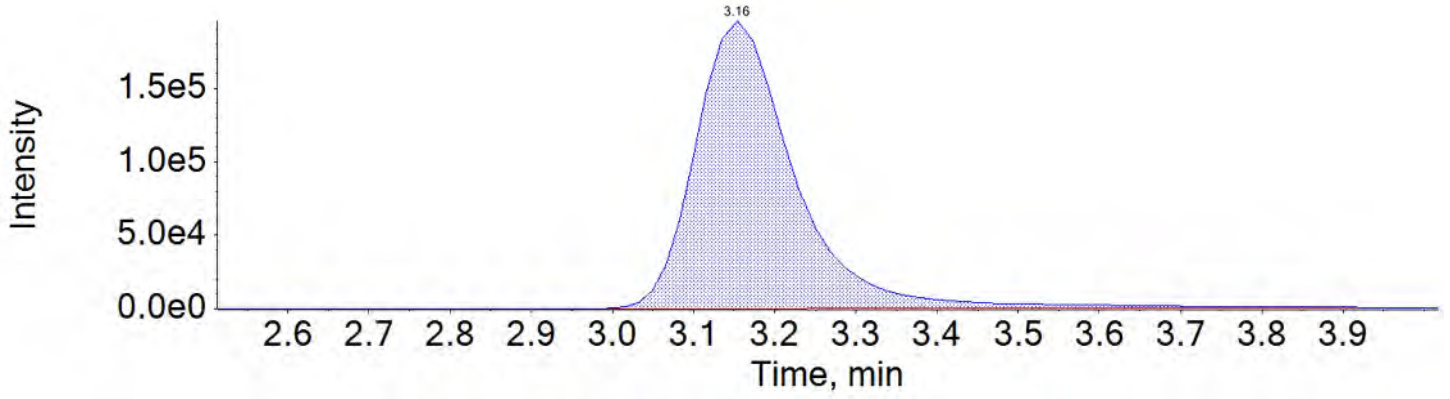


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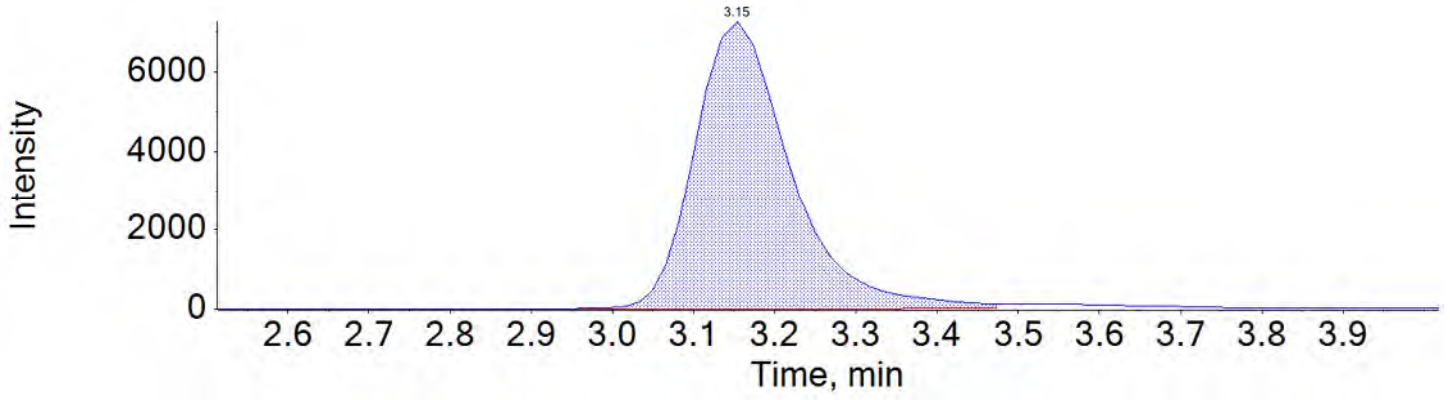
Chromatogram Report

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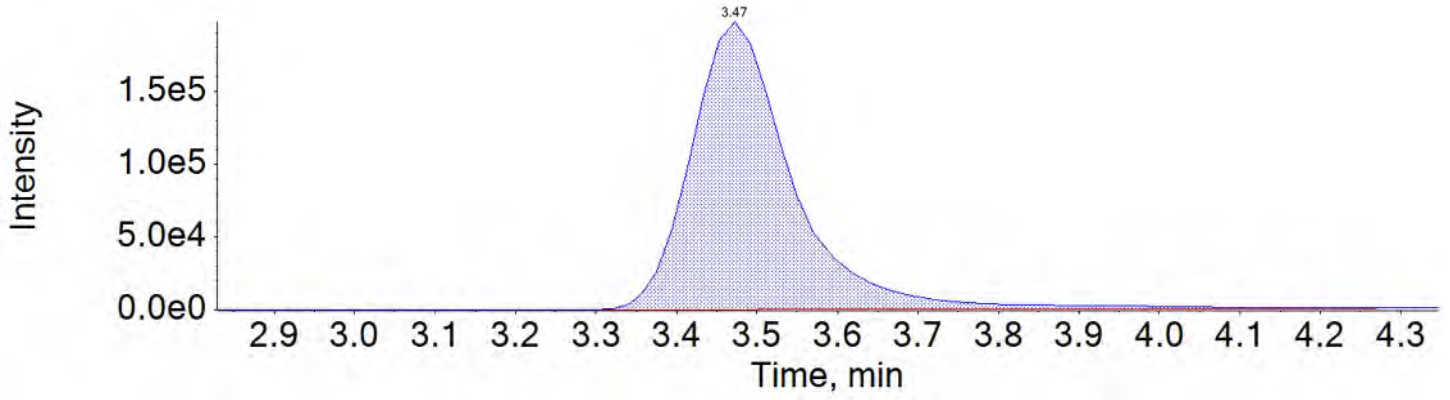
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

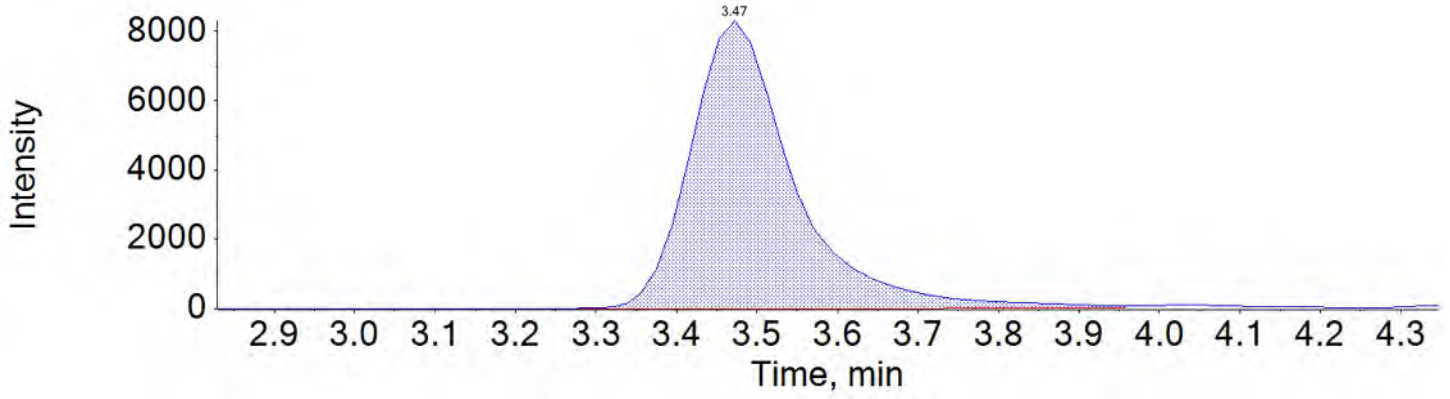


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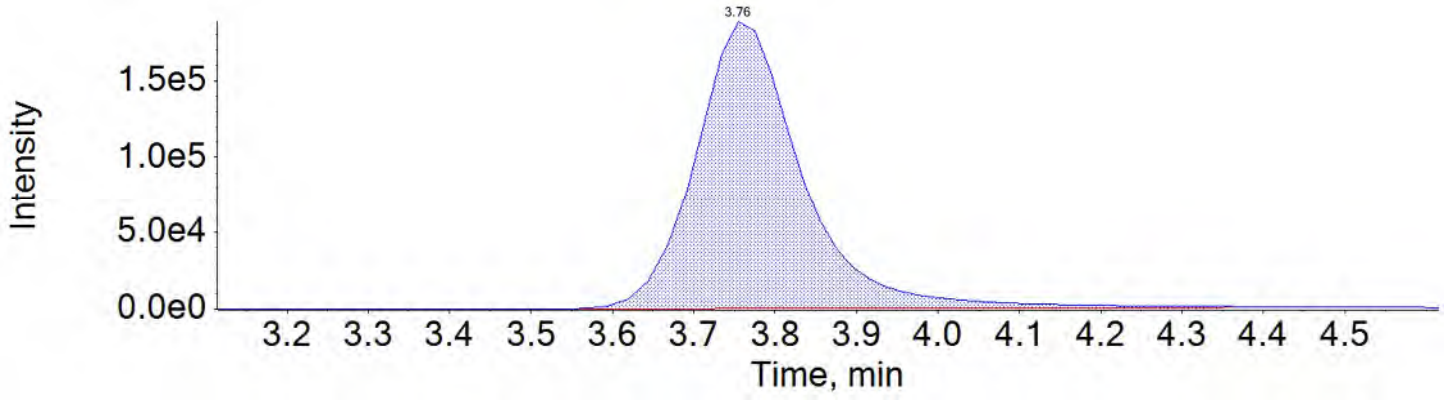
Chromatogram Report

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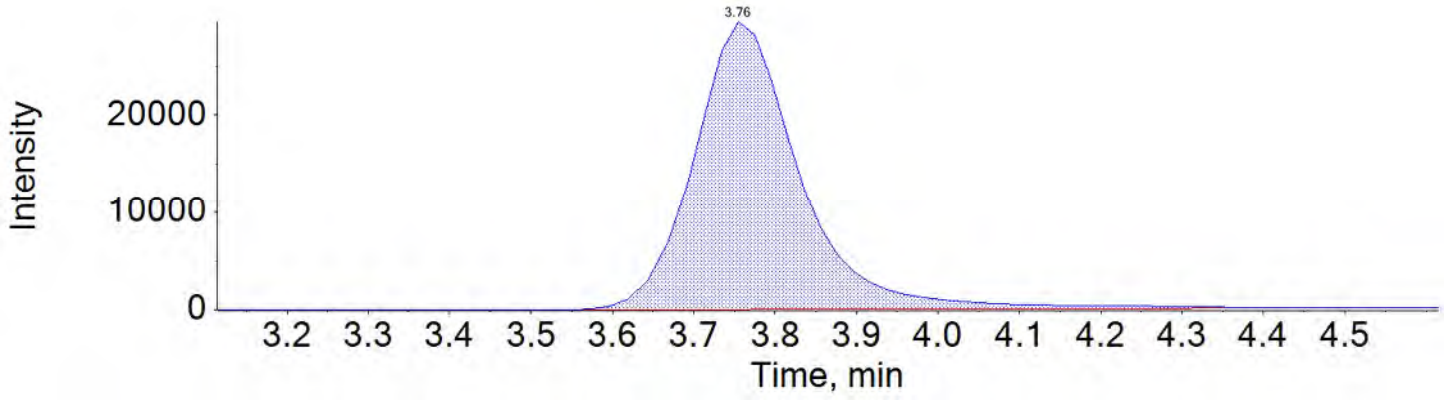
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

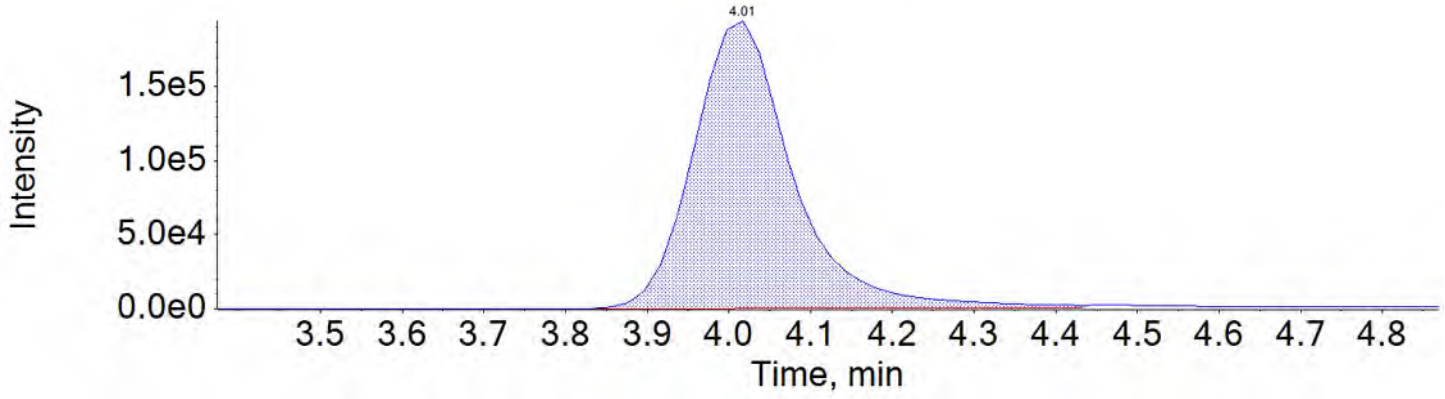


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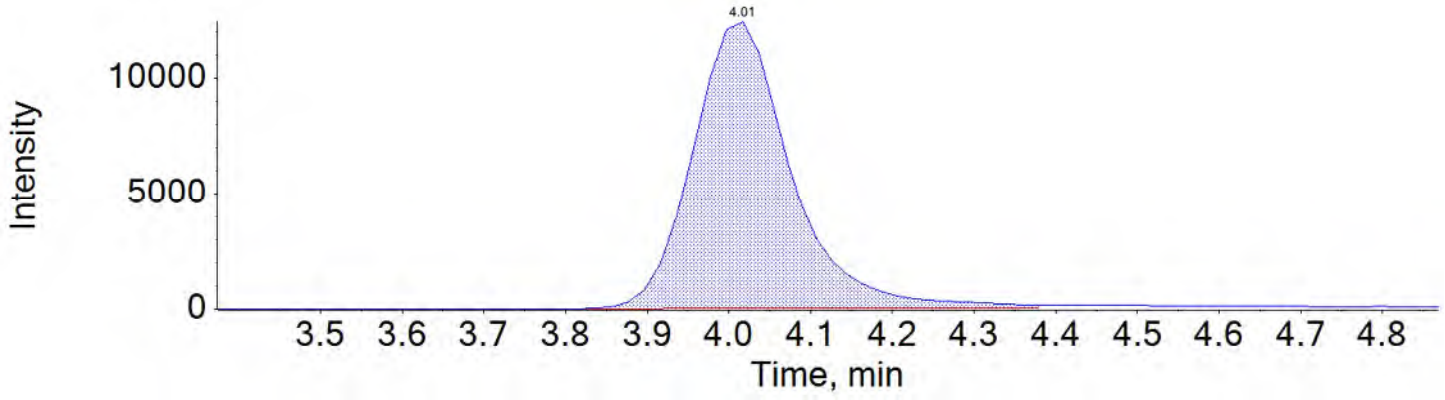
Chromatogram Report

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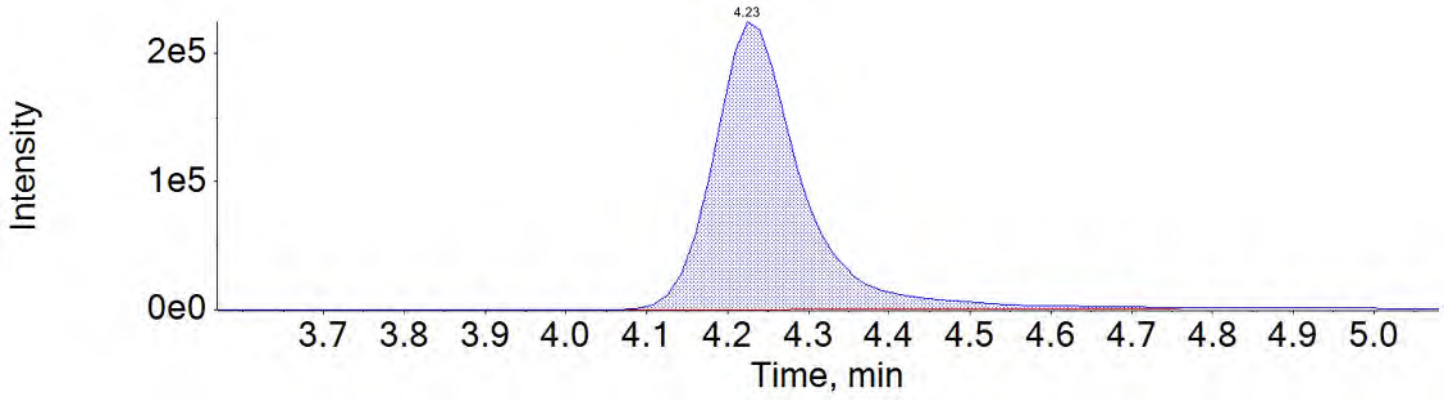
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

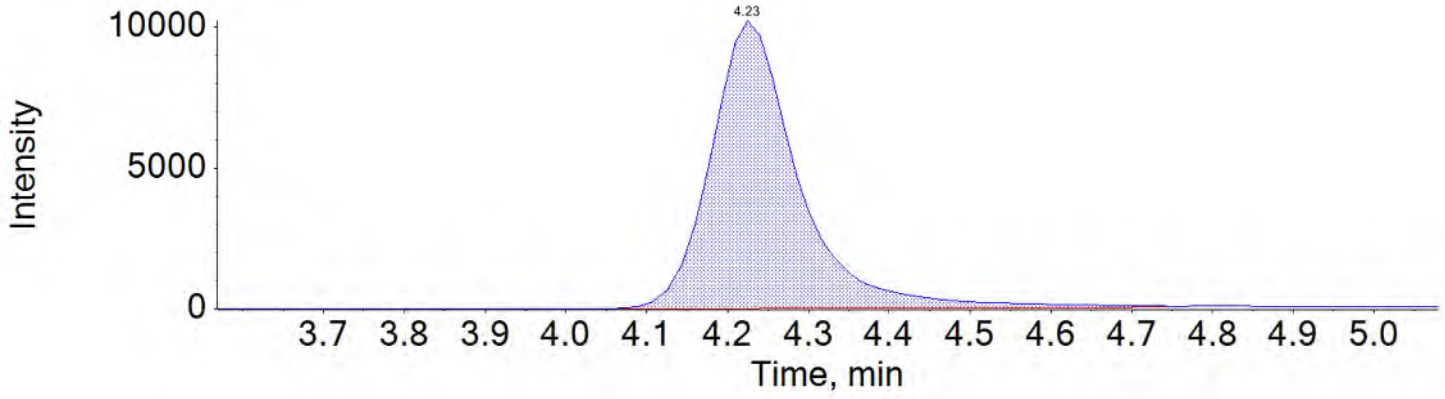


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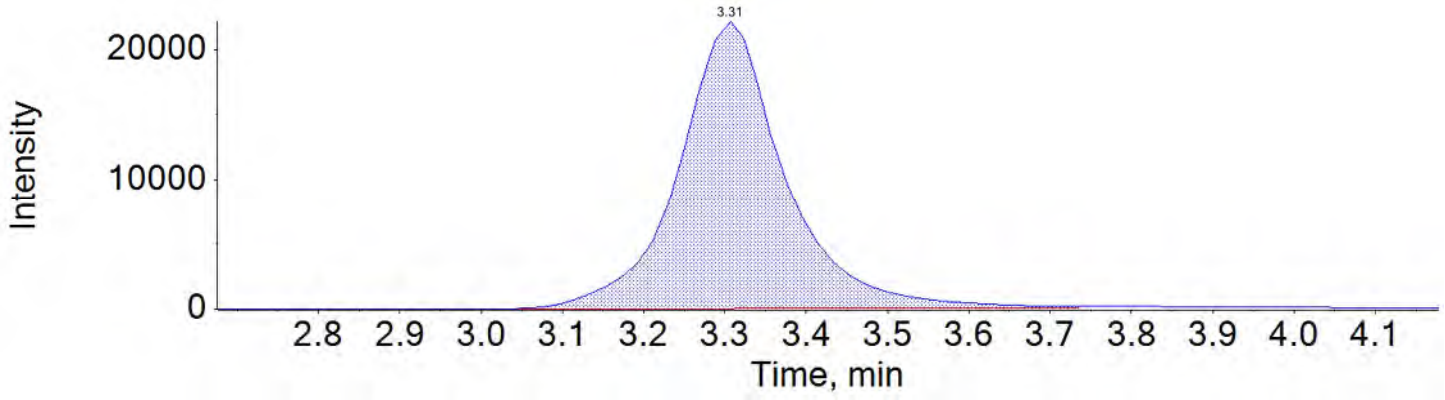
Chromatogram Report

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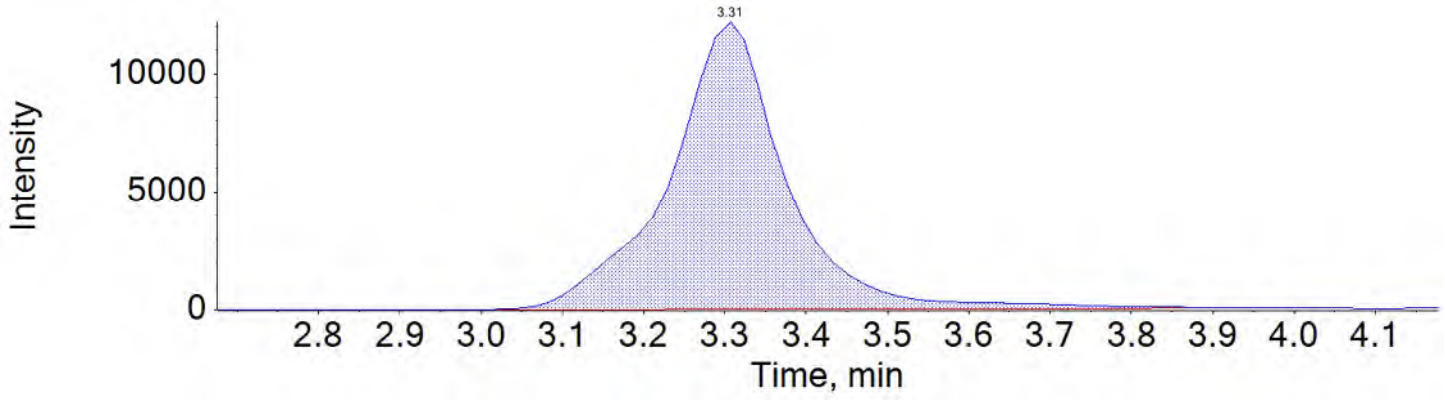
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

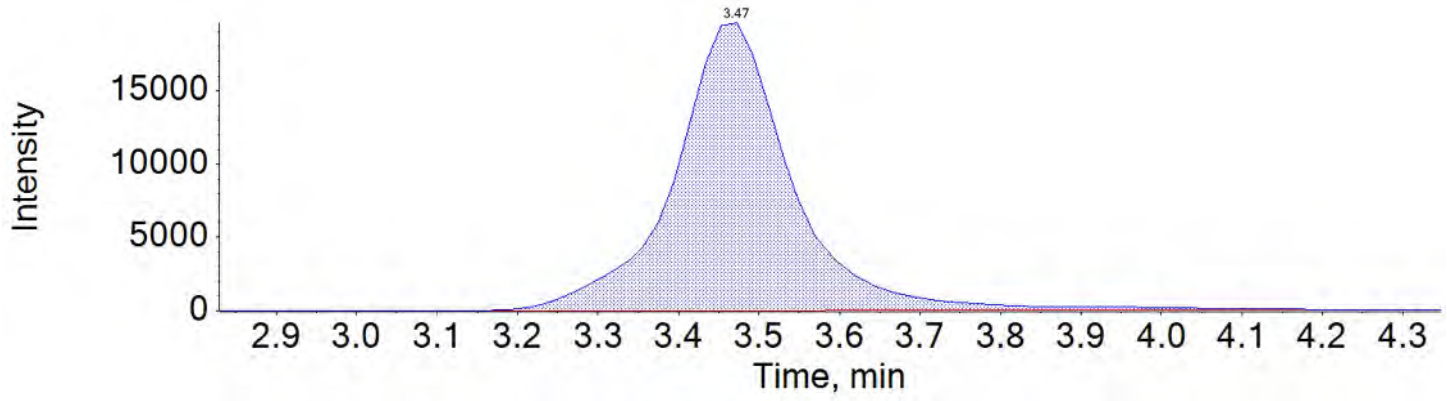


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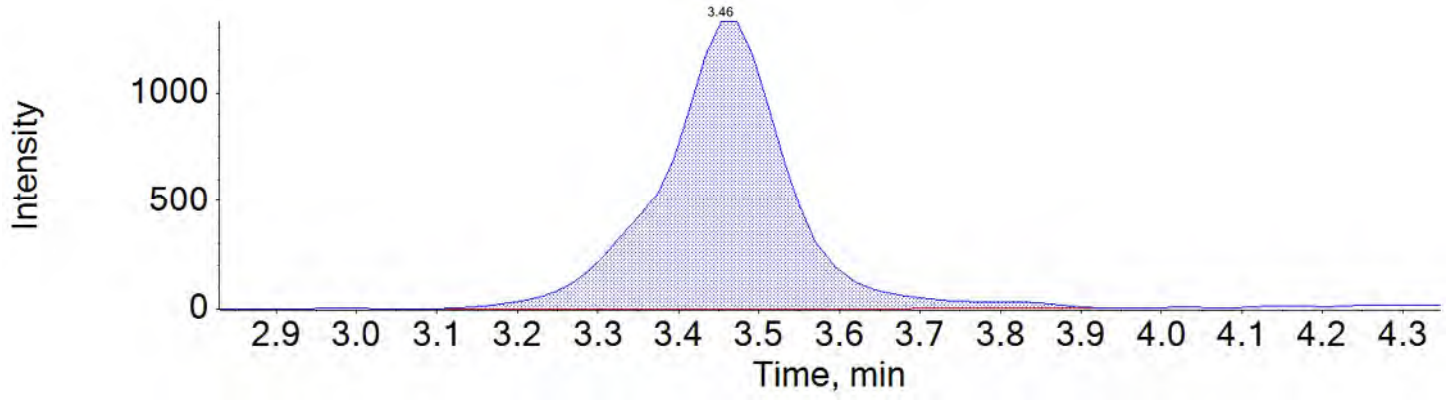
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:54:02 AM

NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

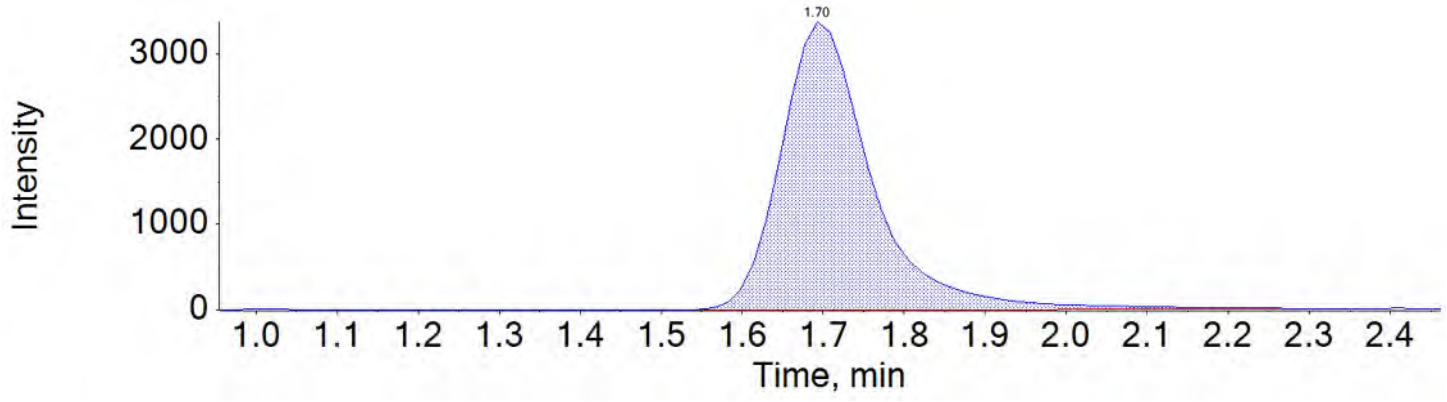
Chromatogram Report

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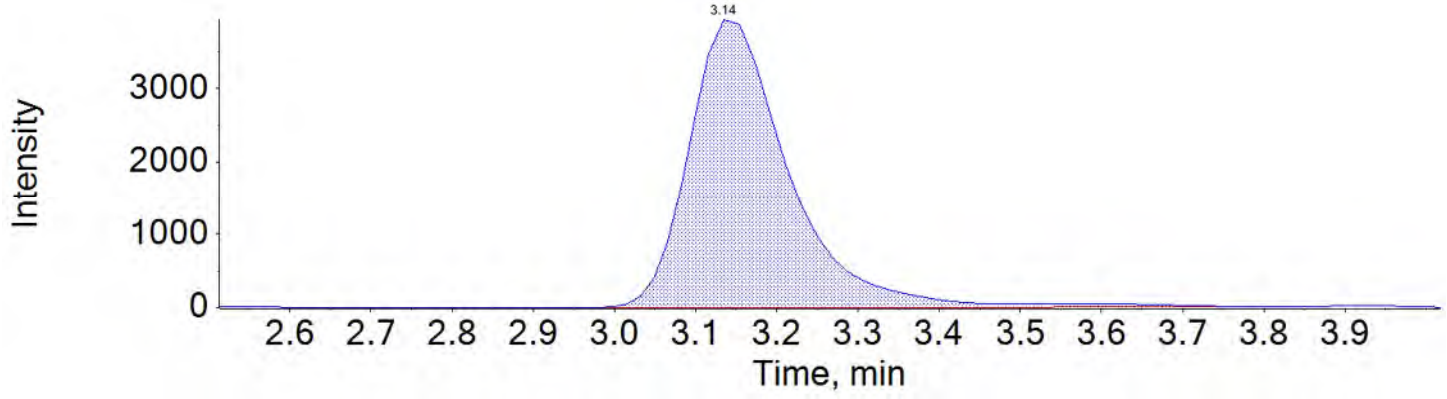
Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

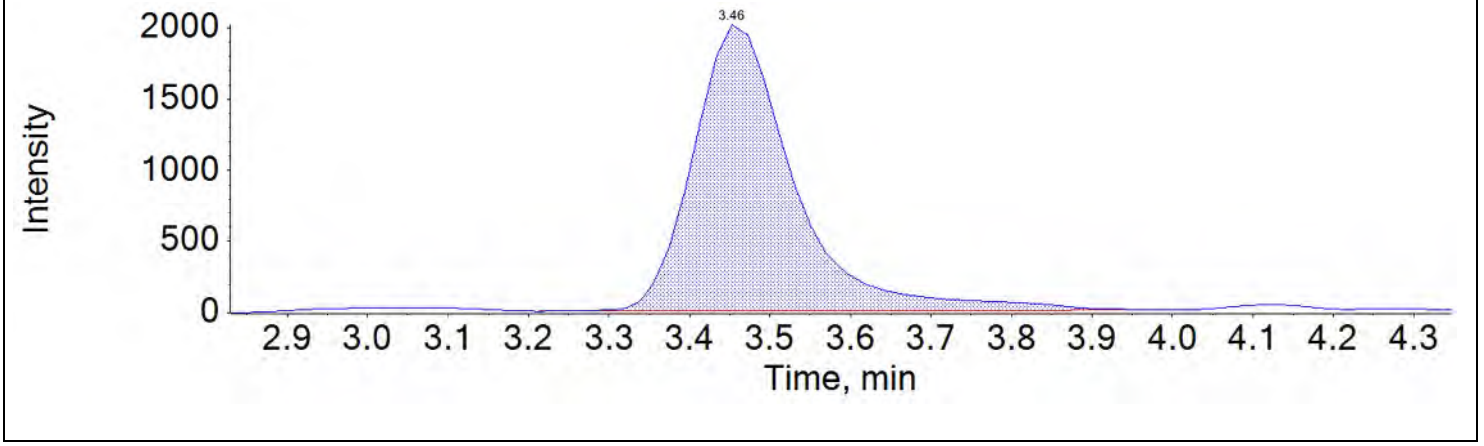


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



BATTELLE

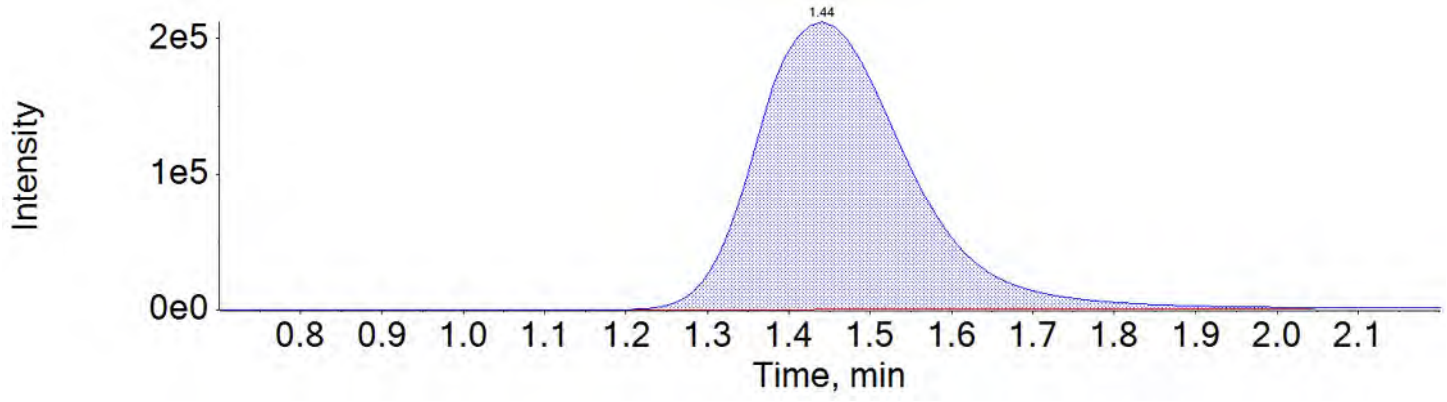
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:54:08 AM

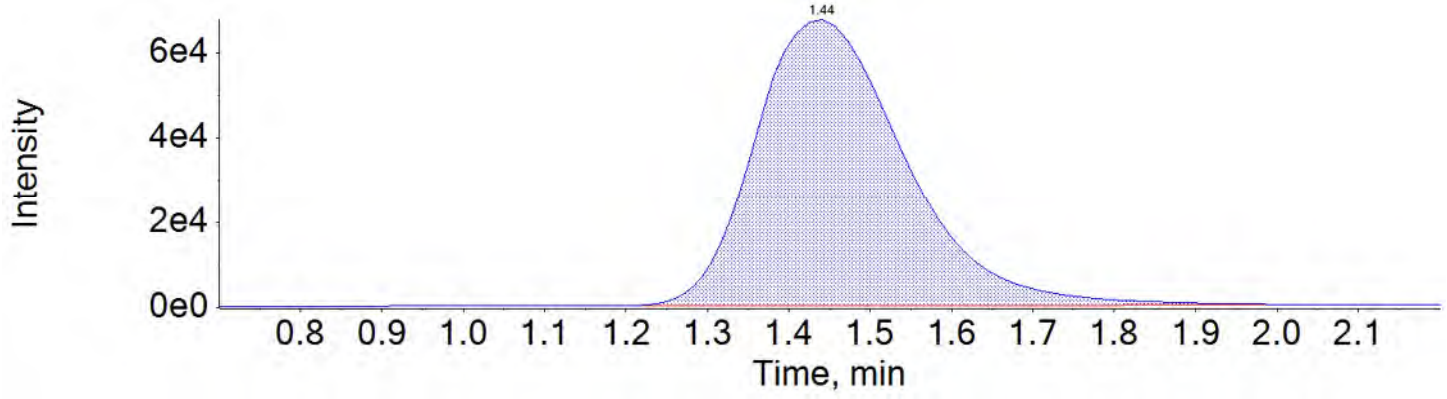
Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

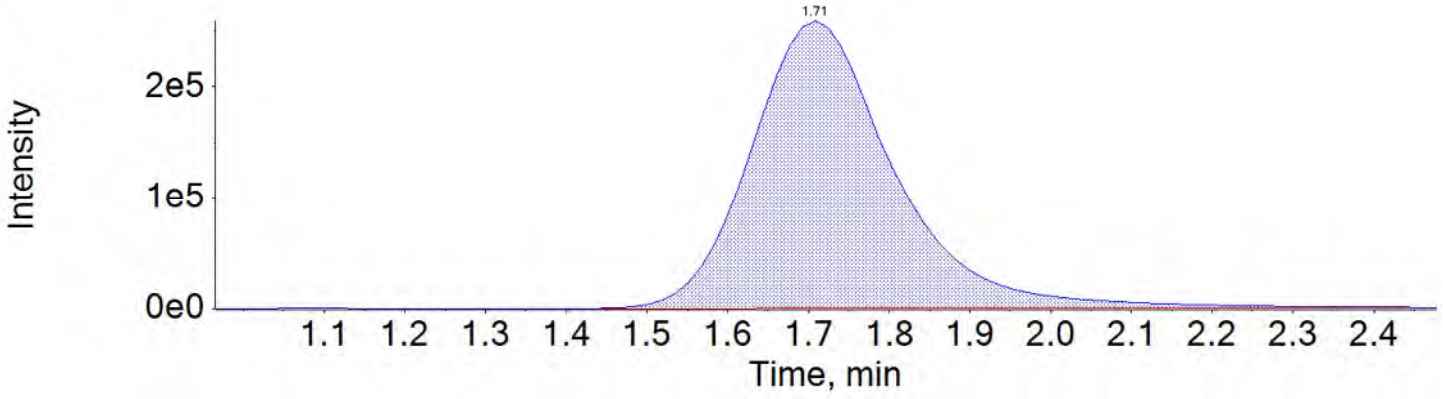


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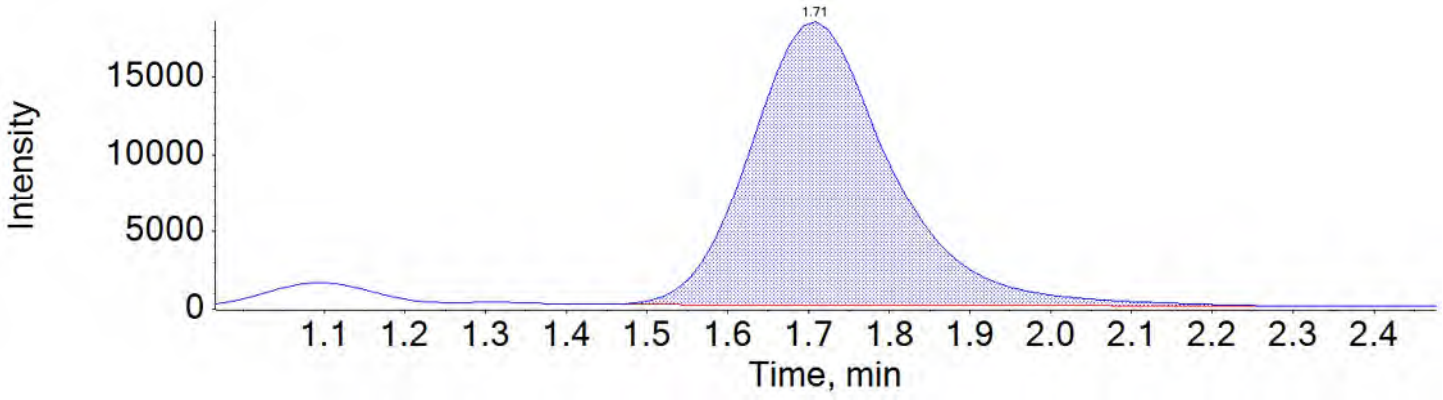
Chromatogram Report

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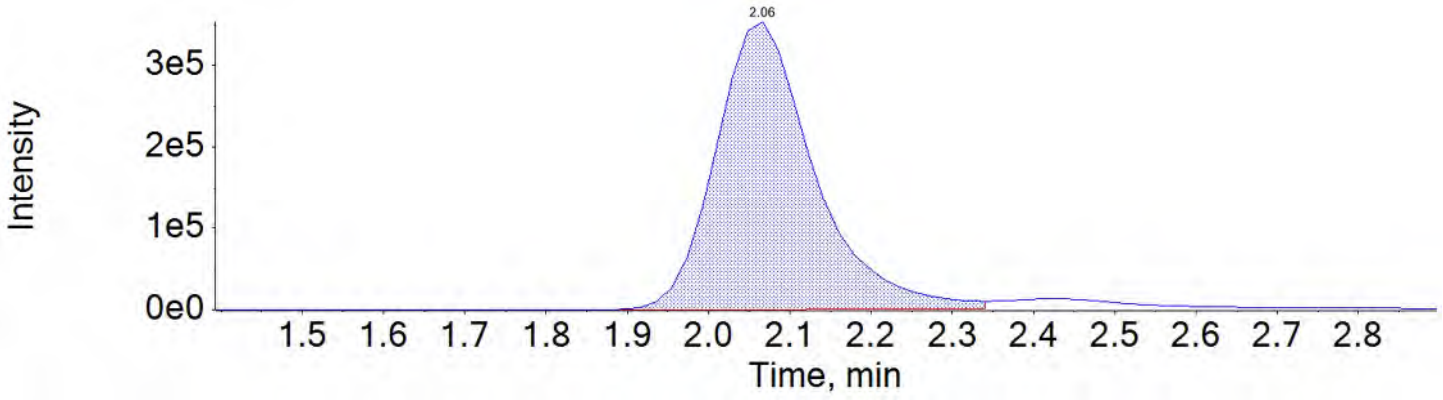
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

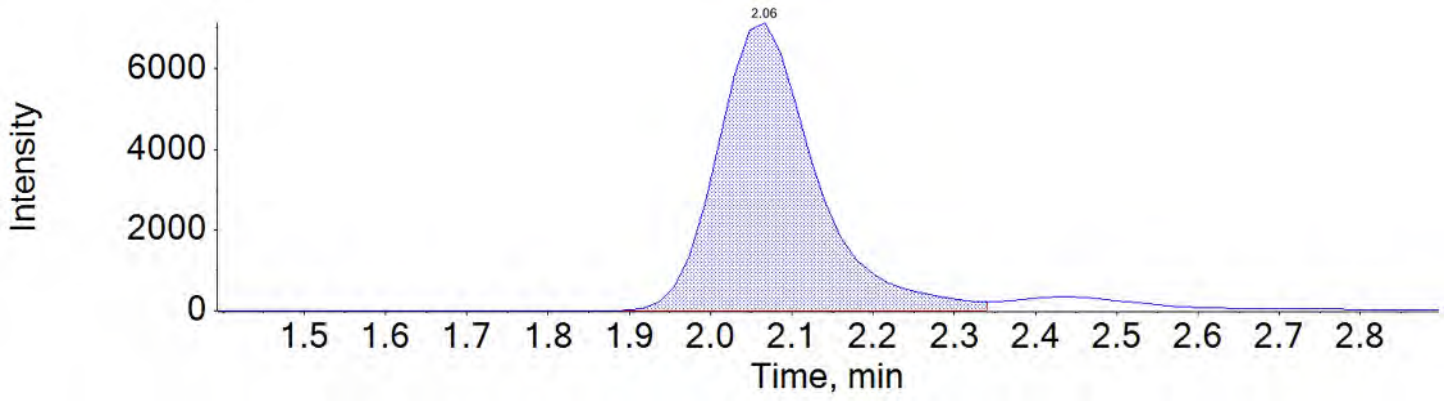


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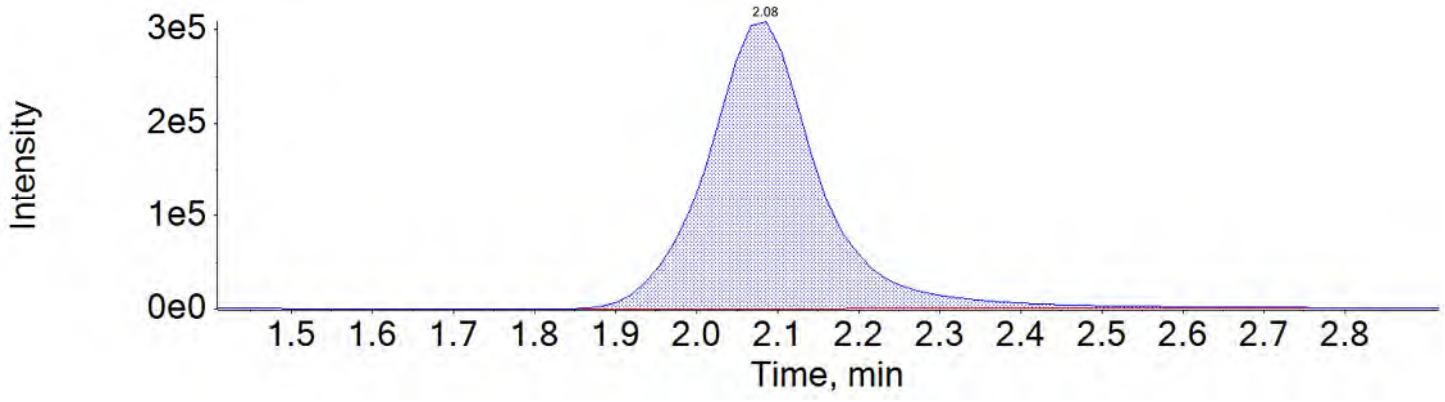
Chromatogram Report

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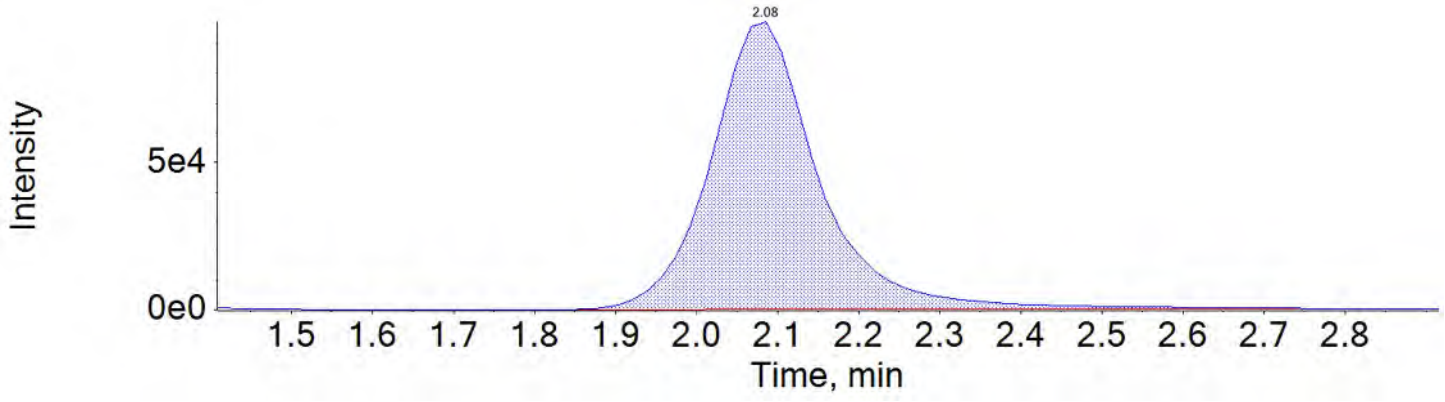
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

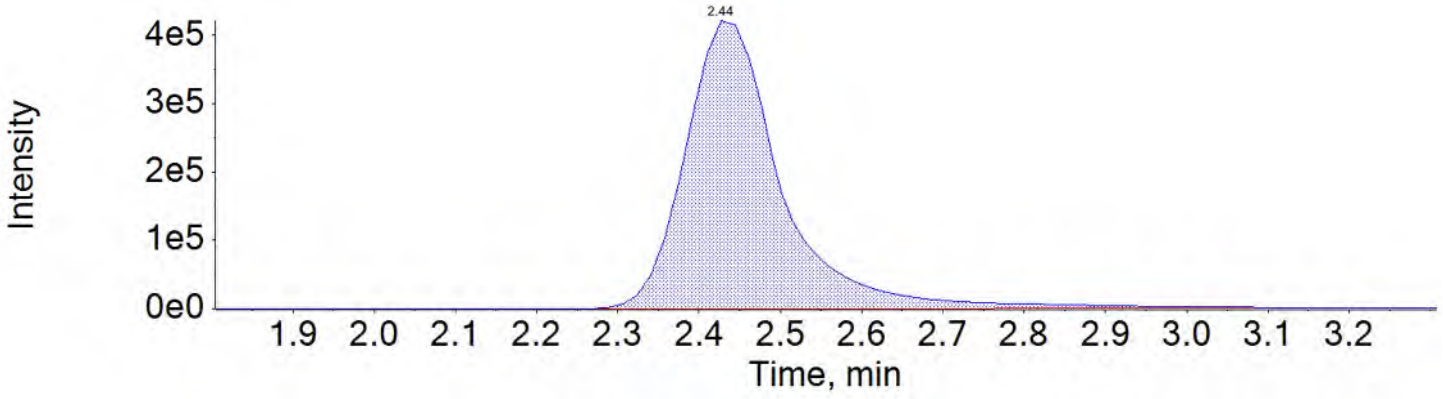


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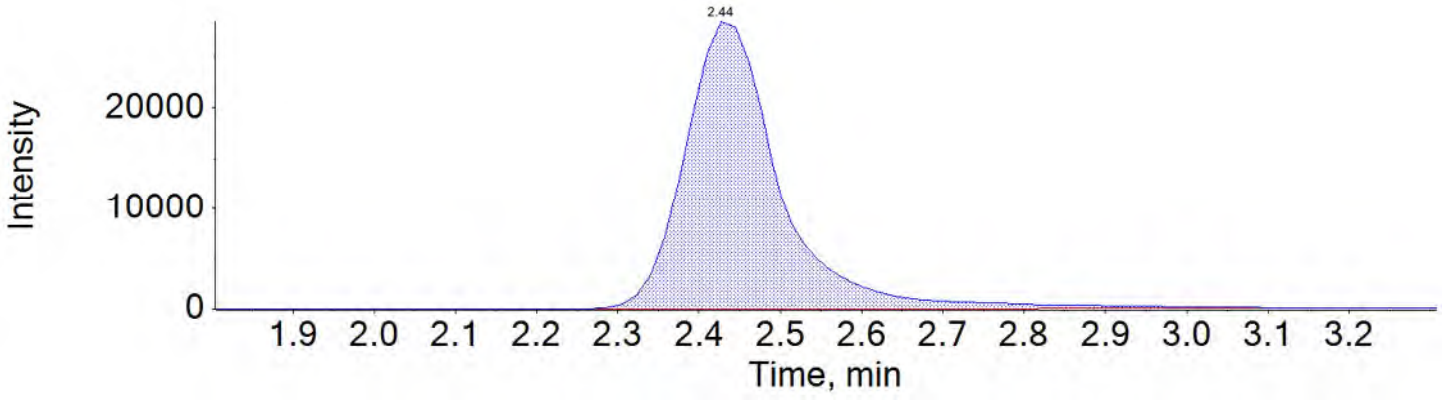
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:54:08 AM

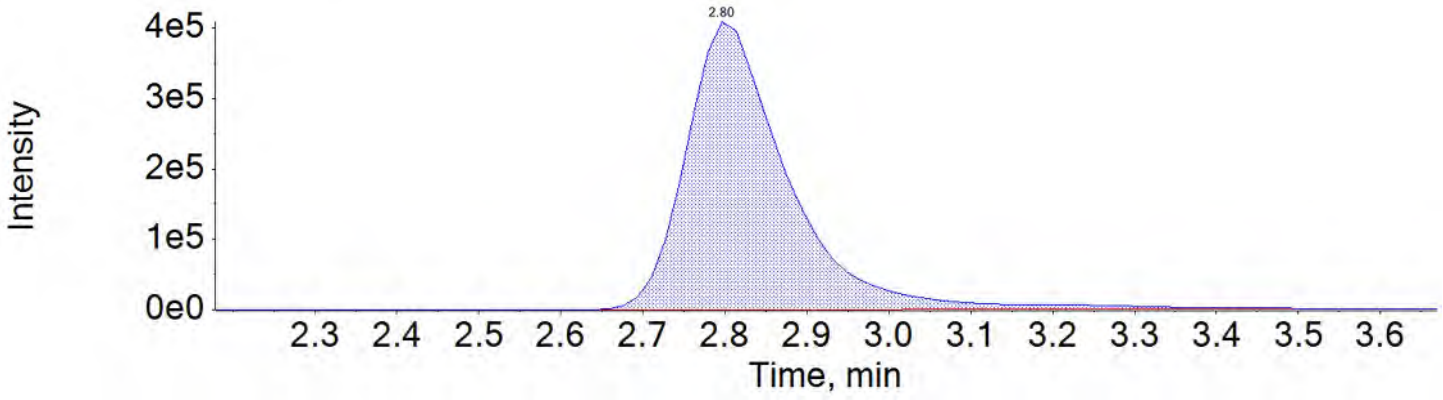
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

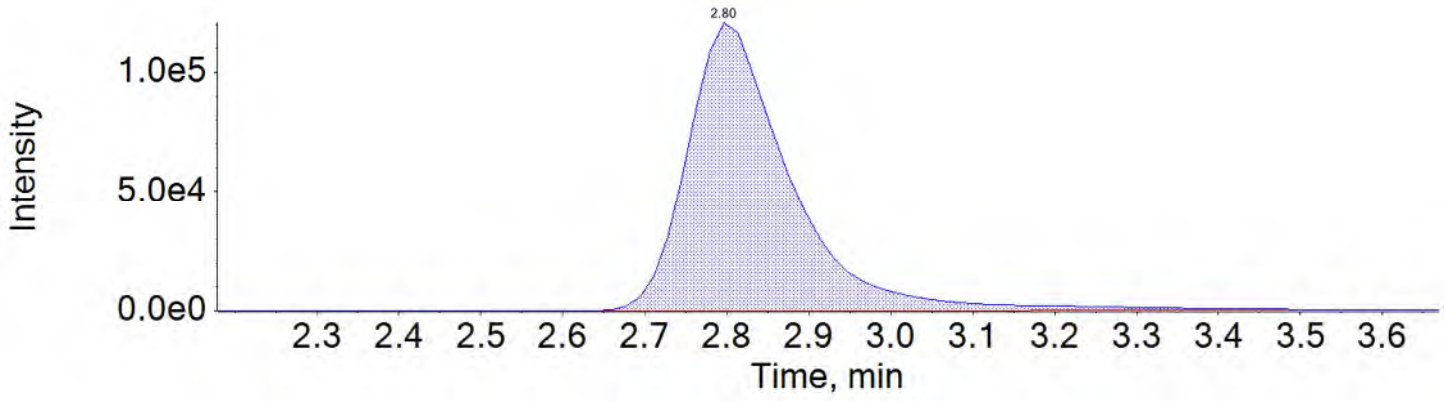


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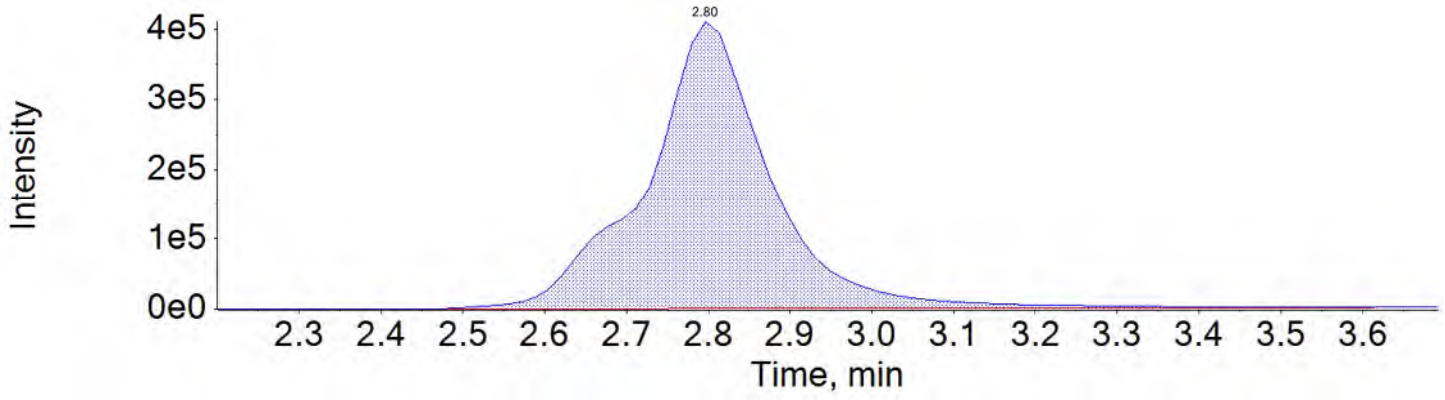
Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:54:08 AM

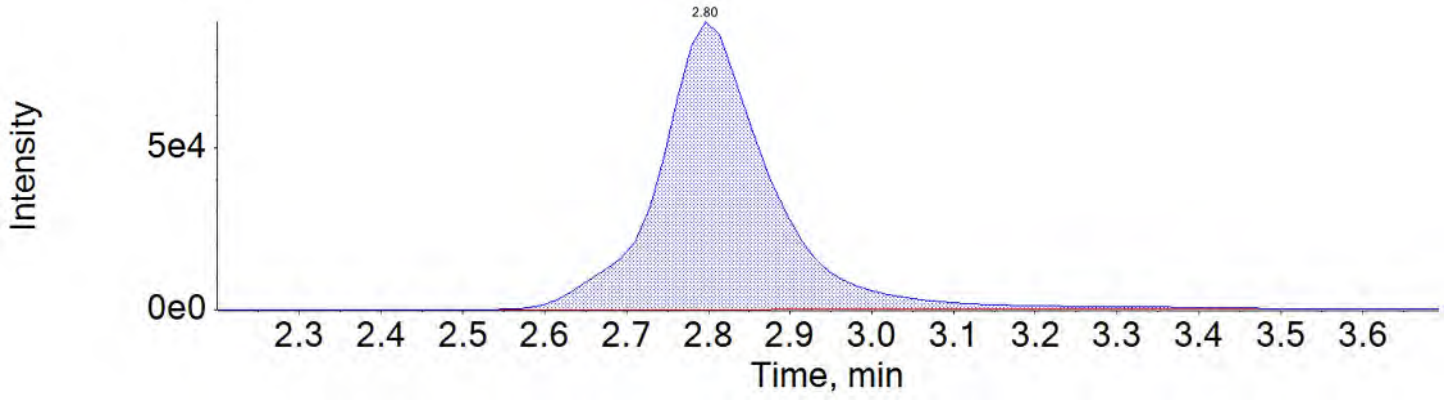
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

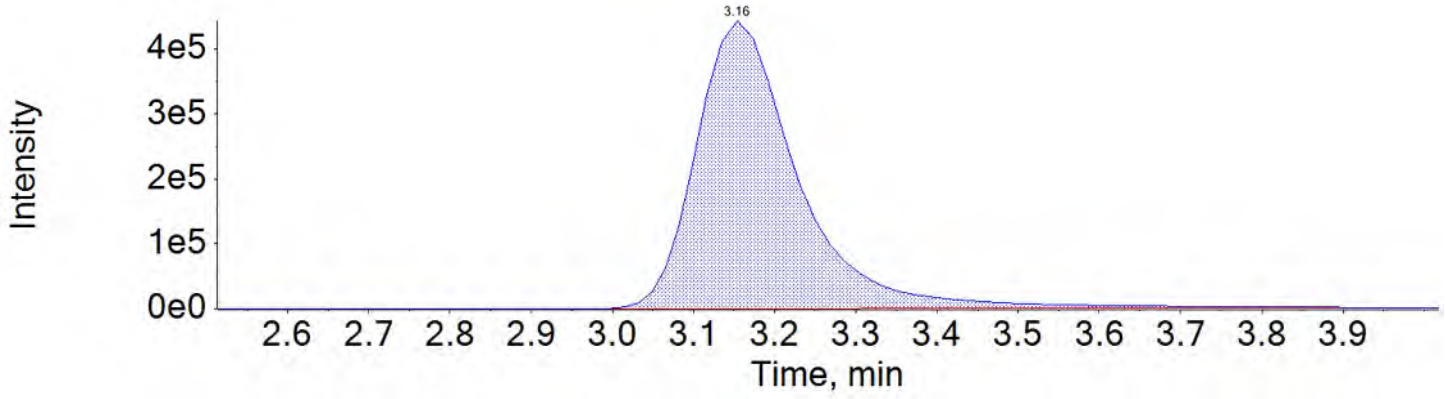


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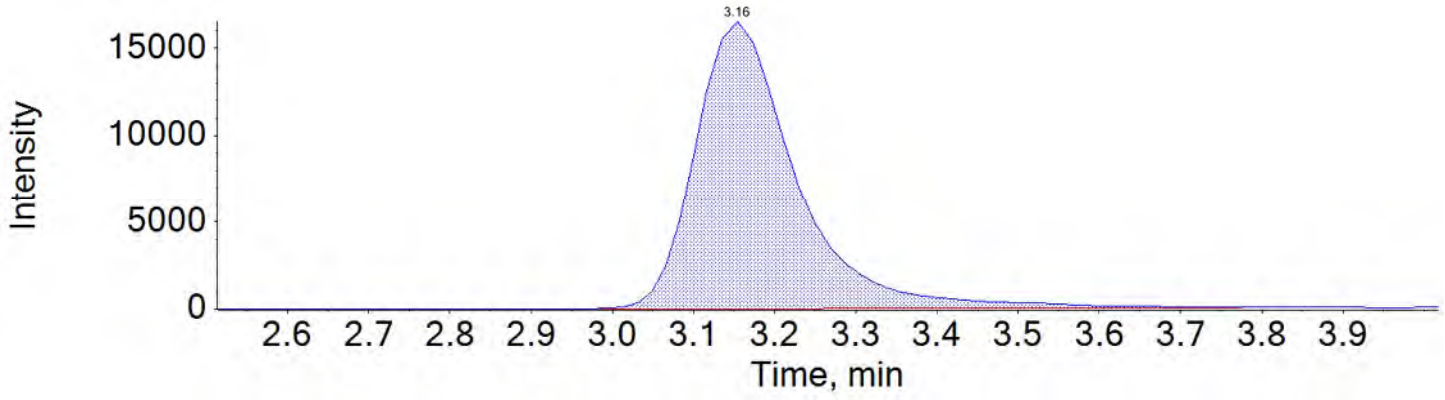
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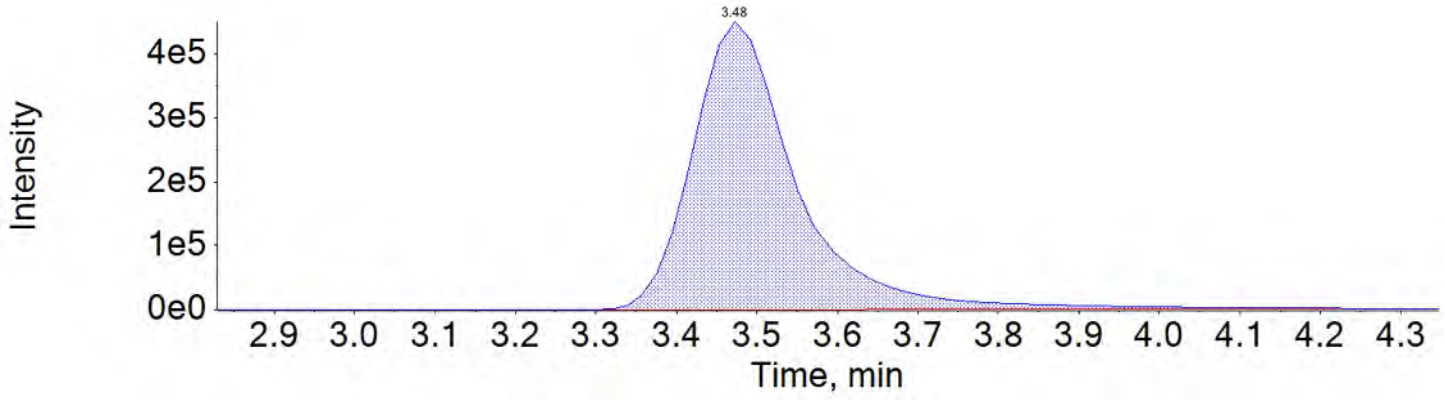
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

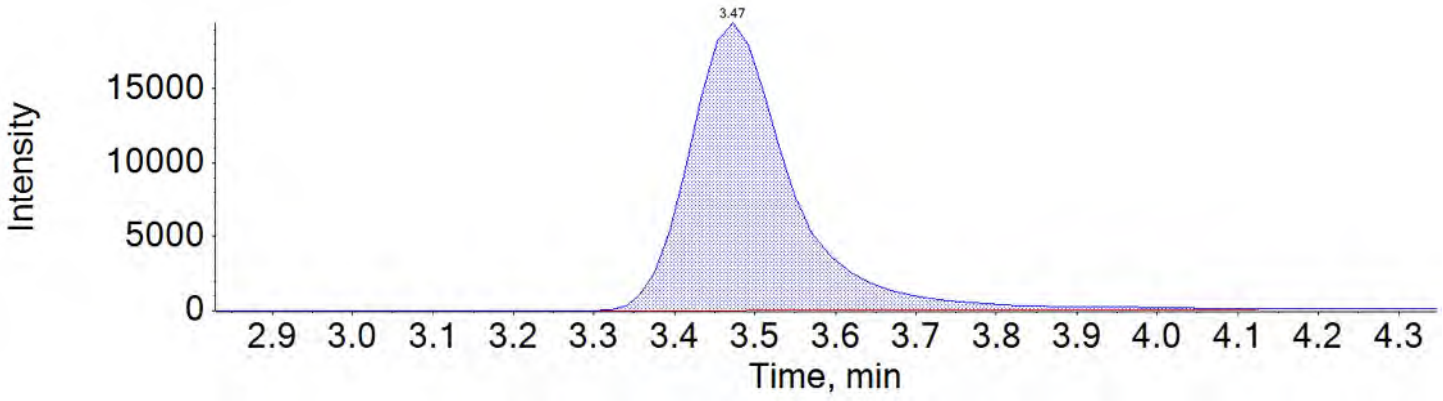


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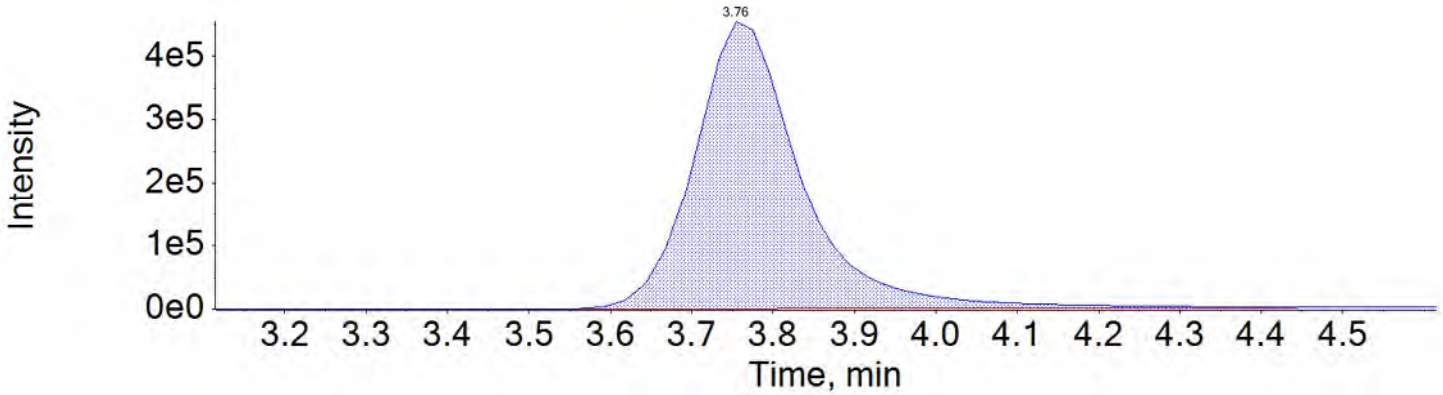
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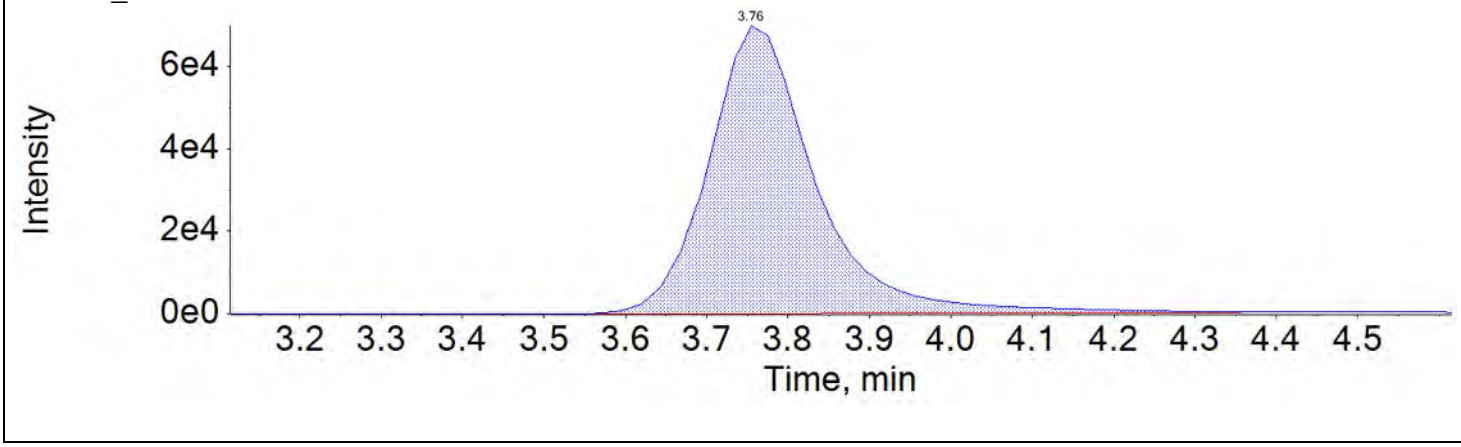
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

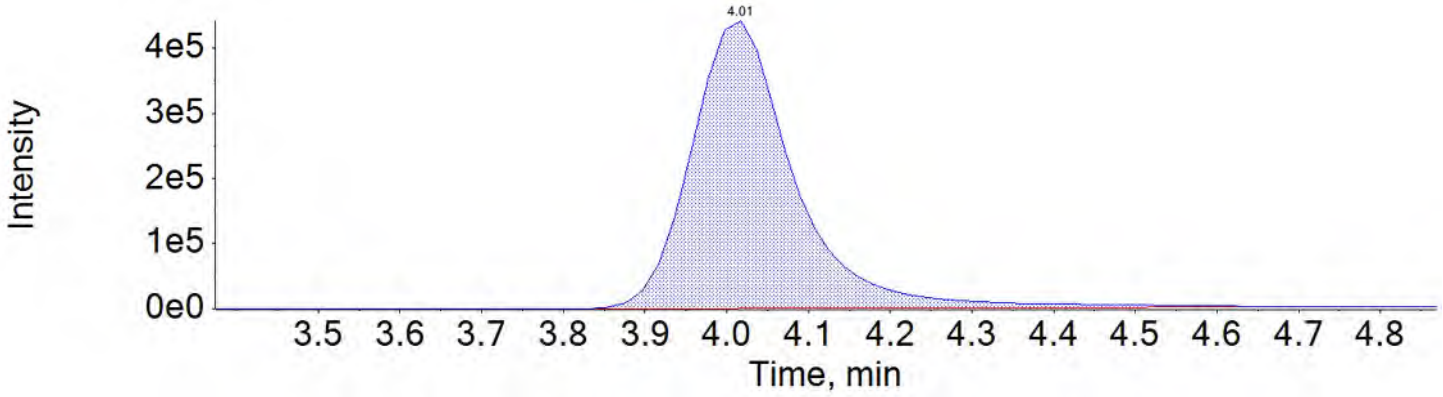


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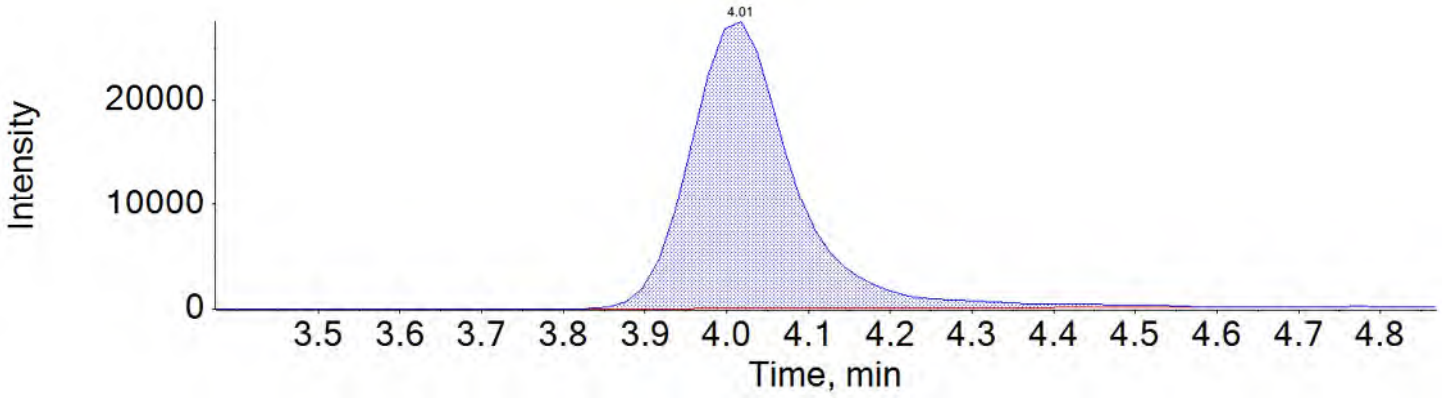
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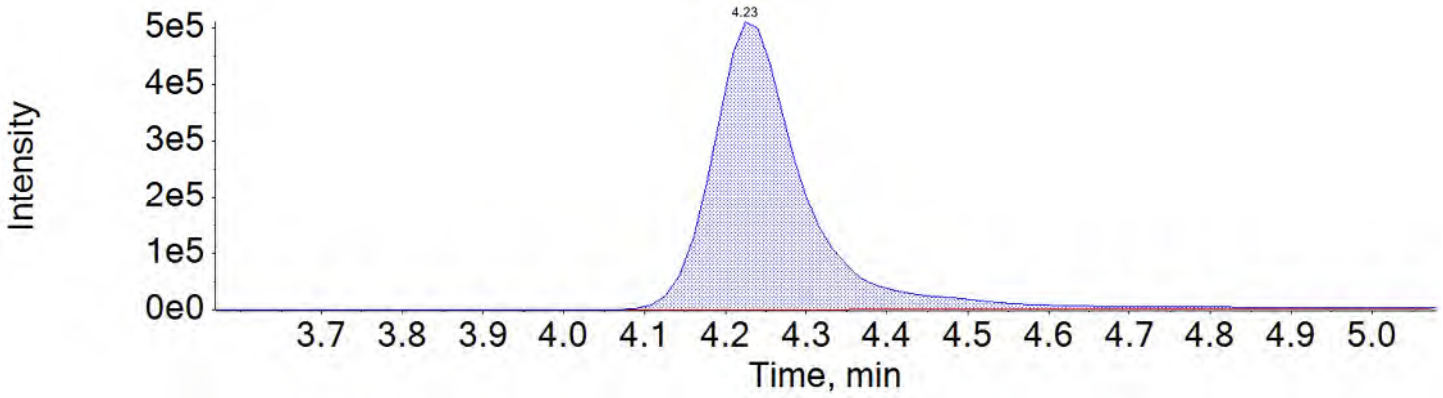
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

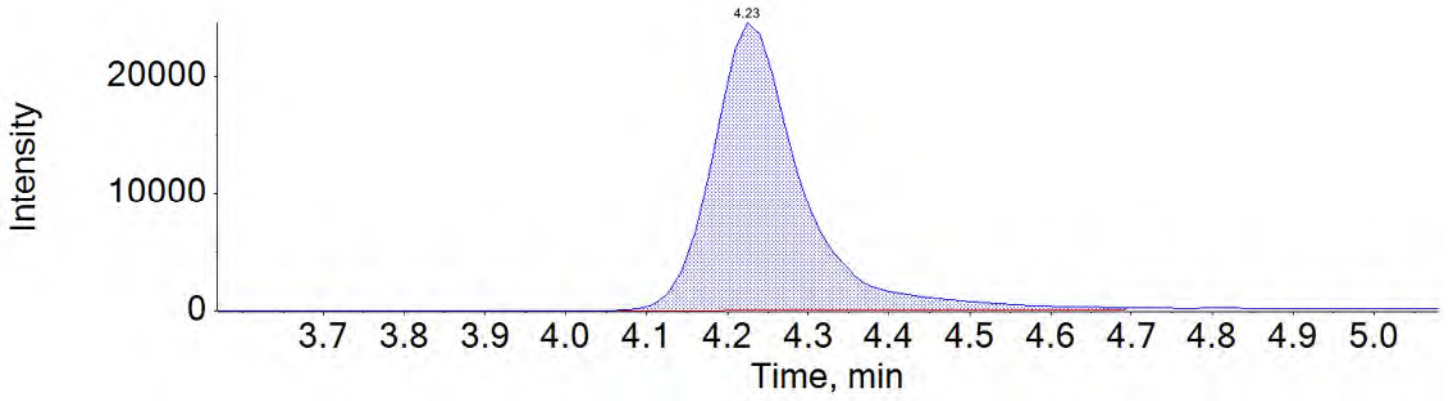


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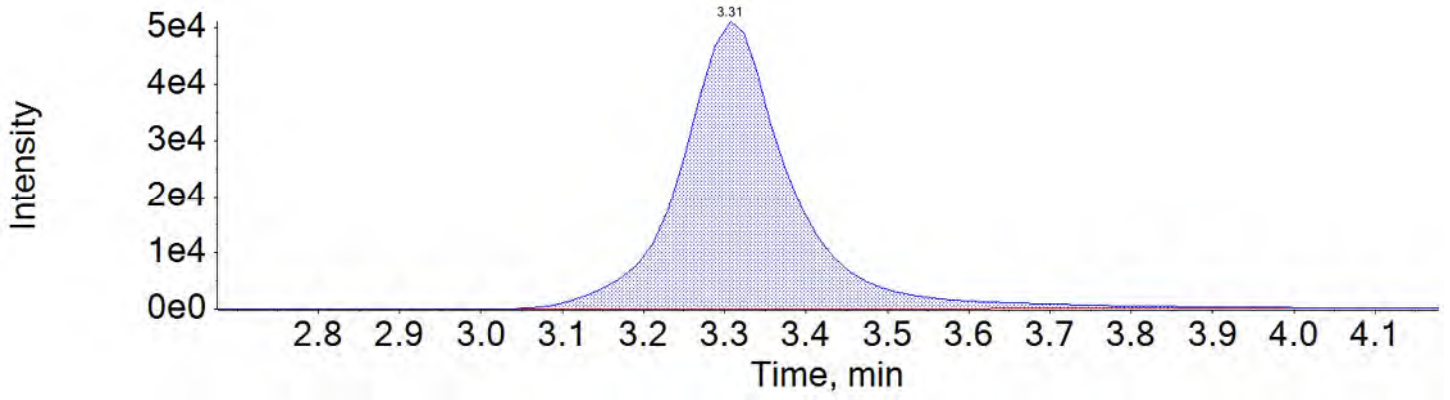
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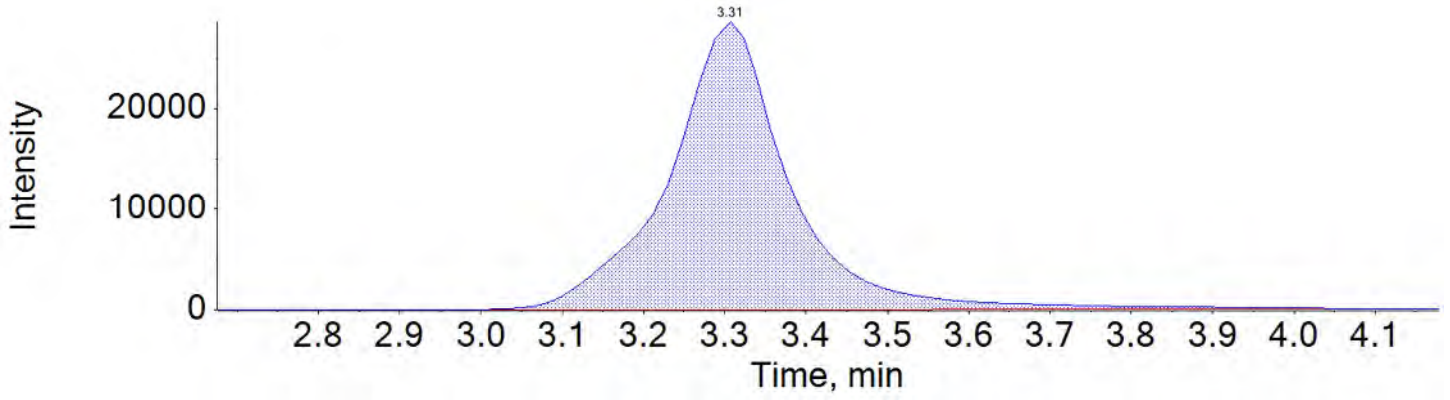
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



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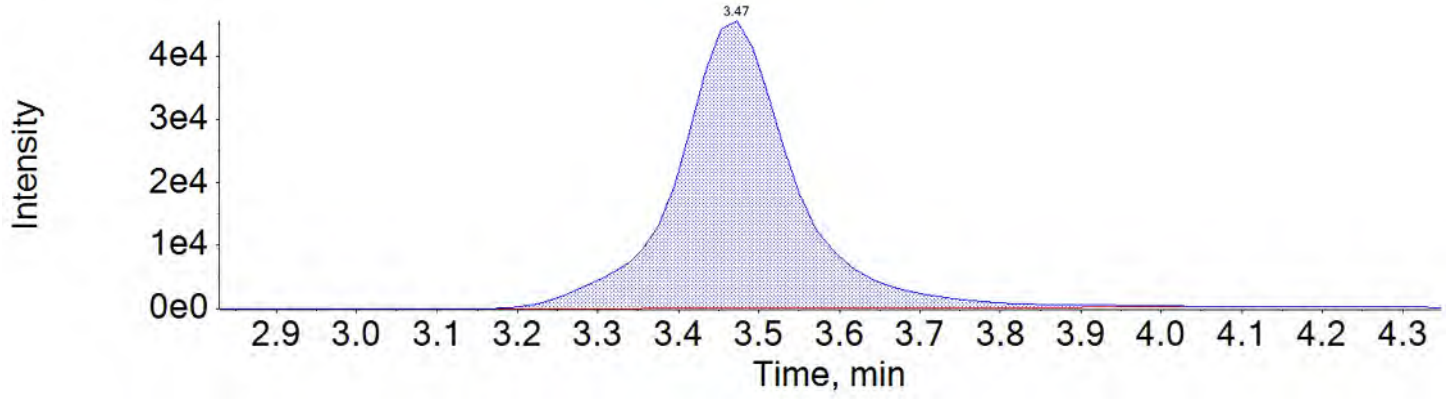


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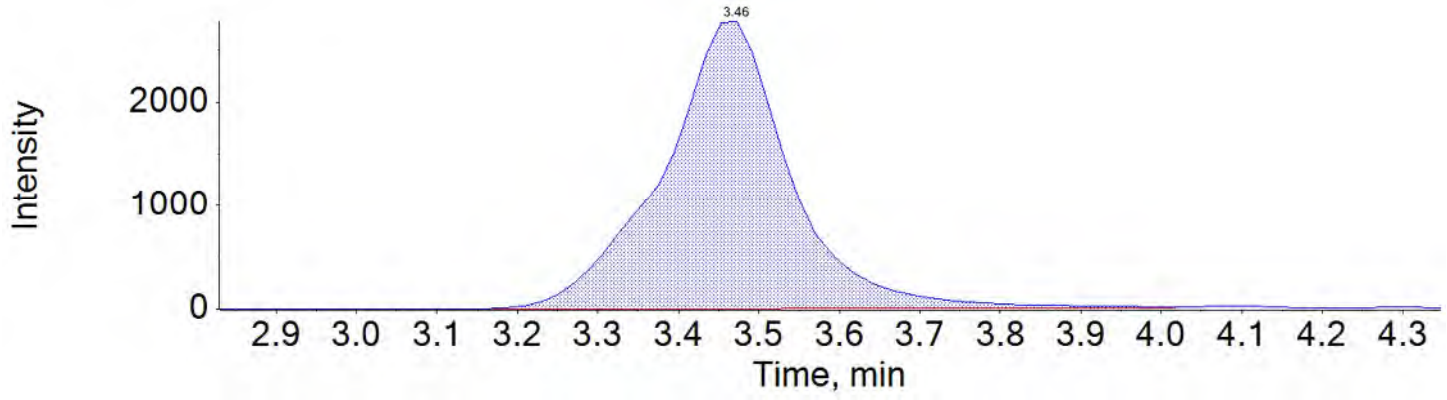
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

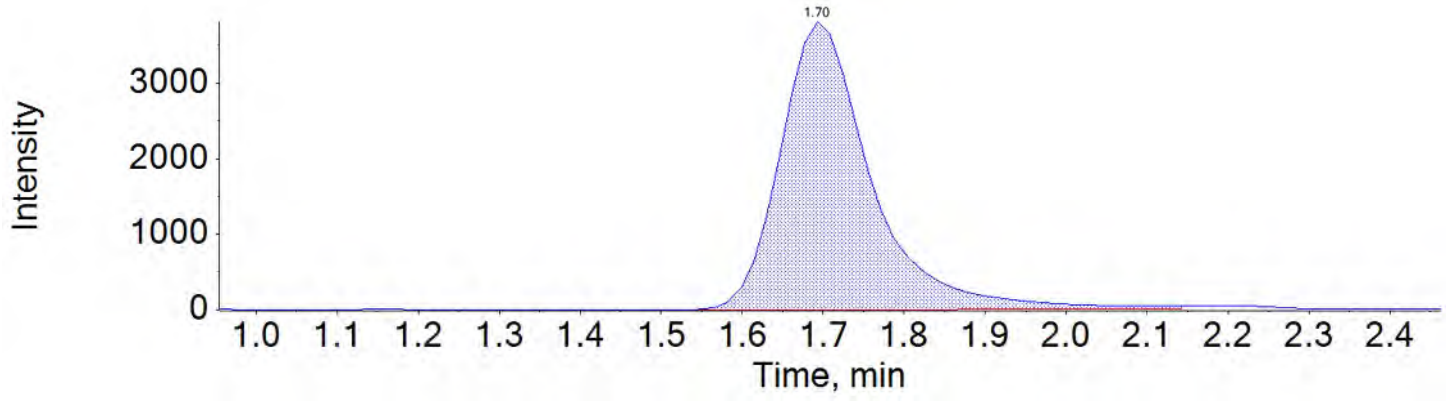
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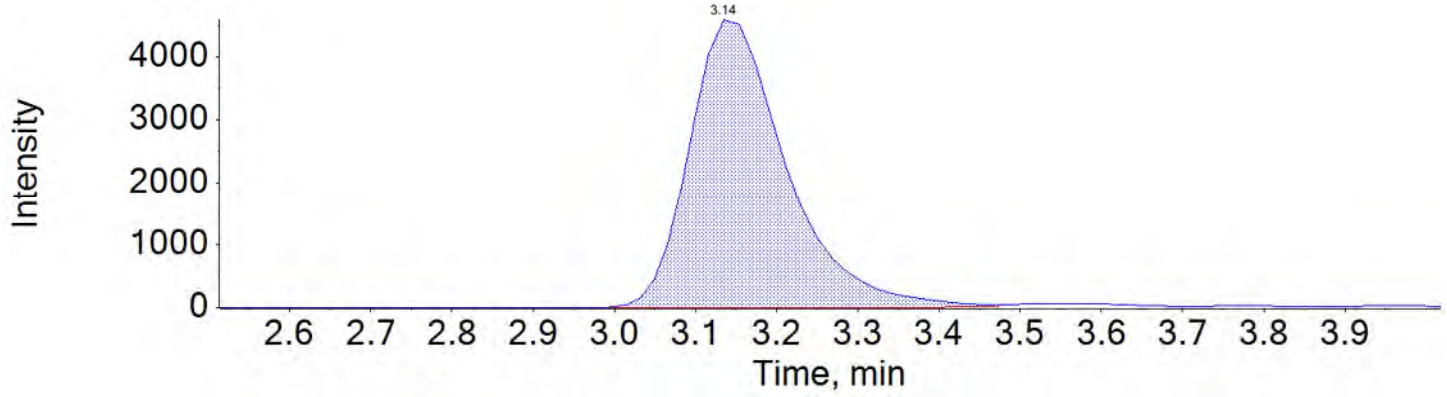
Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

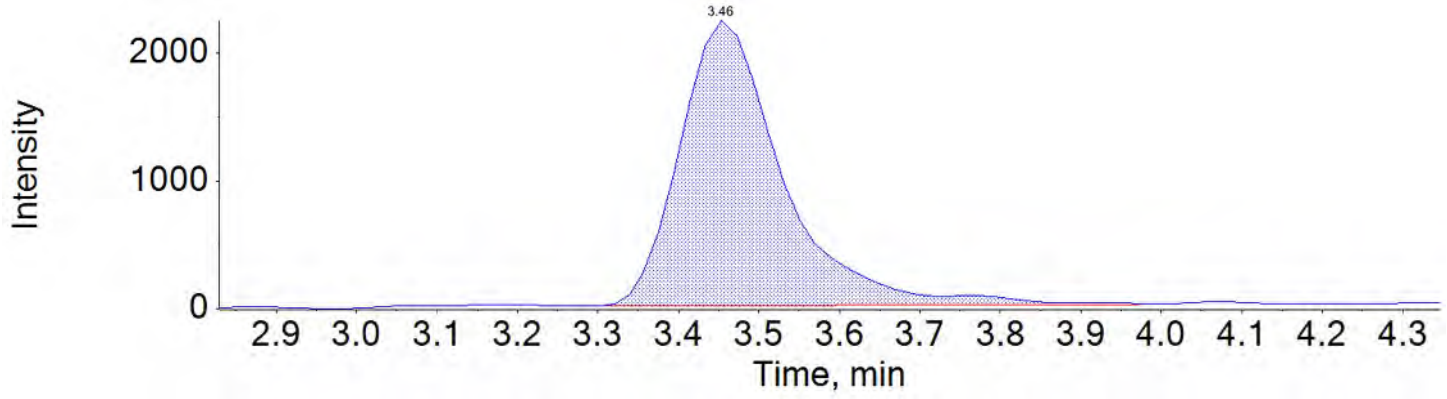


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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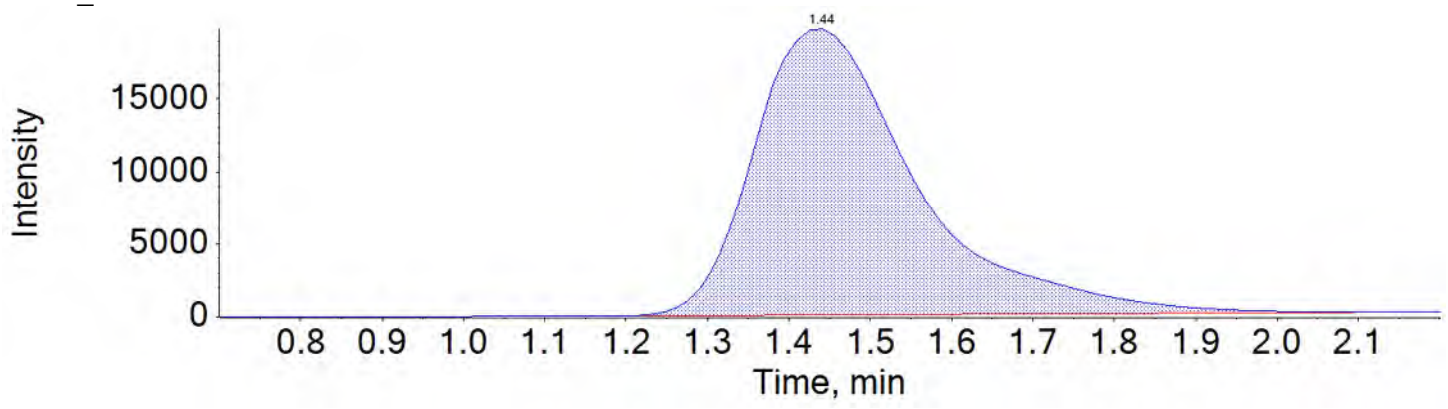
Chromatogram Report

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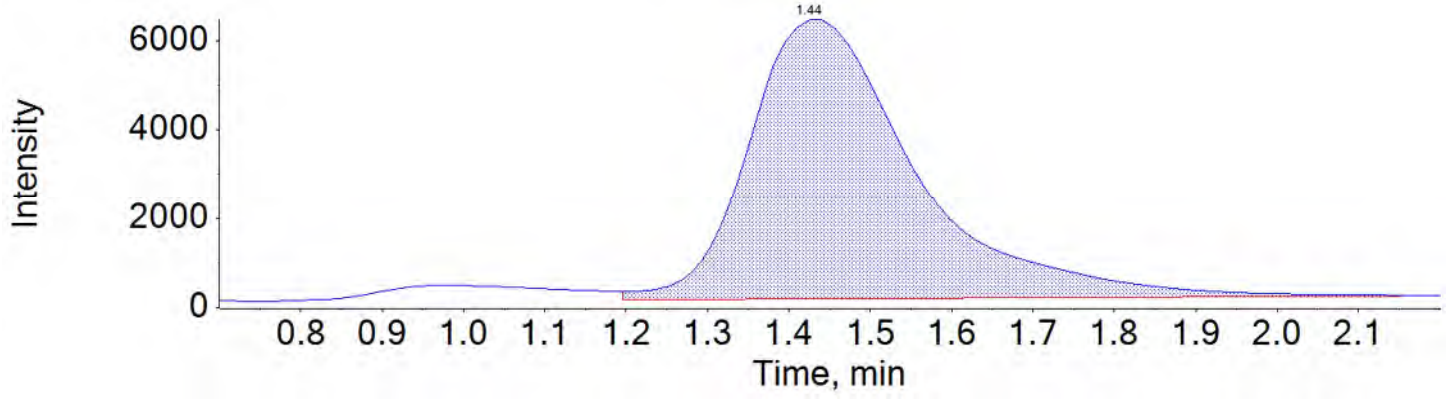
Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

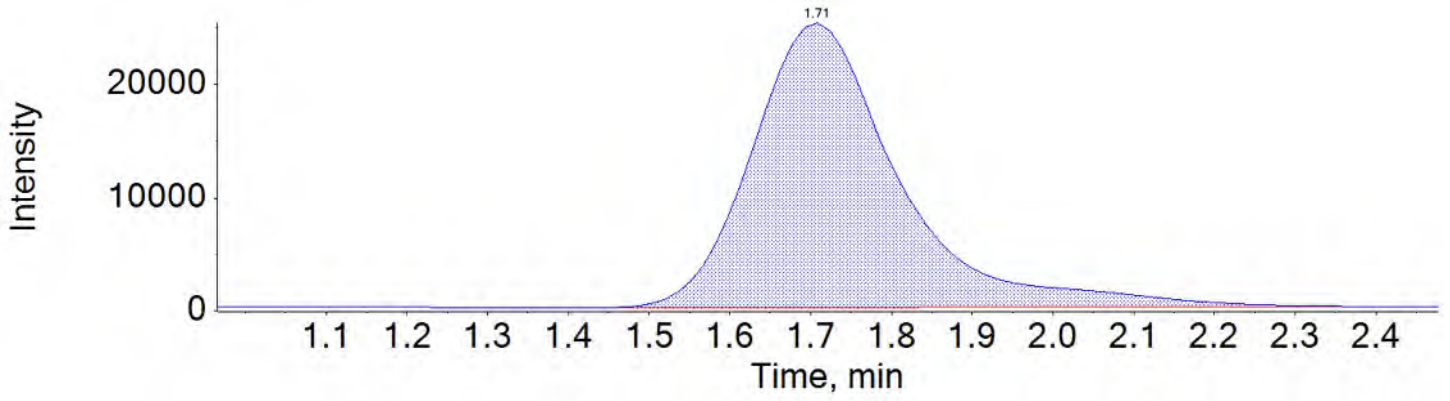


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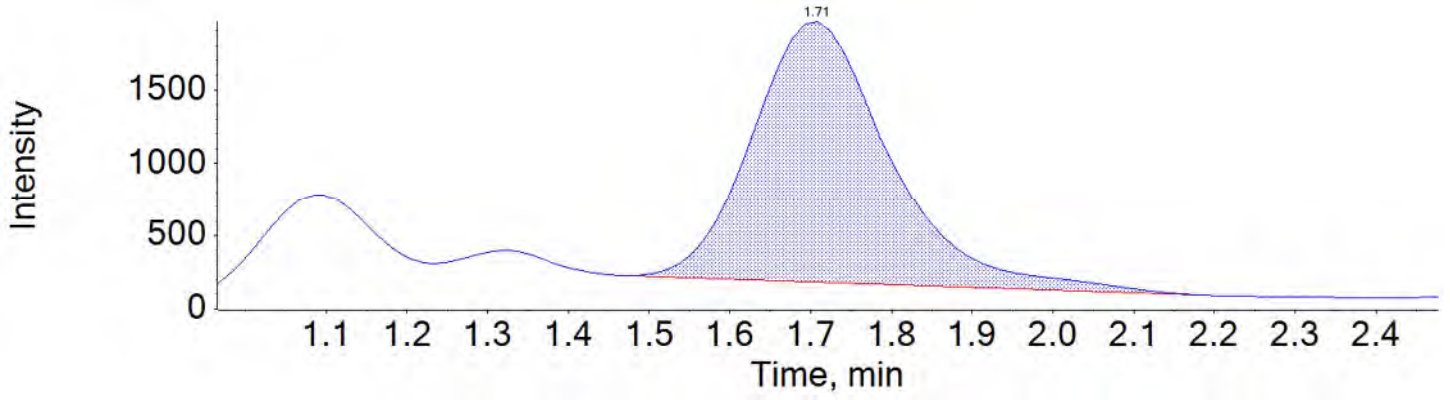
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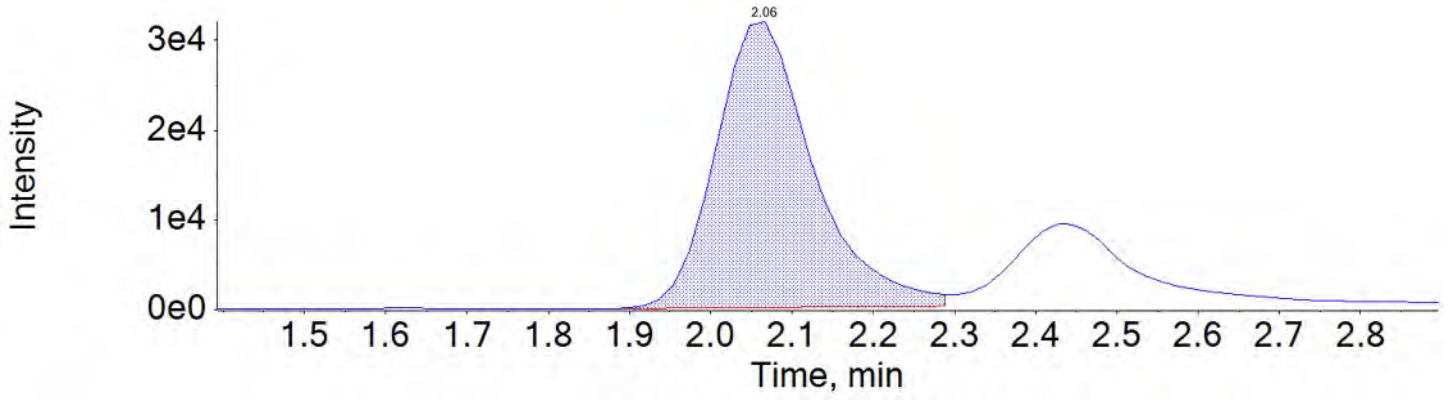
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

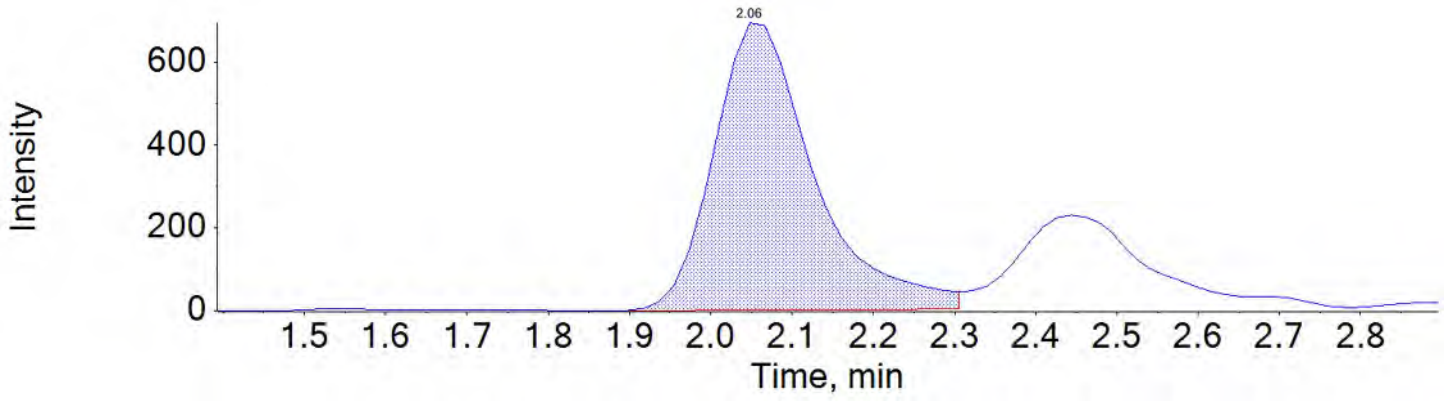


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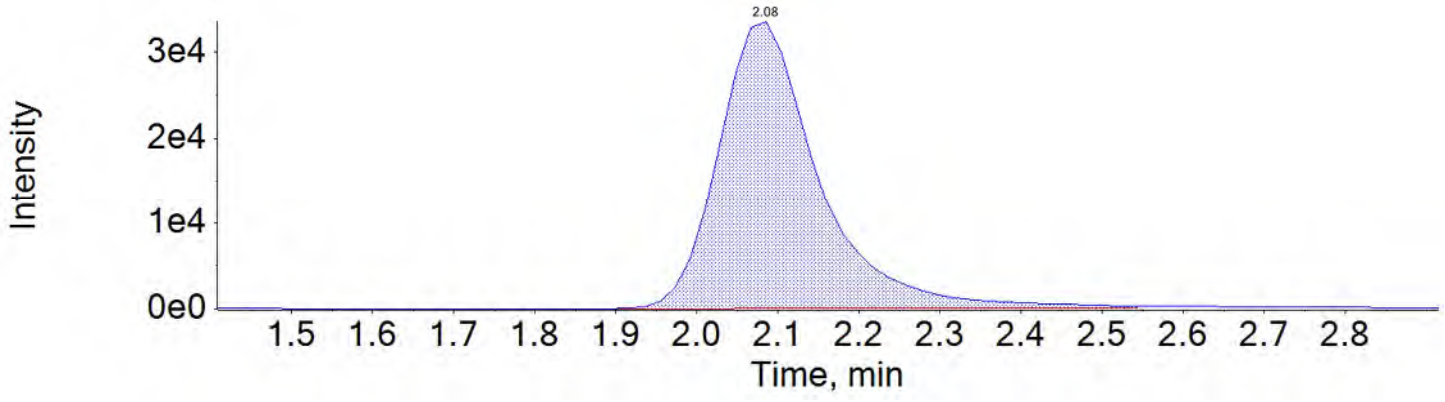
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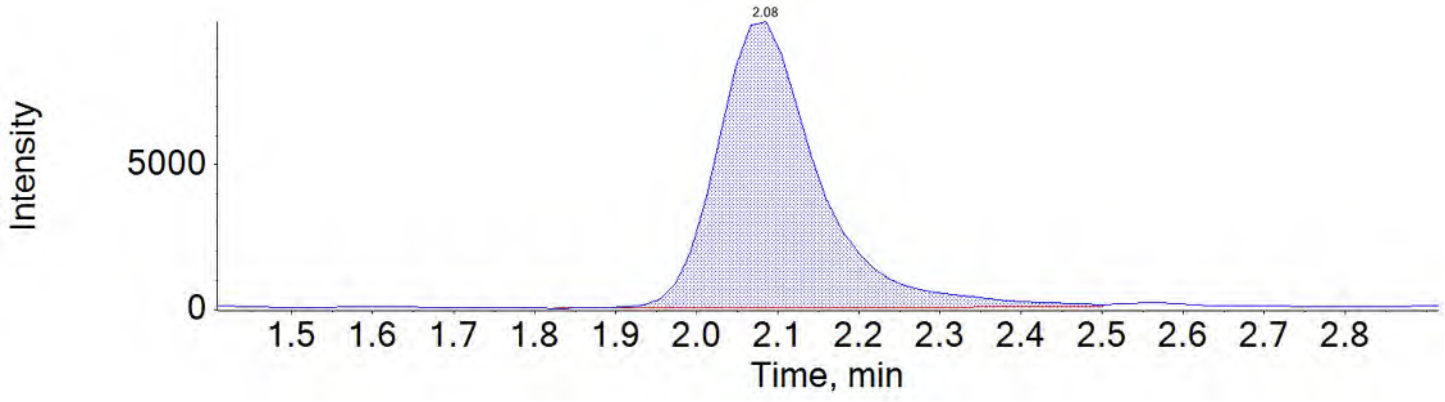
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

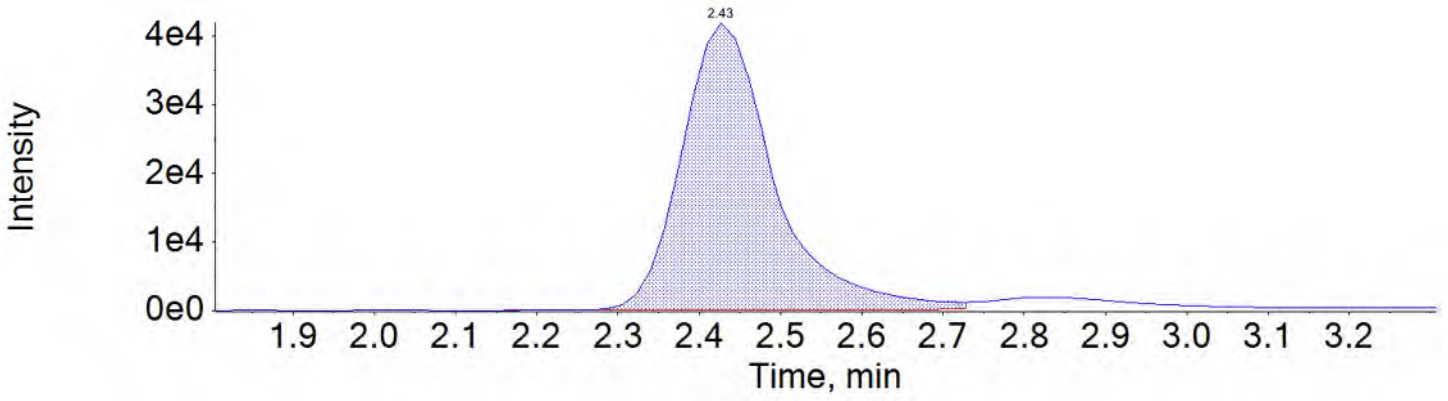


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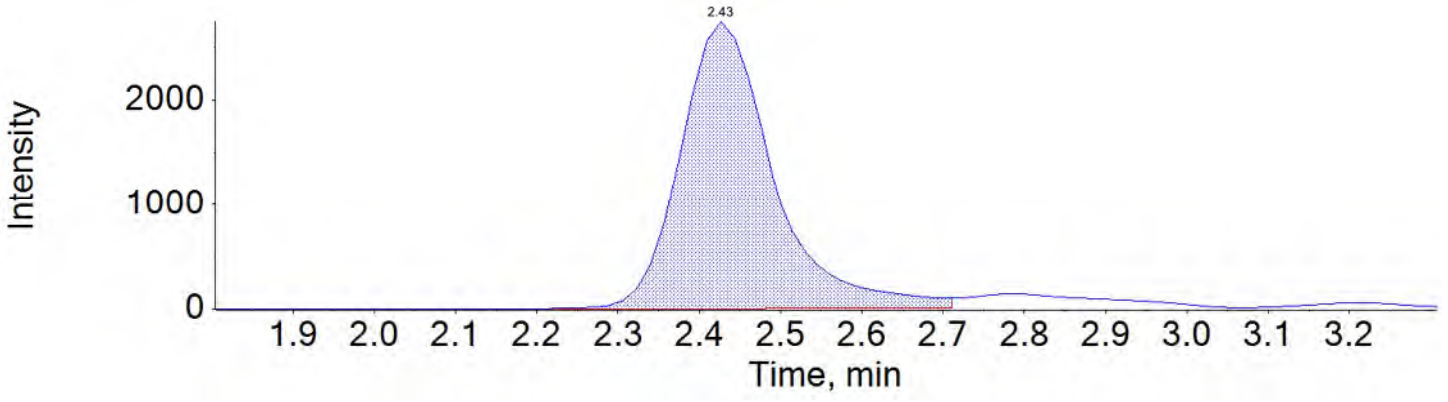
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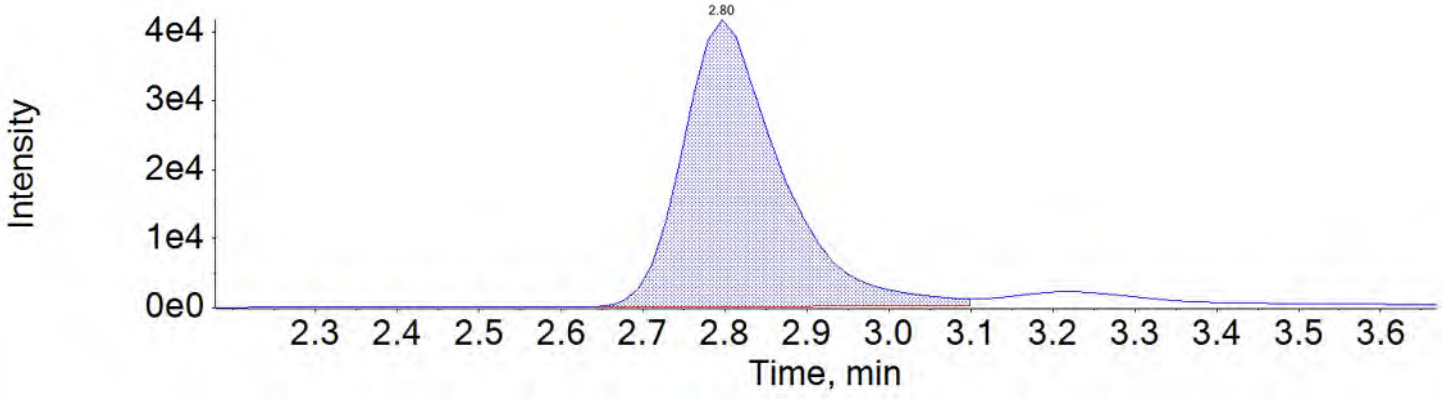
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

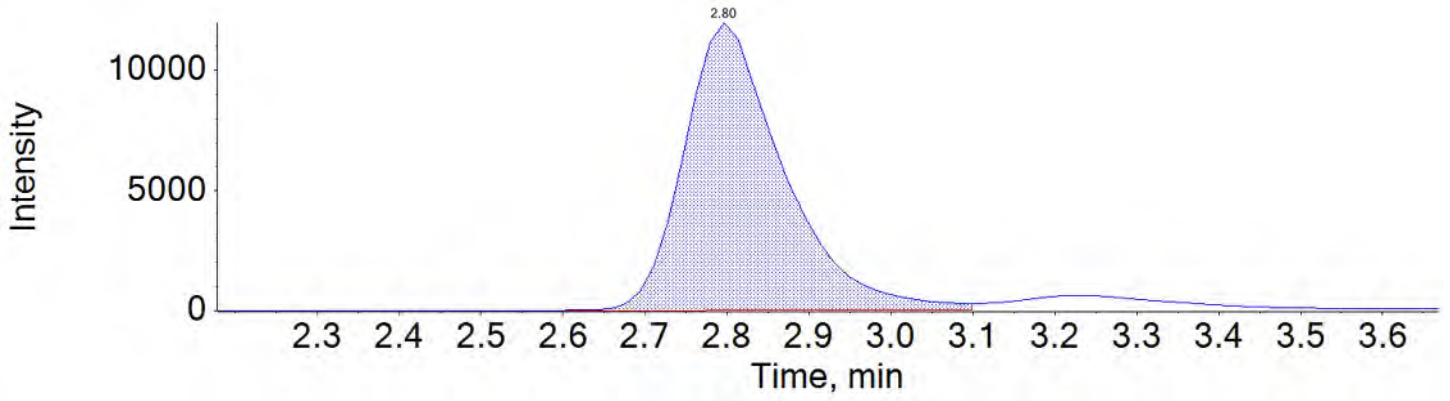


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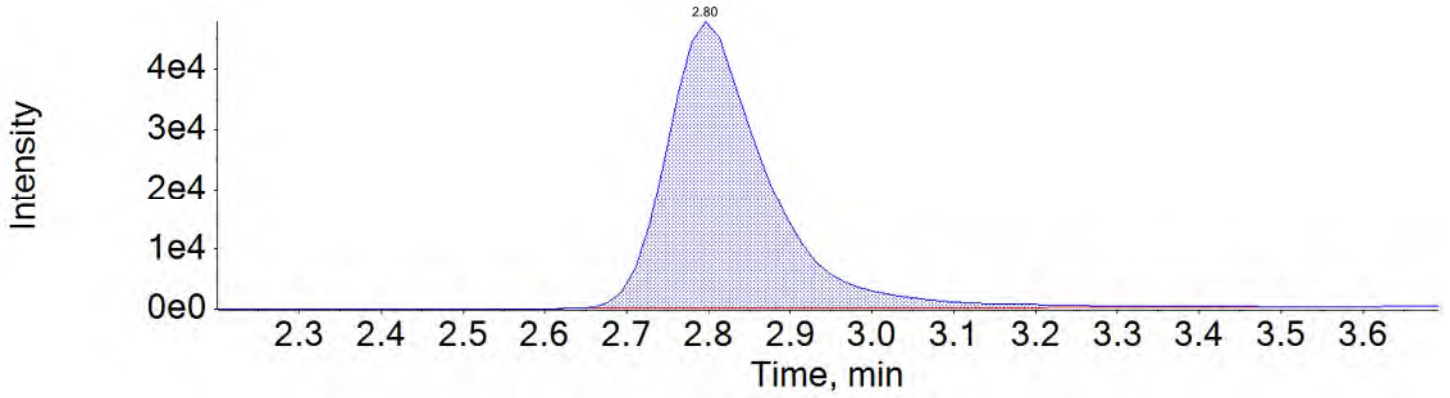
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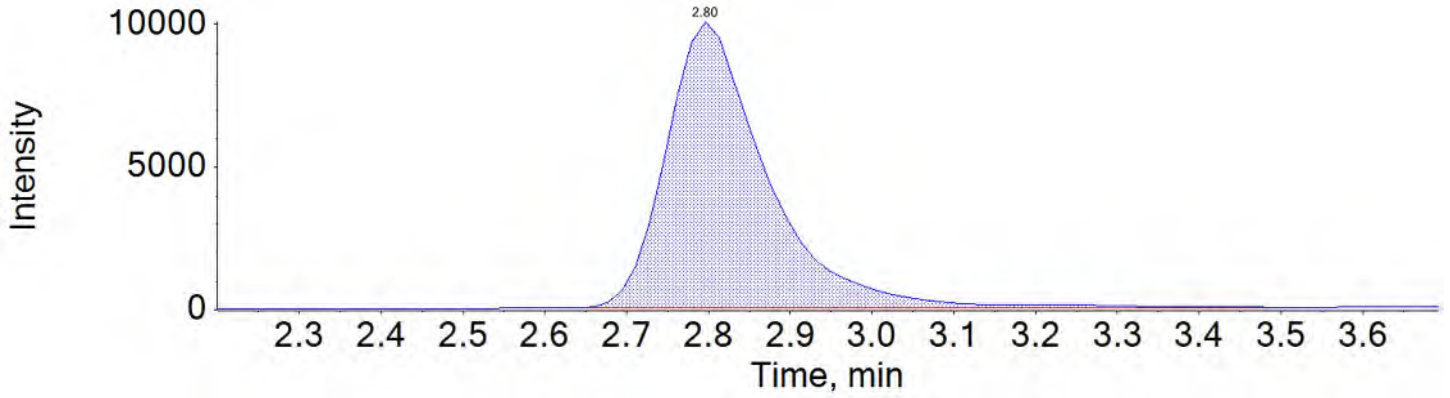
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

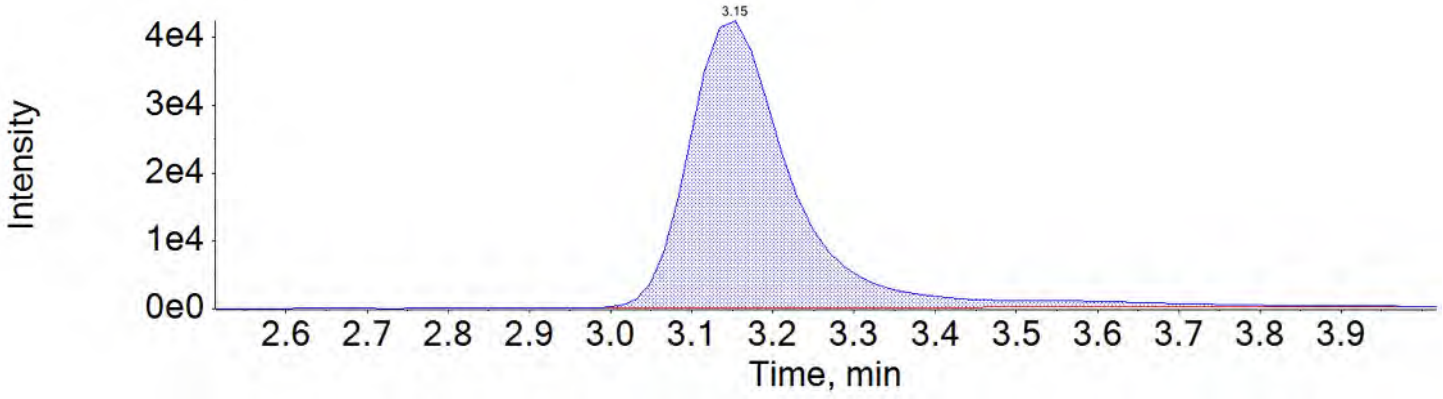


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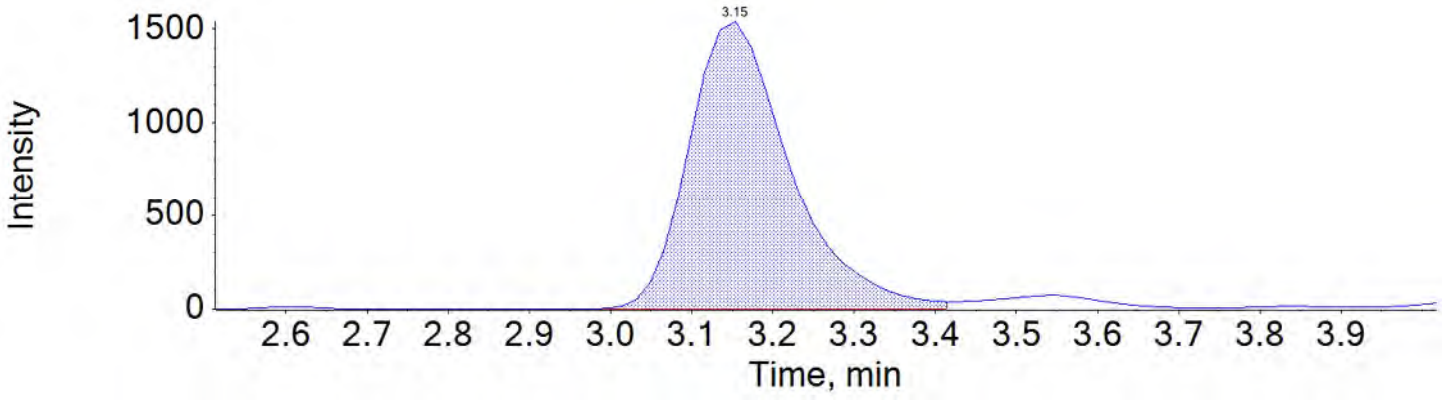
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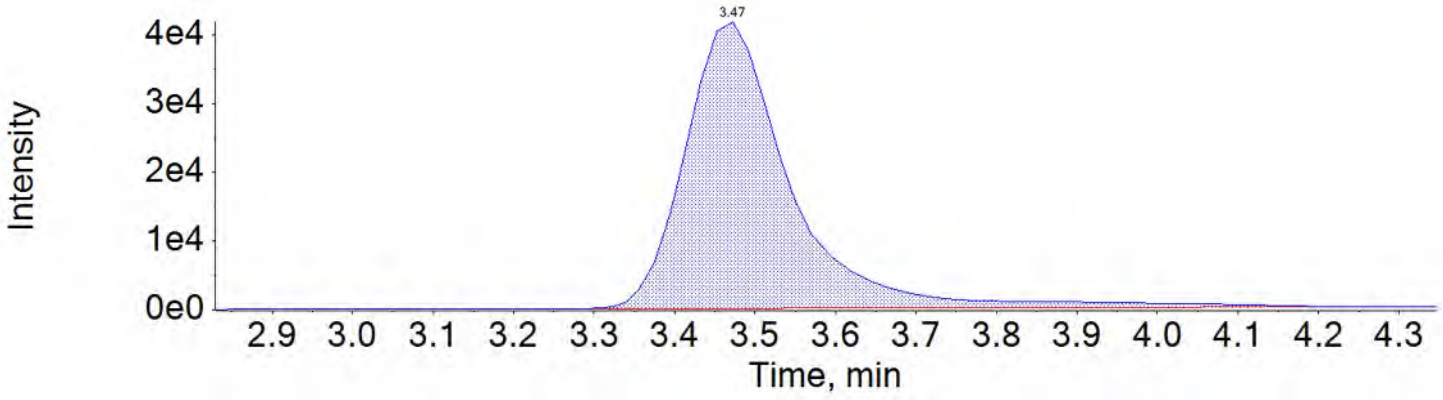
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

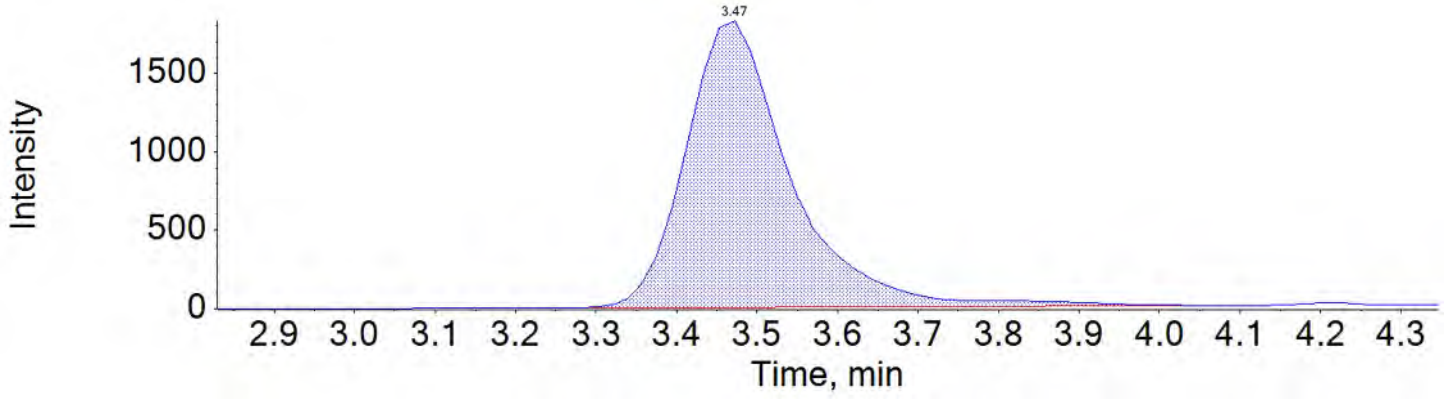


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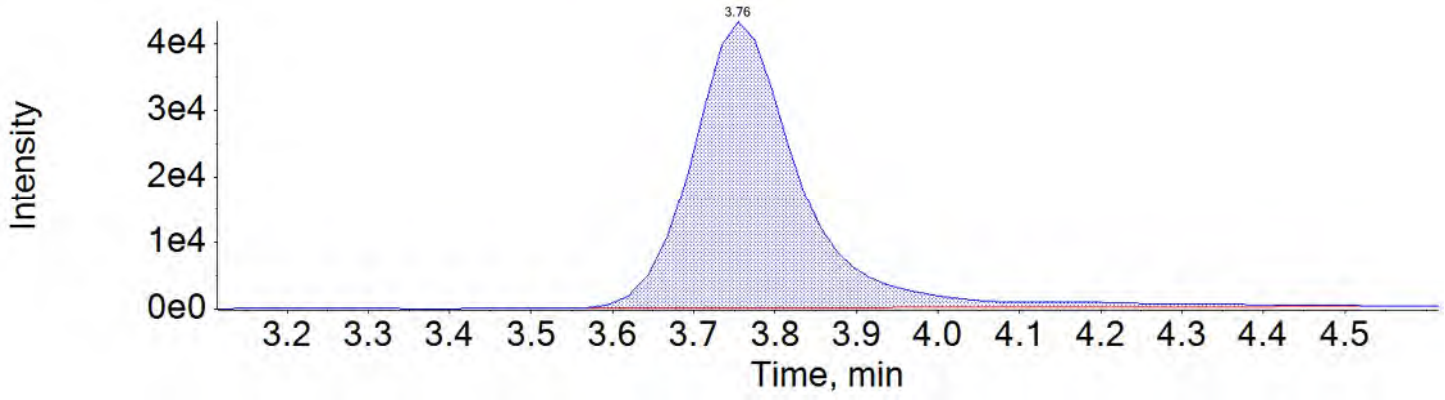
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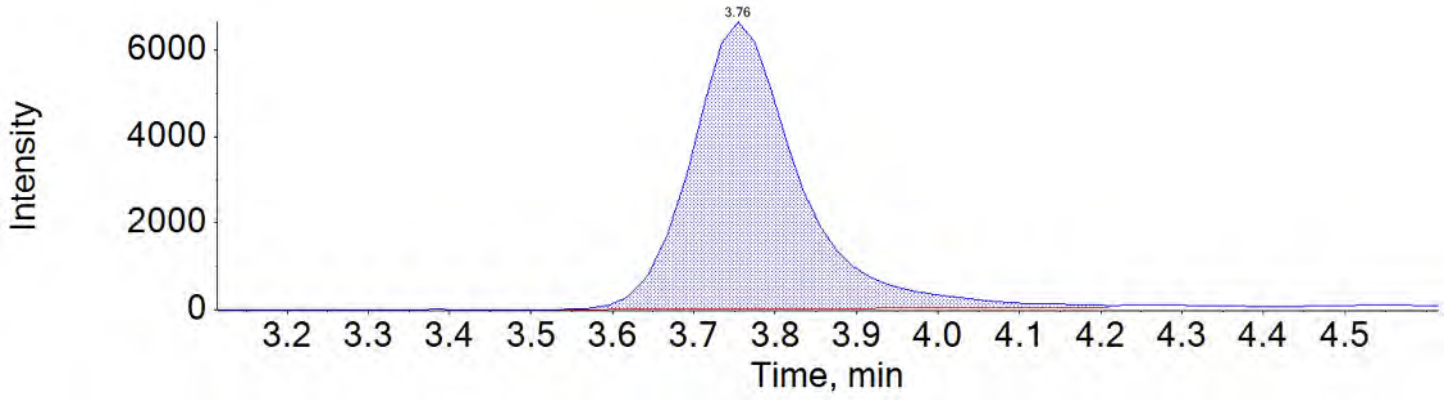
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

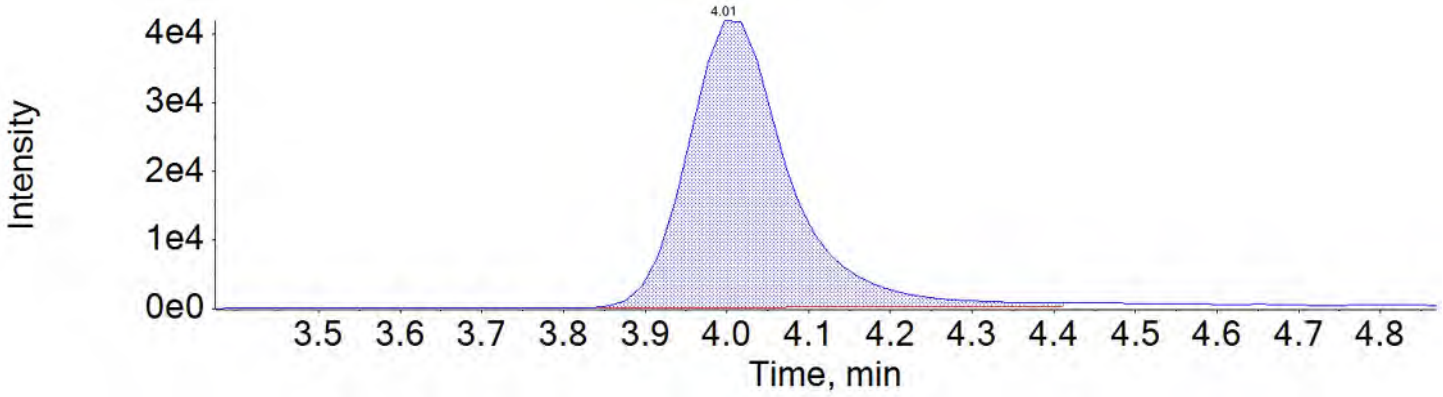


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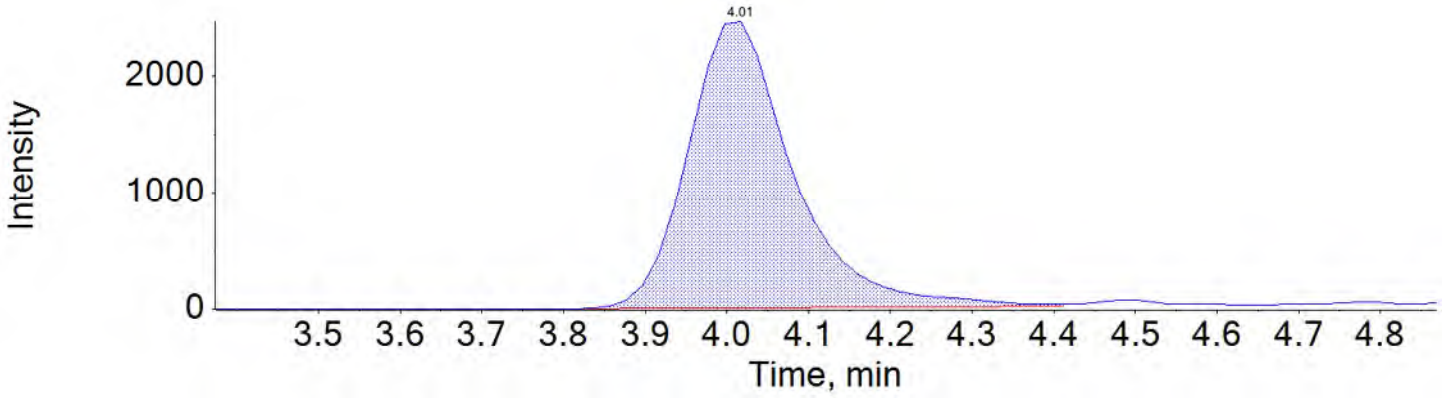
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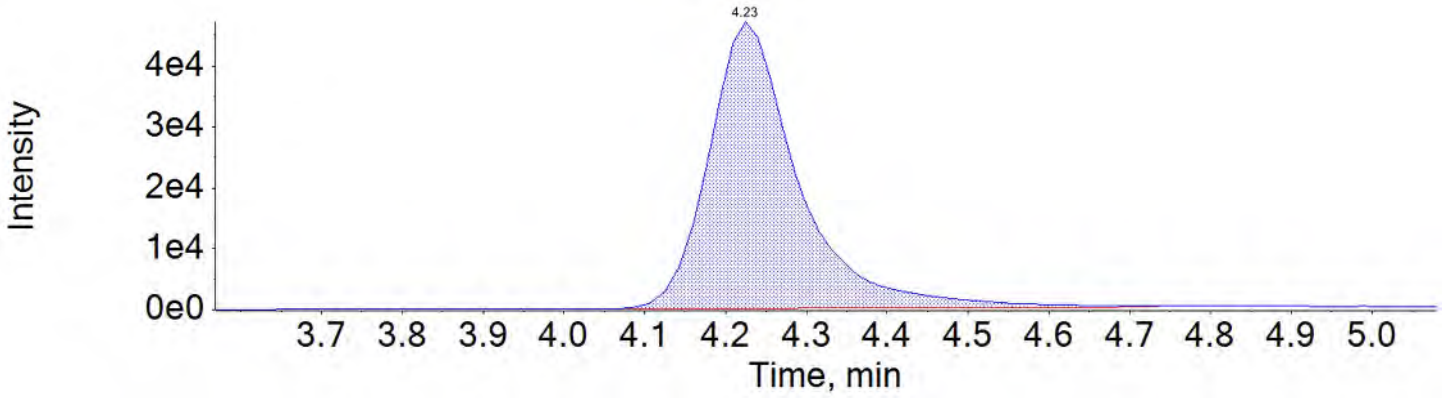
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

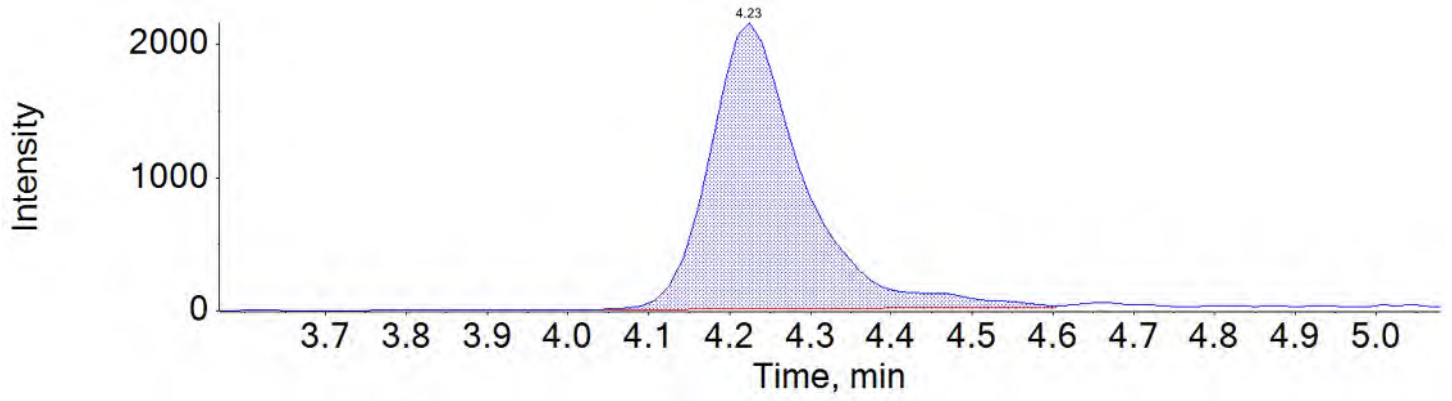


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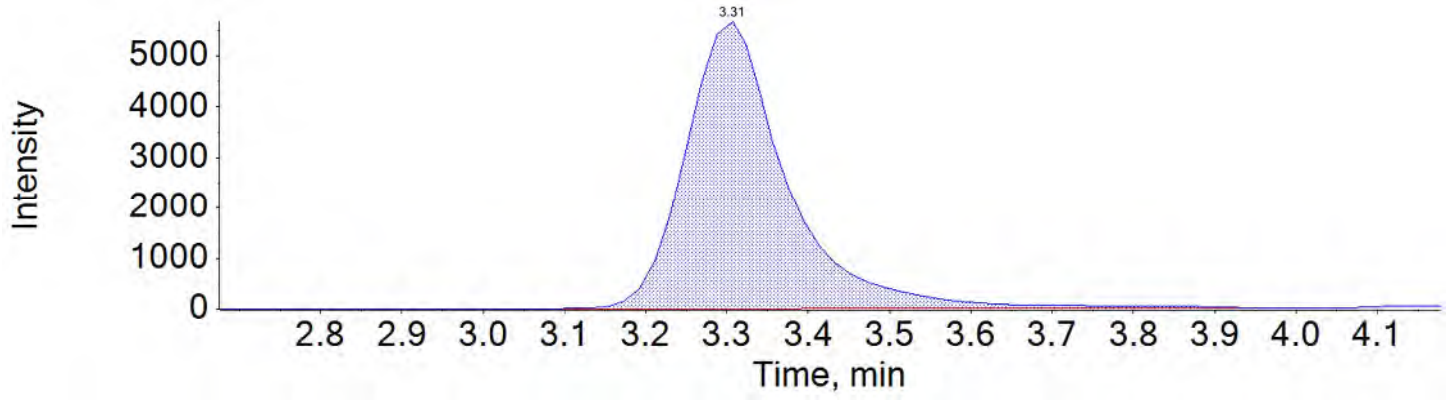
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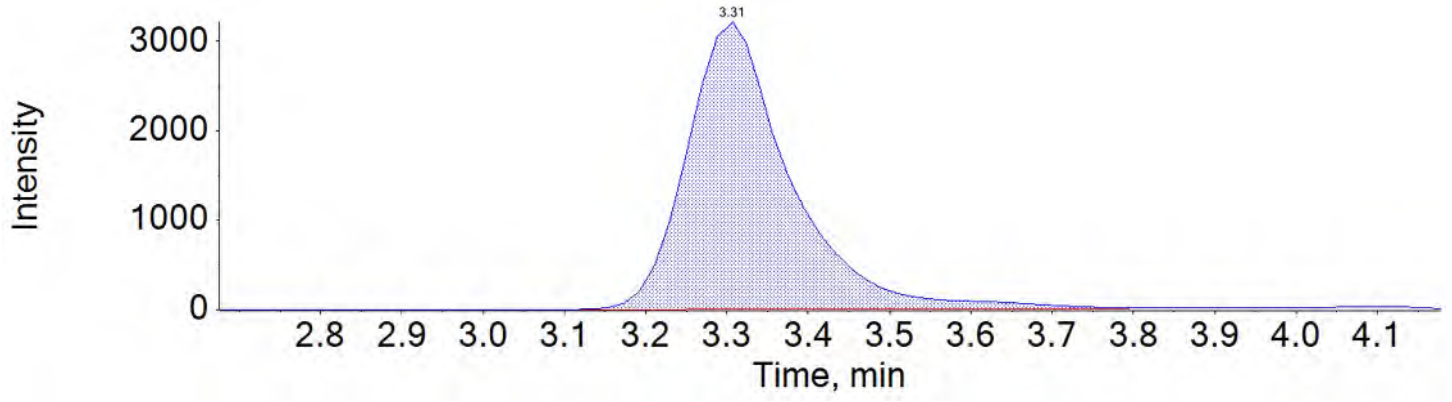
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

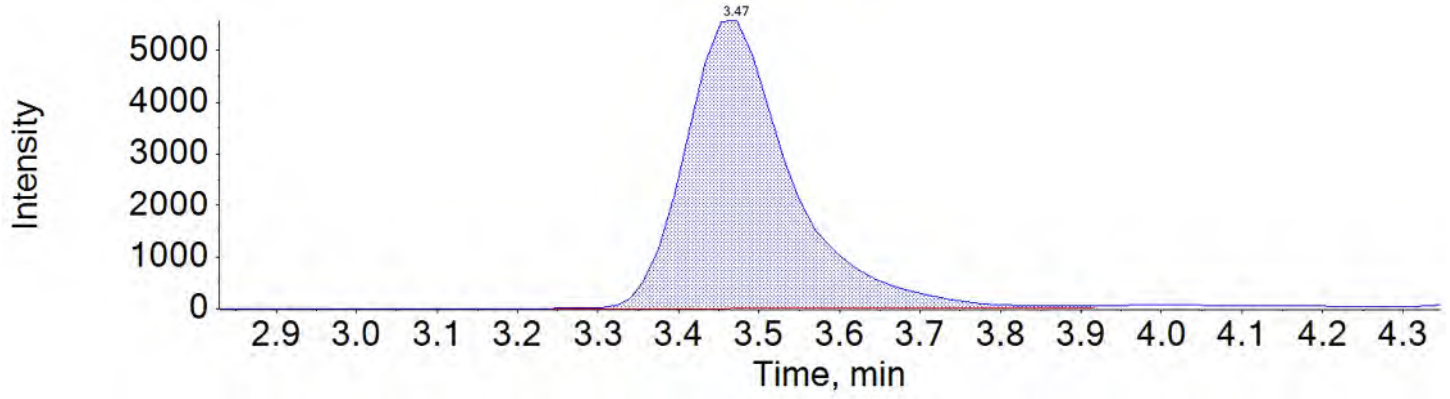


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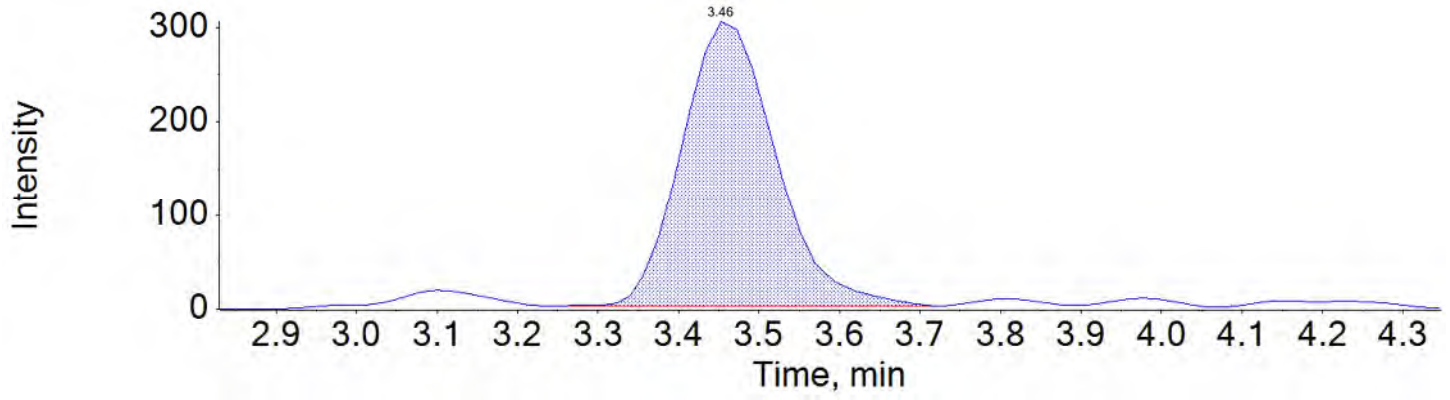
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

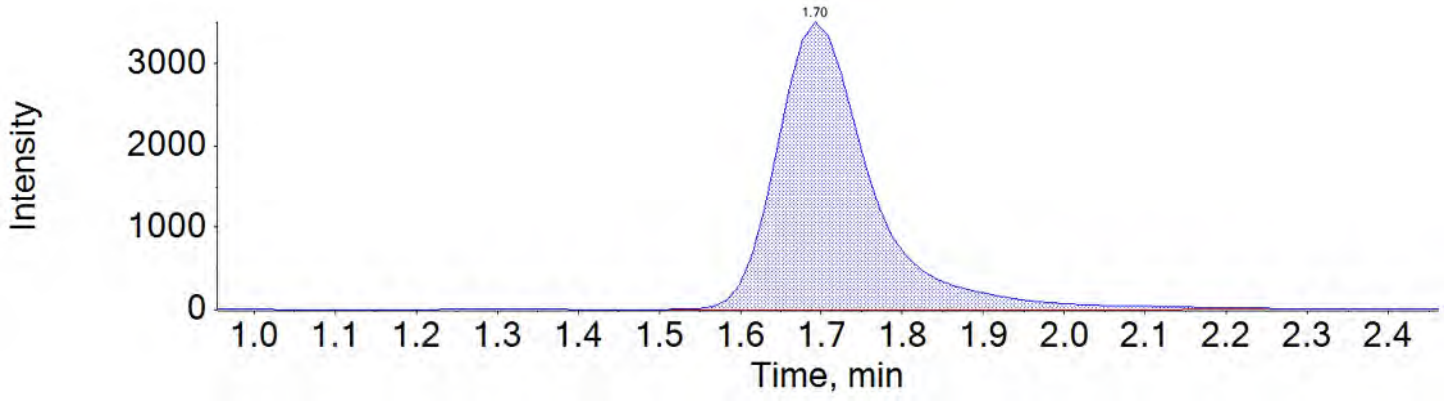
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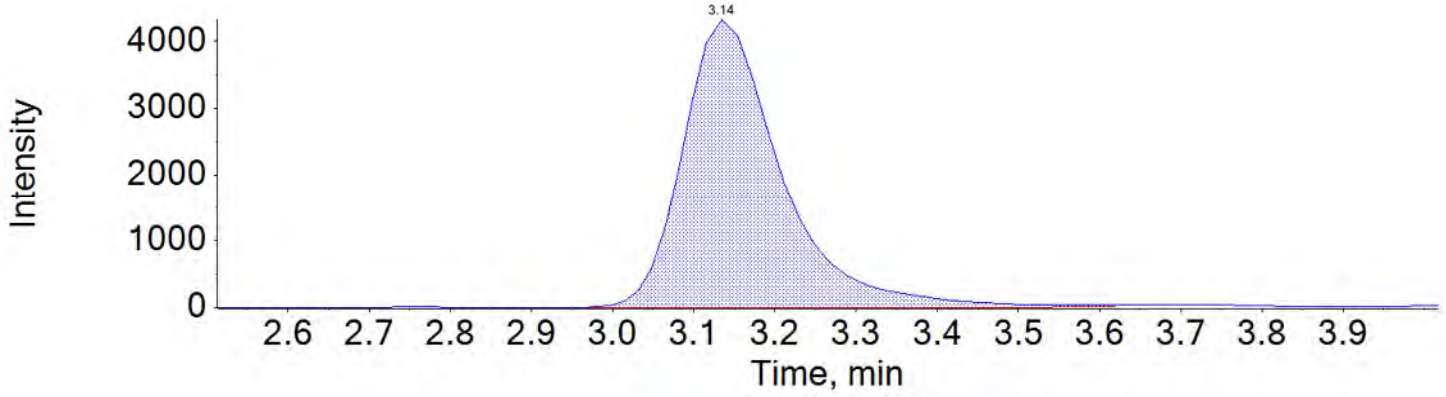
Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

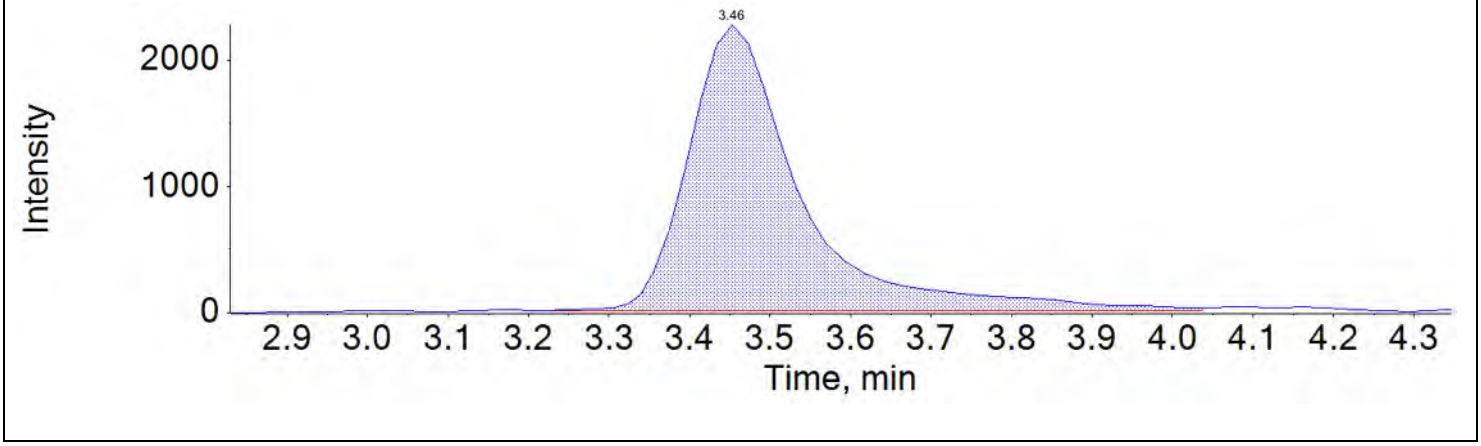


BATTELLE

Chromatogram Report

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Printed: 24/05/2018 10:56:03 AM

d5-EtFOSAA 589.0 / 419.0



BATTELLE

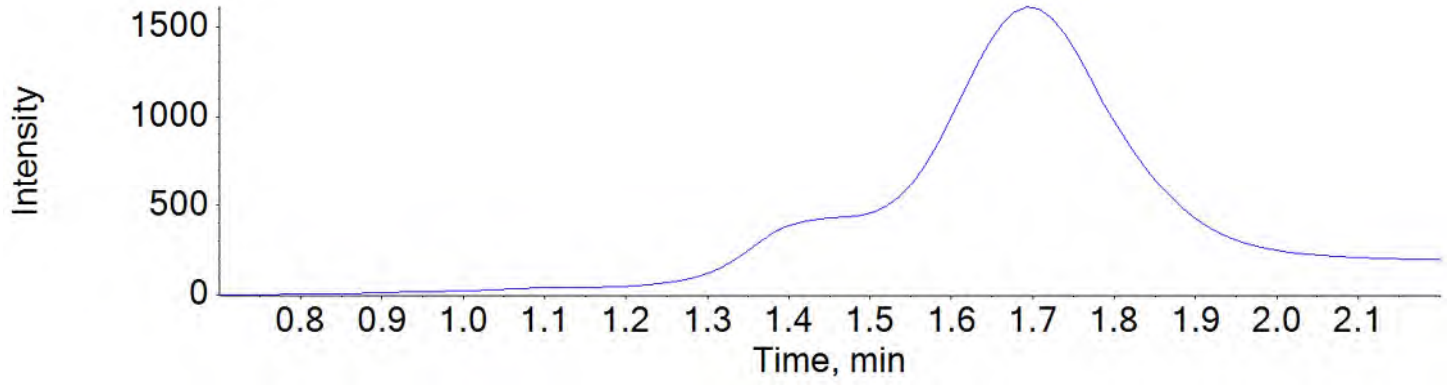
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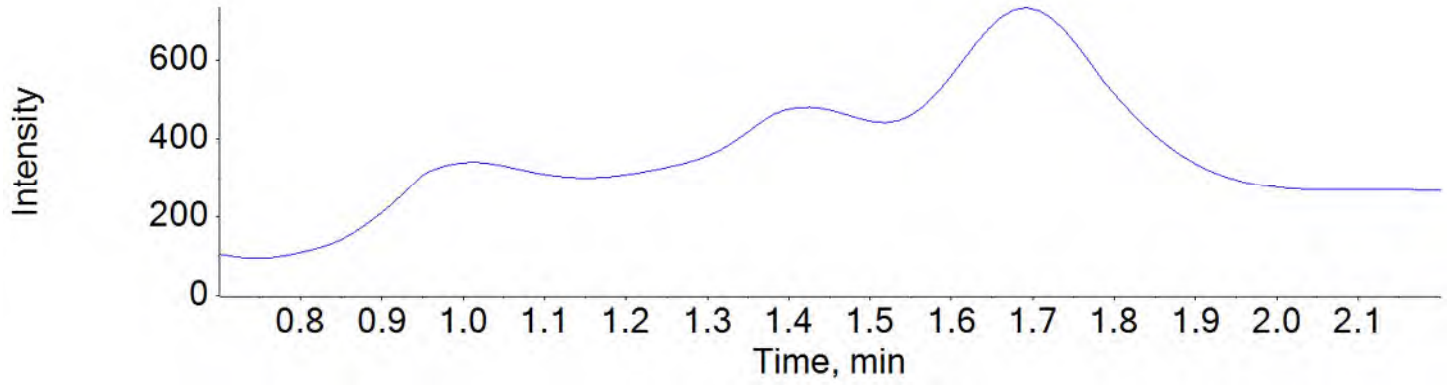
Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

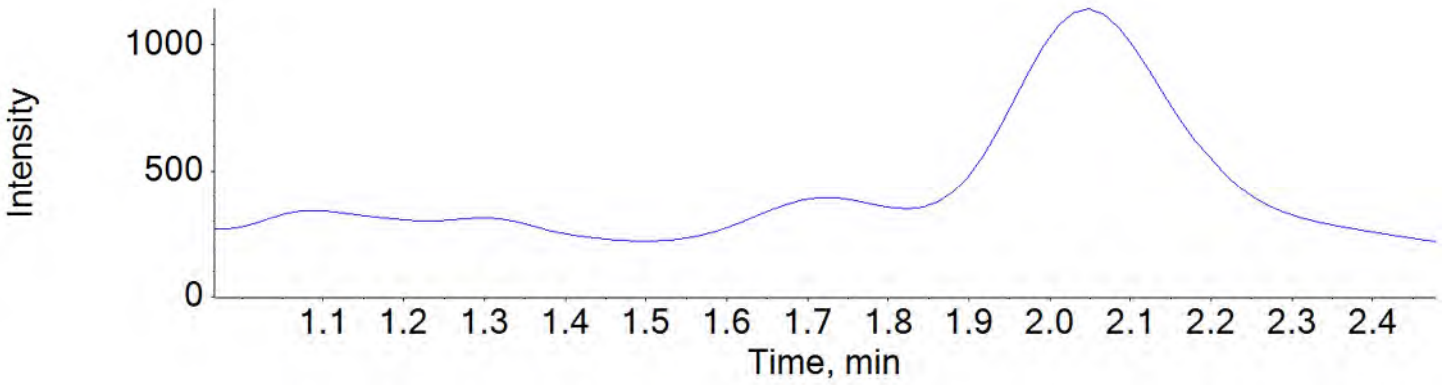


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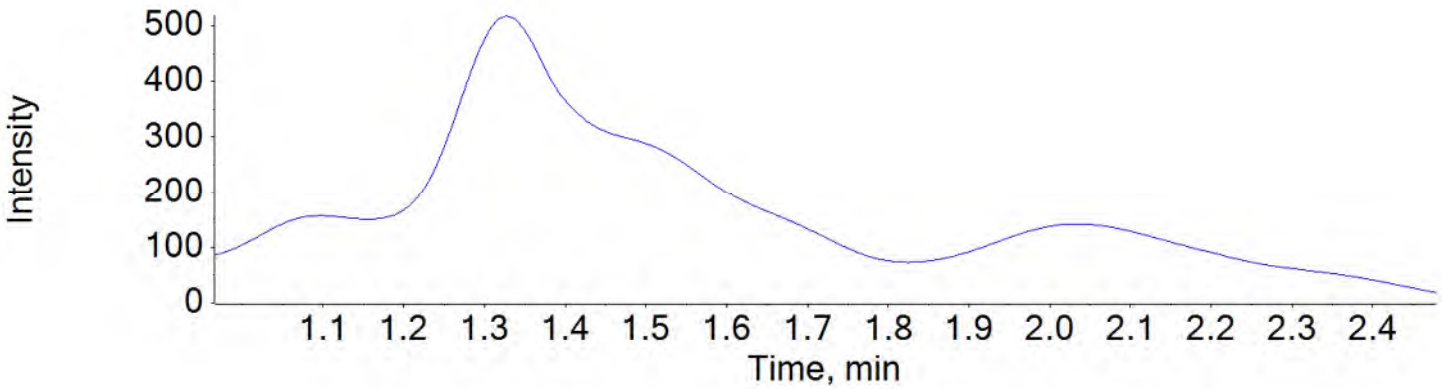
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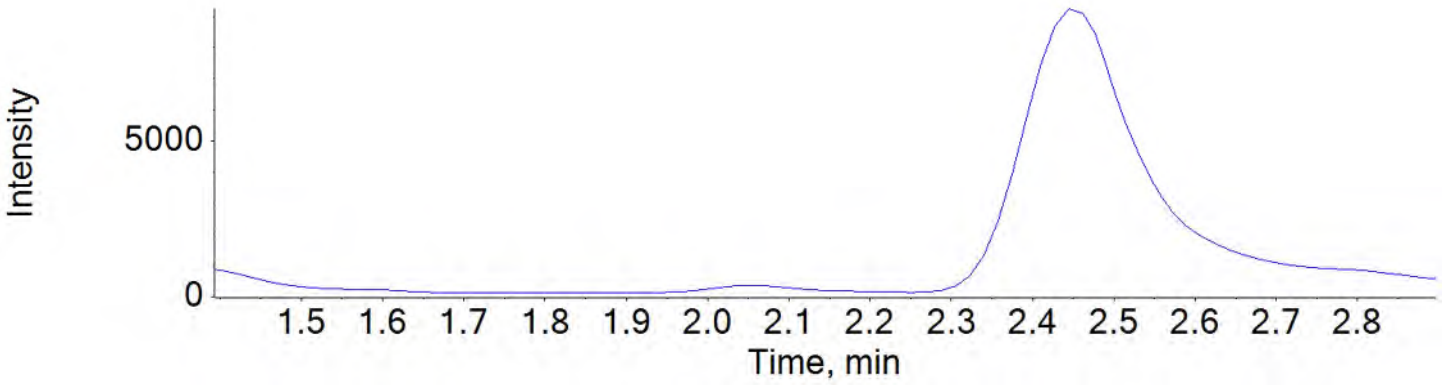
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

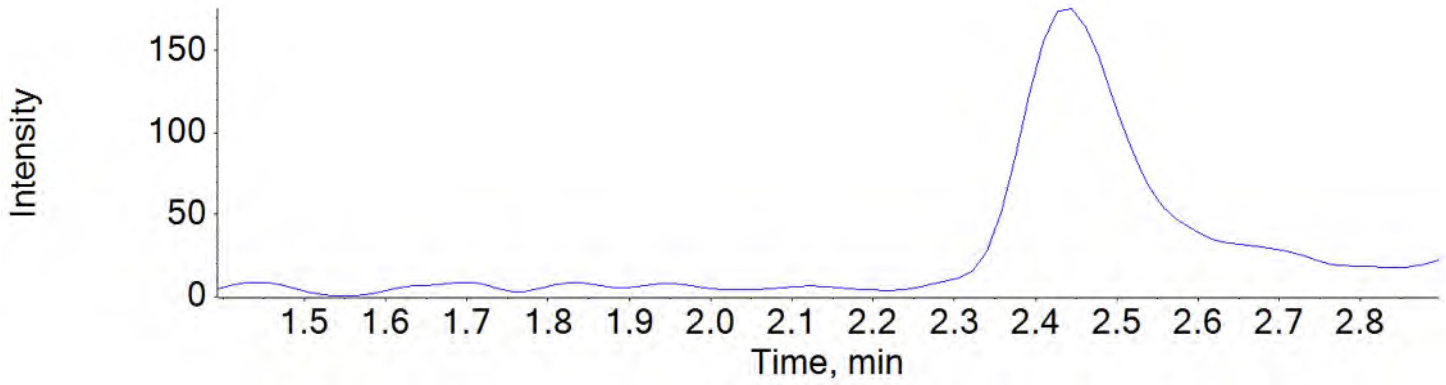


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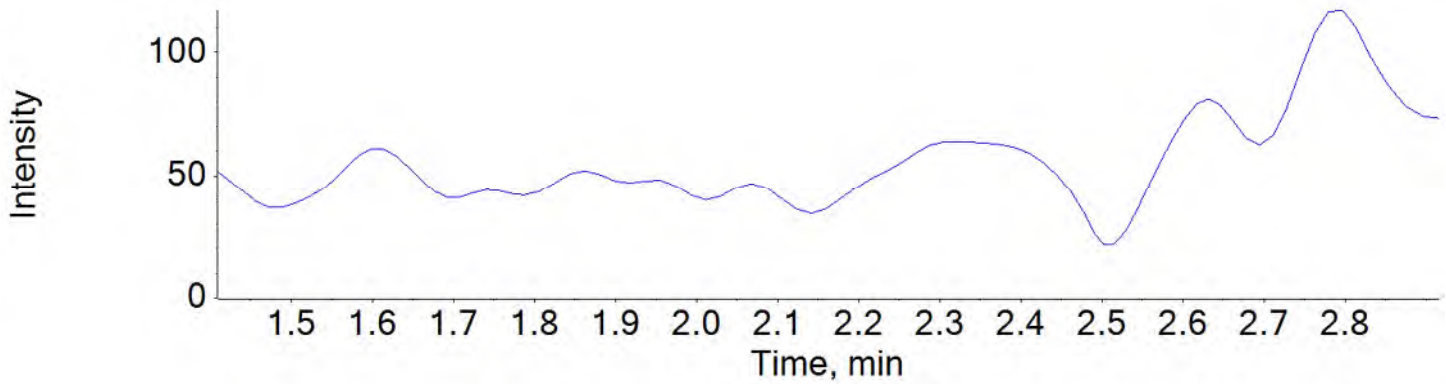
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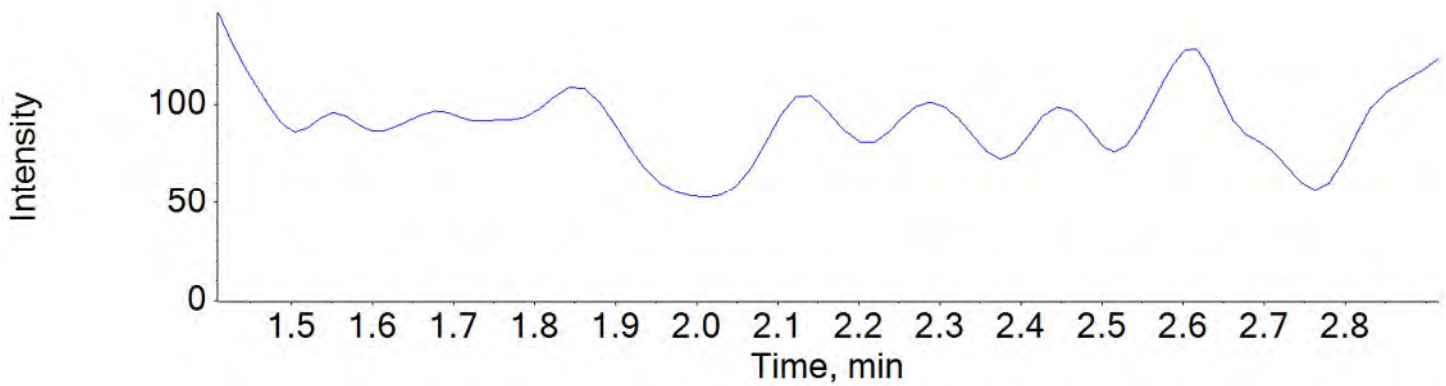
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

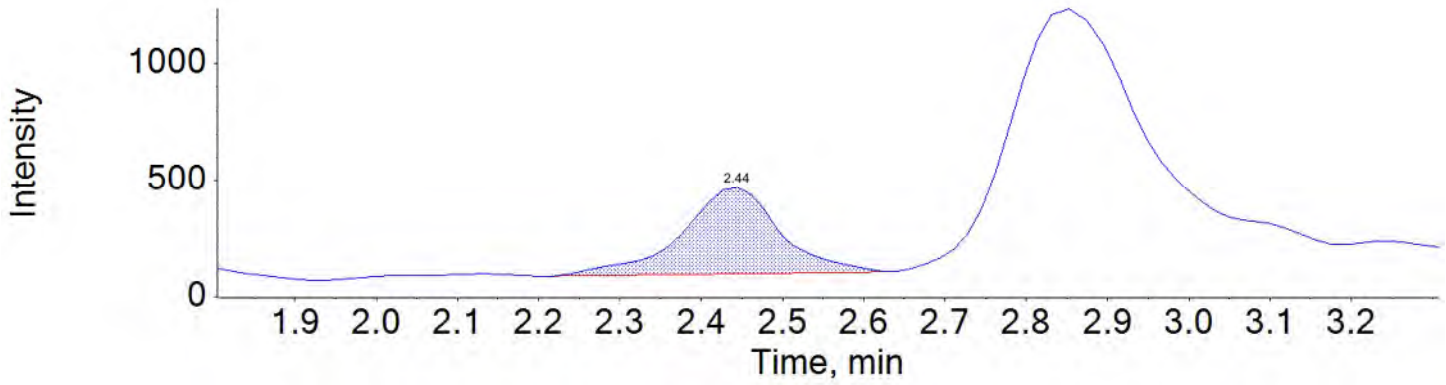


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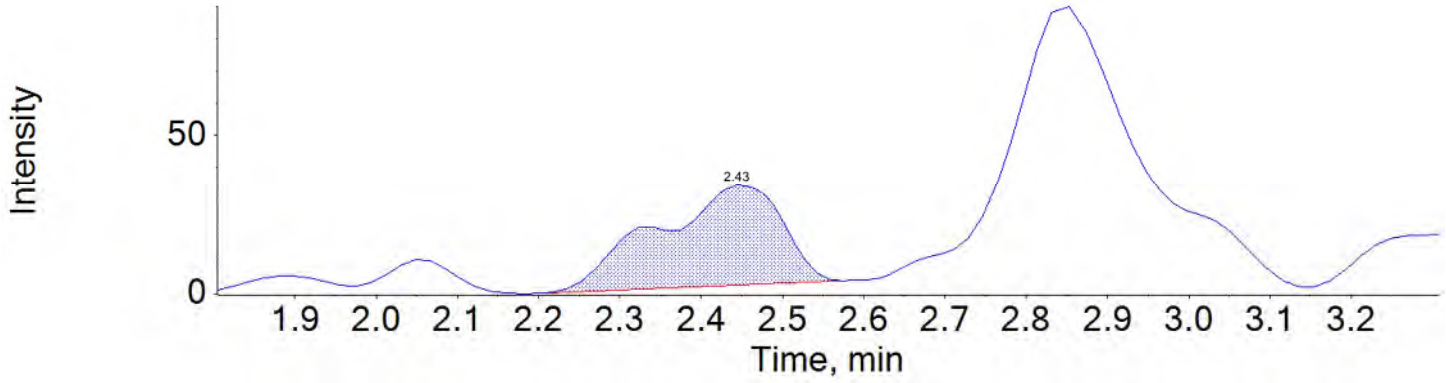
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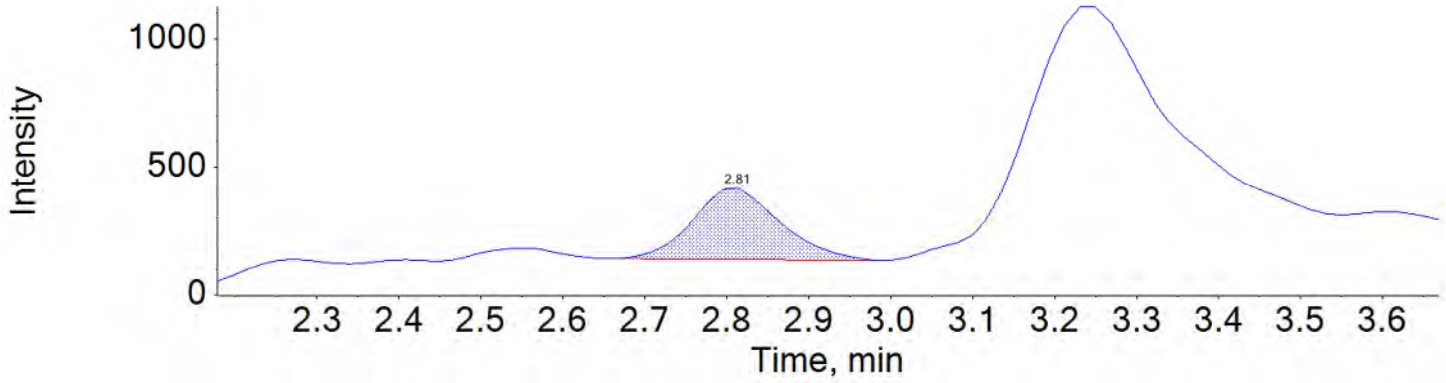
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

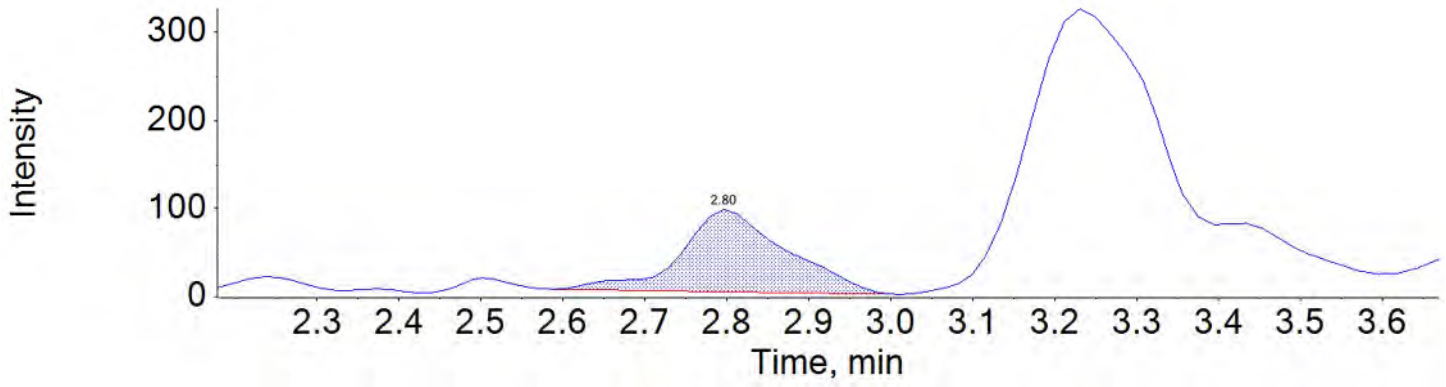


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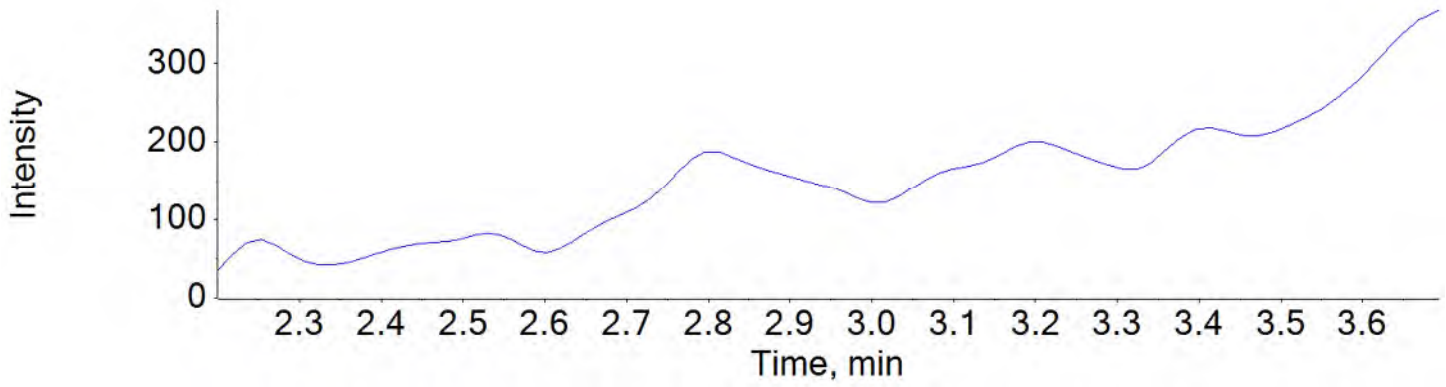
Chromatogram Report

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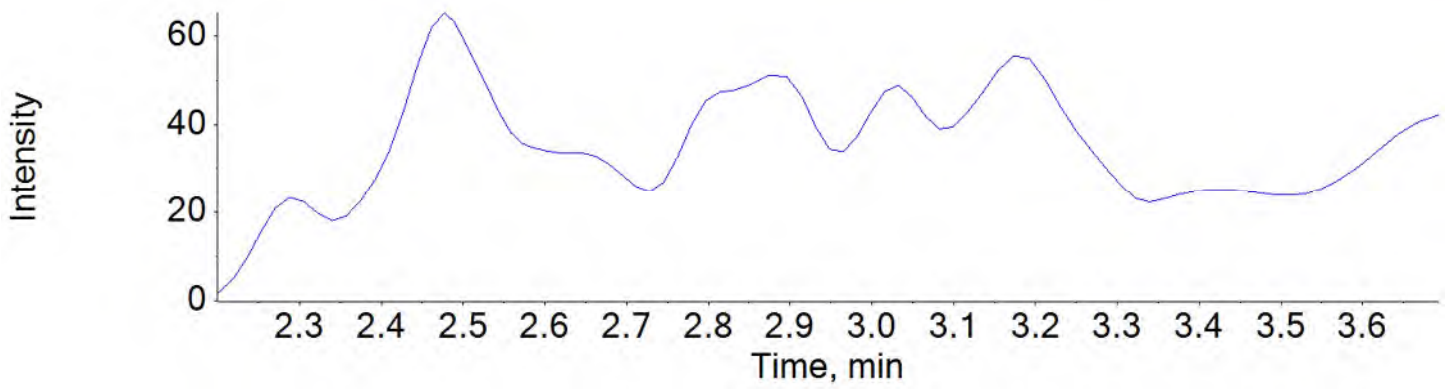
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

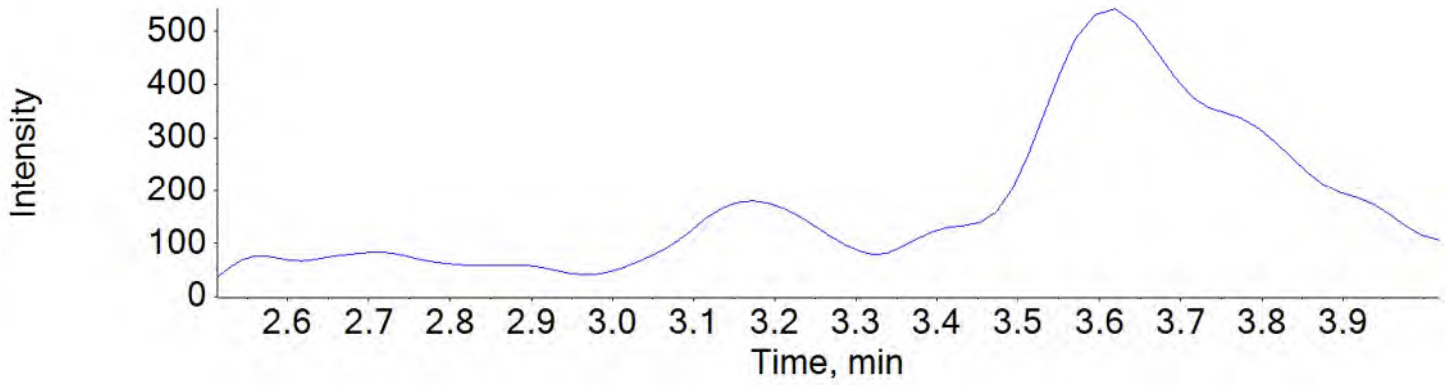


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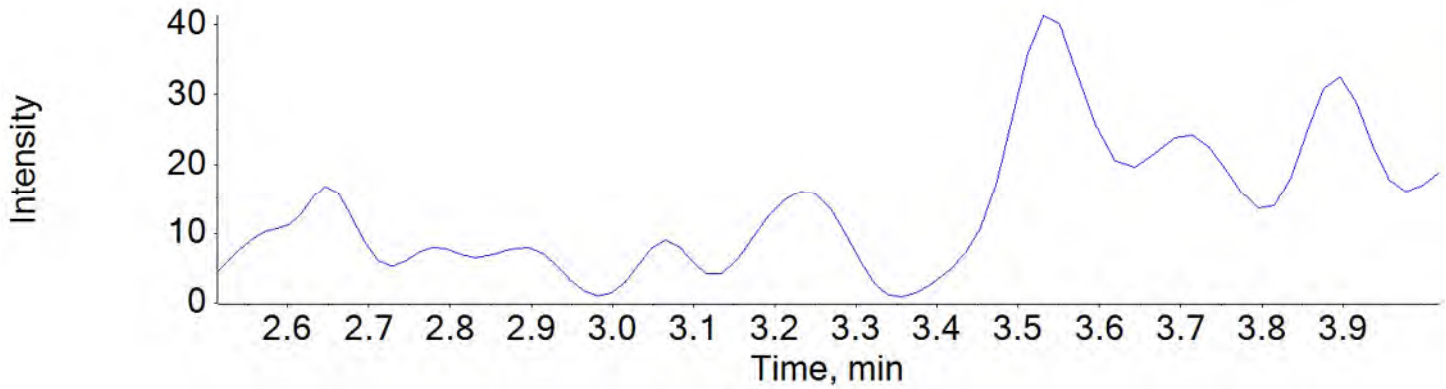
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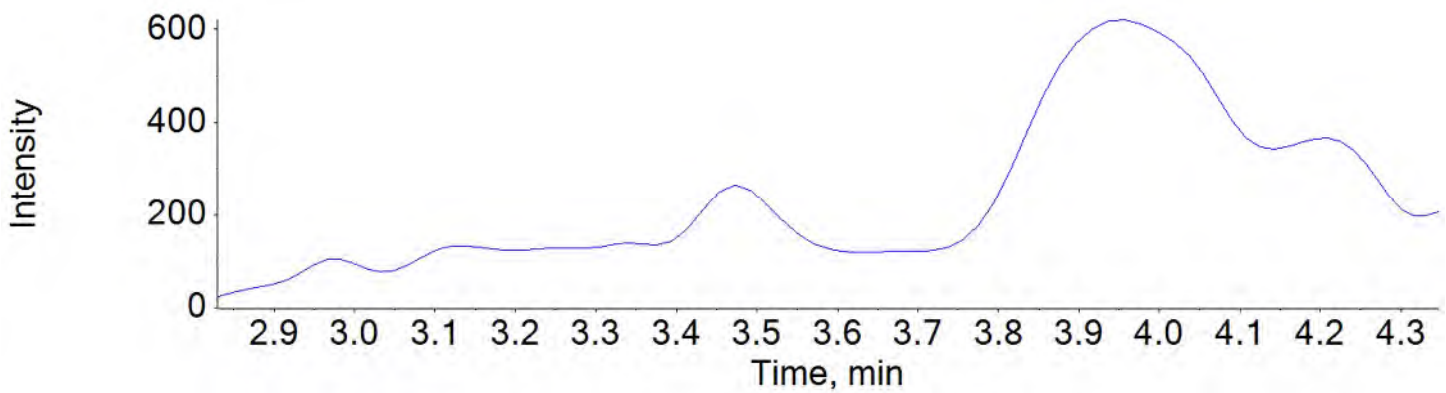
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

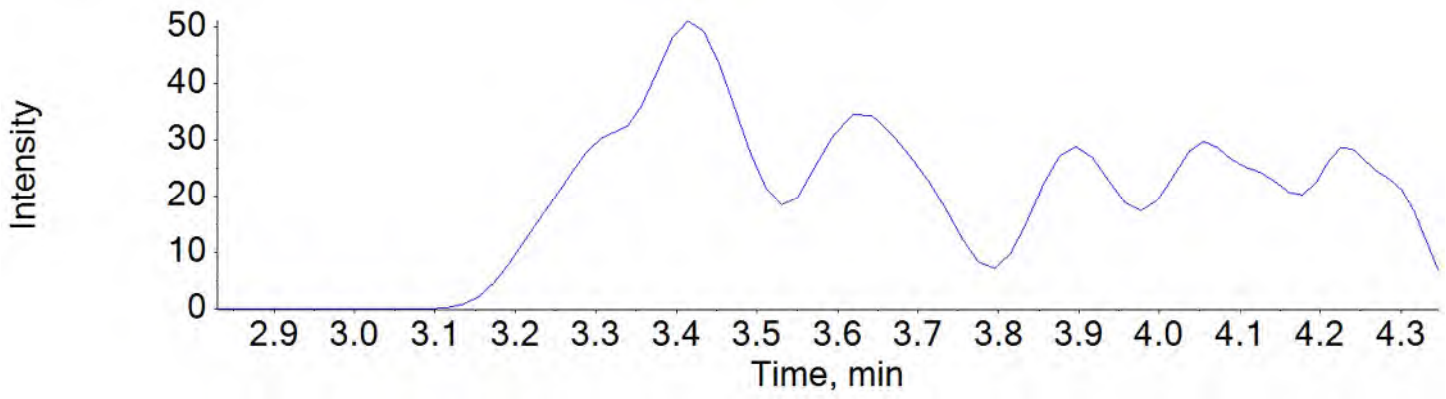


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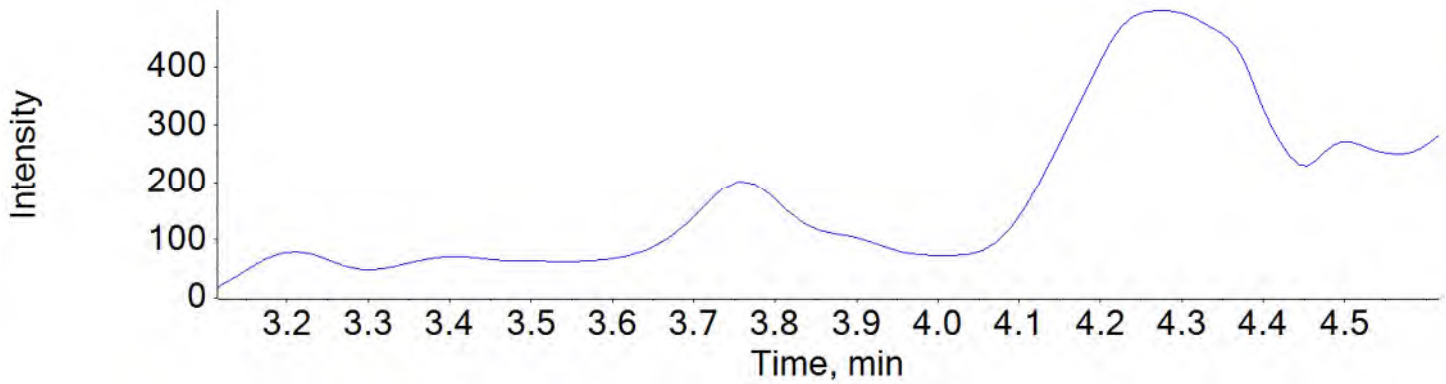
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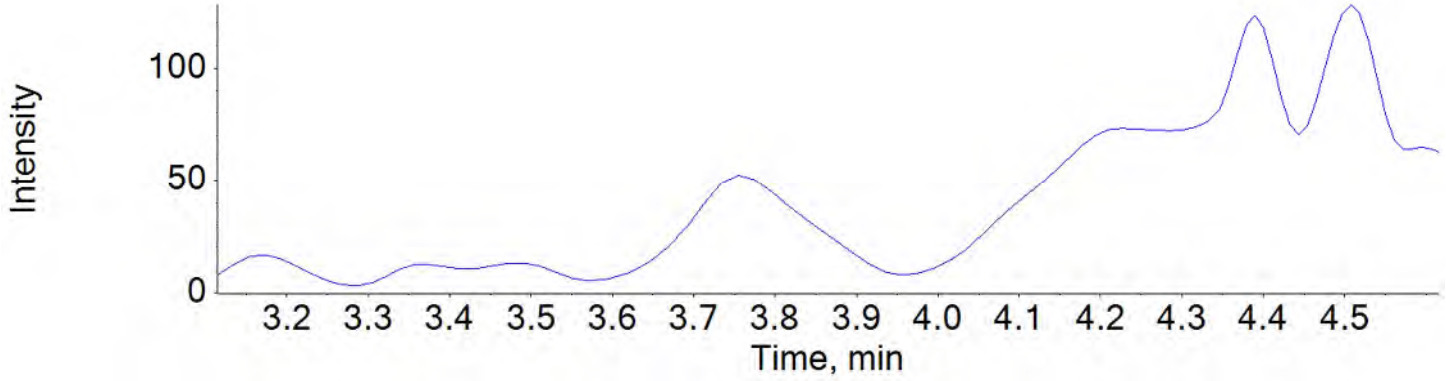
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

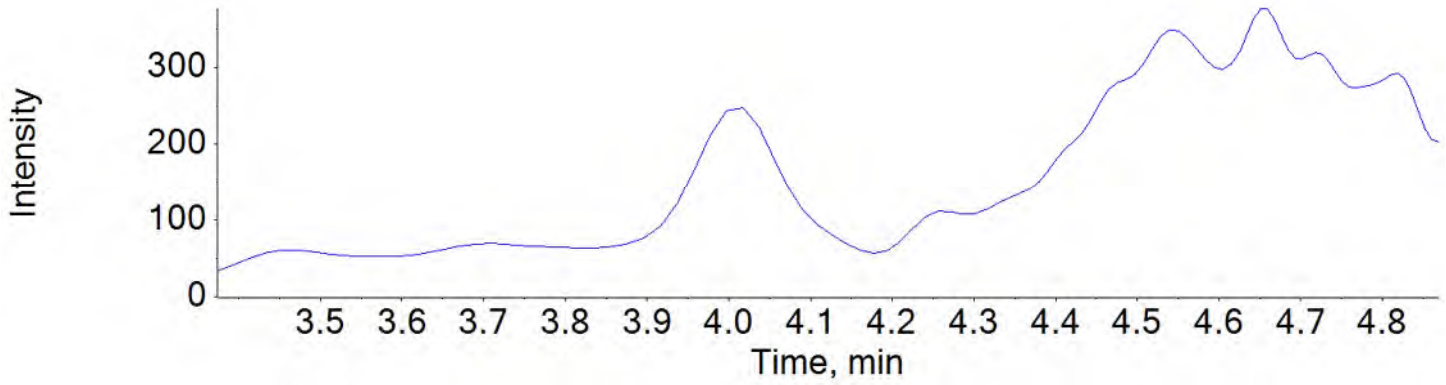


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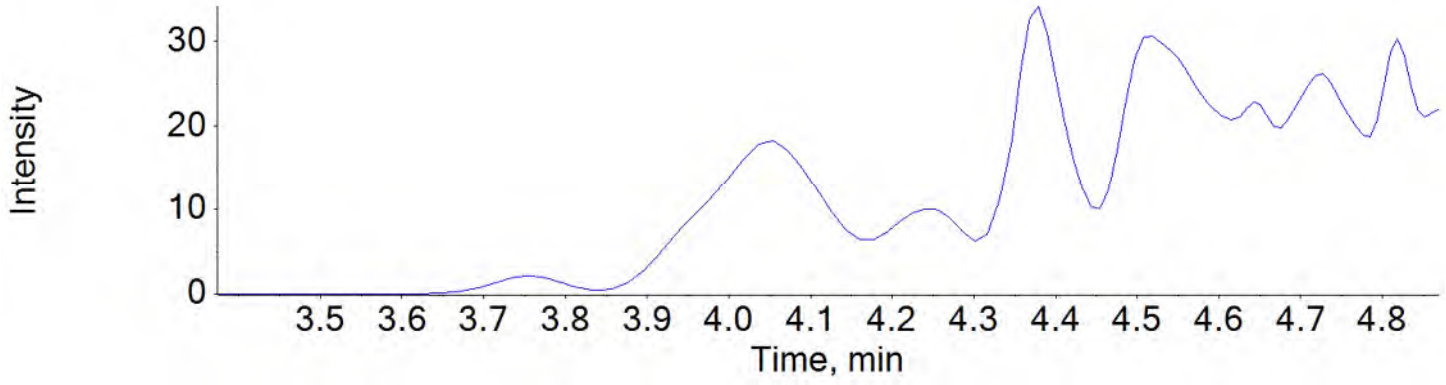
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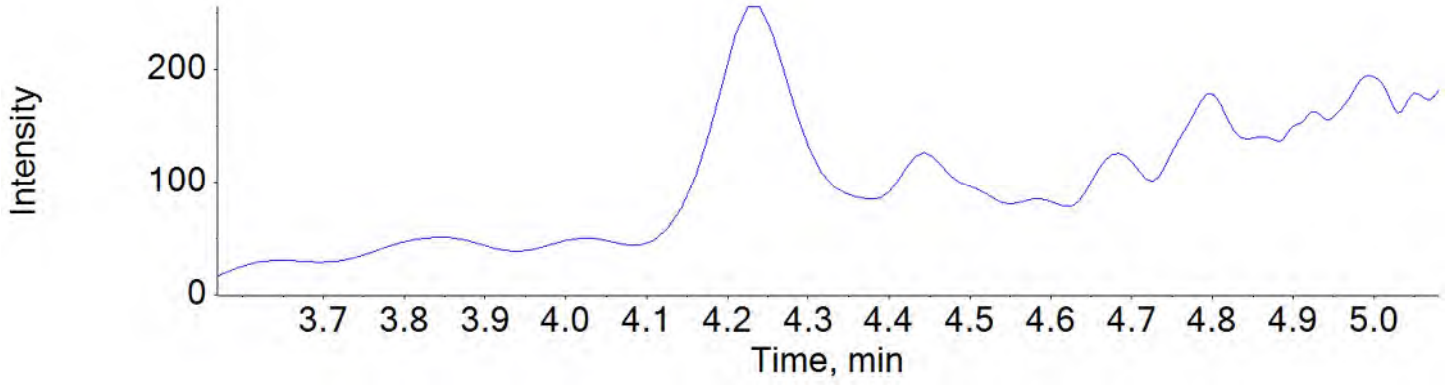
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

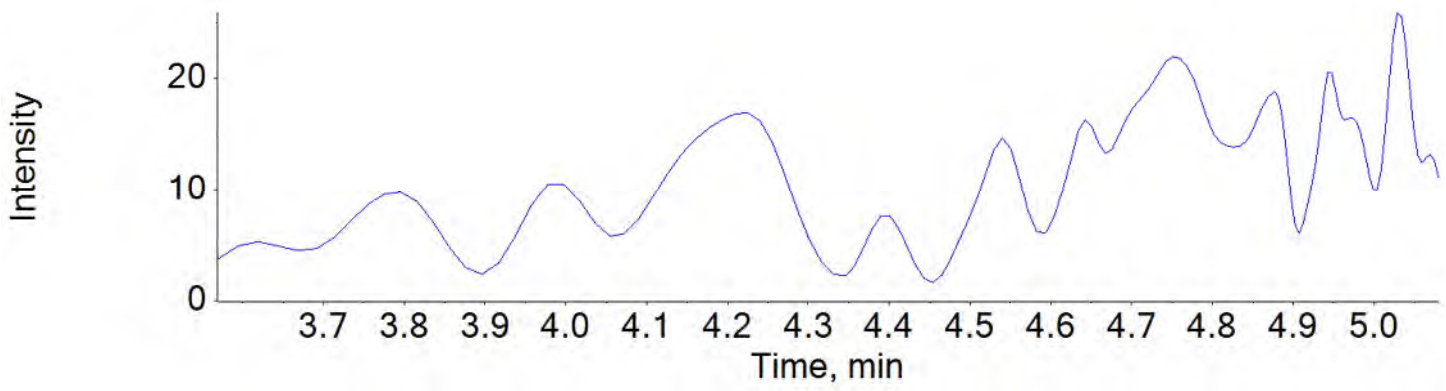


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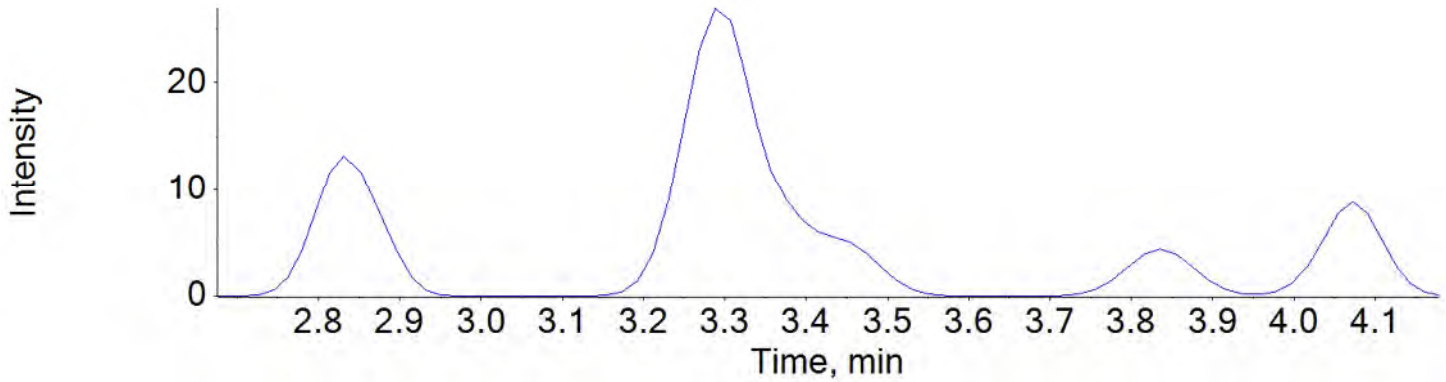
Chromatogram Report

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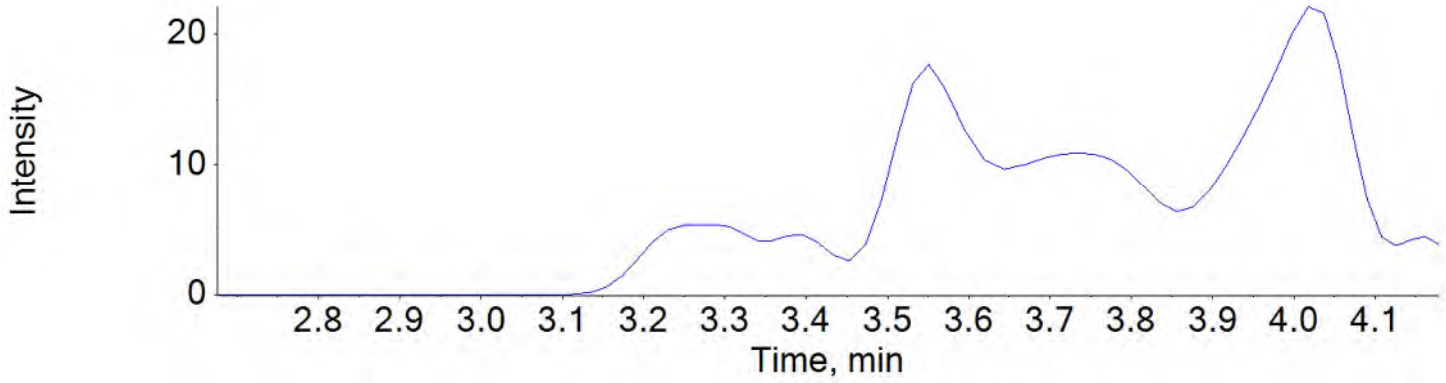
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

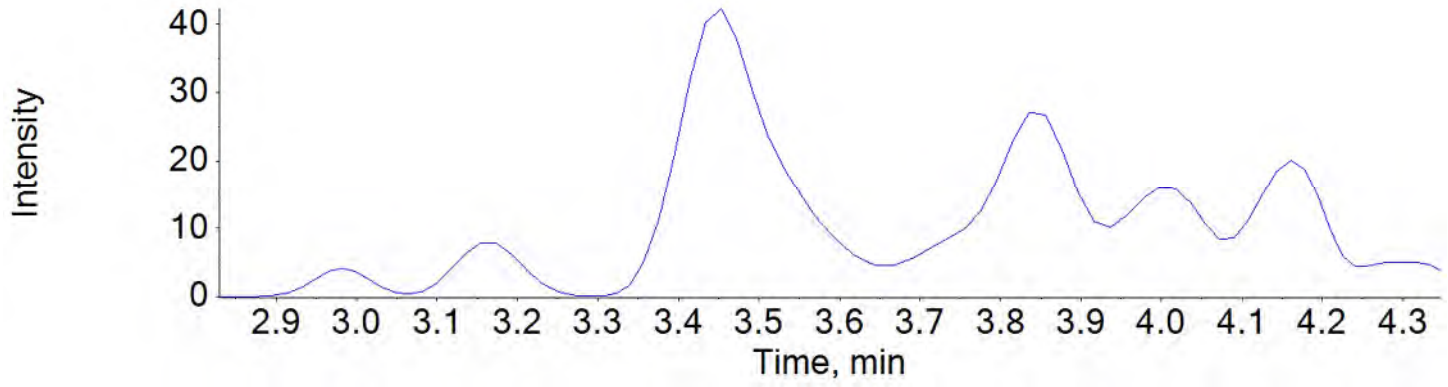


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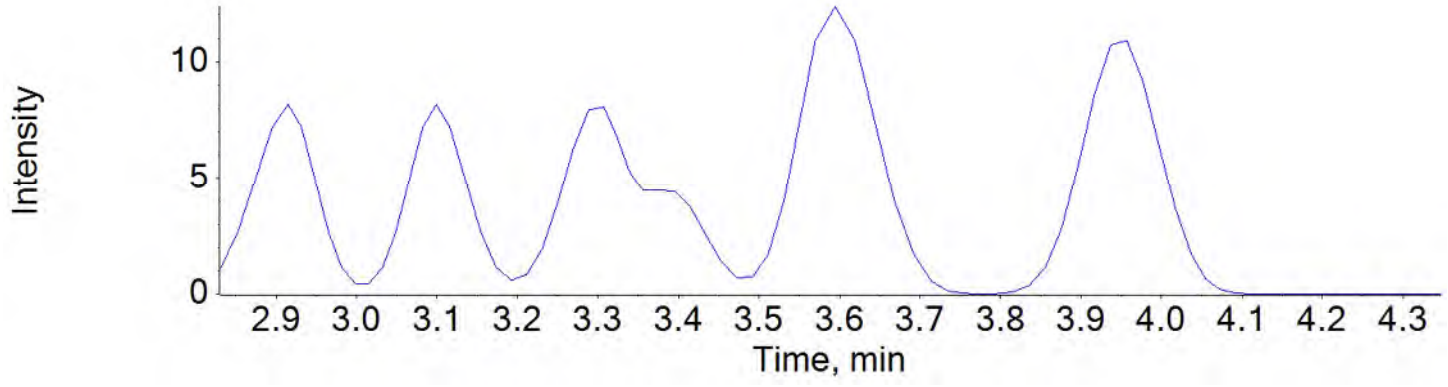
Chromatogram Report

Created with Analyst Reporter
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

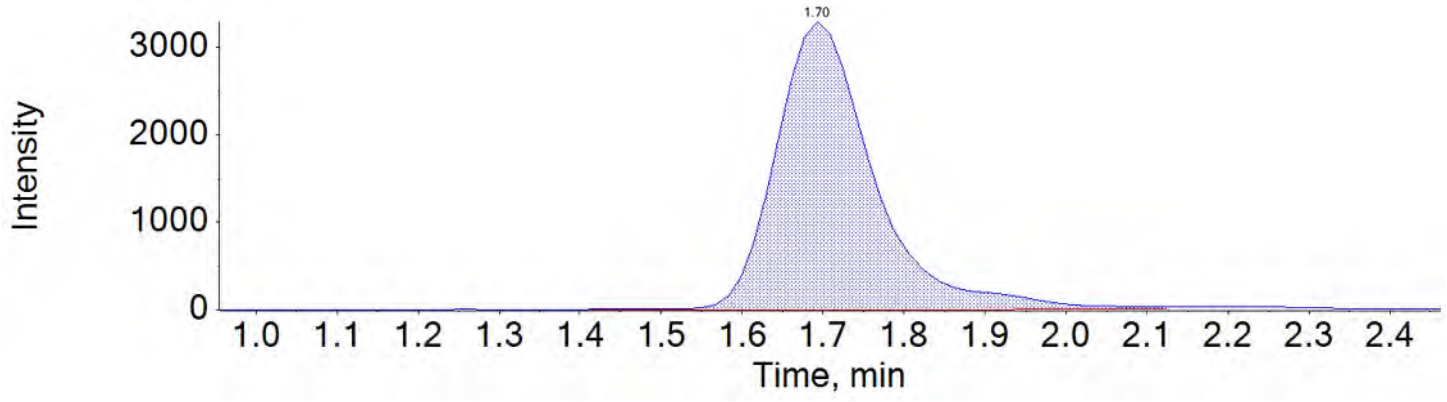
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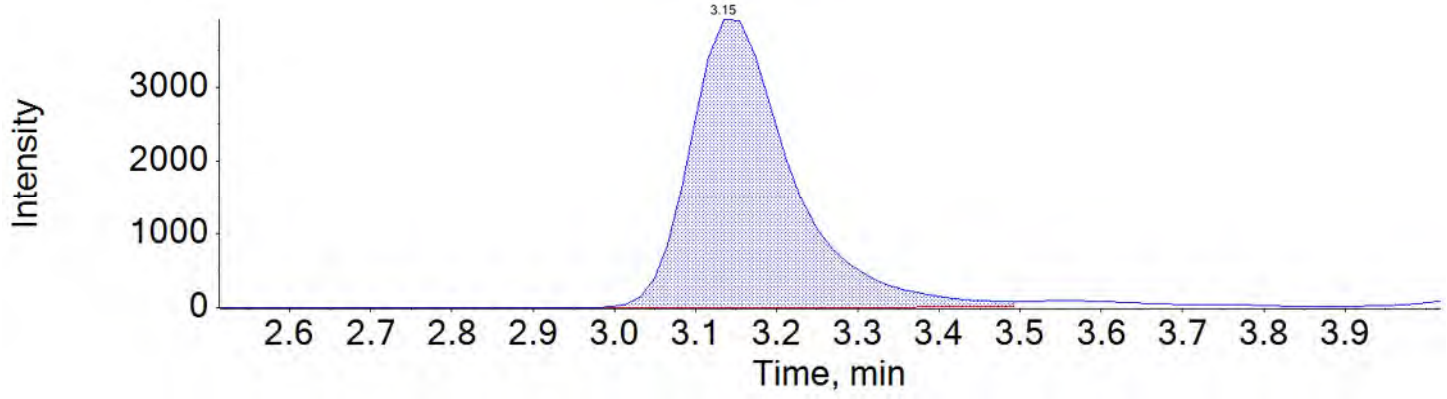
Sample Name	CQ774PB-FS(0)	**Injection Vial**	15
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:35:34	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

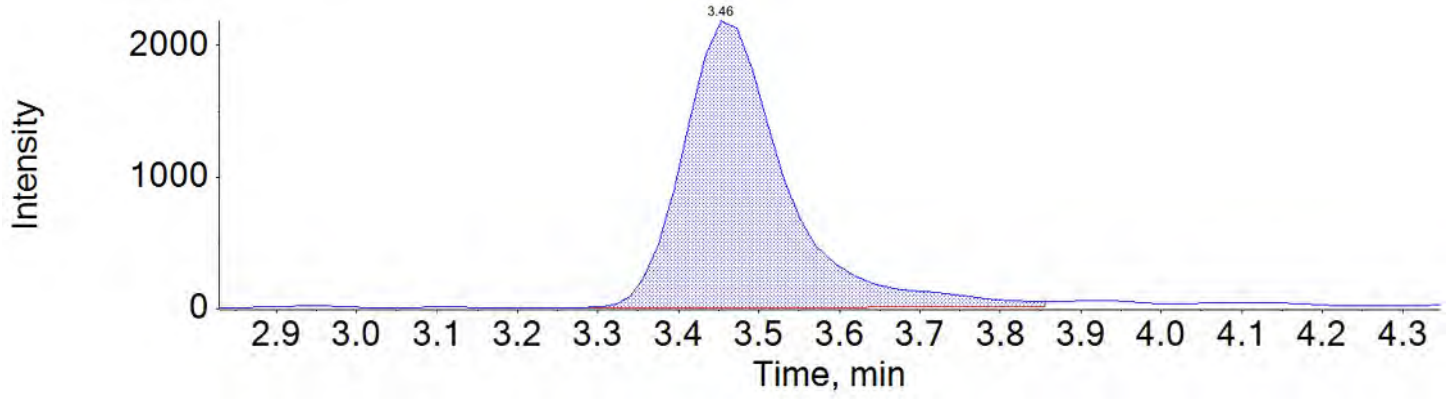


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



BATTELLE

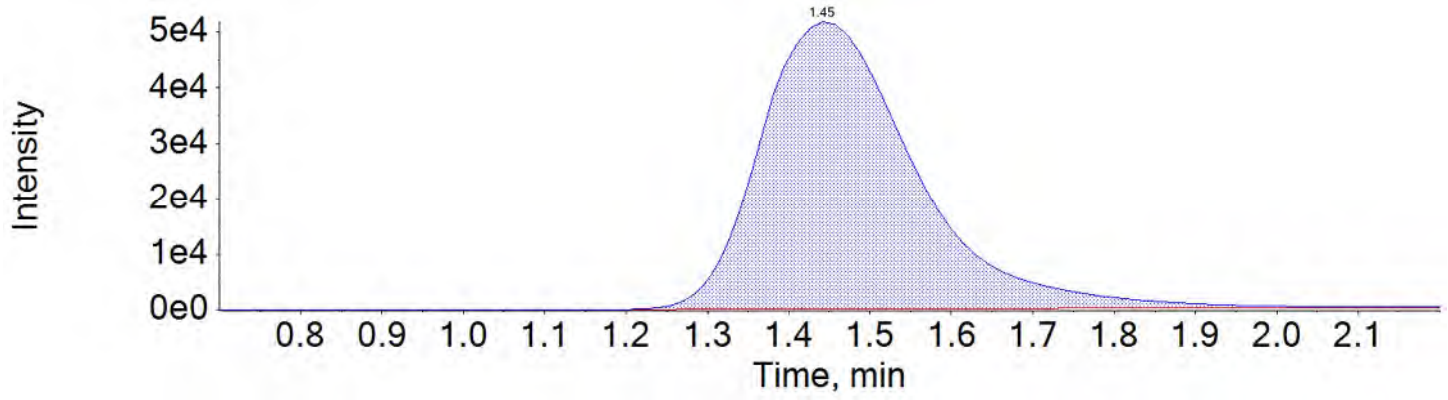
Chromatogram Report

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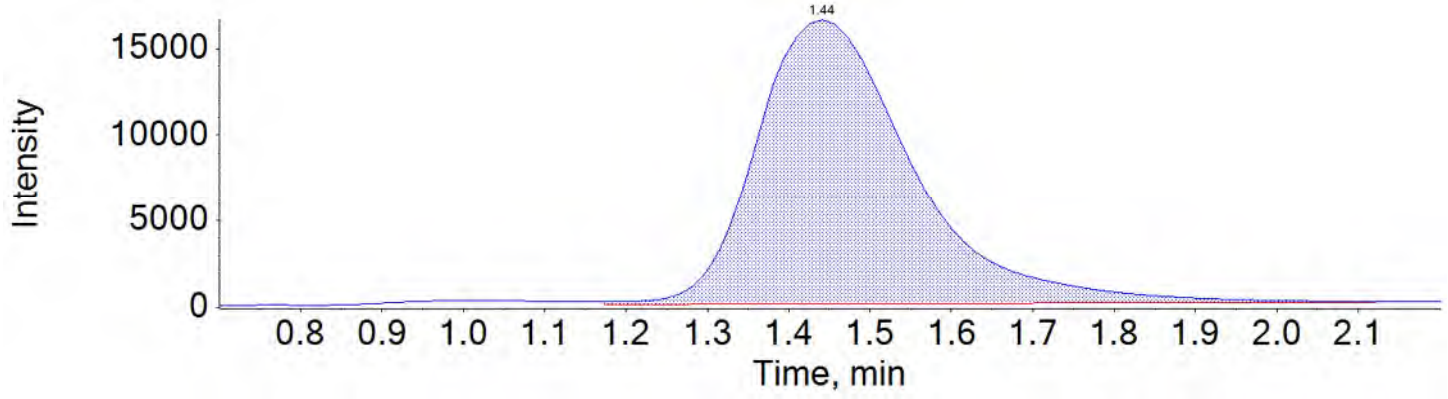
Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

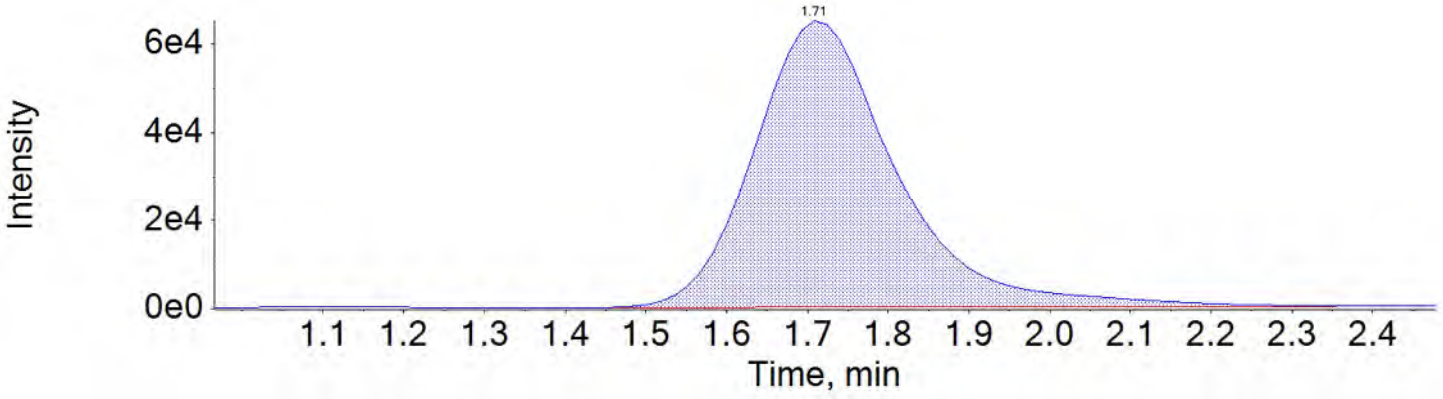


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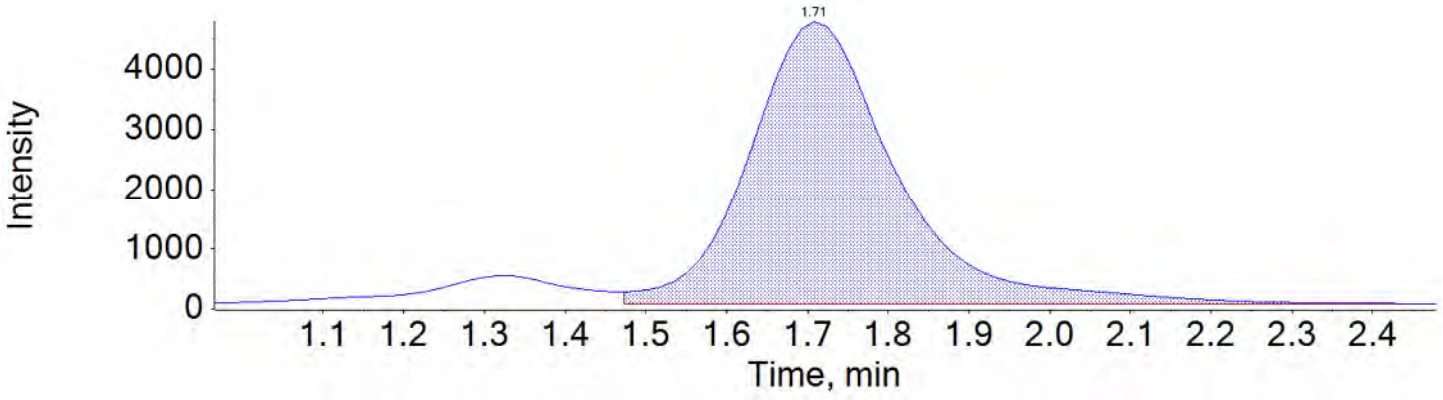
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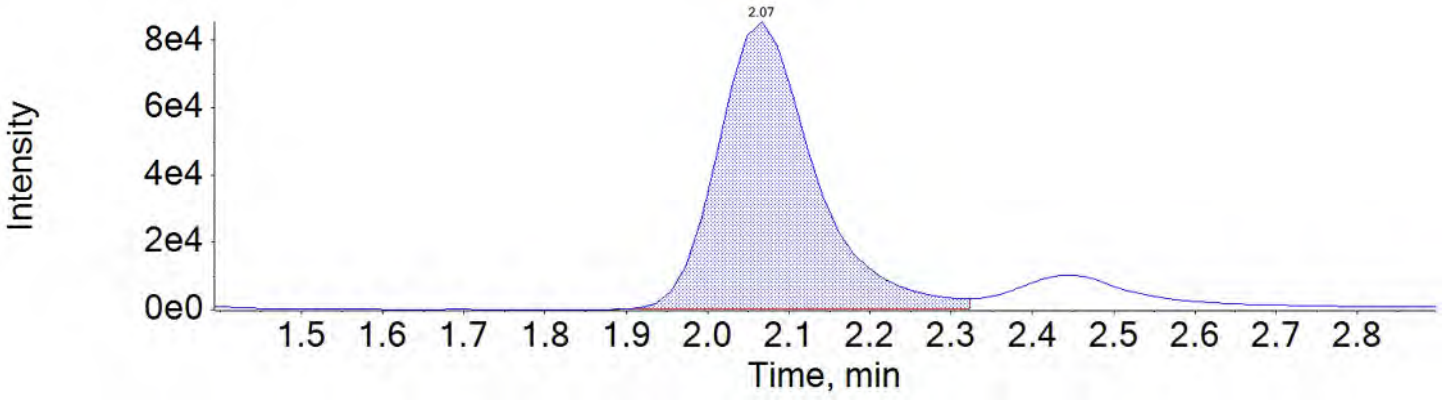
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

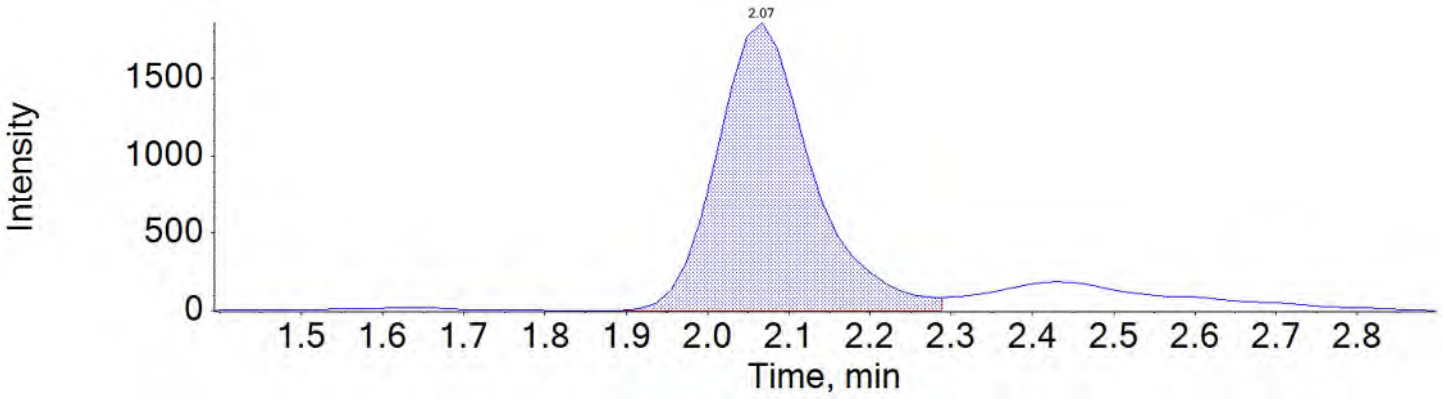


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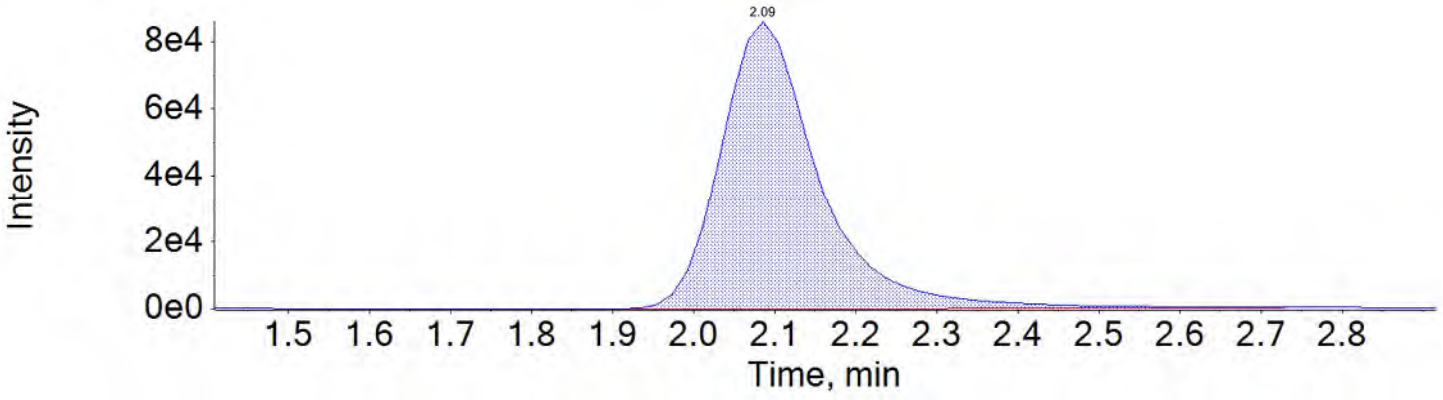
Chromatogram Report

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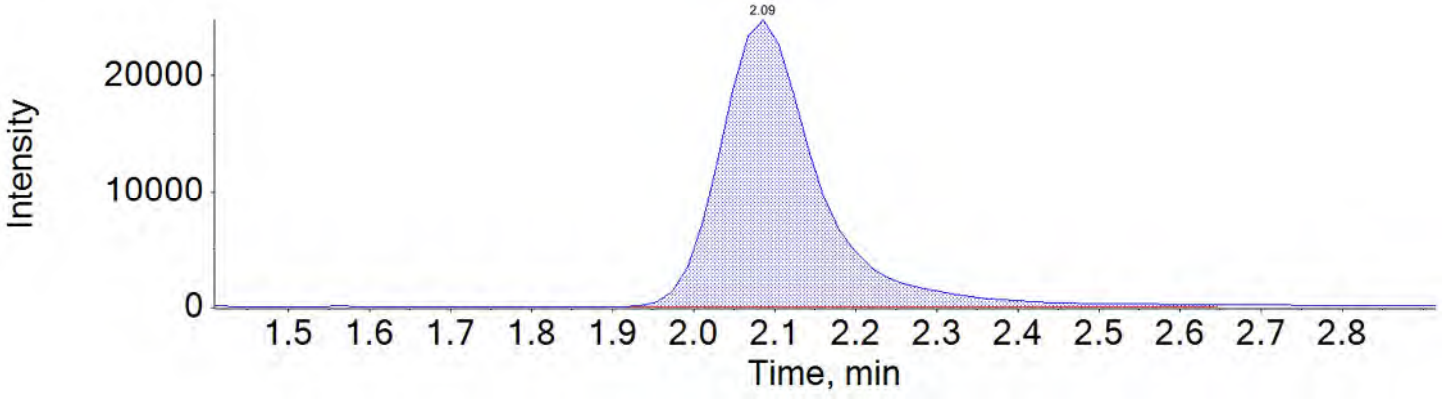
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

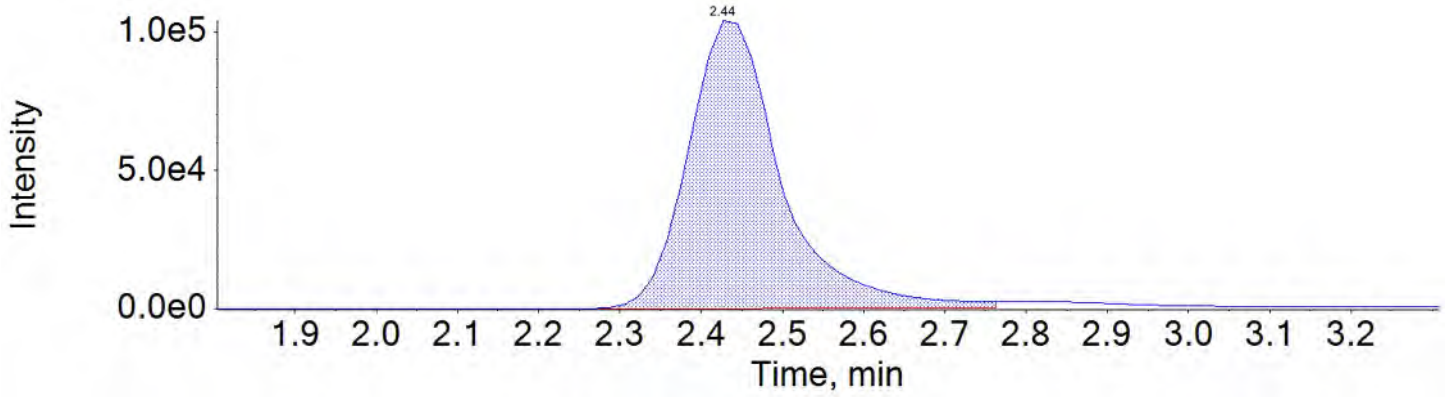


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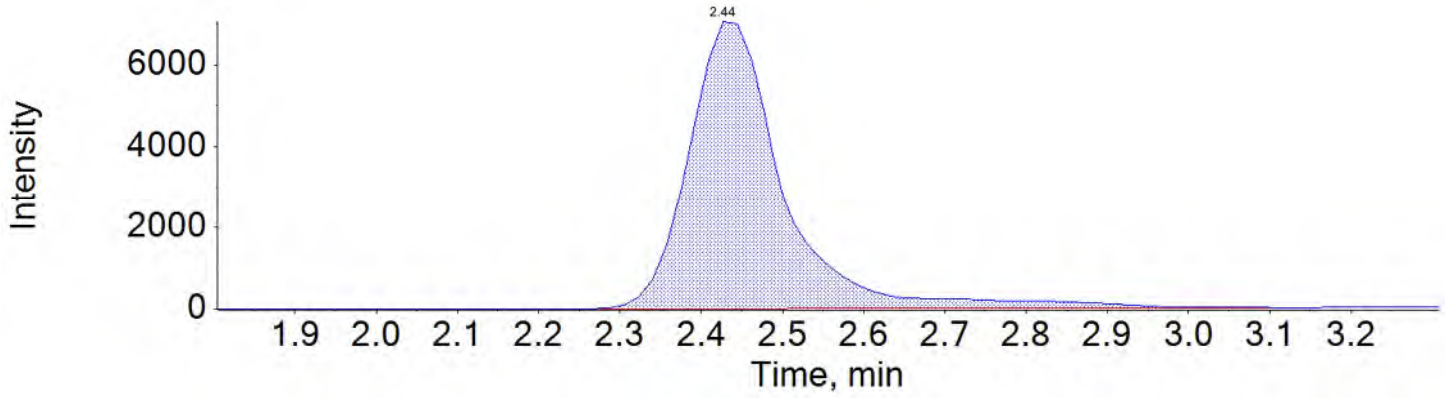
Chromatogram Report

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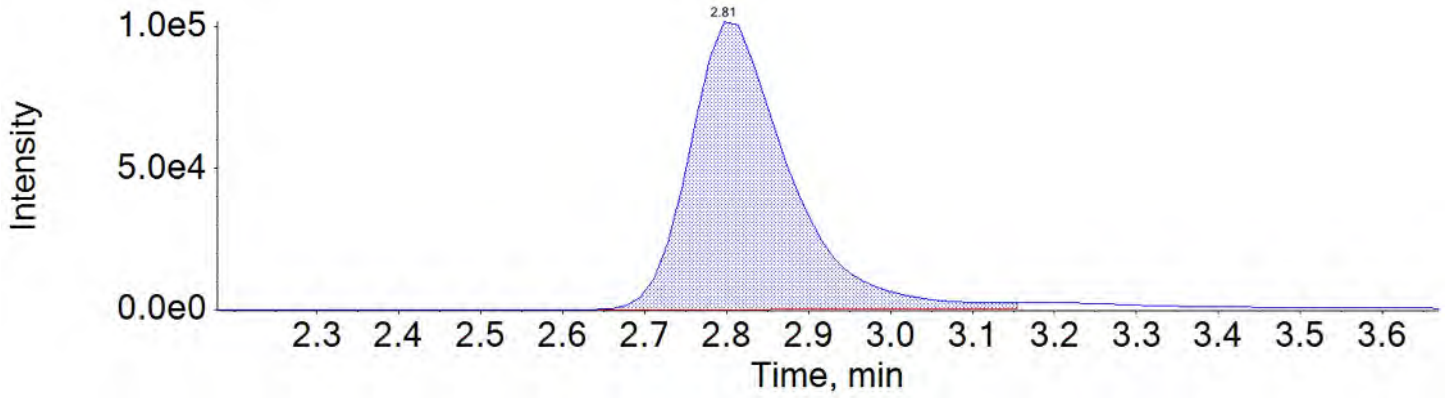
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

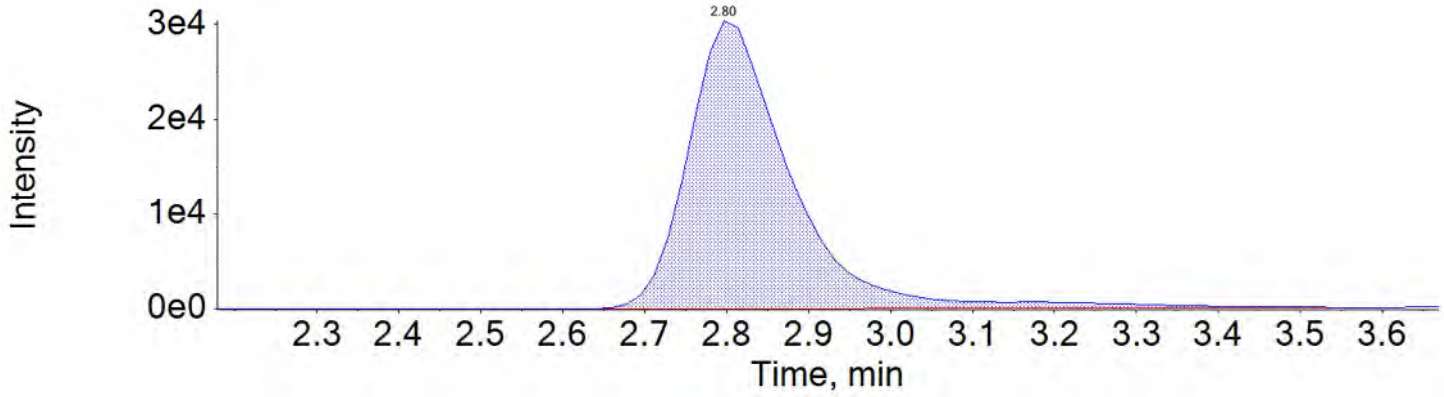


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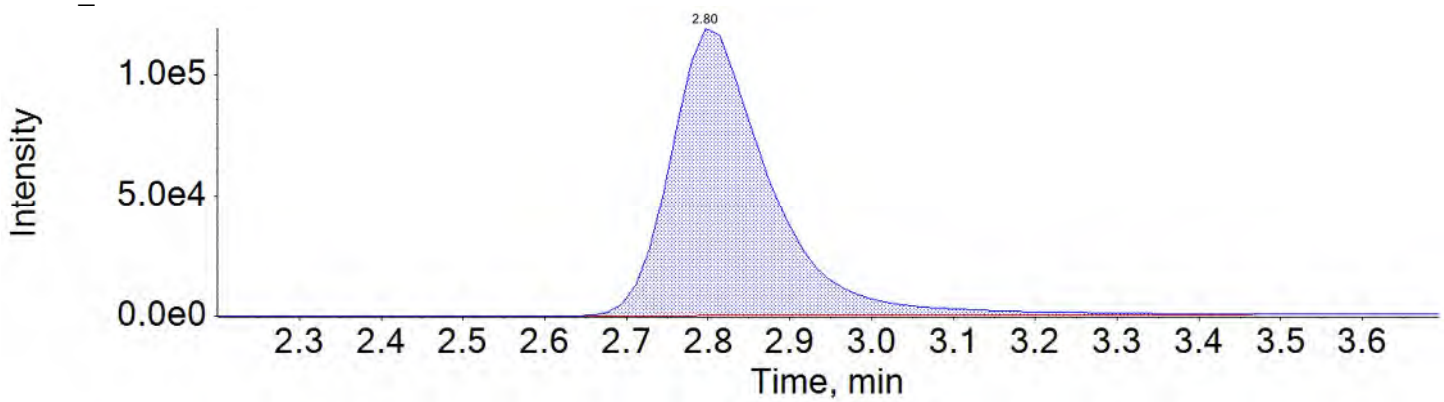
Chromatogram Report

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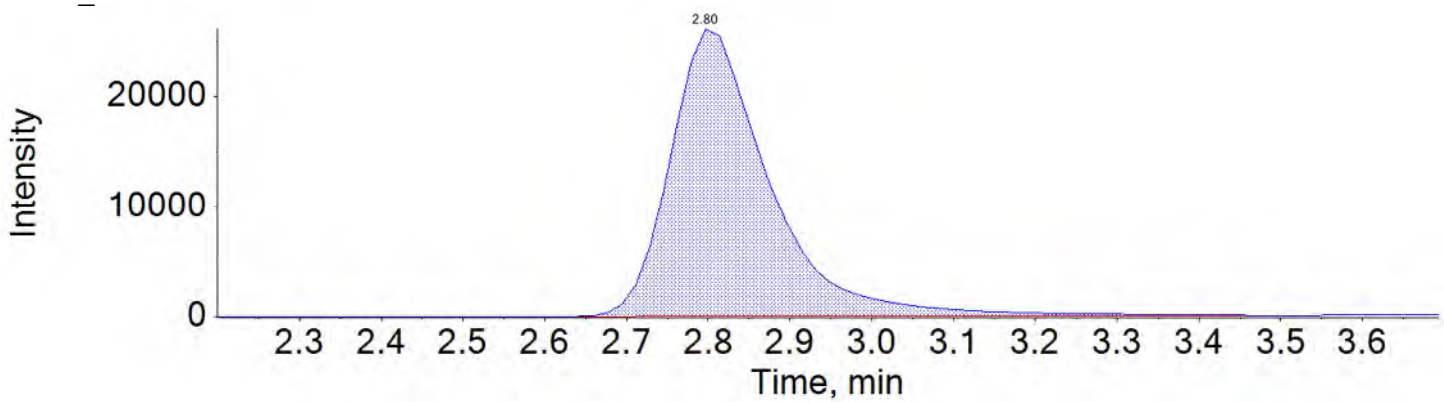
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

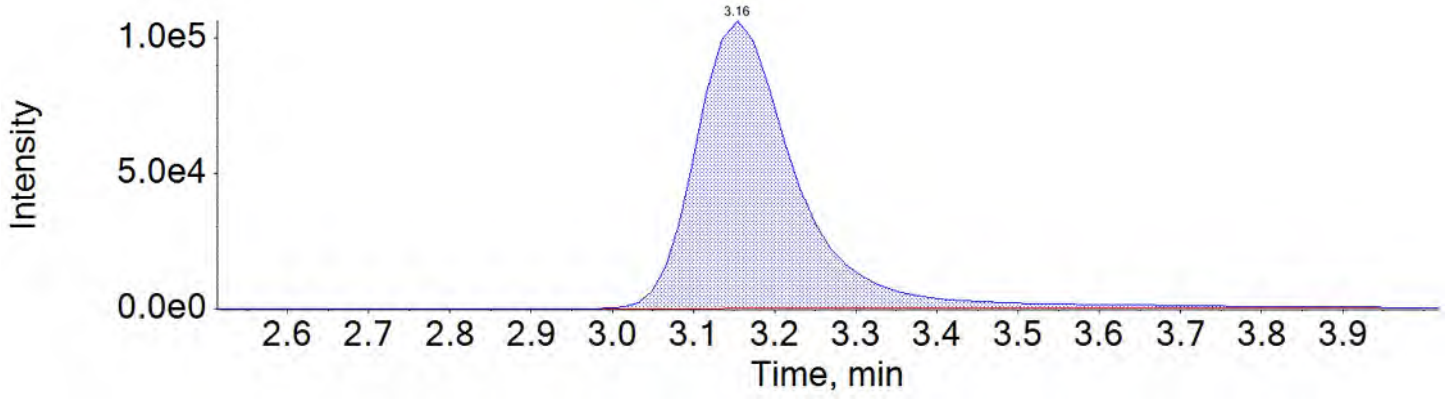


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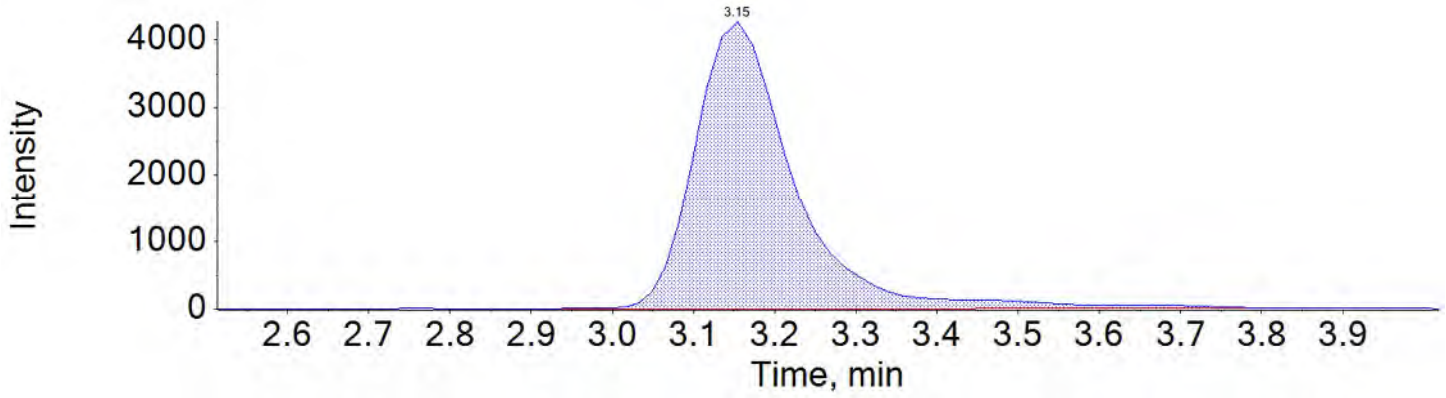
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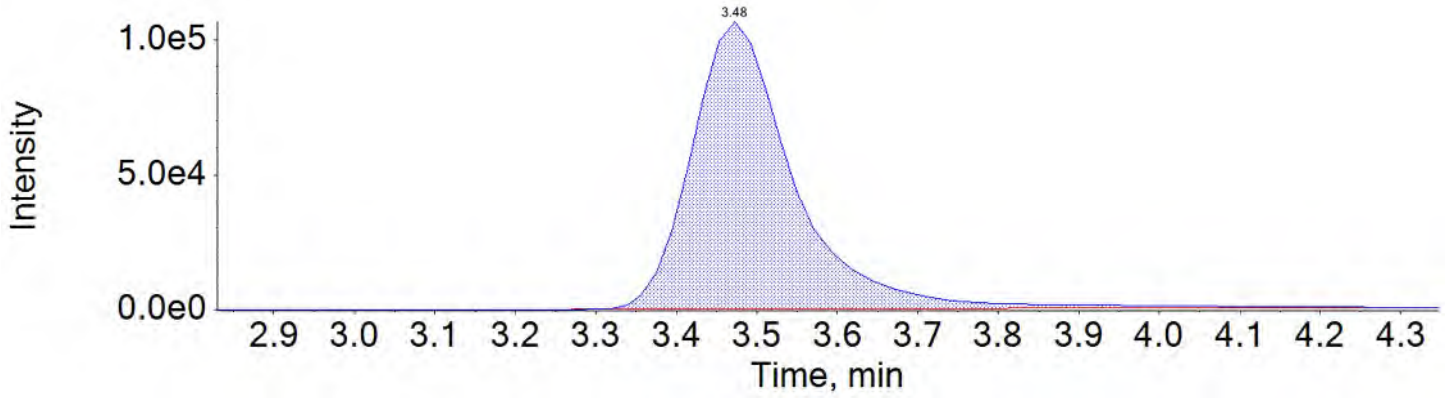
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PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

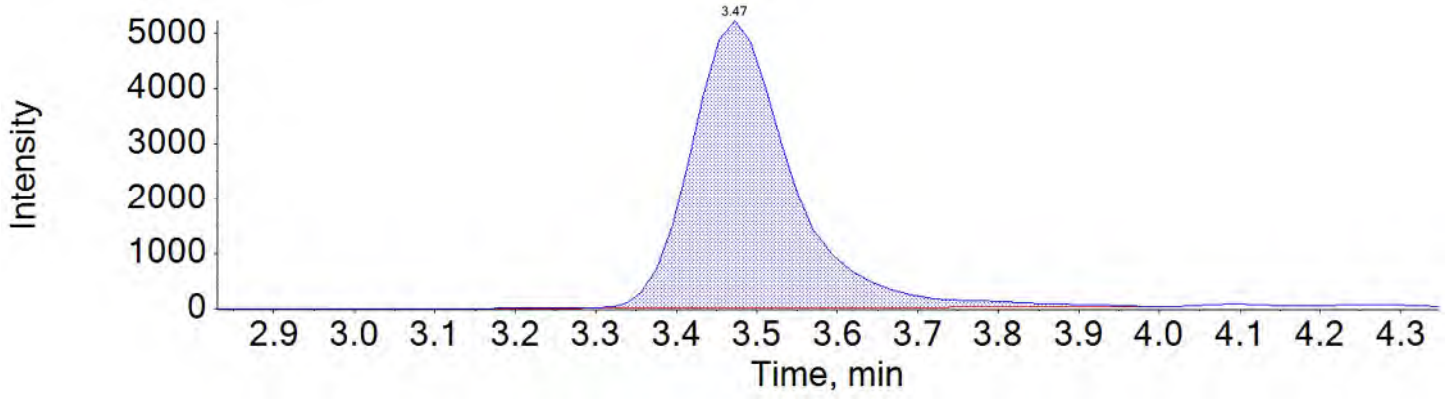


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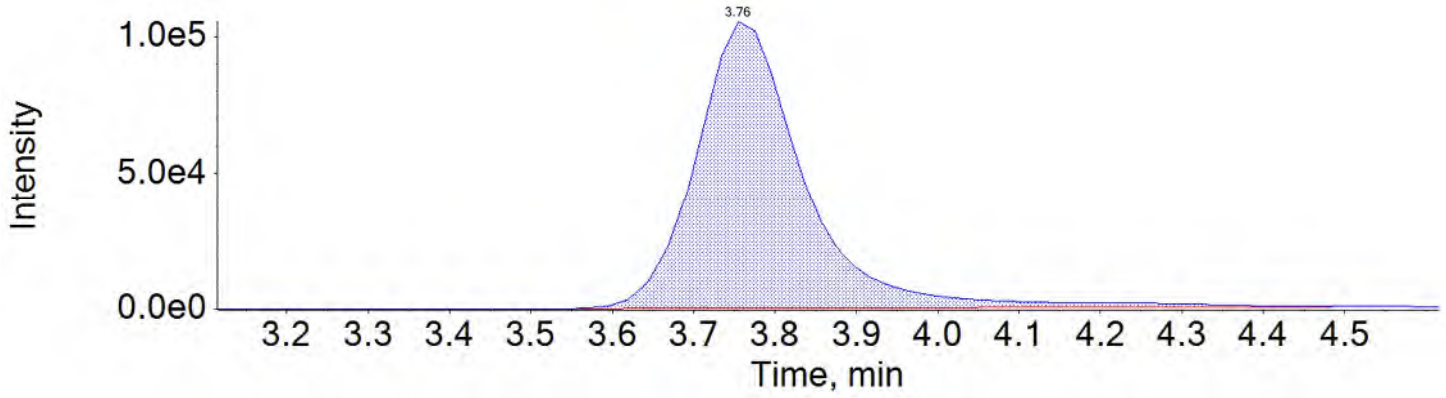
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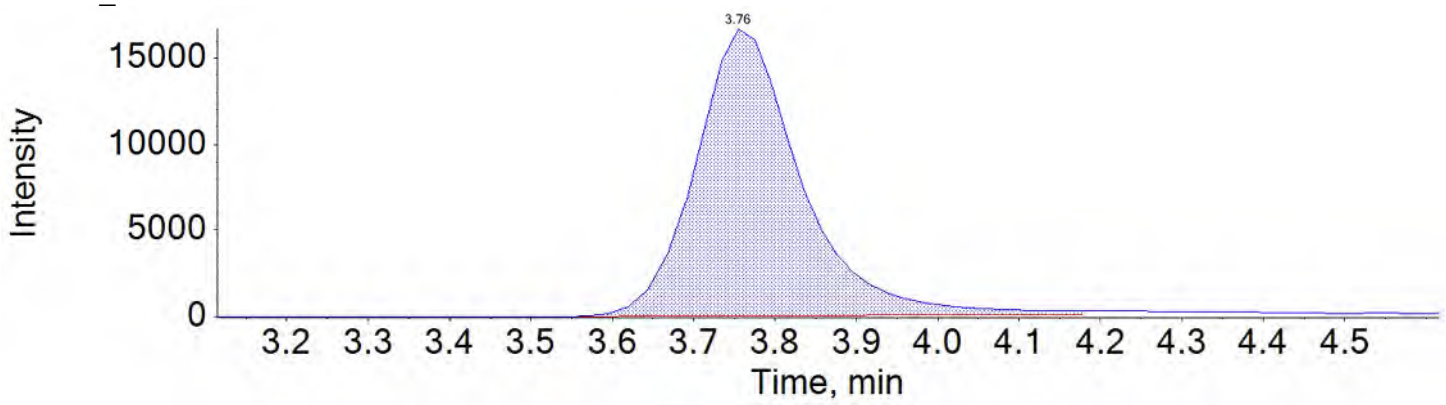
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PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

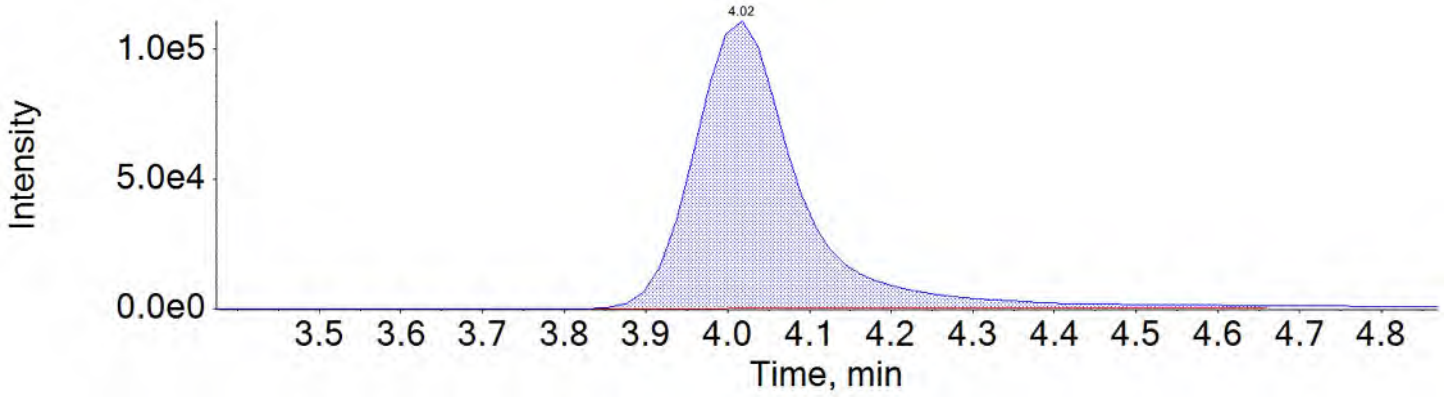


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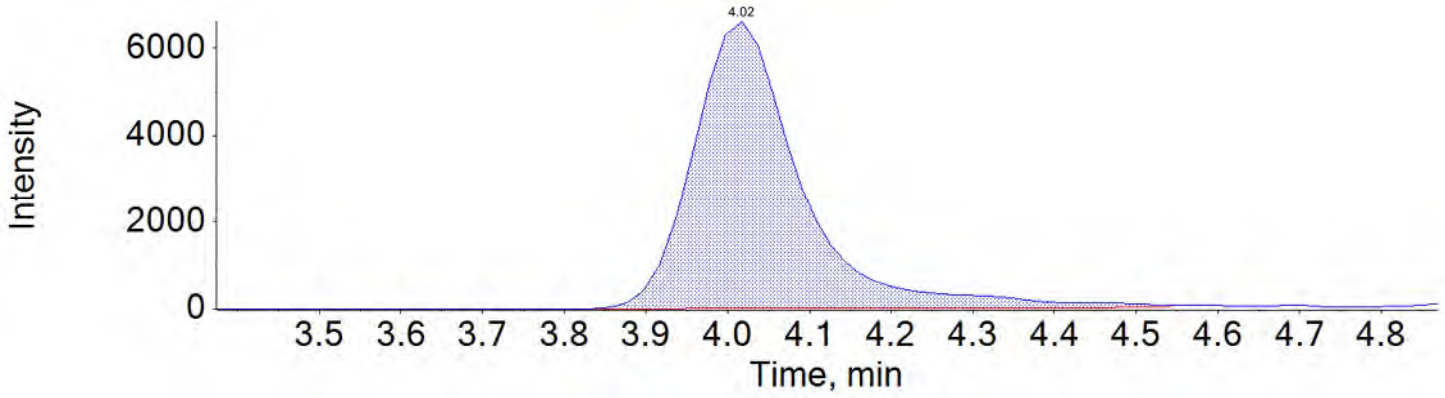
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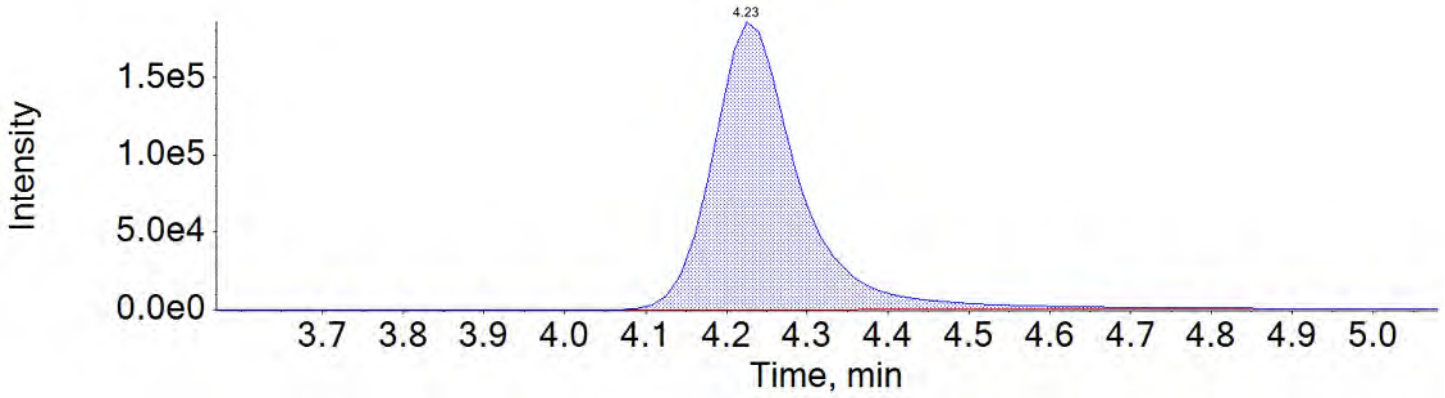
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

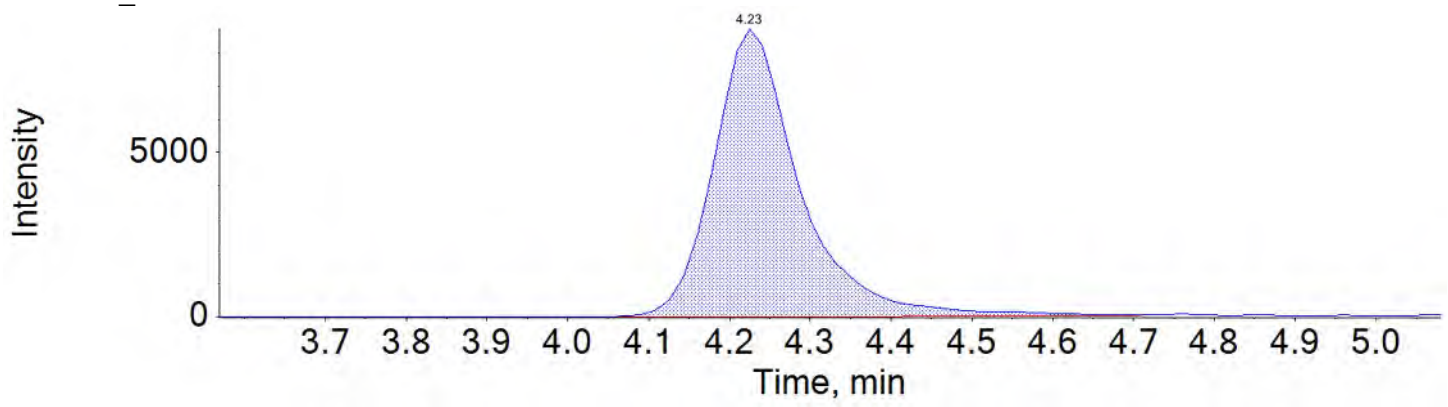


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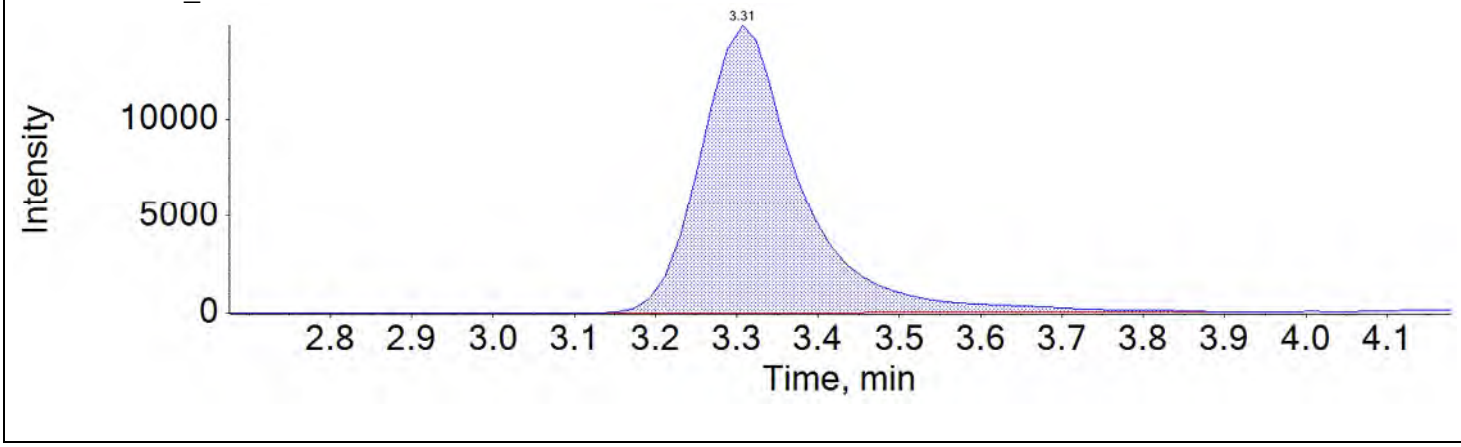
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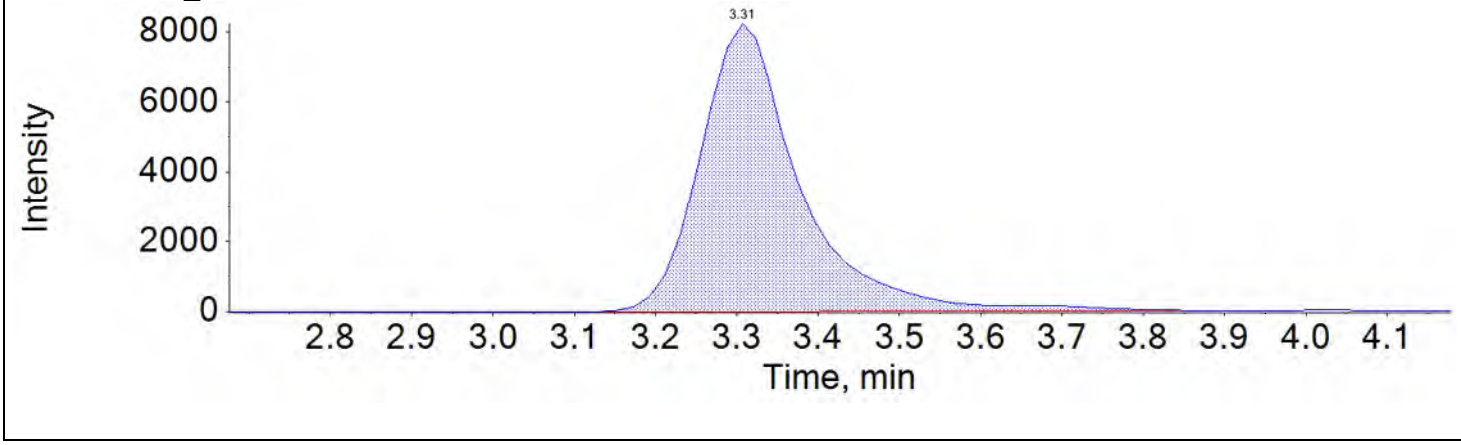
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



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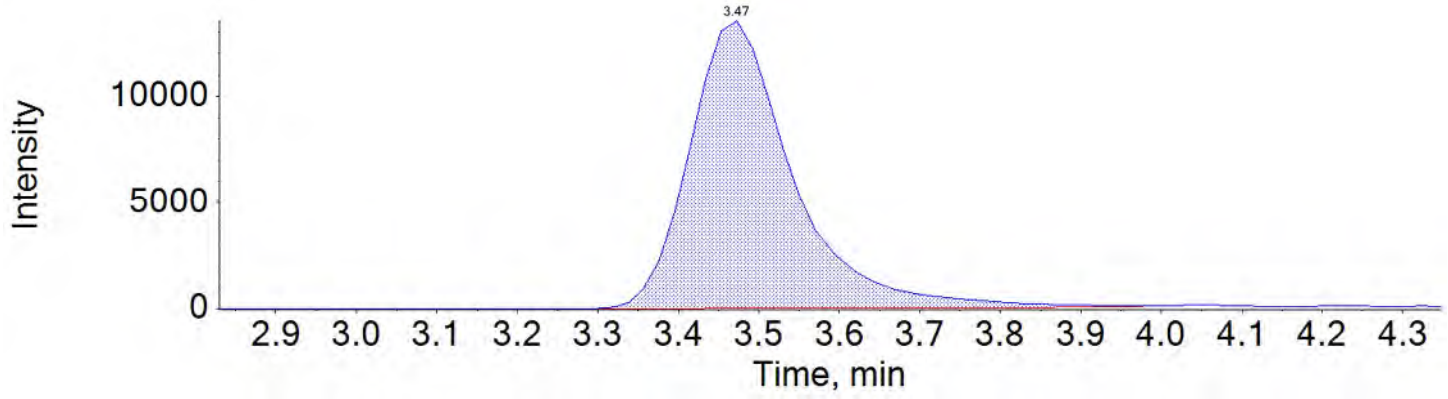


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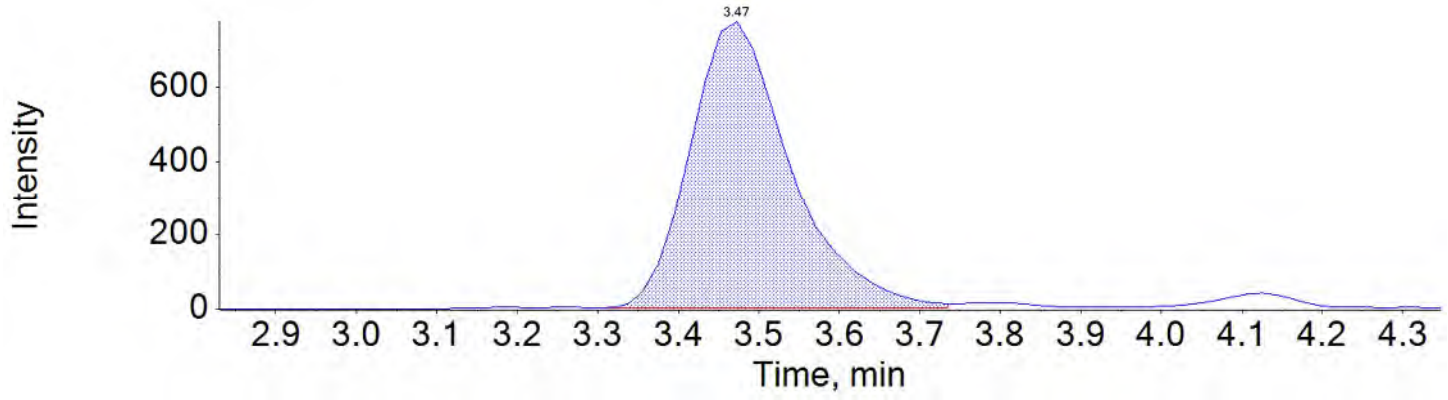
Chromatogram Report

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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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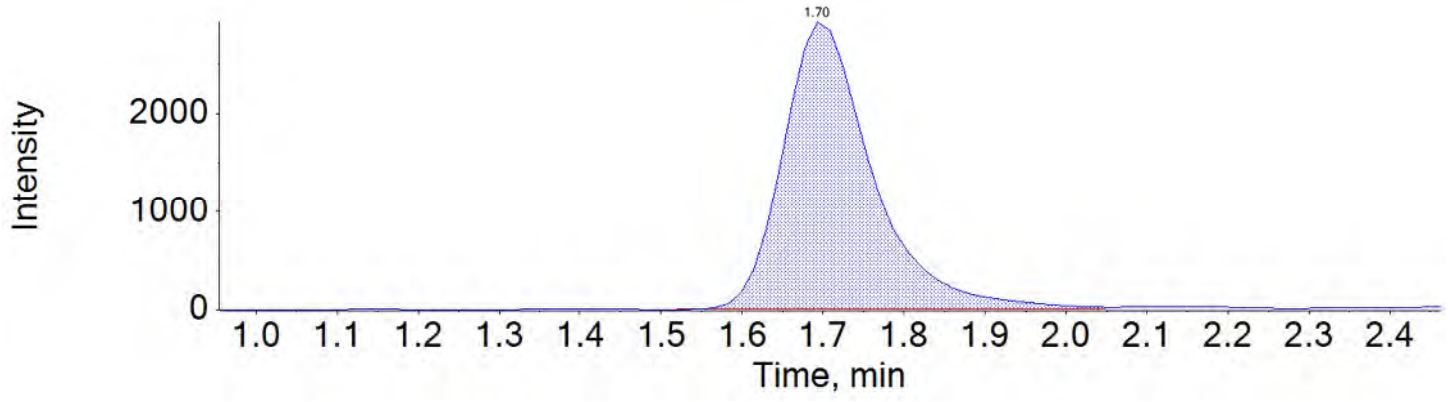
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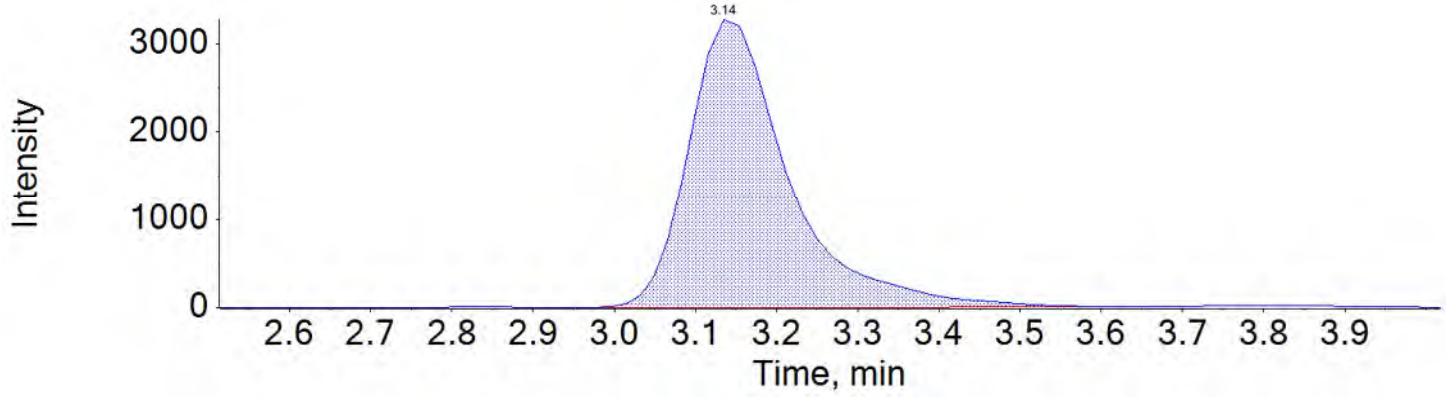
Sample Name	CQ775LCS-FS(0)	**Injection Vial**	16
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:44:30	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

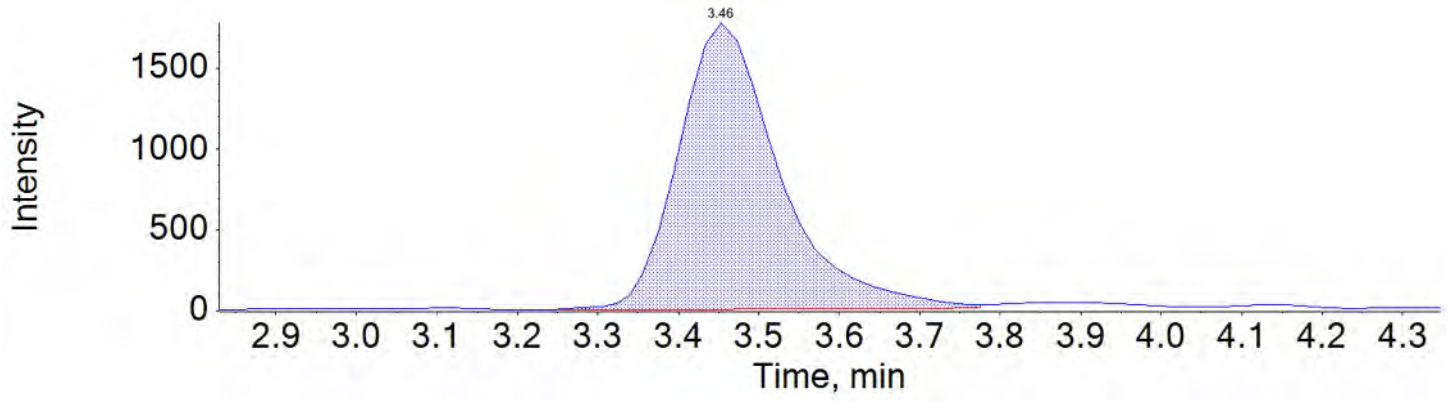


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d5-EtFOSAA 589.0 / 419.0



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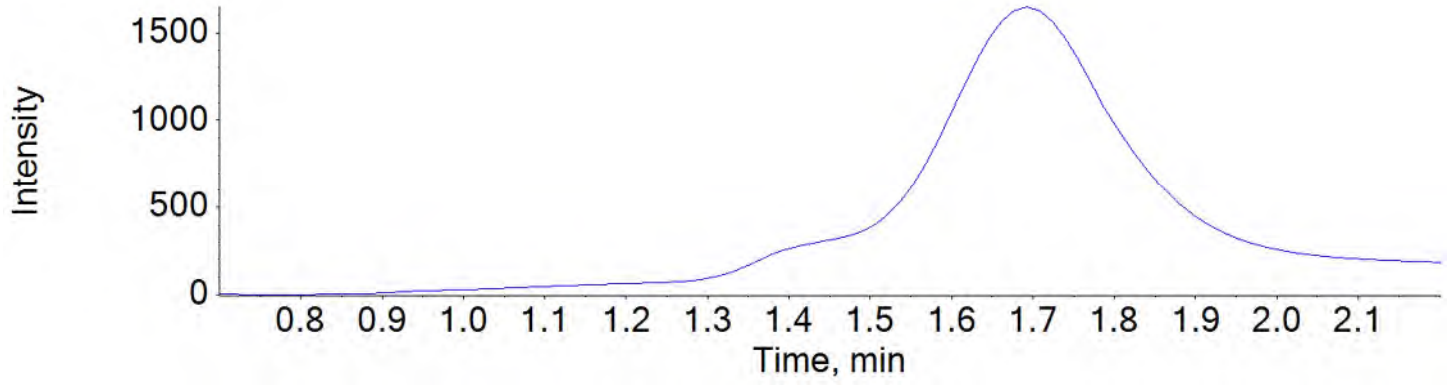
Chromatogram Report

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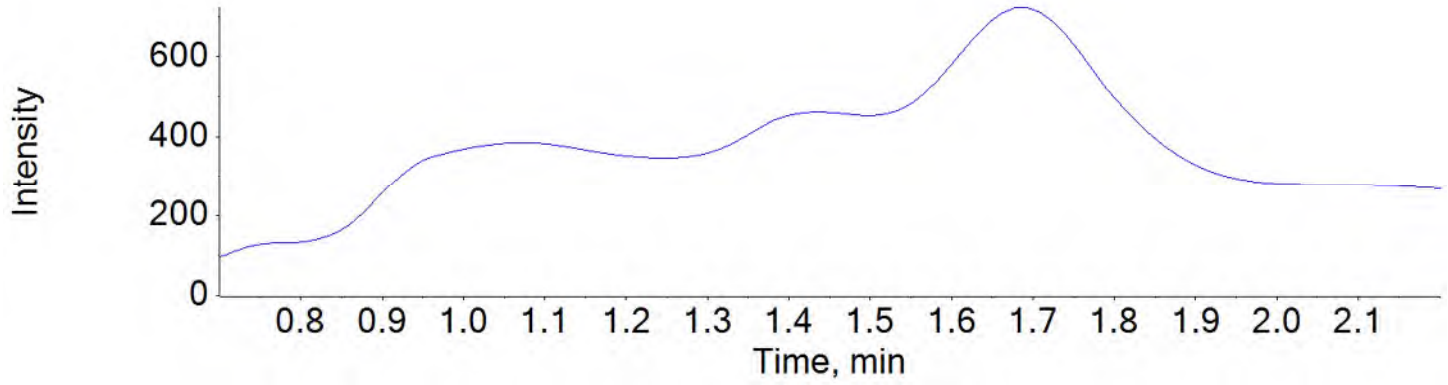
Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

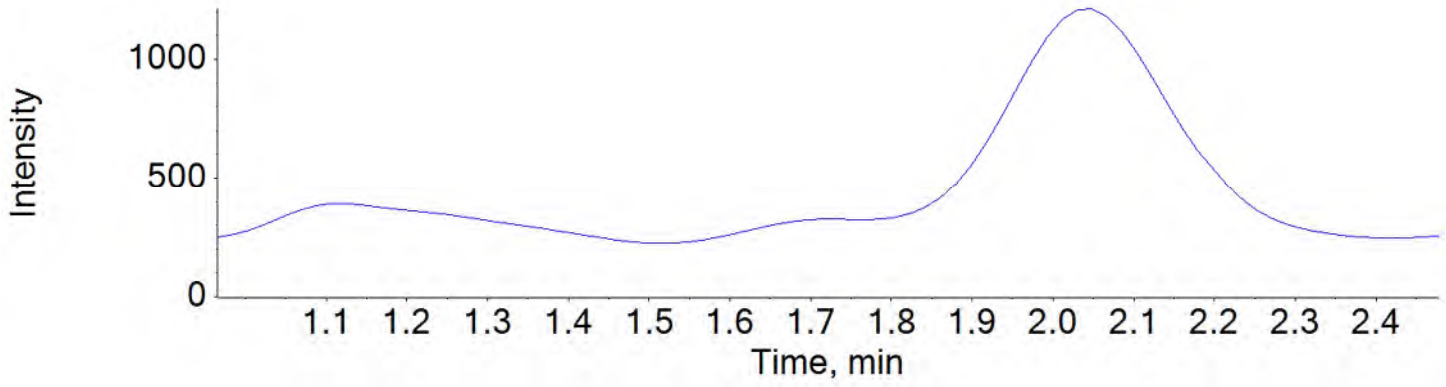


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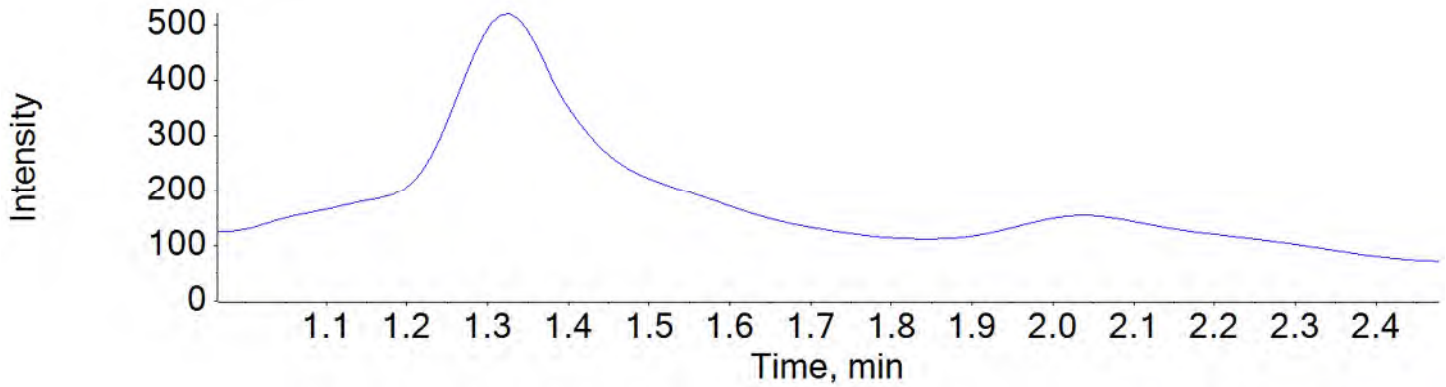
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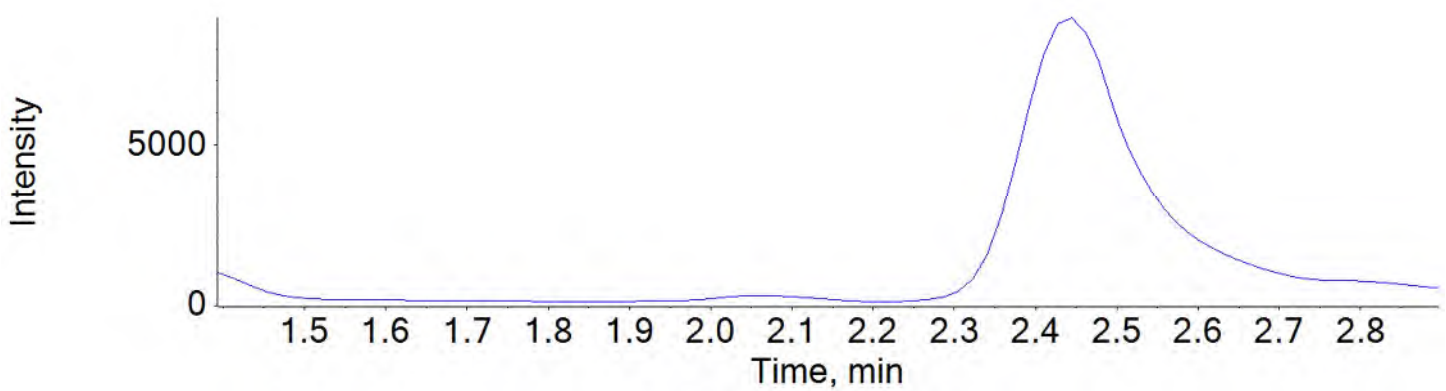
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PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

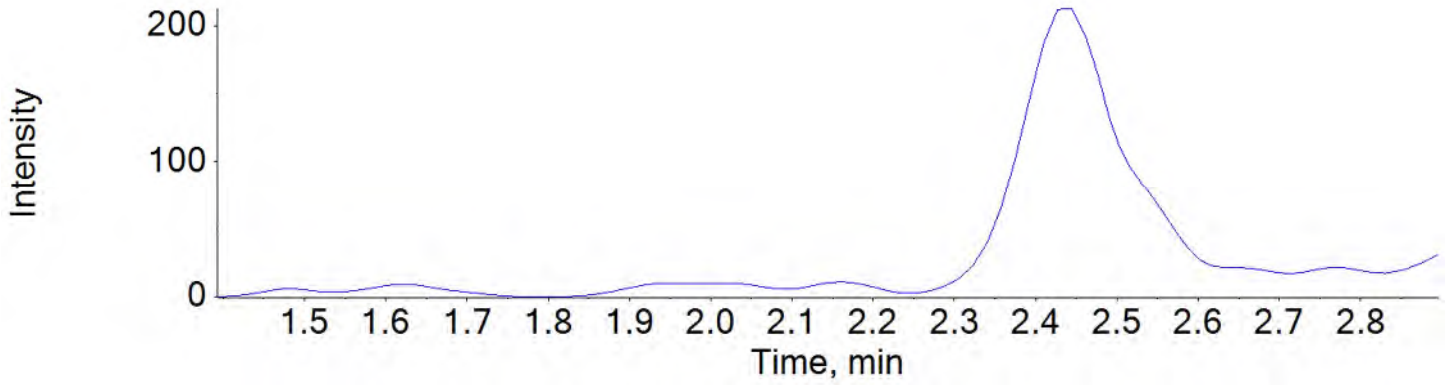


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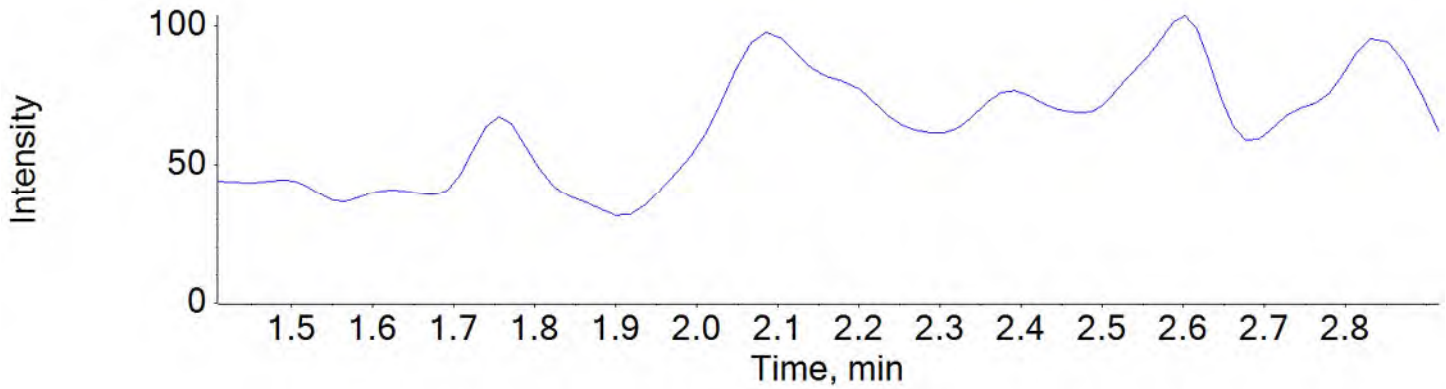
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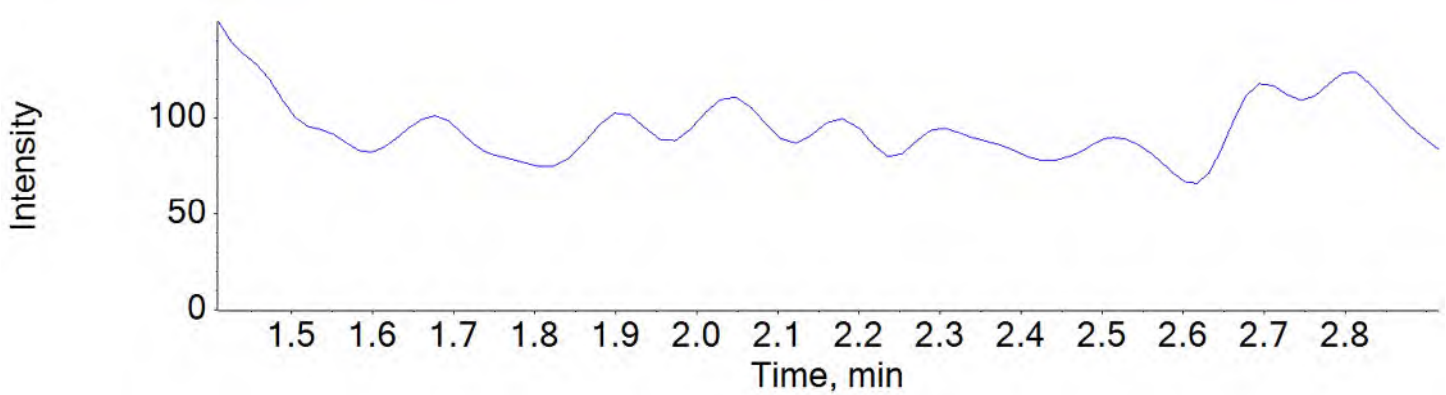
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

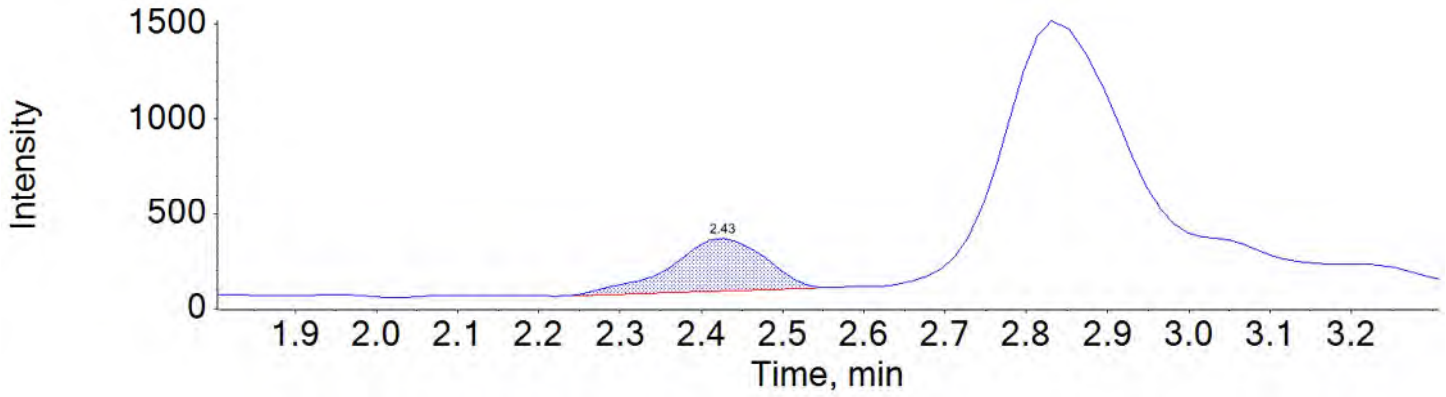


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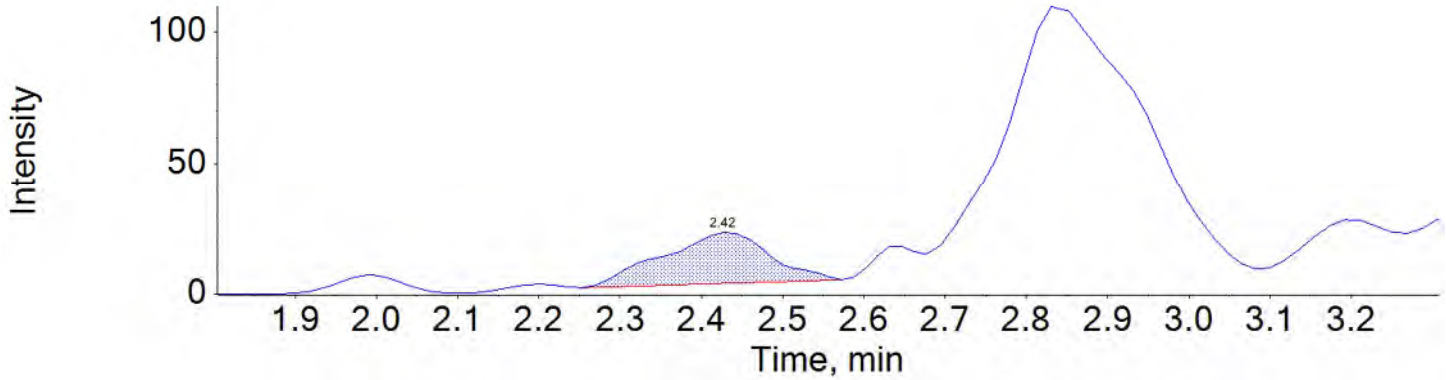
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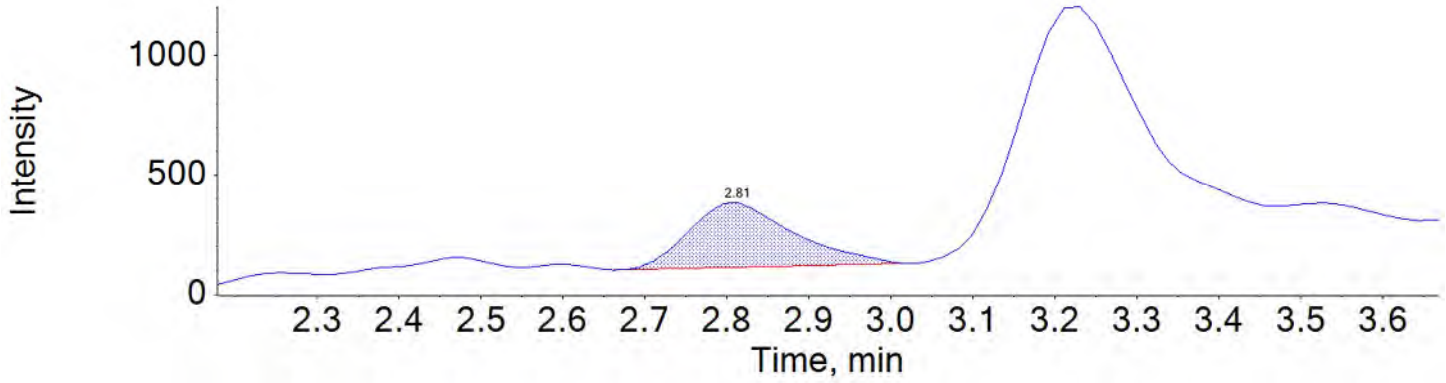
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PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

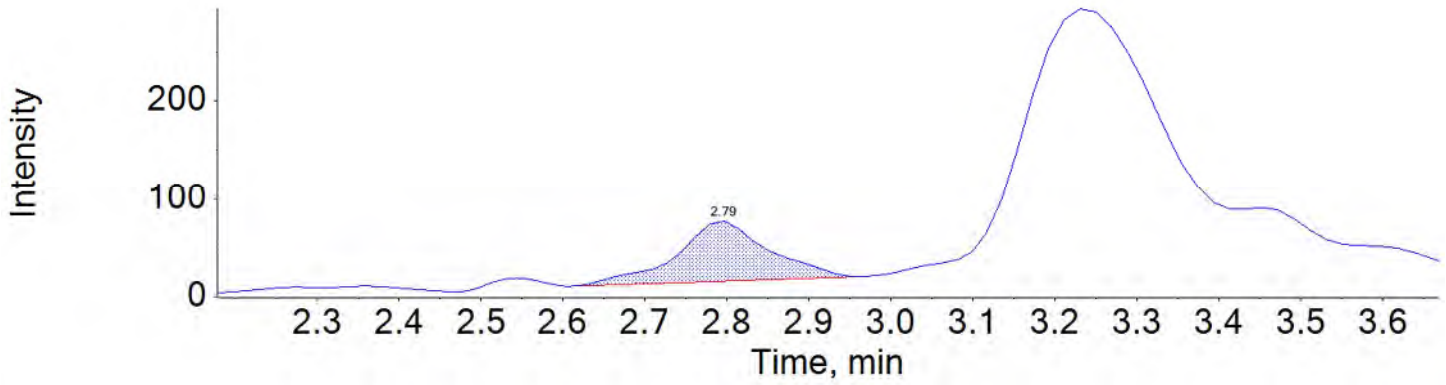


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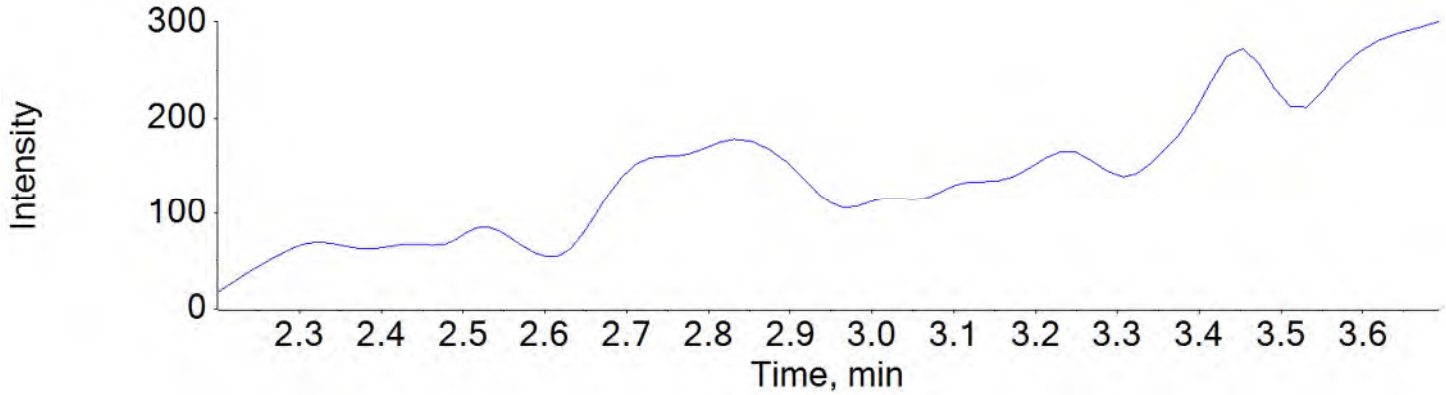
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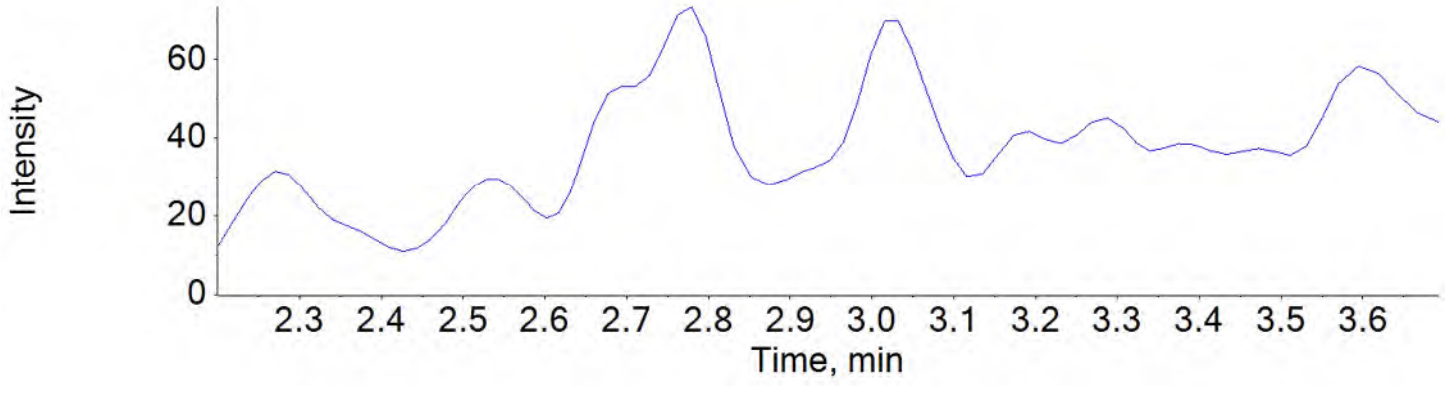
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

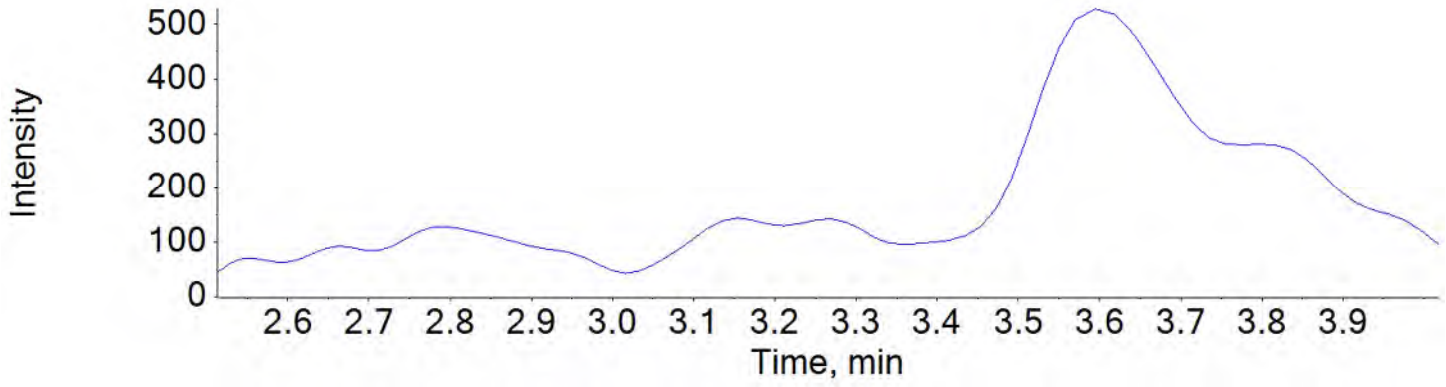


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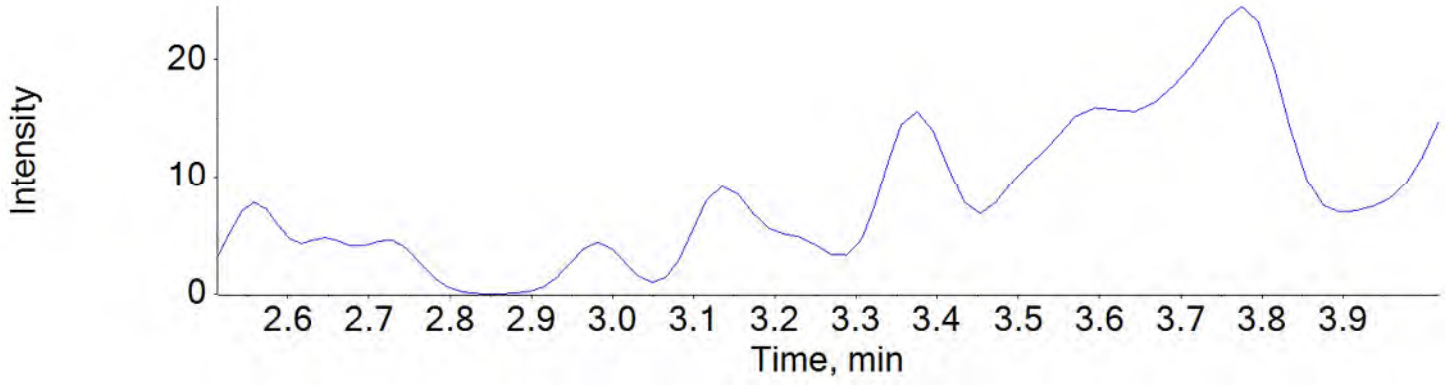
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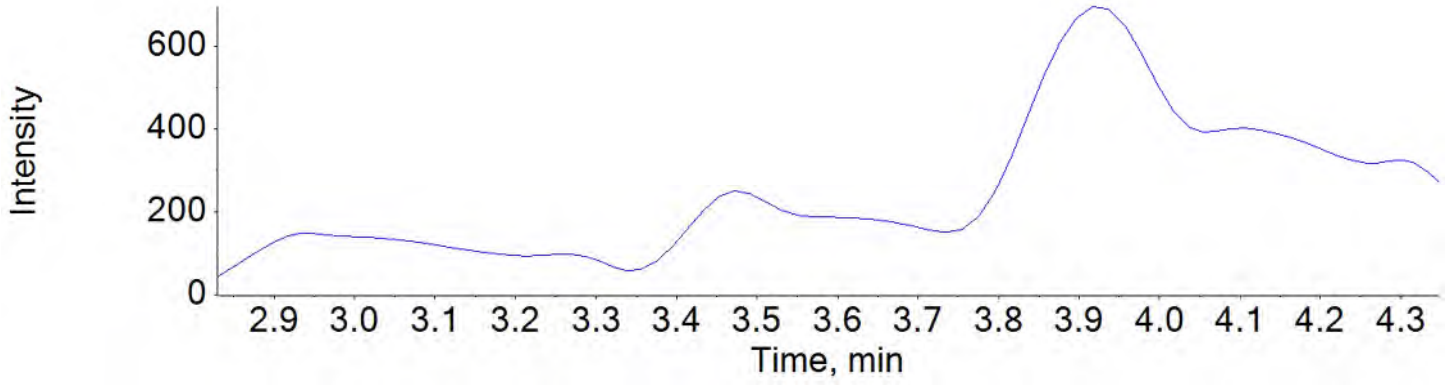
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PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

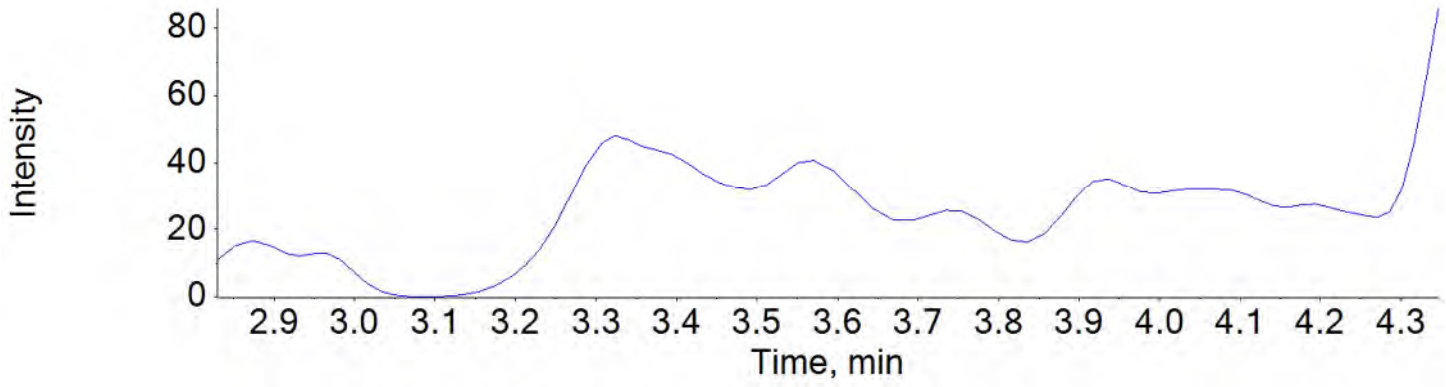


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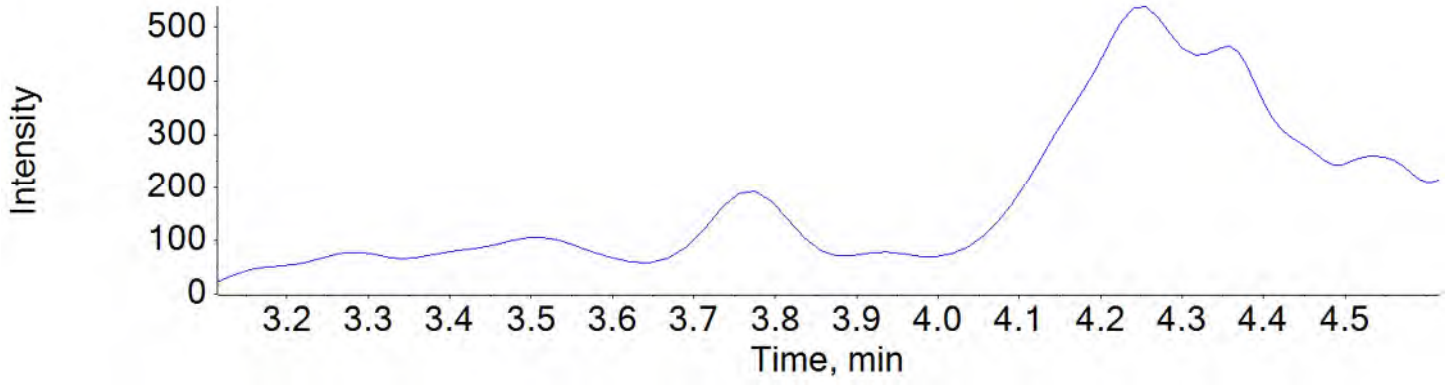
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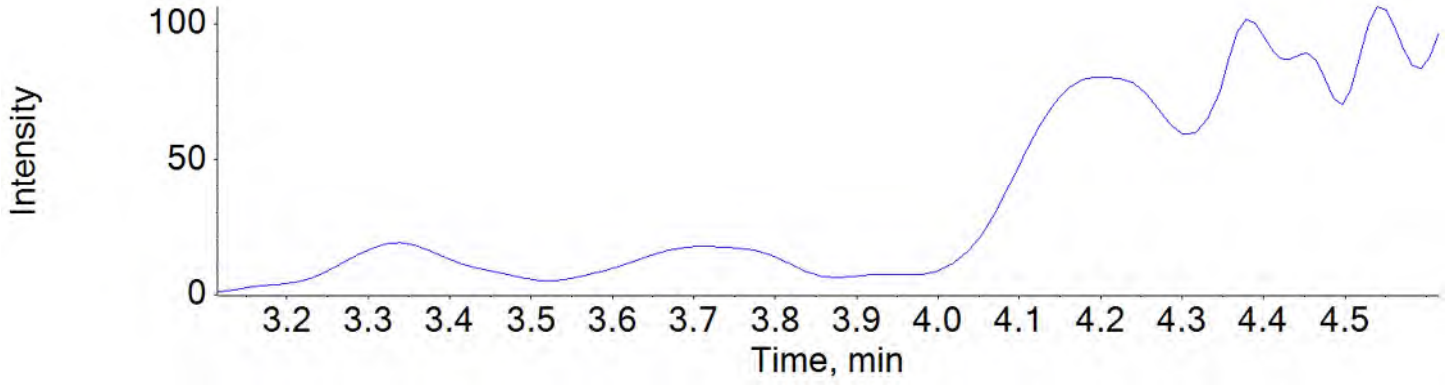
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PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

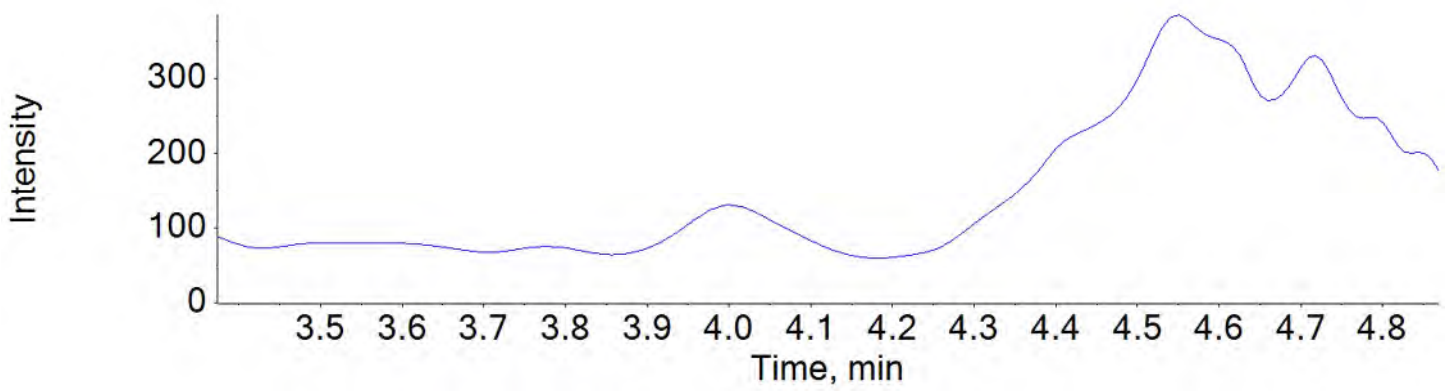


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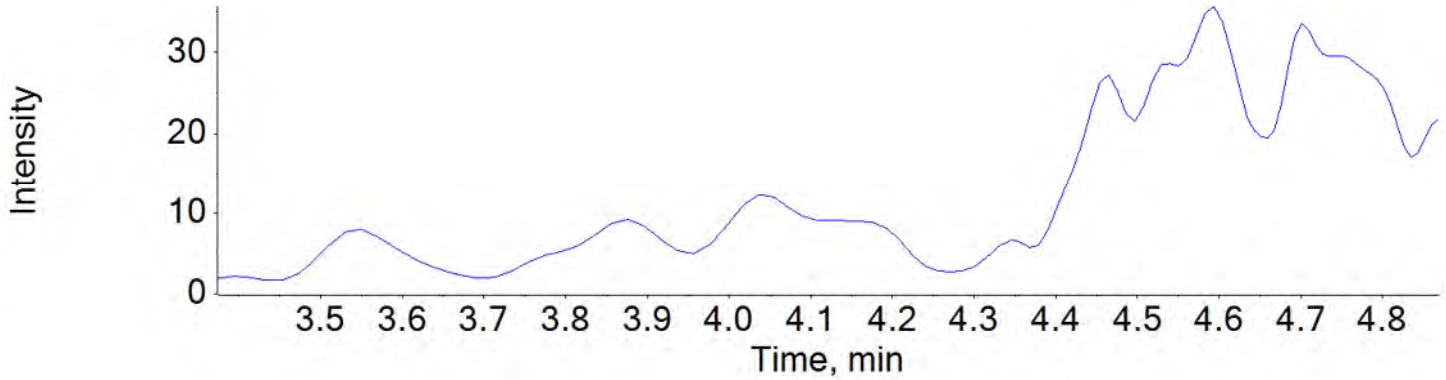
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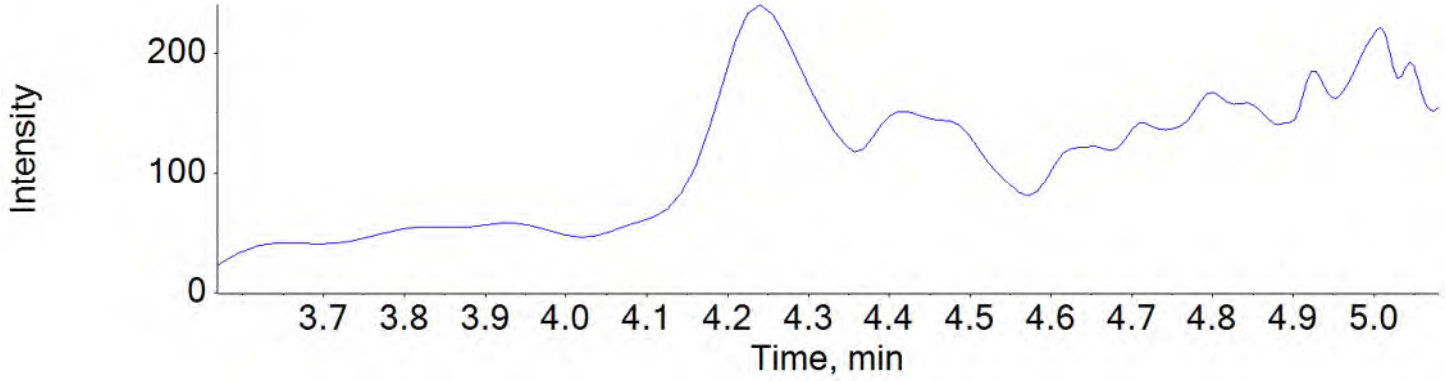
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

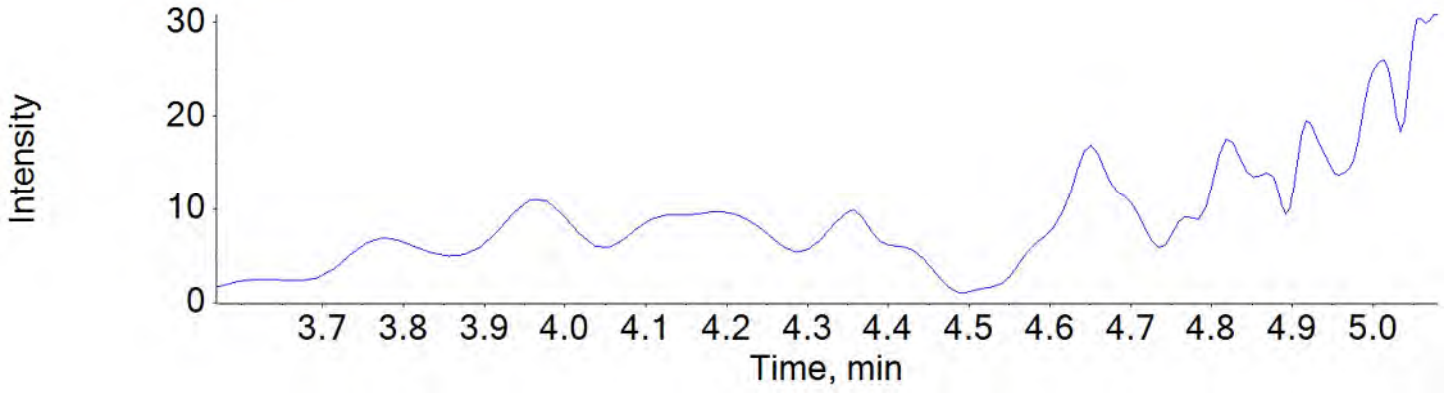


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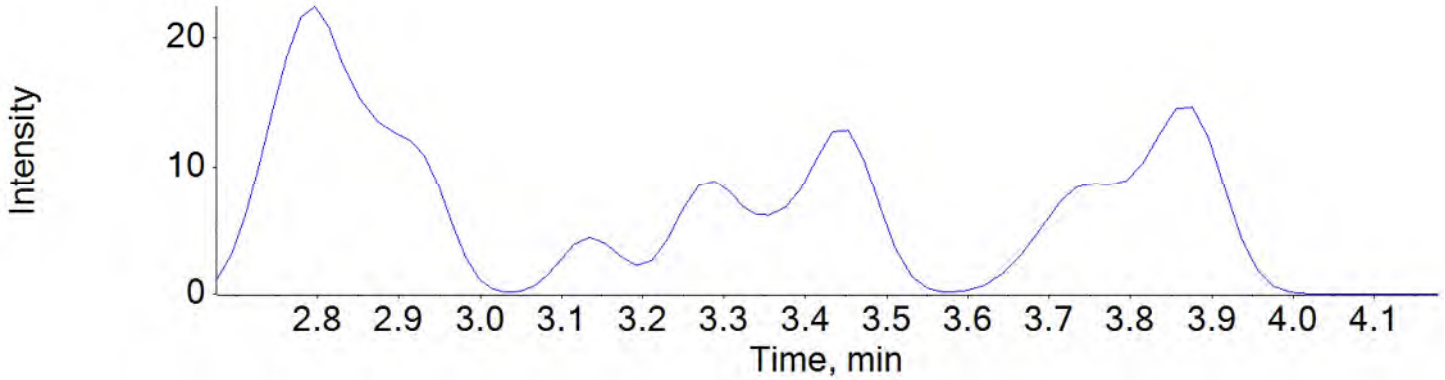
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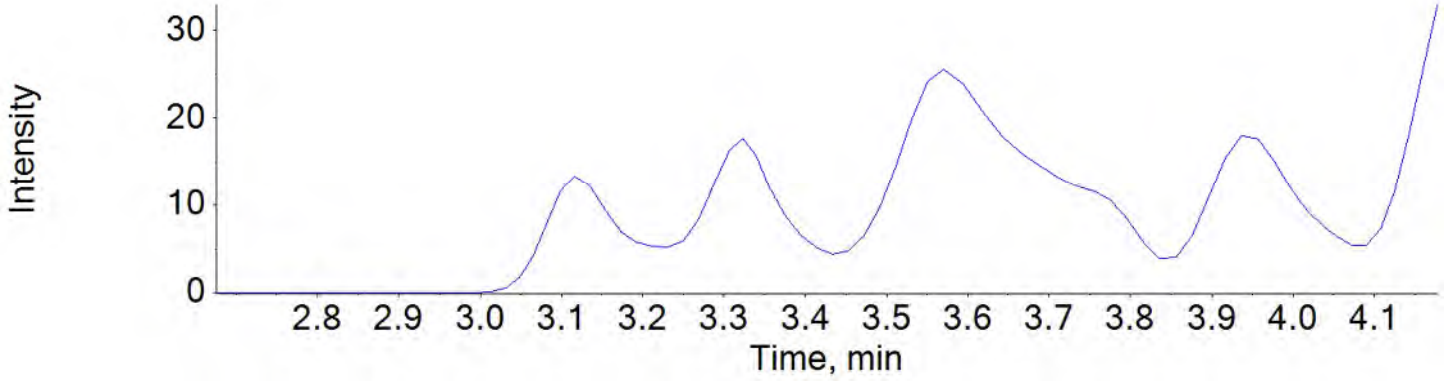
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



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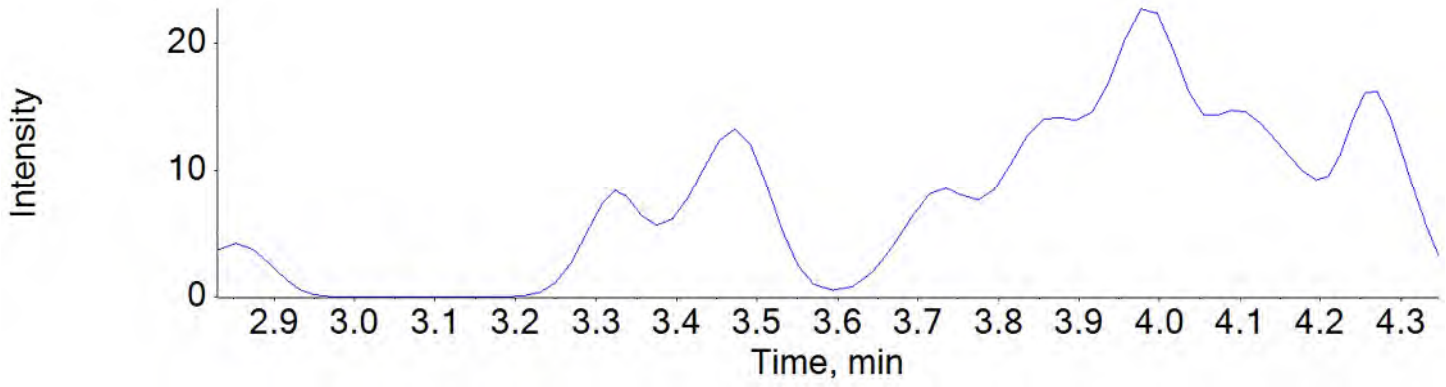


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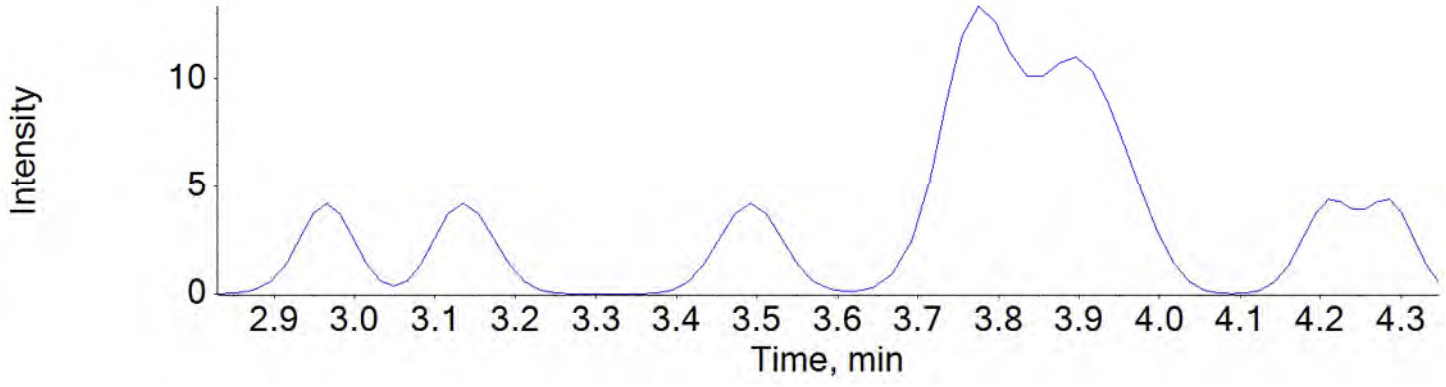
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

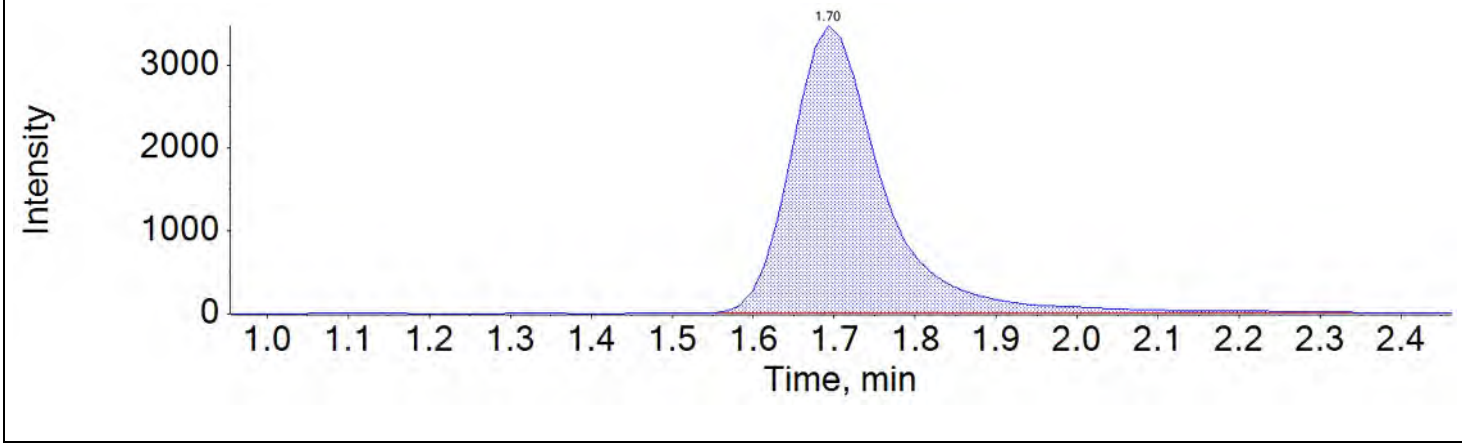
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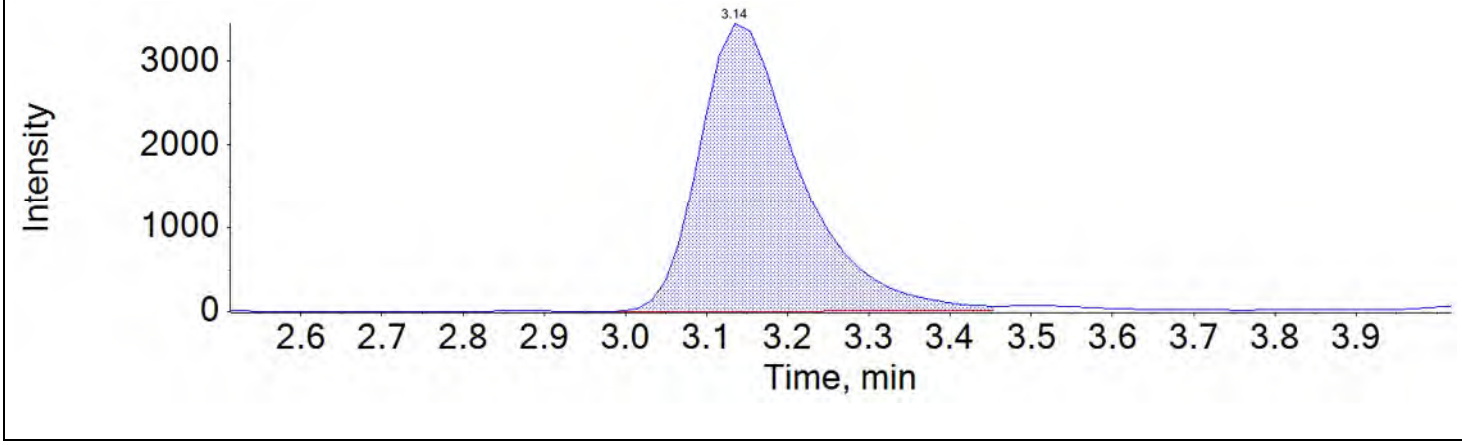
Sample Name	J6149-FS(0)	**Injection Vial**	17
Sample ID	NAWC-050718-FRB-316	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T14:53:26	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

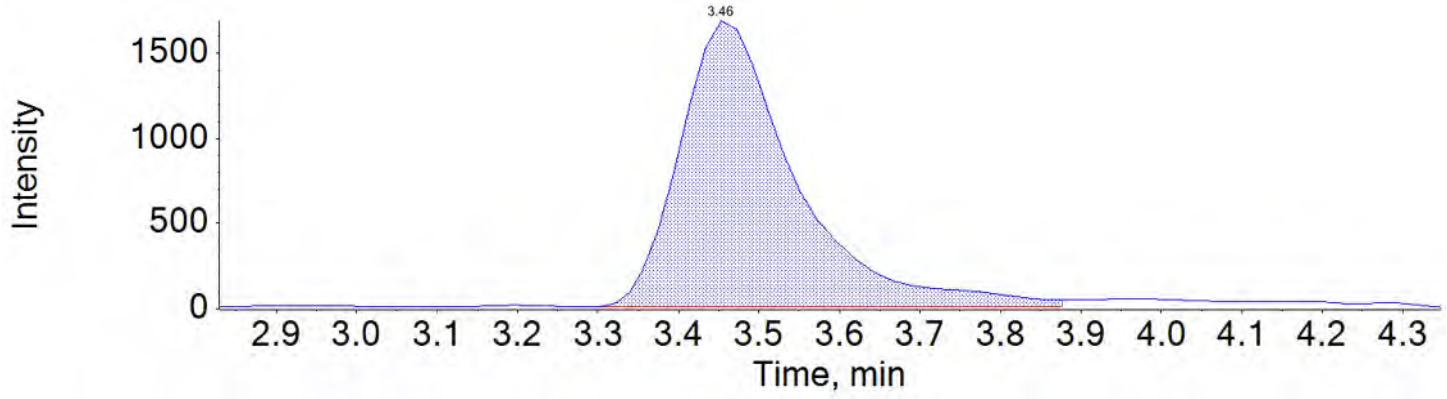


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



BATTELLE

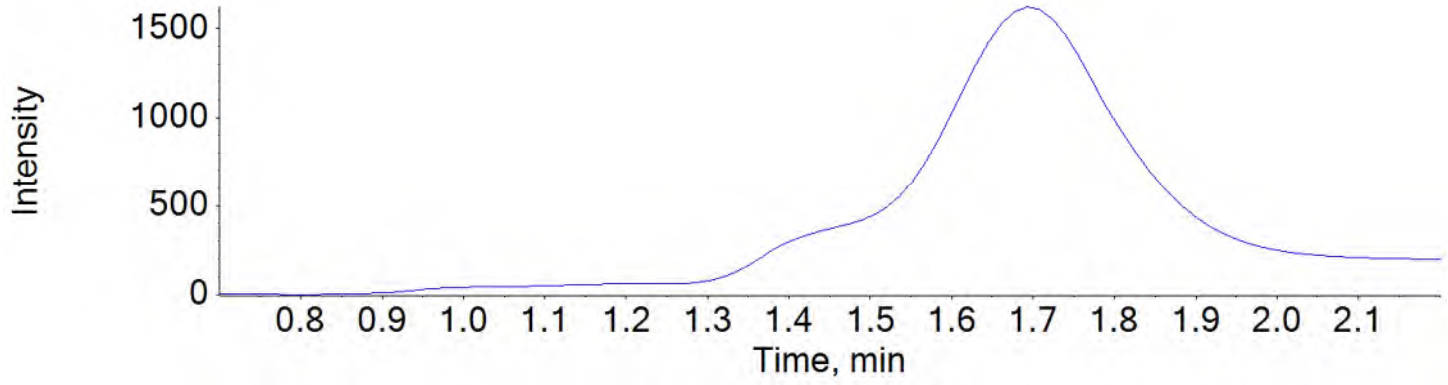
Chromatogram Report

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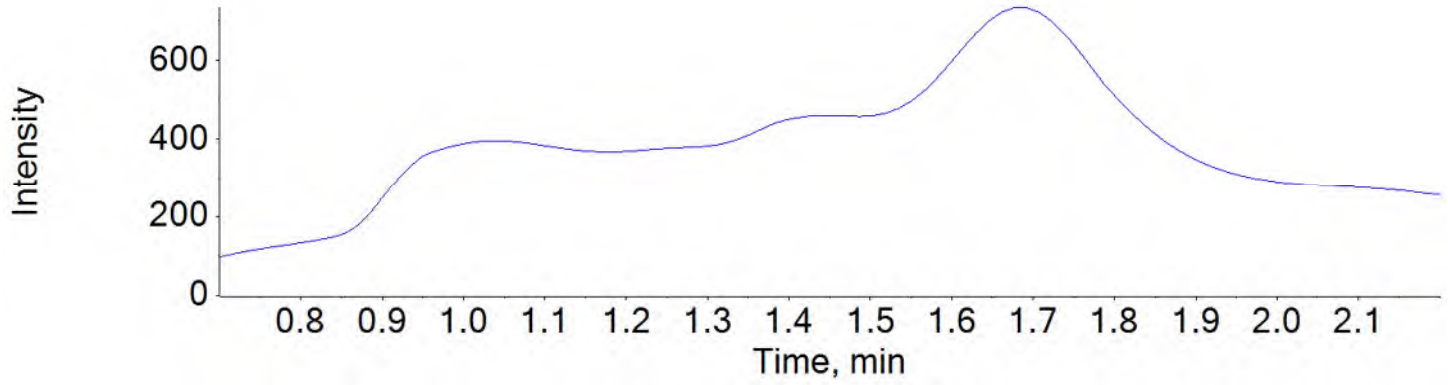
Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

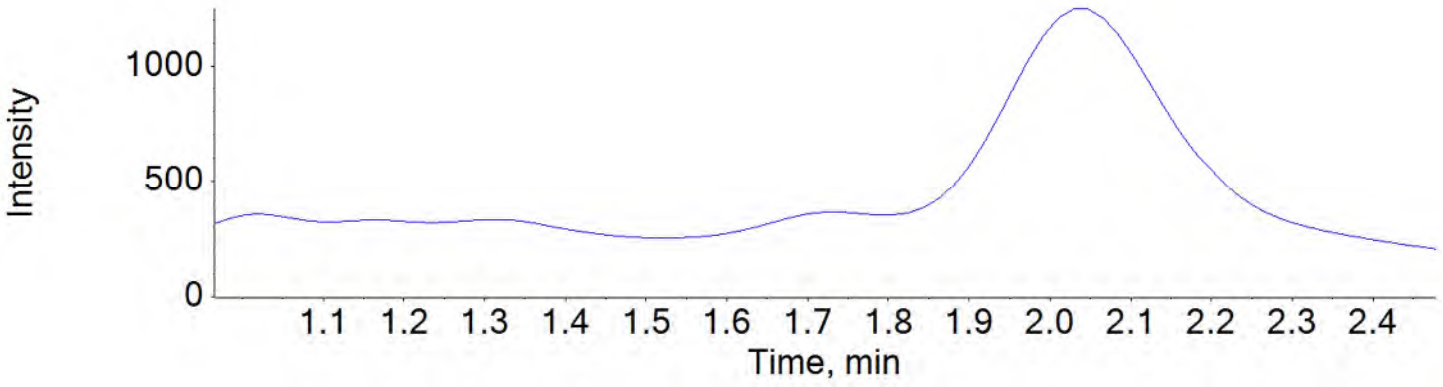


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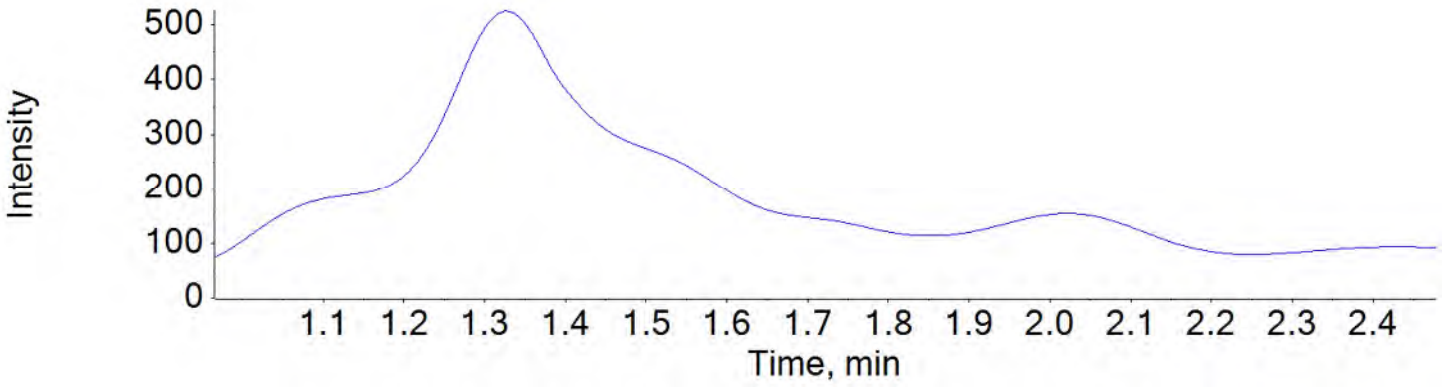
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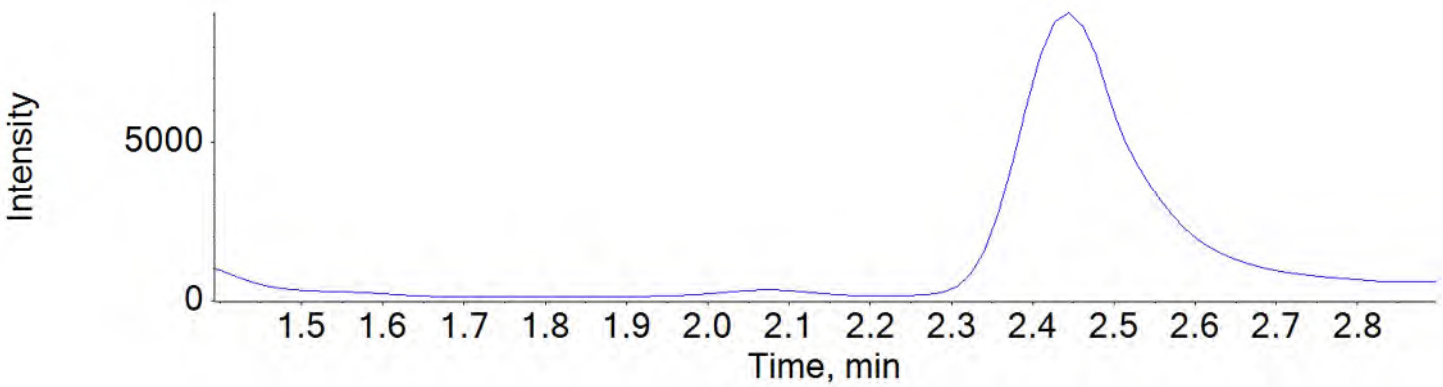
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

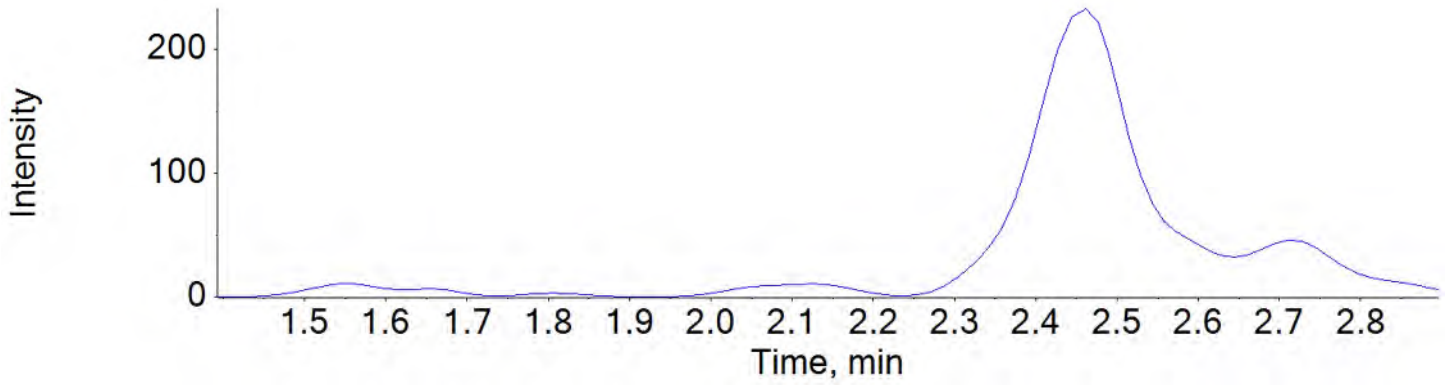


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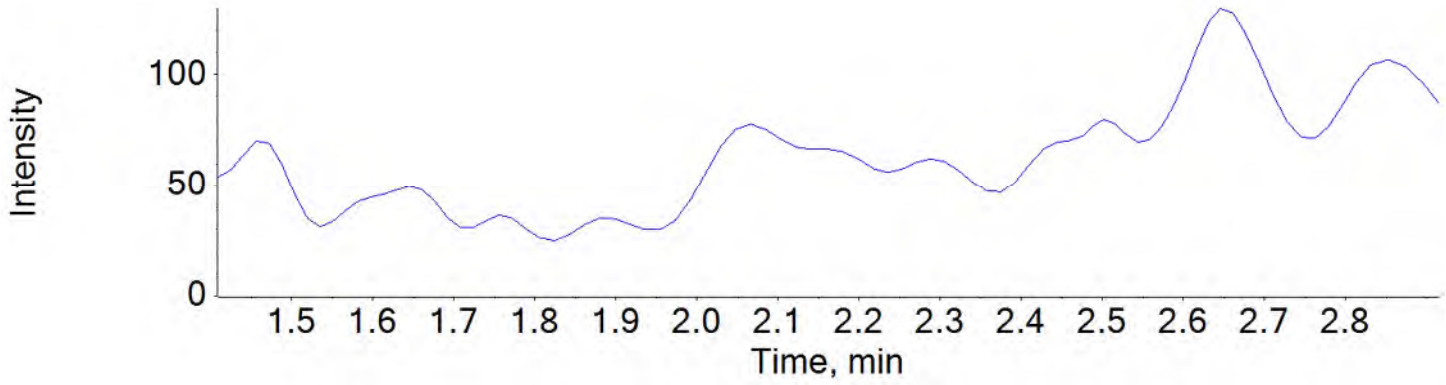
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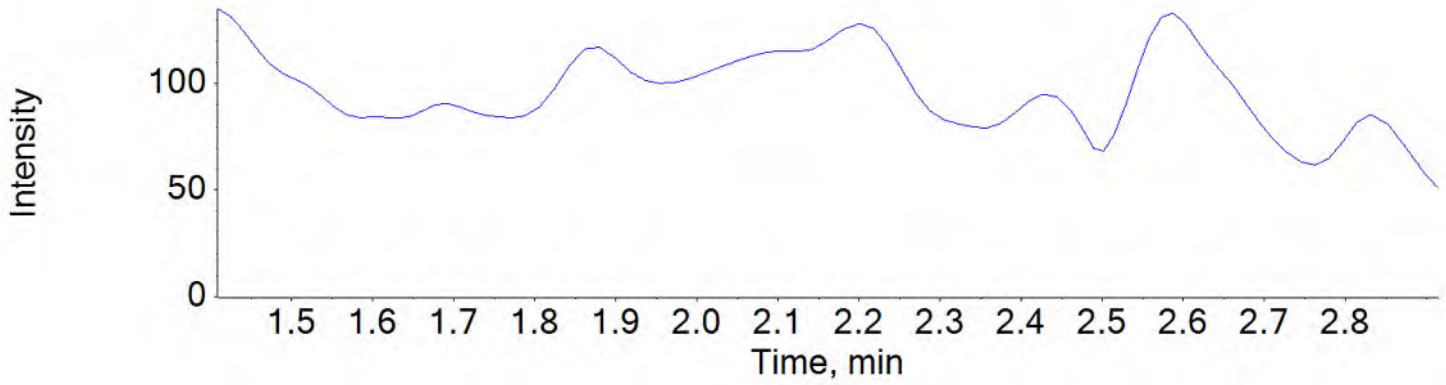
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

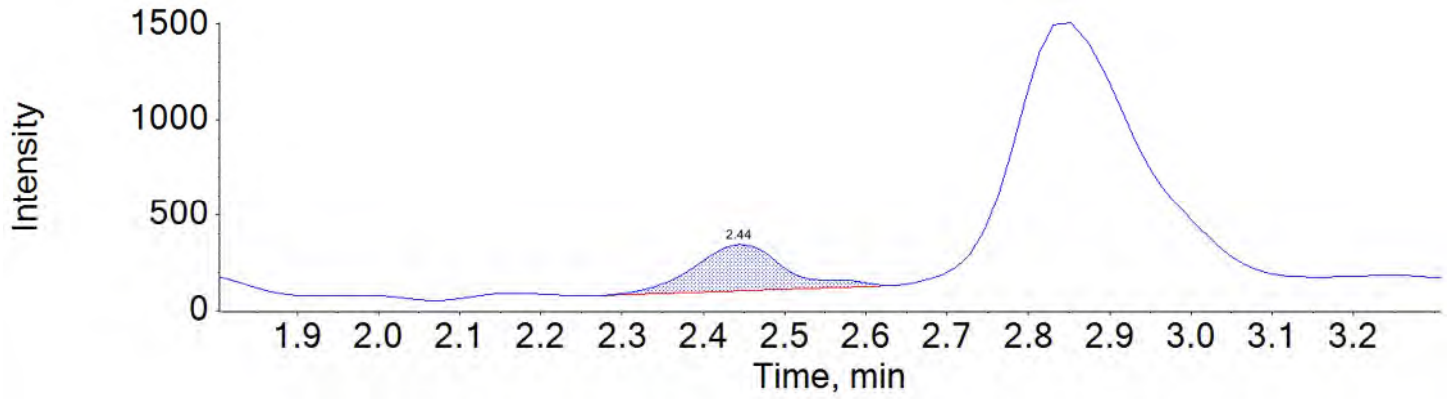


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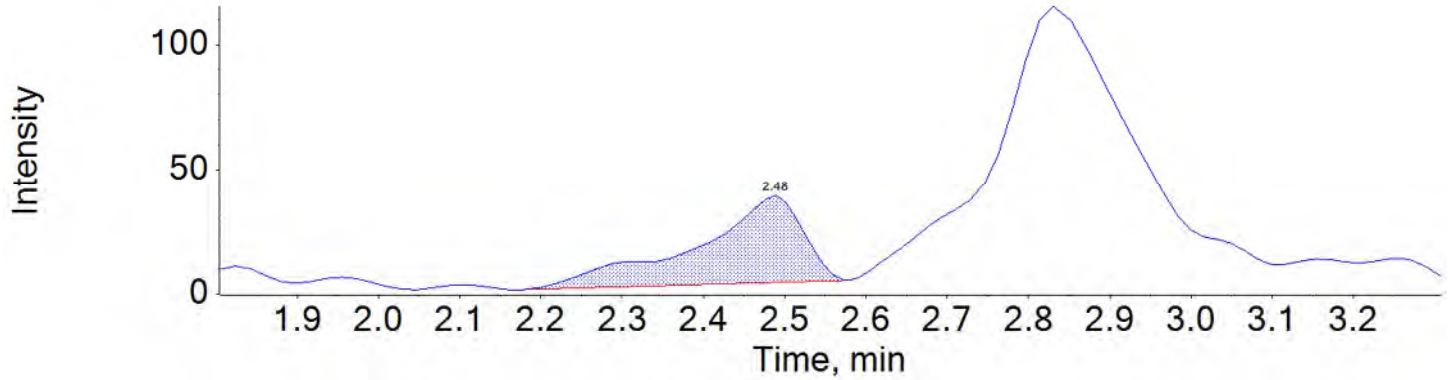
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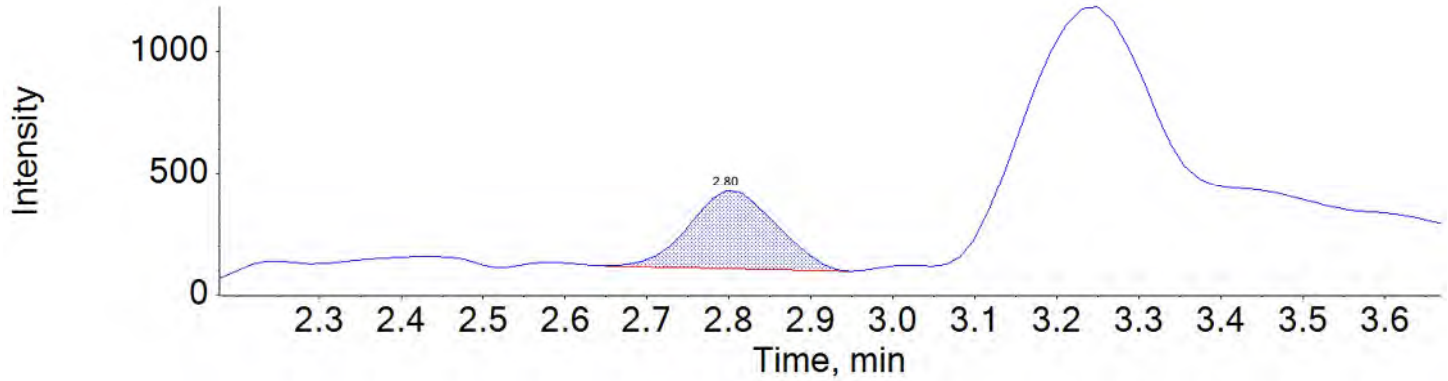
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

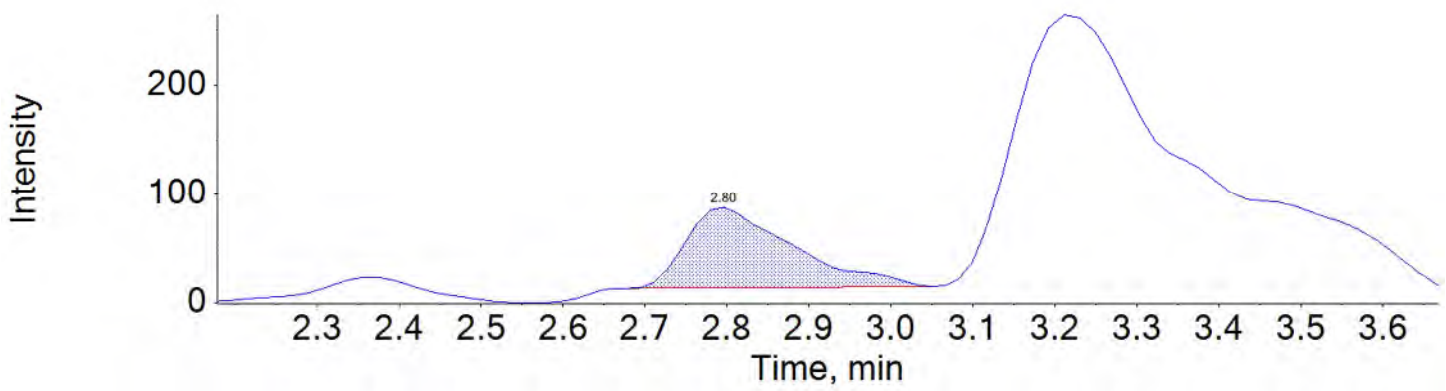


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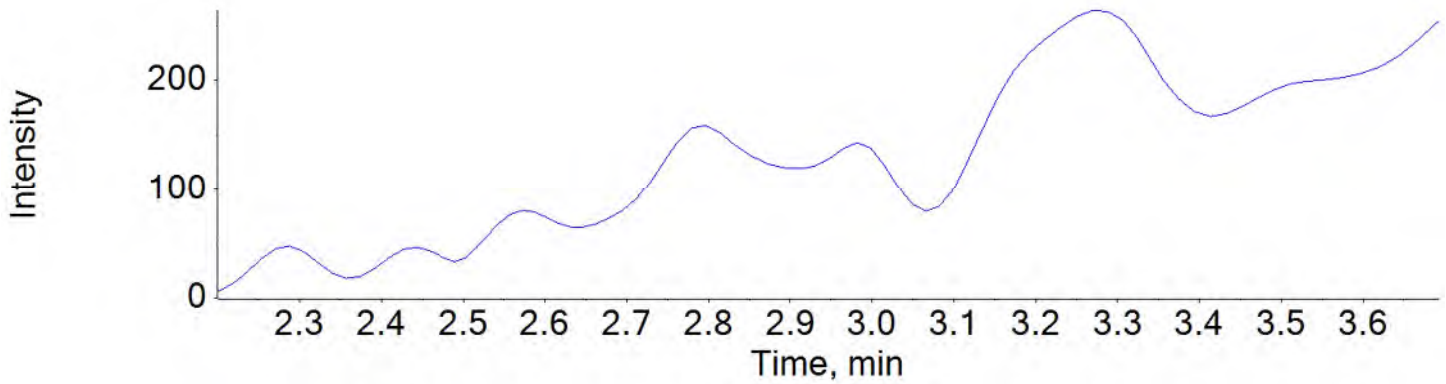
Chromatogram Report

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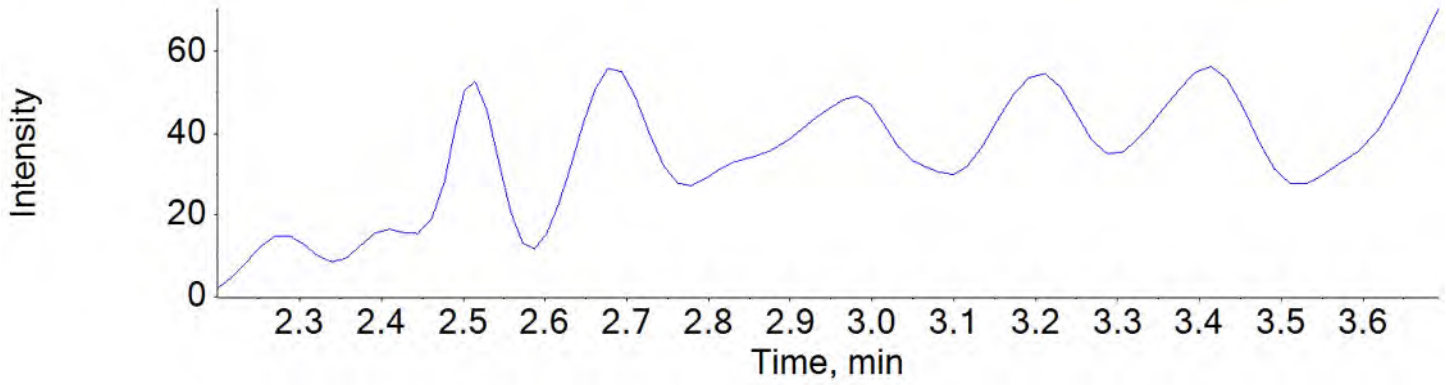
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

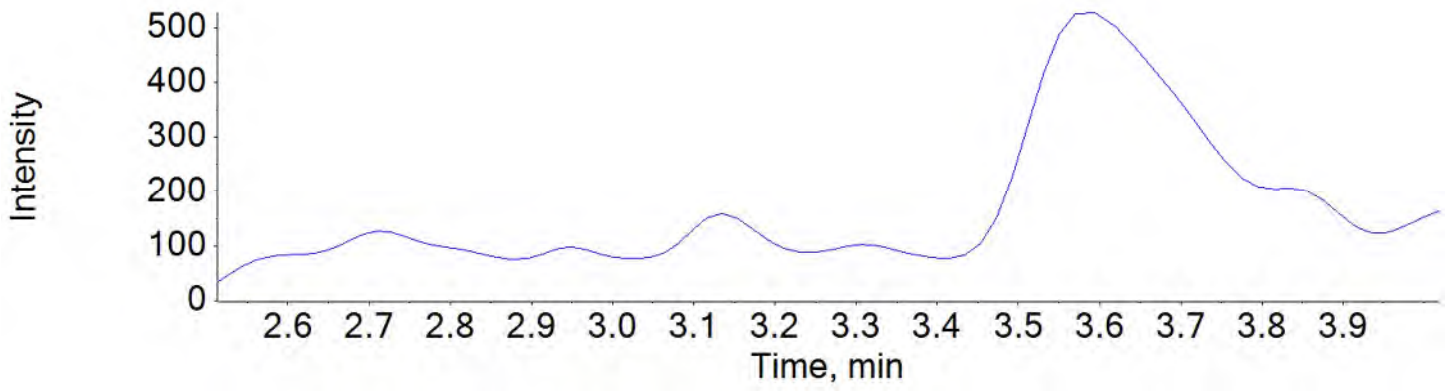


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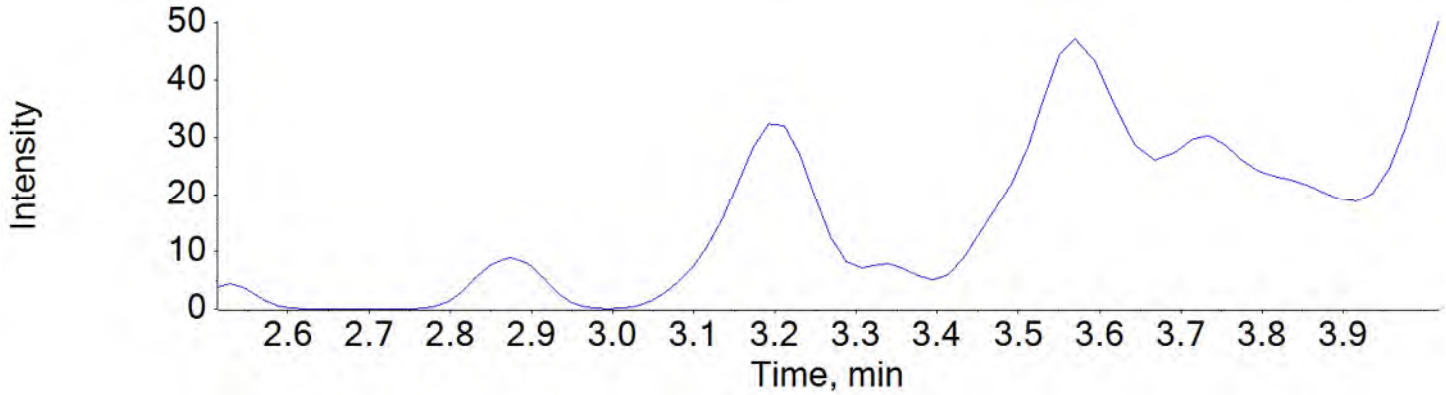
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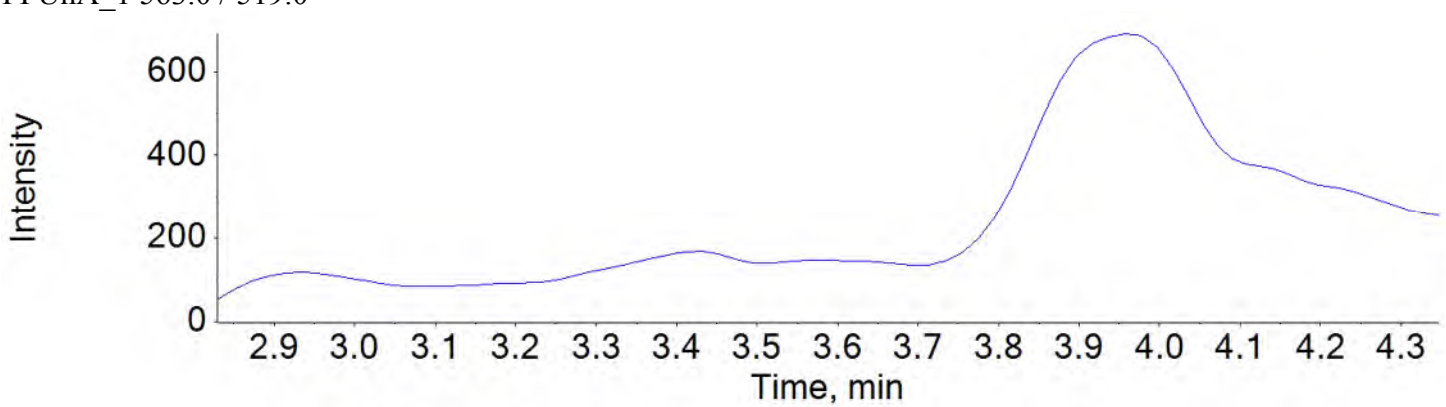
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

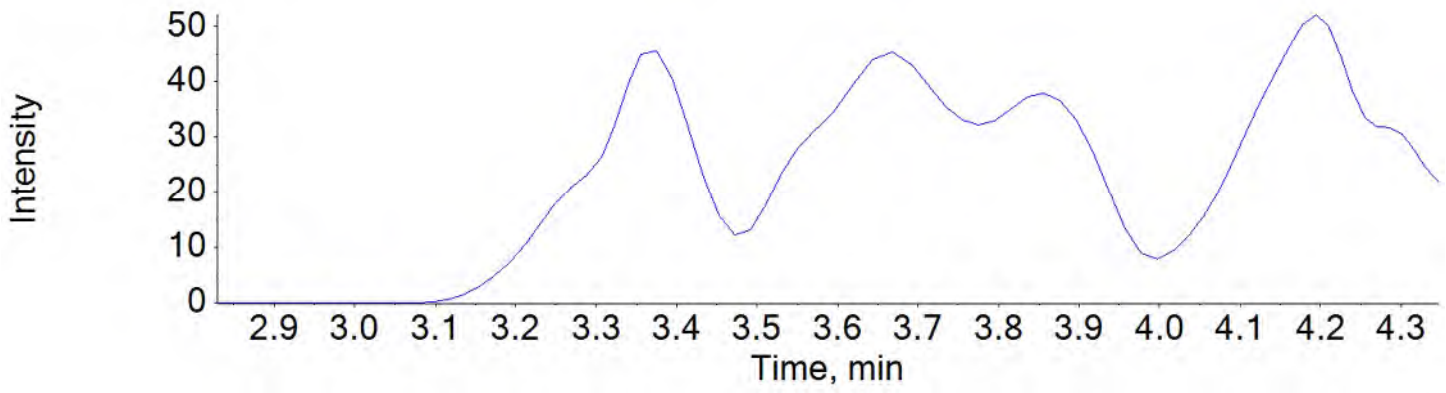


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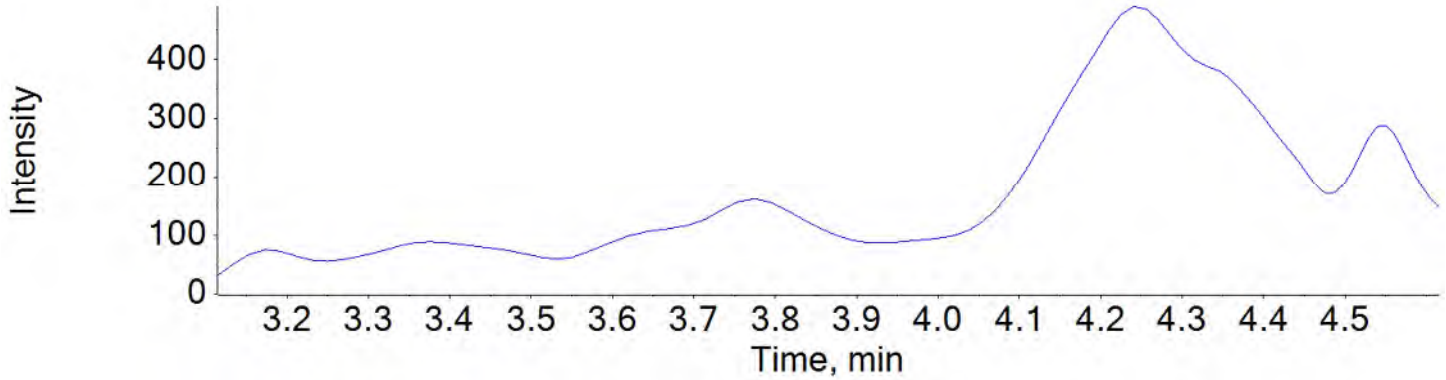
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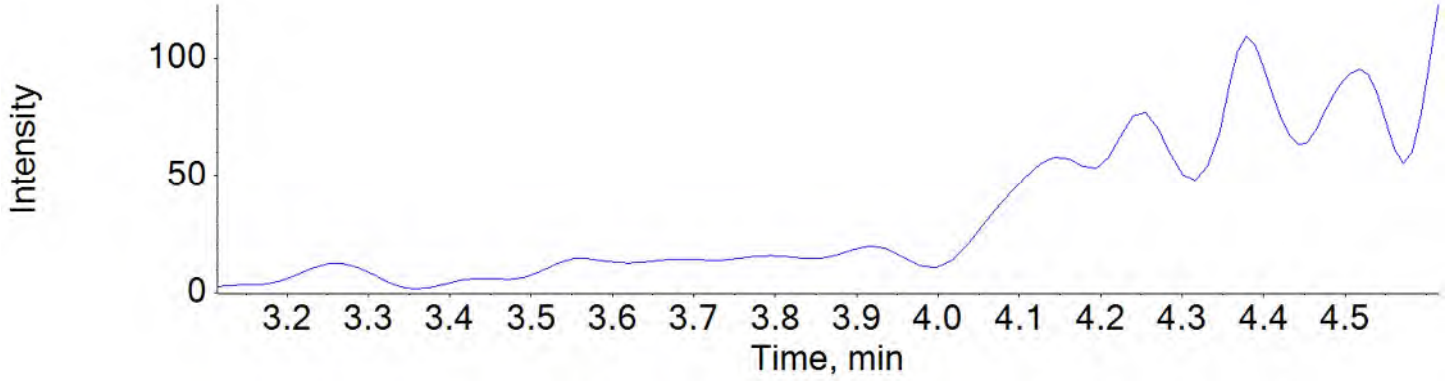
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

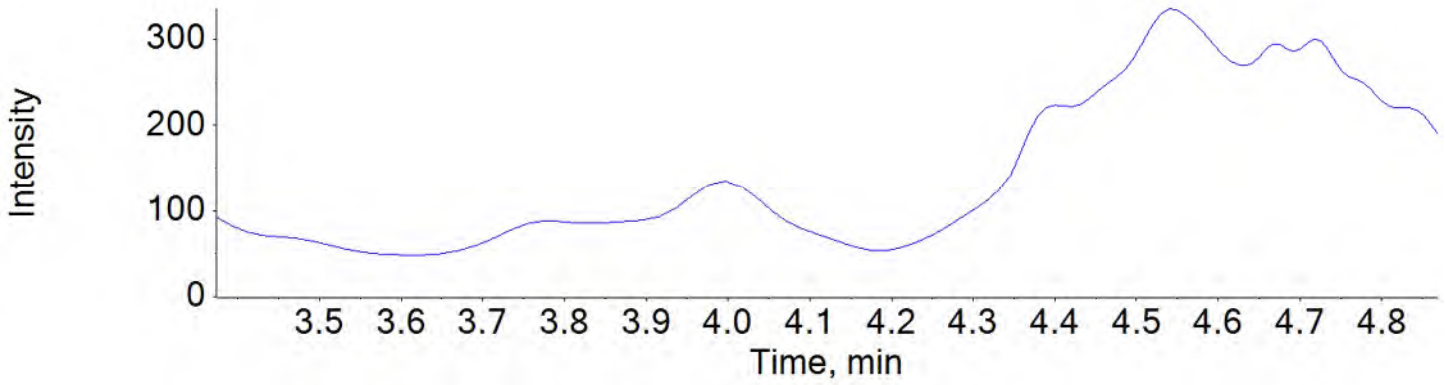


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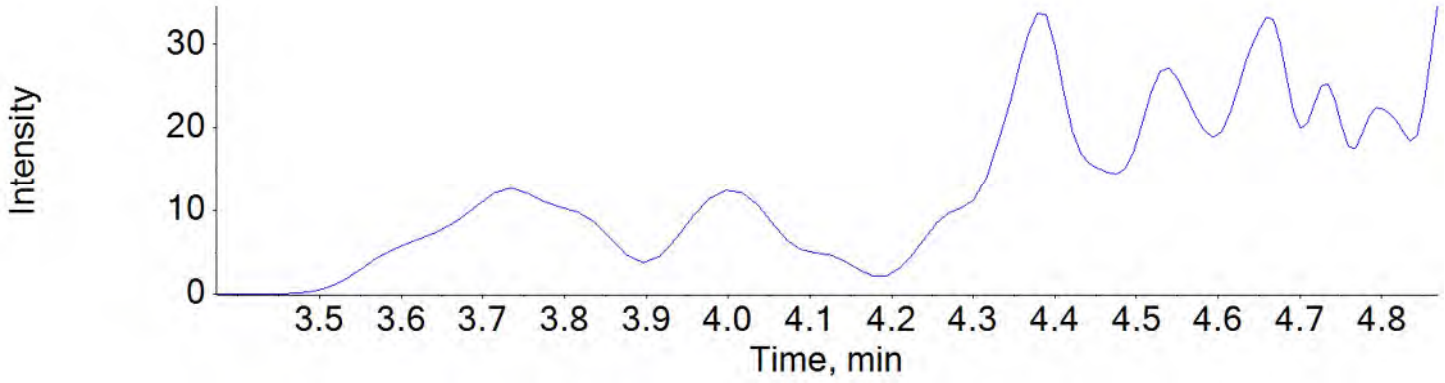
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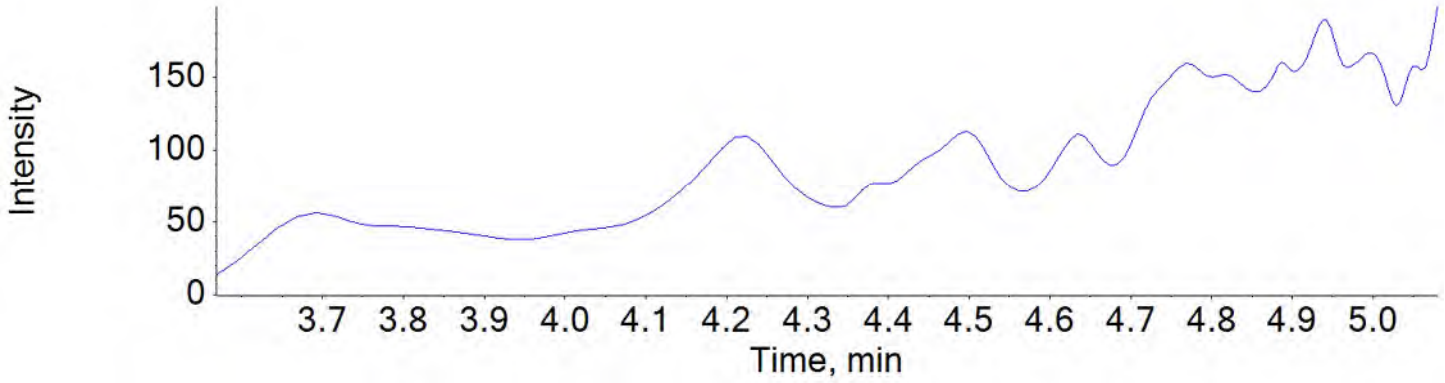
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

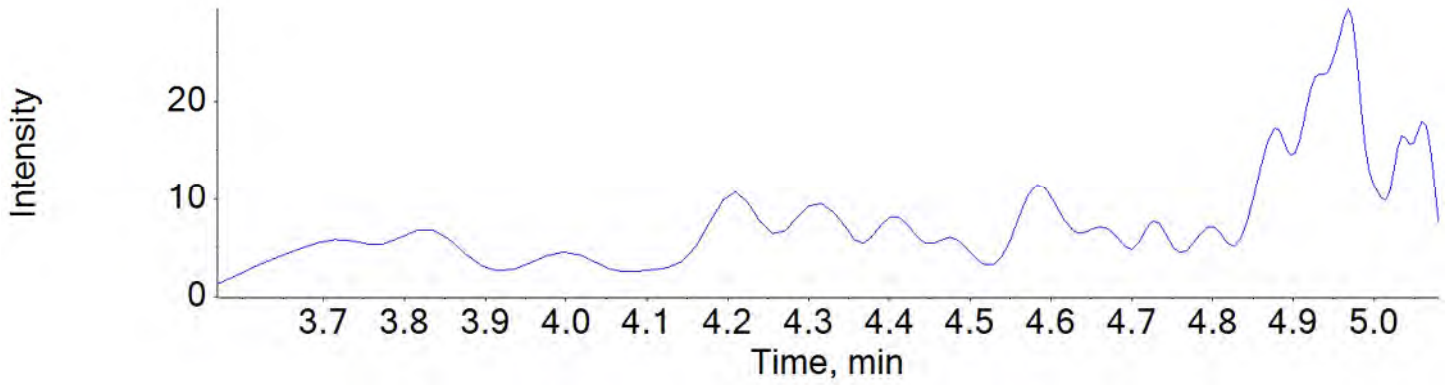


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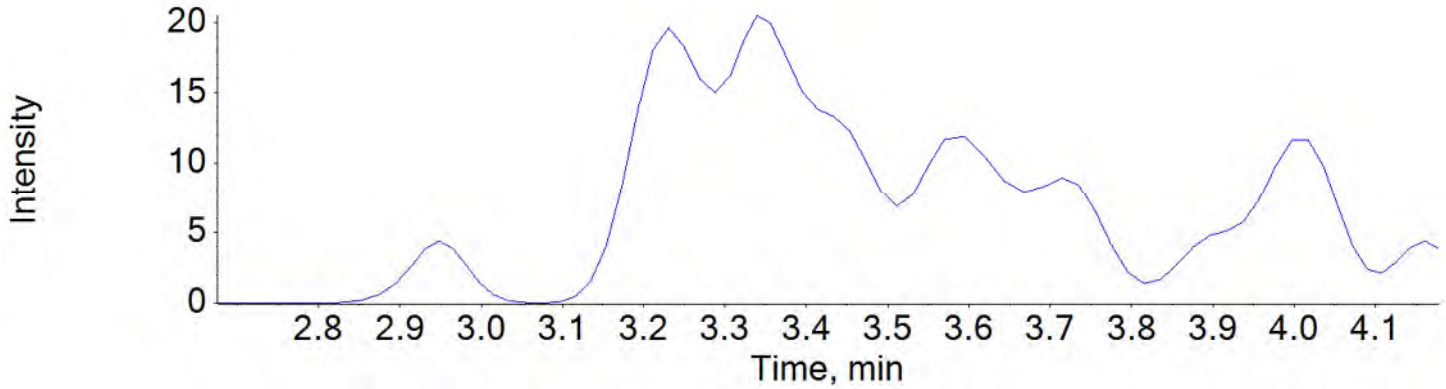
Chromatogram Report

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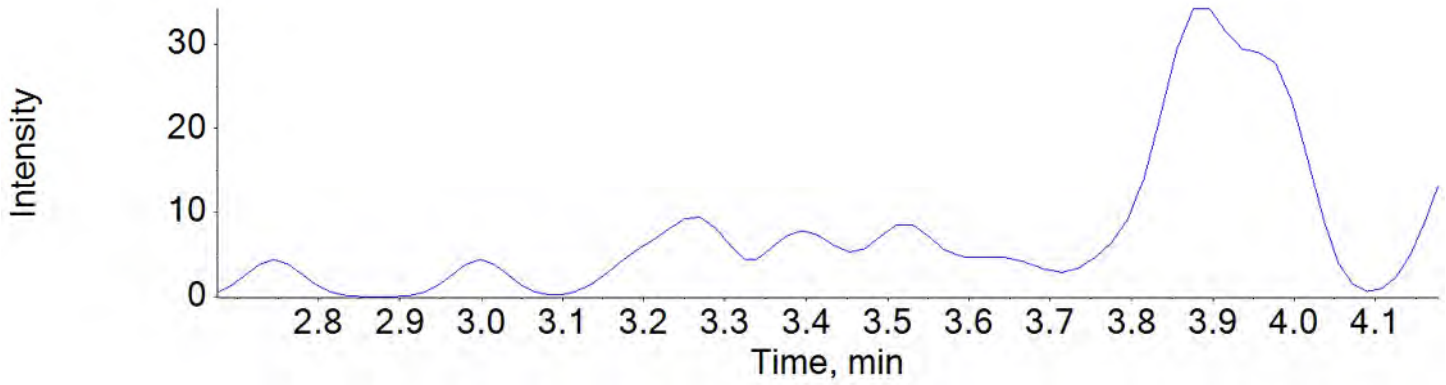
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

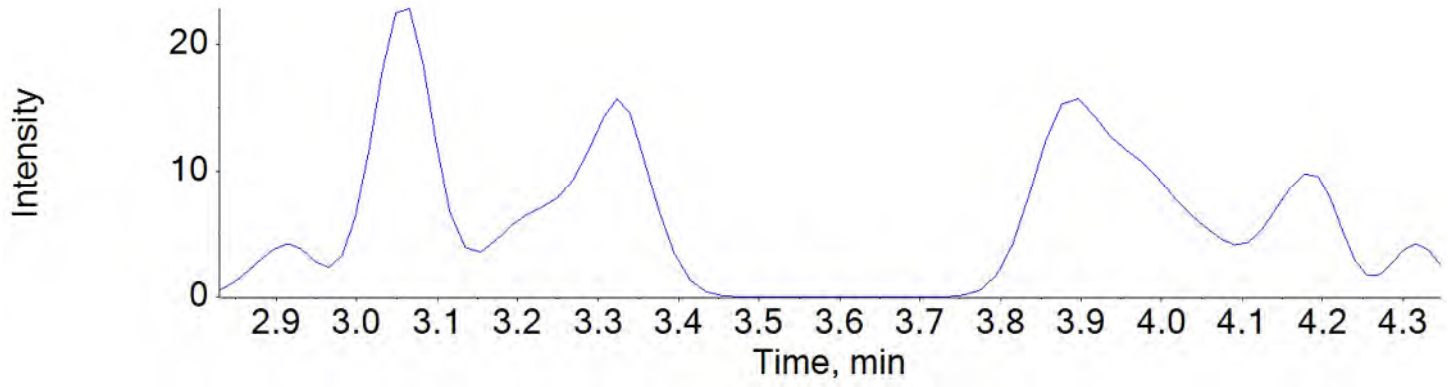


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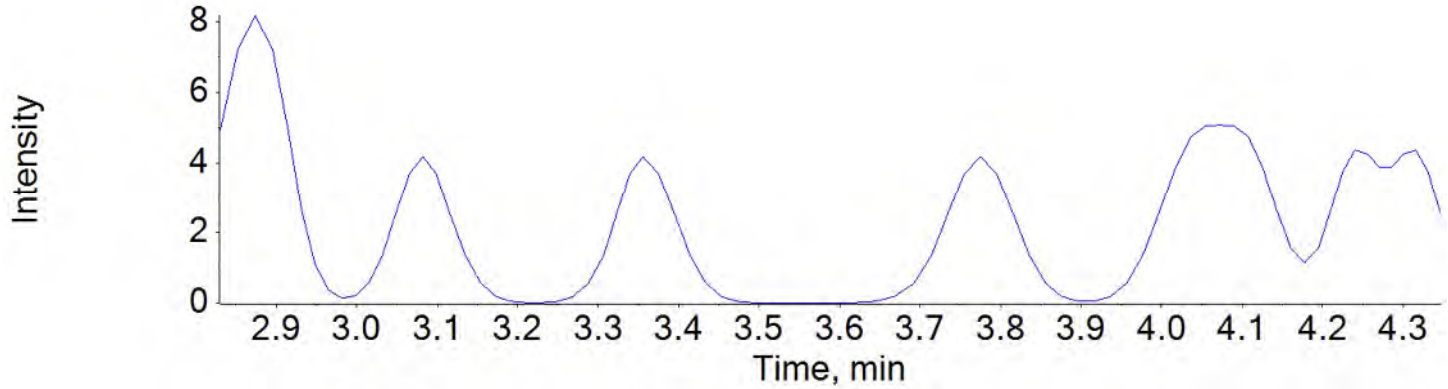
Chromatogram Report

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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

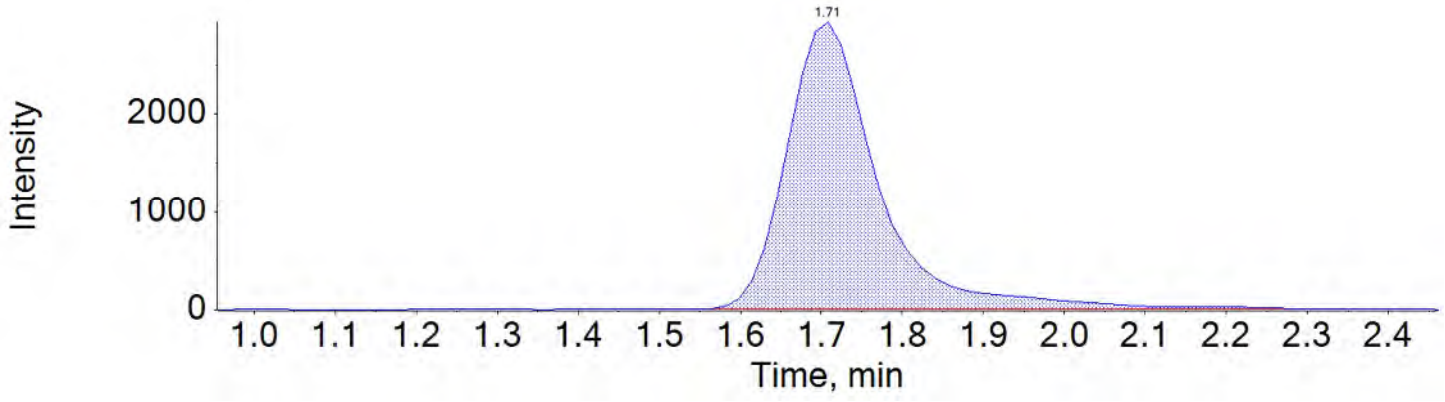
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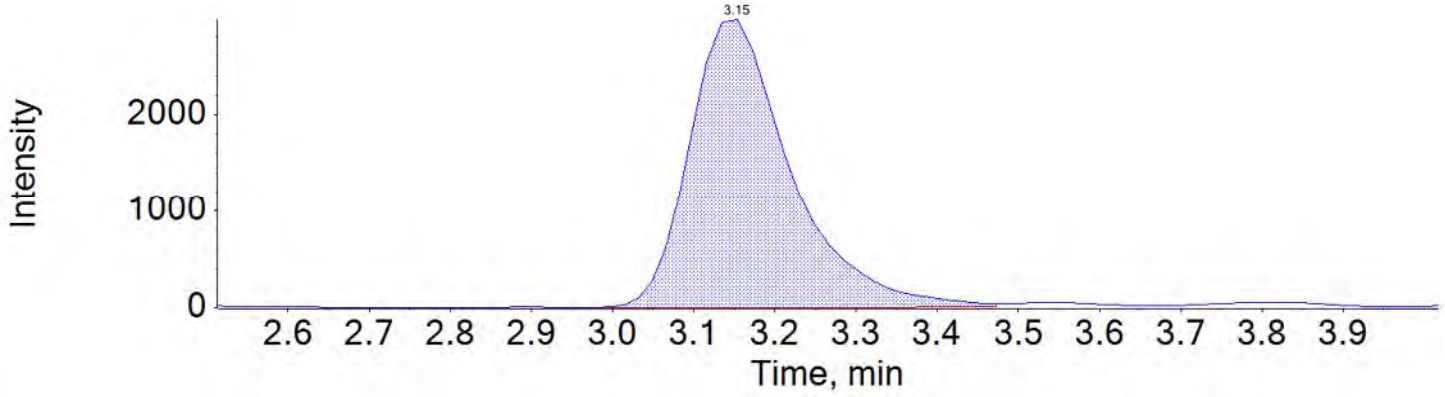
Sample Name	J6151-FS(0)	**Injection Vial**	18
Sample ID	NAWC-050718-FRB-180	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:02:22	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

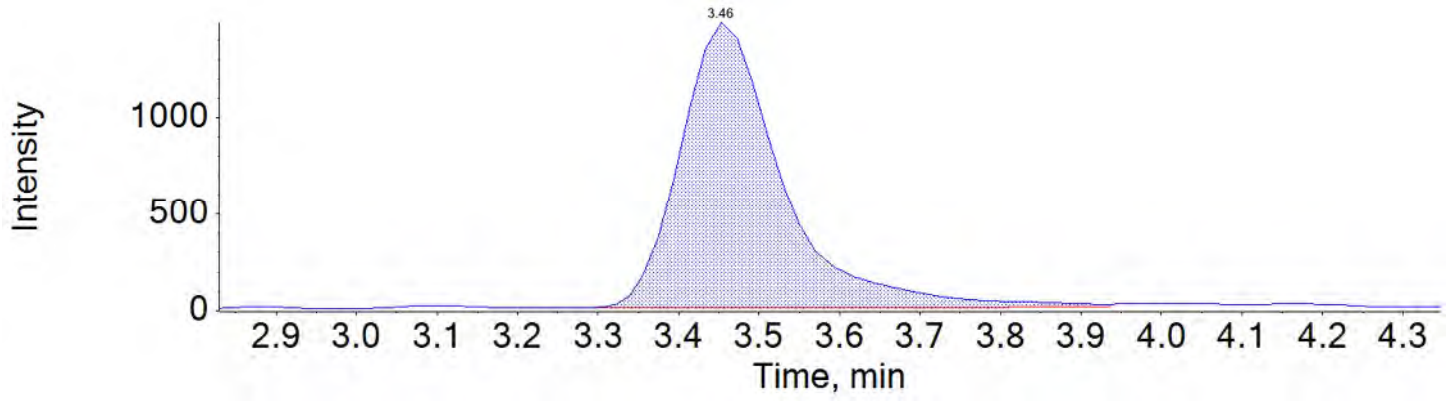


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Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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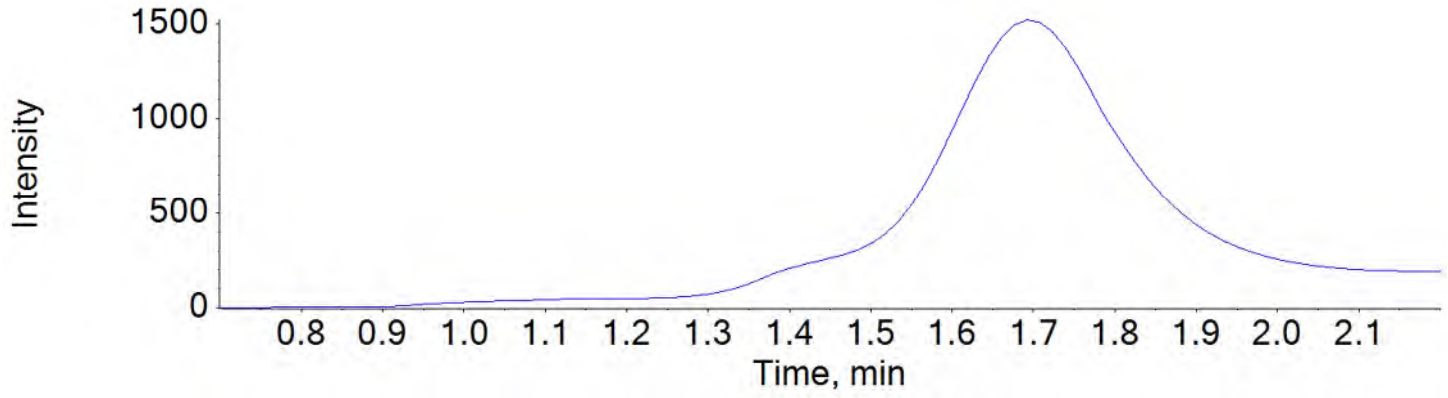
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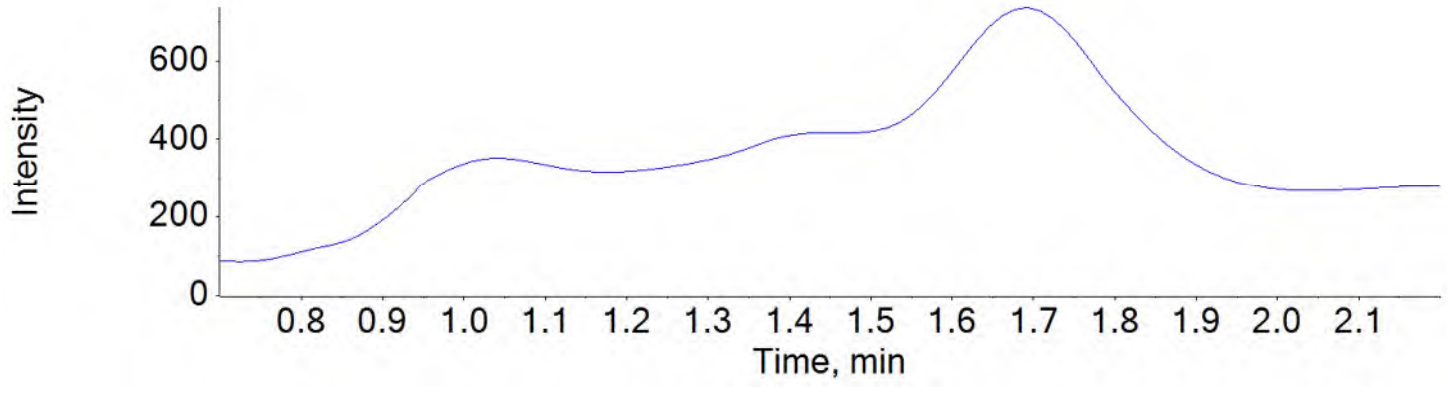
Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

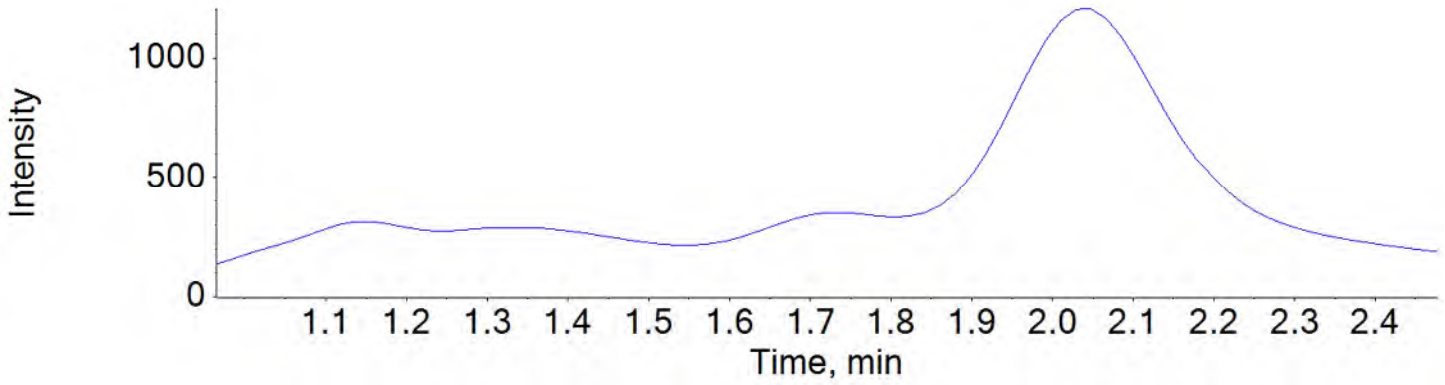


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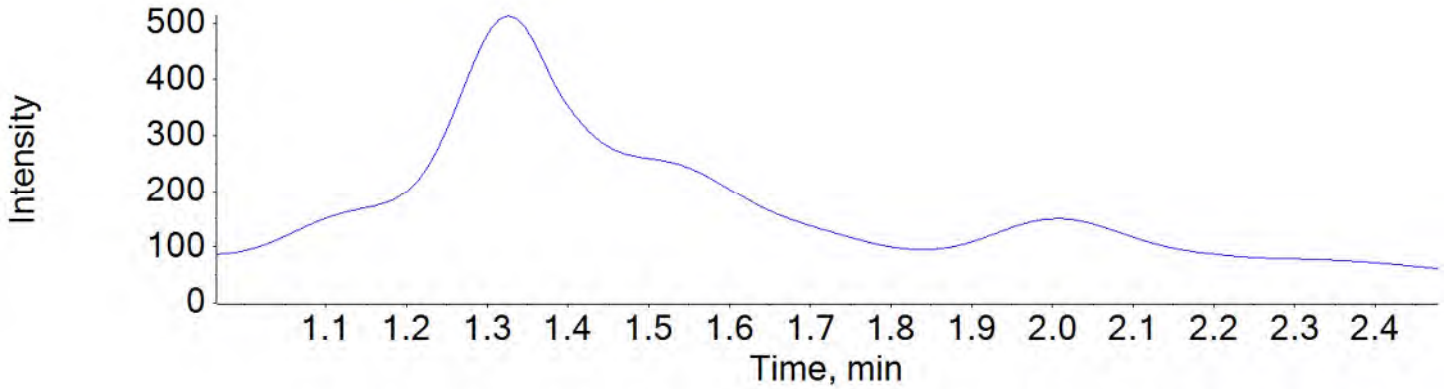
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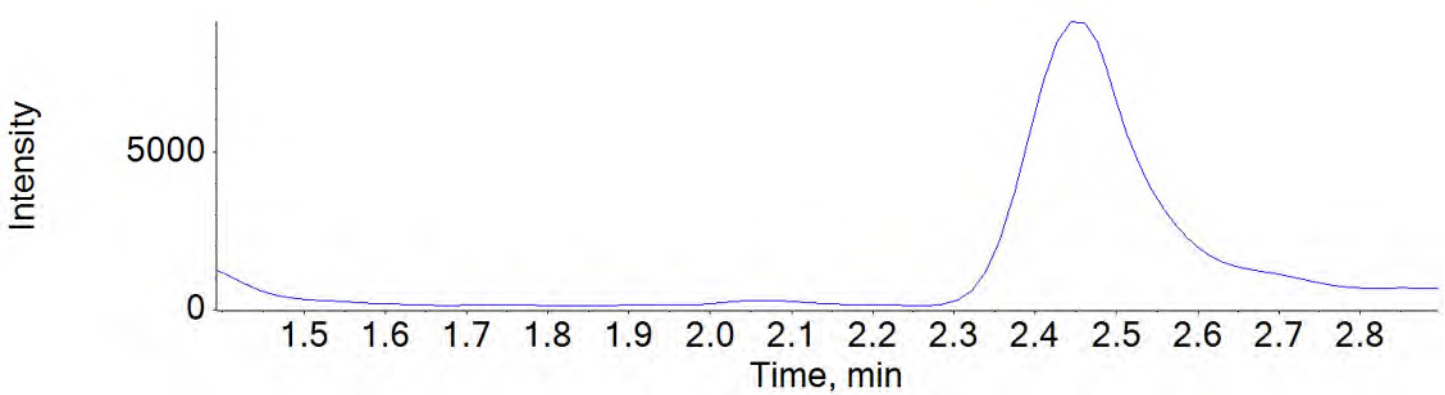
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

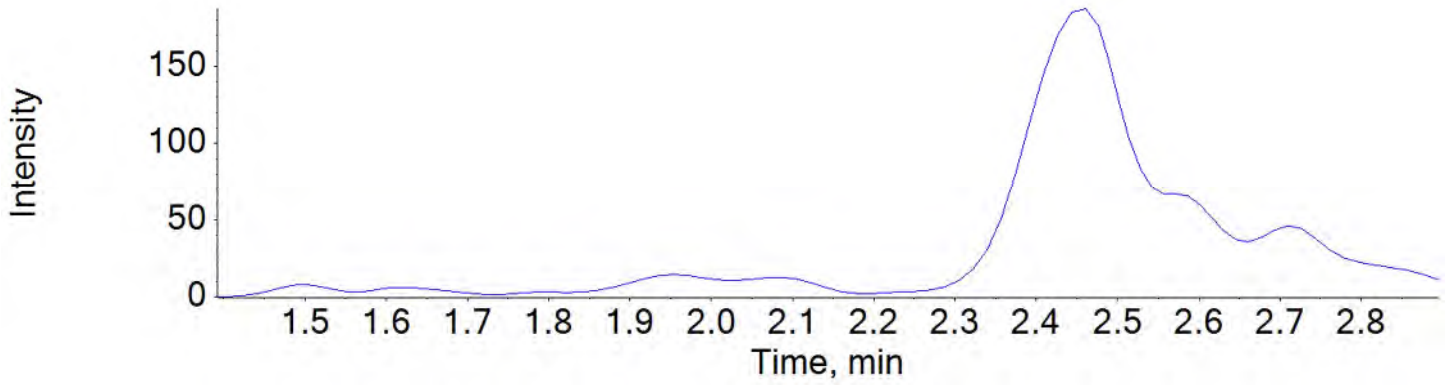


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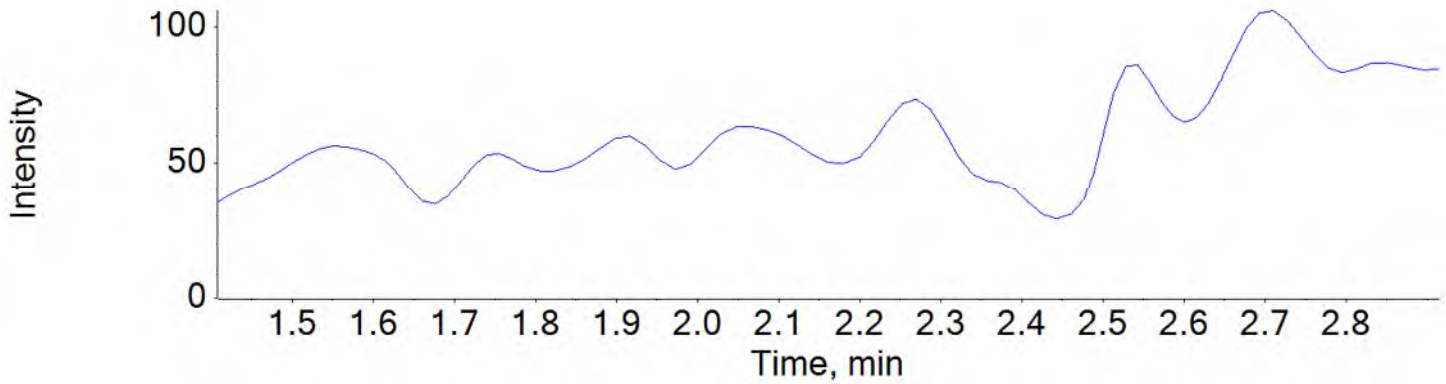
Chromatogram Report

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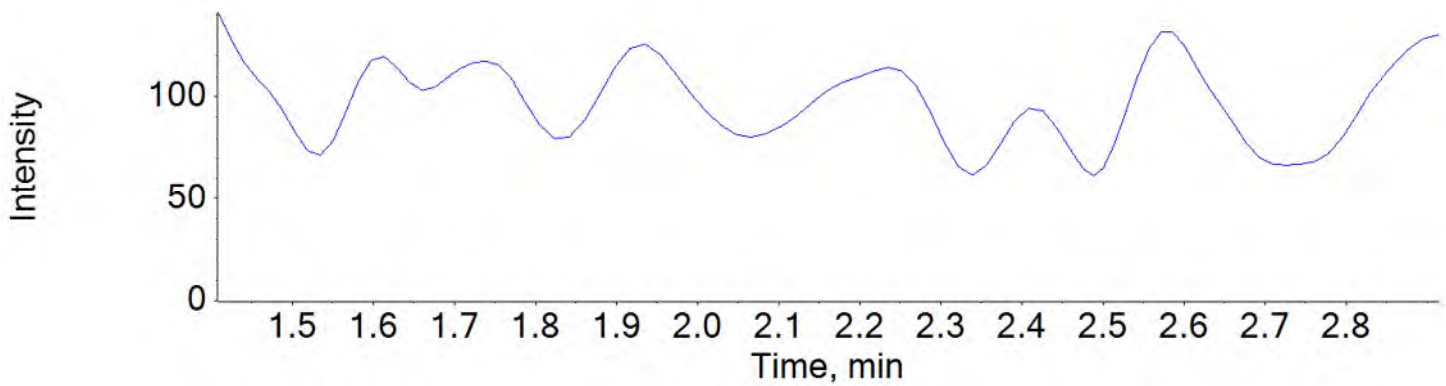
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

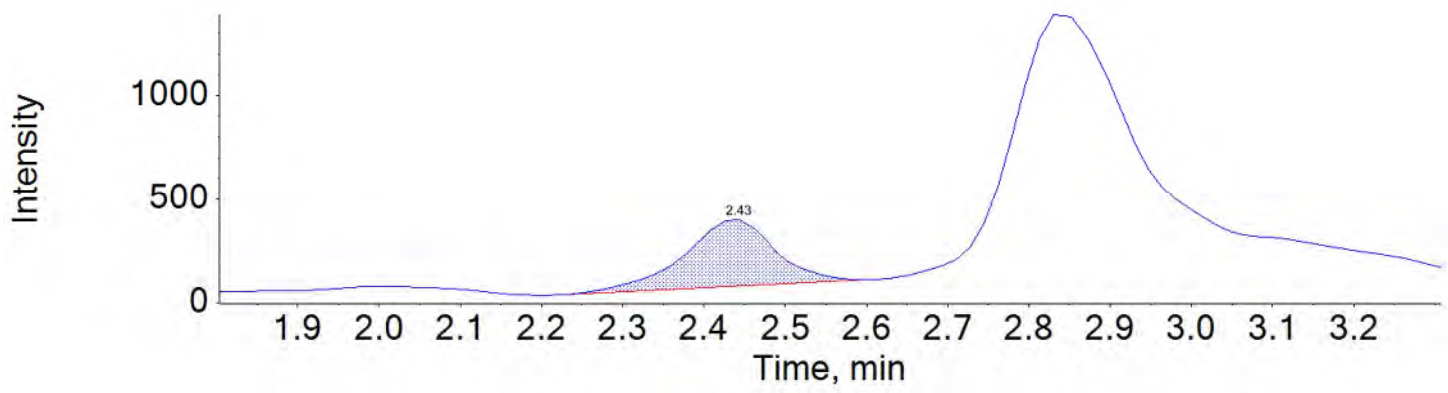


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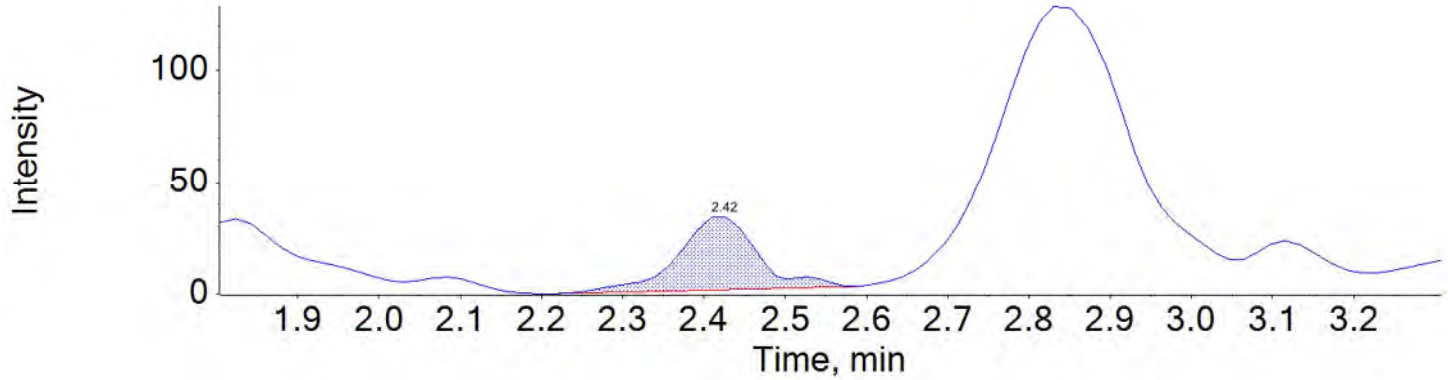
Chromatogram Report

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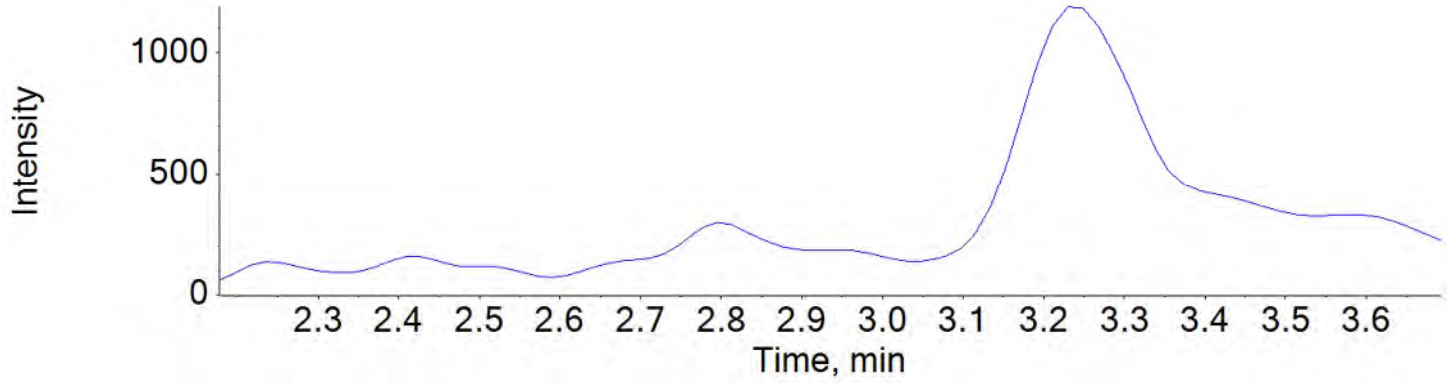
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

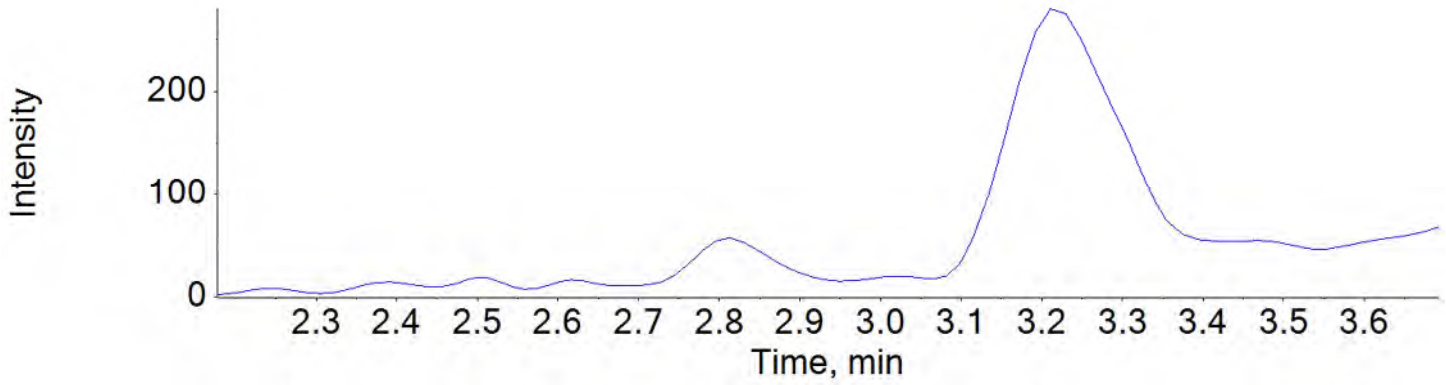


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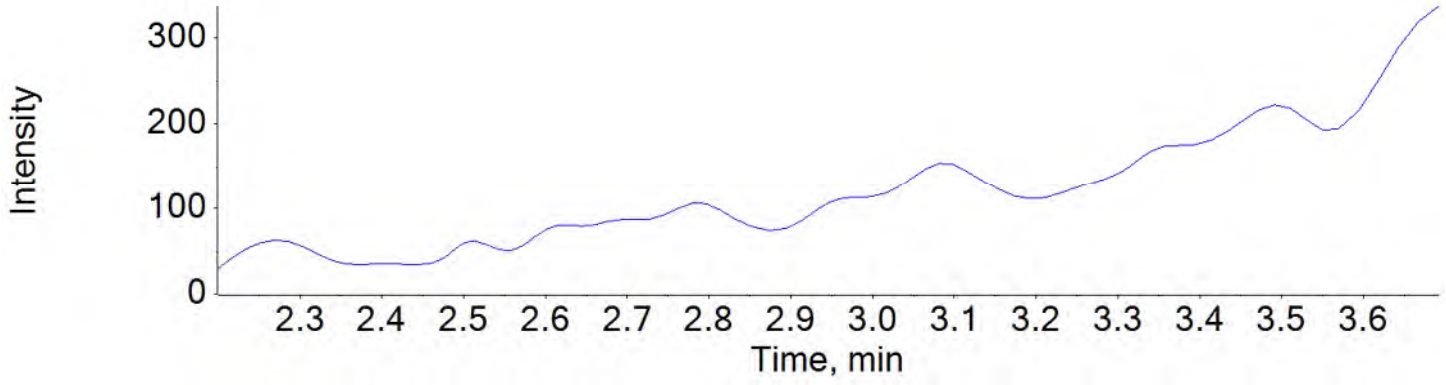
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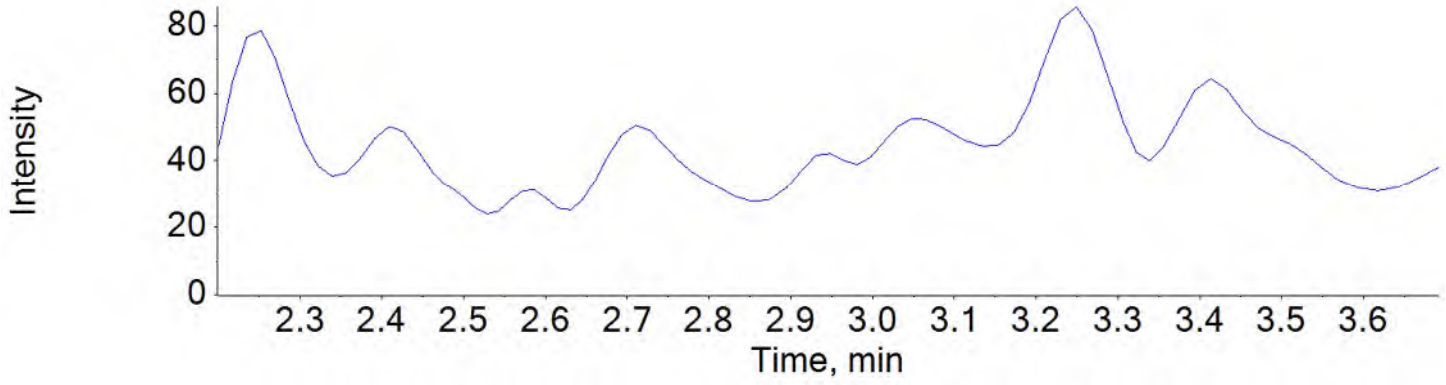
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

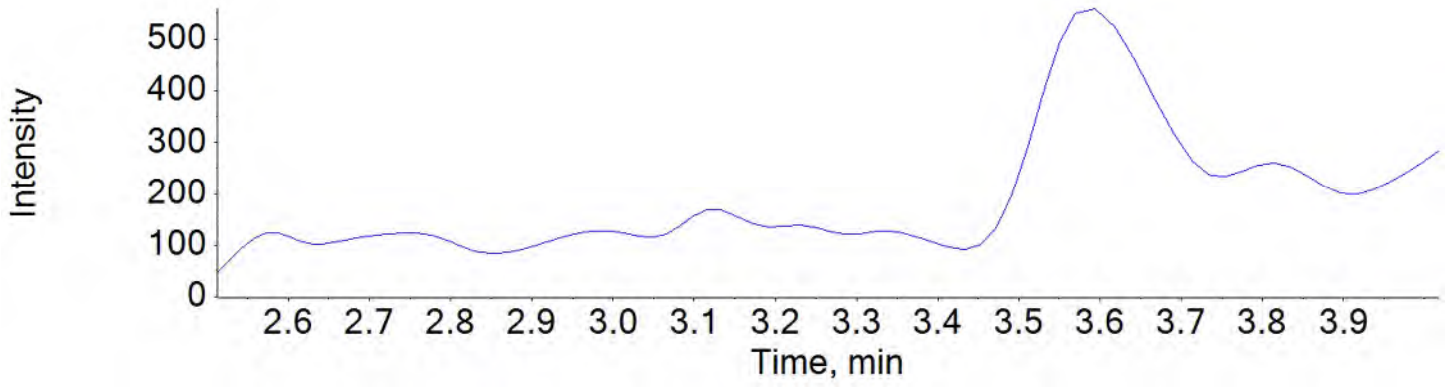


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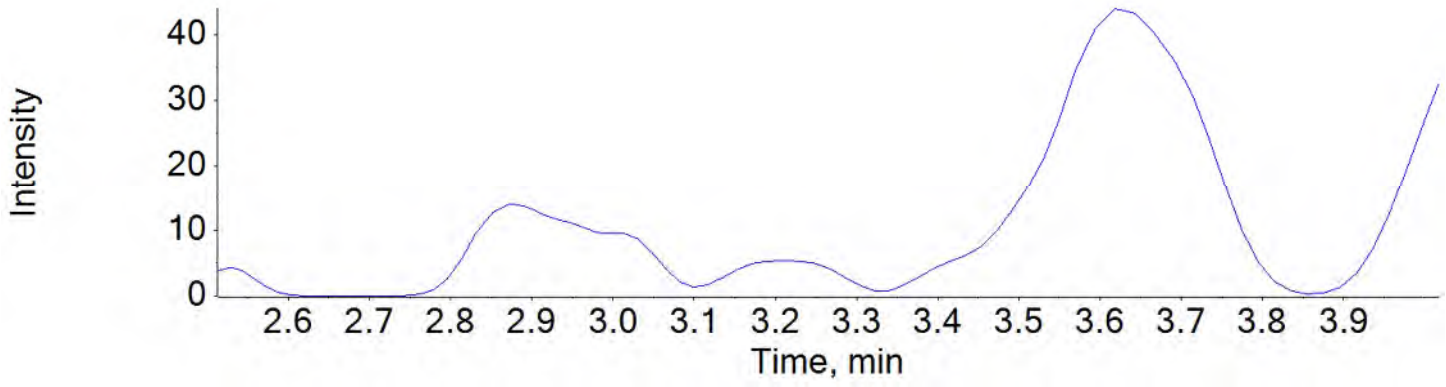
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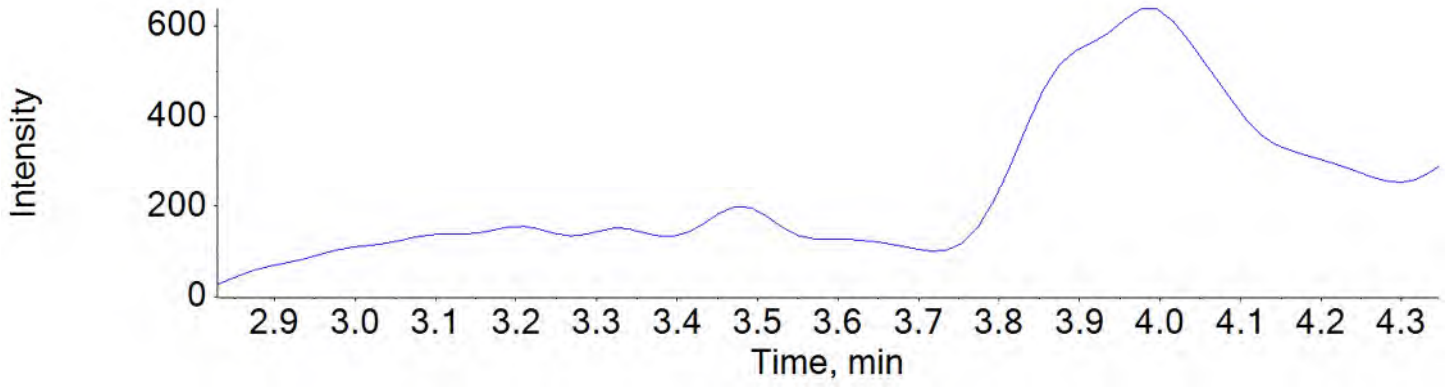
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

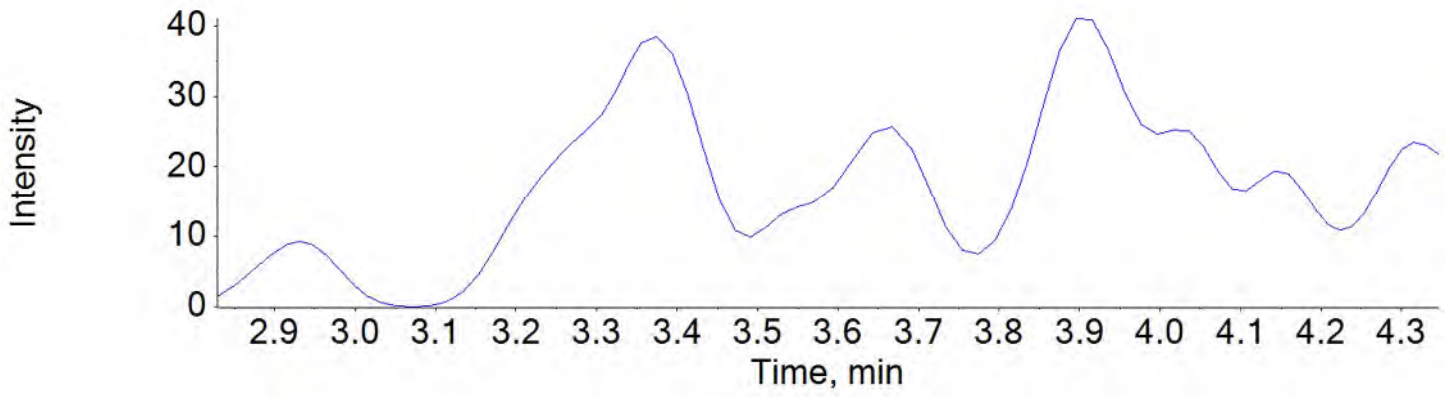


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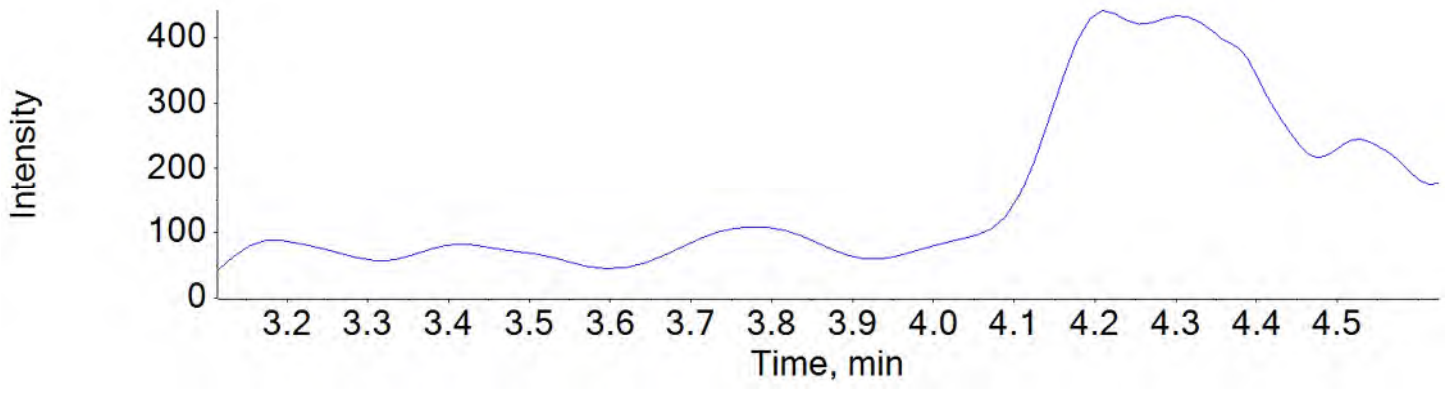
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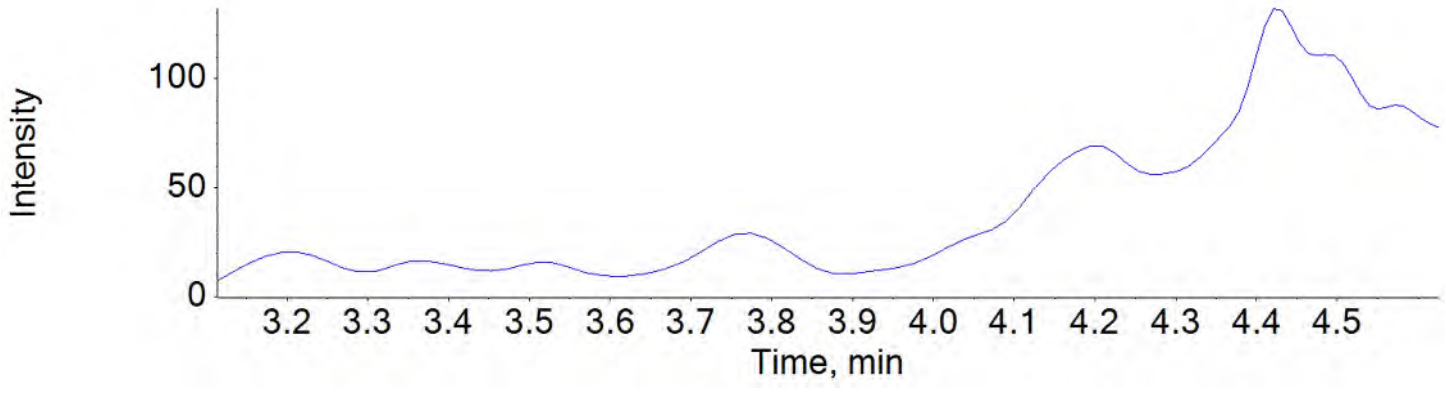
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PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

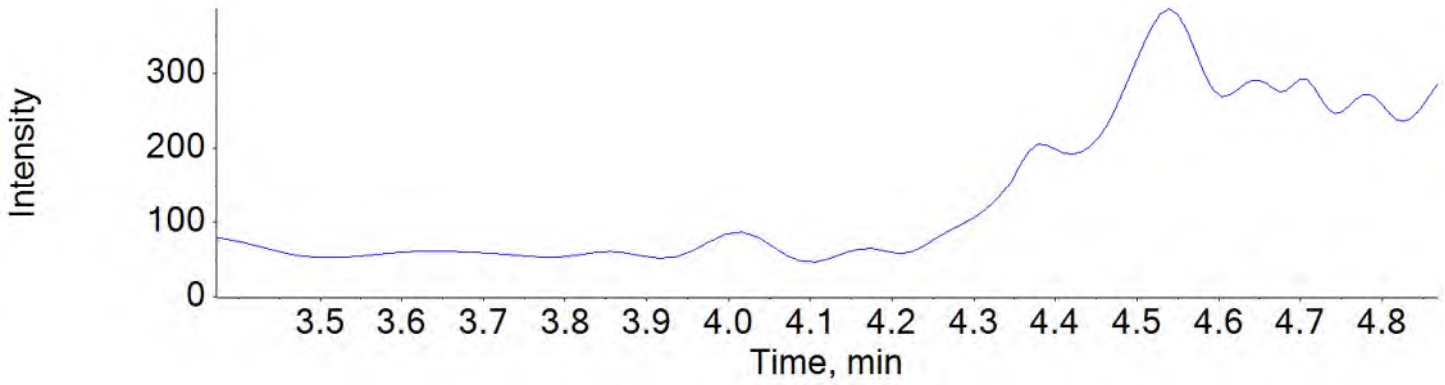


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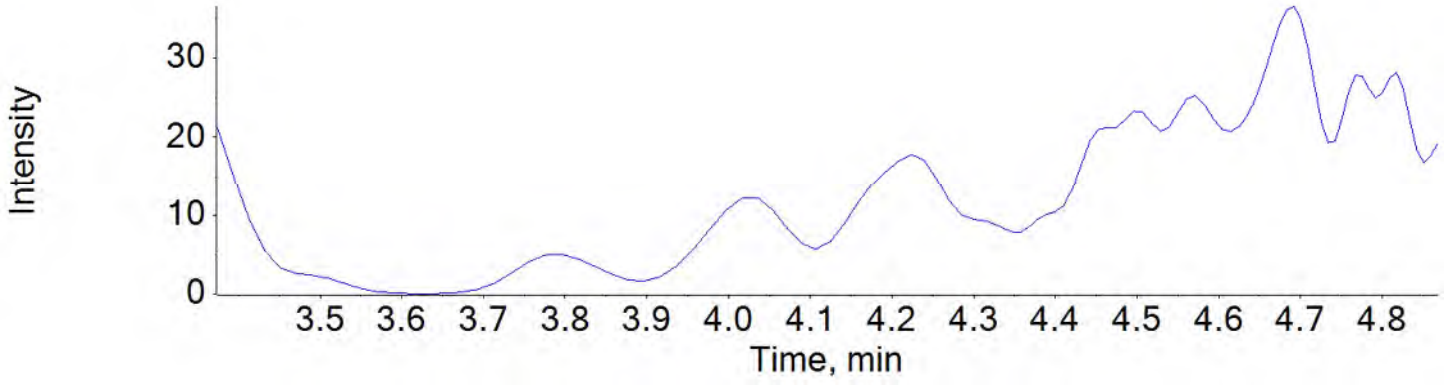
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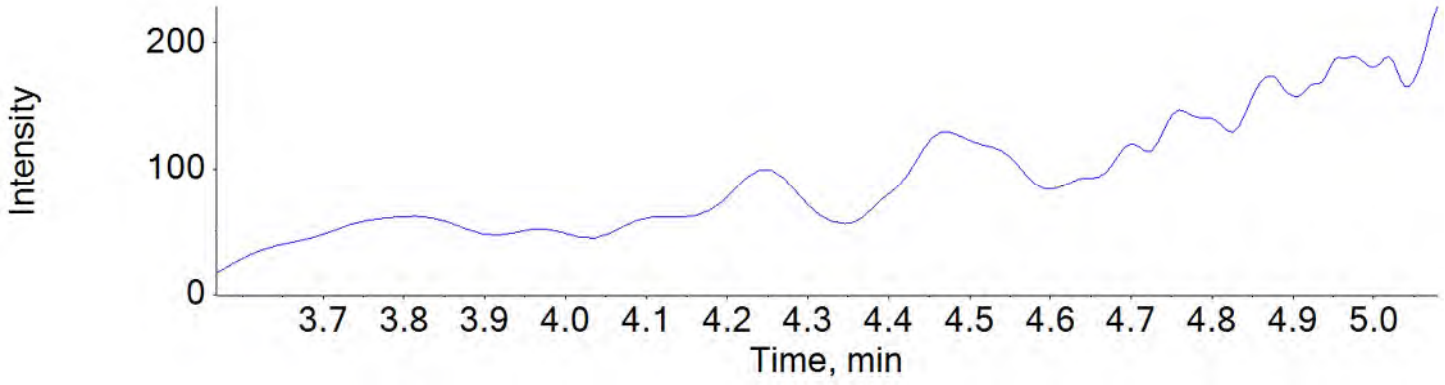
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

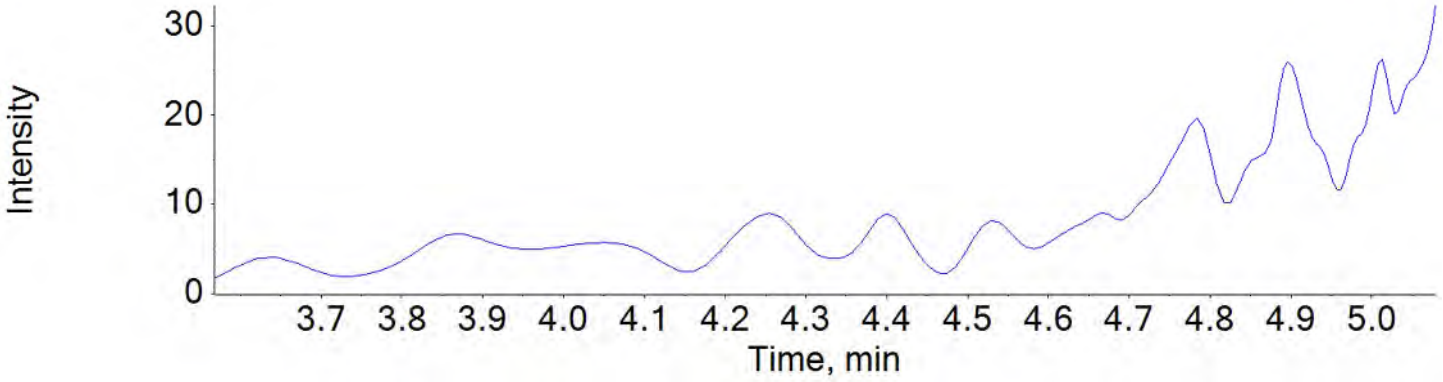


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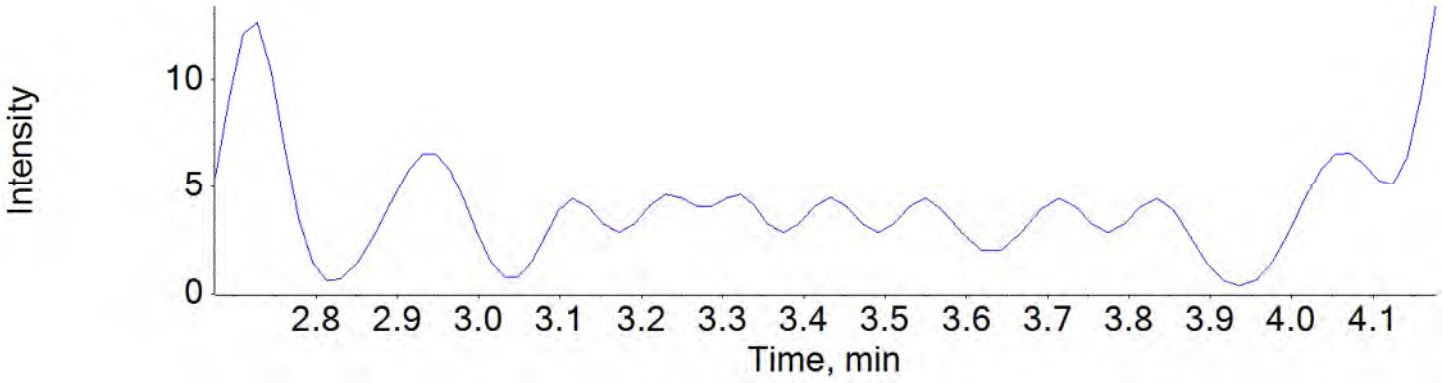
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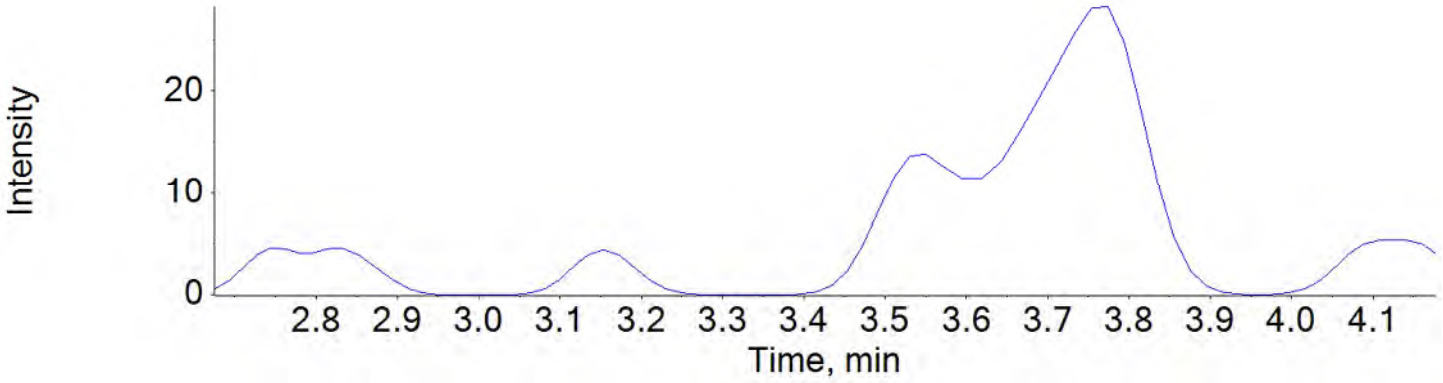
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

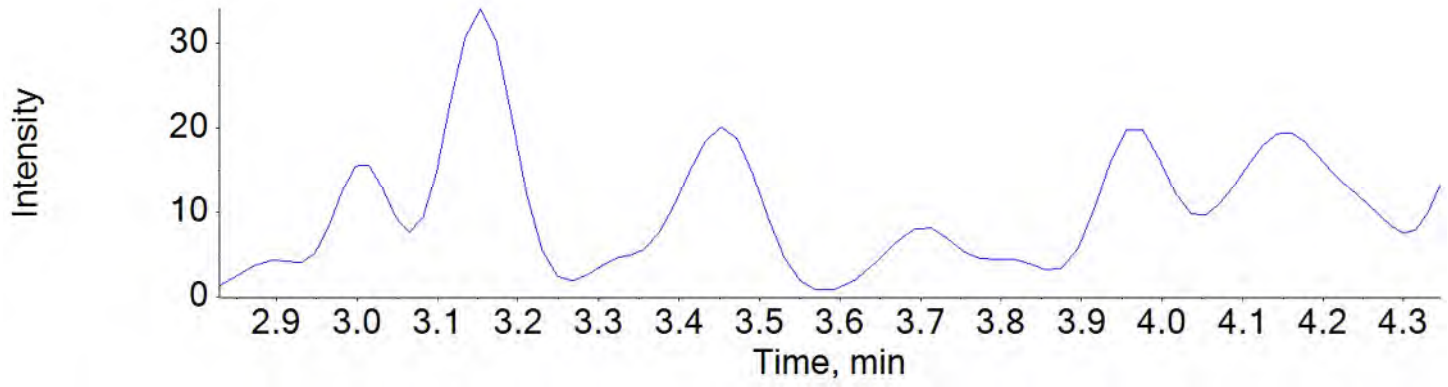


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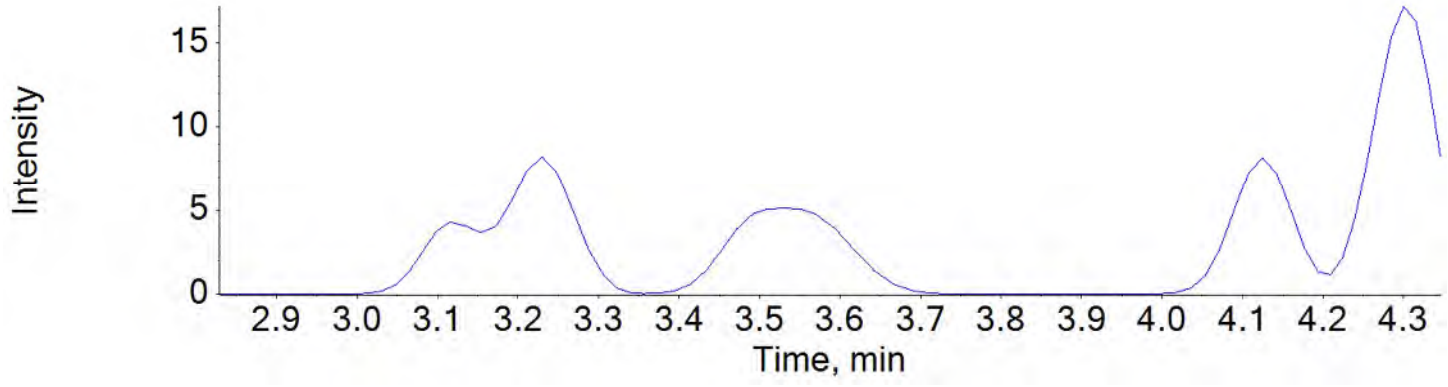
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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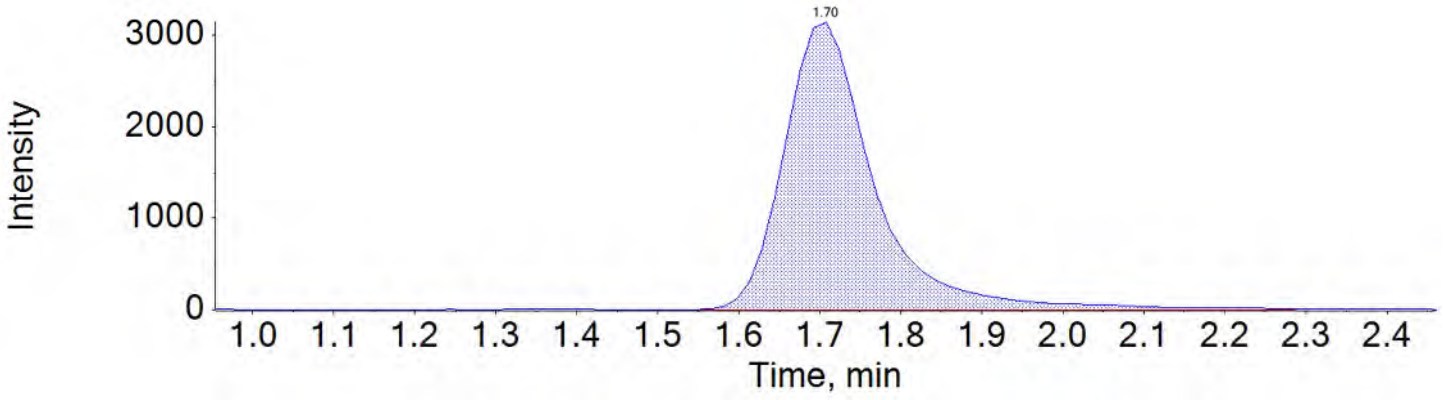
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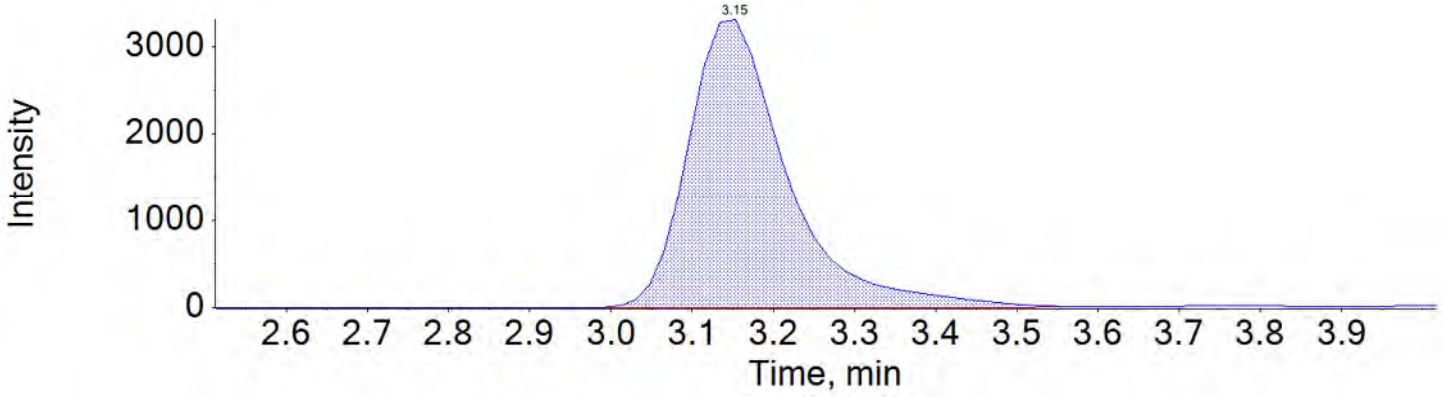
Sample Name	J6153-FS(0)	**Injection Vial**	19
Sample ID	NAWC-050718-FRB-275	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:11:18	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

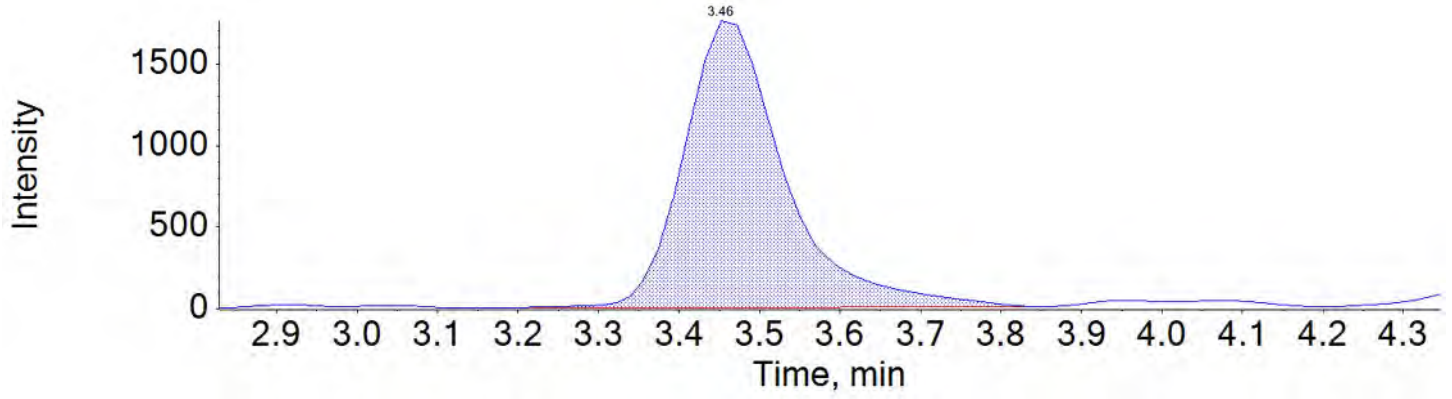


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Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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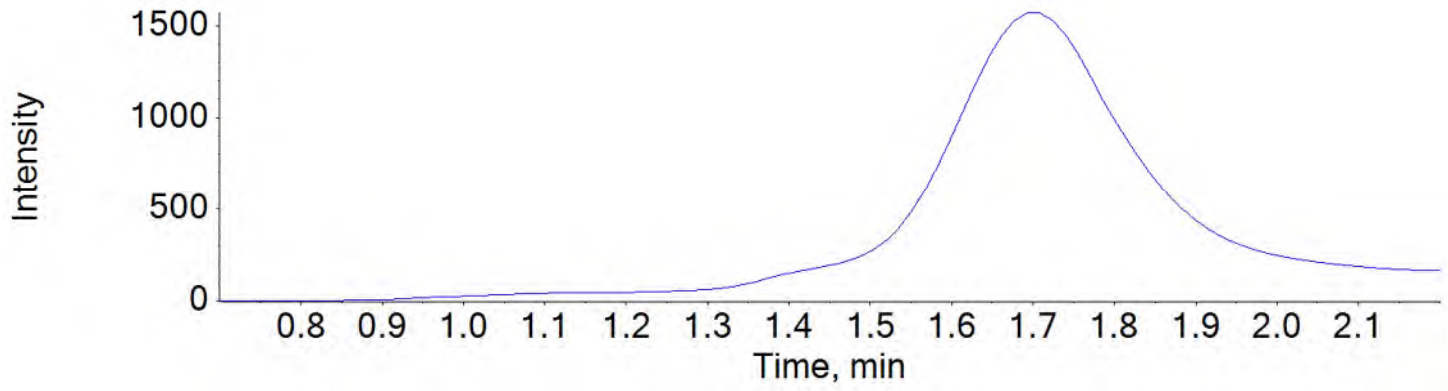
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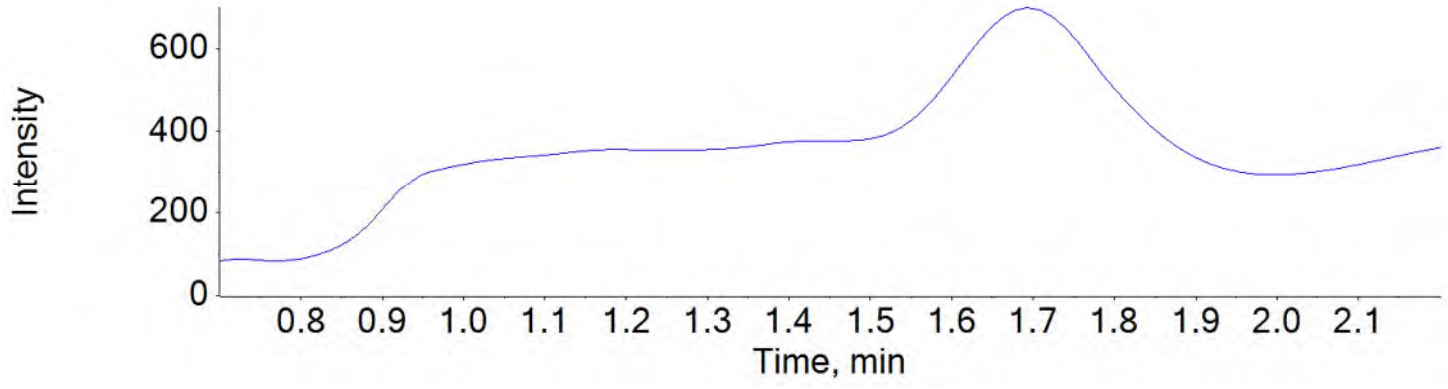
Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

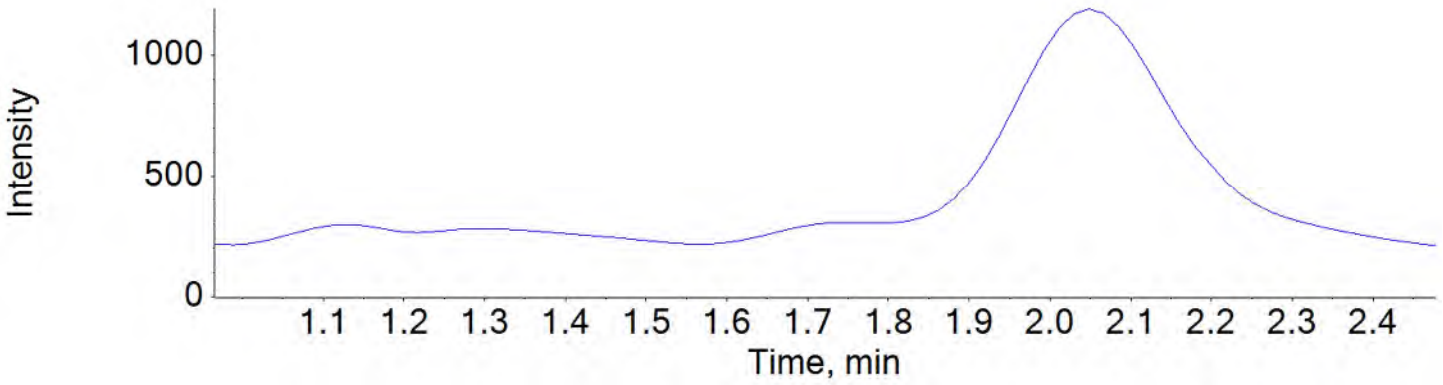


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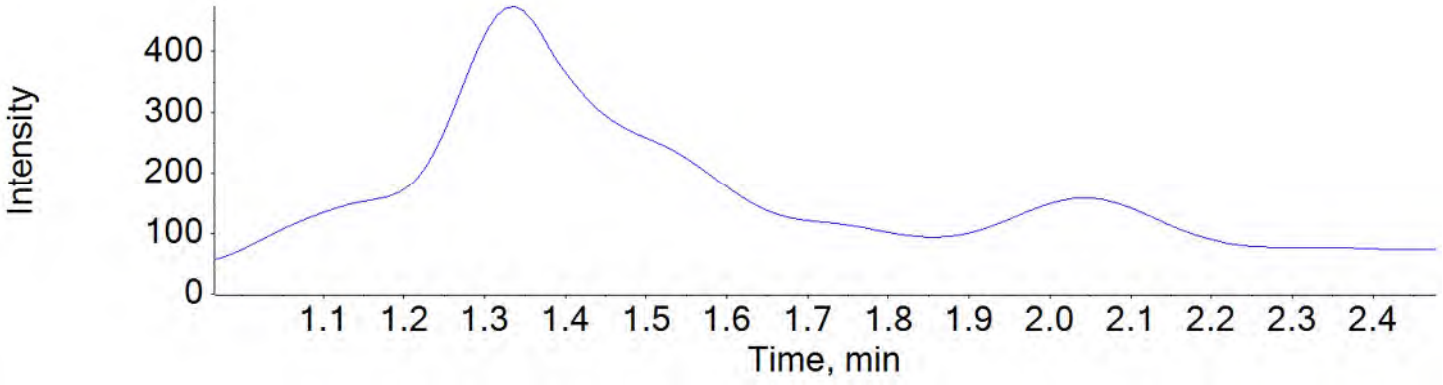
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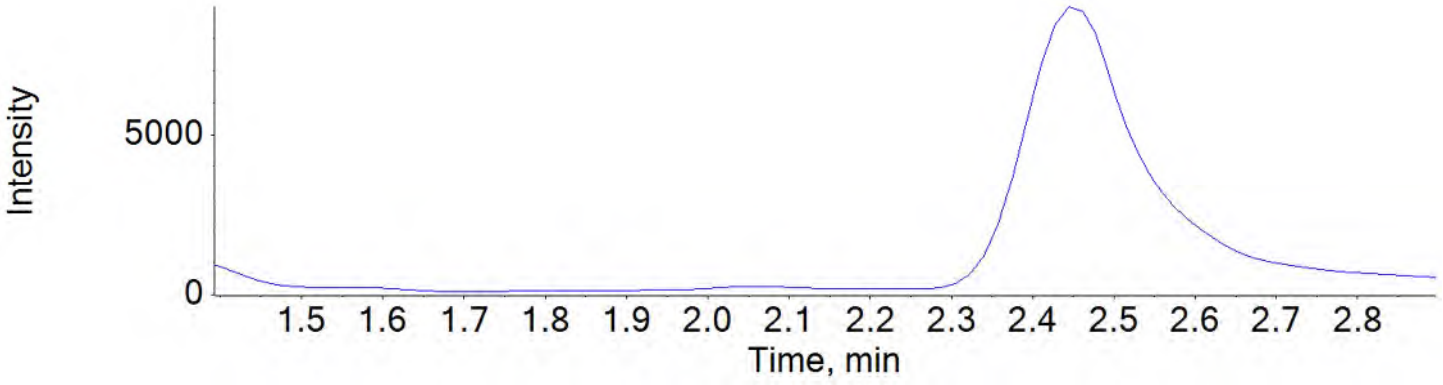
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

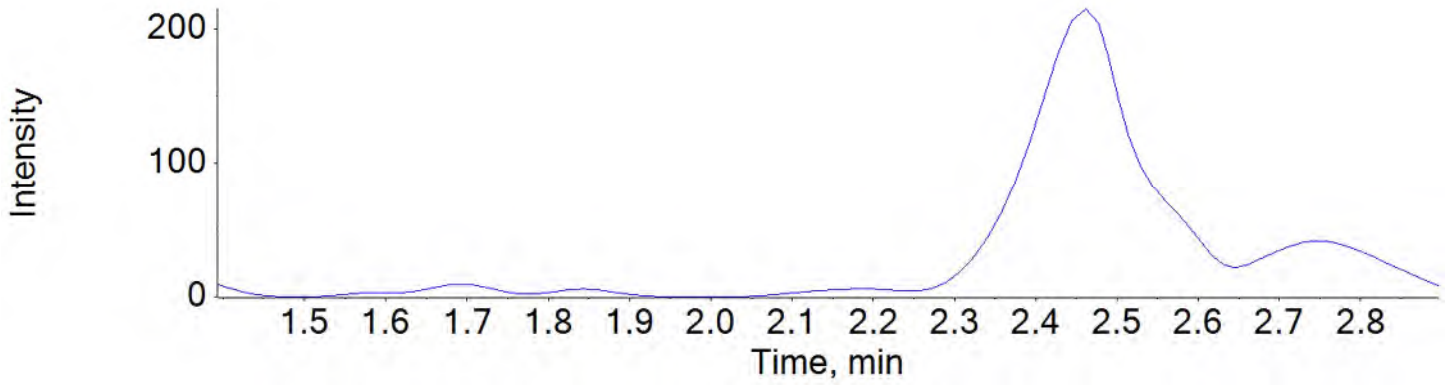


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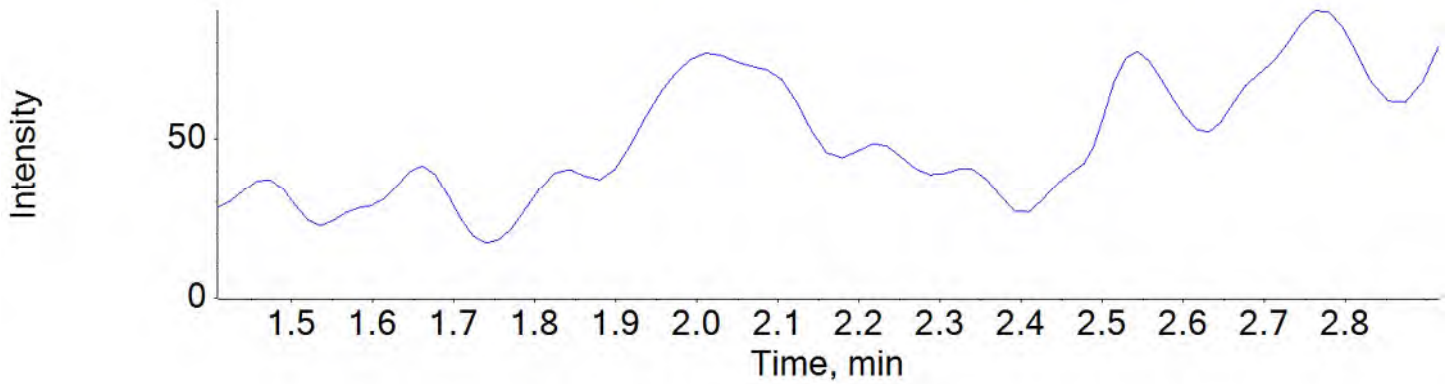
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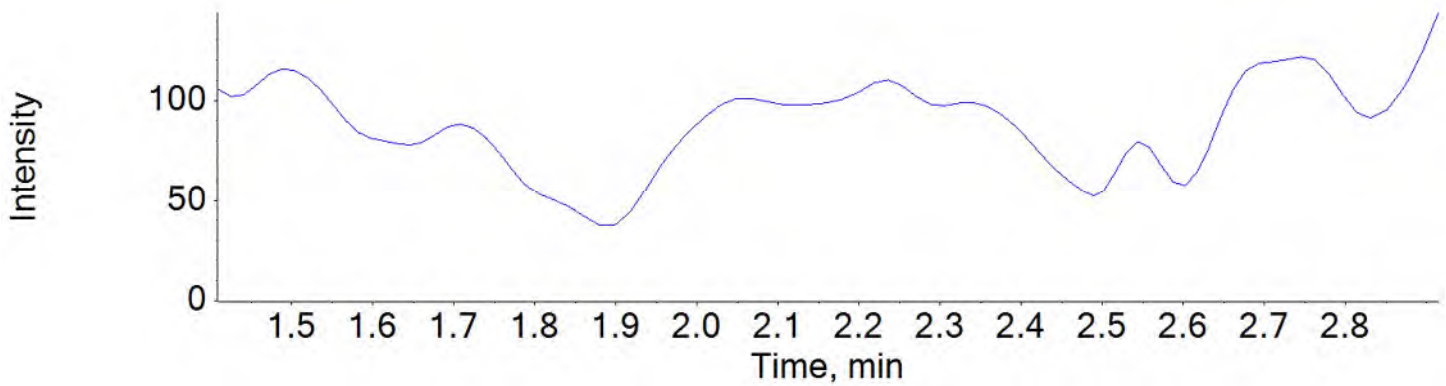
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

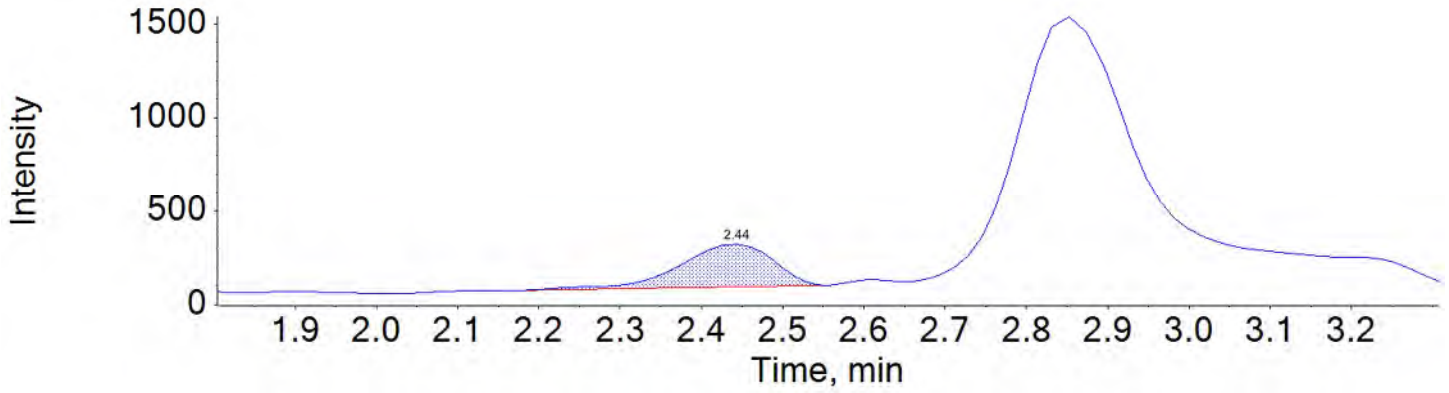


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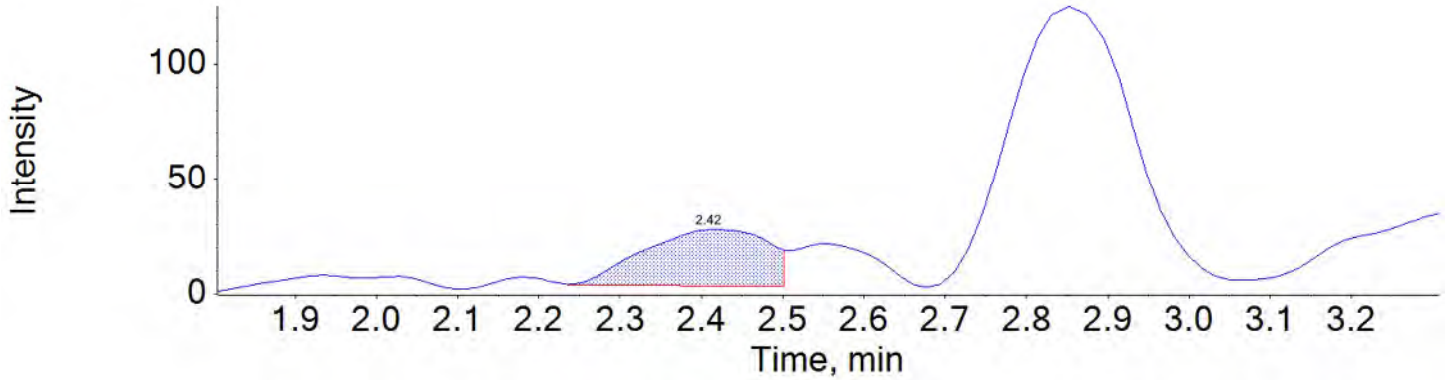
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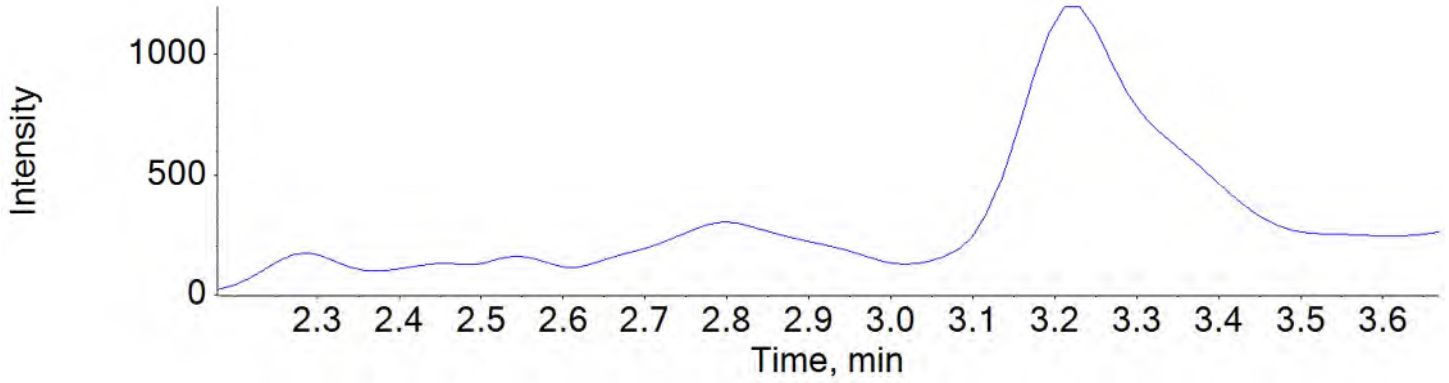
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

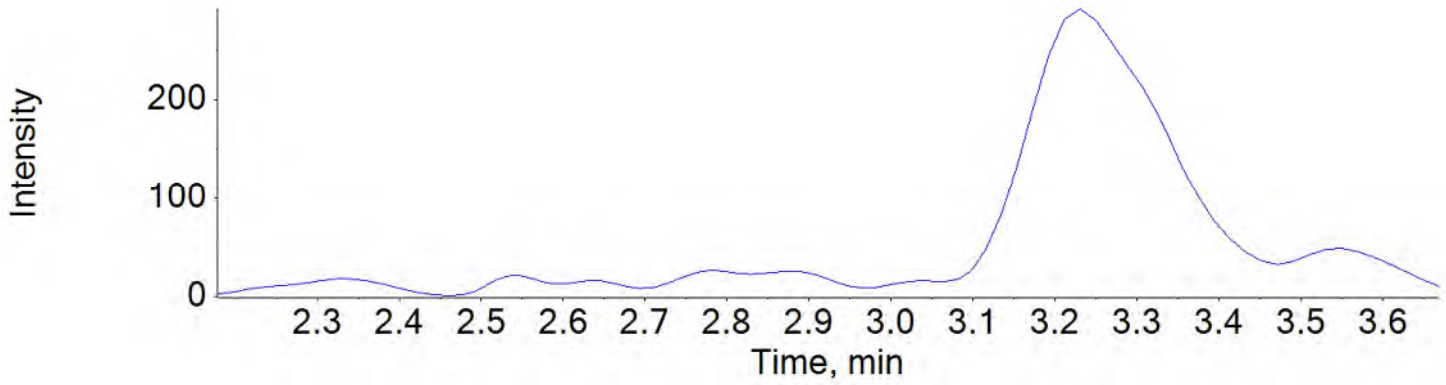


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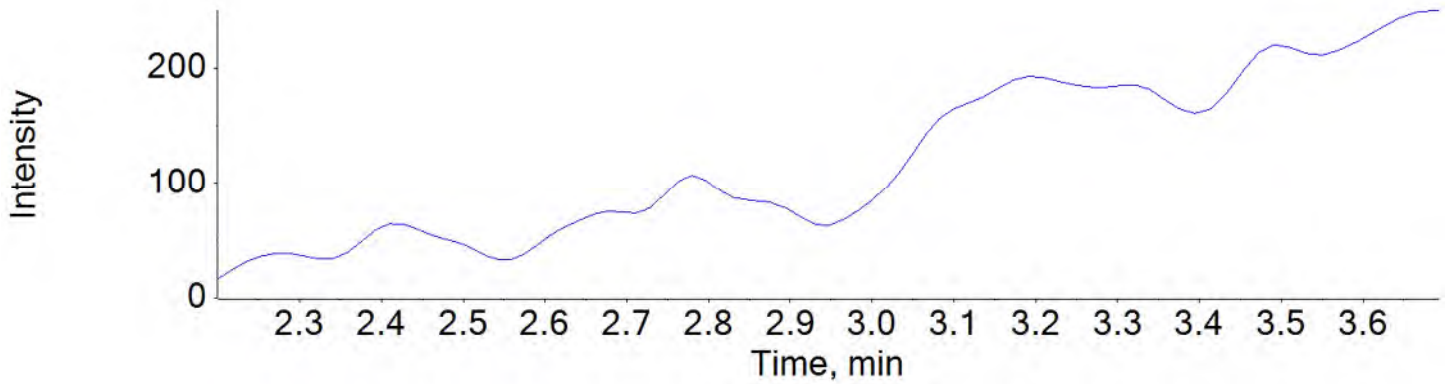
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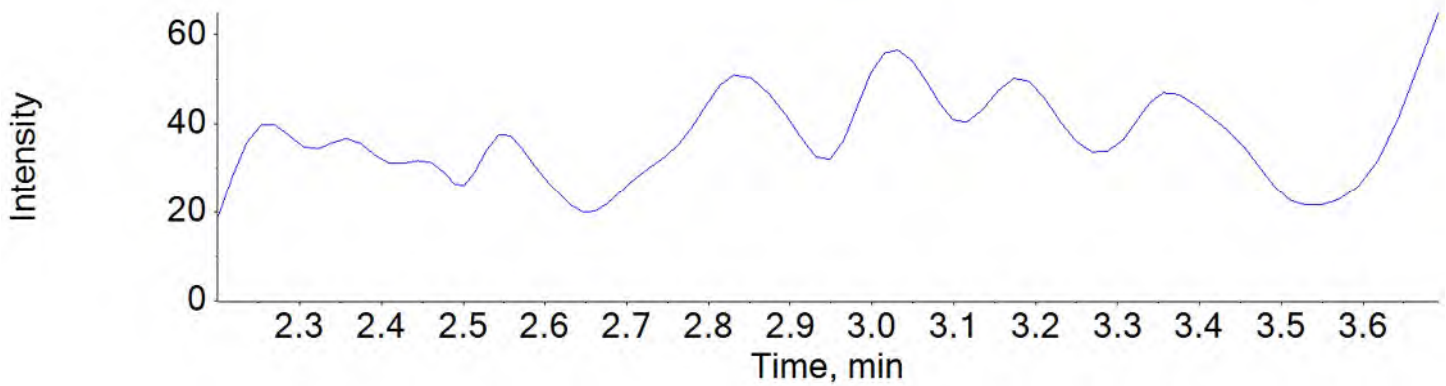
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

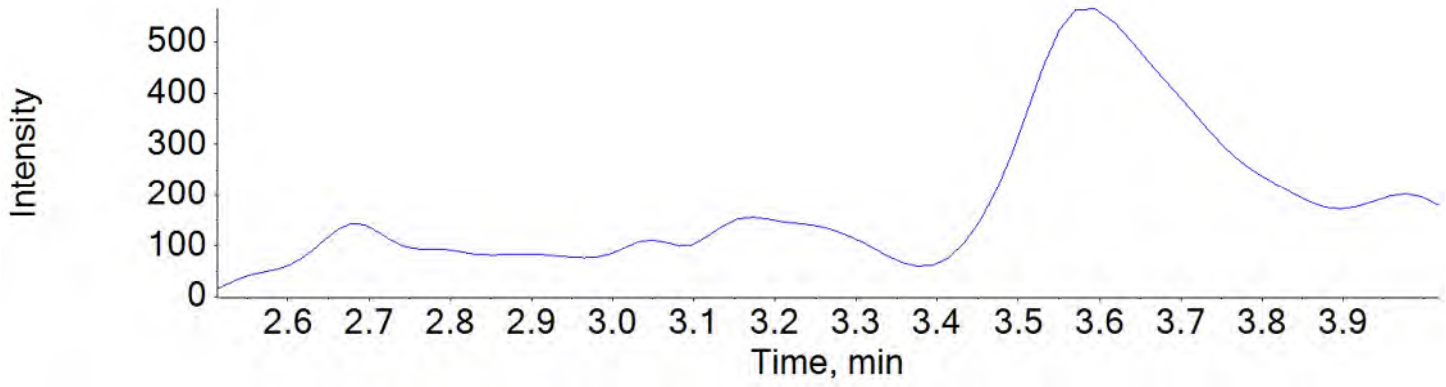


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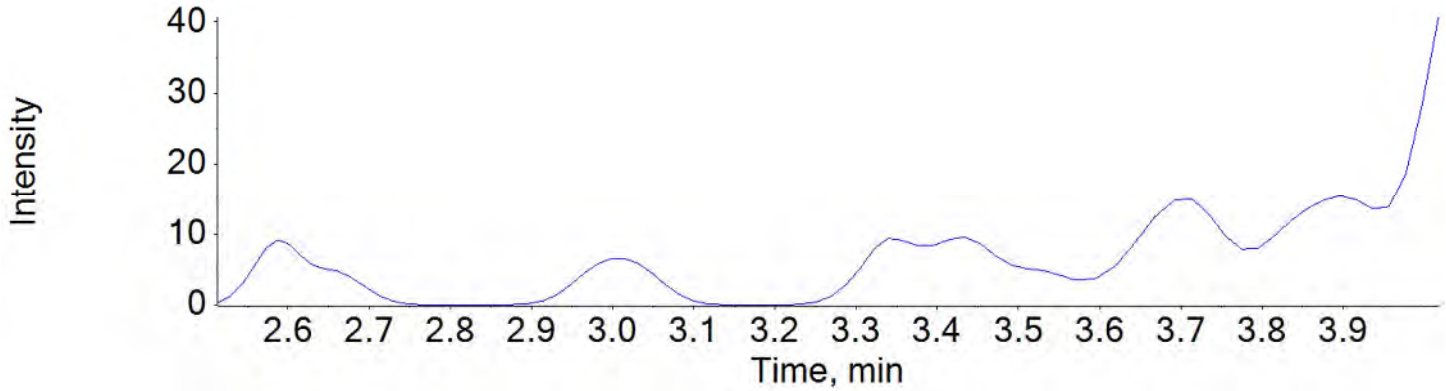
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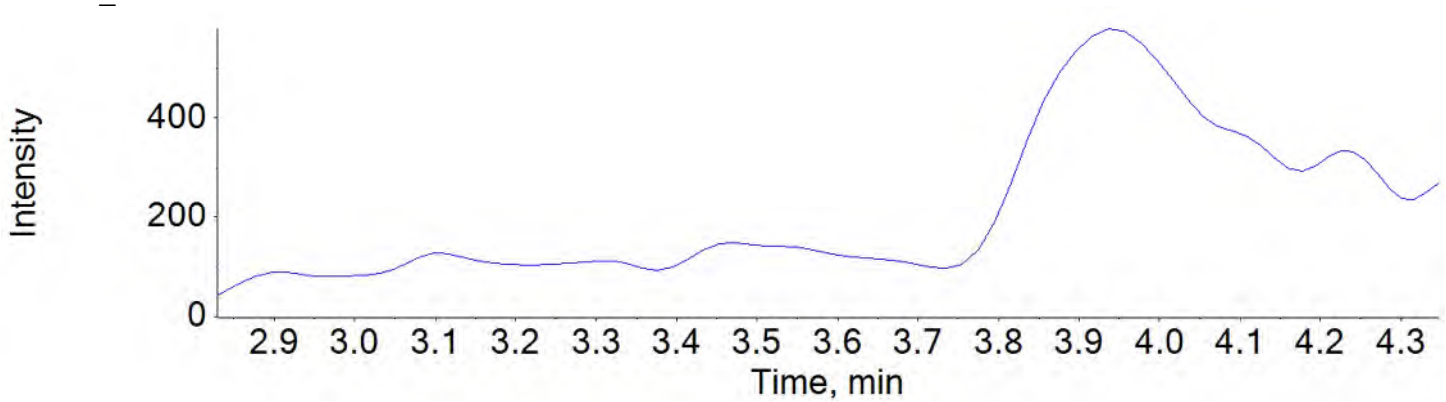
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

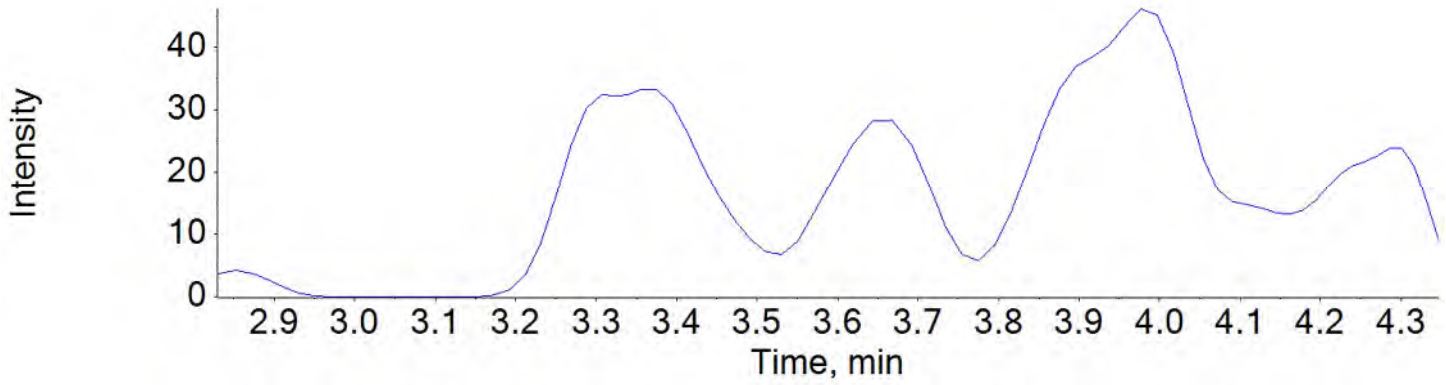


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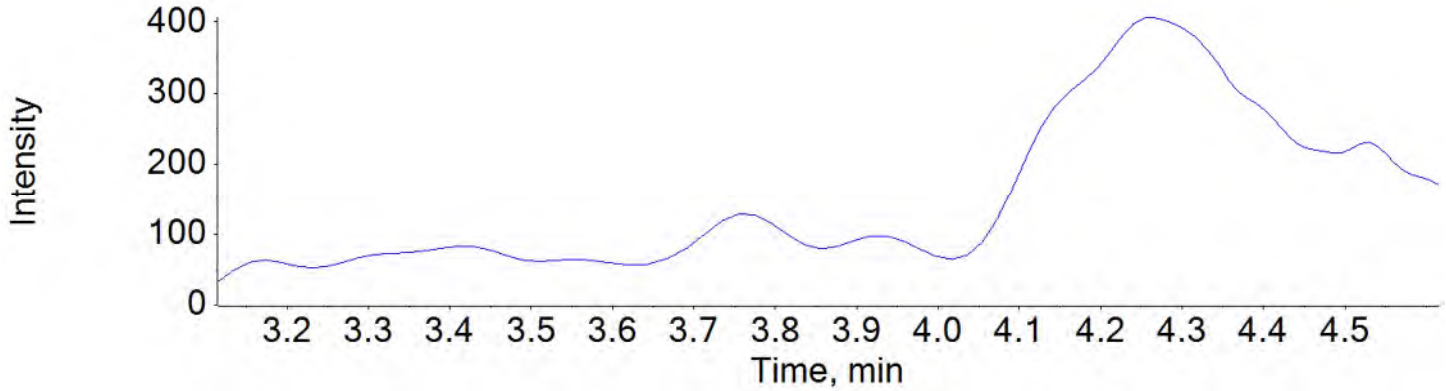
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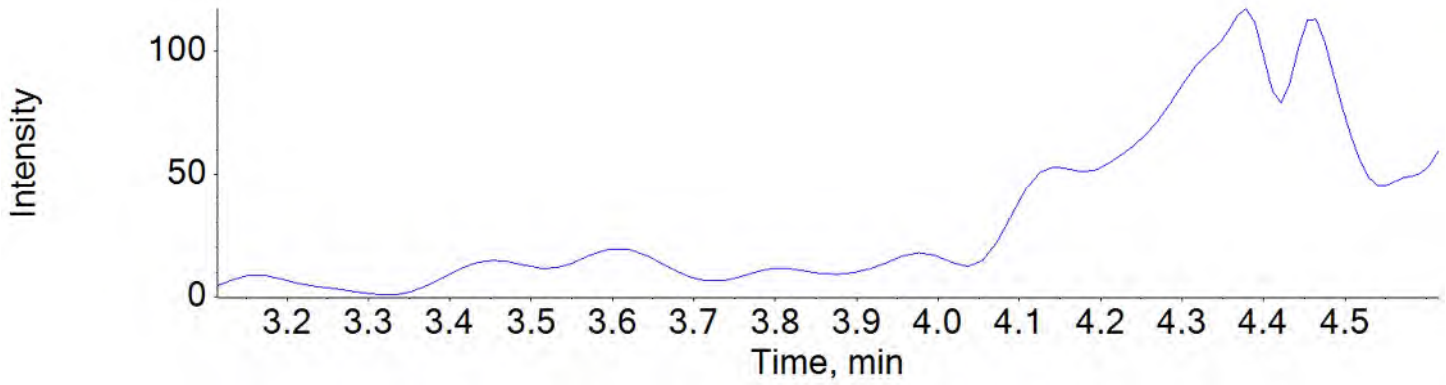
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

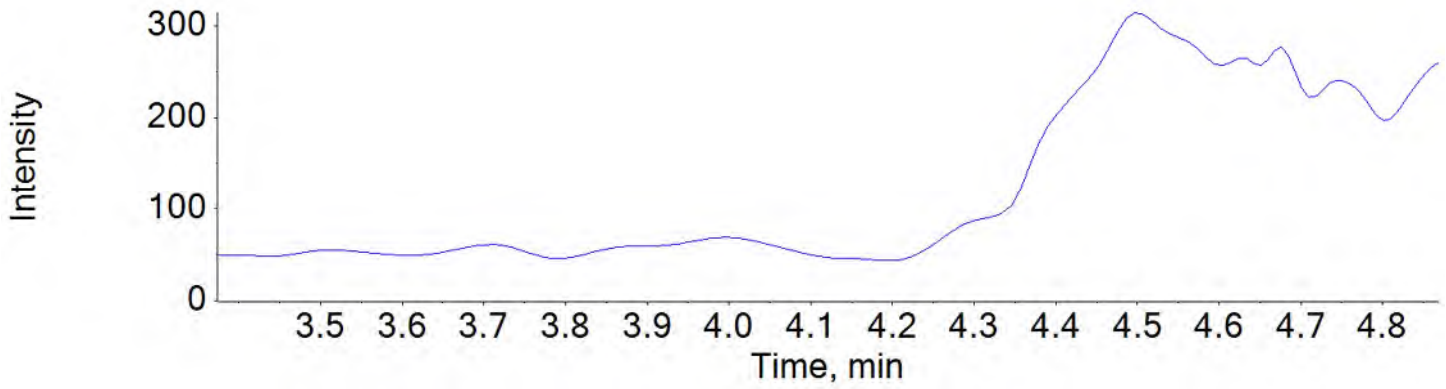


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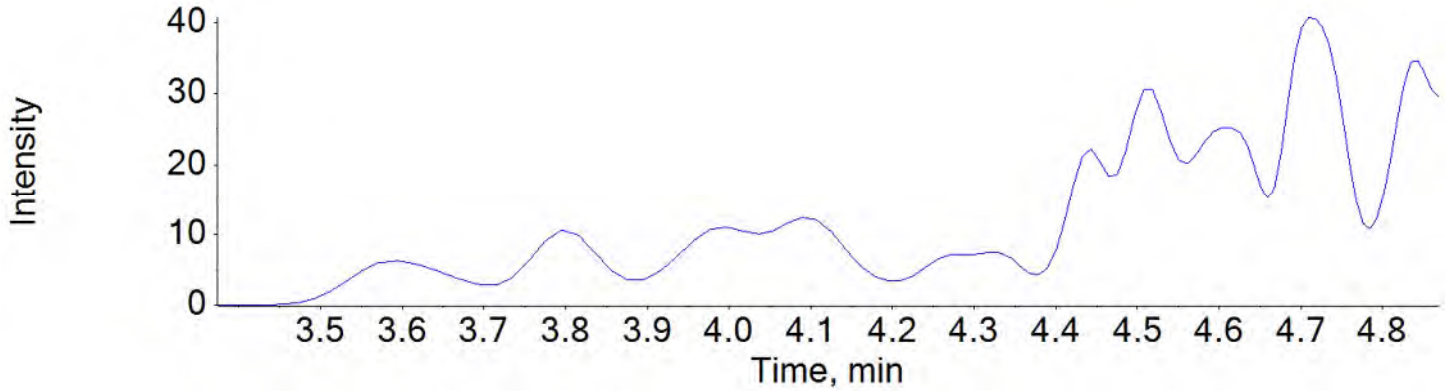
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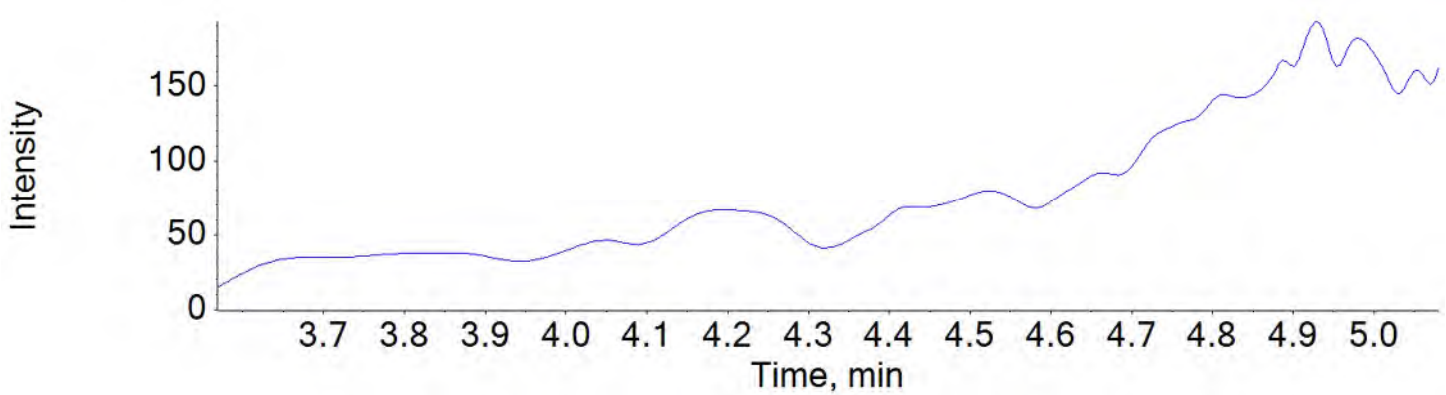
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

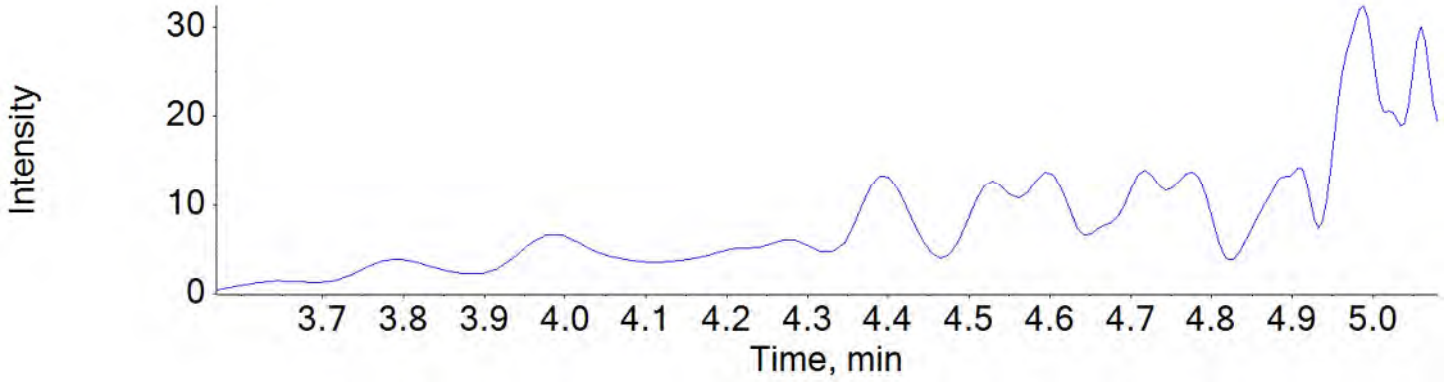


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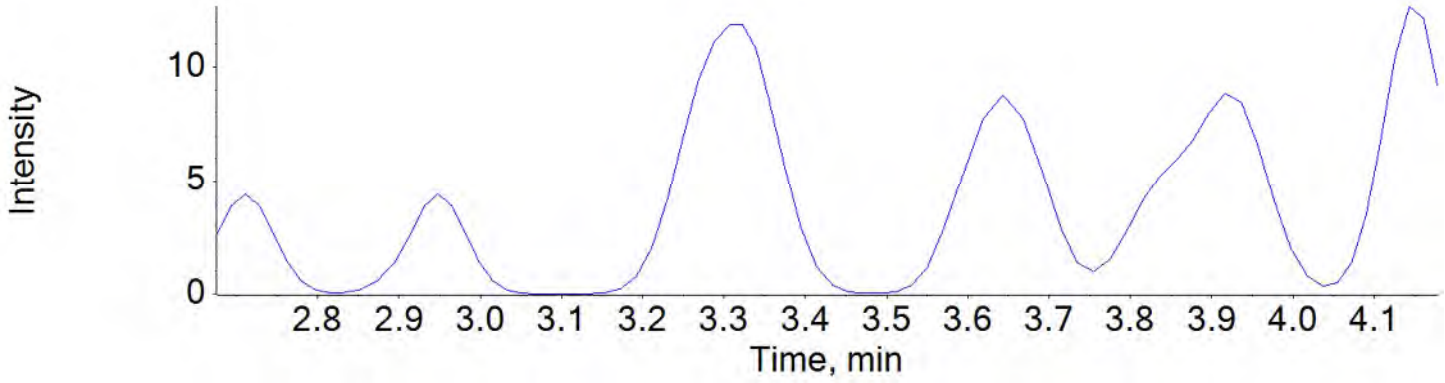
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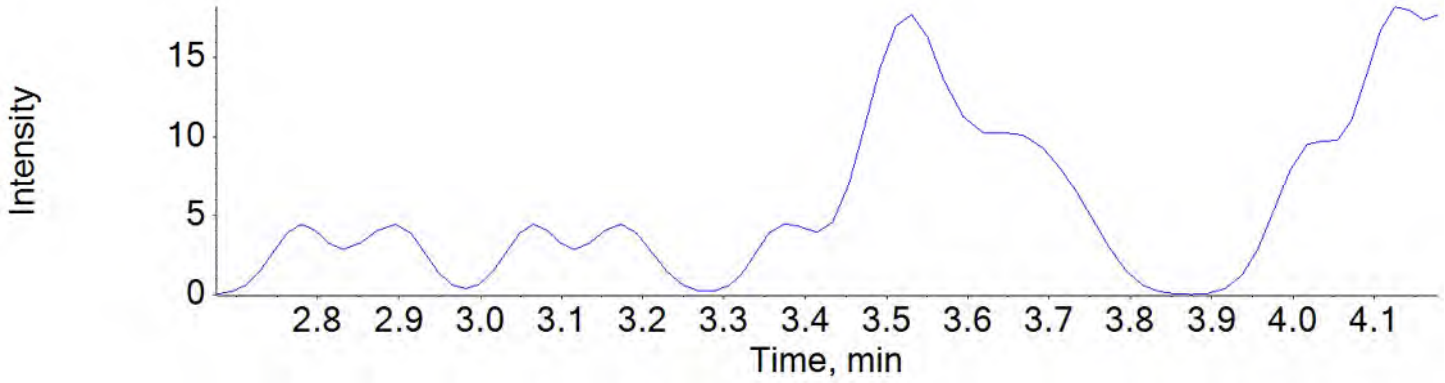
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

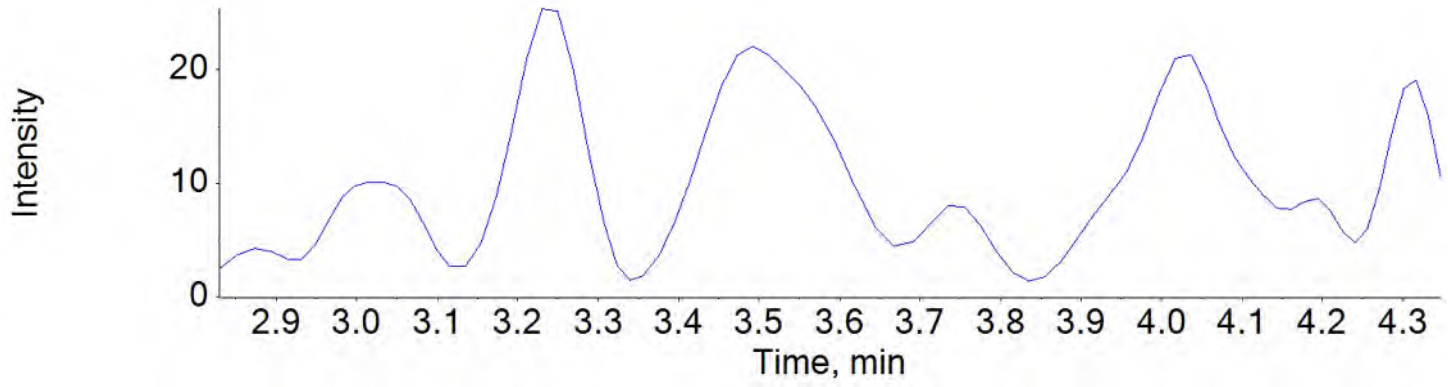


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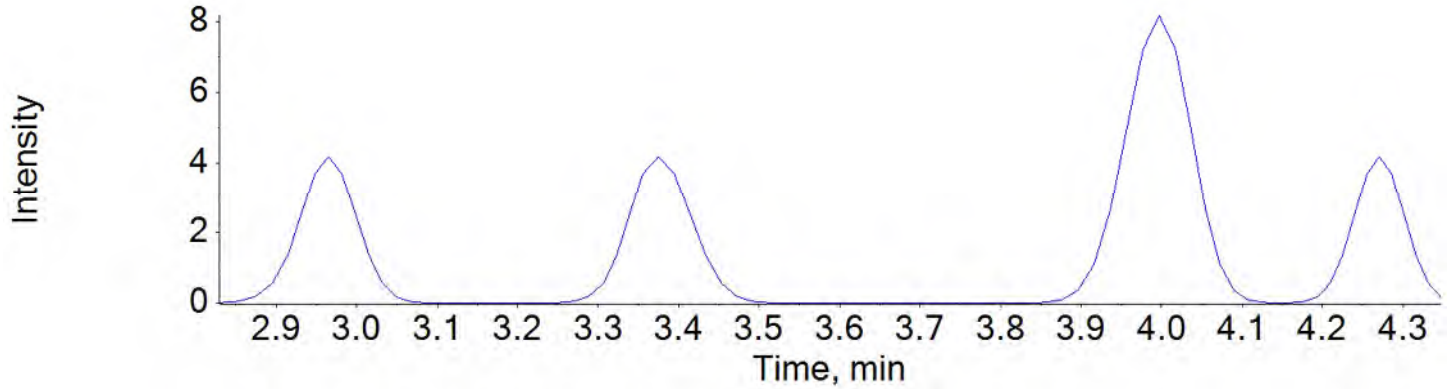
Chromatogram Report

Created with Analyst Reporter
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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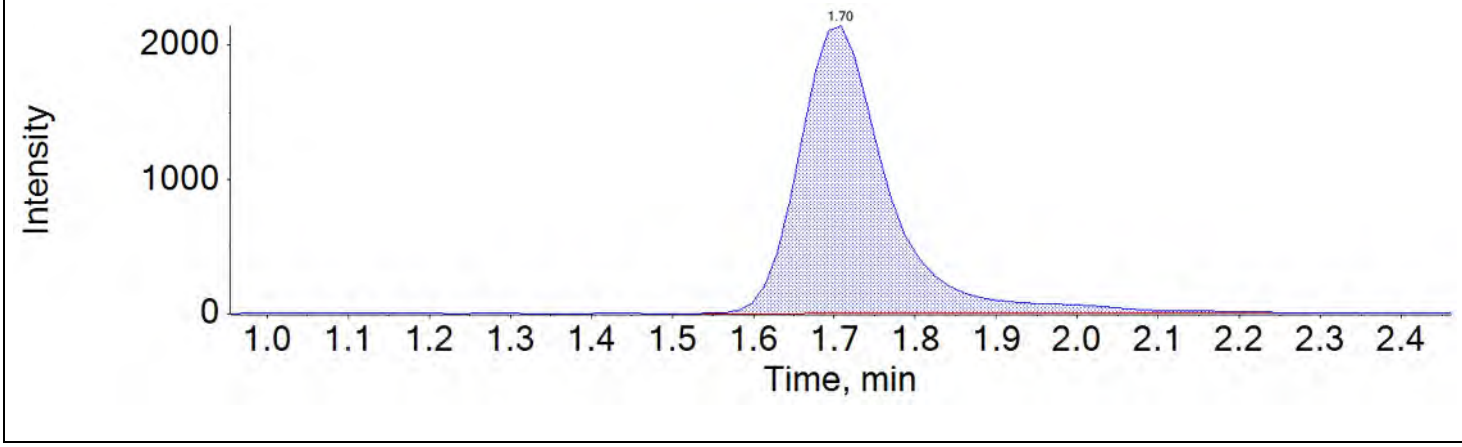
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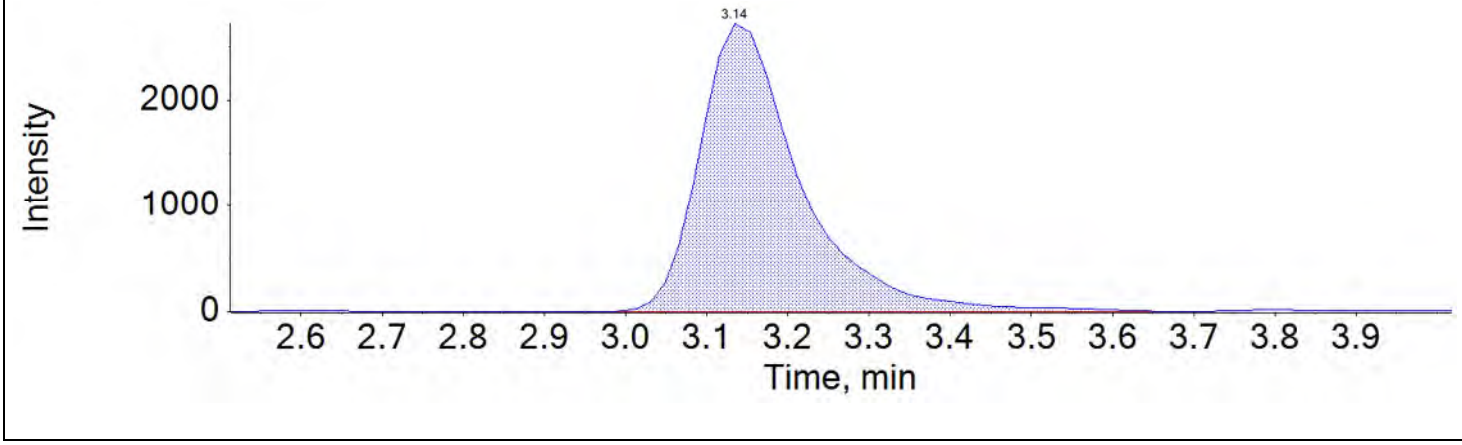
Sample Name	J6155-FS(0)	**Injection Vial**	20
Sample ID	NAWC-050718-FRB-145	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:20:15	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

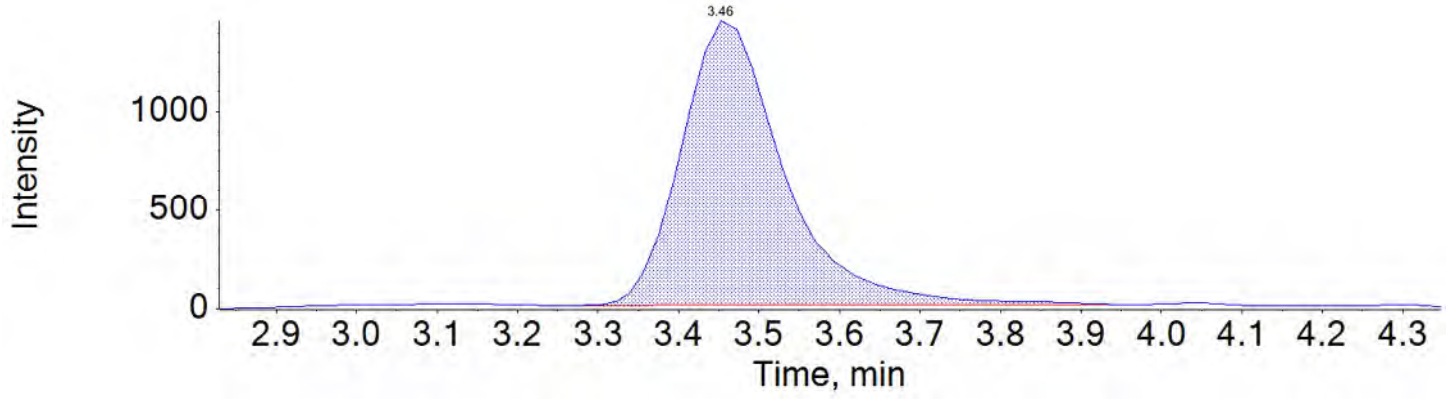


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Chromatogram Report

Created with Analyst Reporter
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d5-EtFOSAA 589.0 / 419.0



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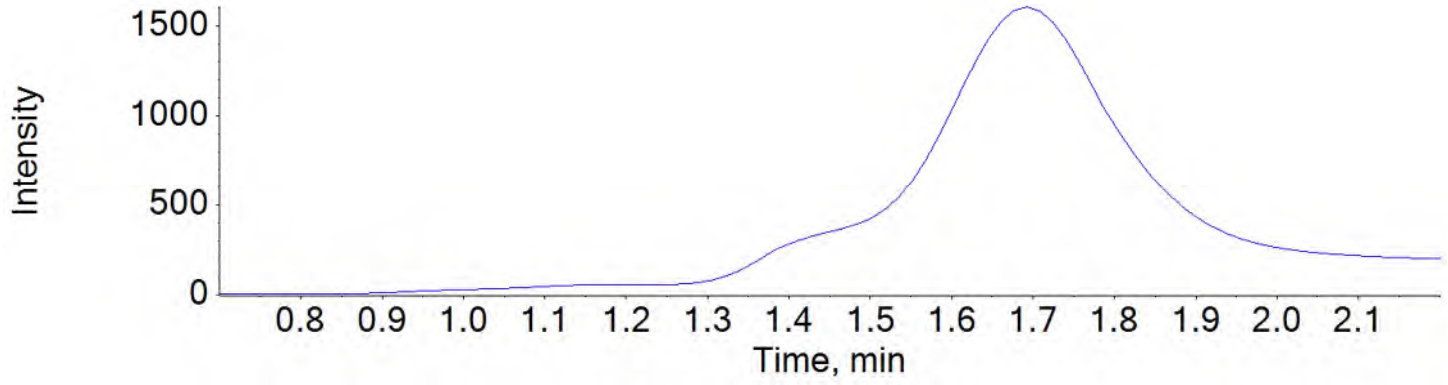
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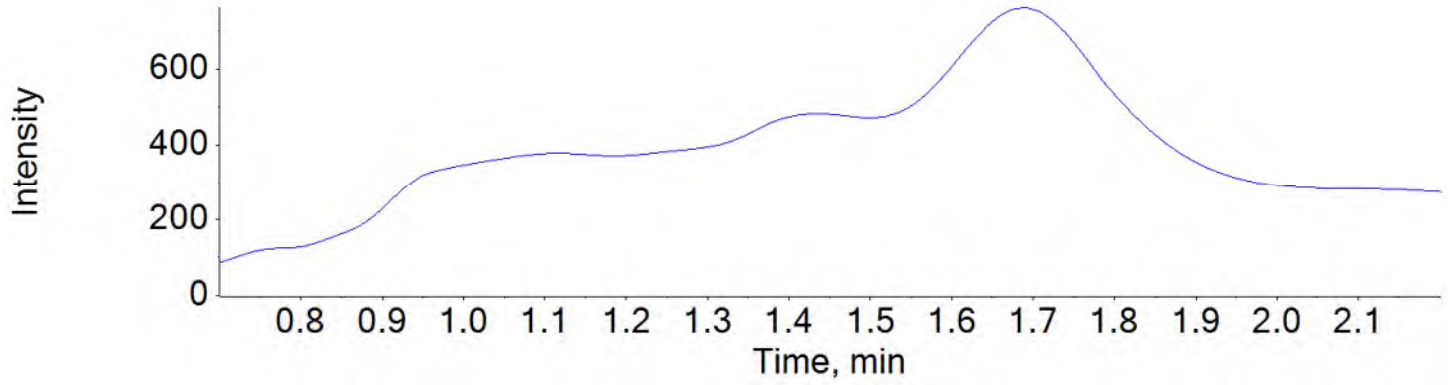
Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

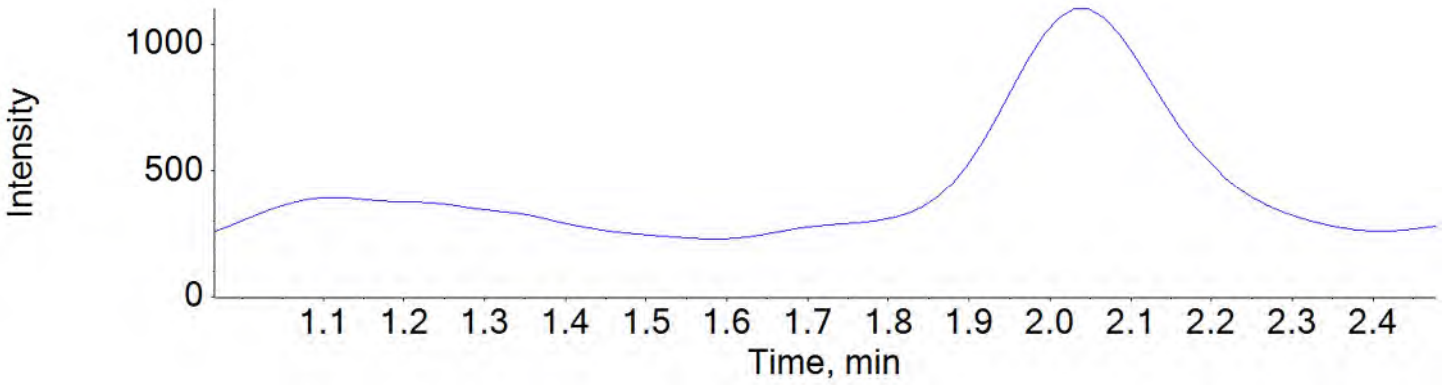


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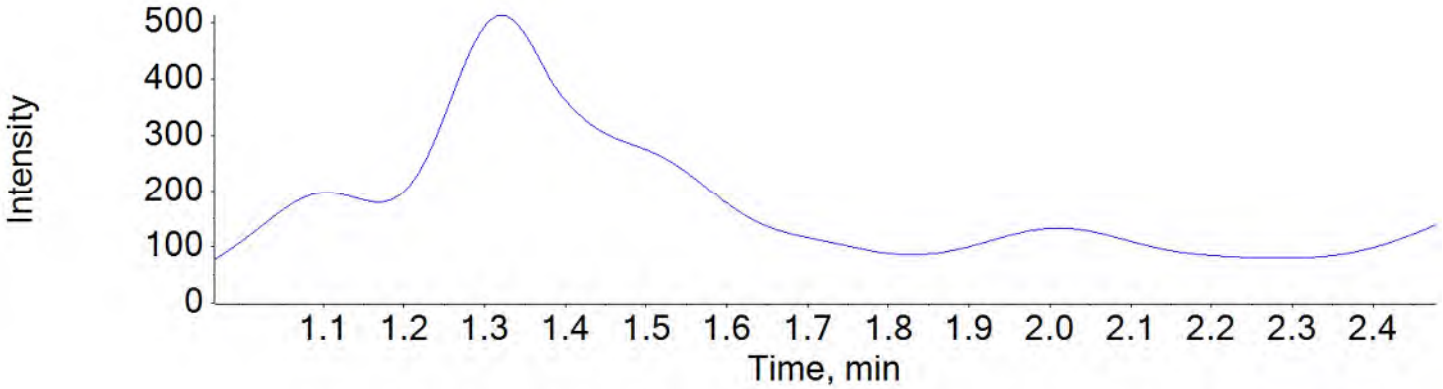
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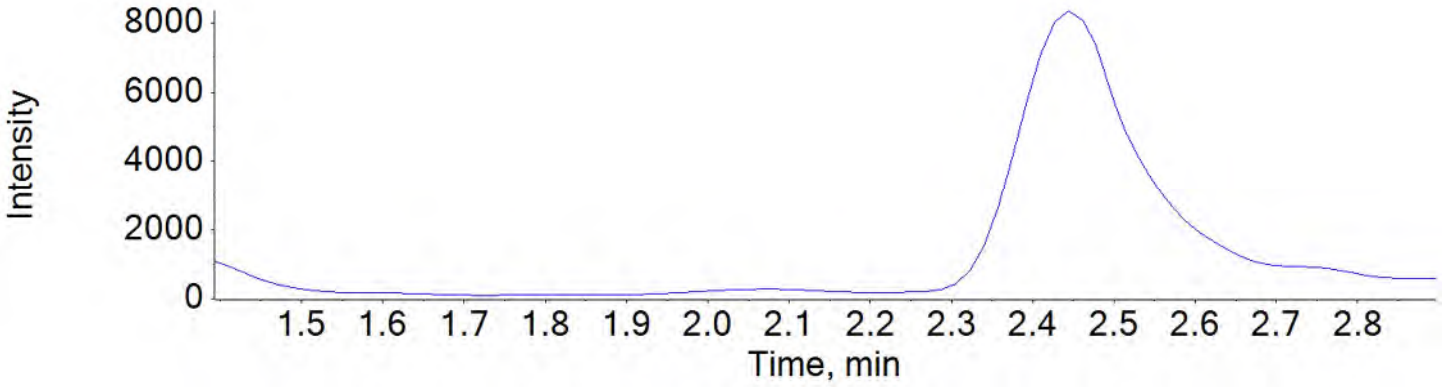
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

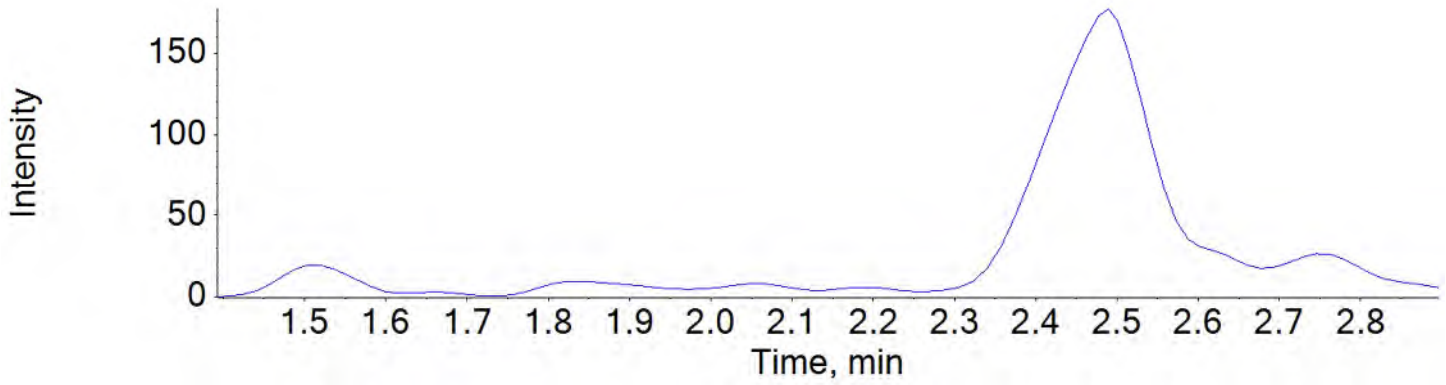


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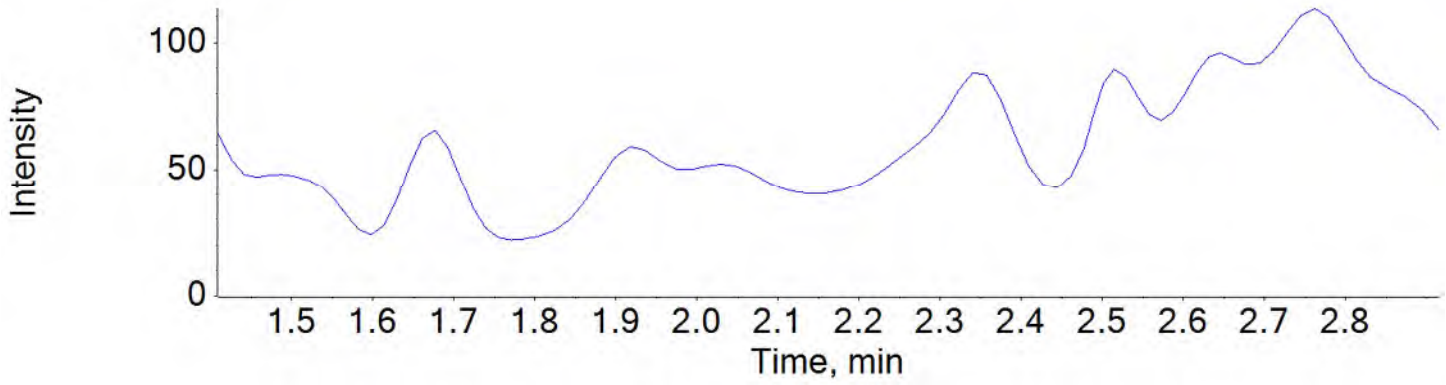
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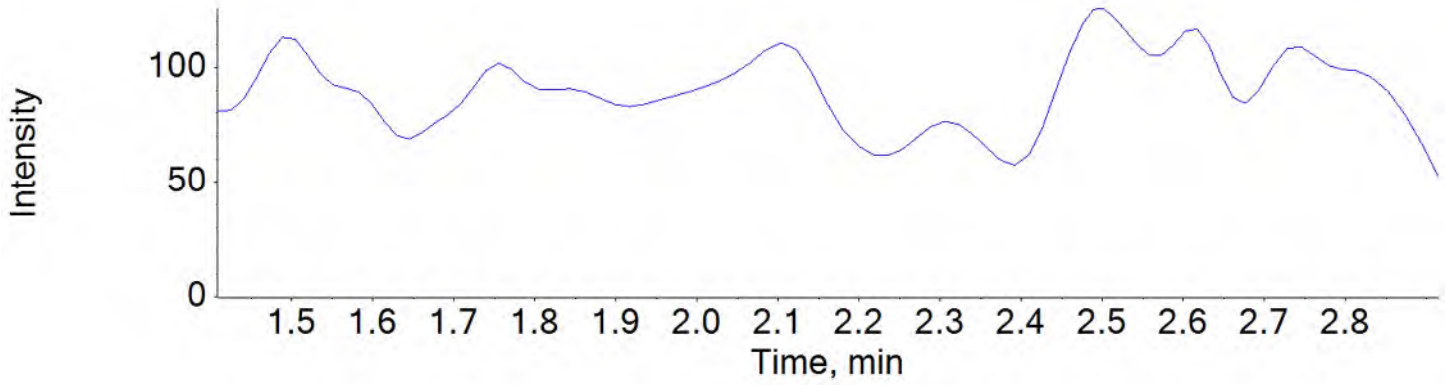
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

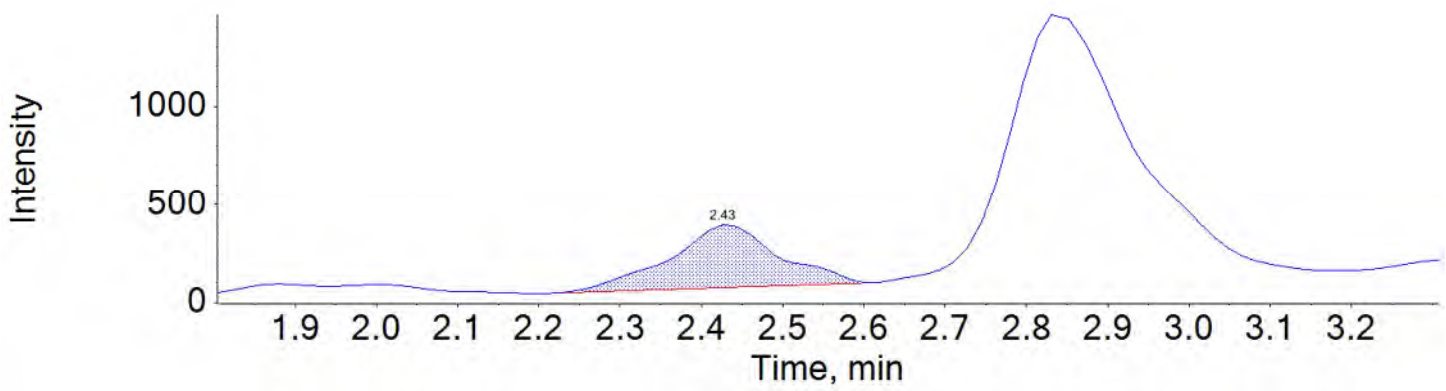


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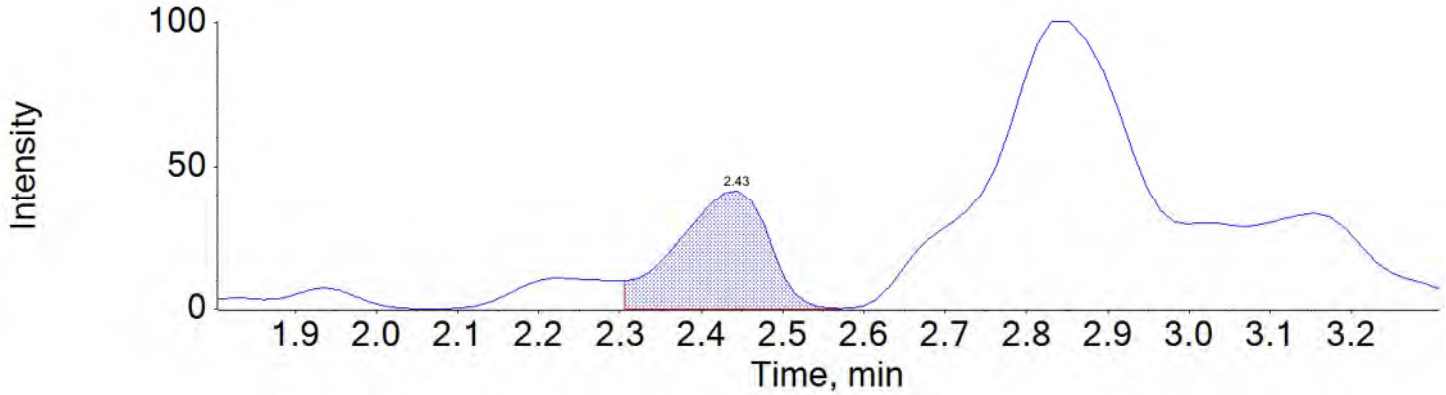
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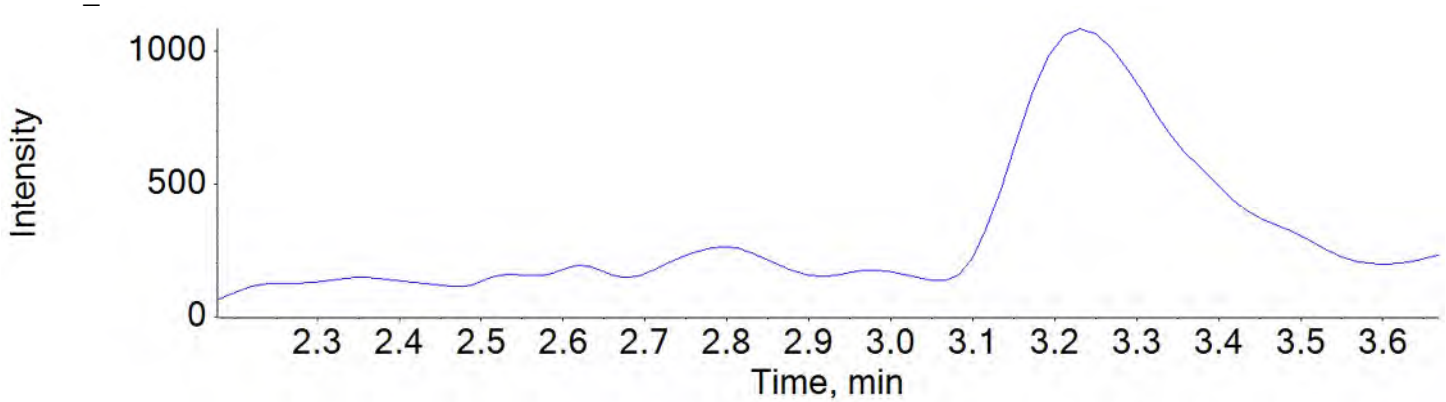
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

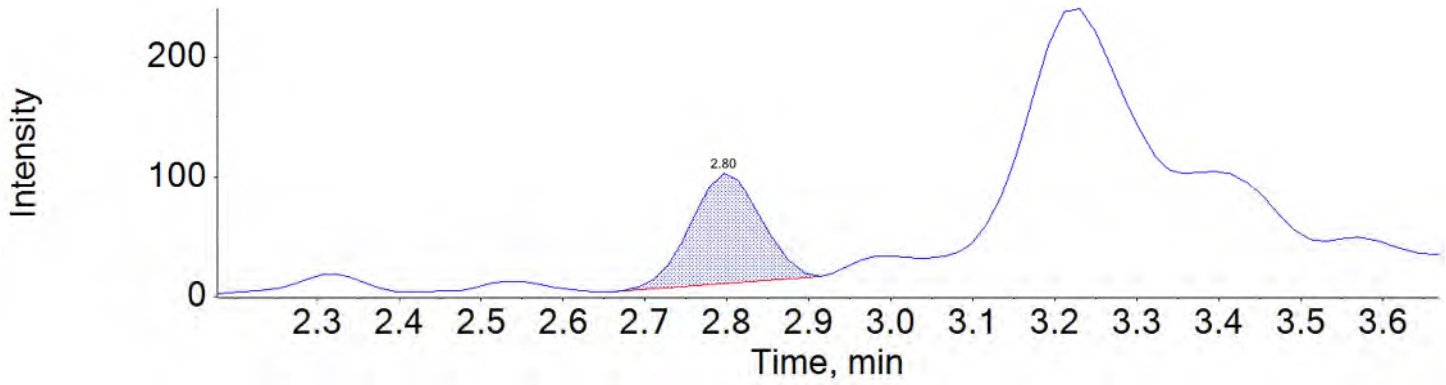


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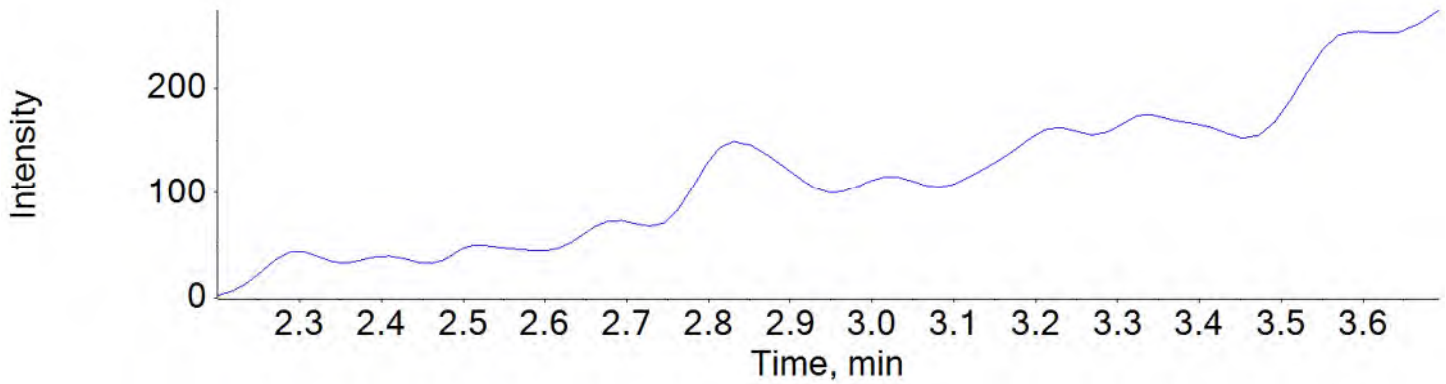
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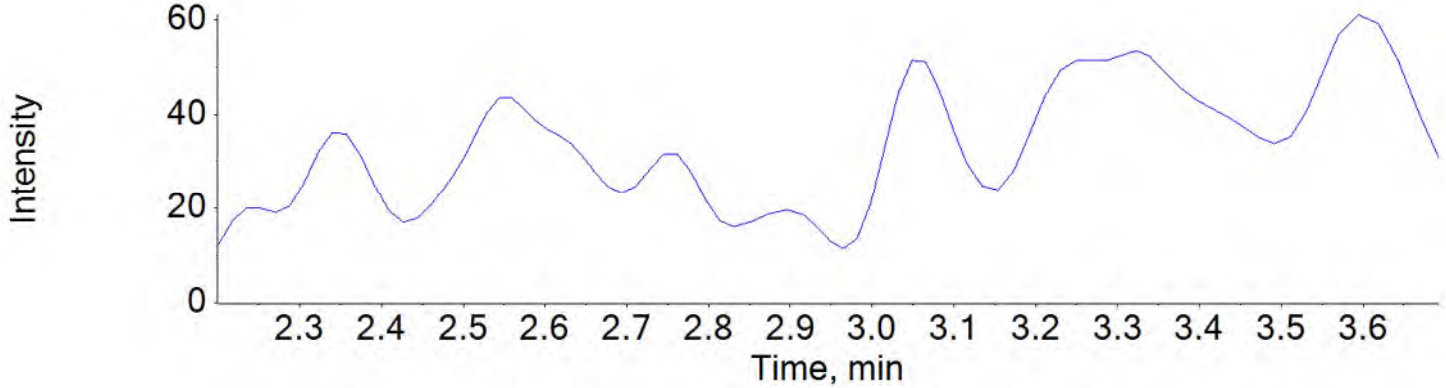
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

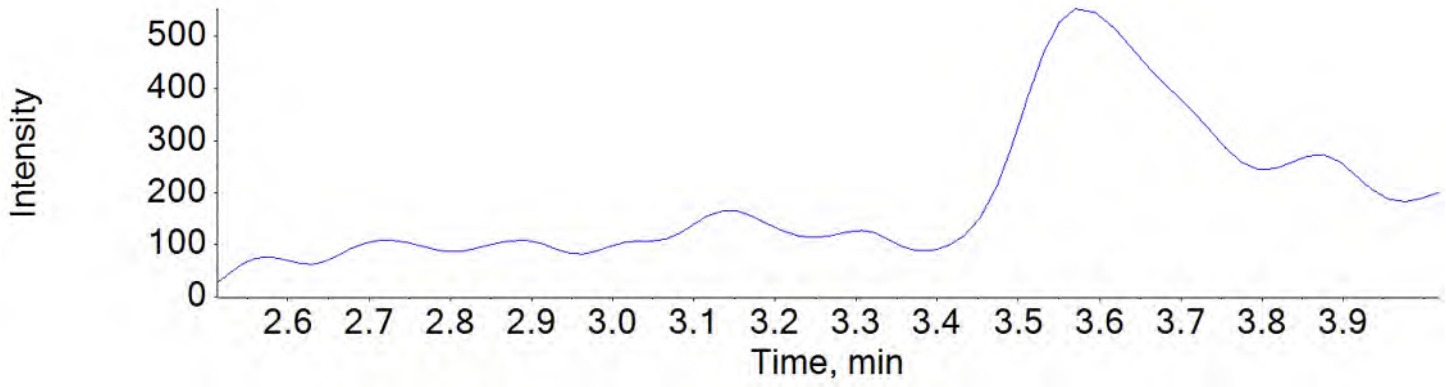


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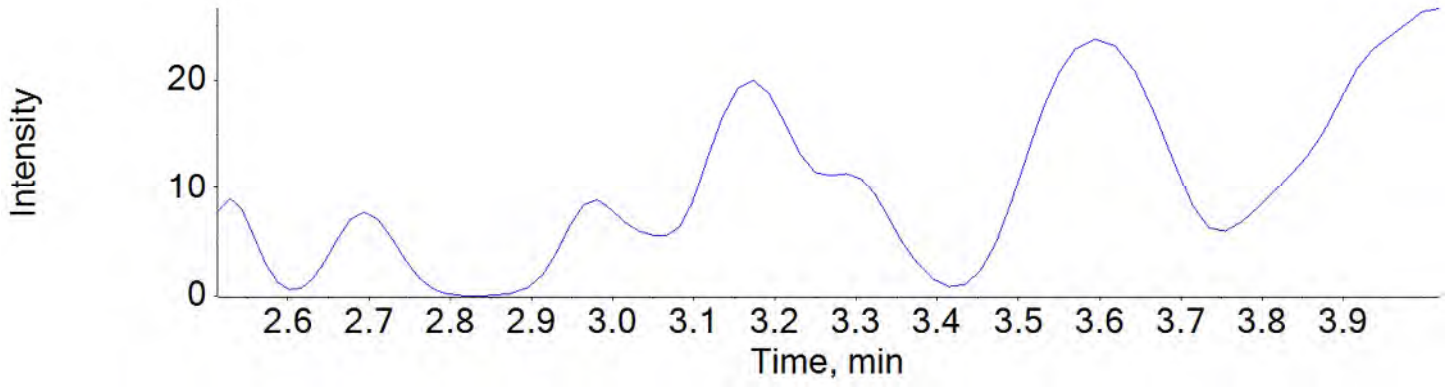
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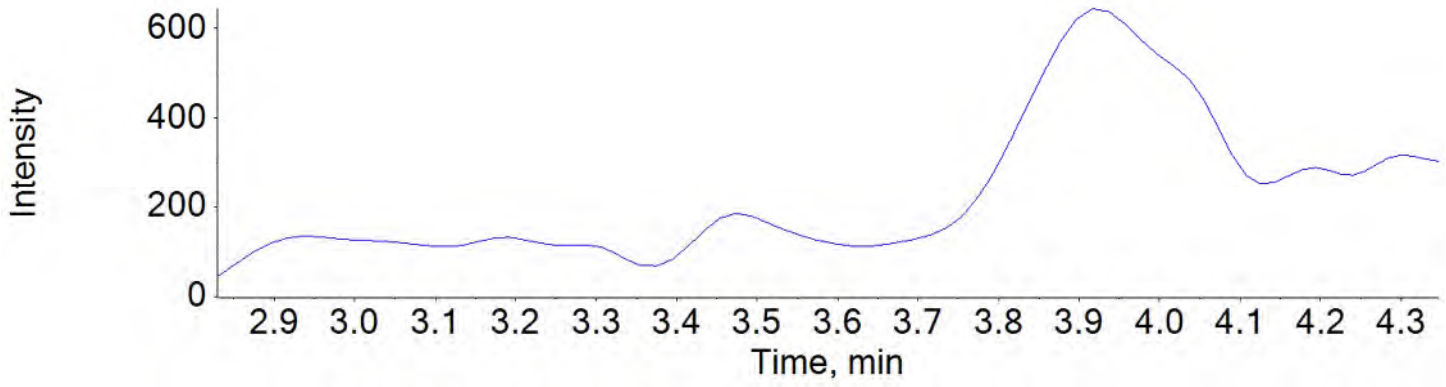
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

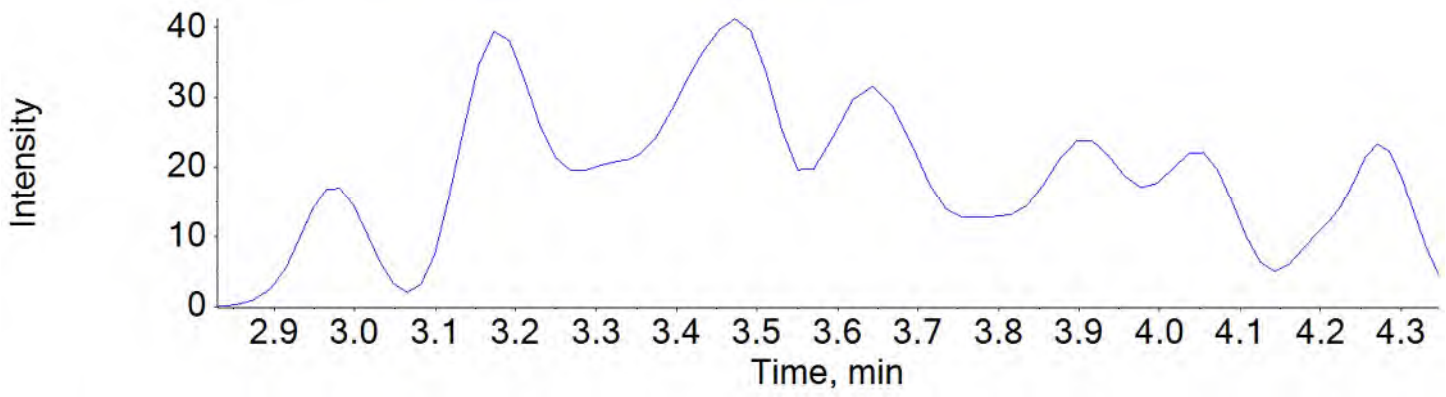


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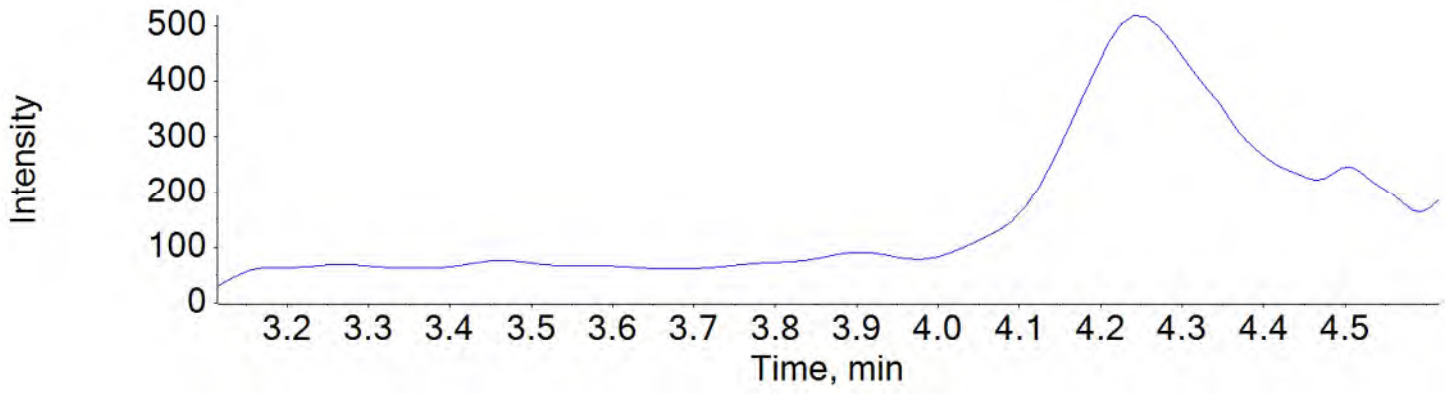
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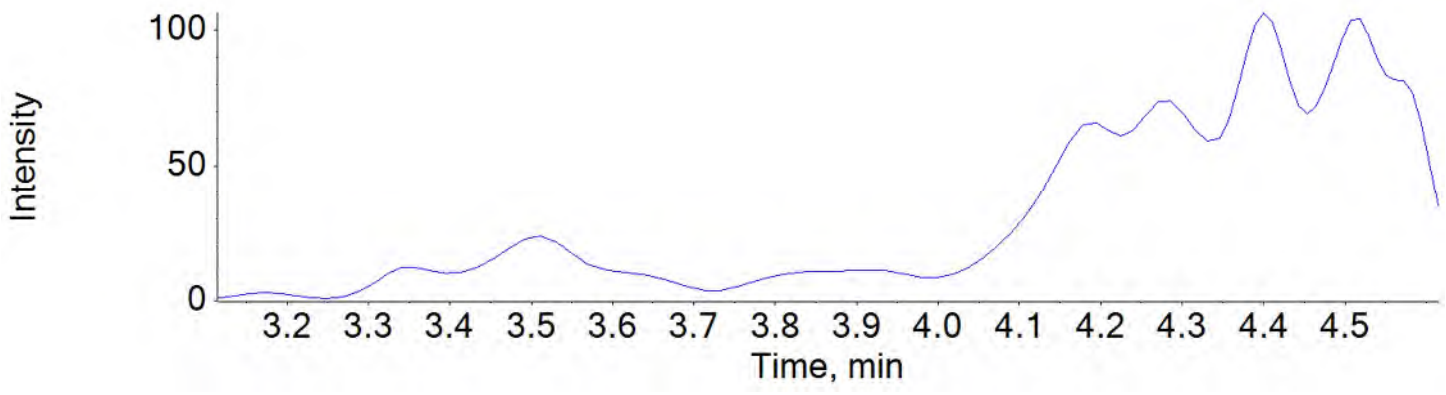
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

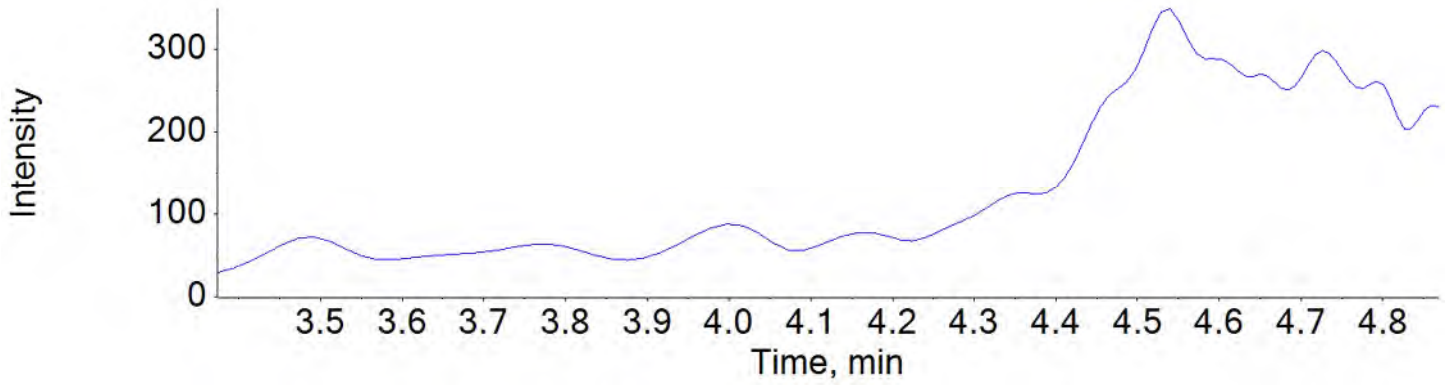


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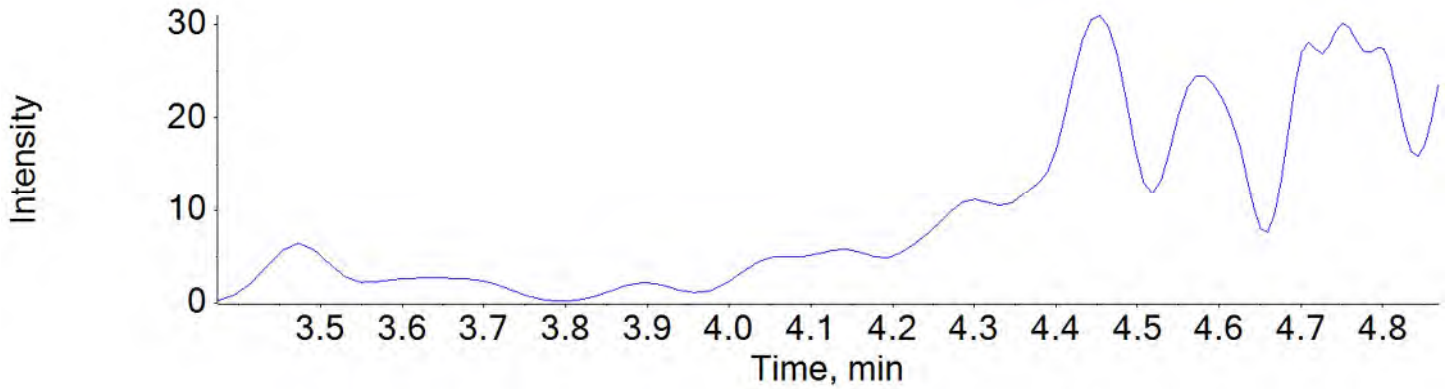
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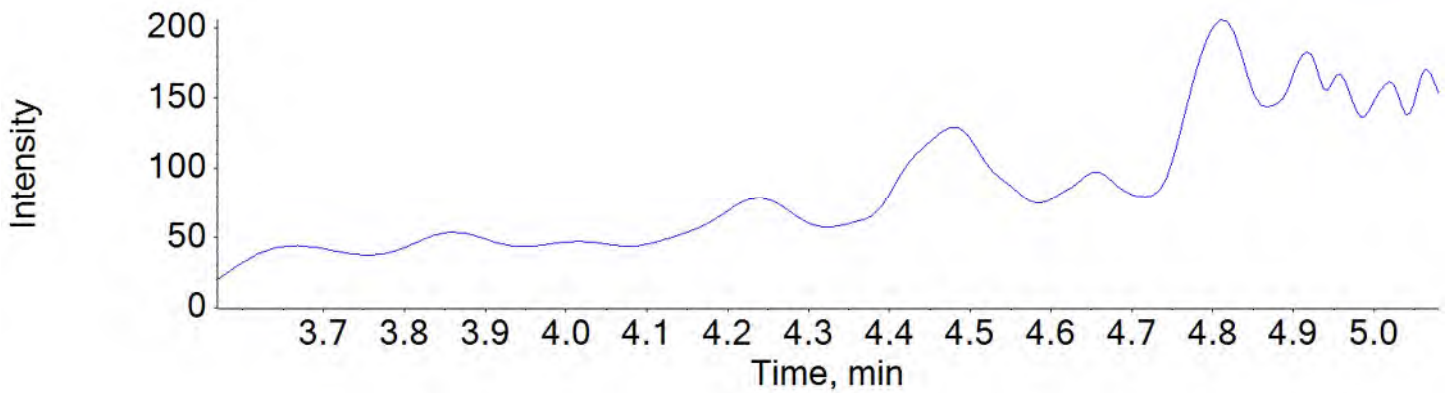
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

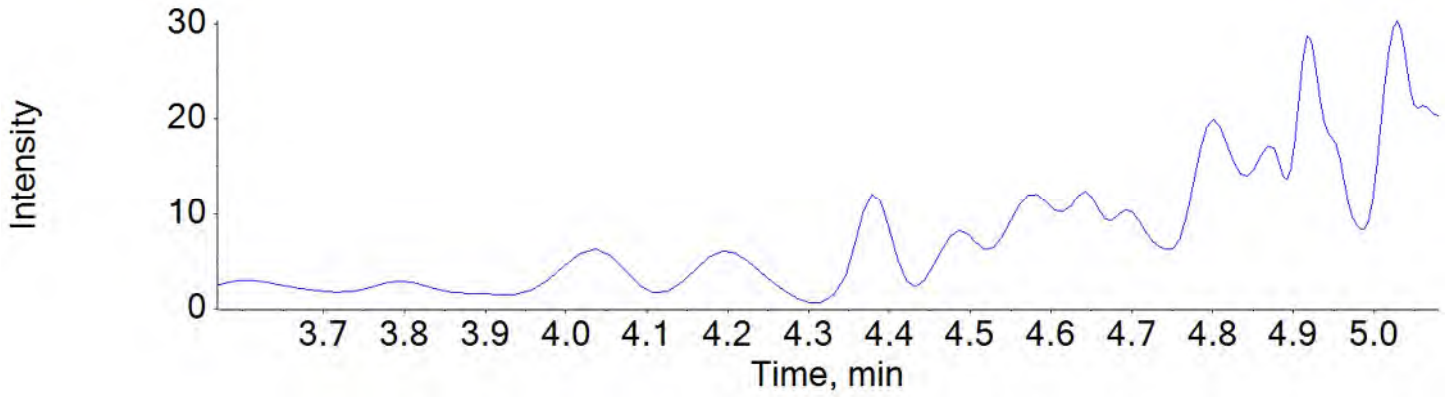


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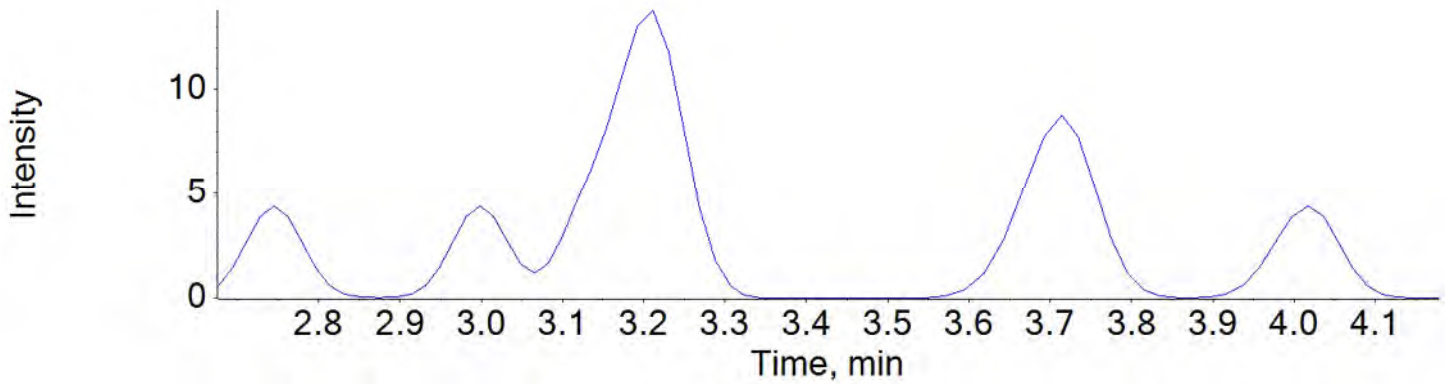
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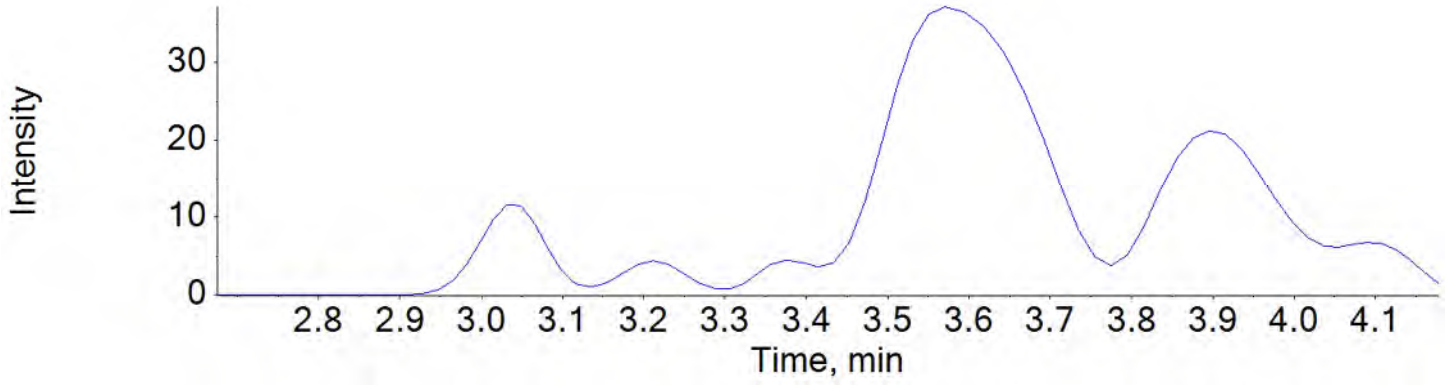
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

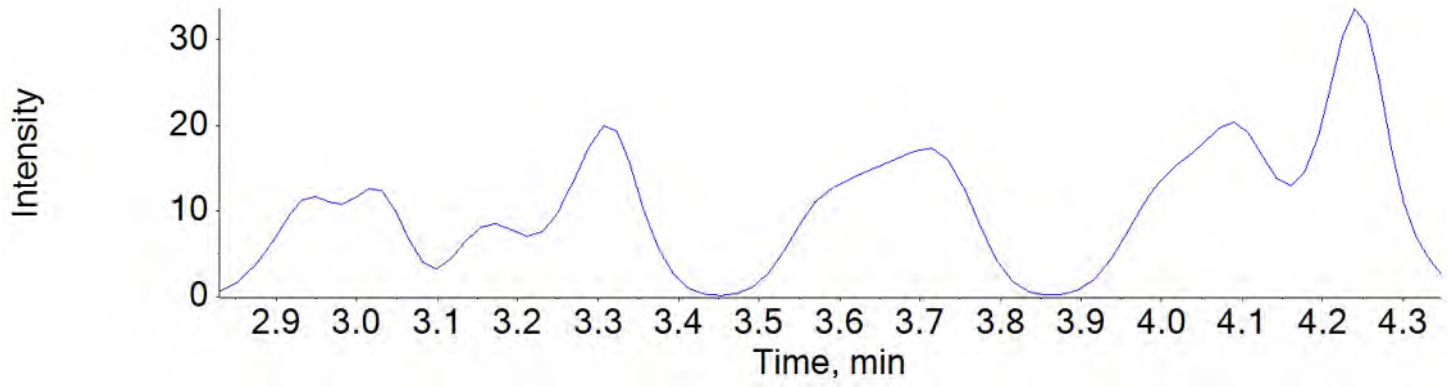


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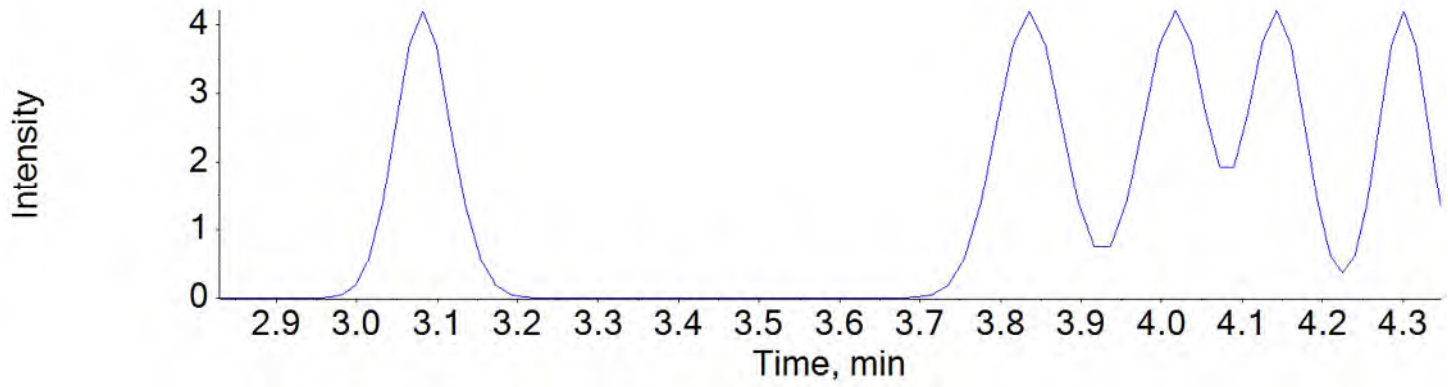
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

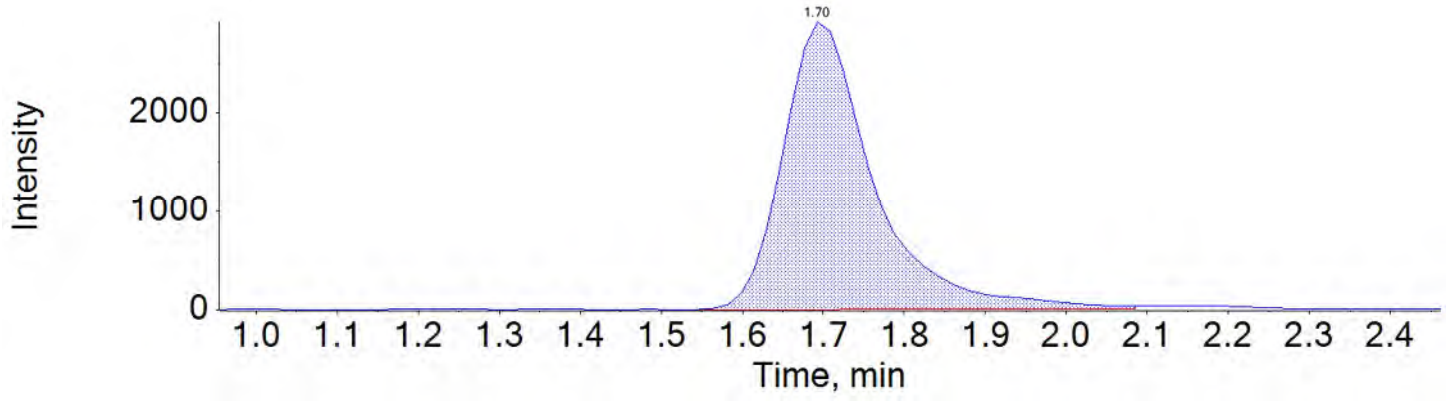
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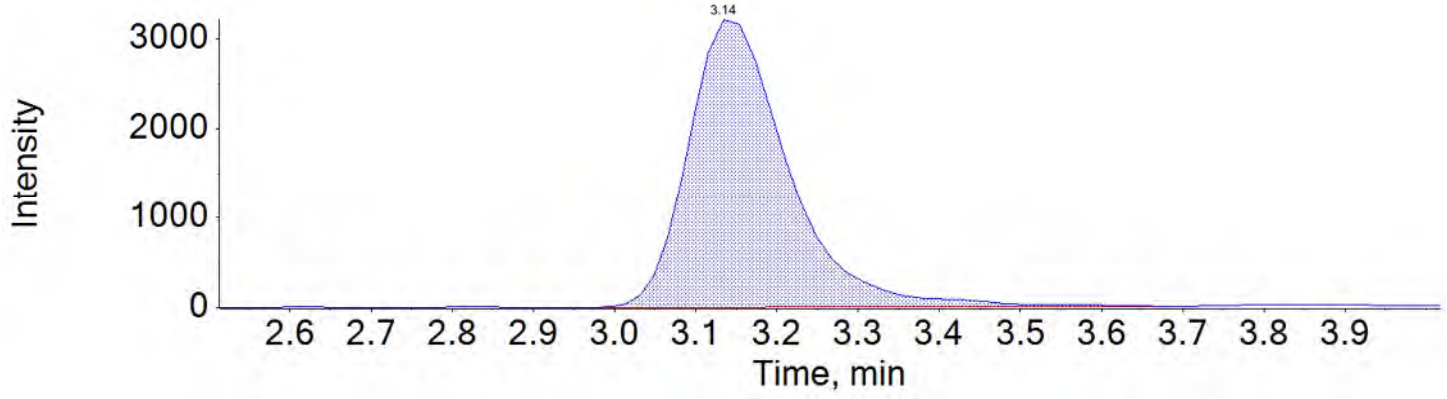
Sample Name	J6157-FS(0)	**Injection Vial**	21
Sample ID	NAWC-050718-FRB-357	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:29:12	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

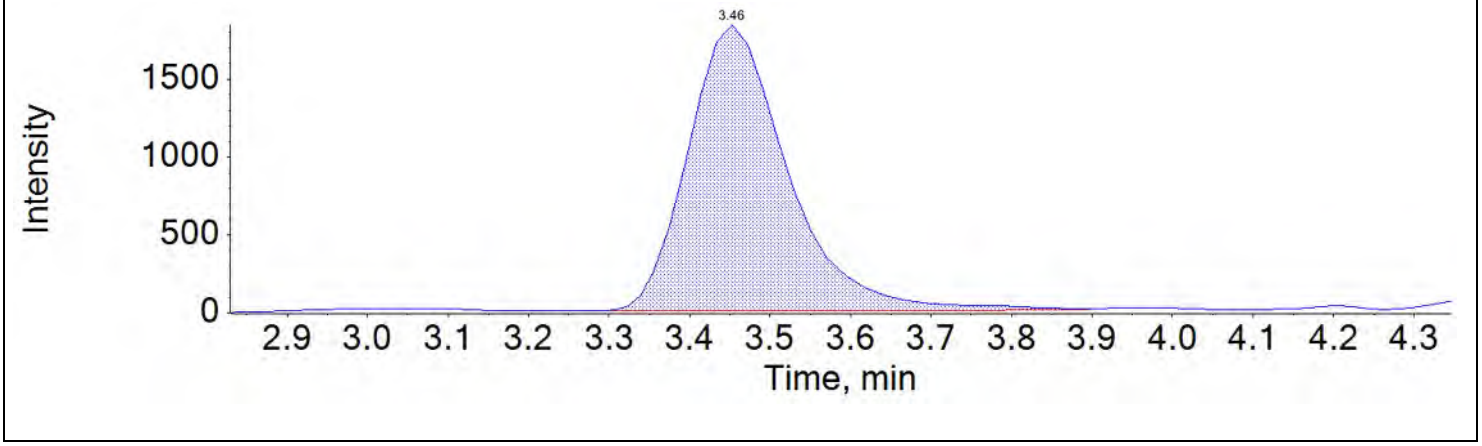


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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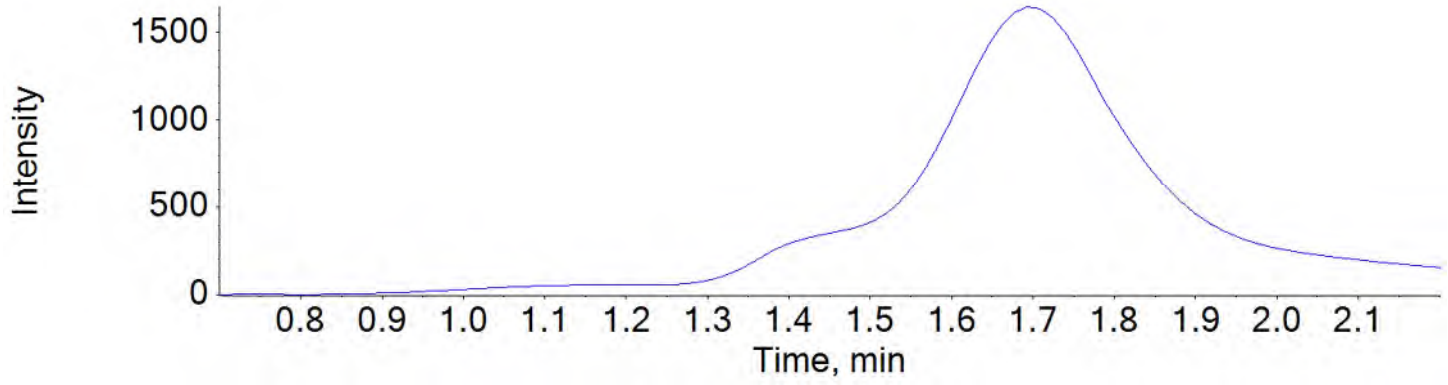
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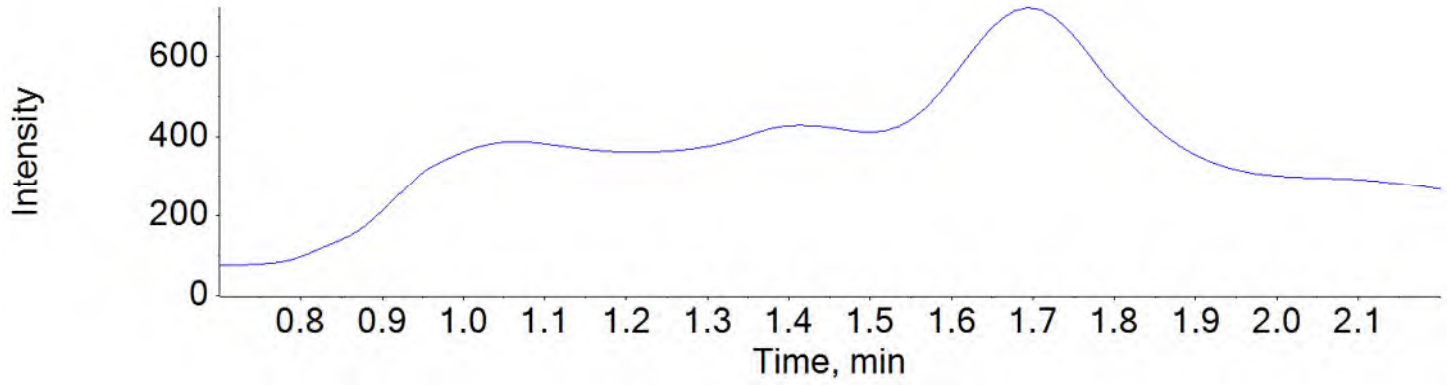
Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

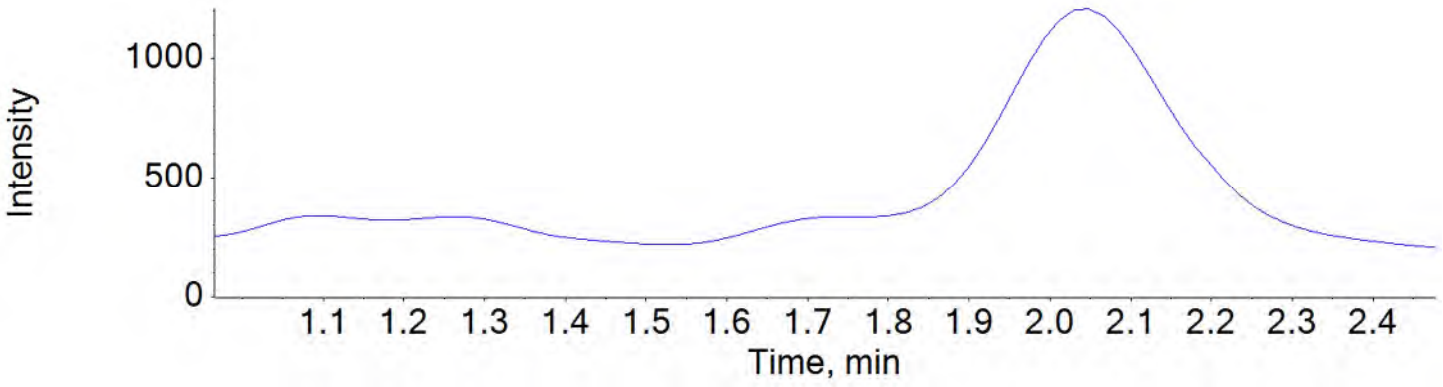


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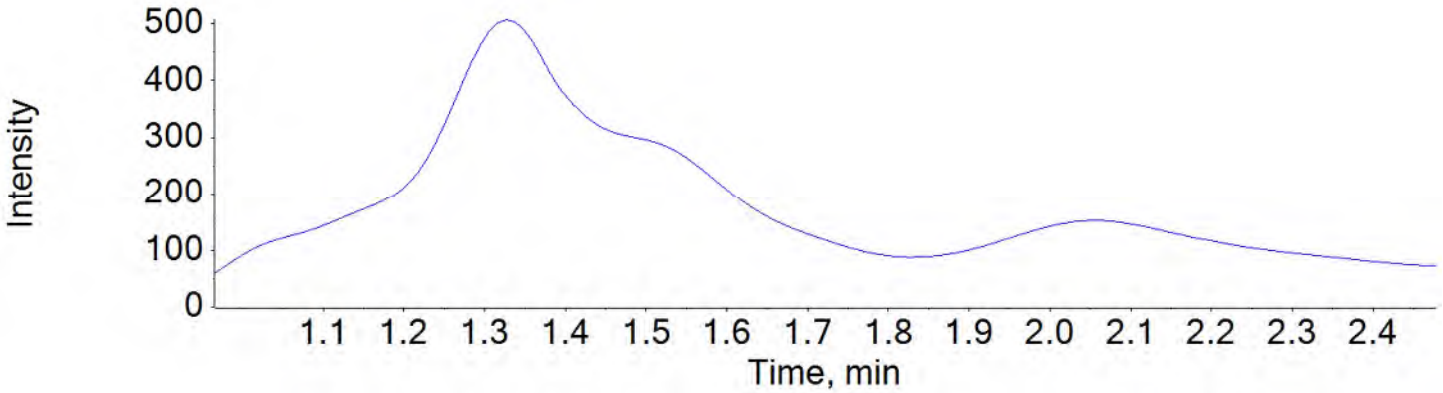
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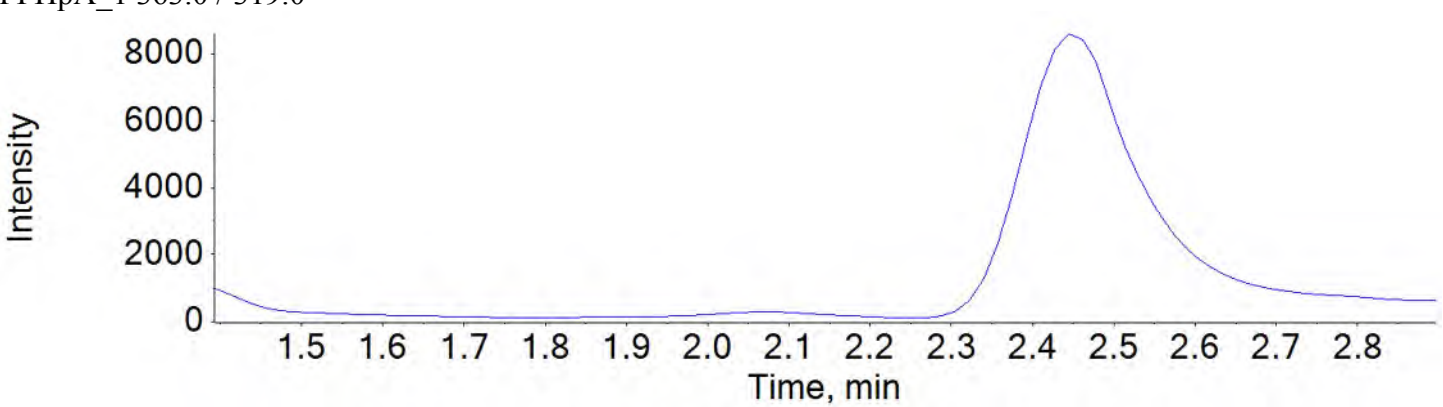
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

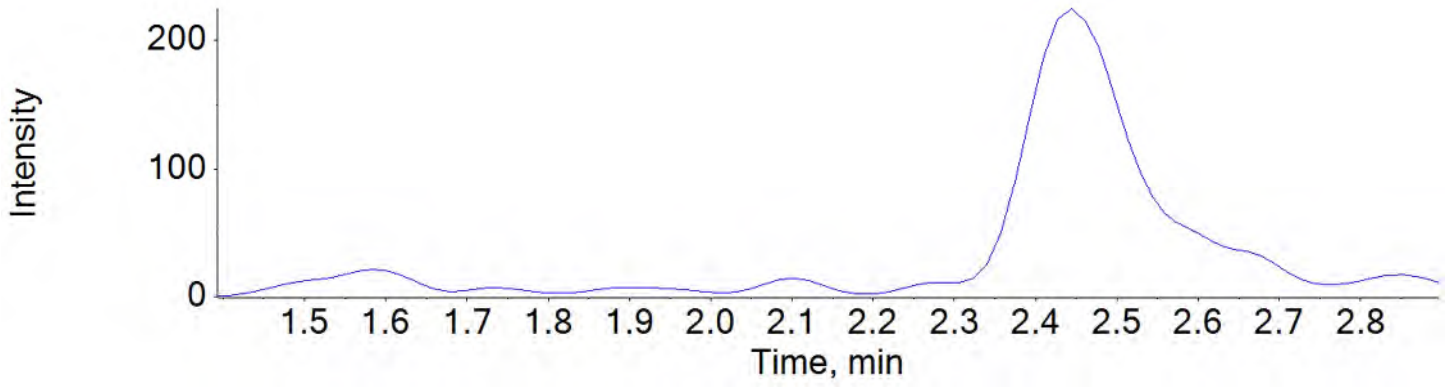


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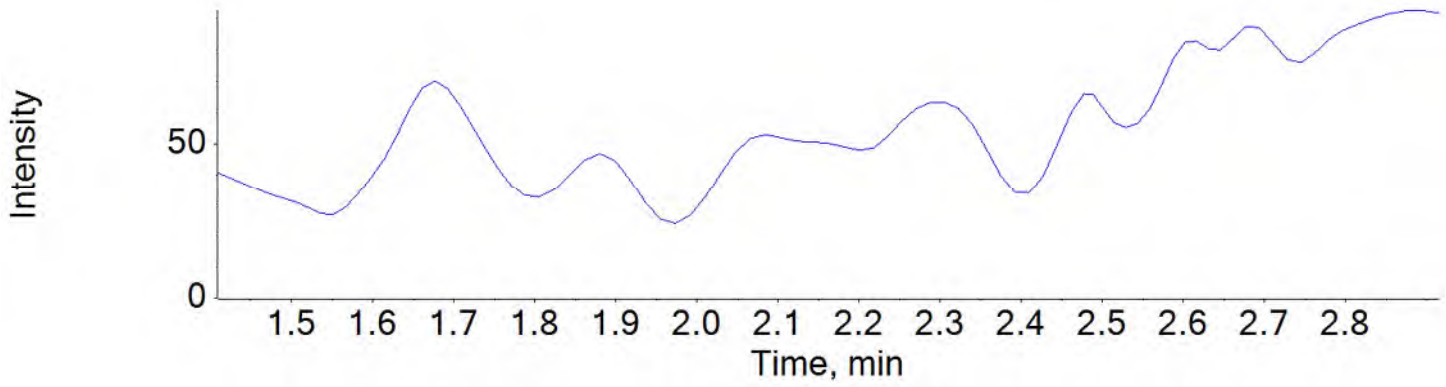
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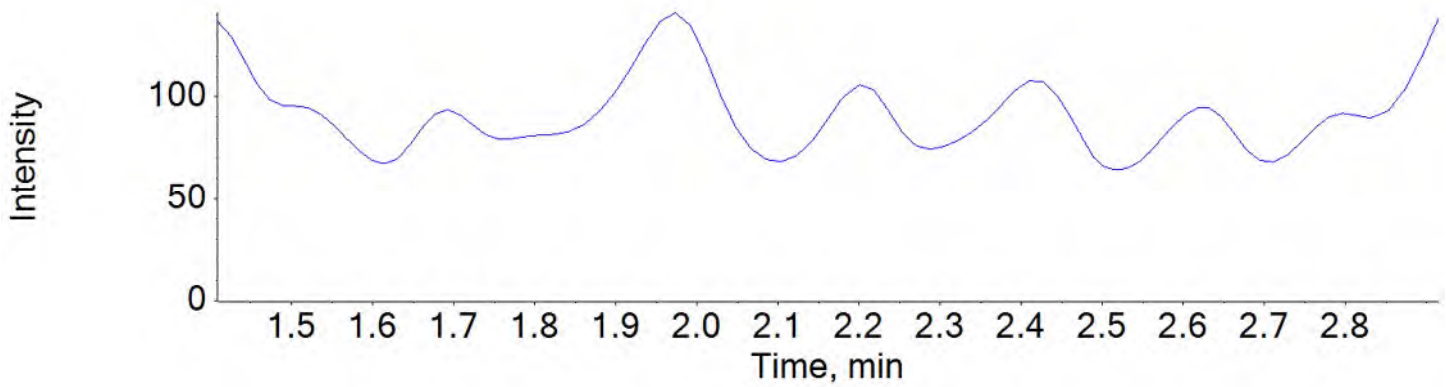
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

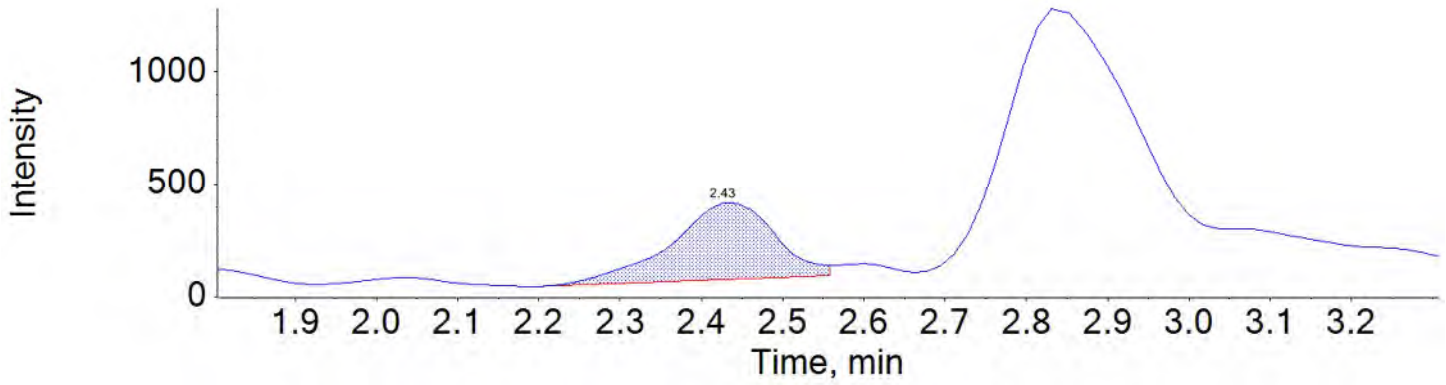


BATTELLE

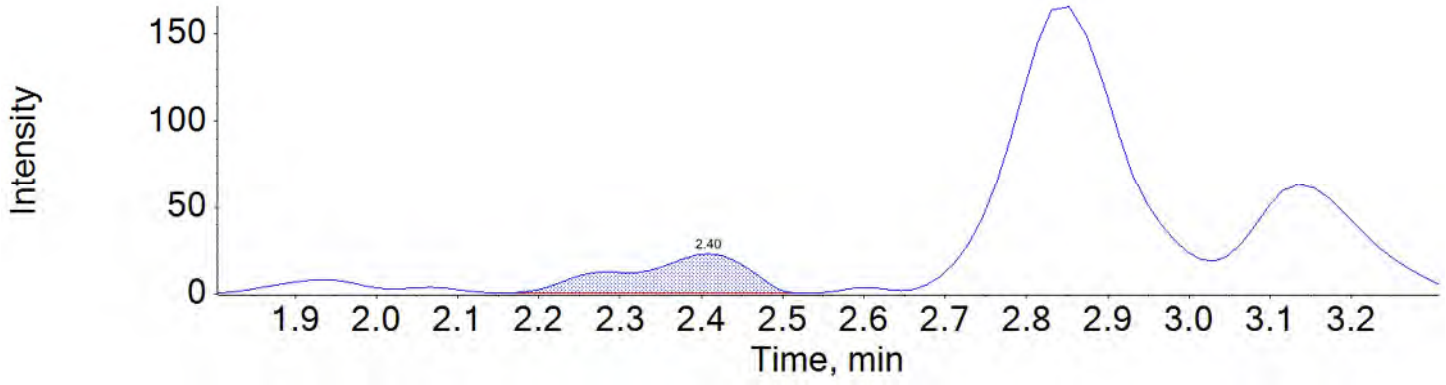
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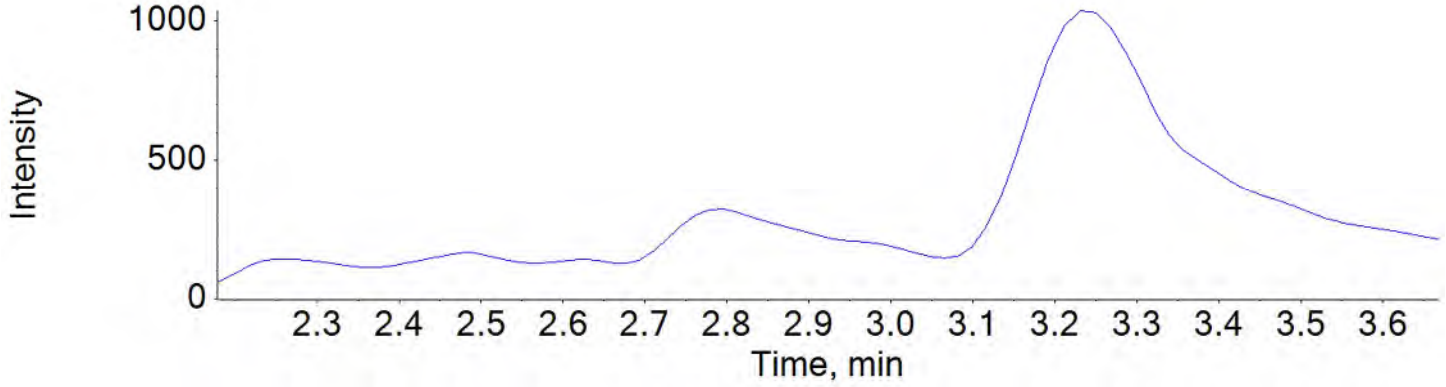
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

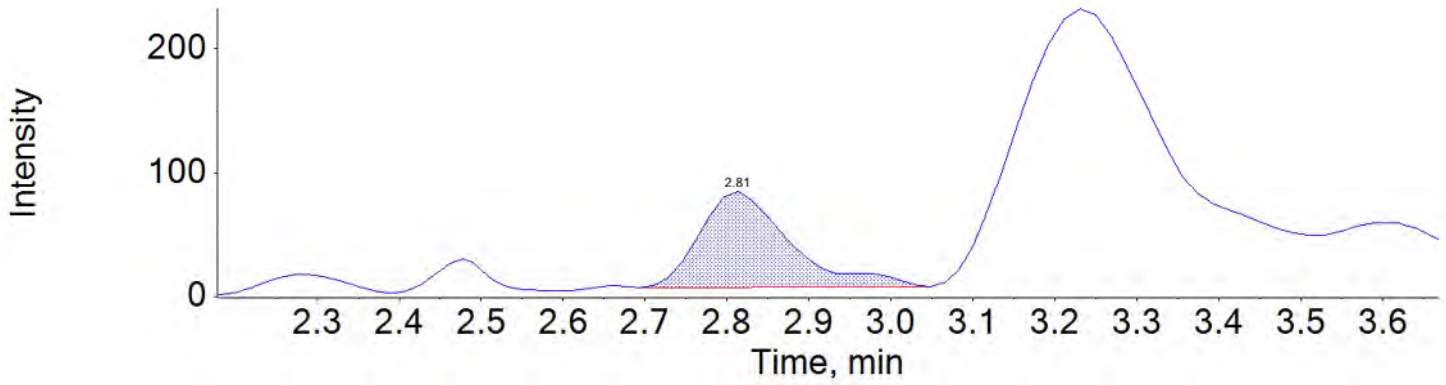


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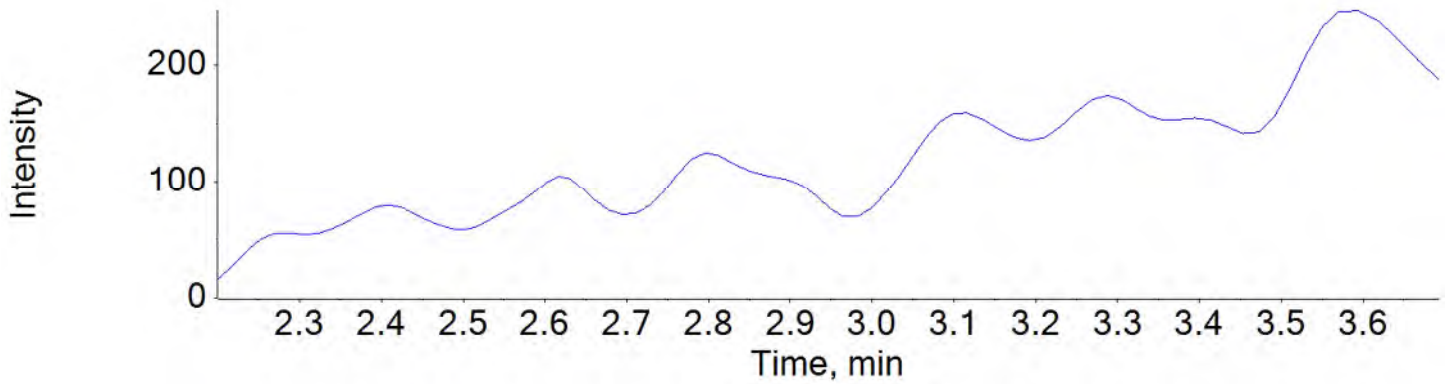
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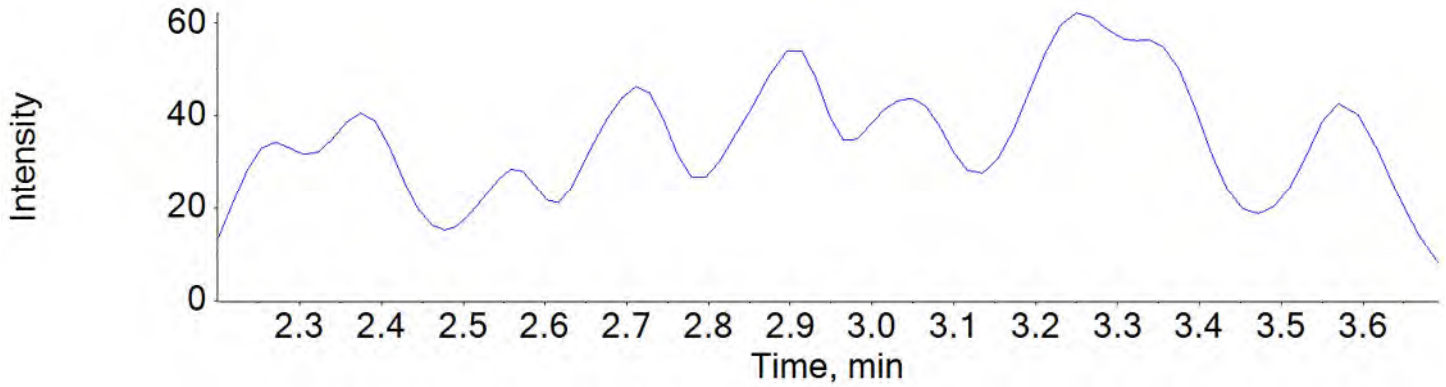
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

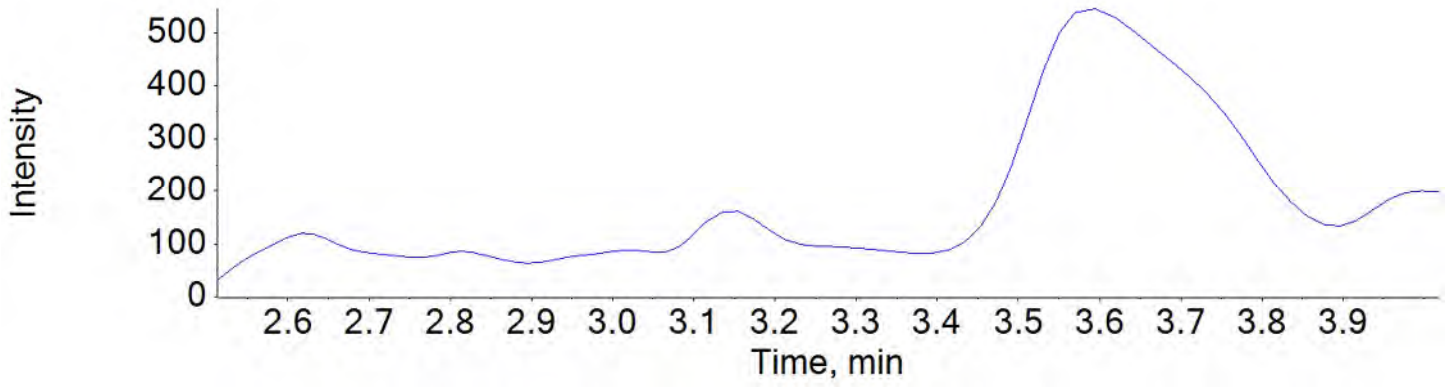


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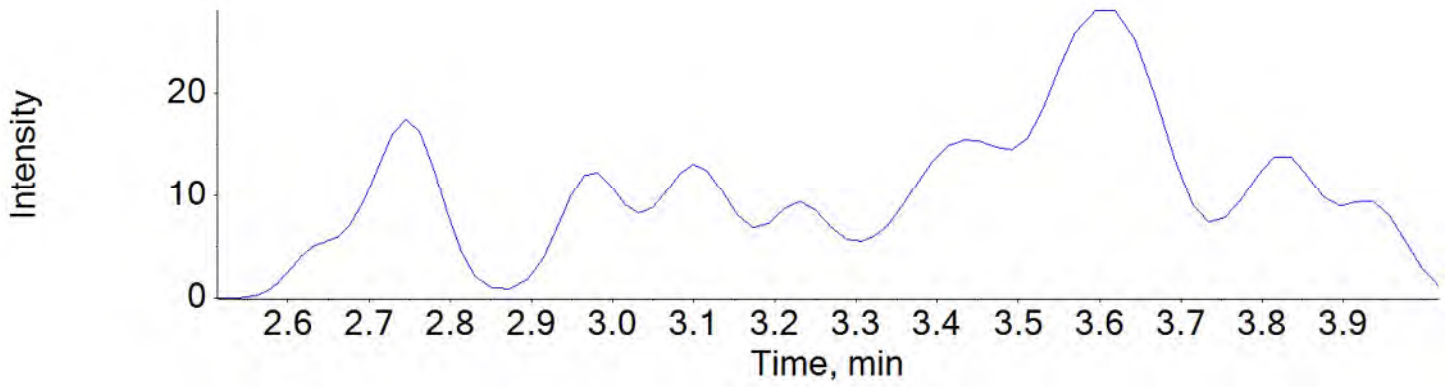
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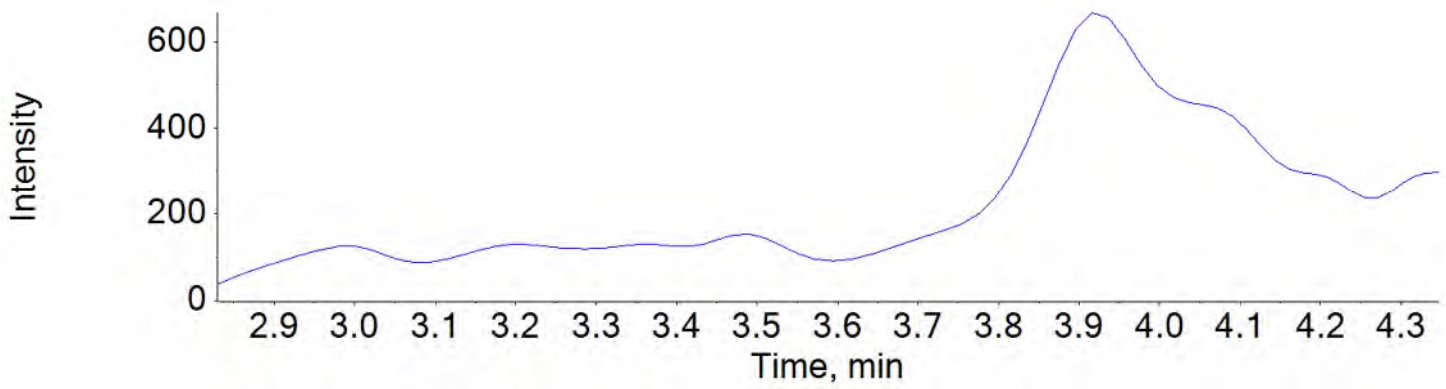
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

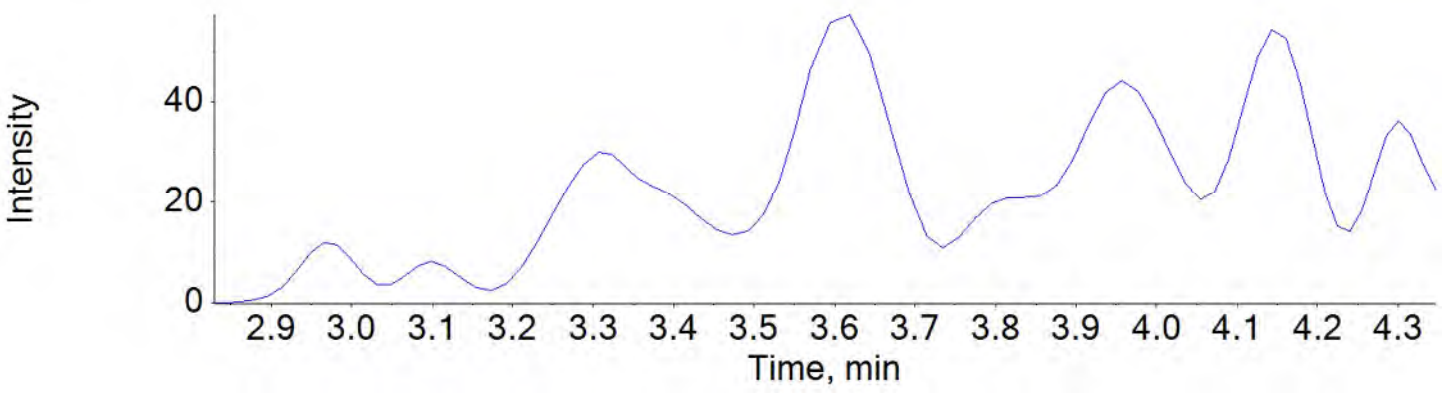


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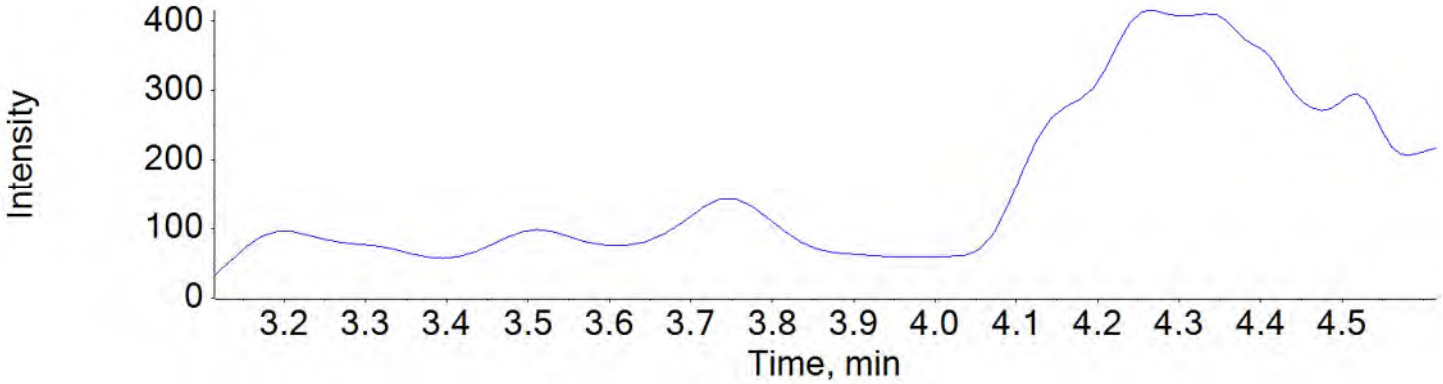
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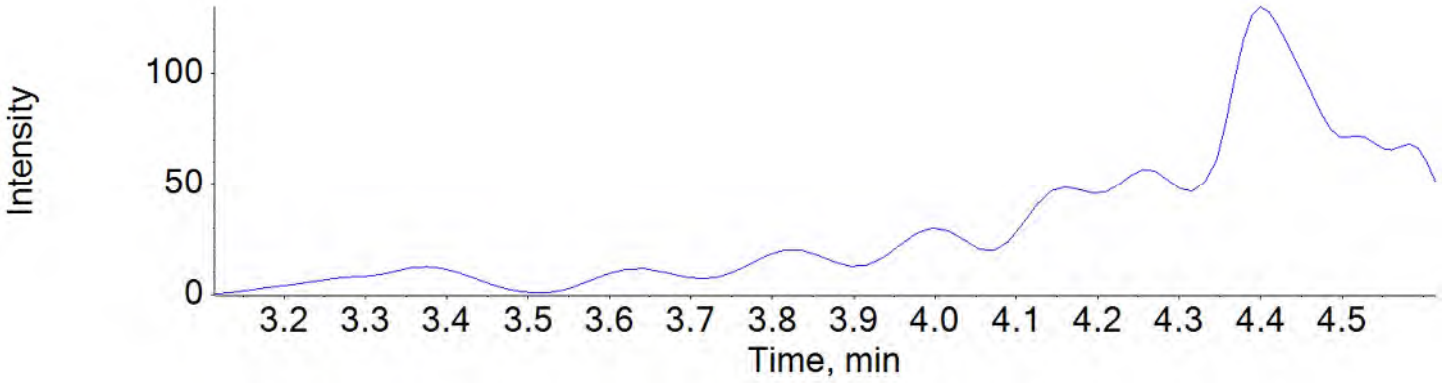
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PFDoA_2 613.0 / 319.0

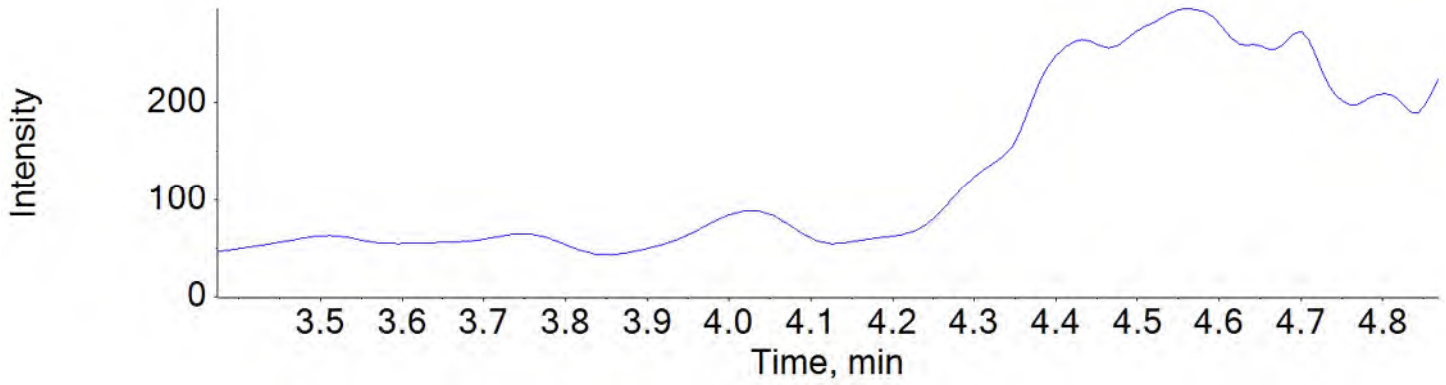


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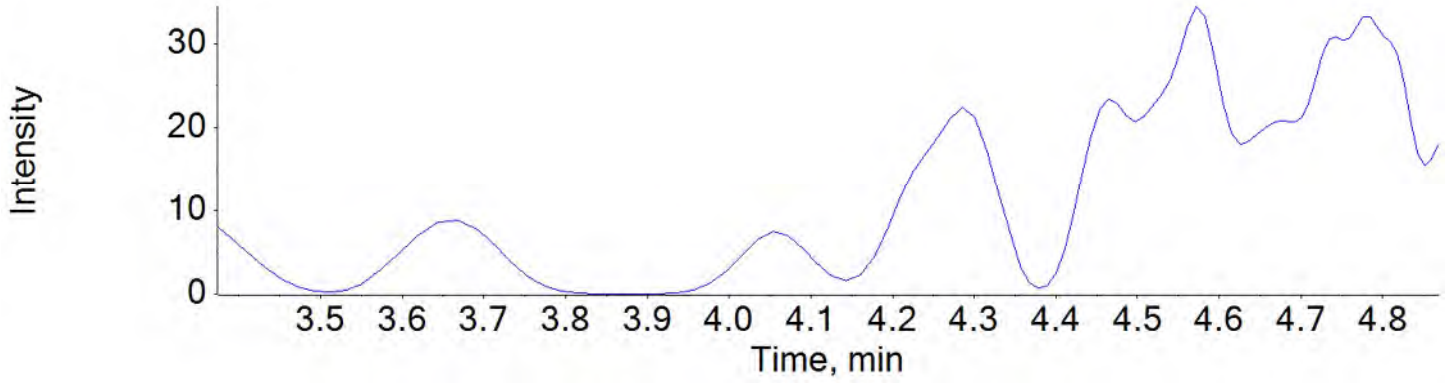
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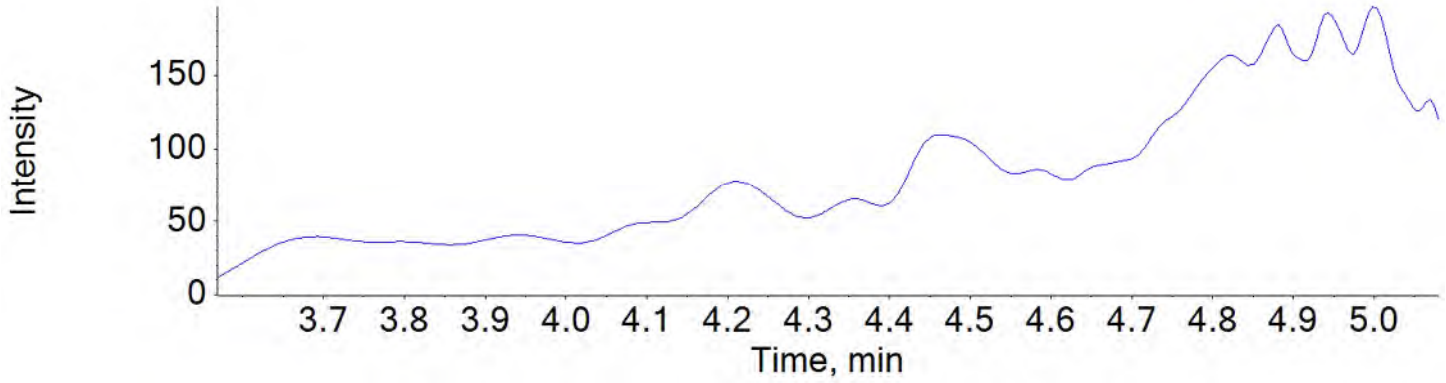
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

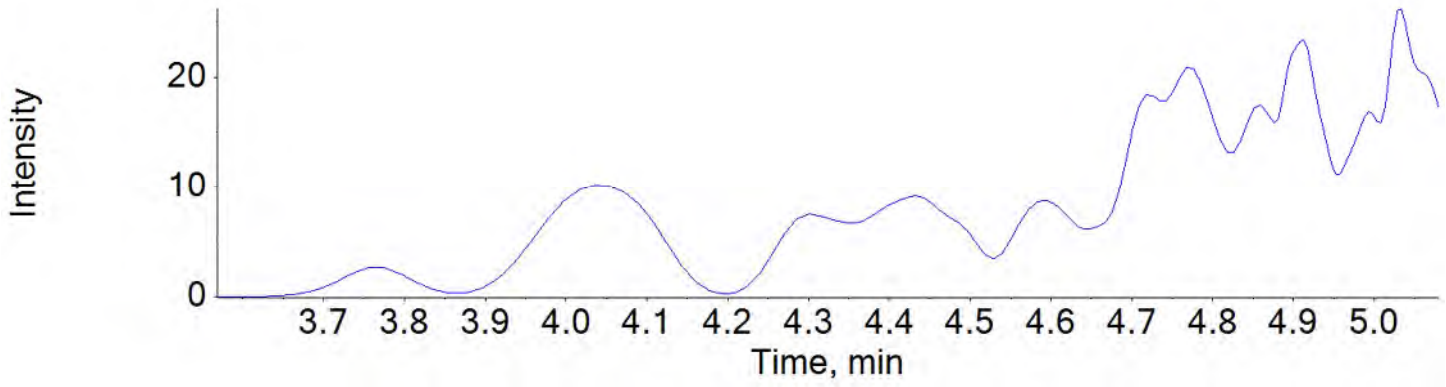


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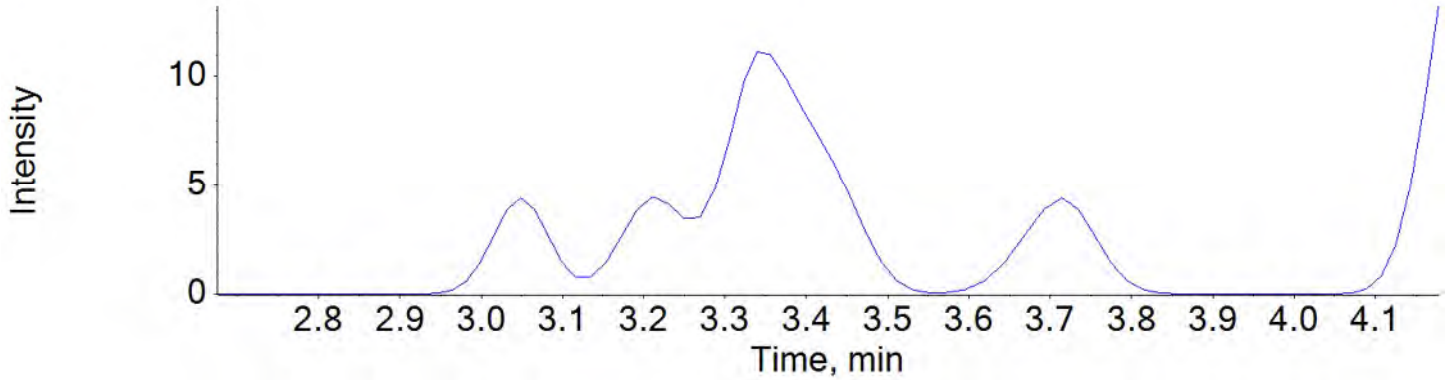
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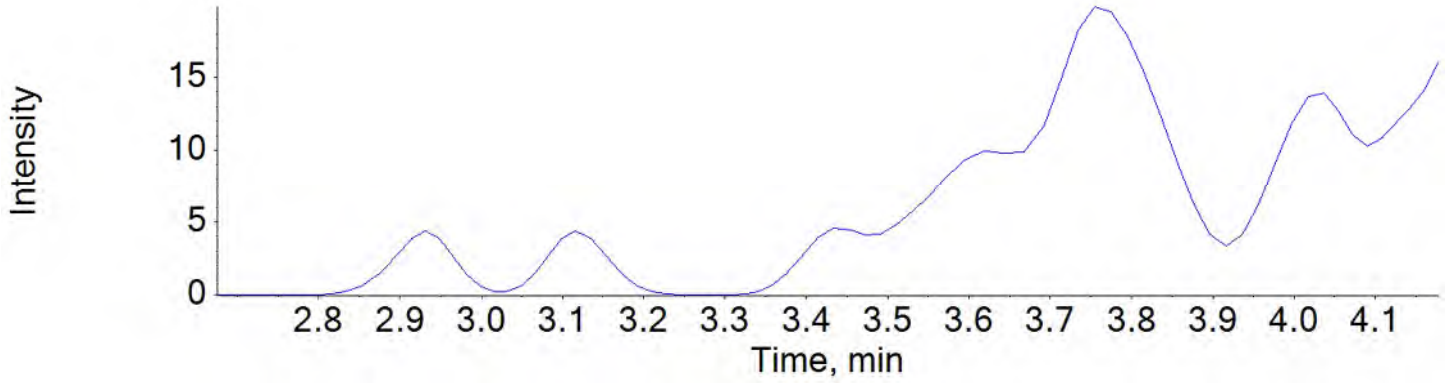
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

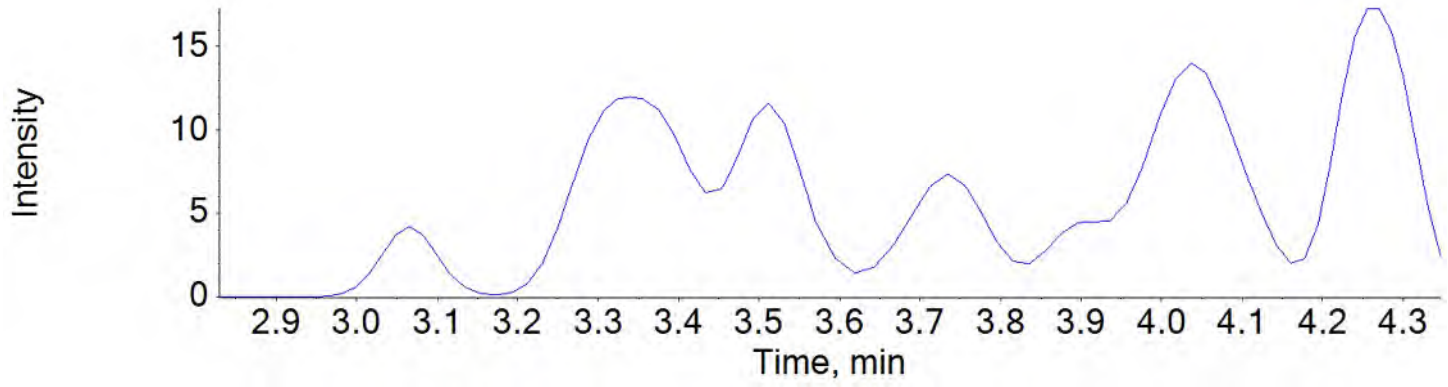


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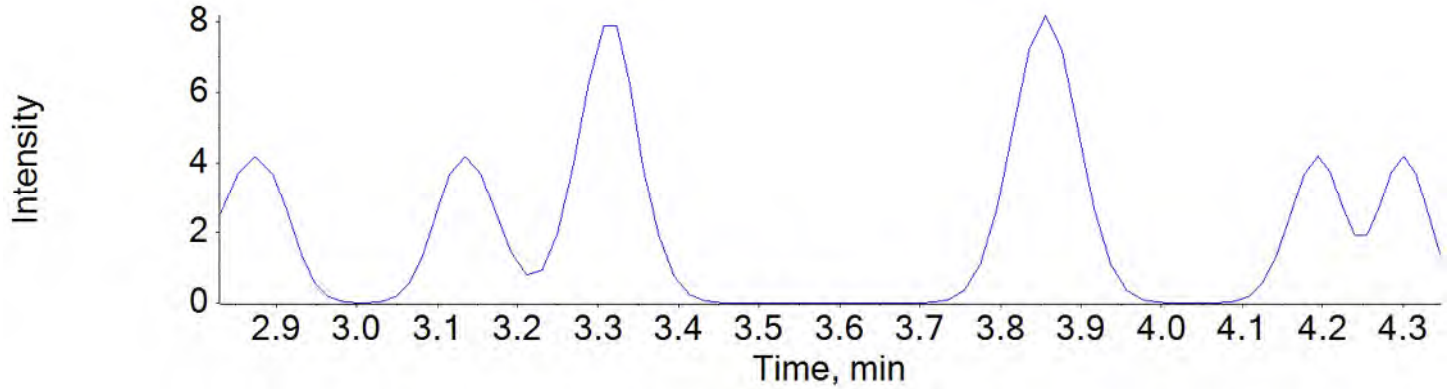
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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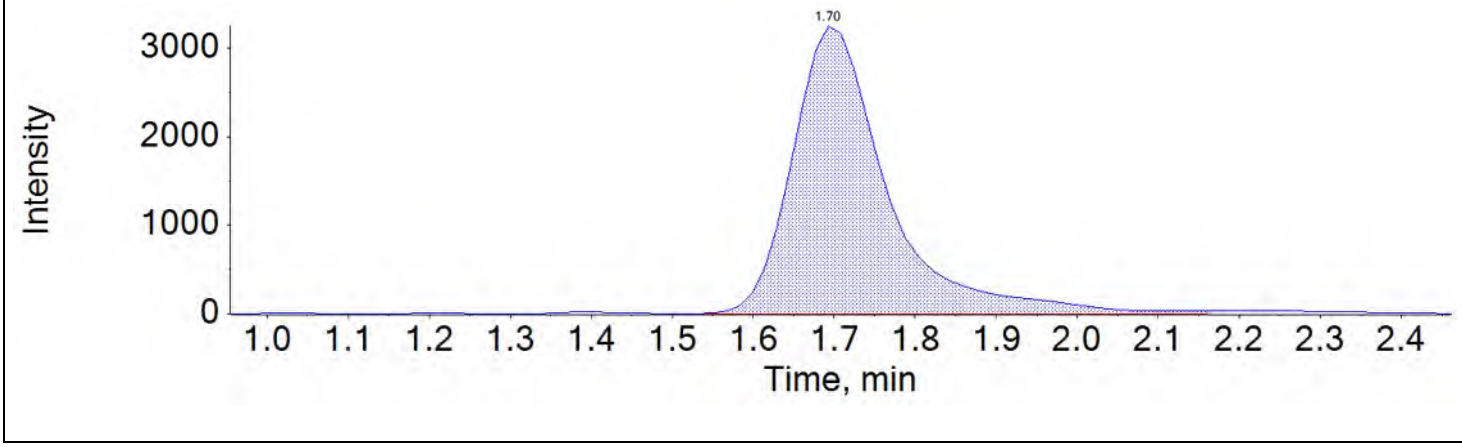
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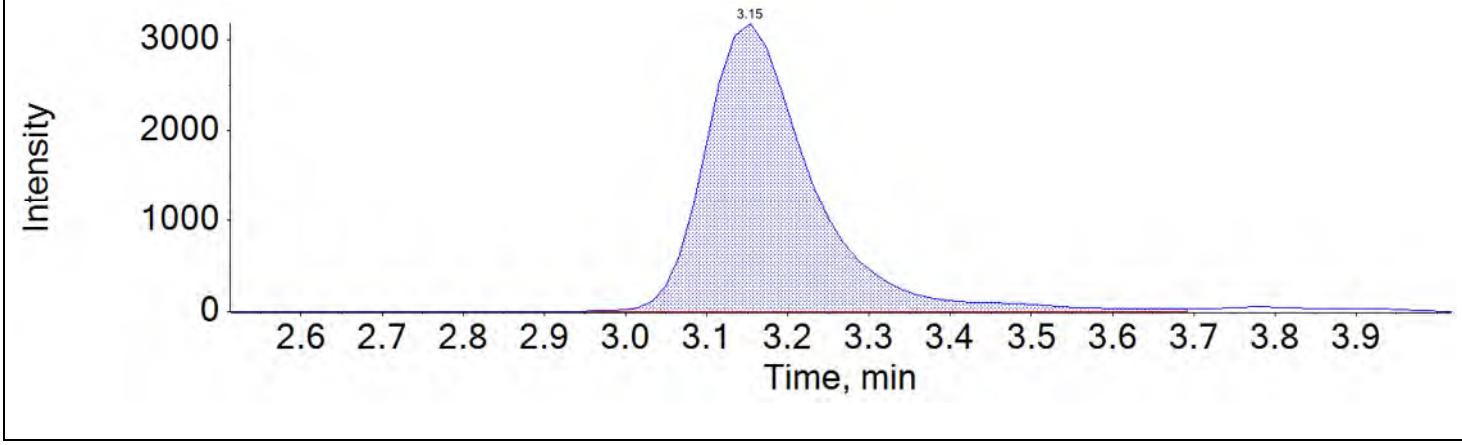
Sample Name	J6159-FS(0)	**Injection Vial**	22
Sample ID	NAWC-050718-FRB-162	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:38:10	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

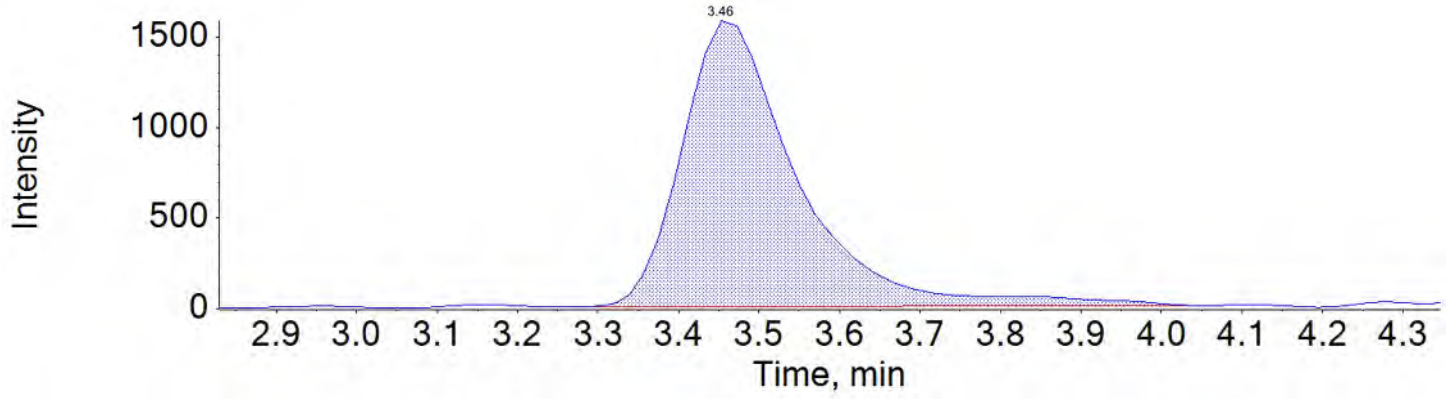


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Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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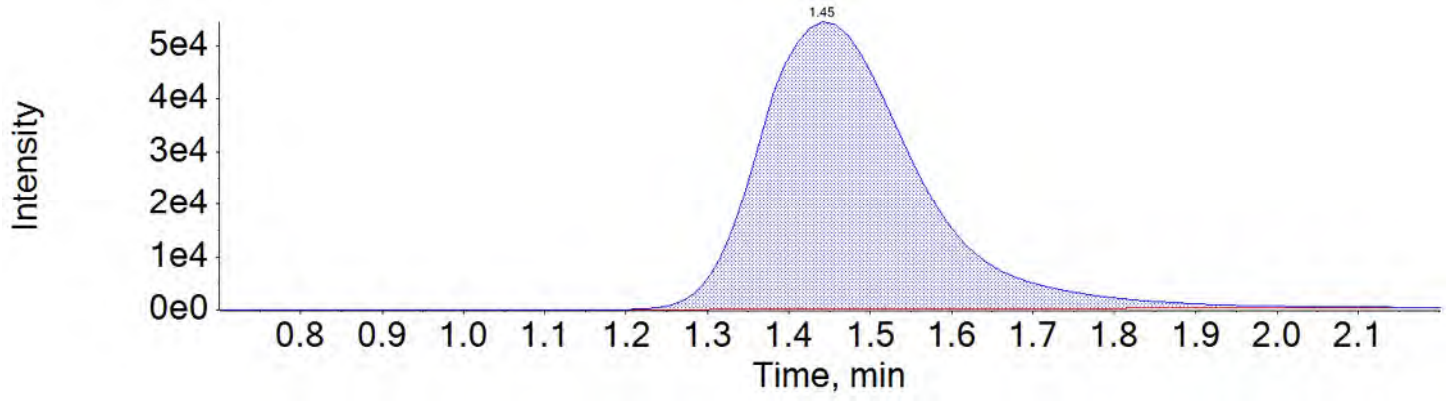
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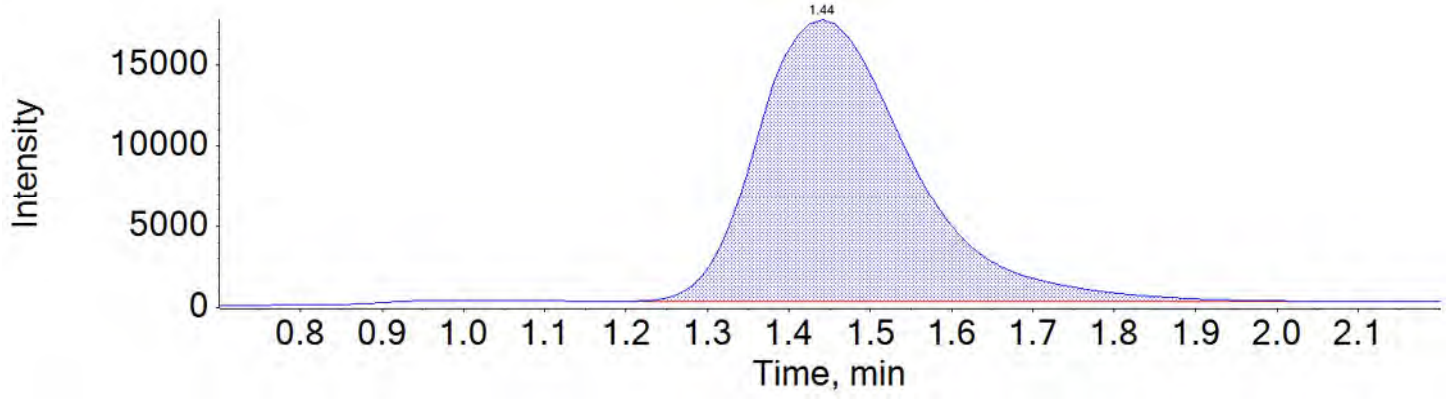
Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

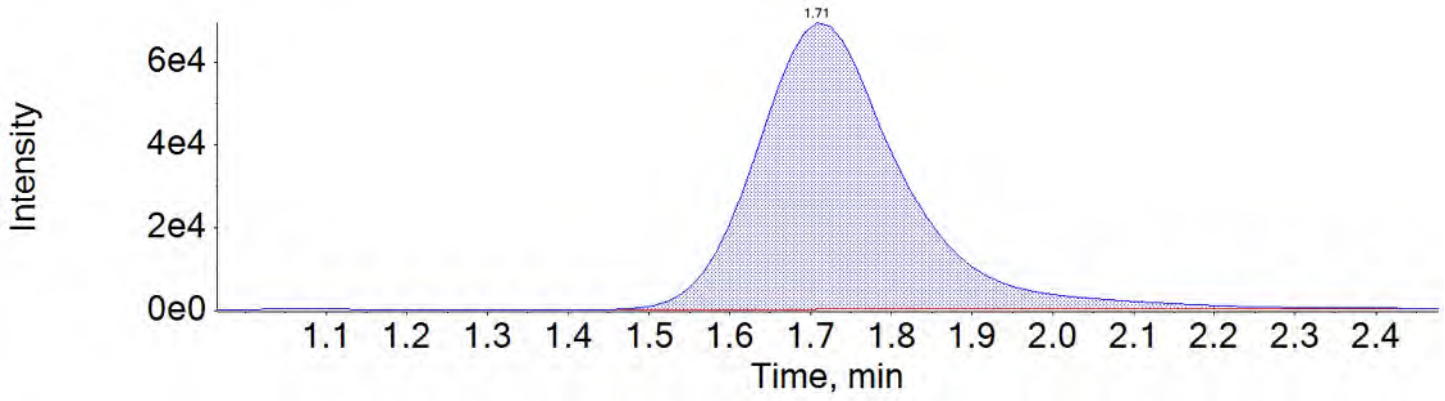


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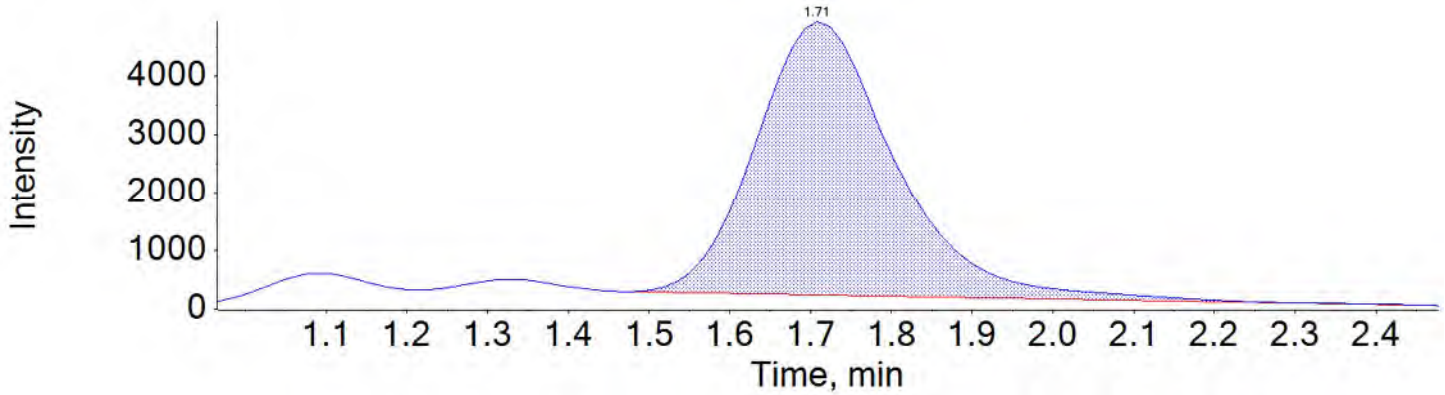
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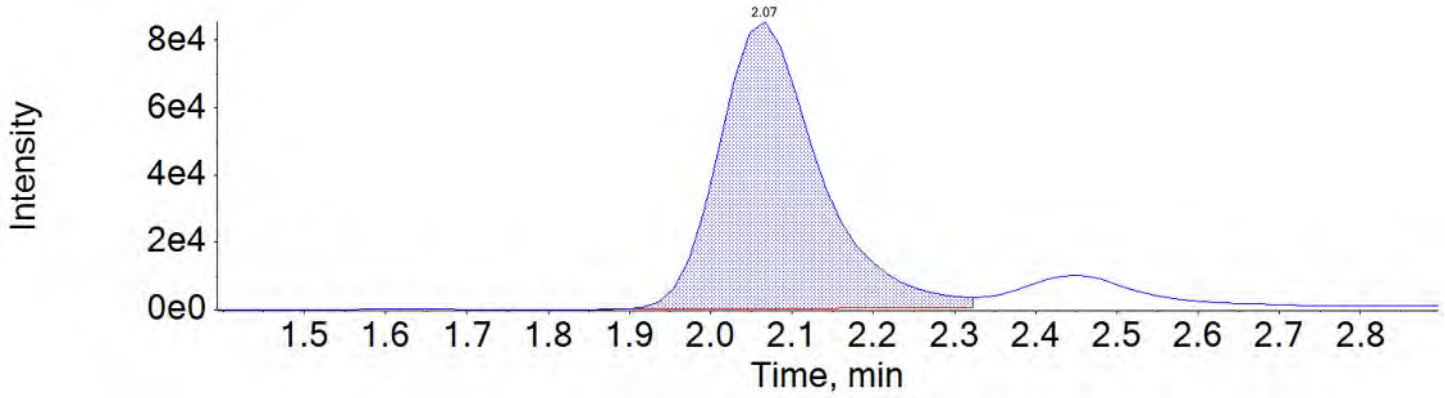
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

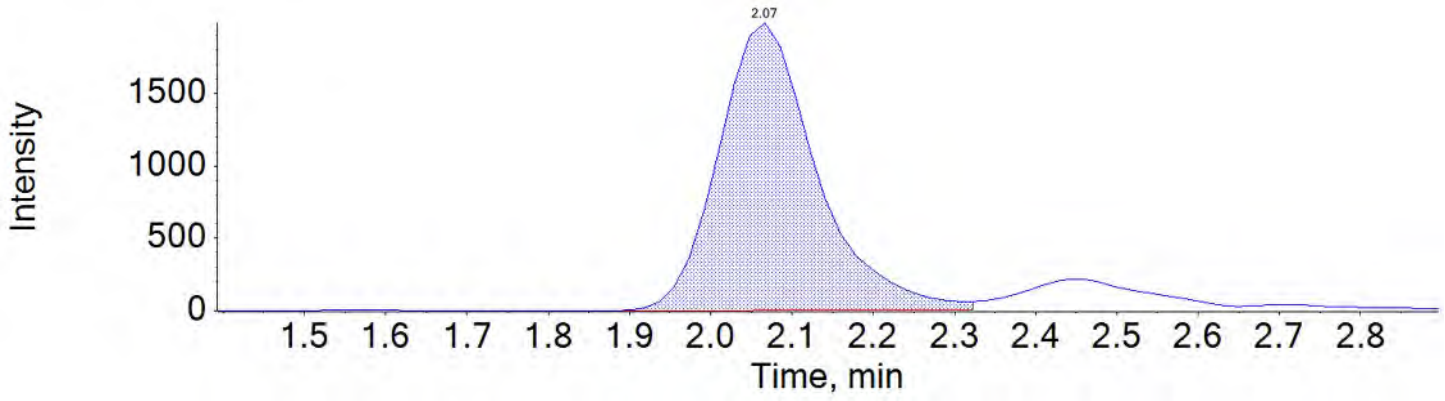


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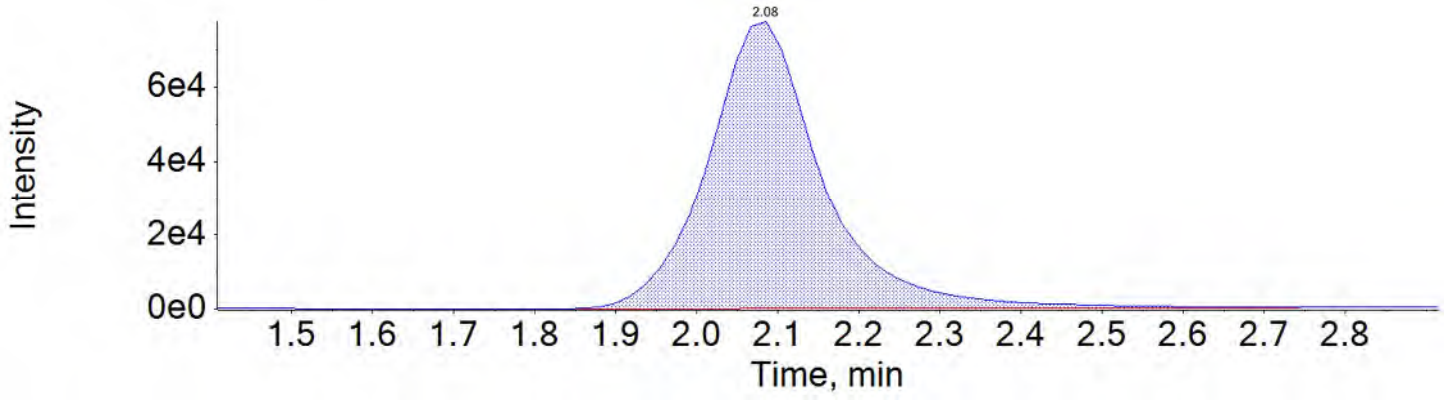
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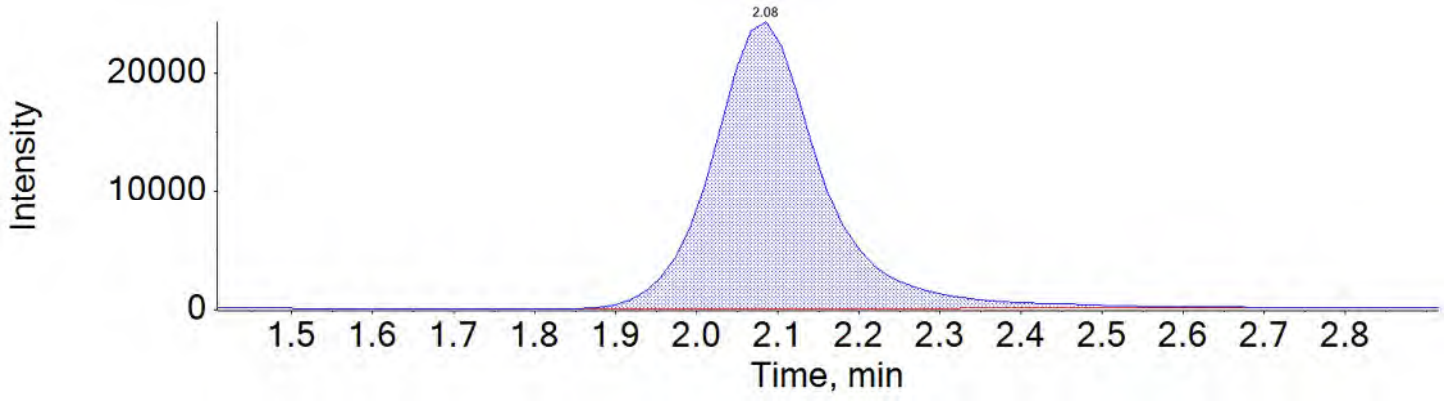
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

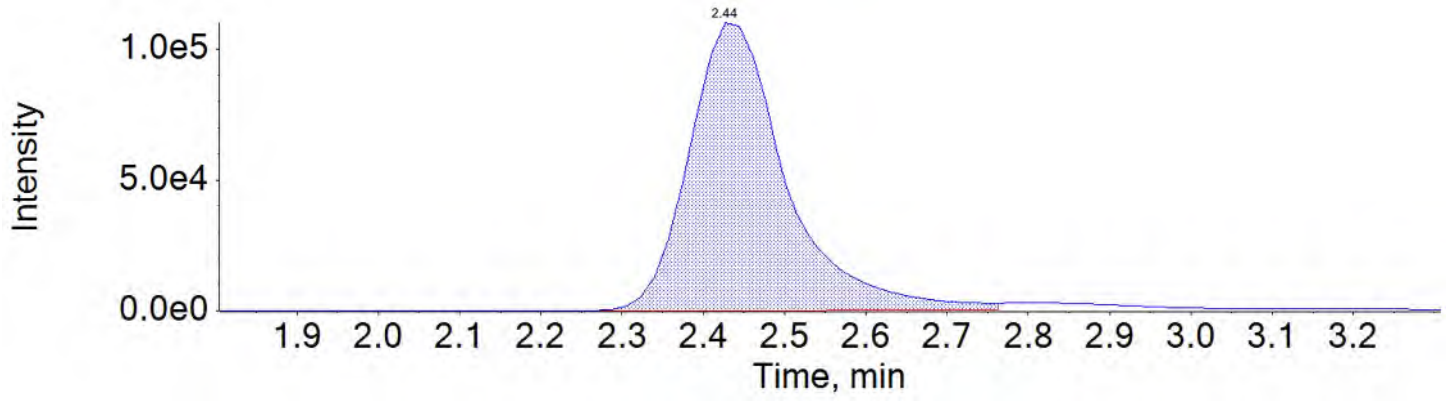


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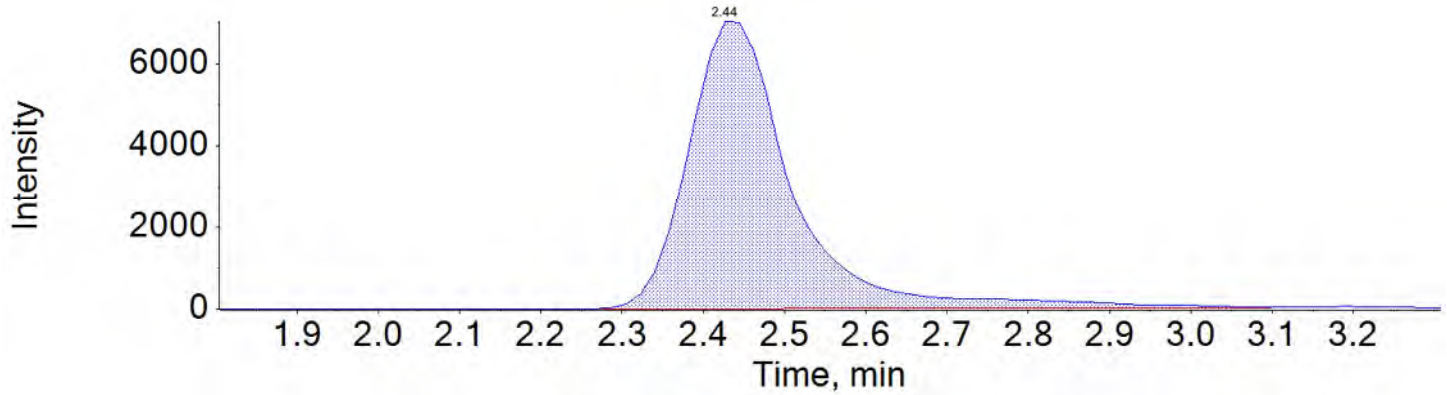
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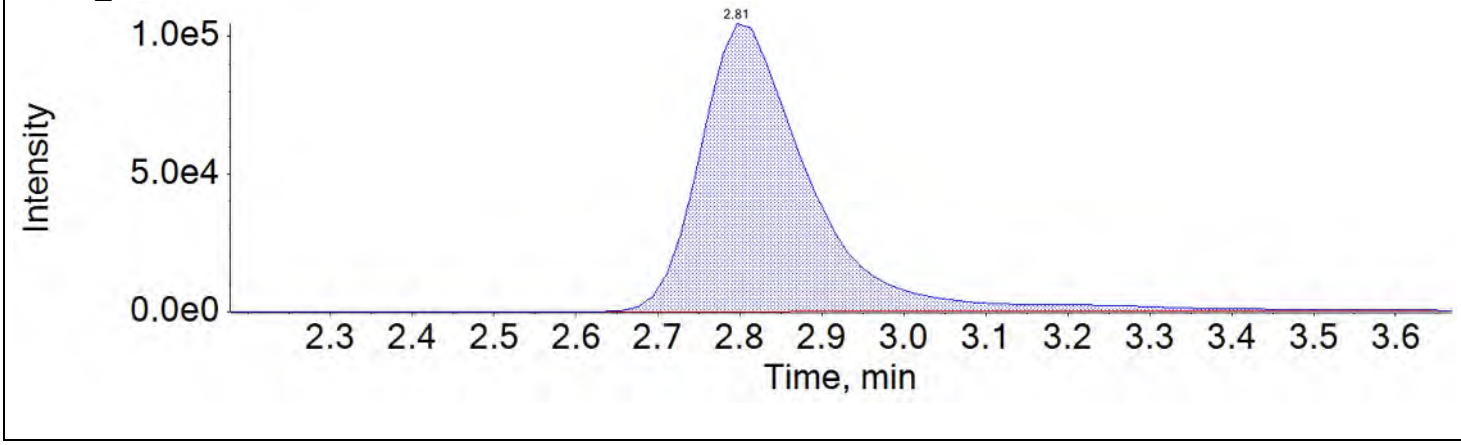
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

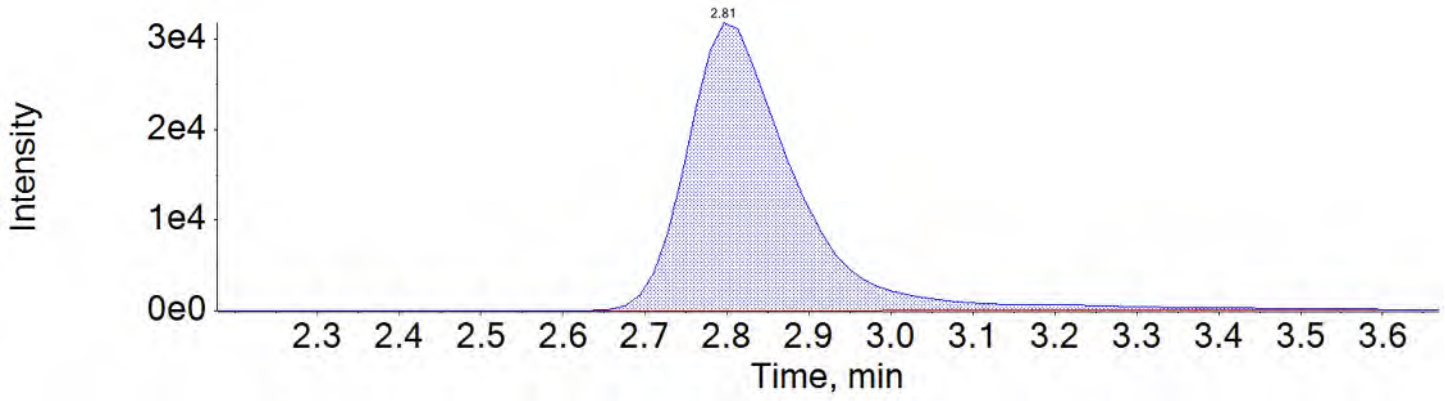


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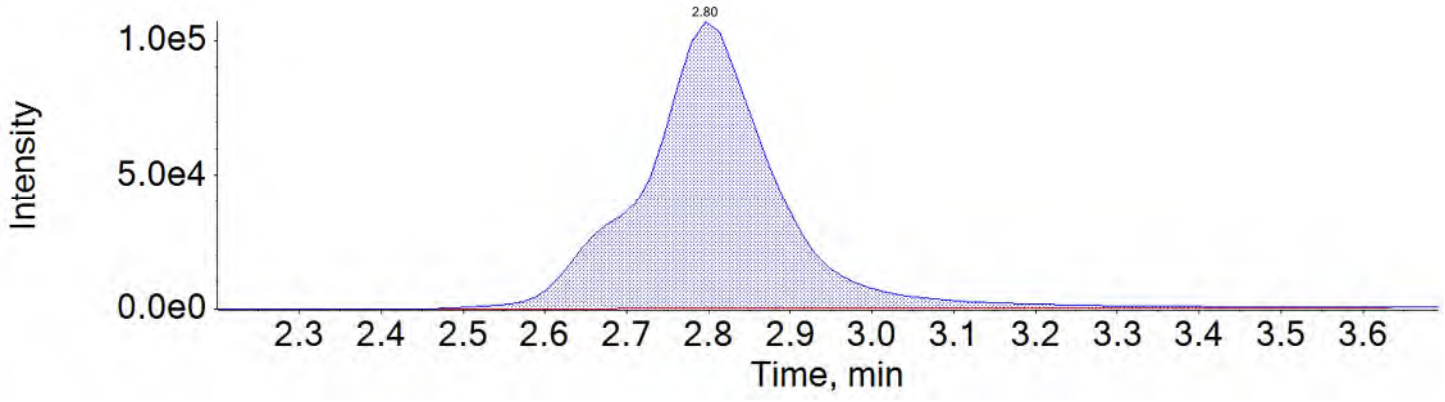
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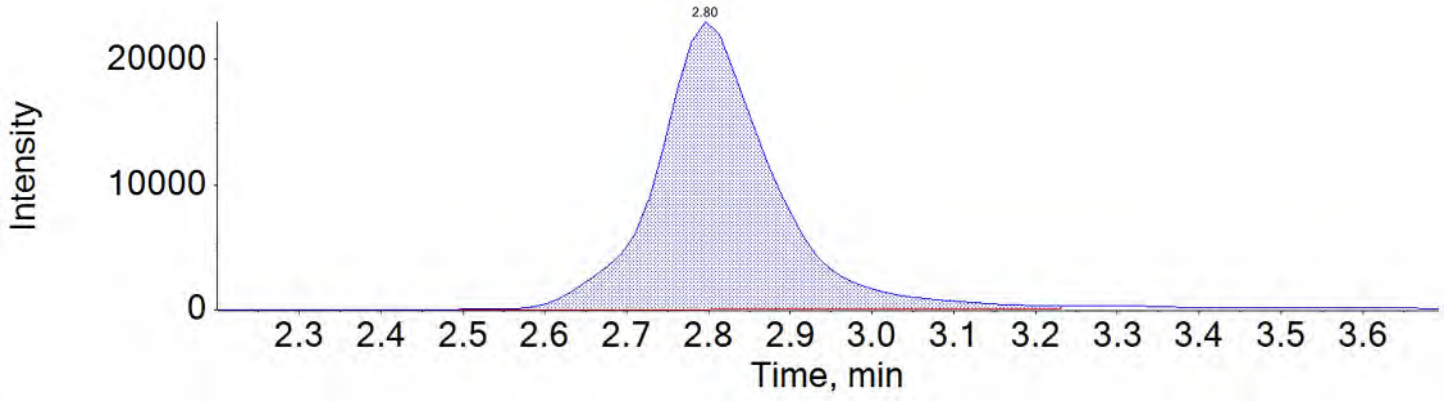
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

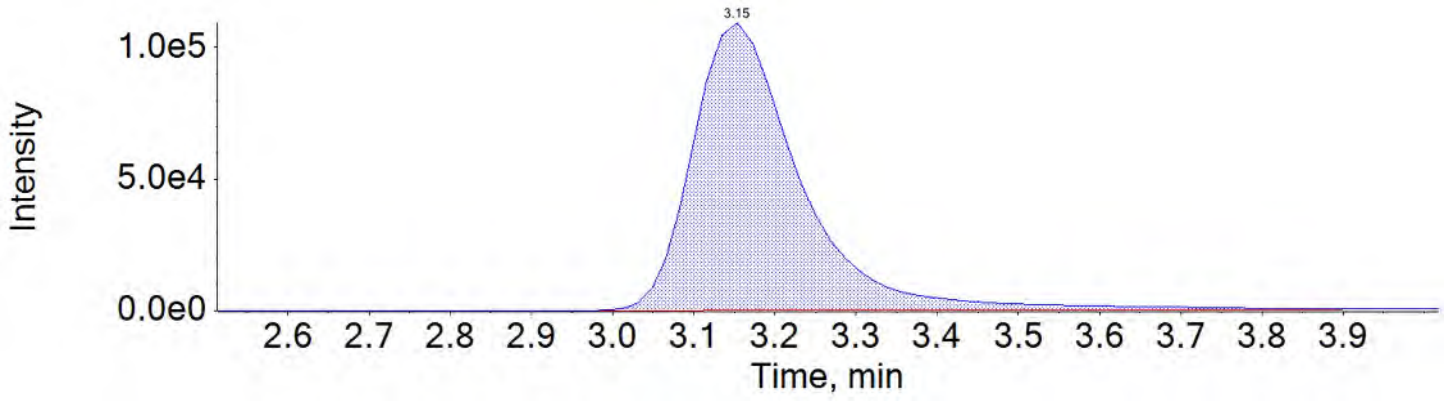


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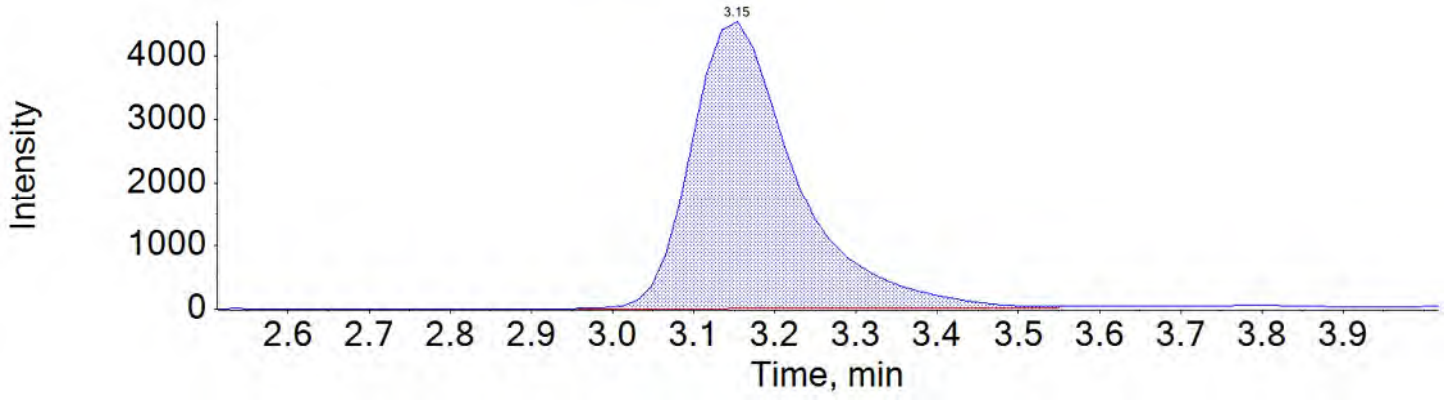
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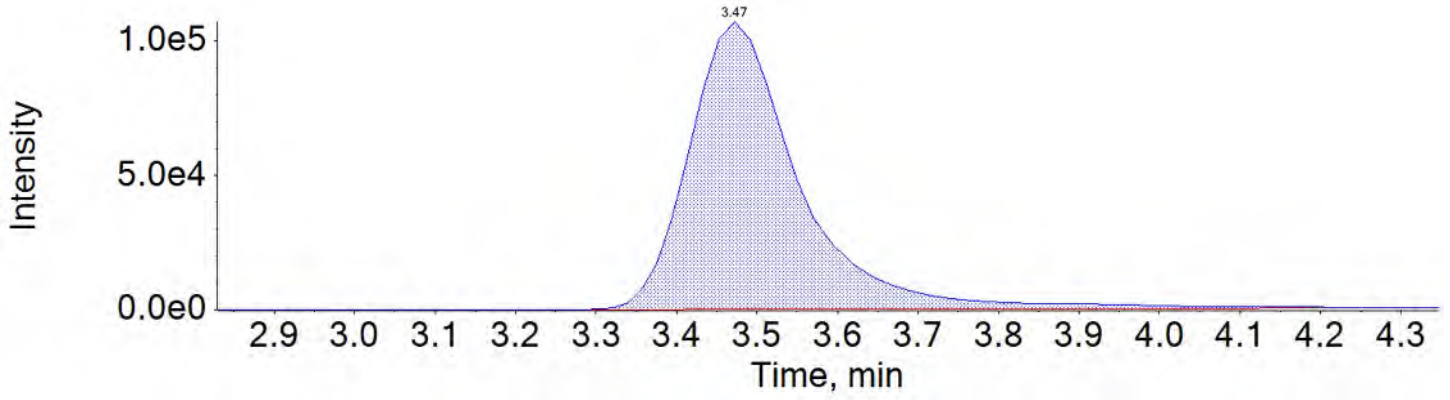
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

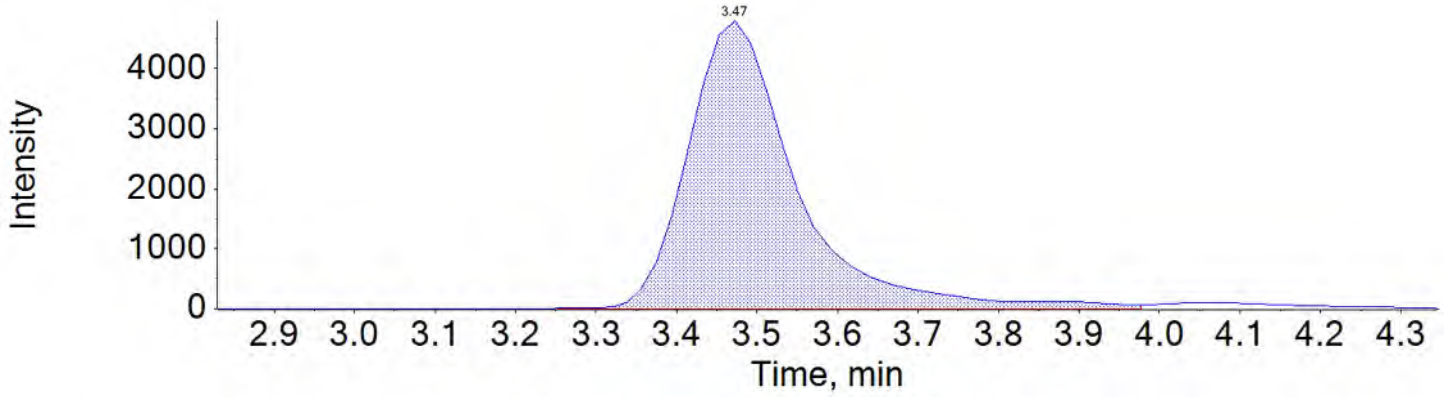


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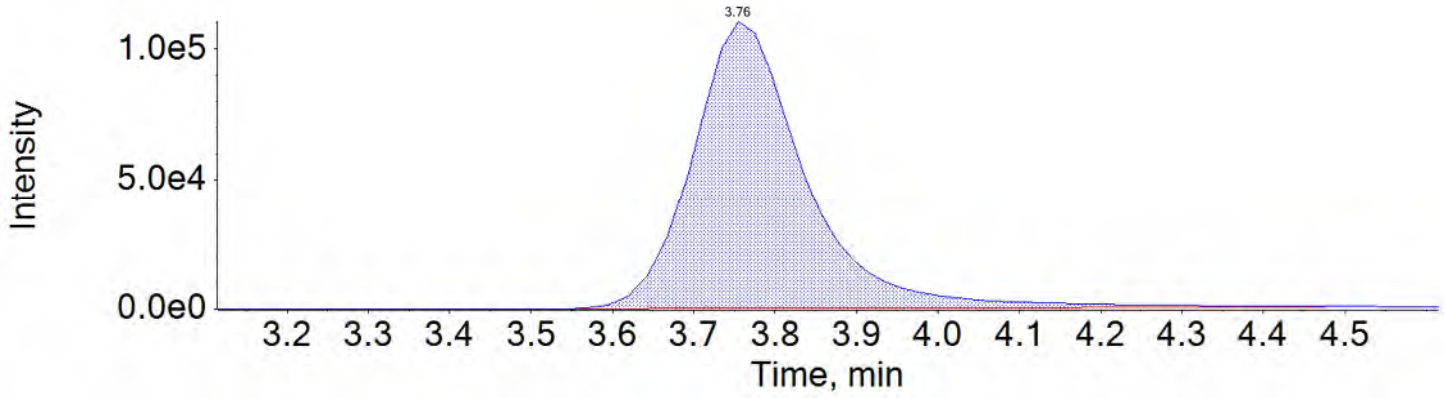
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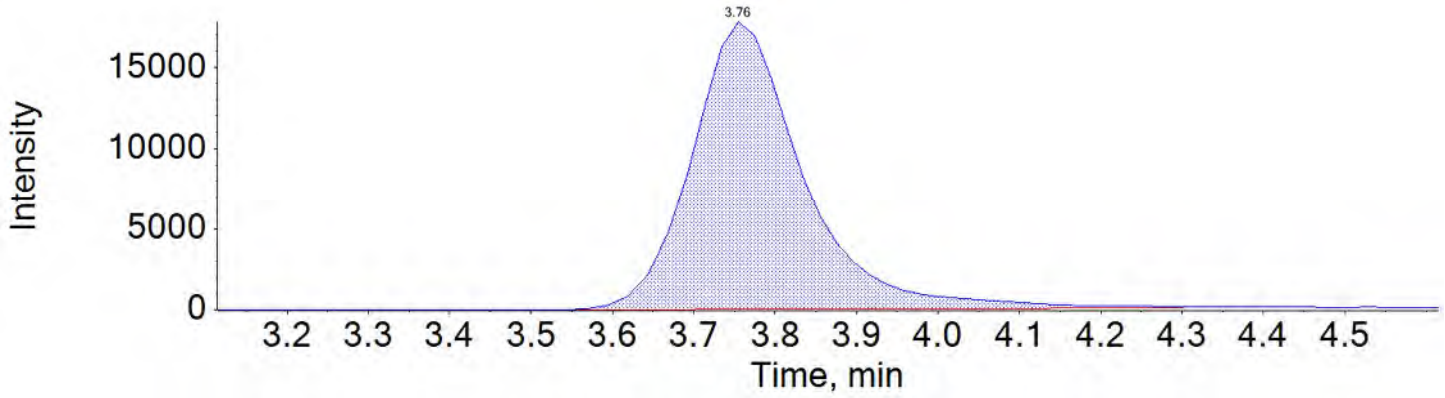
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

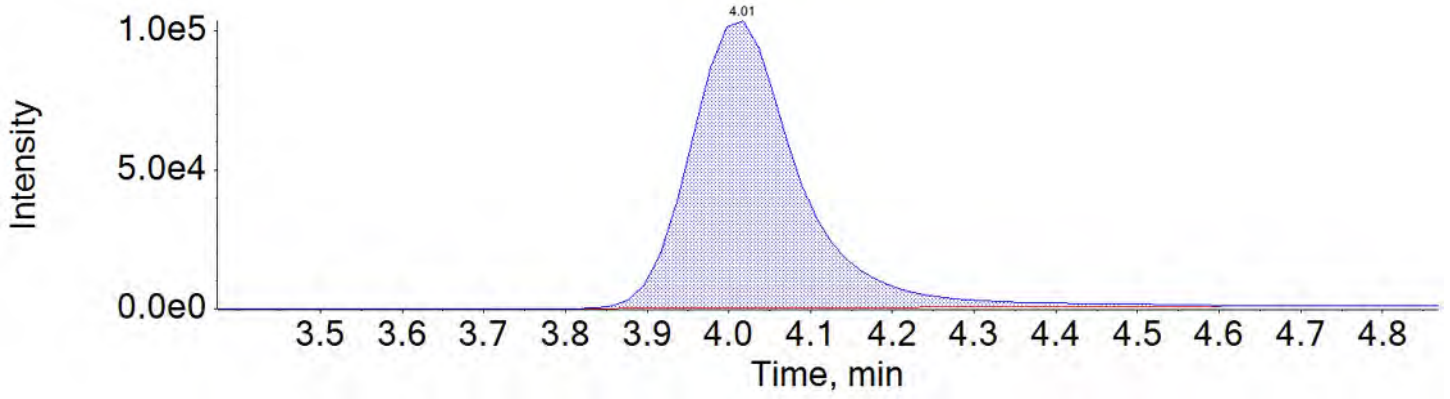


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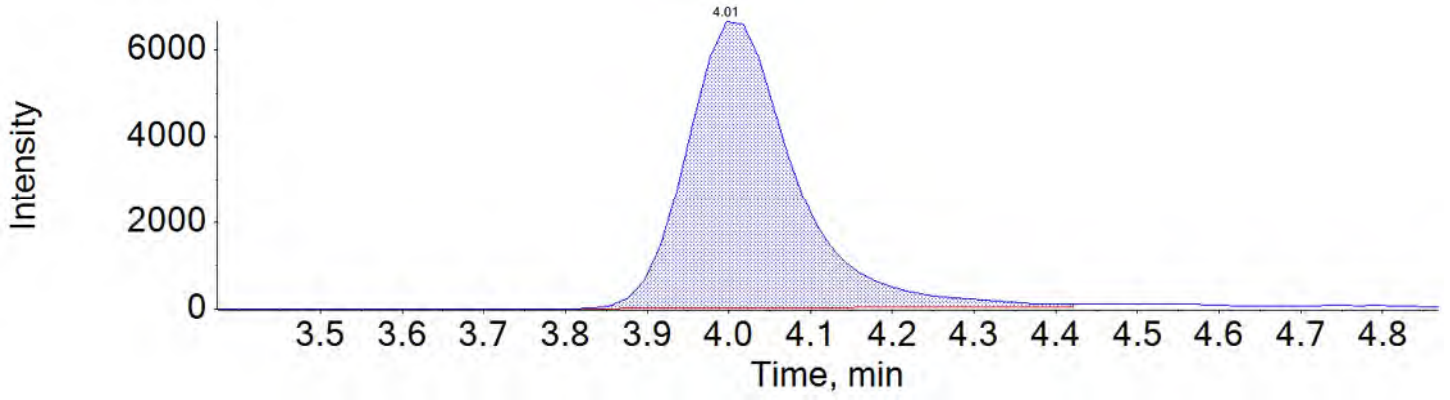
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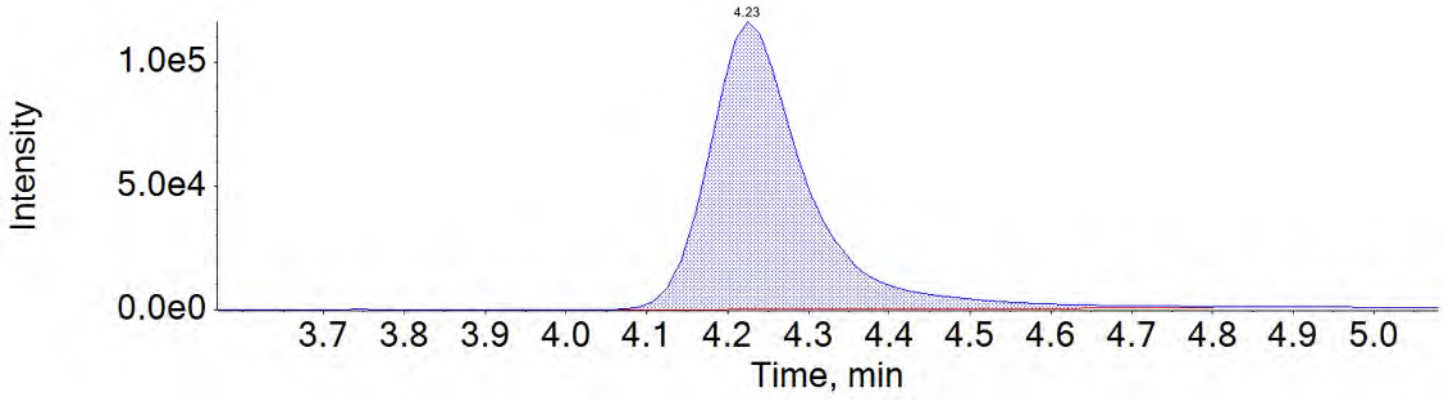
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

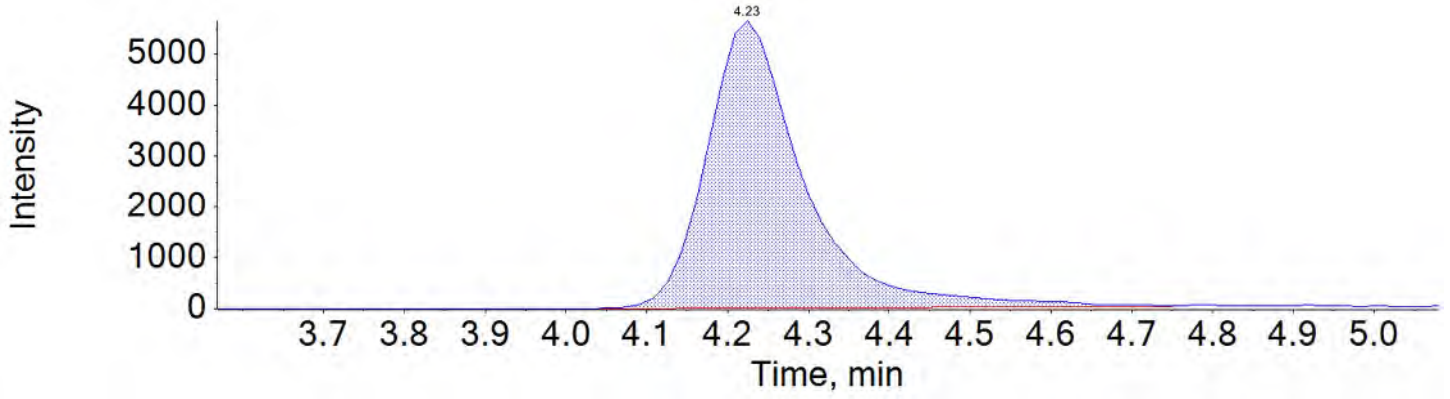


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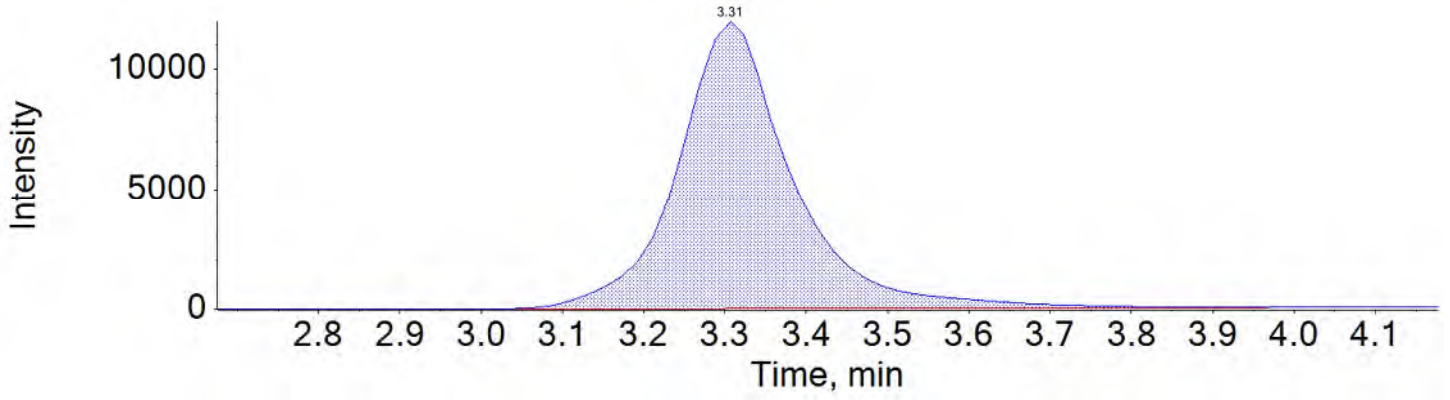
Chromatogram Report

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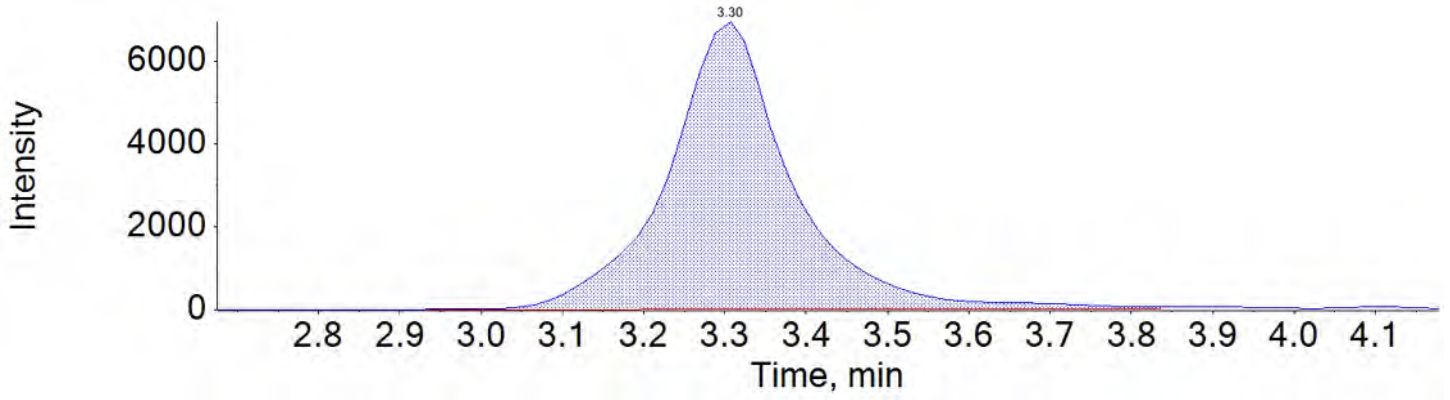
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

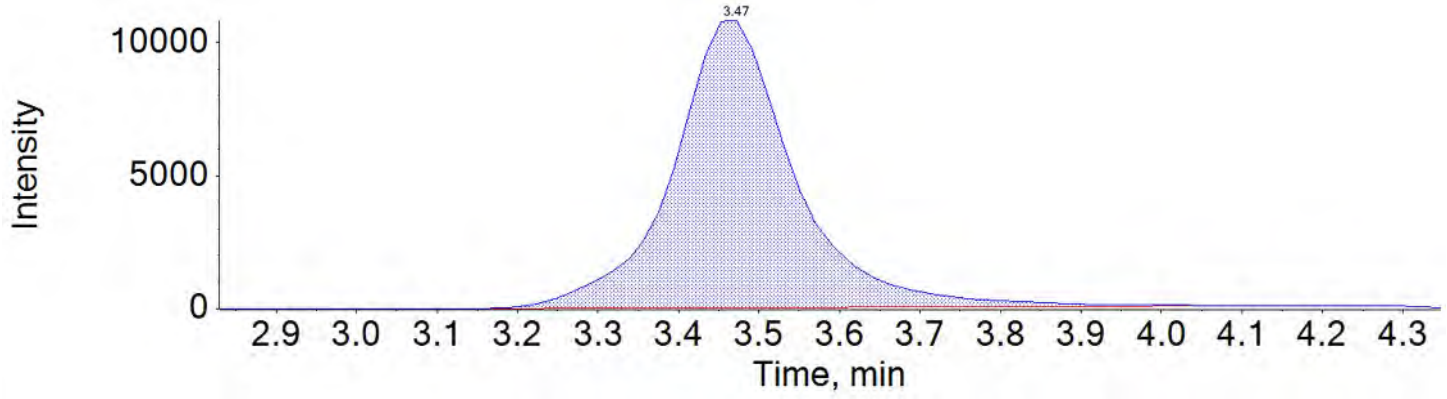


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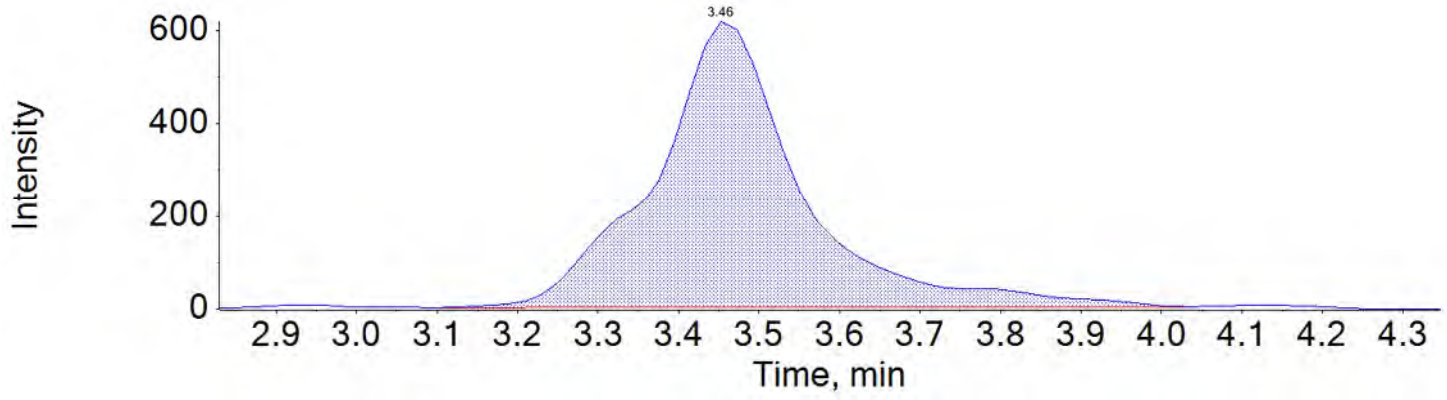
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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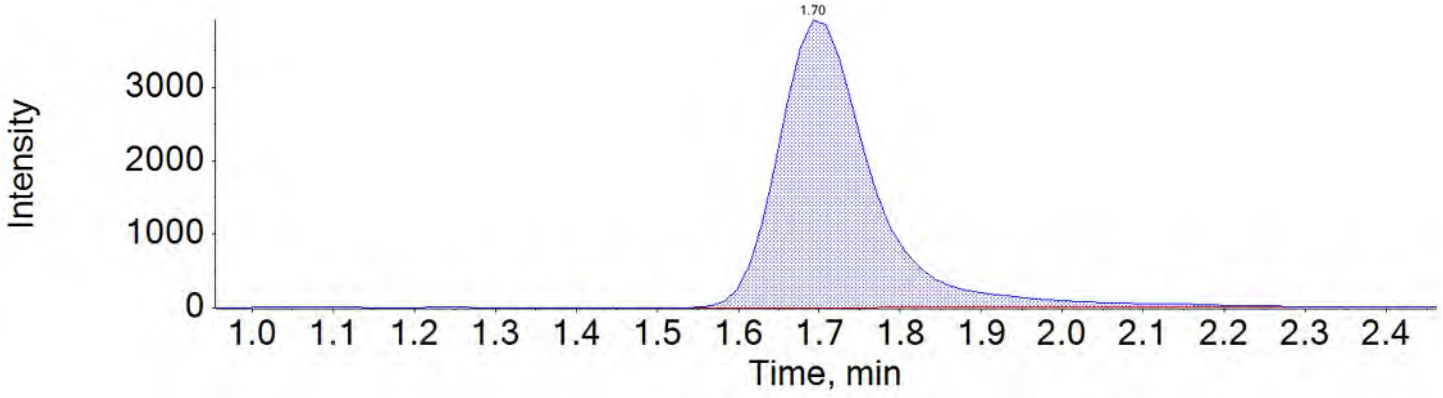
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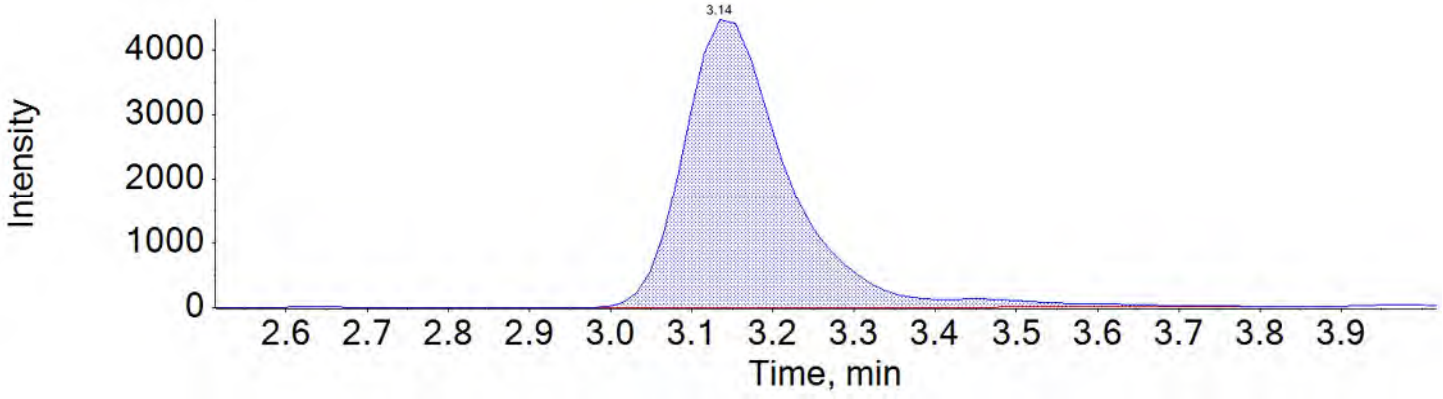
Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

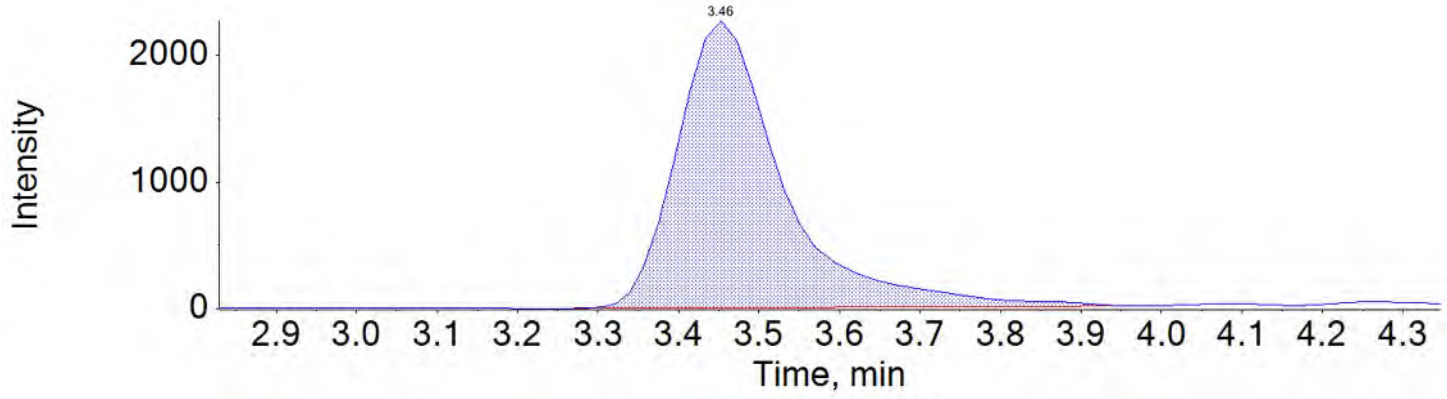


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d5-EtFOSAA 589.0 / 419.0



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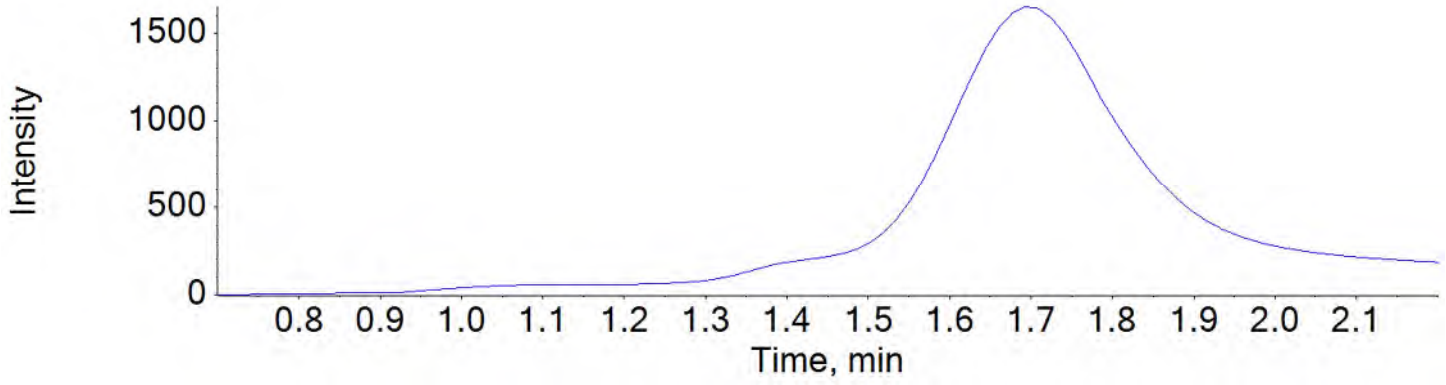
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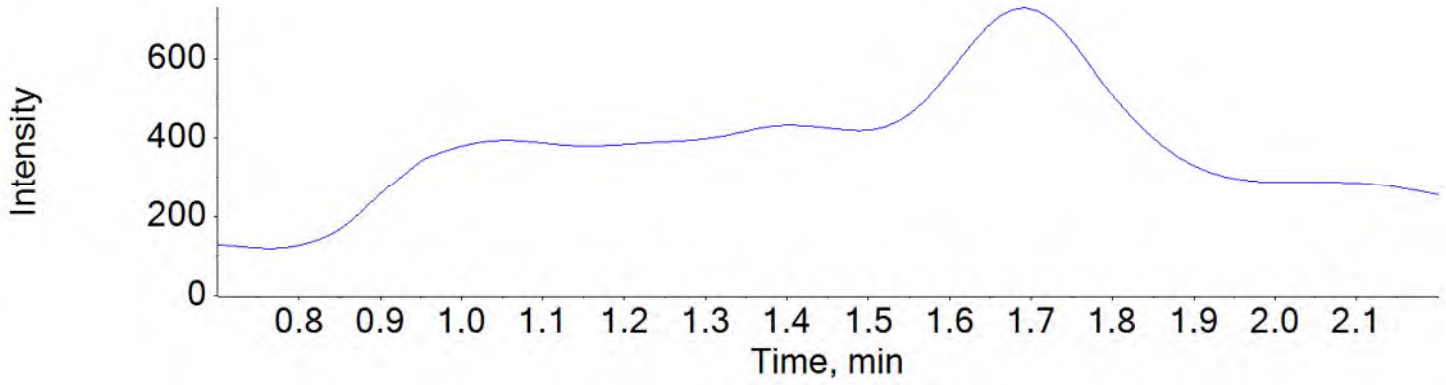
Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

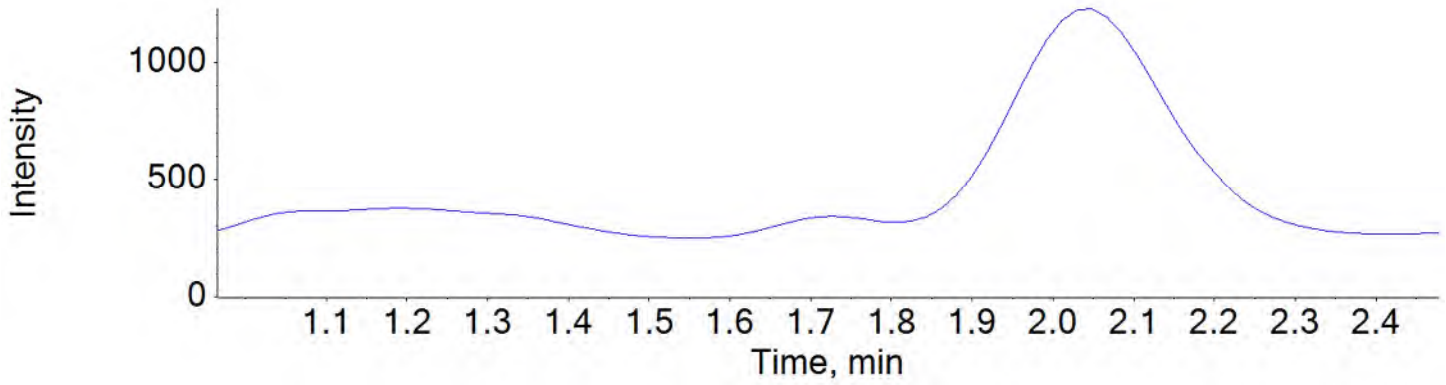


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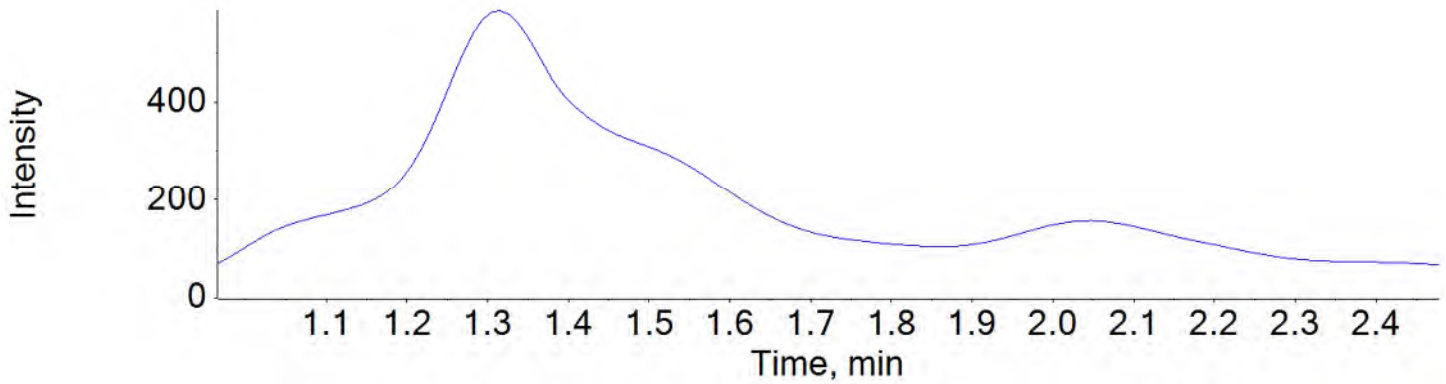
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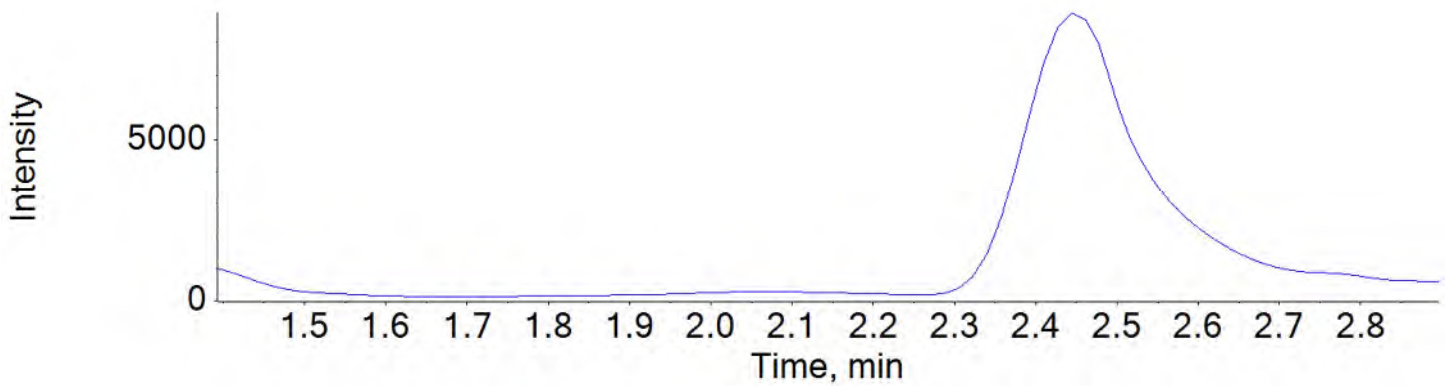
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

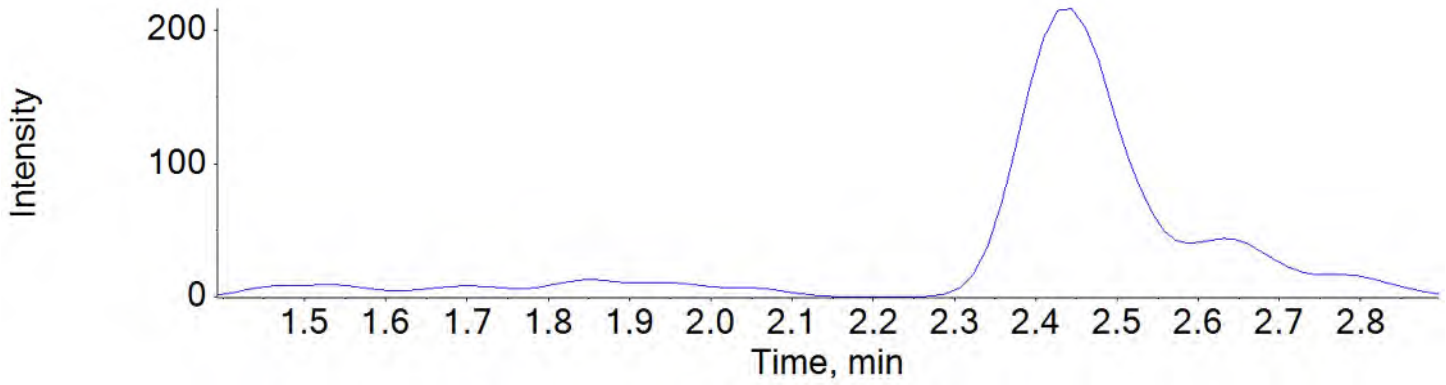


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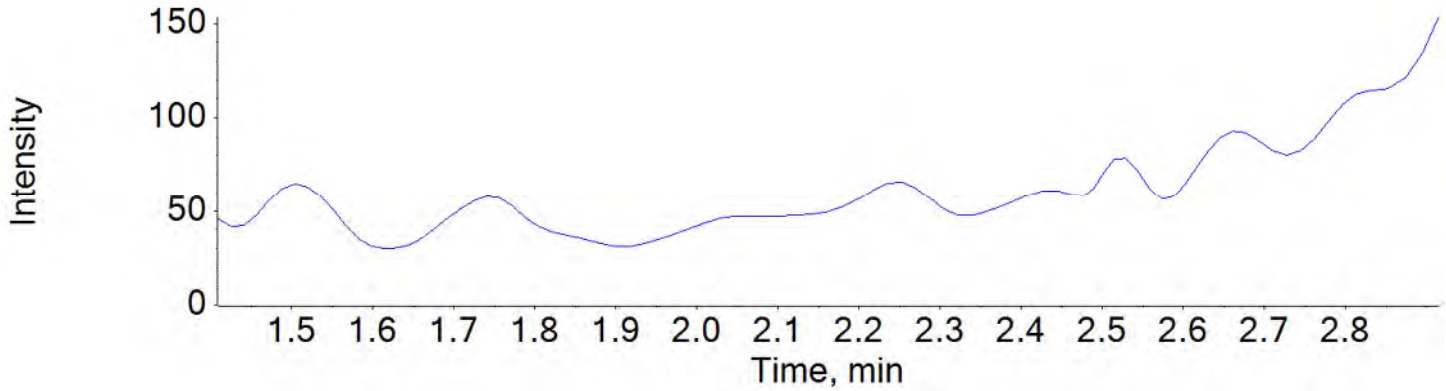
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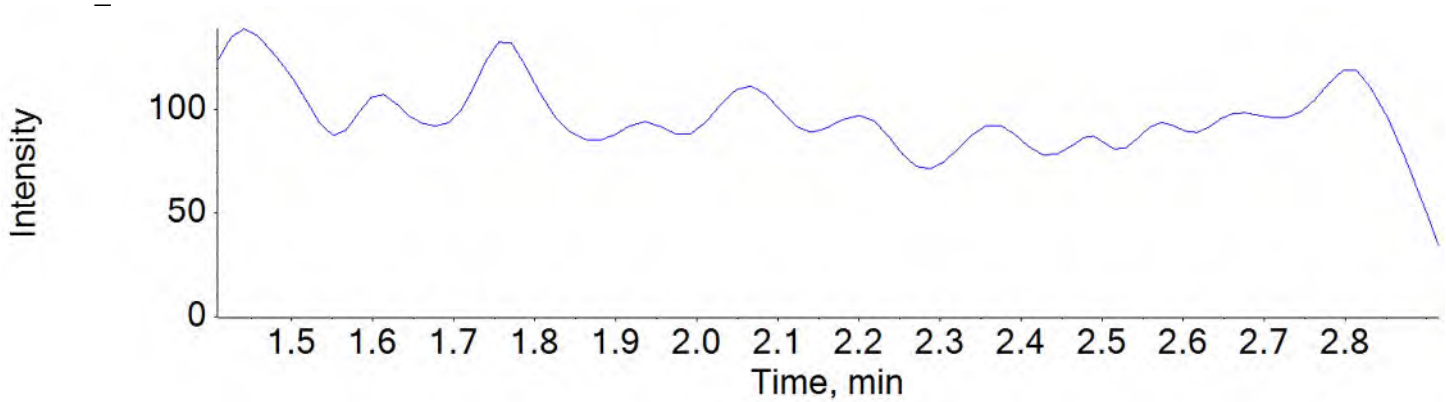
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

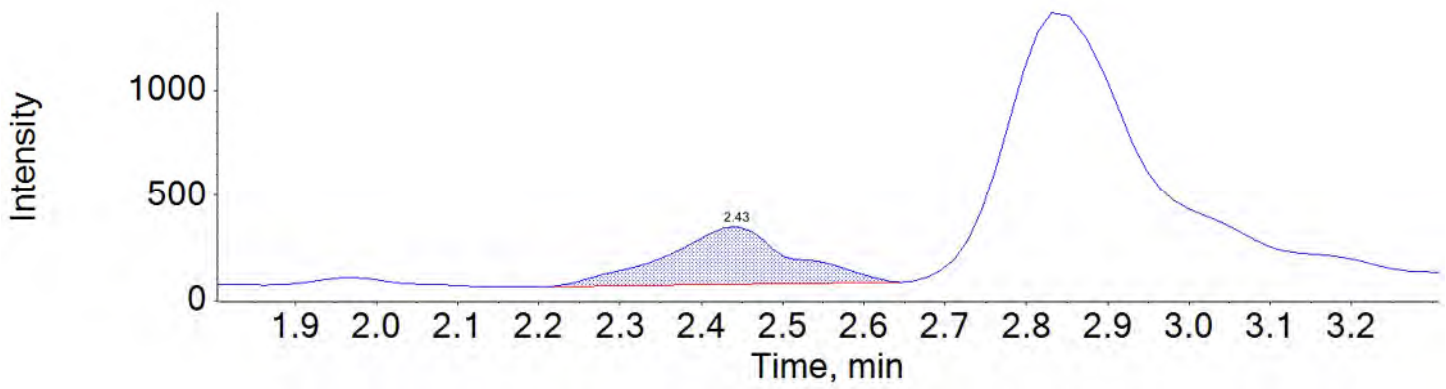


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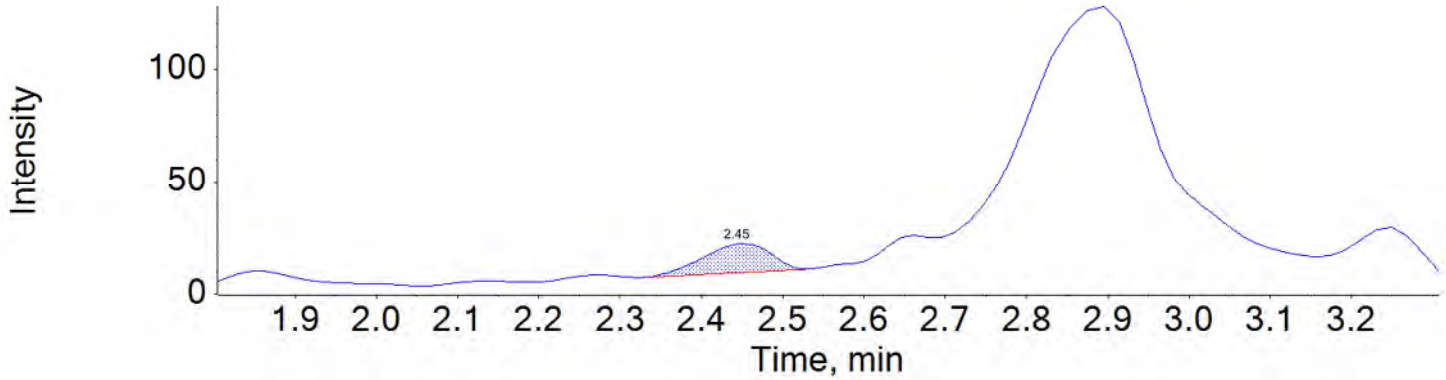
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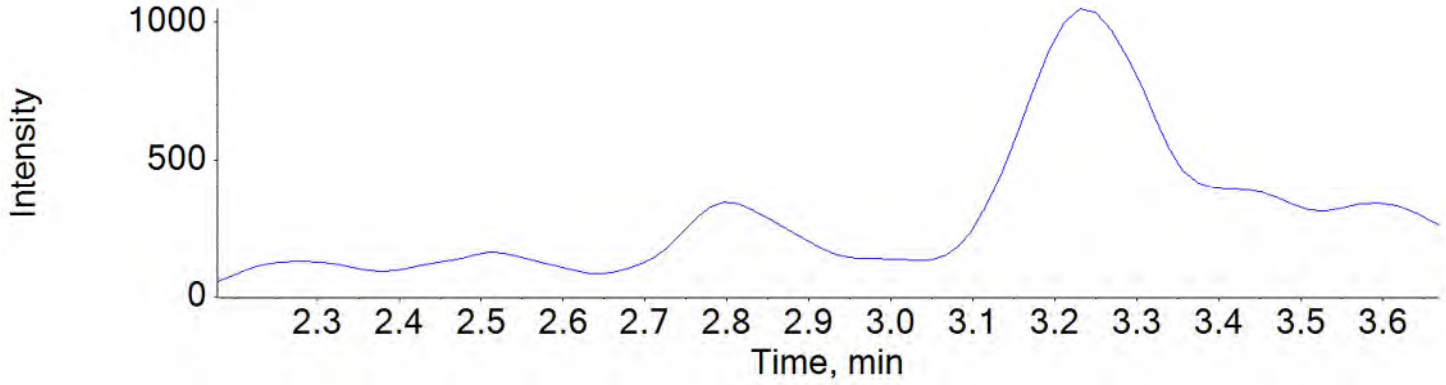
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

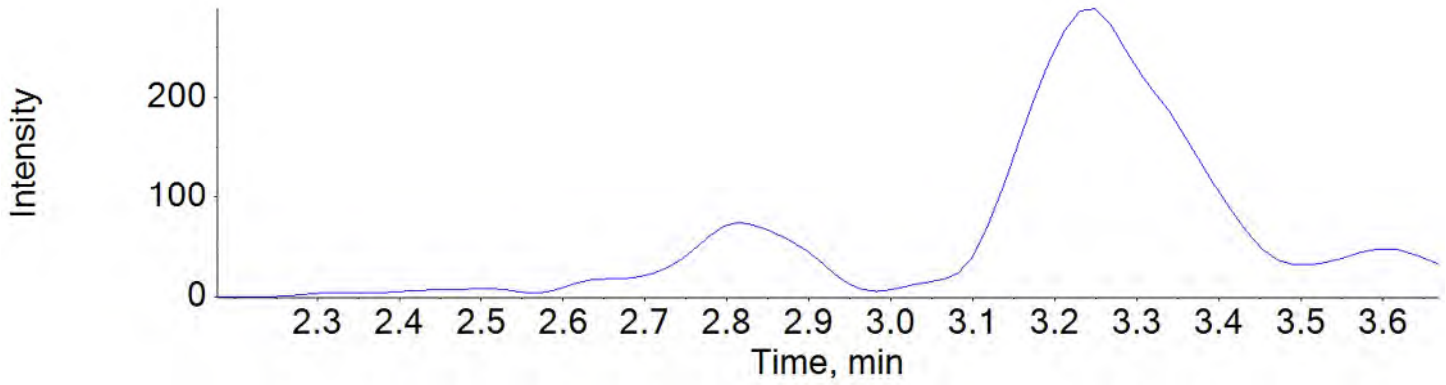


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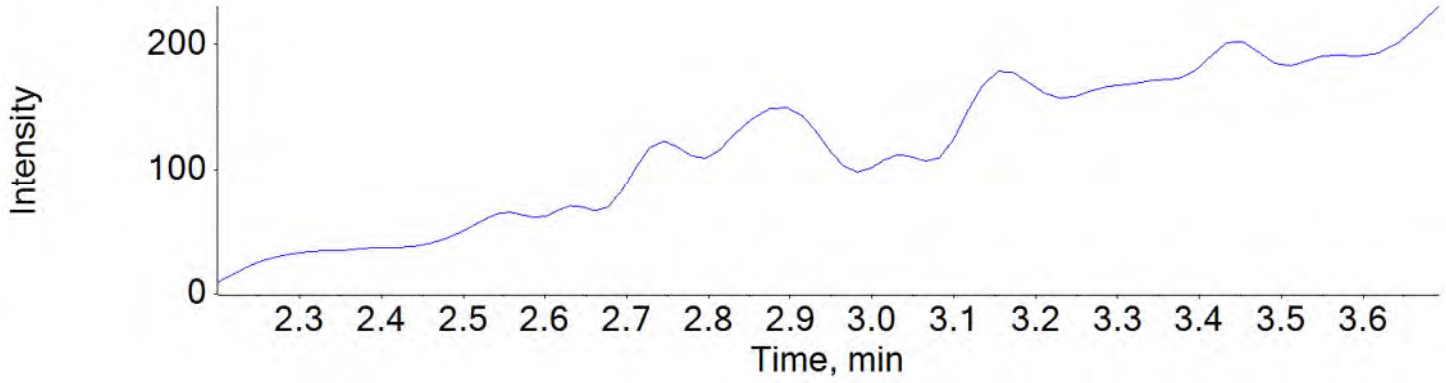
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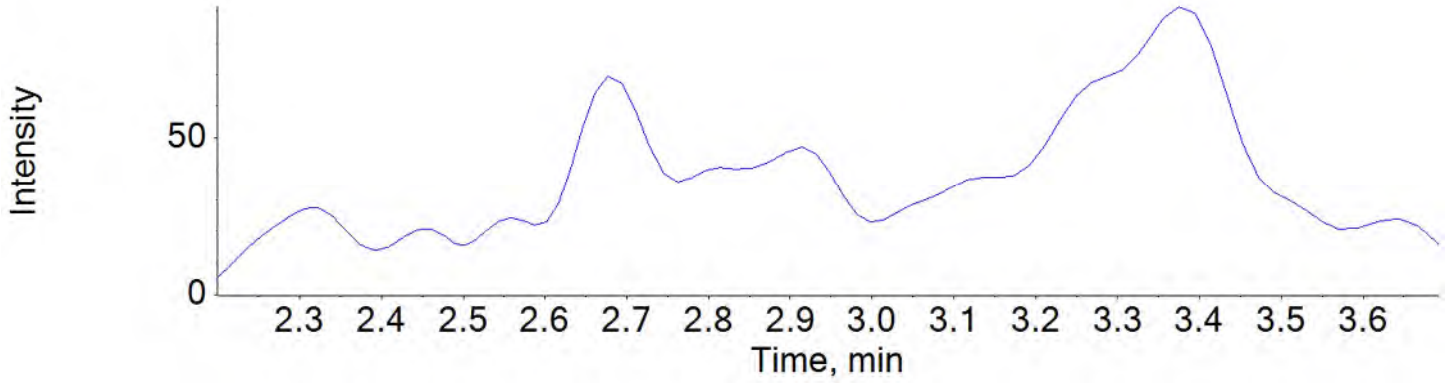
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

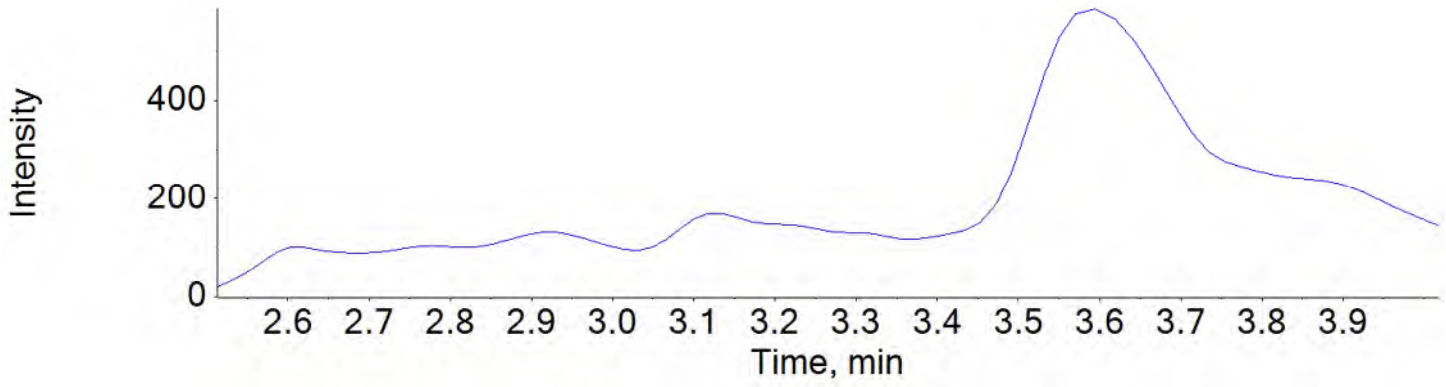


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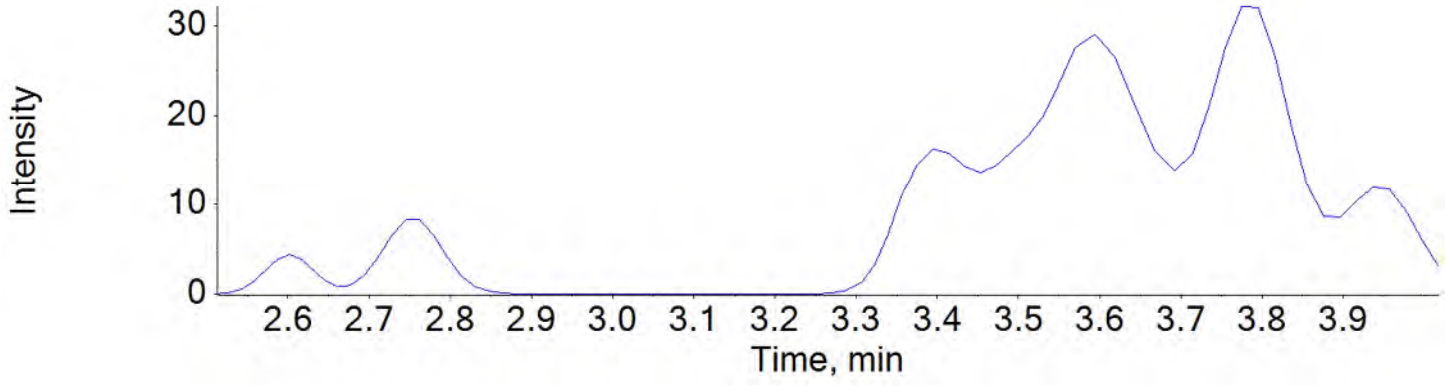
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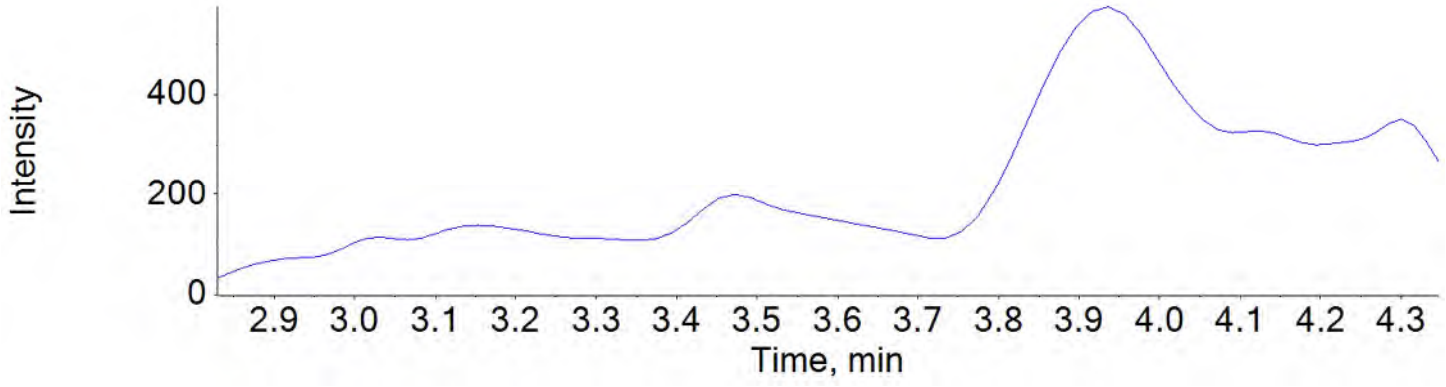
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

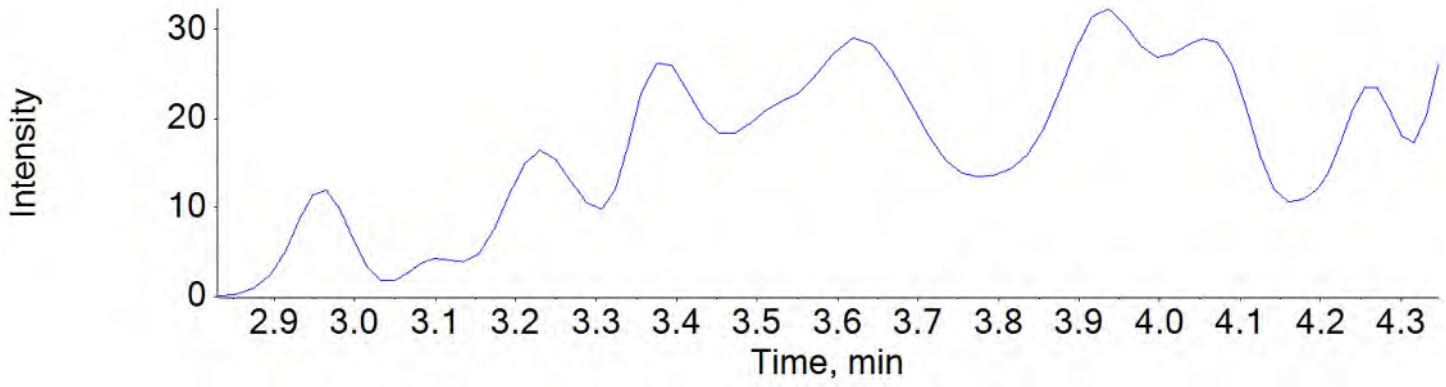


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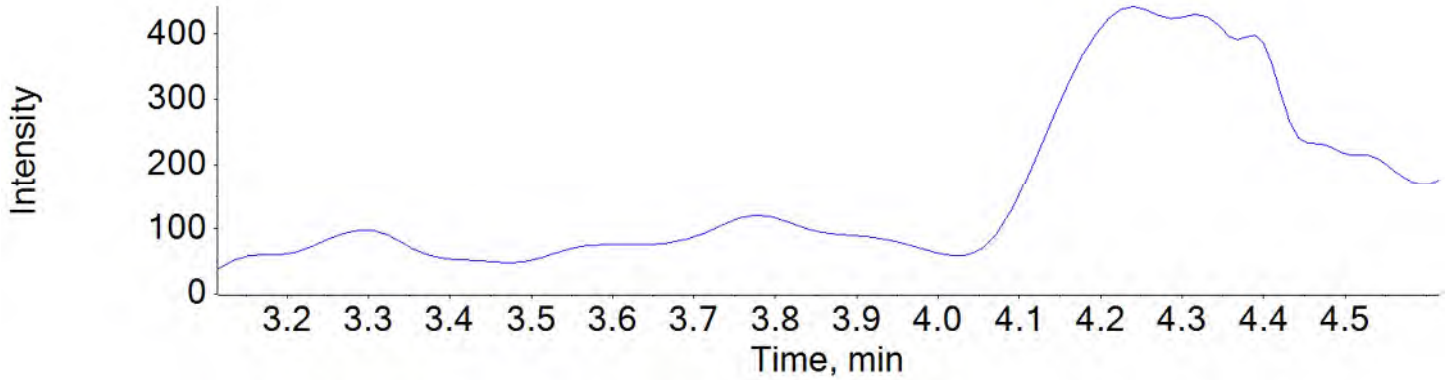
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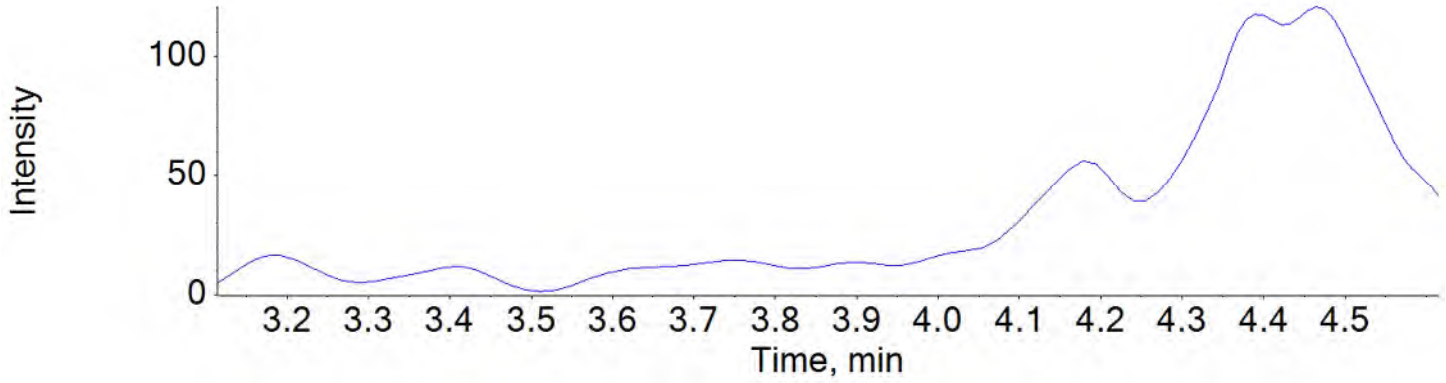
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

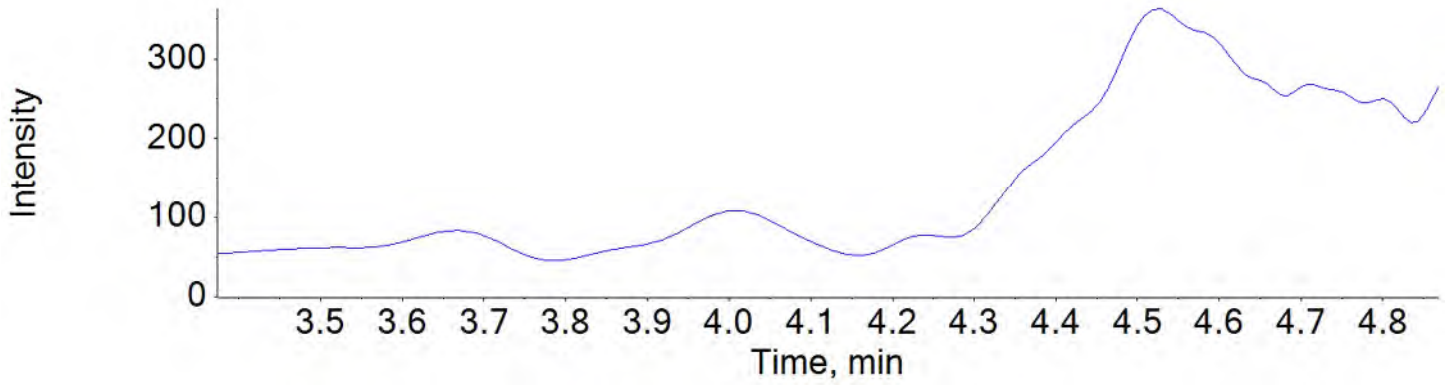


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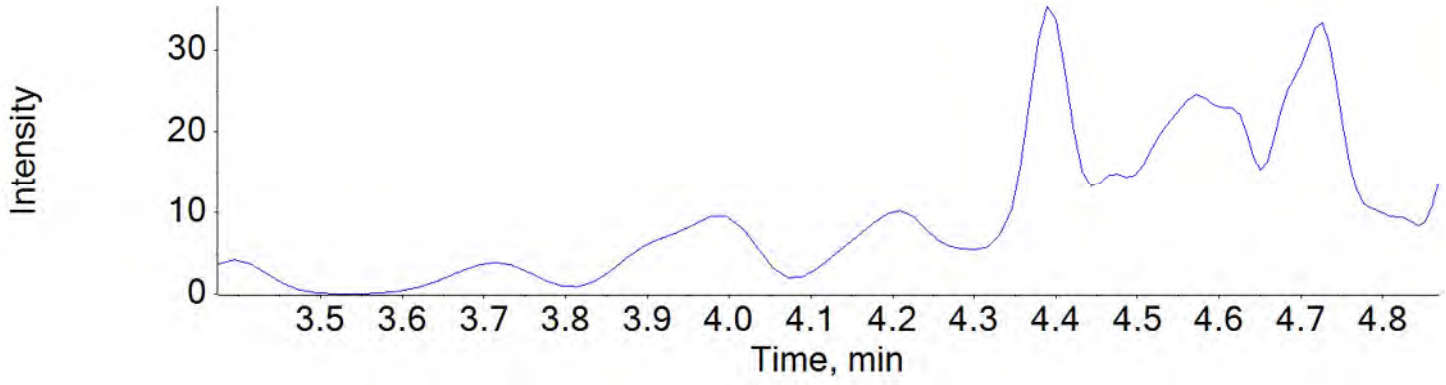
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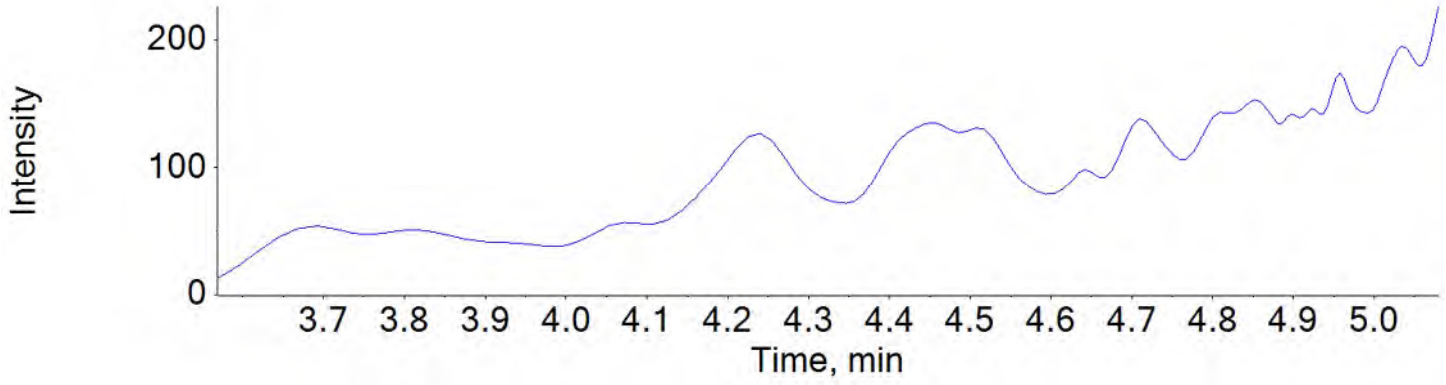
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

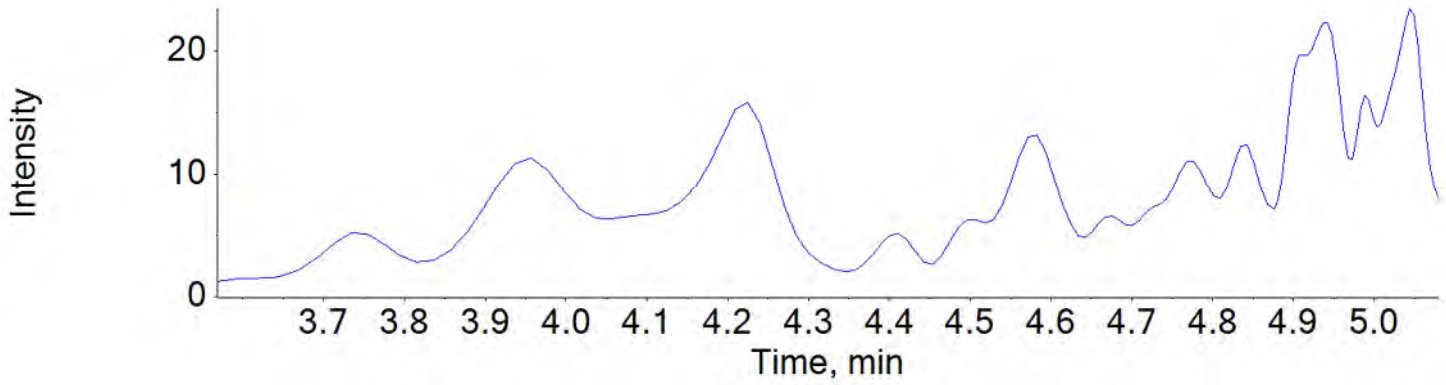


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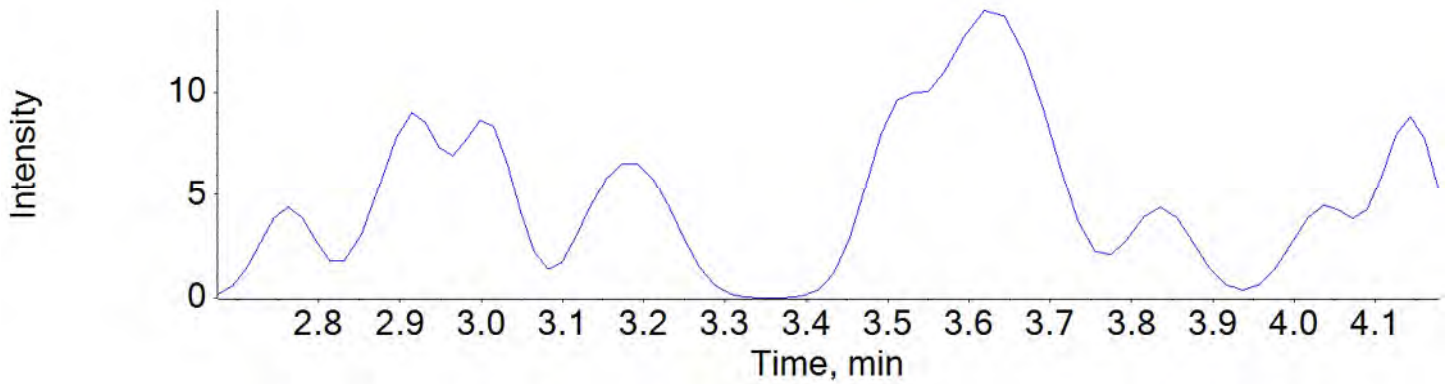
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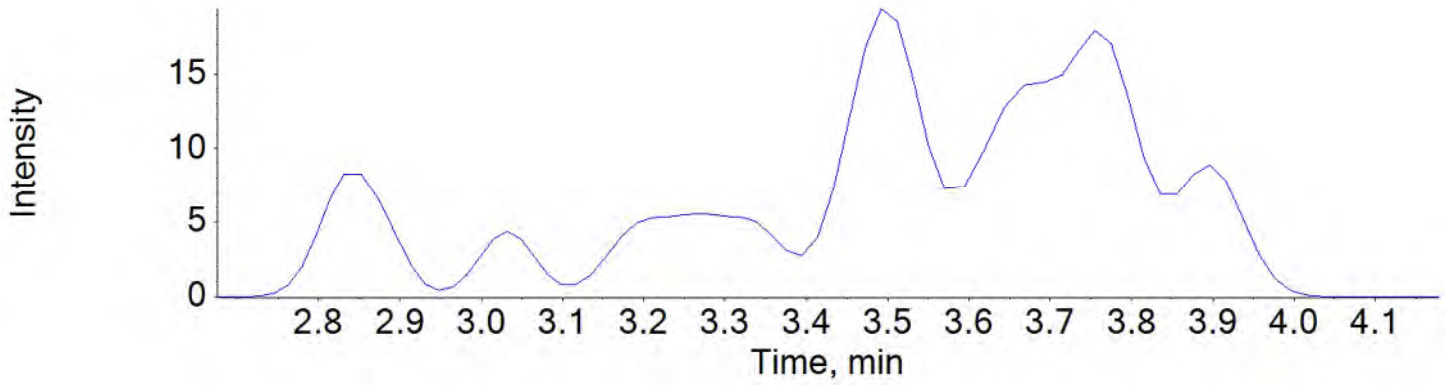
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

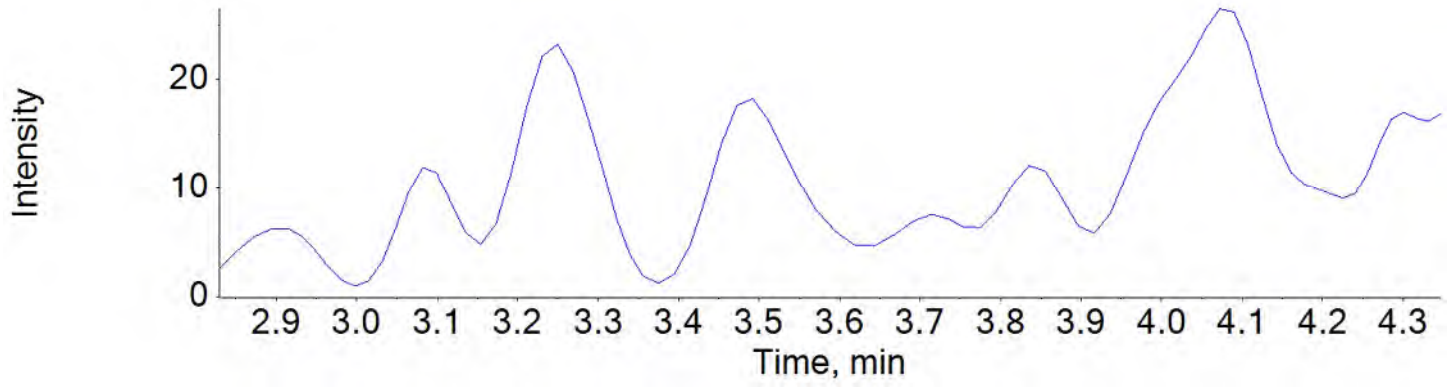


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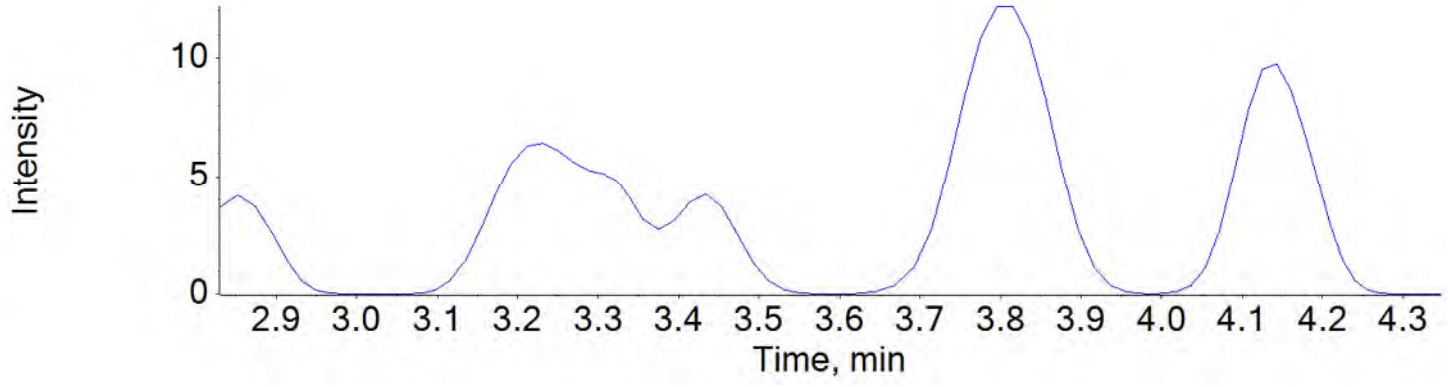
Chromatogram Report

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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

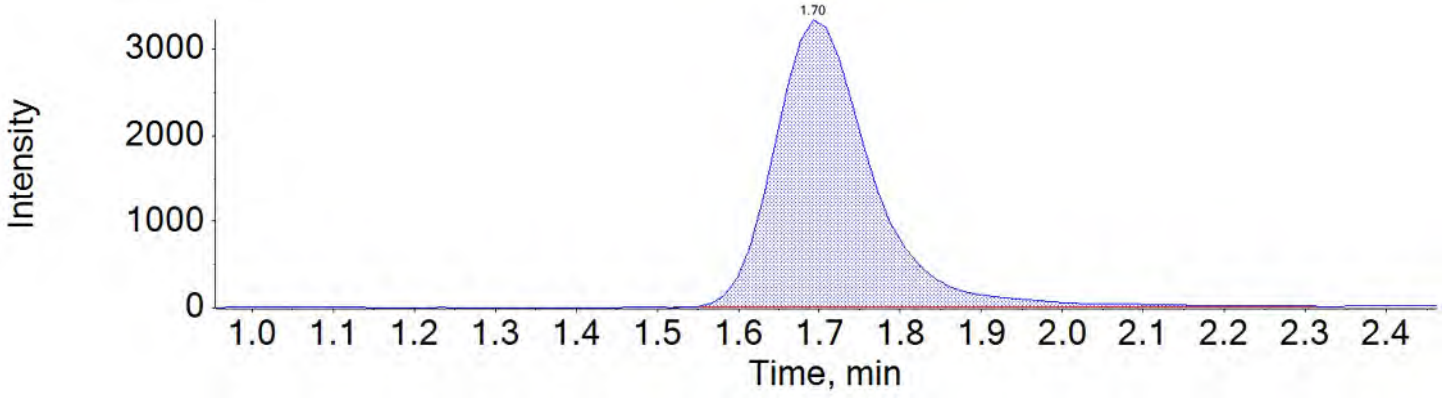
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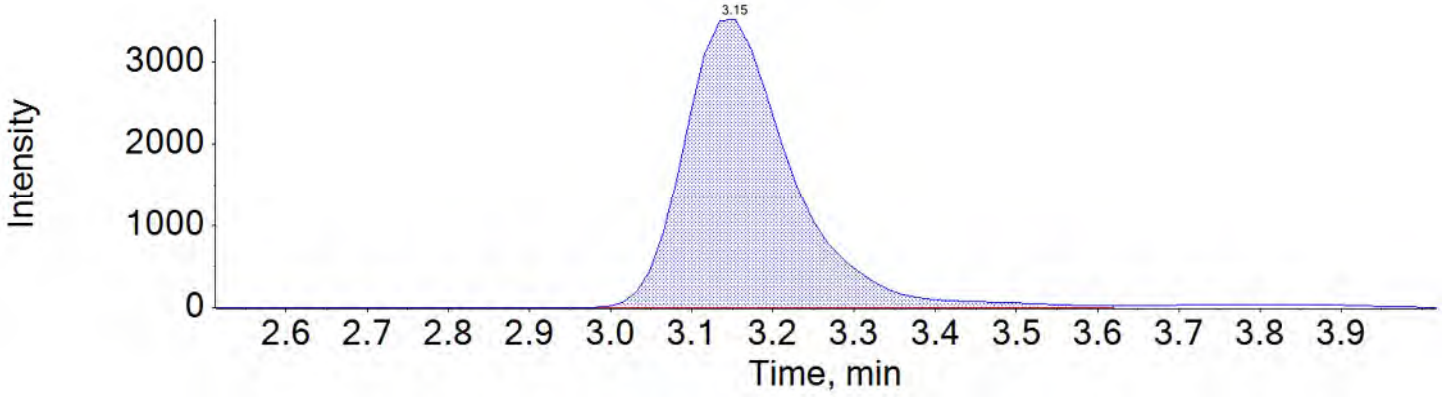
Sample Name	J6161-FS(0)	**Injection Vial**	23
Sample ID	WGNA-050718-FRB-0800	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:04:58	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

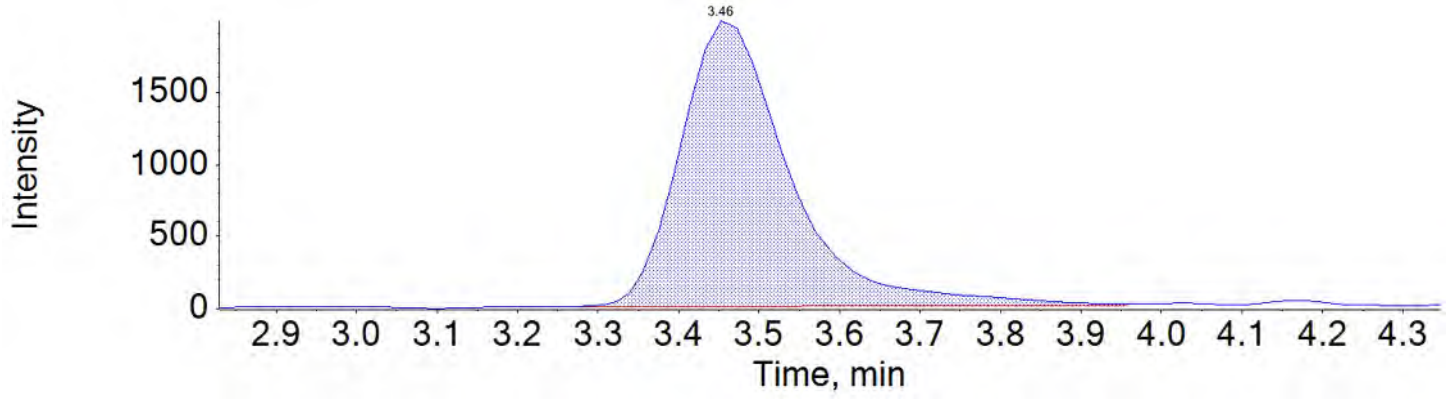


BATTELLE

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d5-EtFOSAA 589.0 / 419.0



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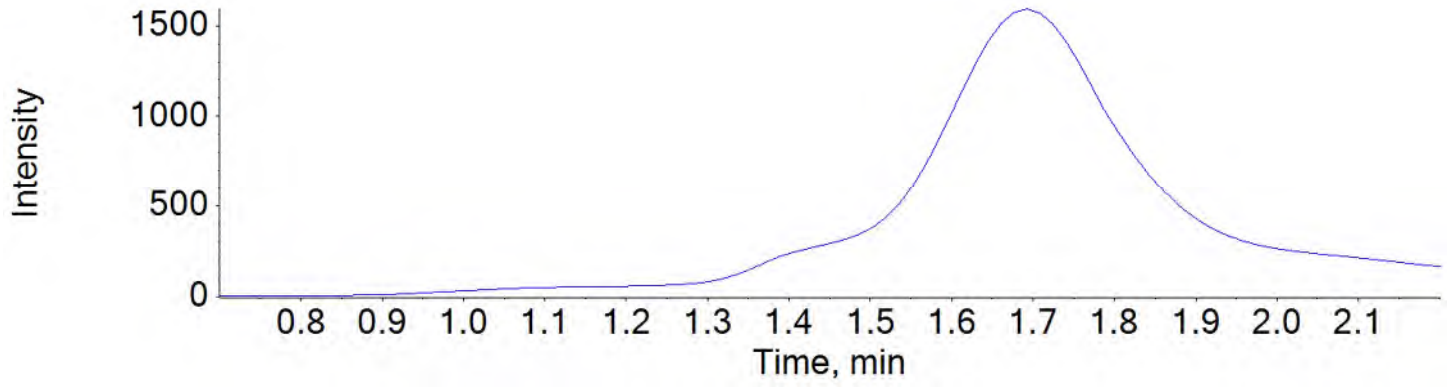
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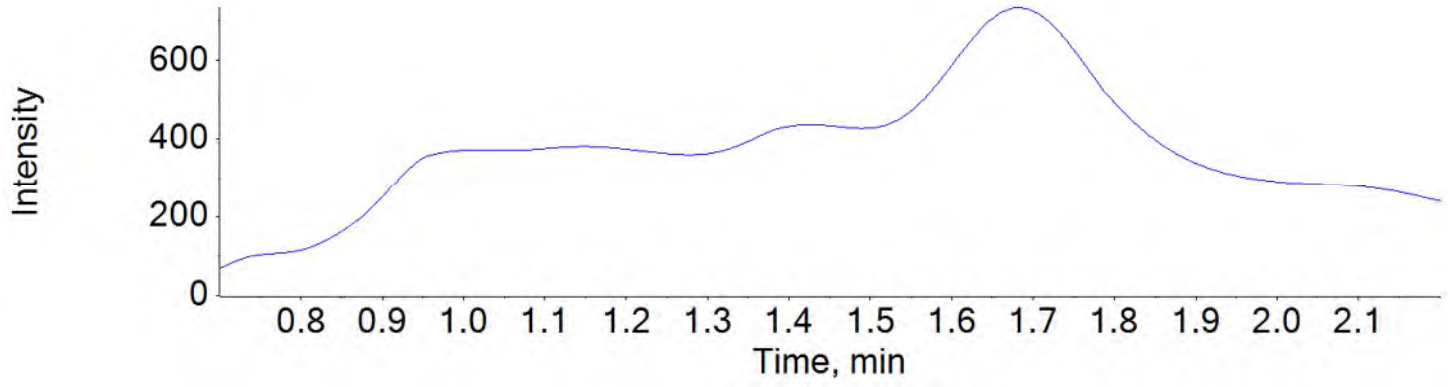
Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

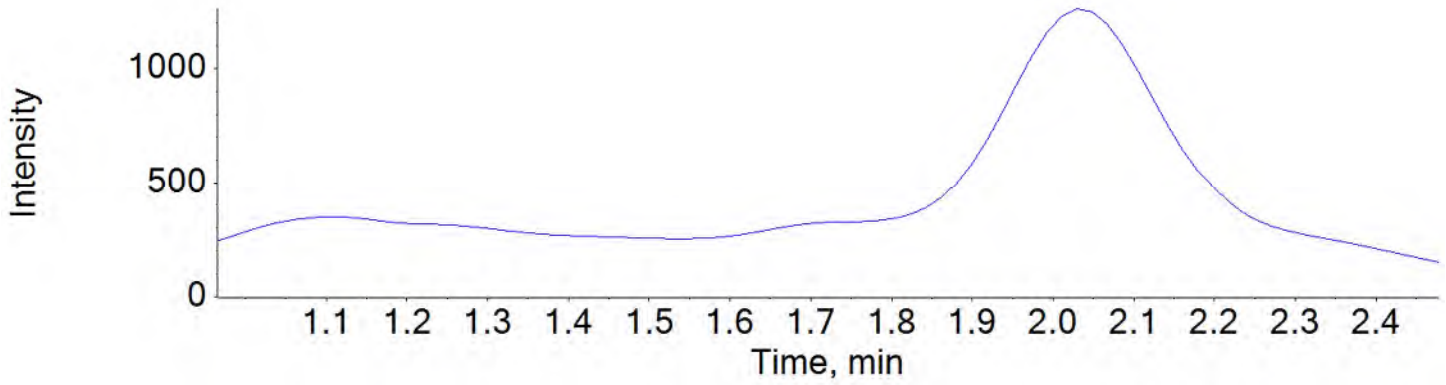


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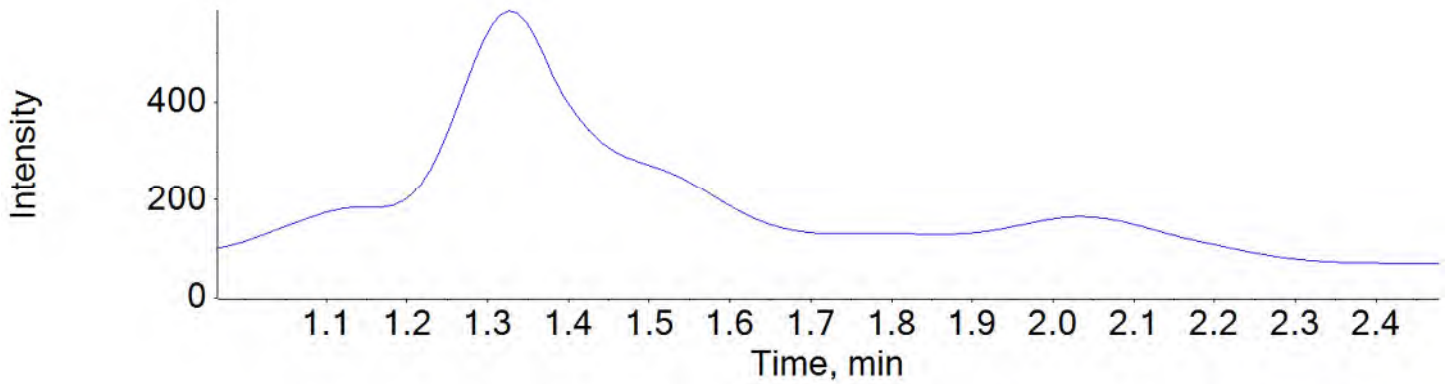
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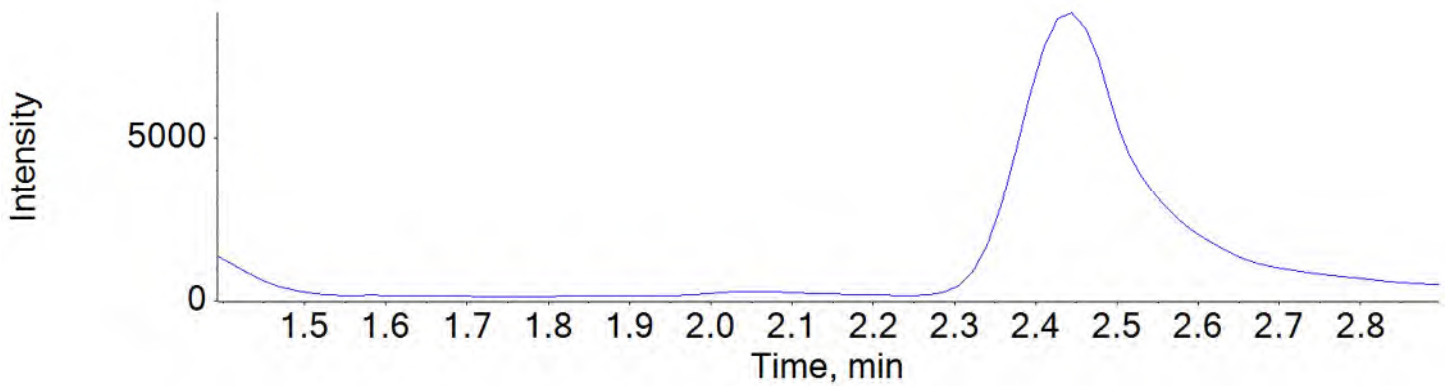
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

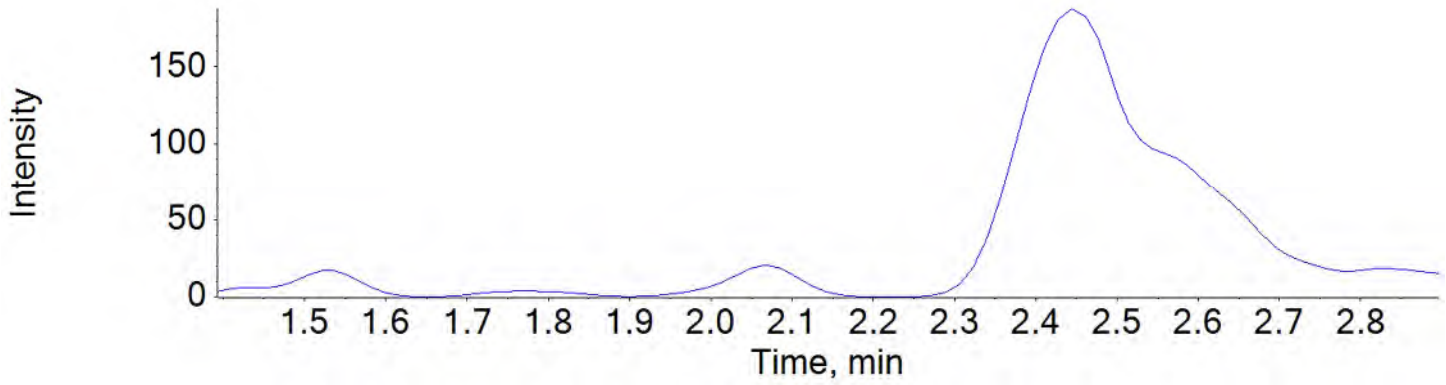


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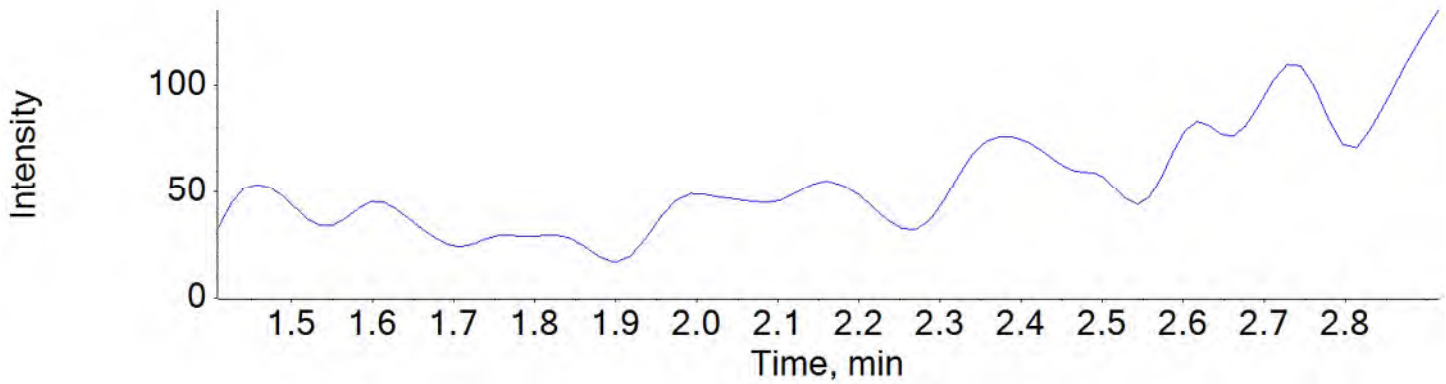
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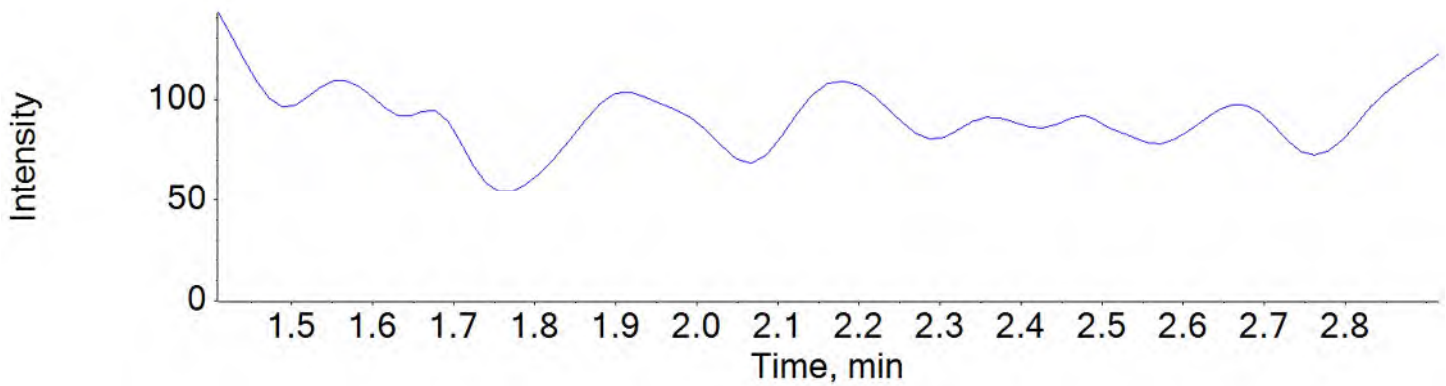
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

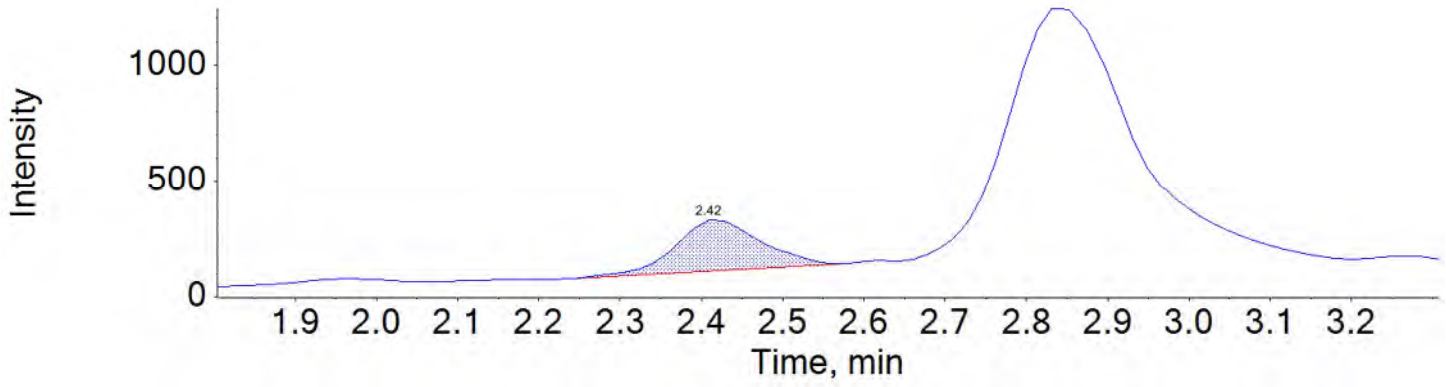


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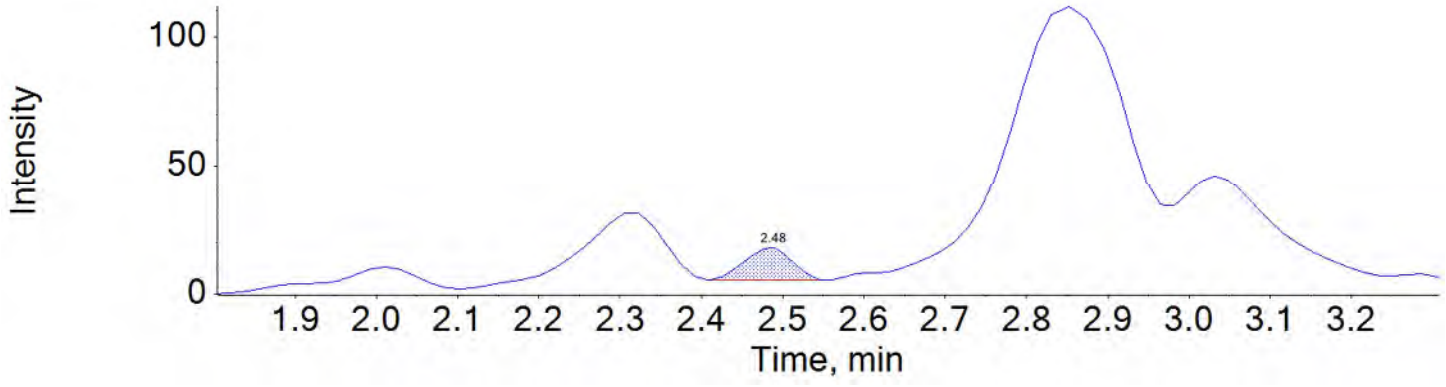
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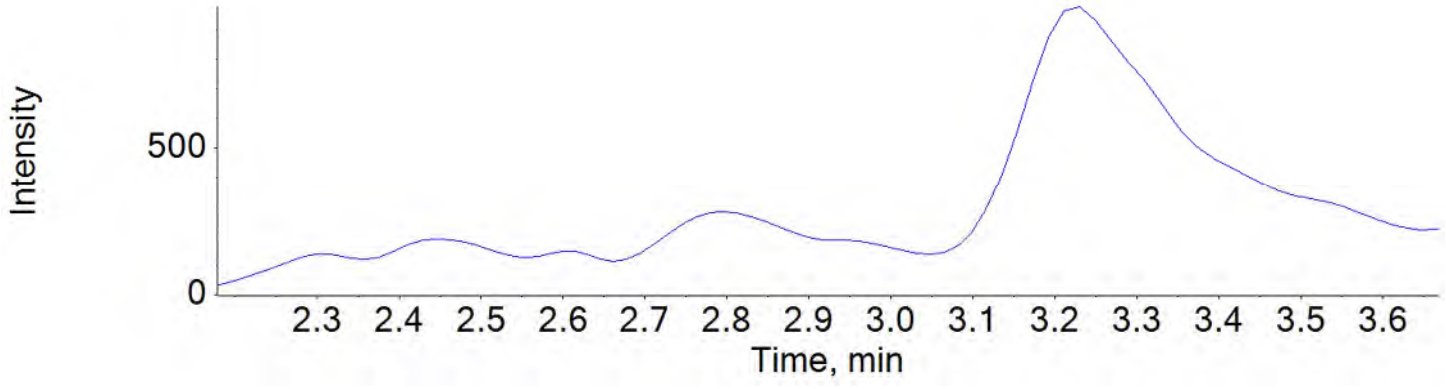
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

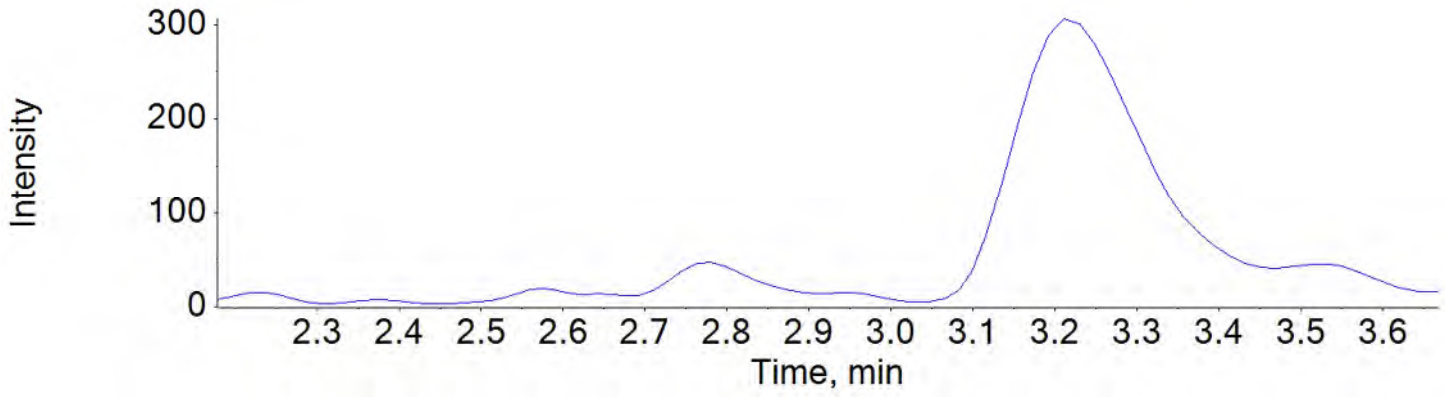


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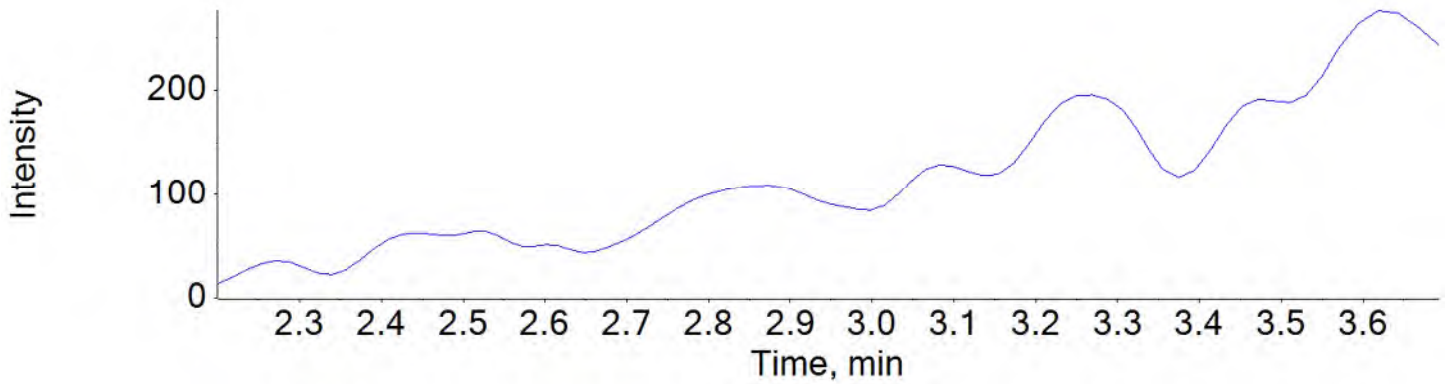
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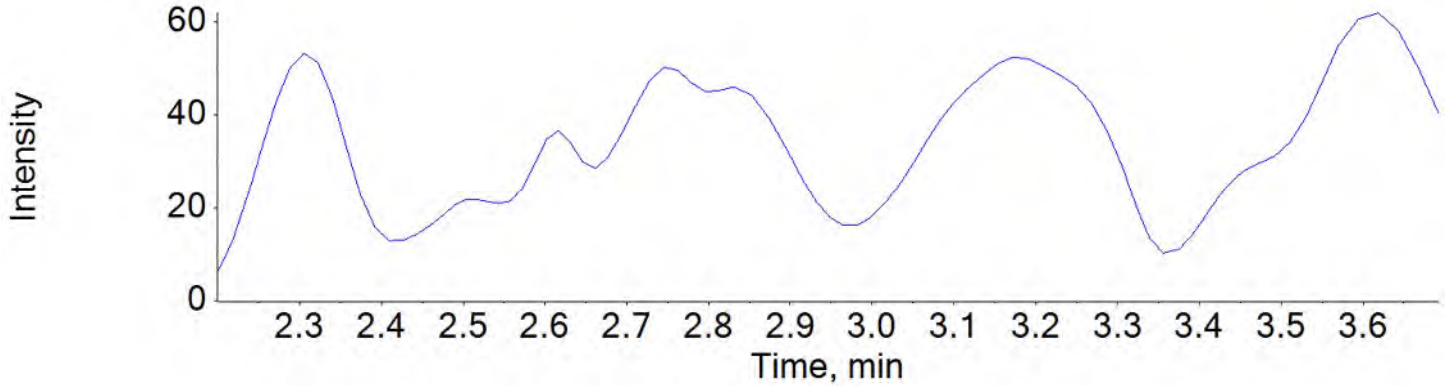
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PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

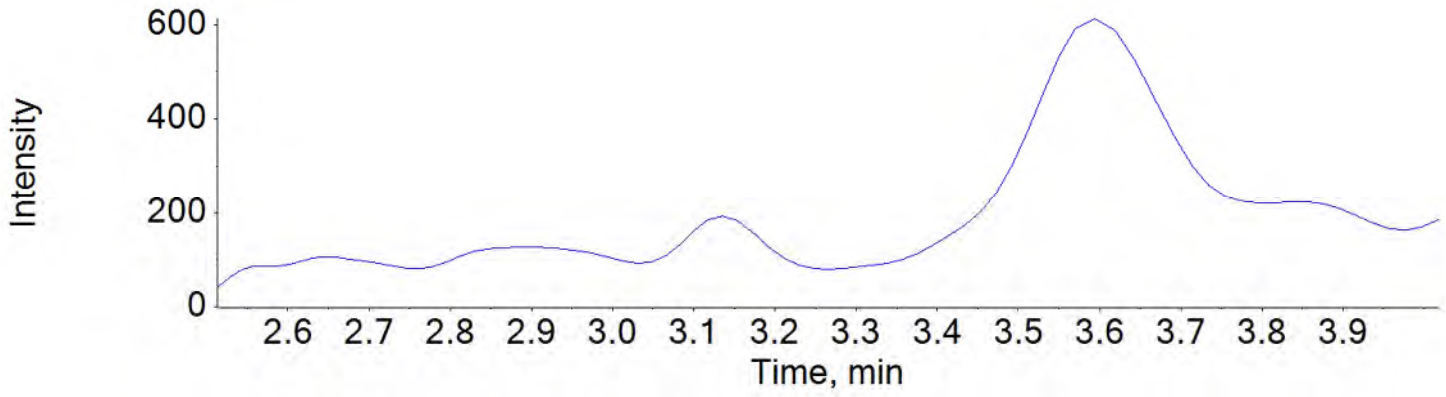


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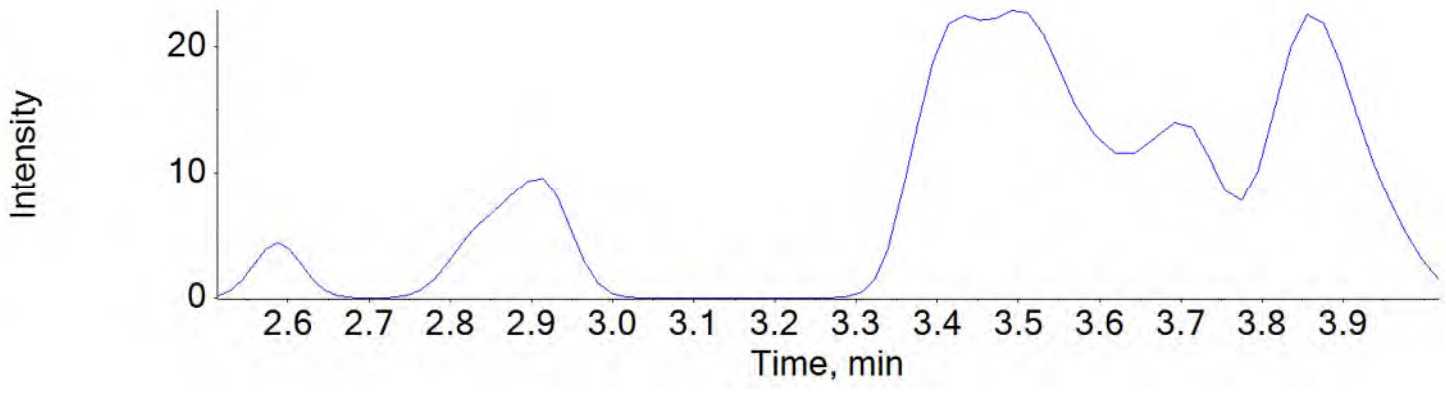
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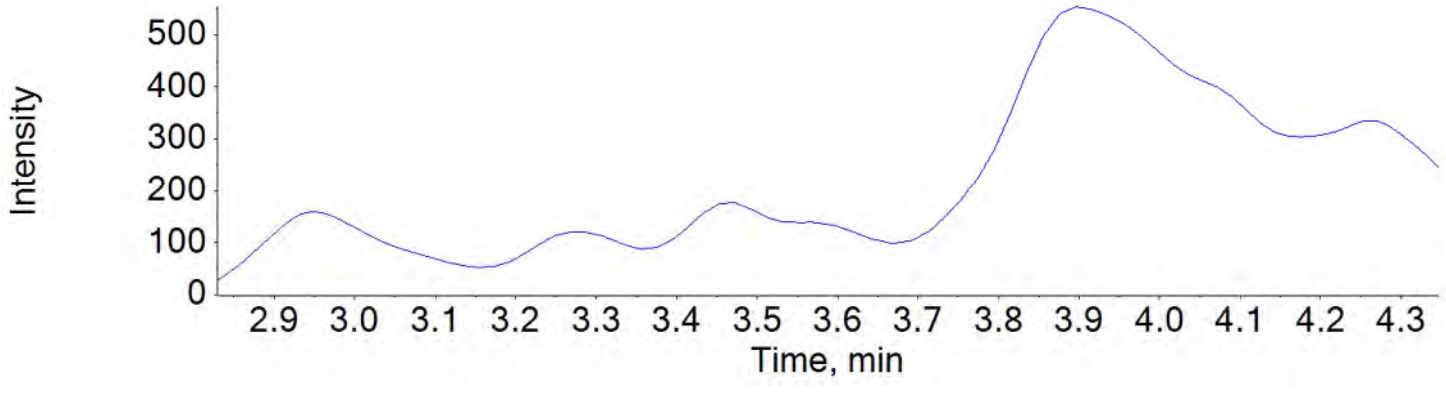
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

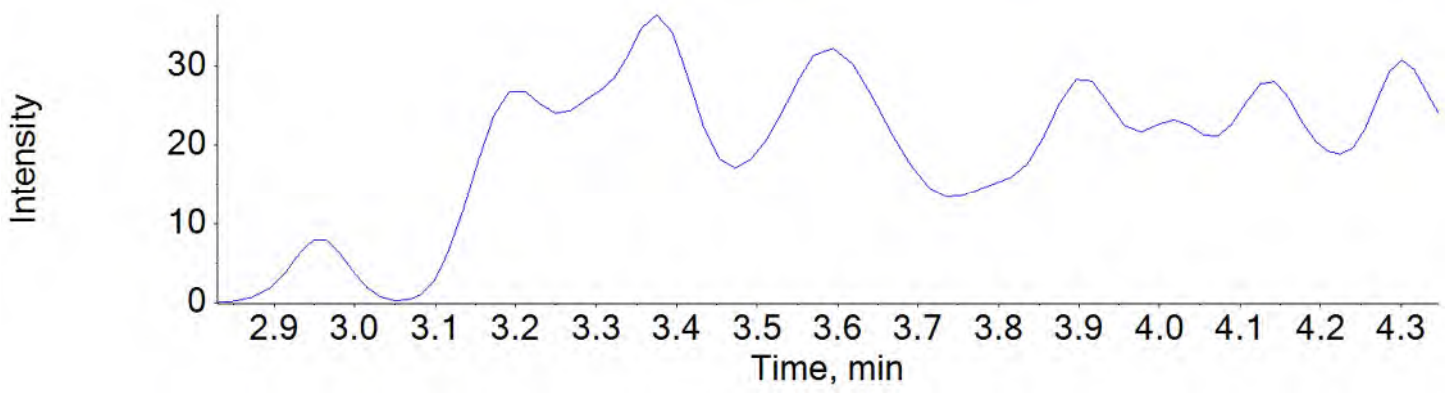


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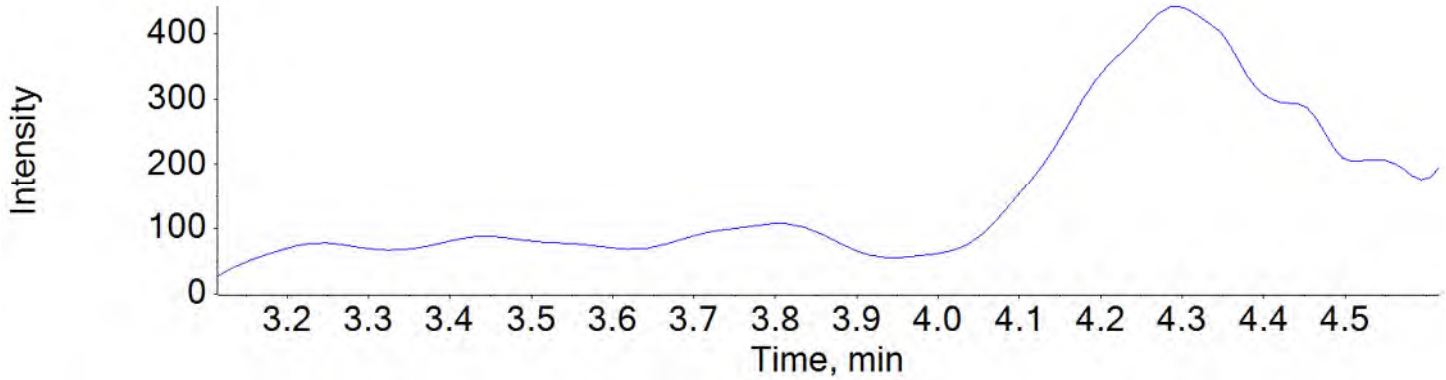
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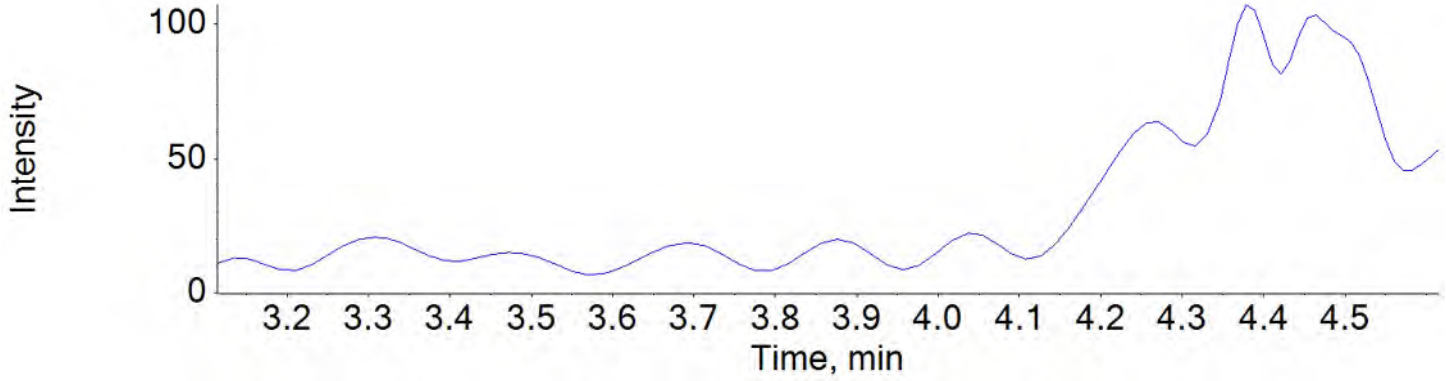
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

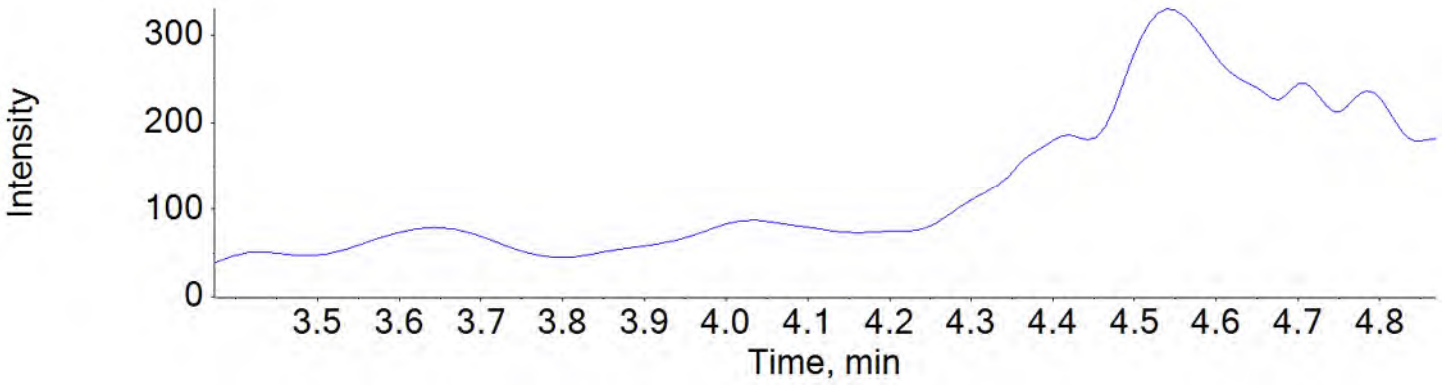


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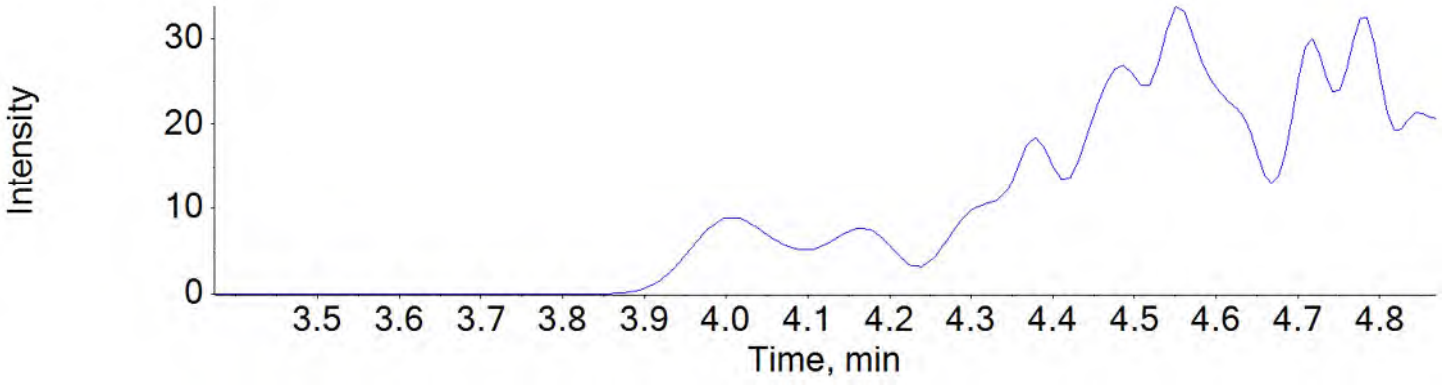
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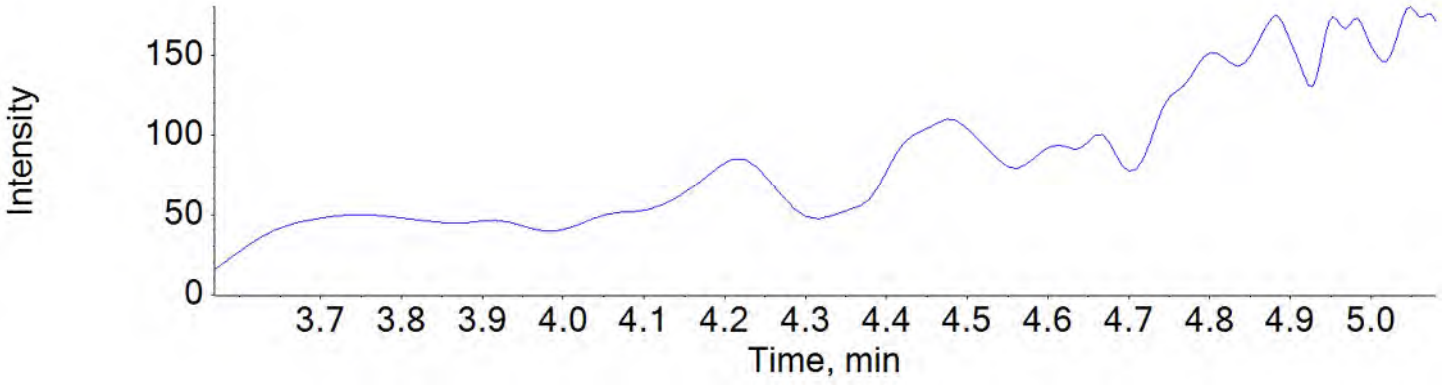
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

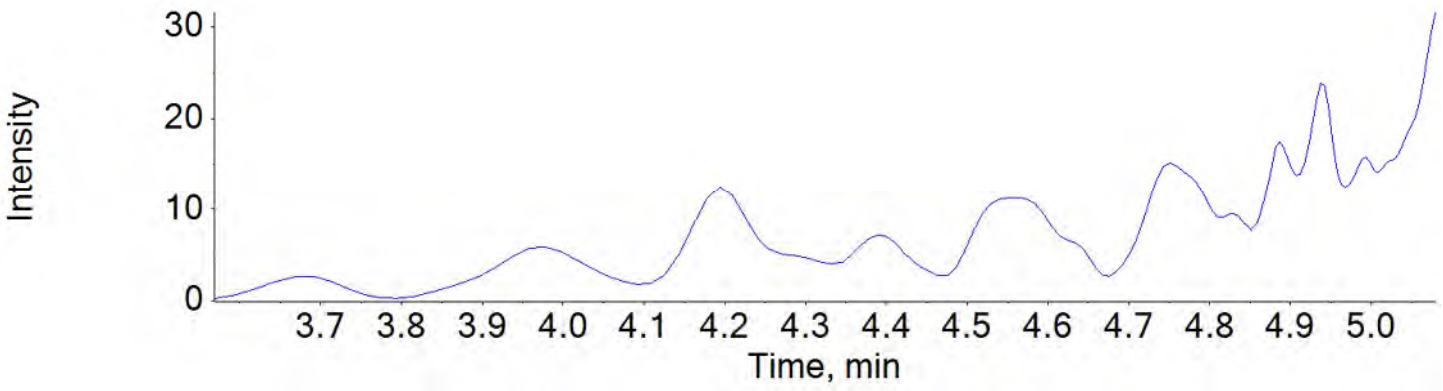


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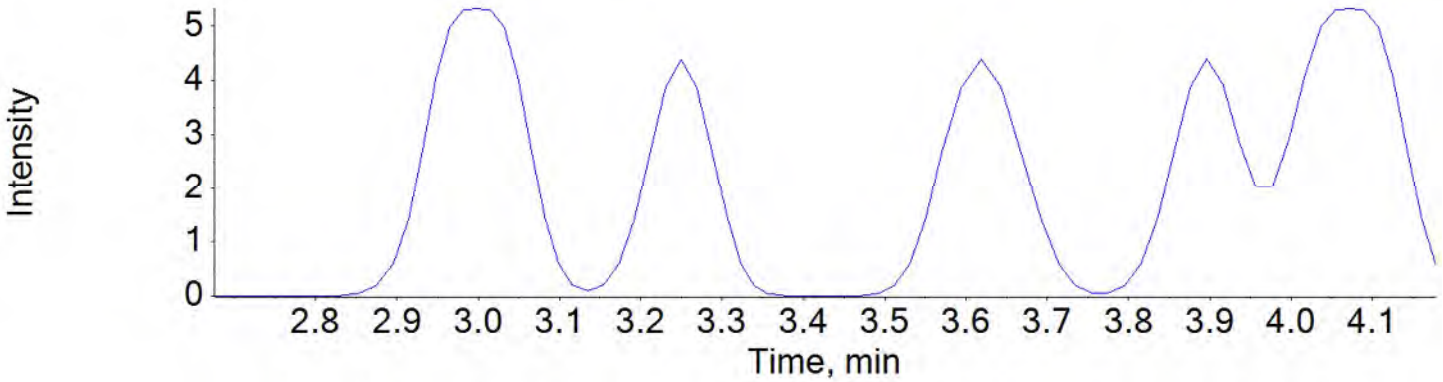
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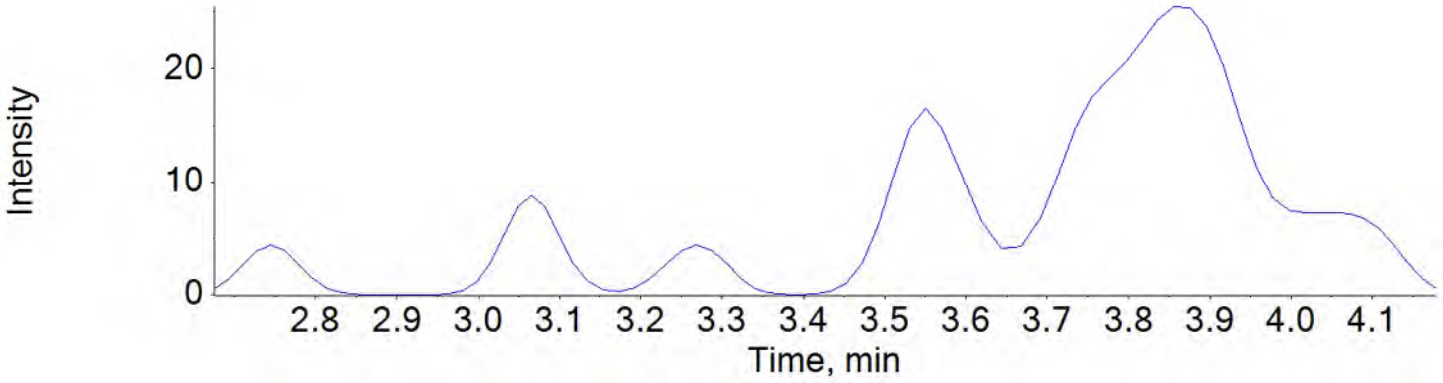
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

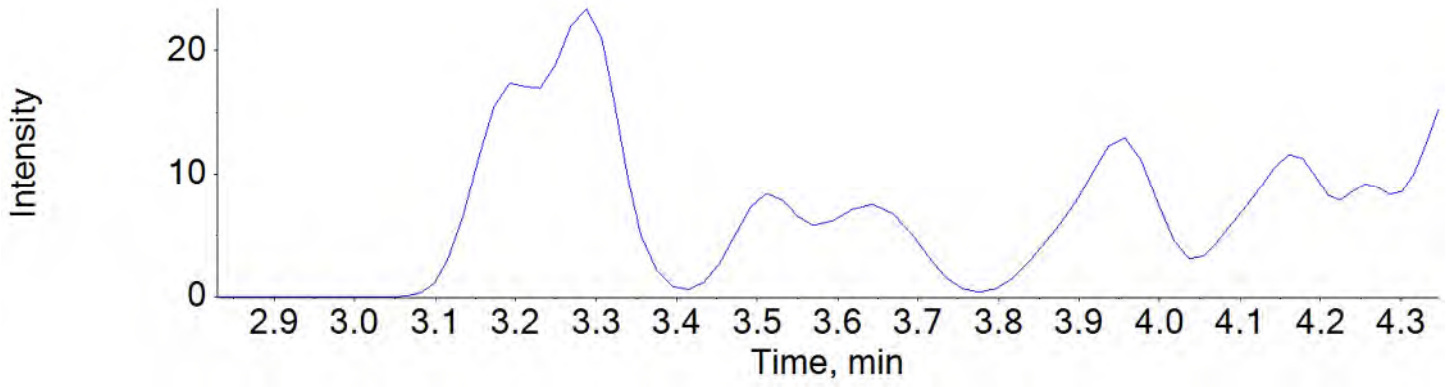


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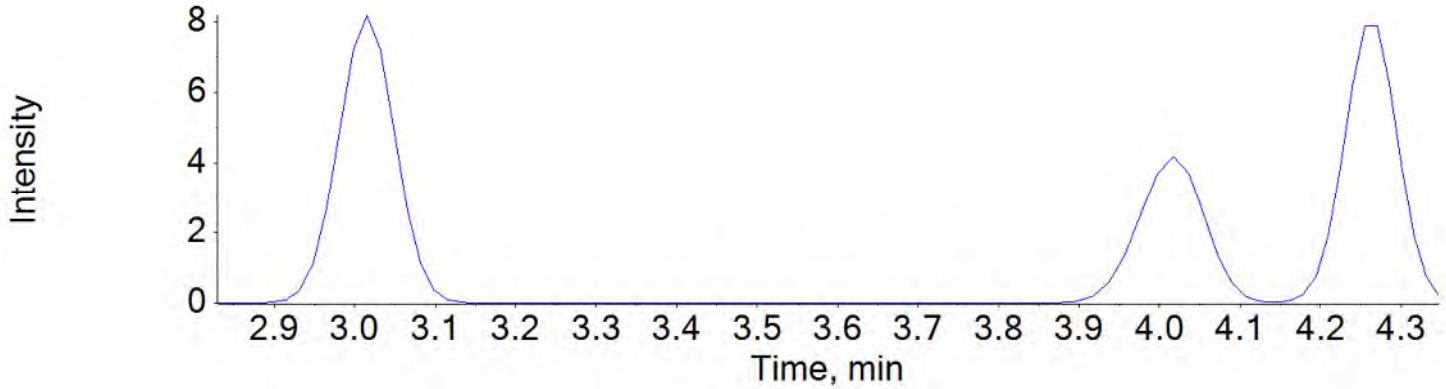
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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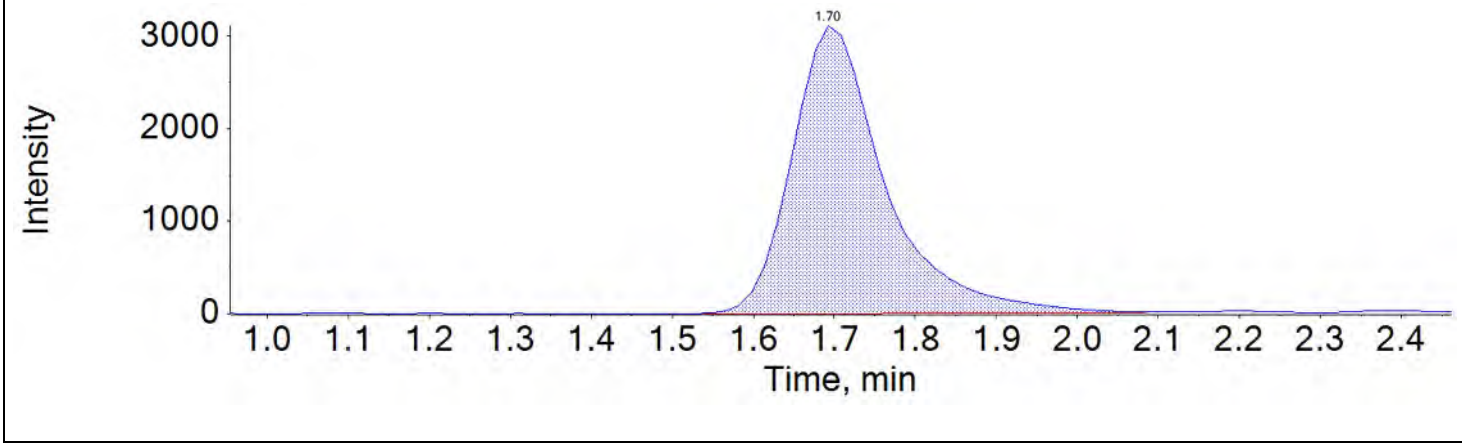
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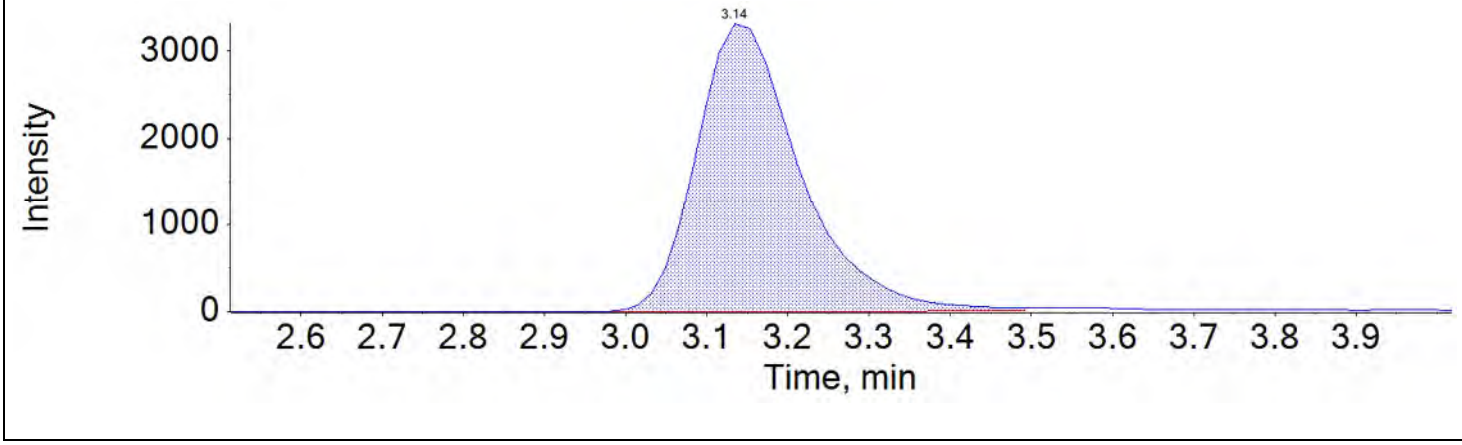
Sample Name	J6163-FS(0)	**Injection Vial**	24
Sample ID	WGNA-050718-FRB-0335	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:13:55	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

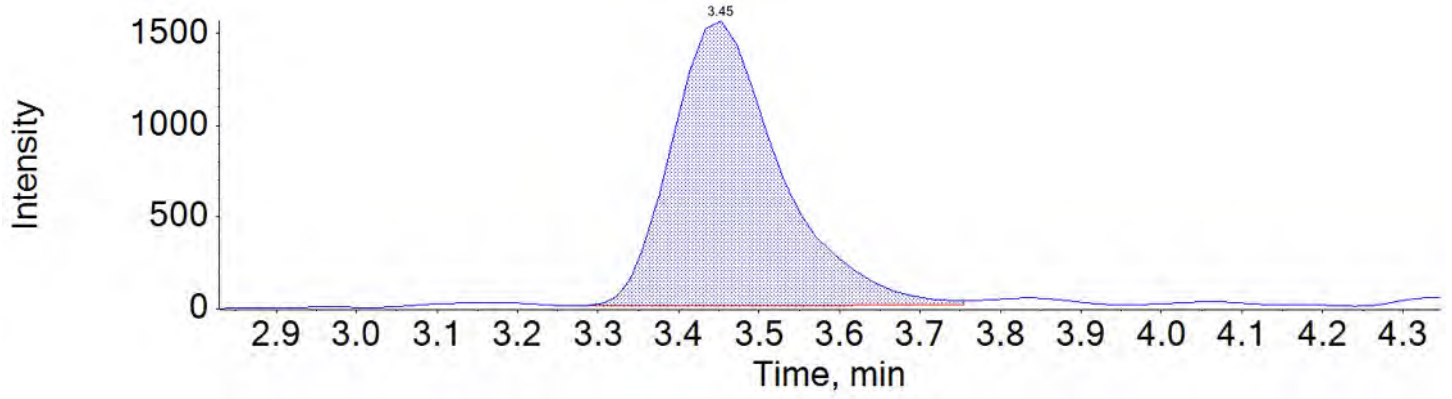


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Chromatogram Report

Created with Analyst Reporter
Printed: 24/05/2018 10:56:31 AM

d5-EtFOSAA 589.0 / 419.0



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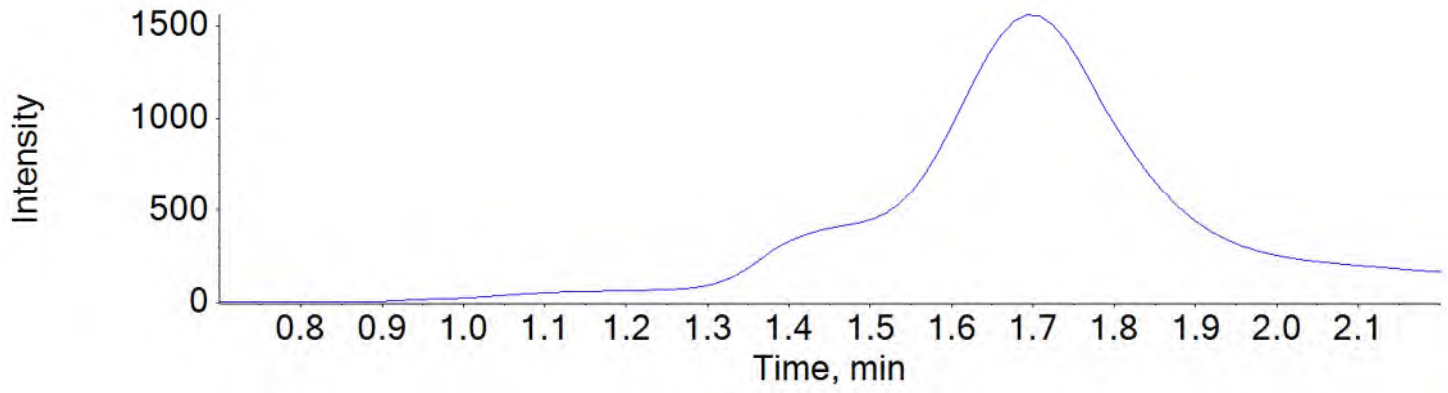
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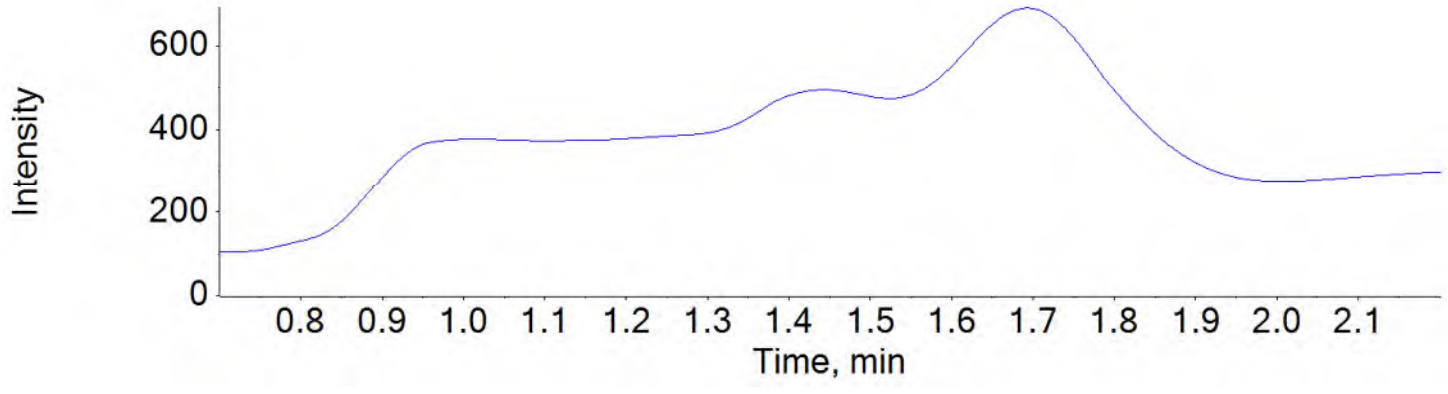
Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

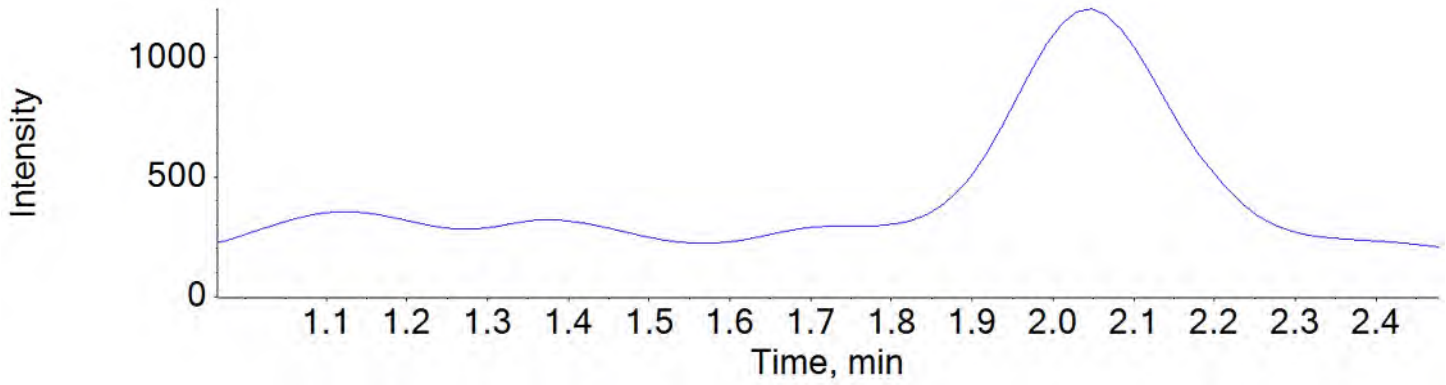


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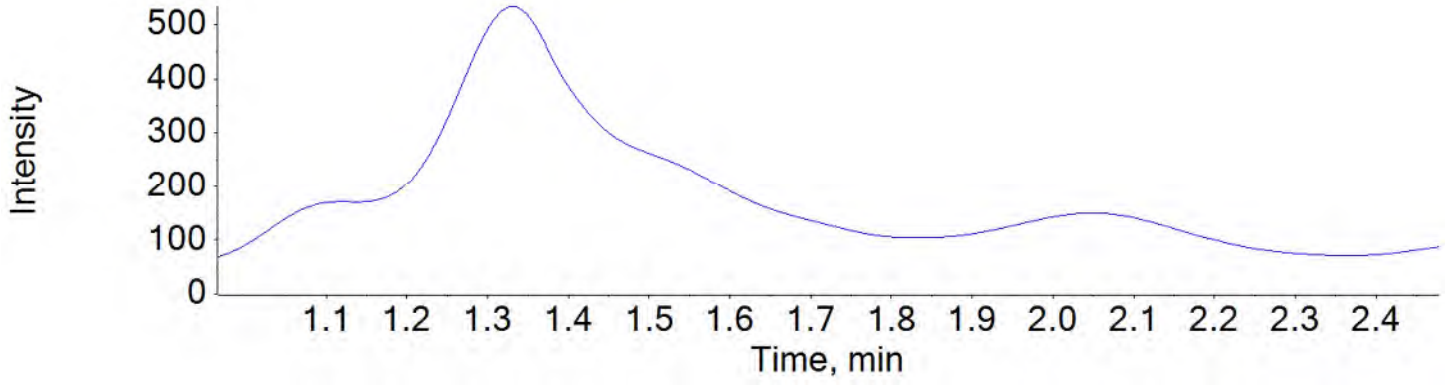
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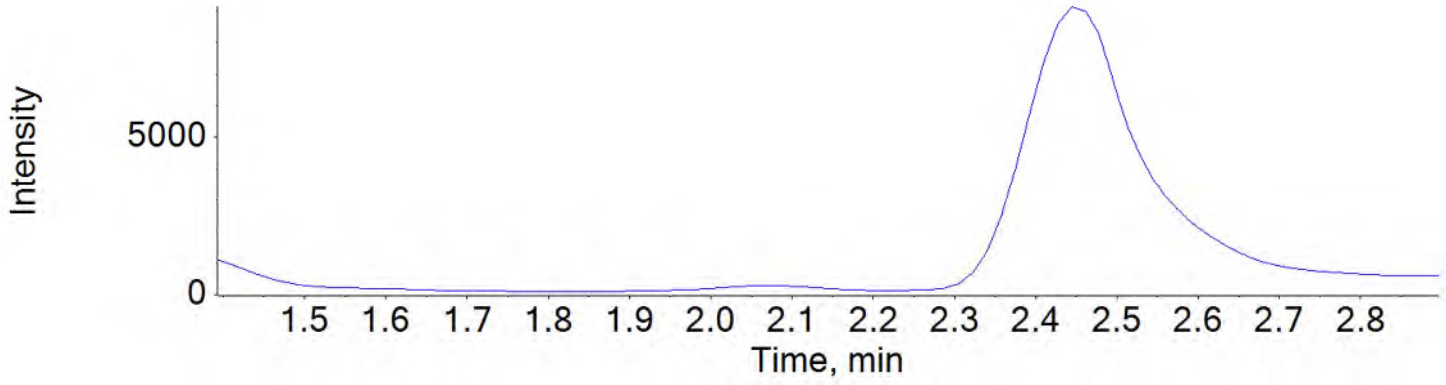
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

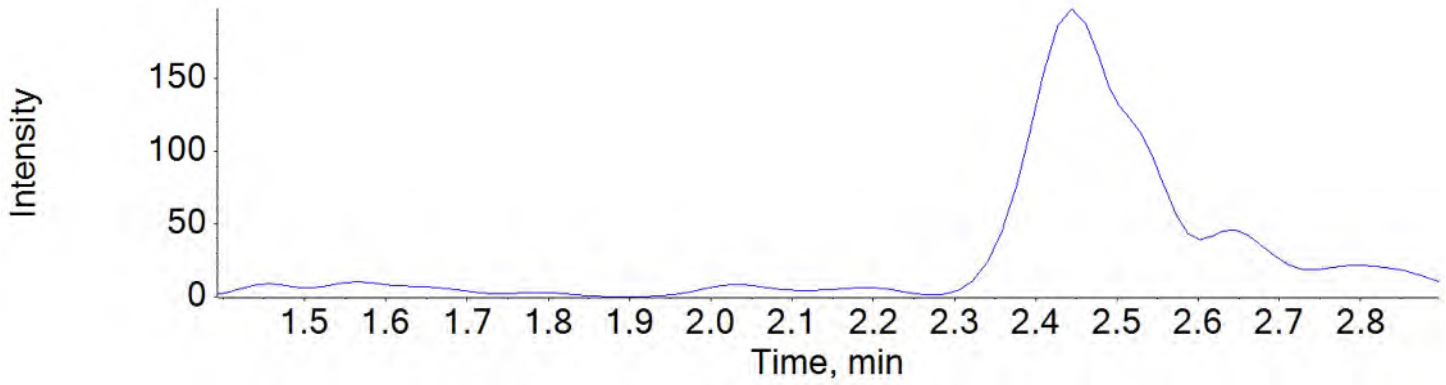


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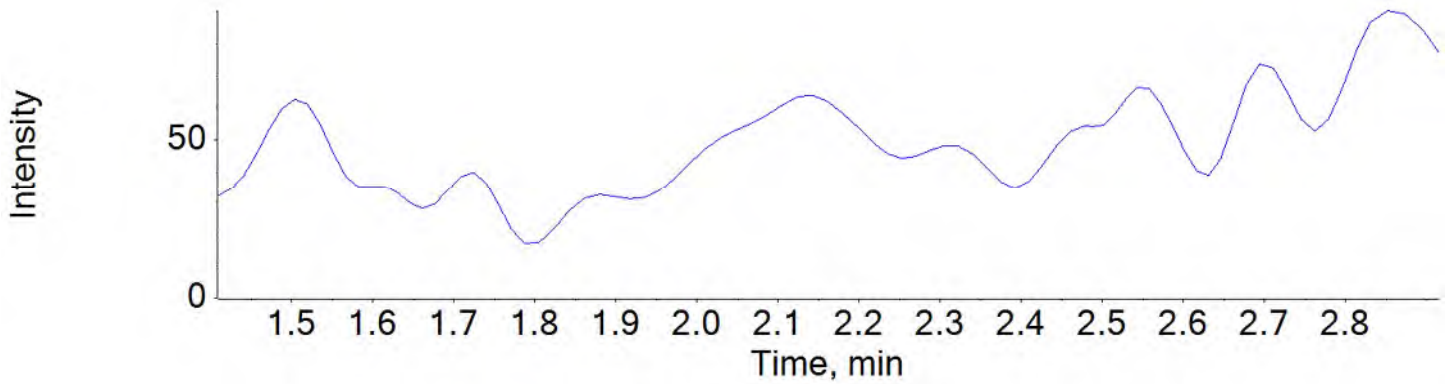
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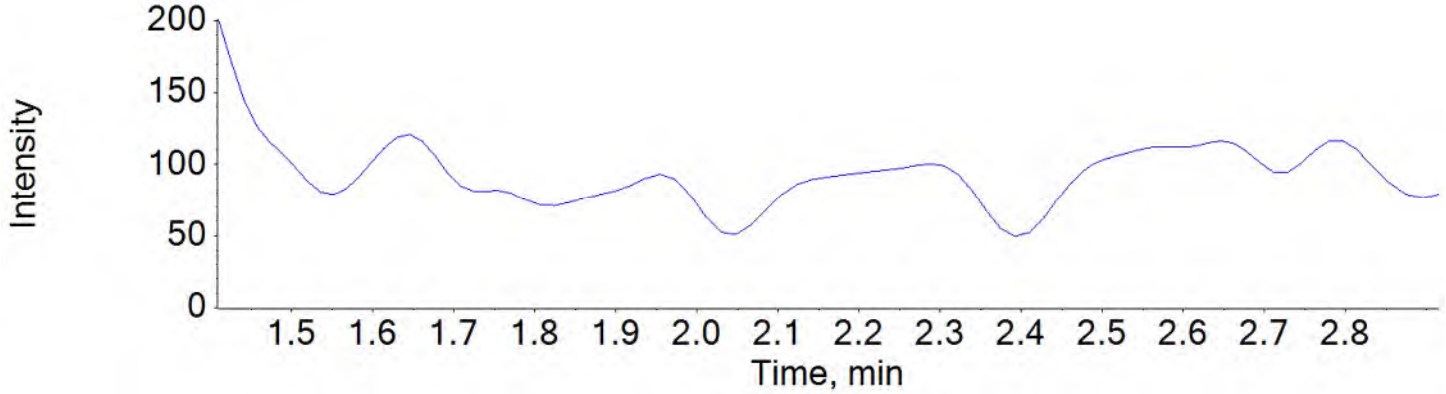
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

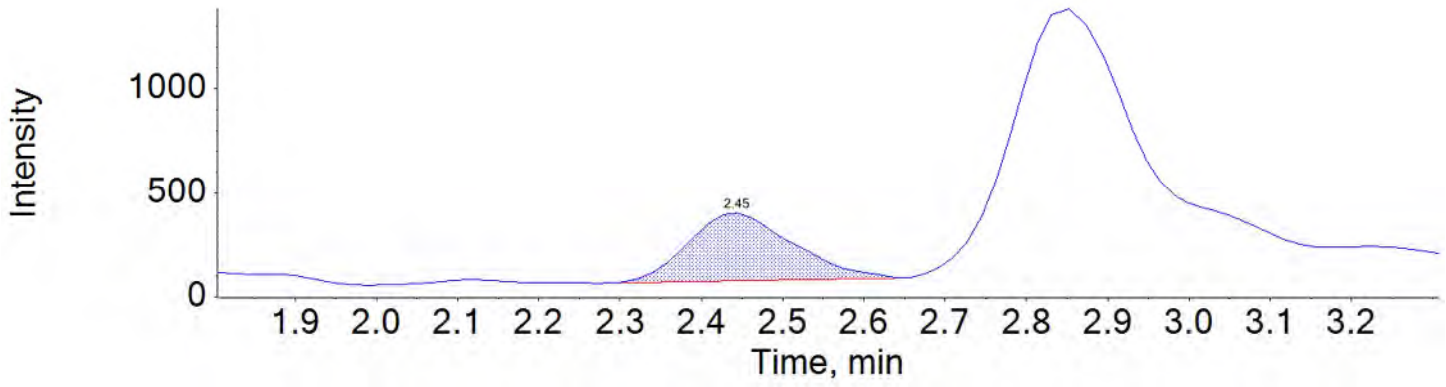


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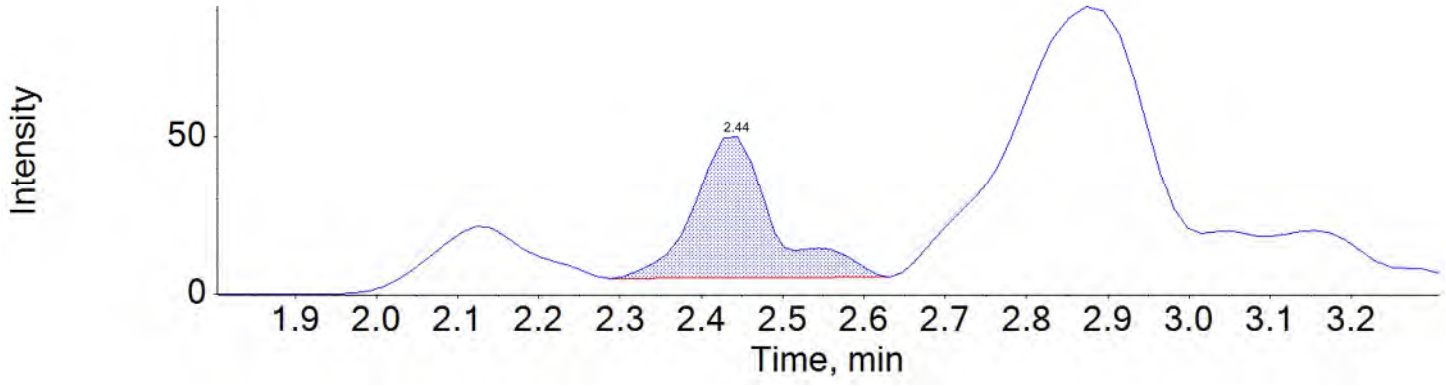
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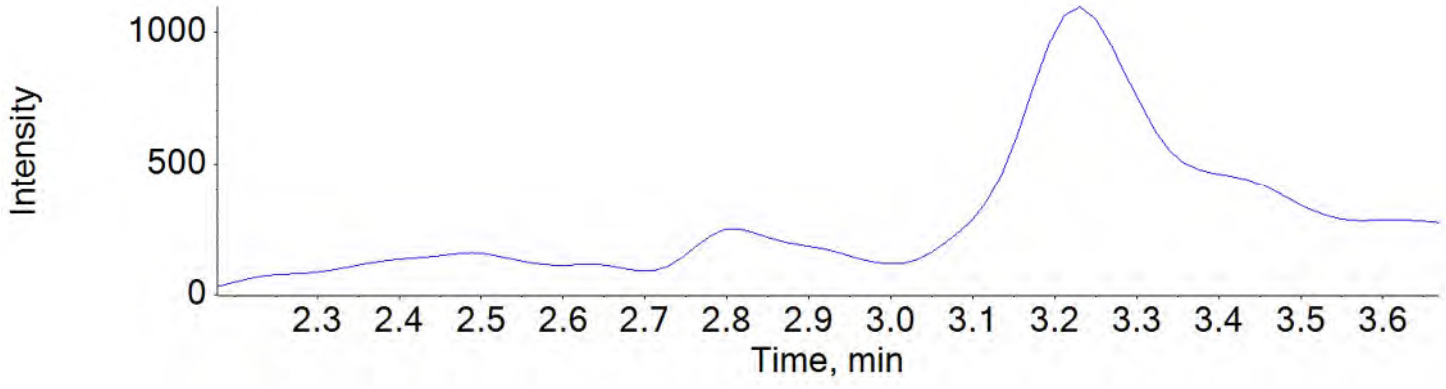
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

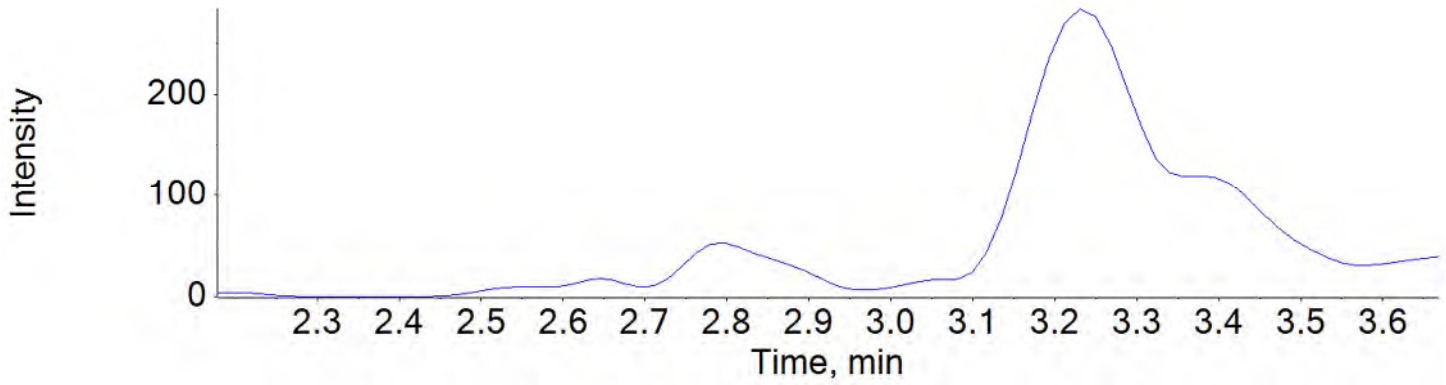


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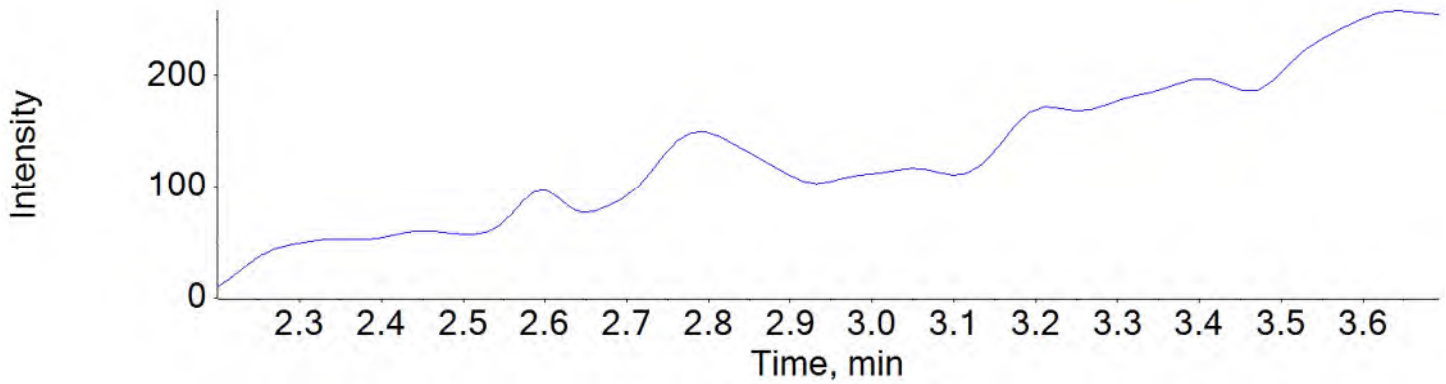
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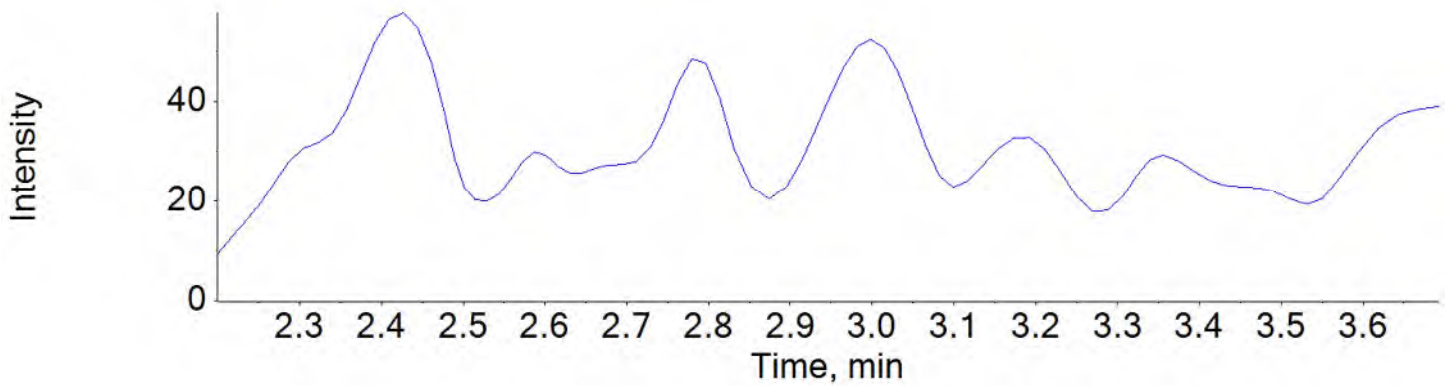
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

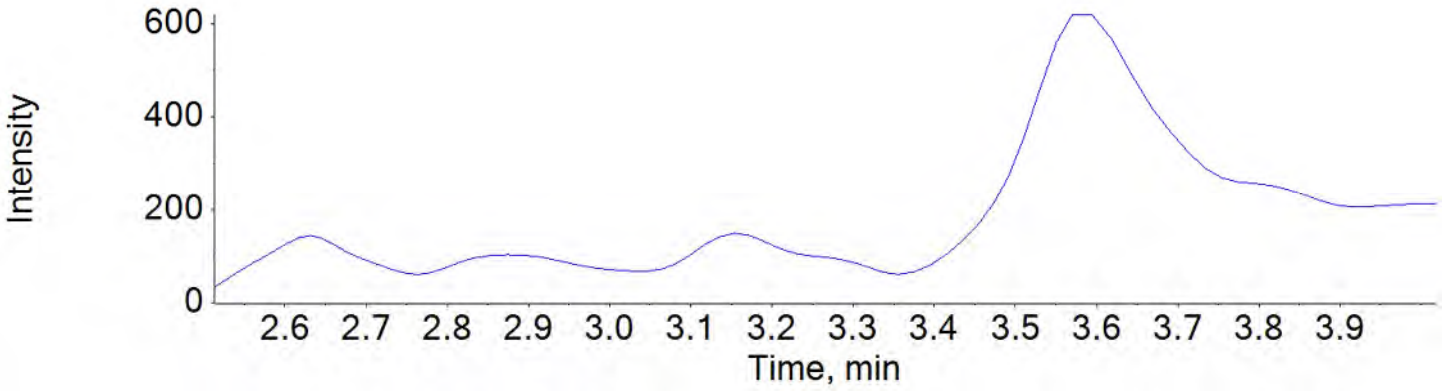


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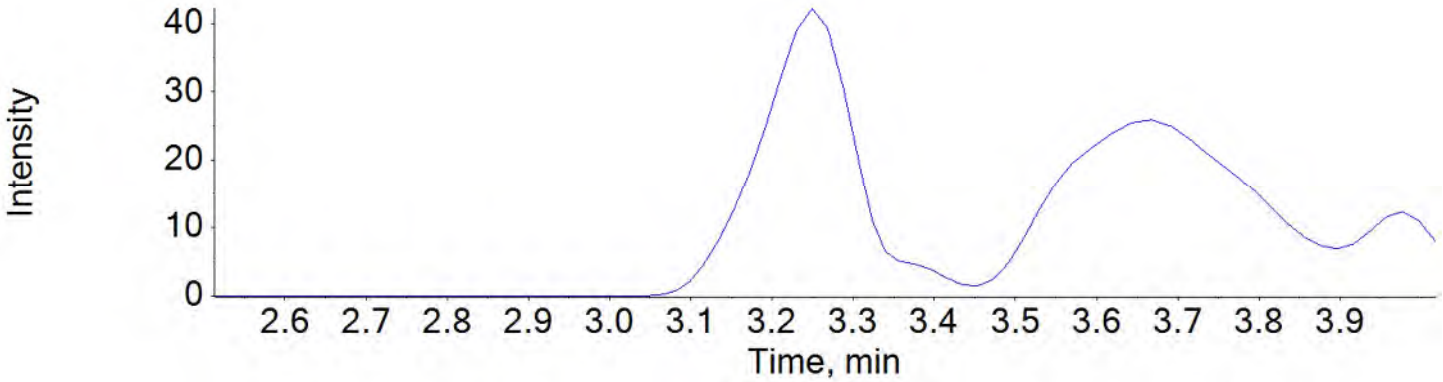
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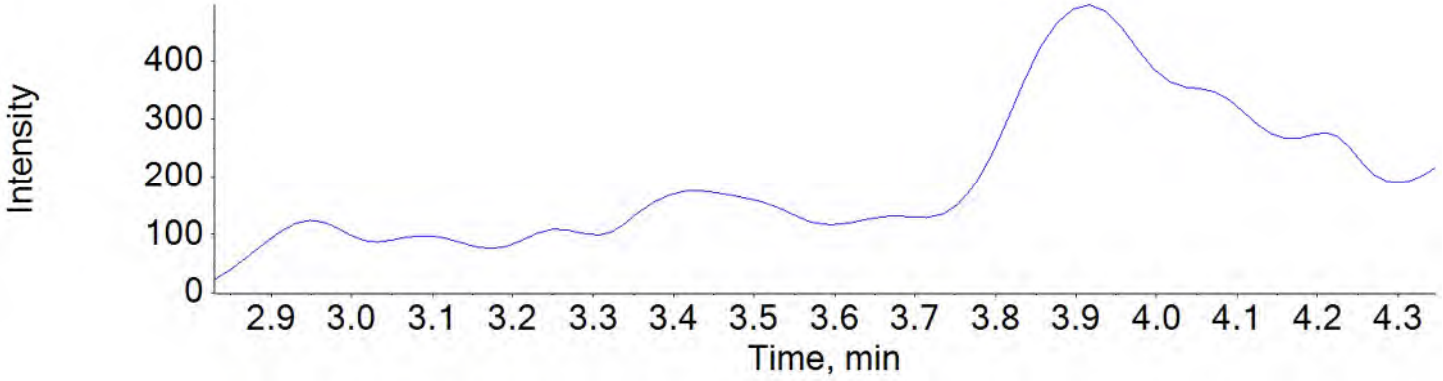
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

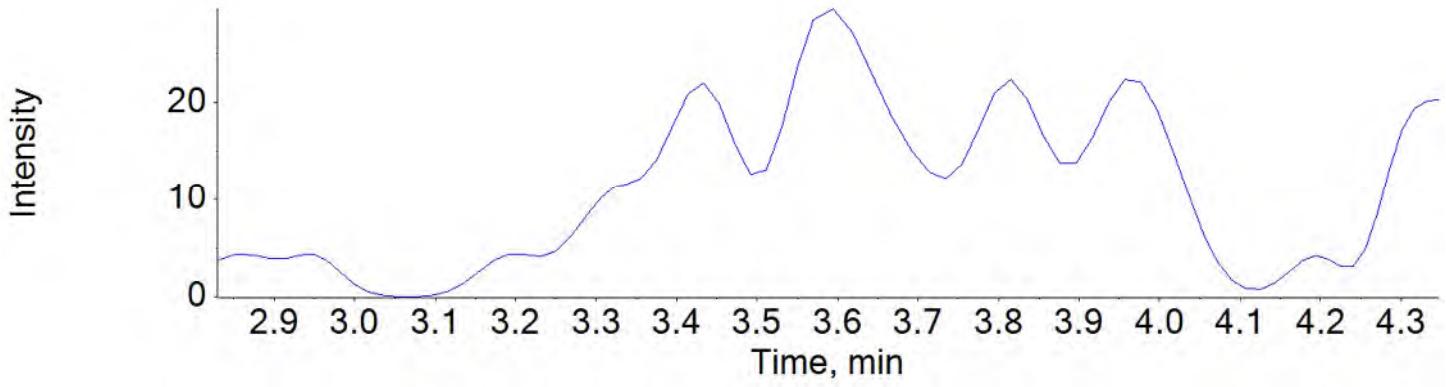


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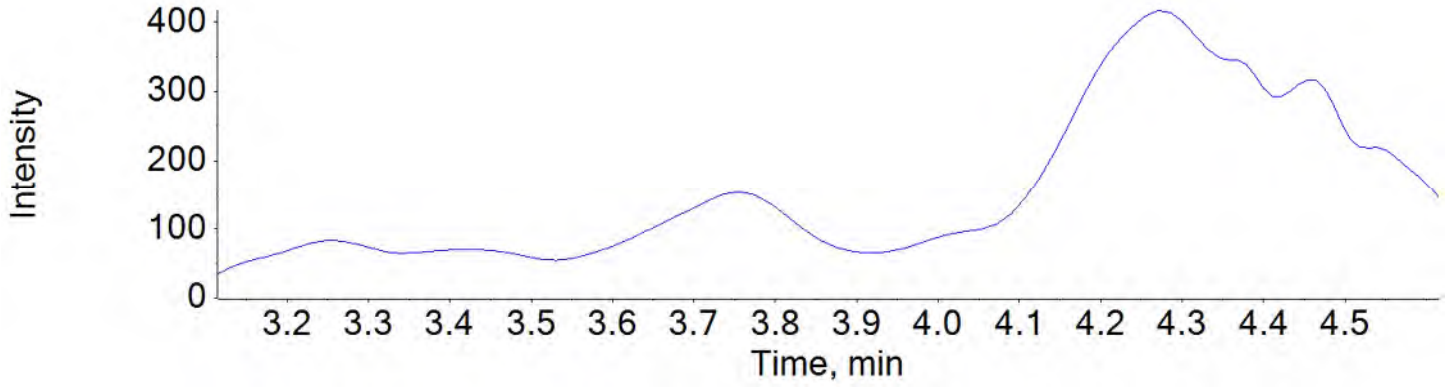
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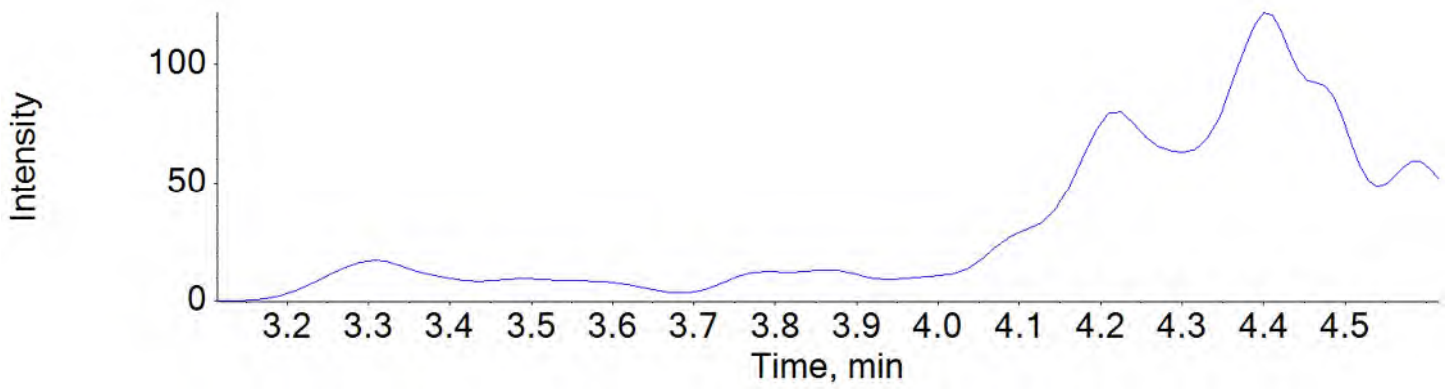
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

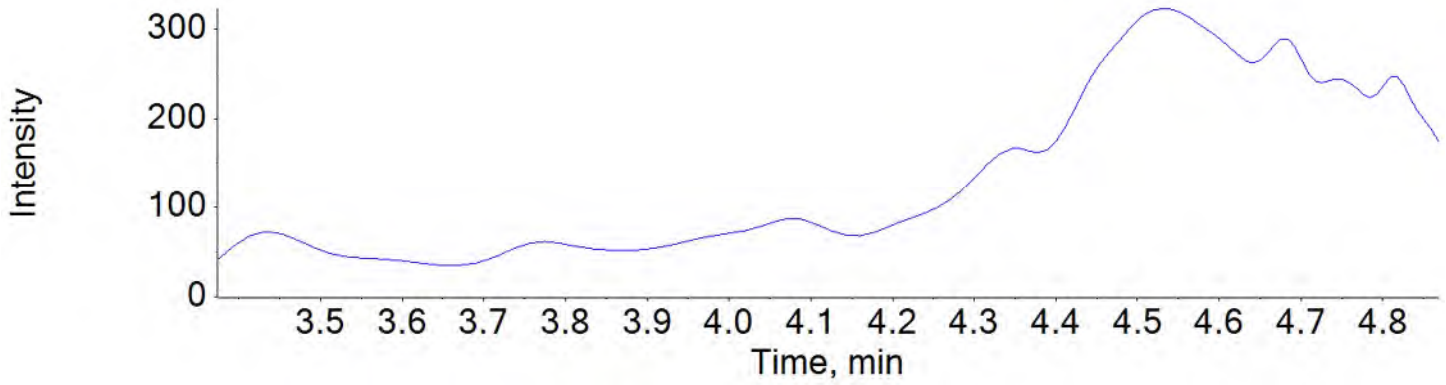


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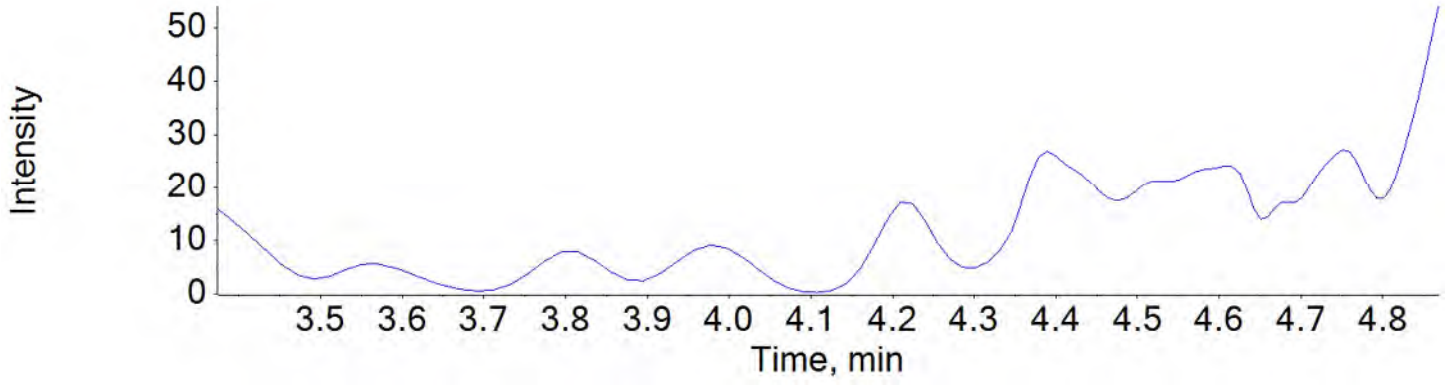
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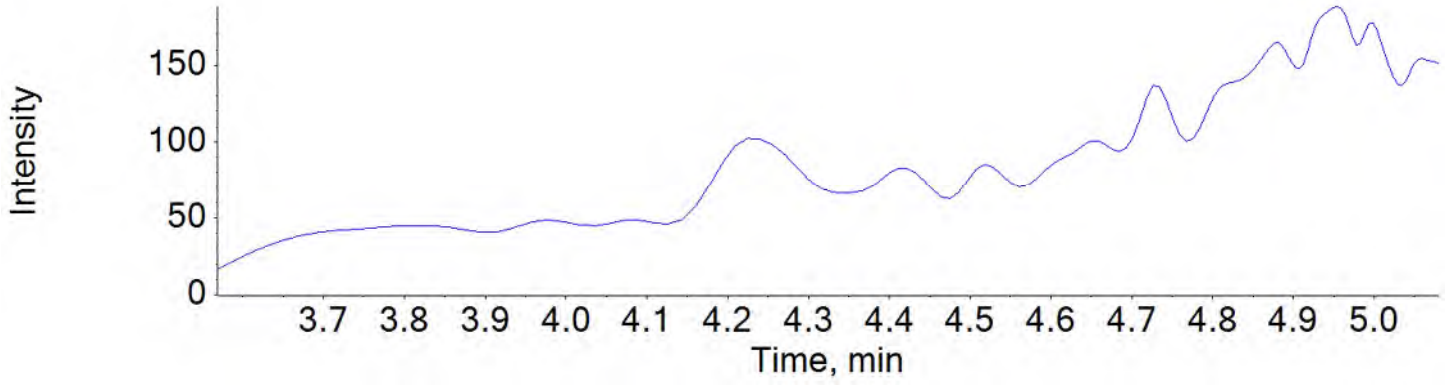
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

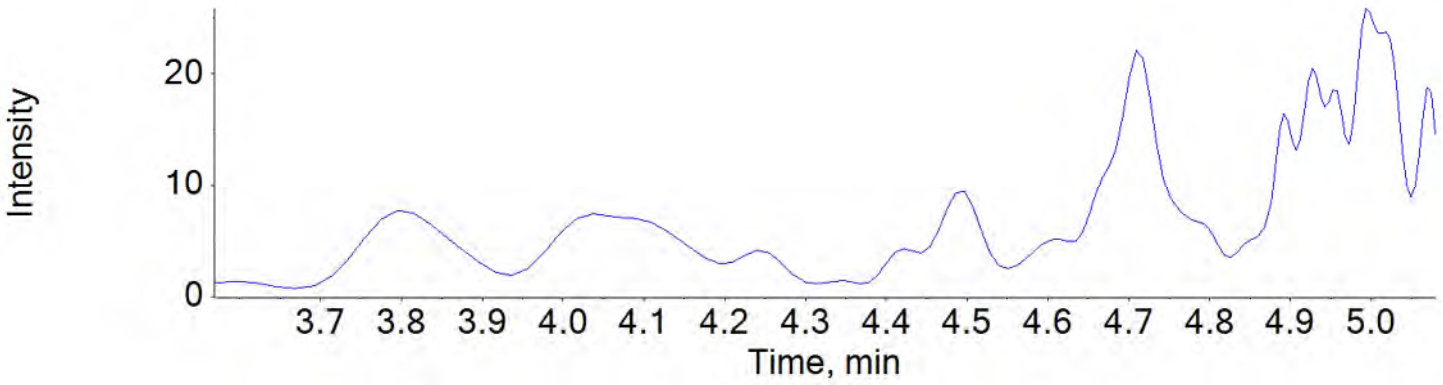


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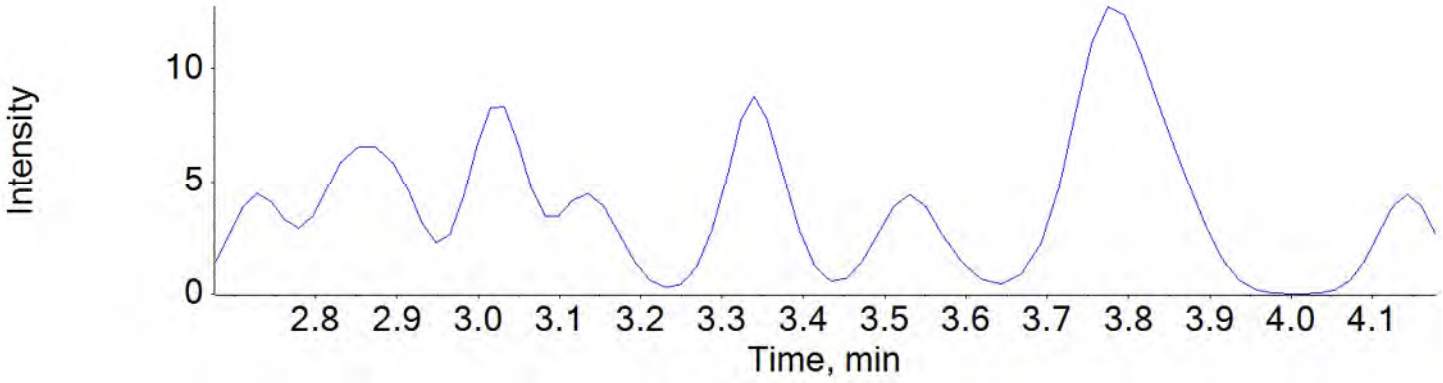
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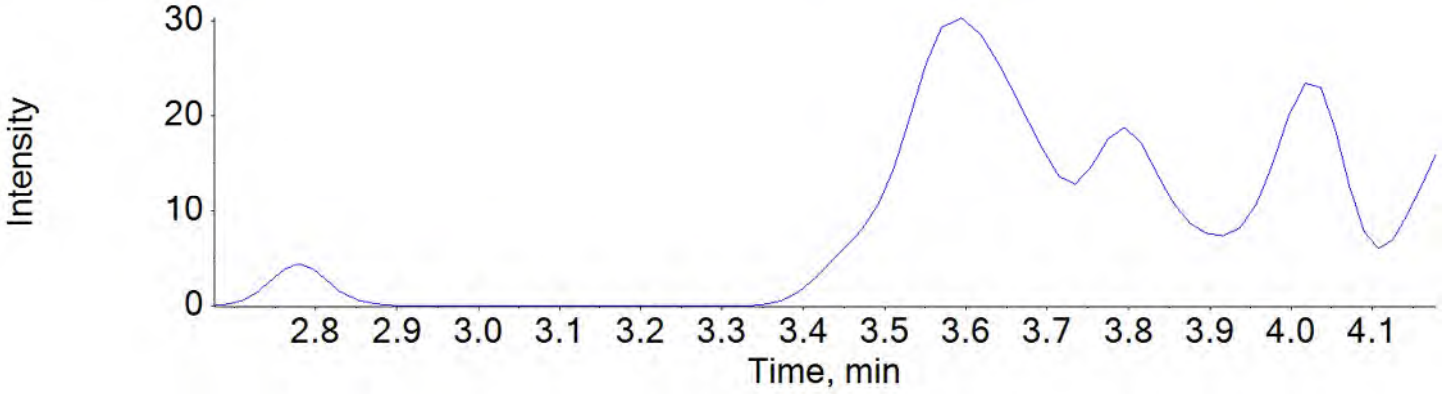
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

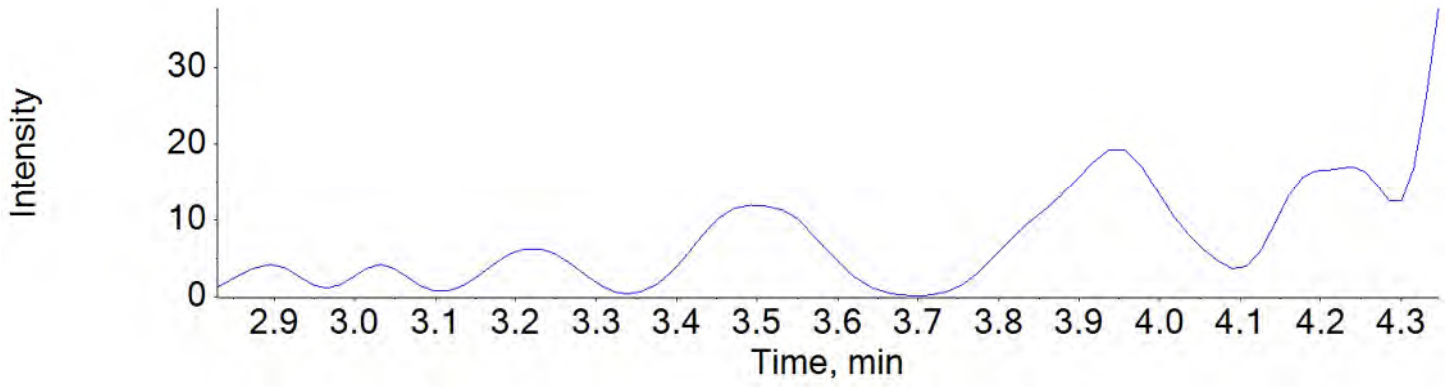


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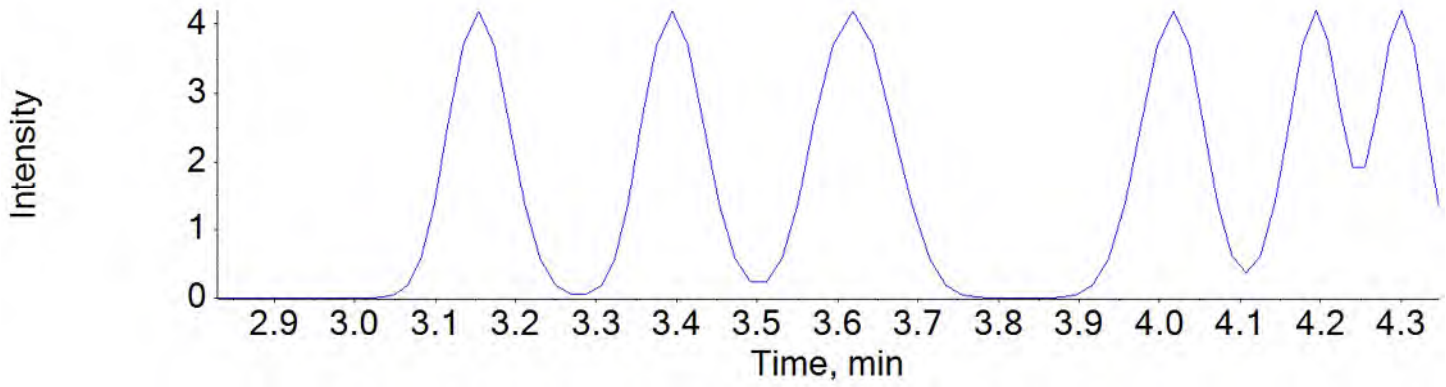
Chromatogram Report

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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



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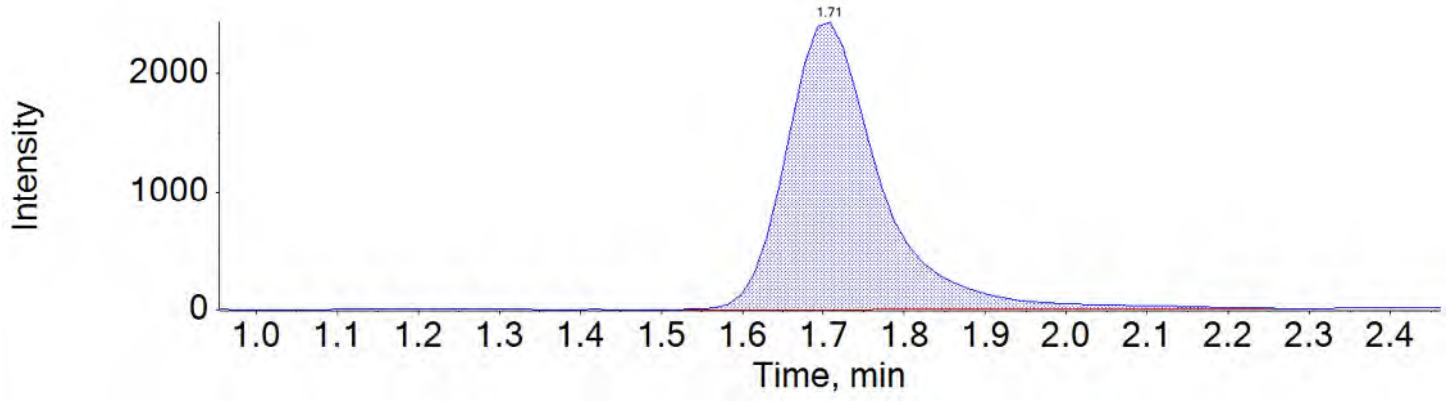
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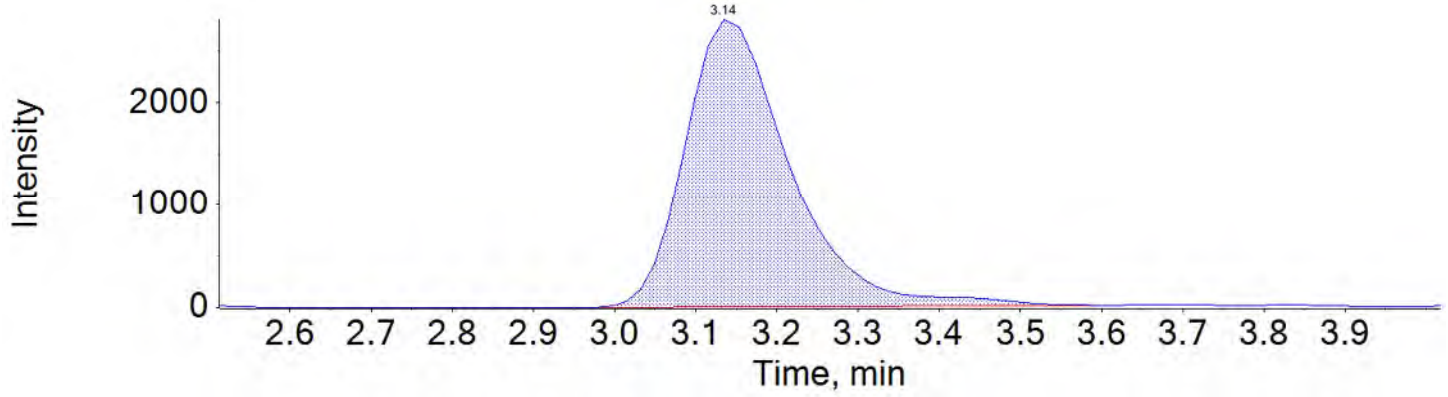
Sample Name	J6165-FS(0)	**Injection Vial**	25
Sample ID	WGNA-050718-FRB-3556	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:22:52	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

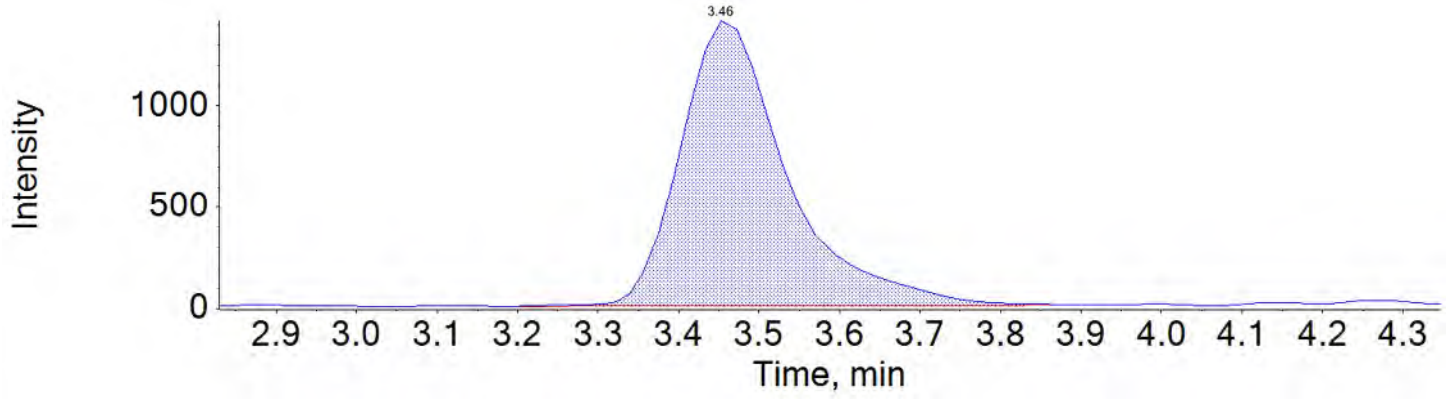


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



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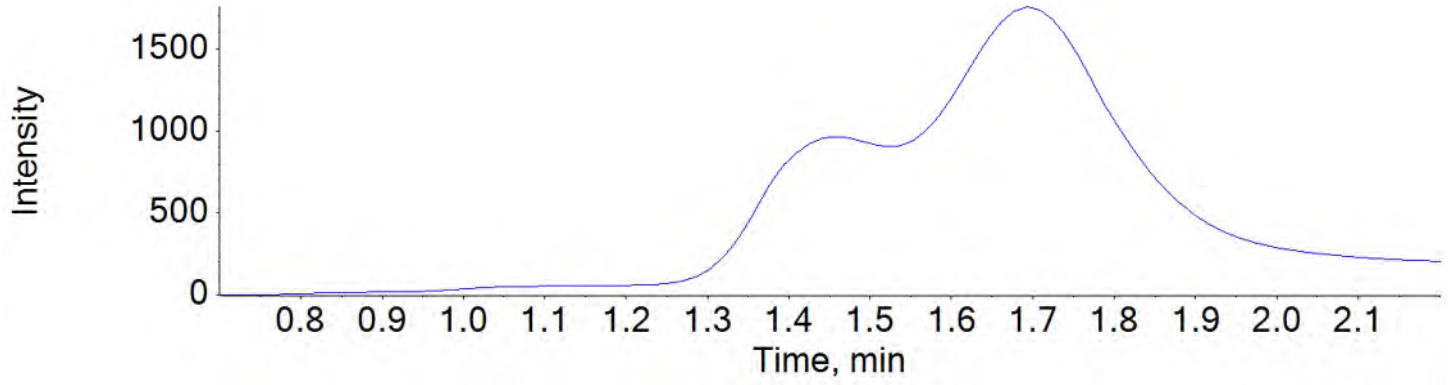
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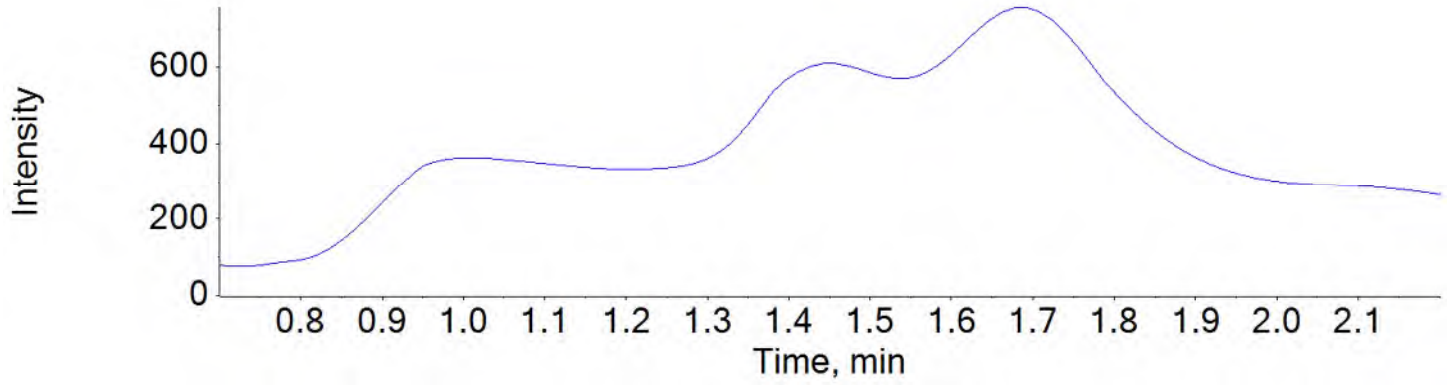
Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

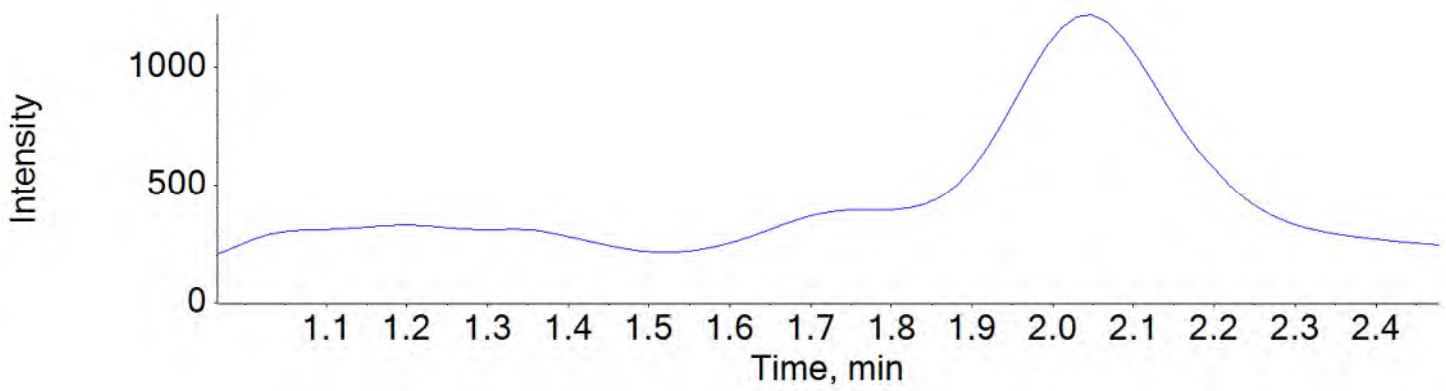


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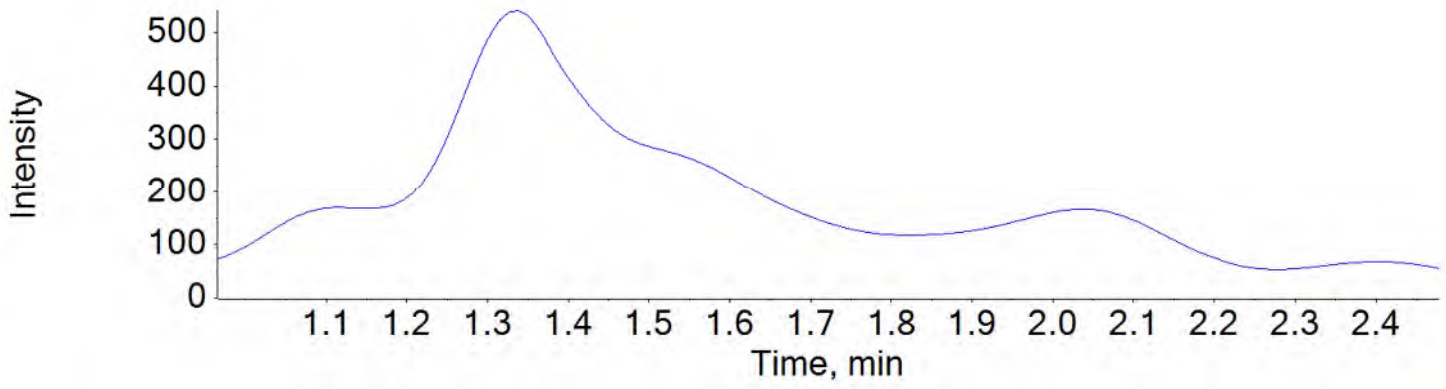
Chromatogram Report

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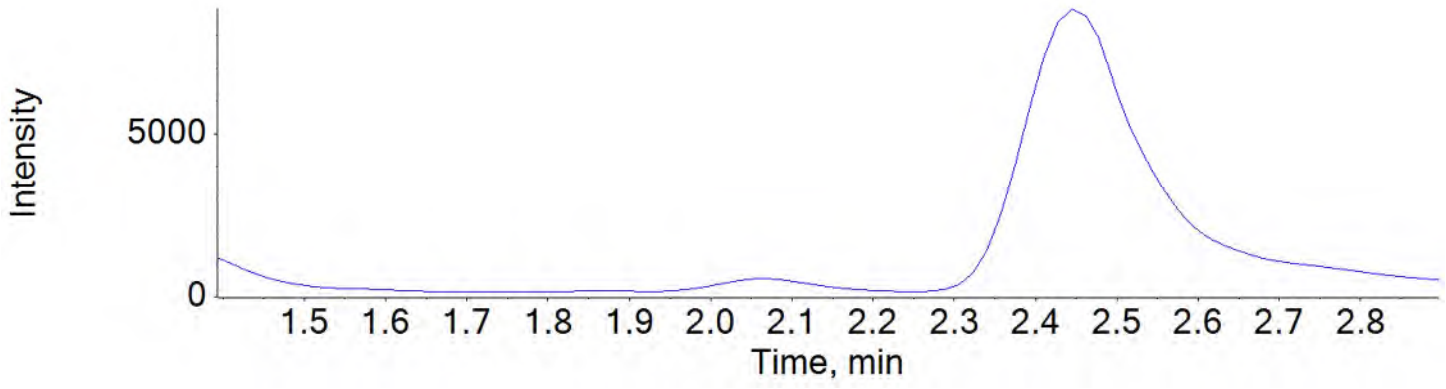
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

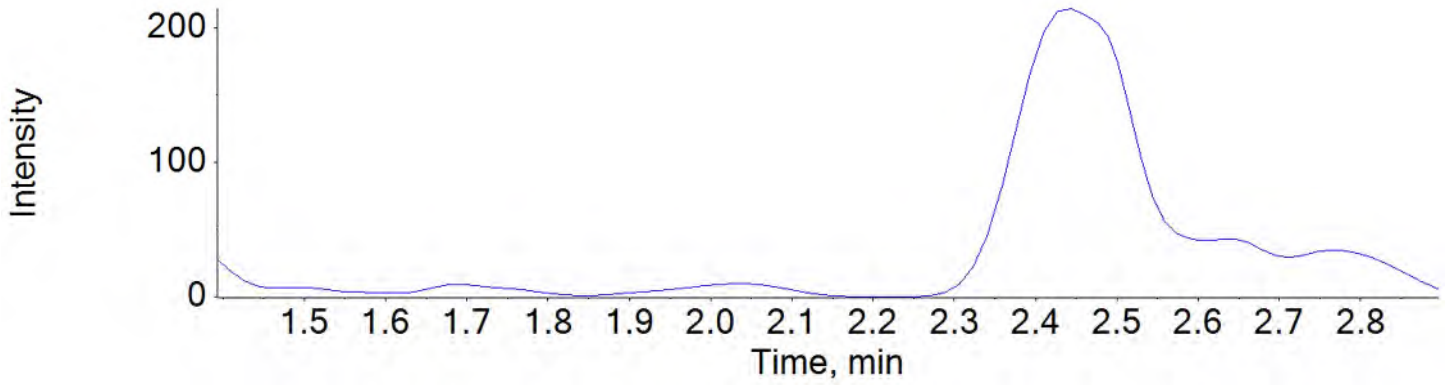


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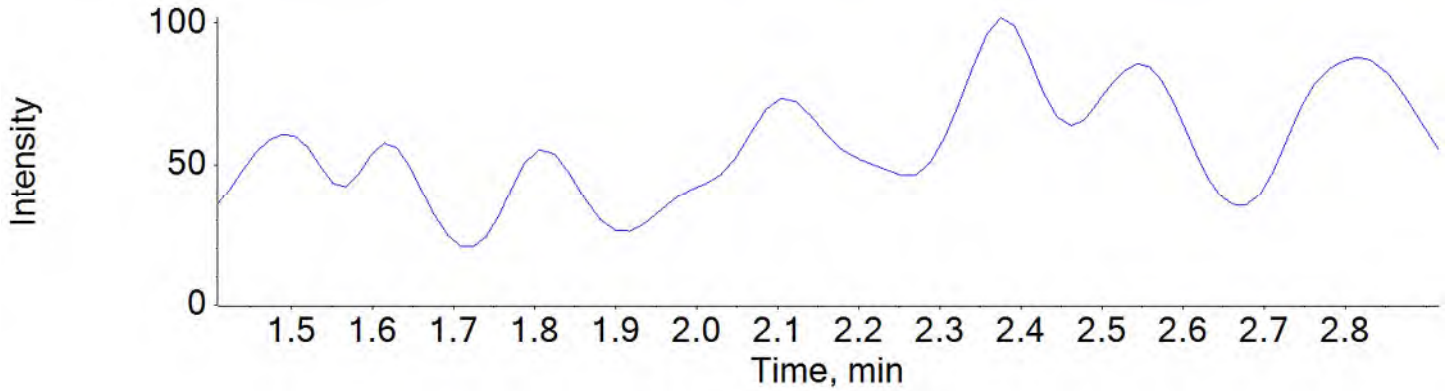
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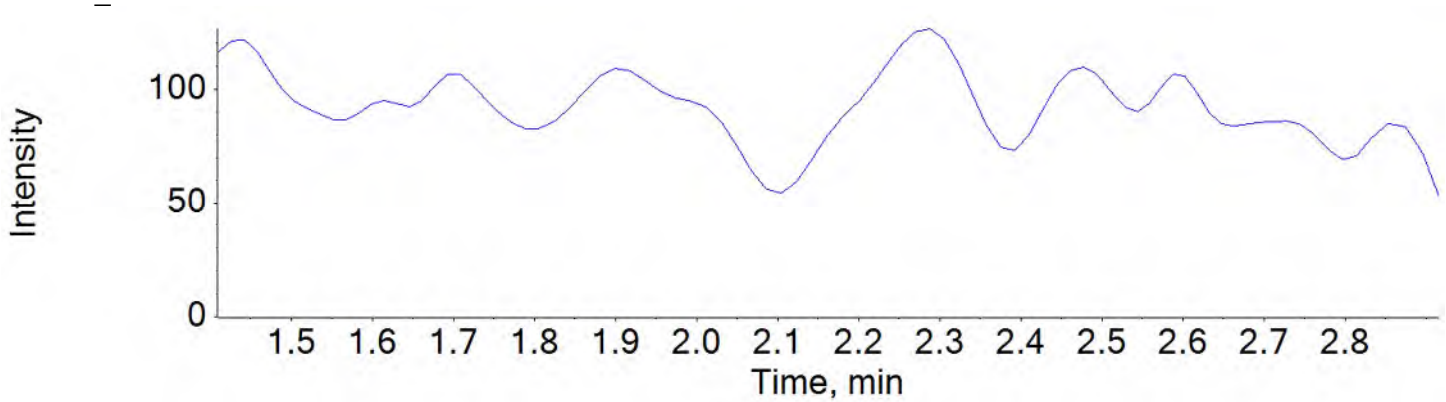
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

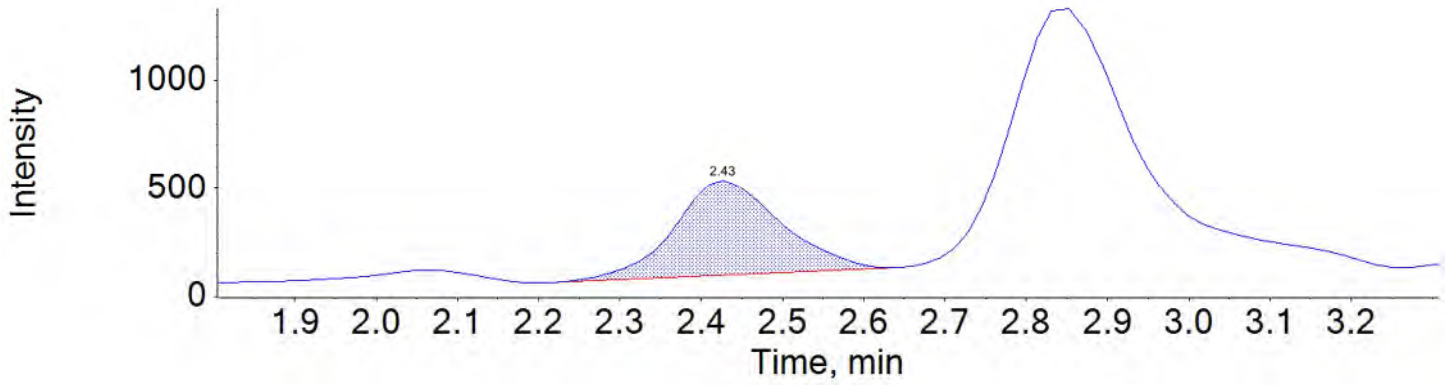


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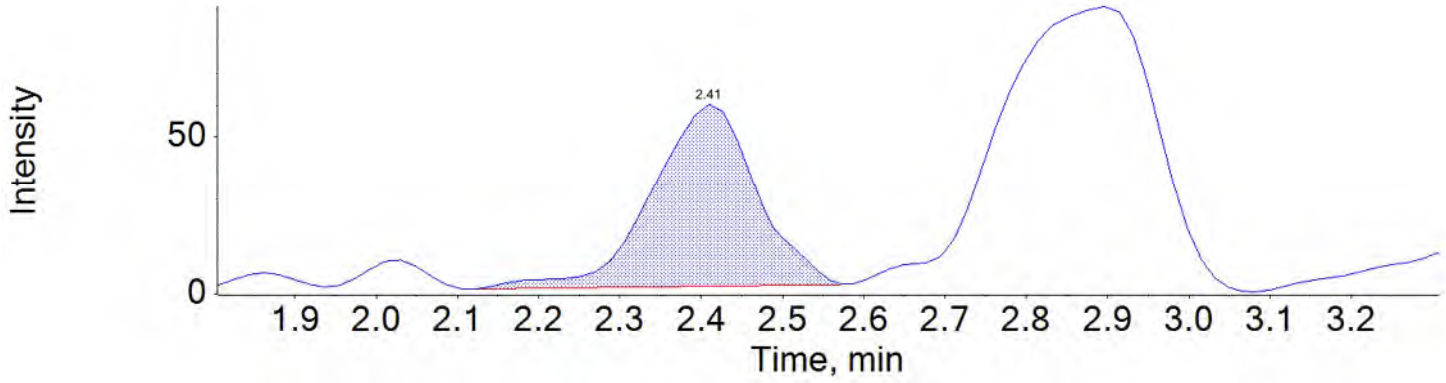
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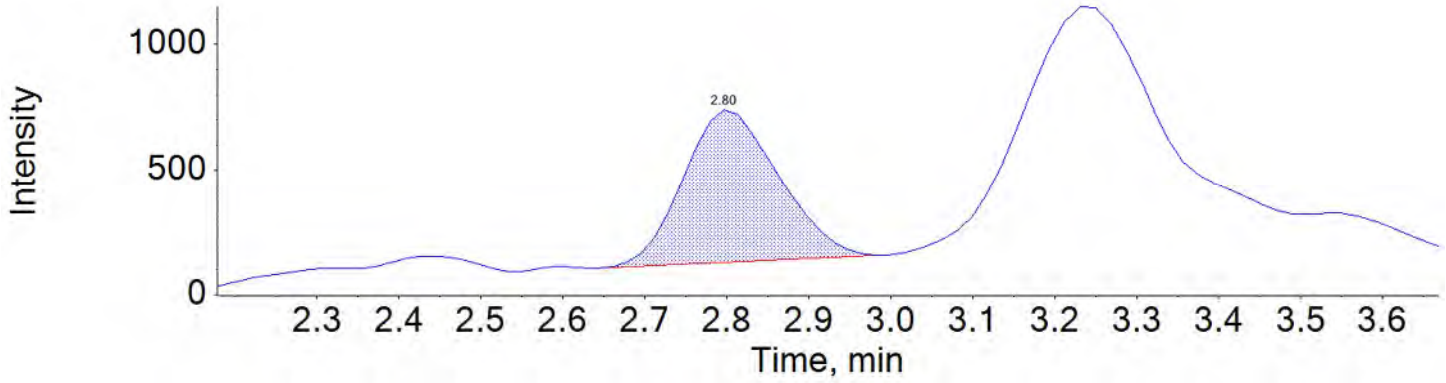
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

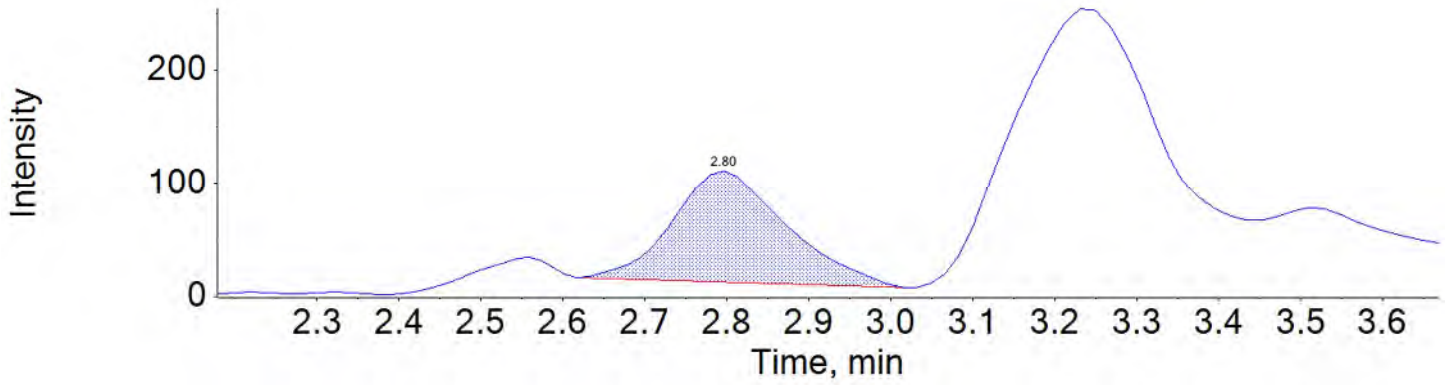


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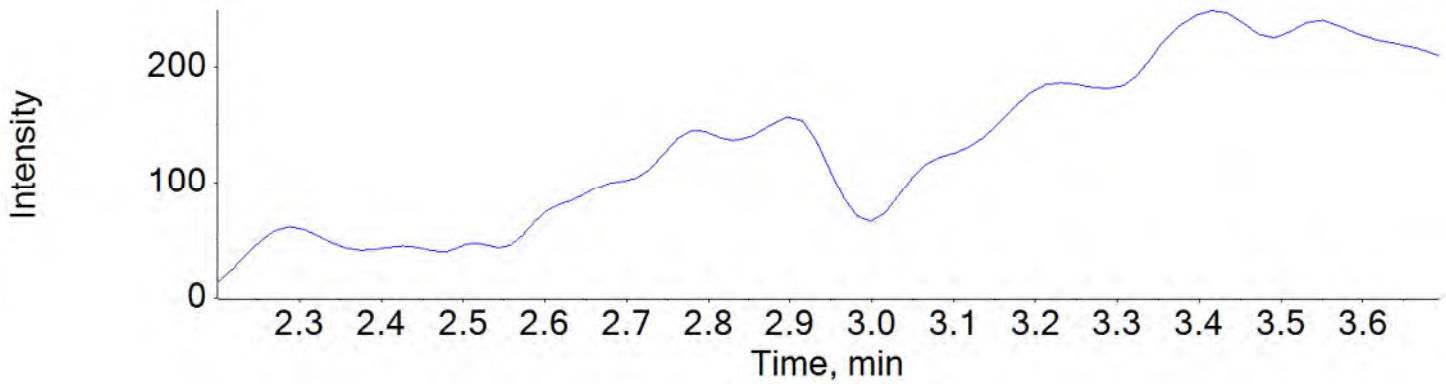
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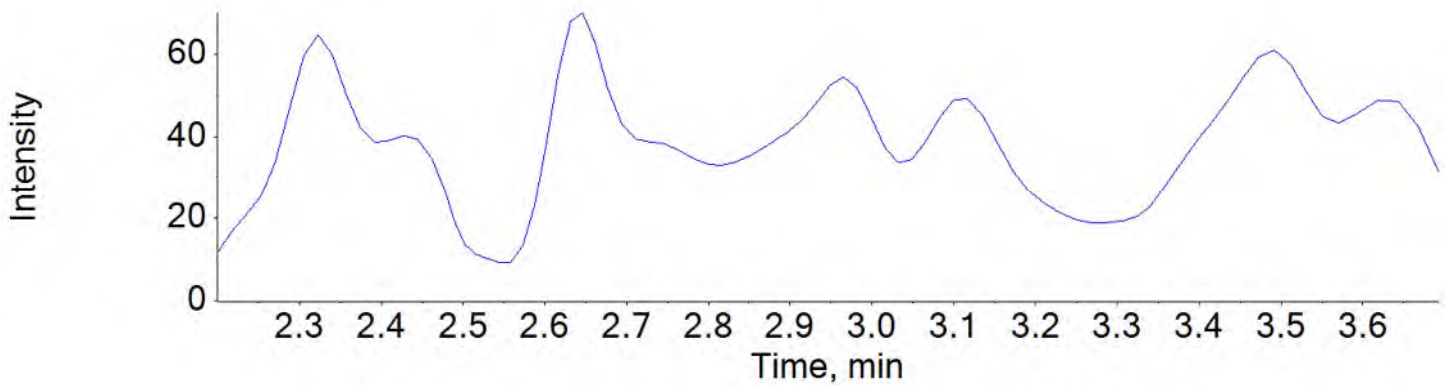
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

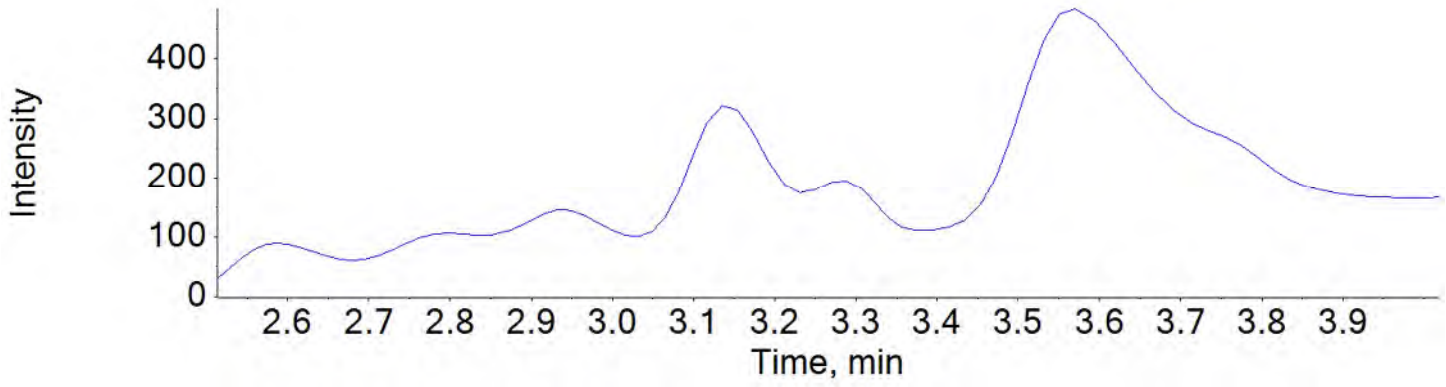


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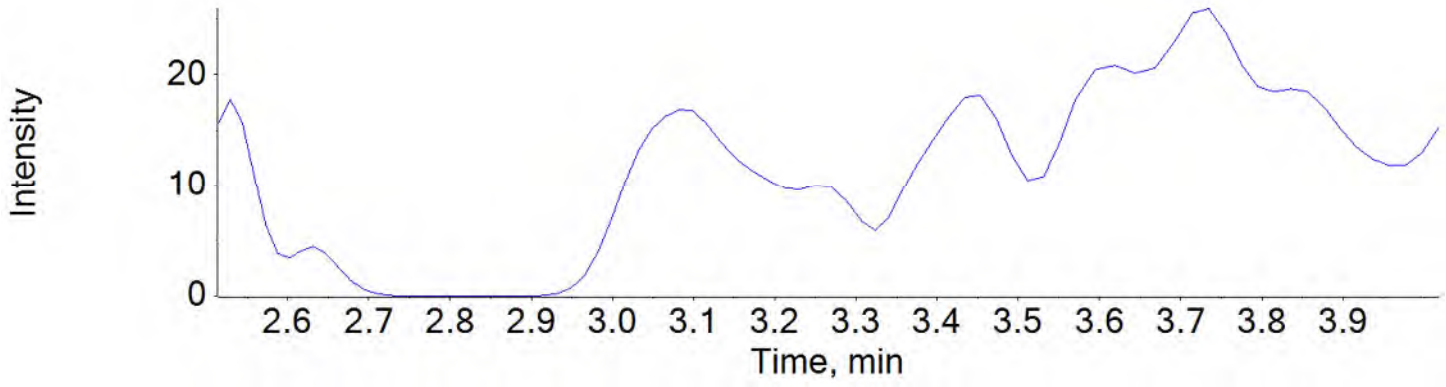
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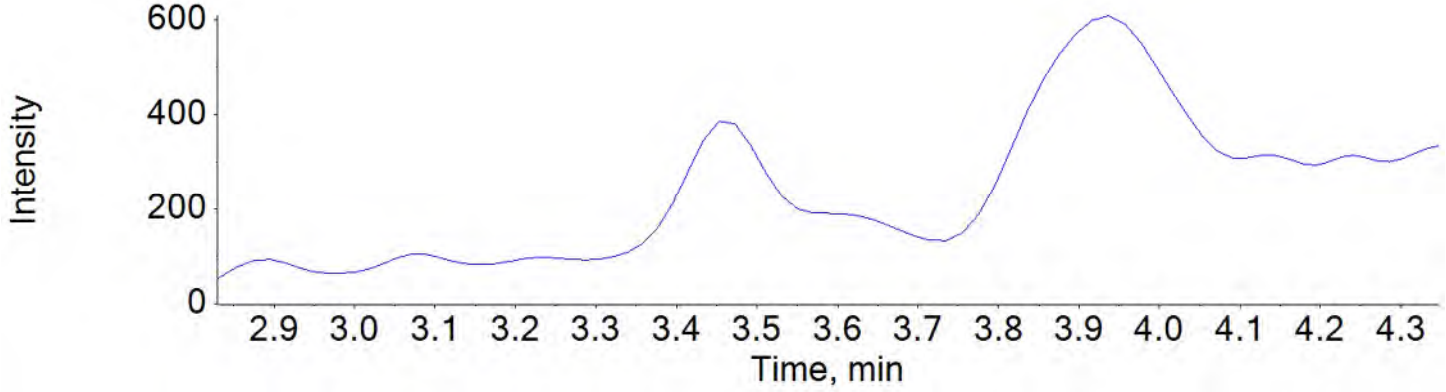
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

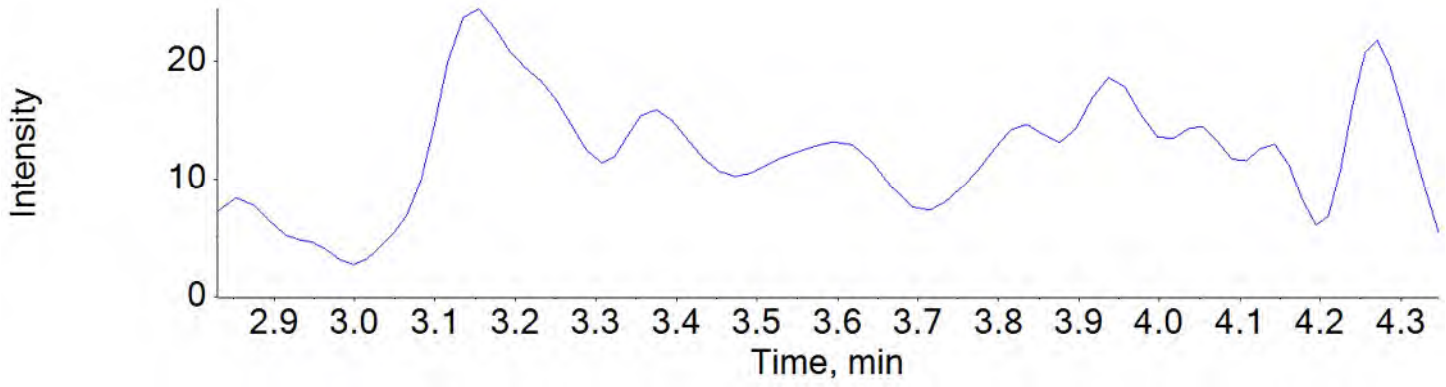


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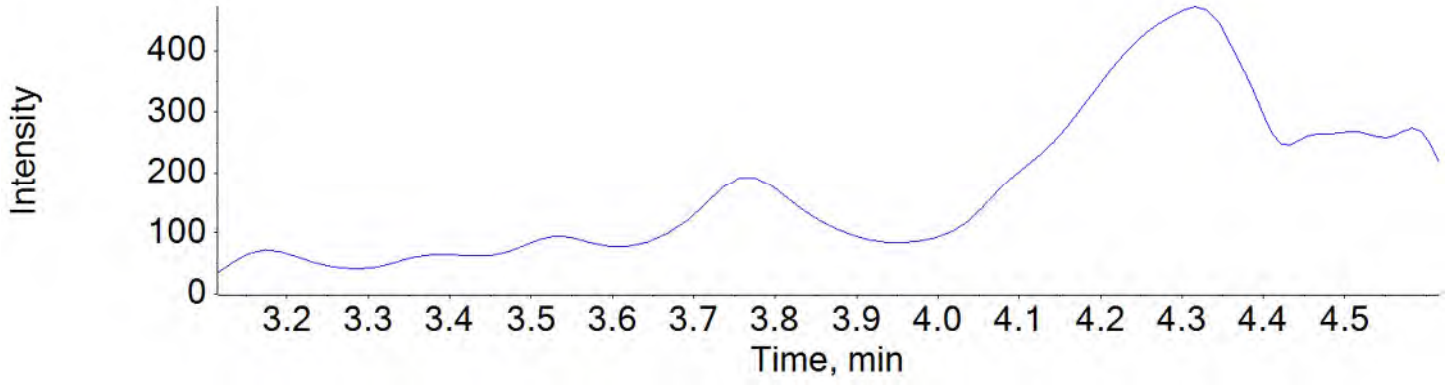
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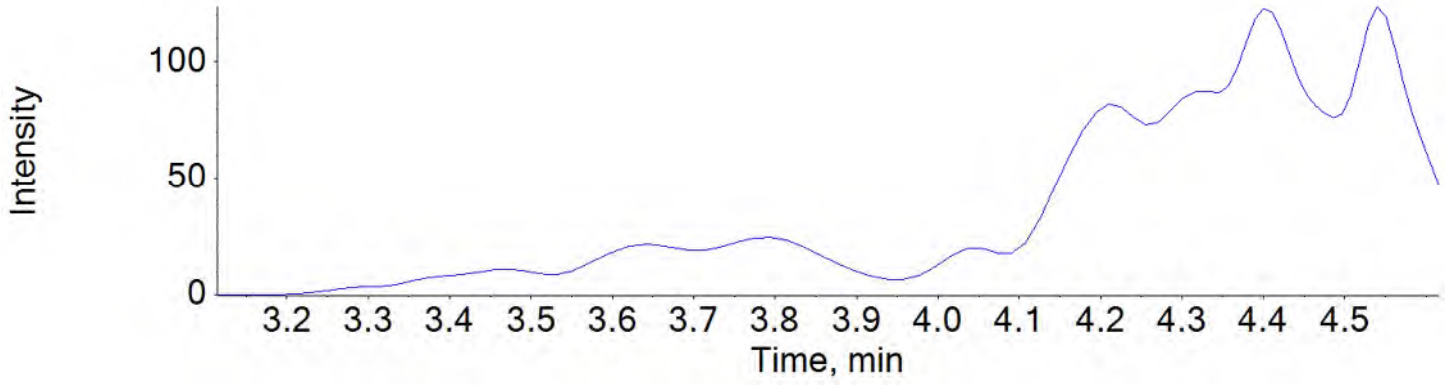
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

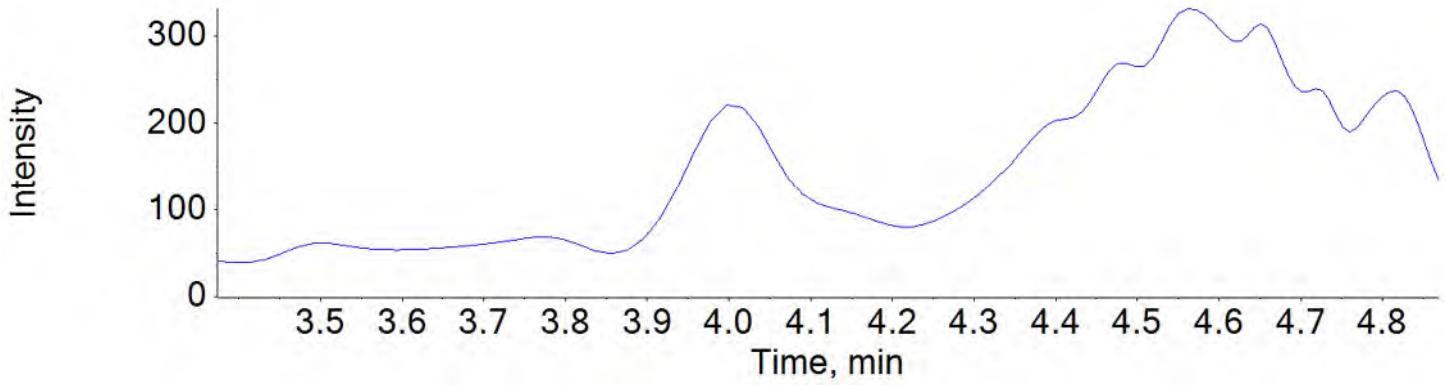


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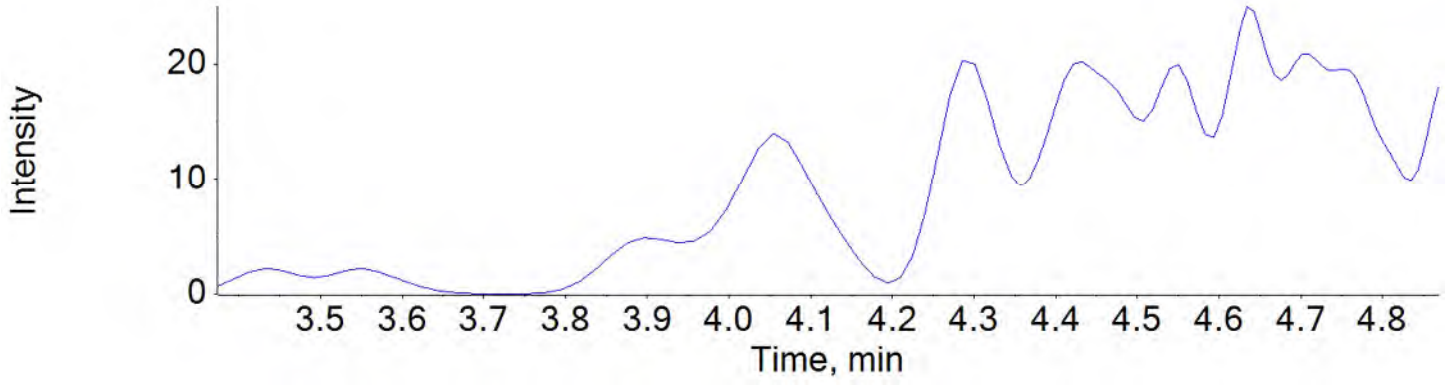
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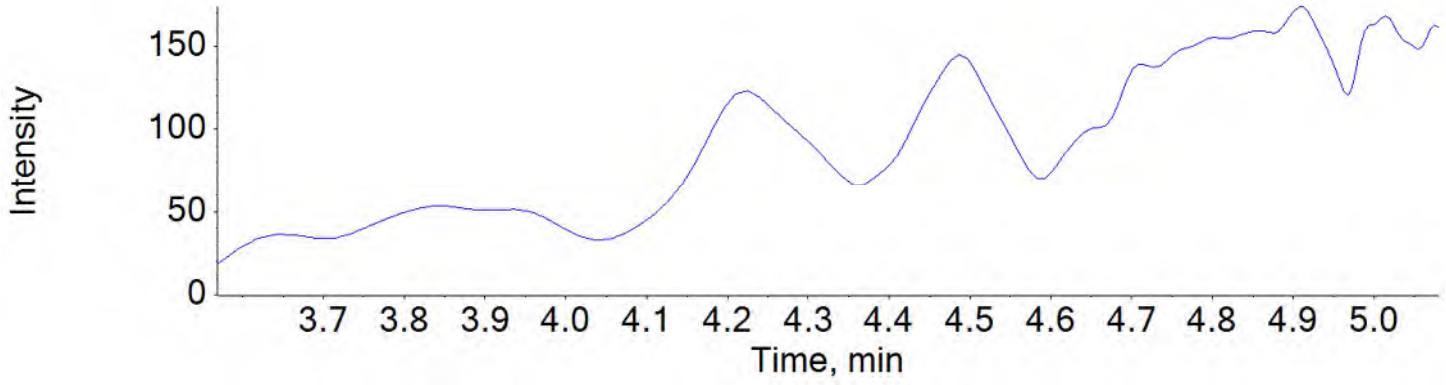
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

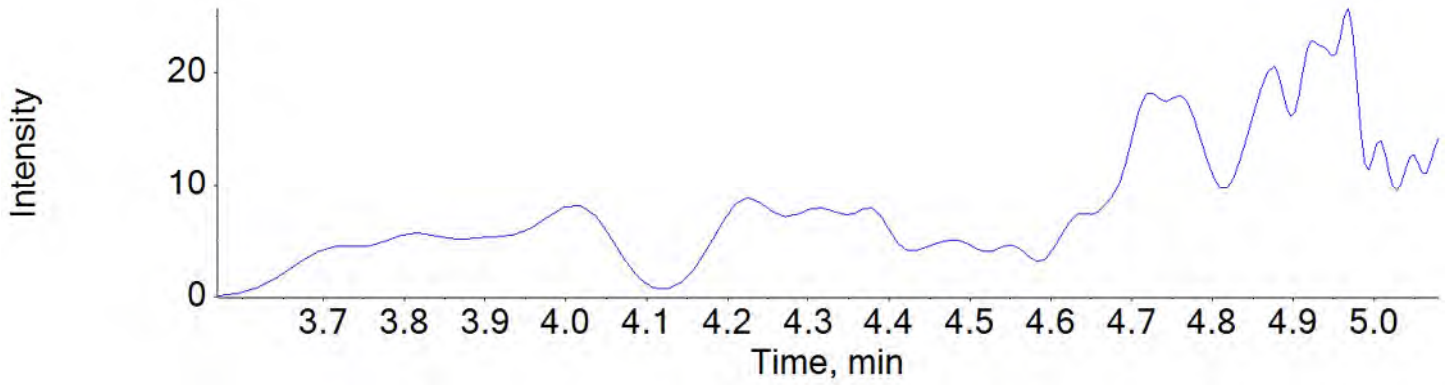


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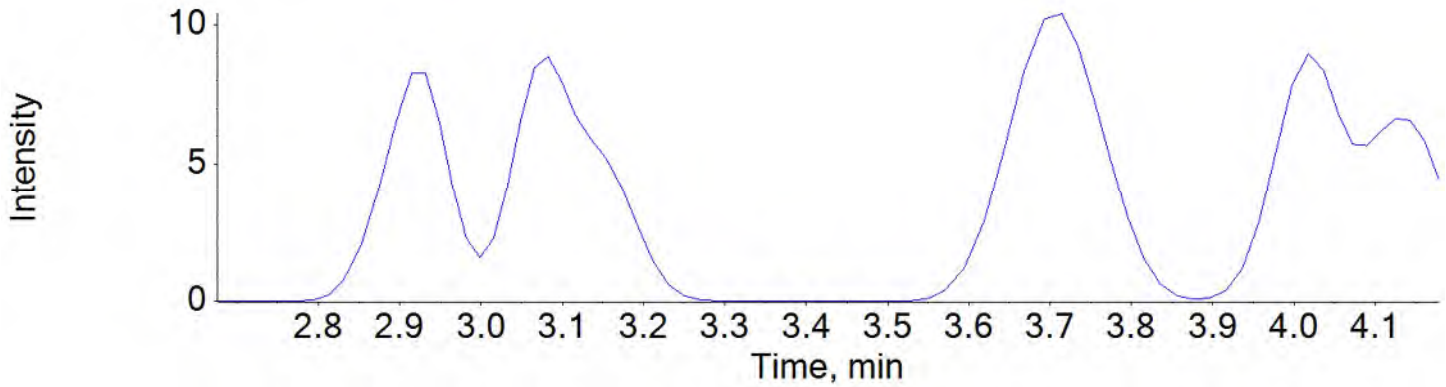
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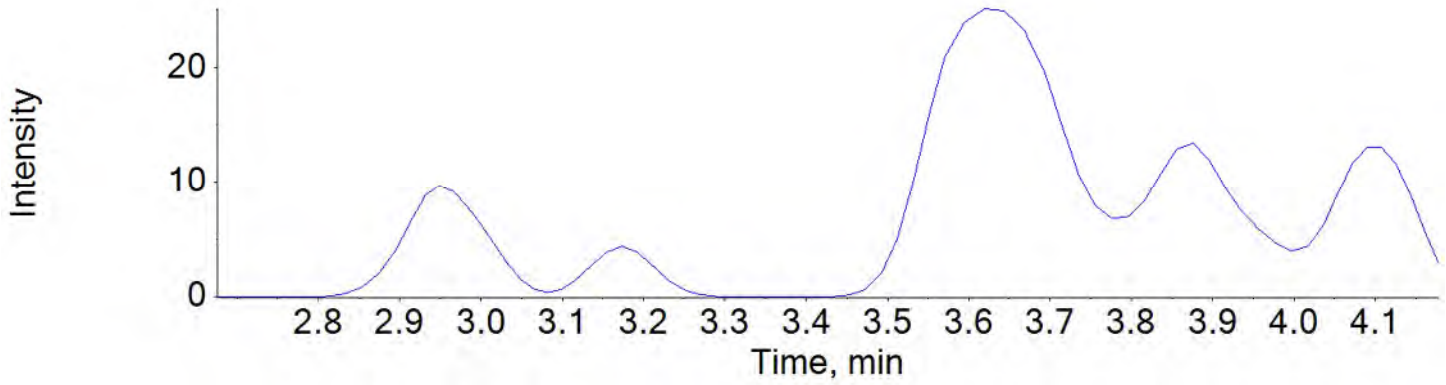
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

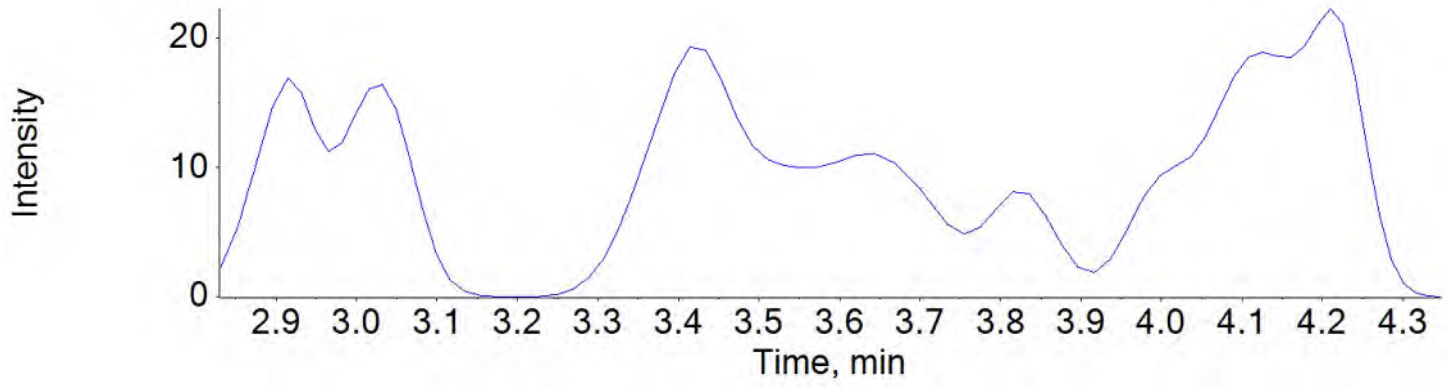


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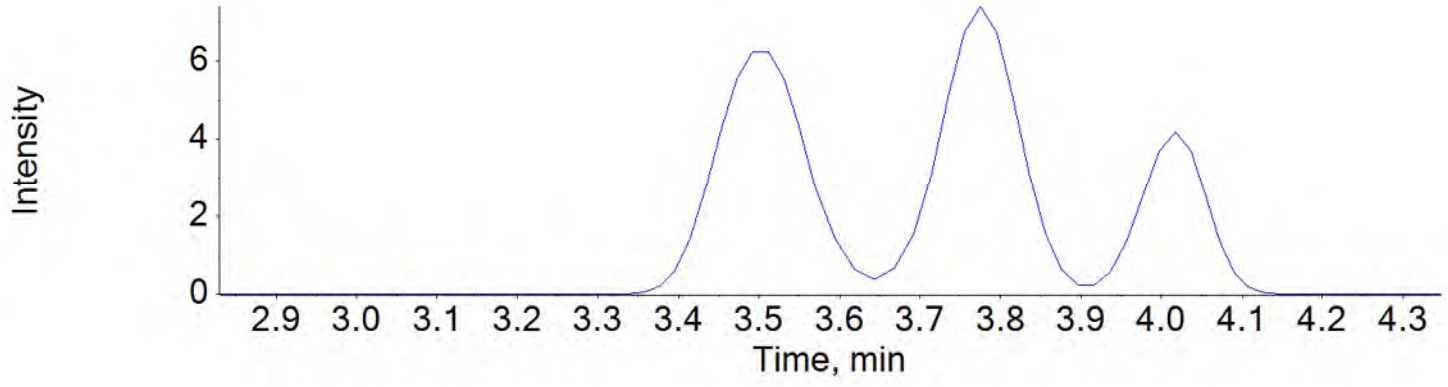
Chromatogram Report

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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

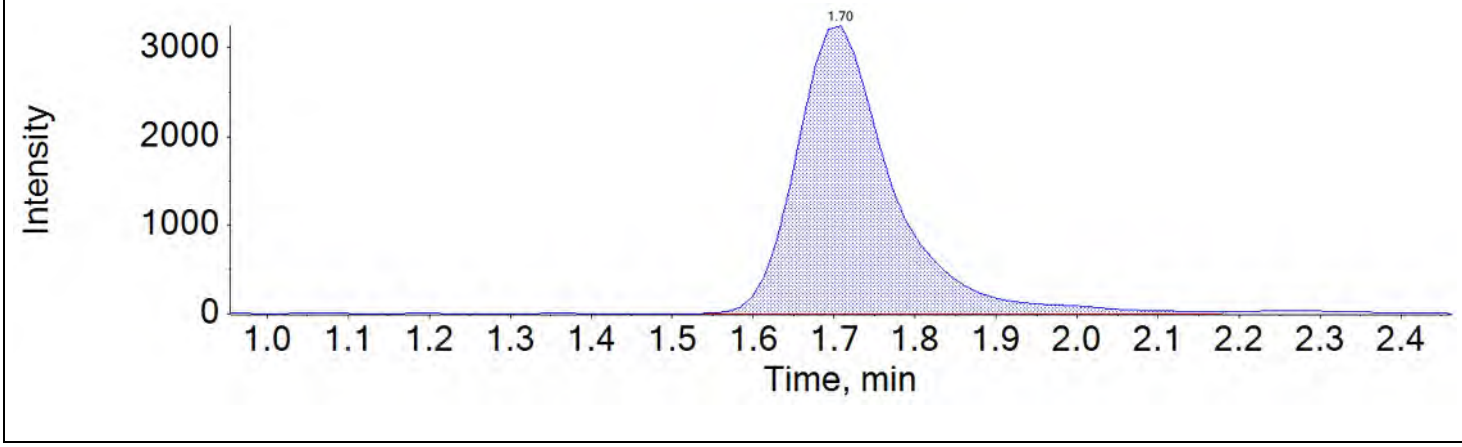
Chromatogram Report

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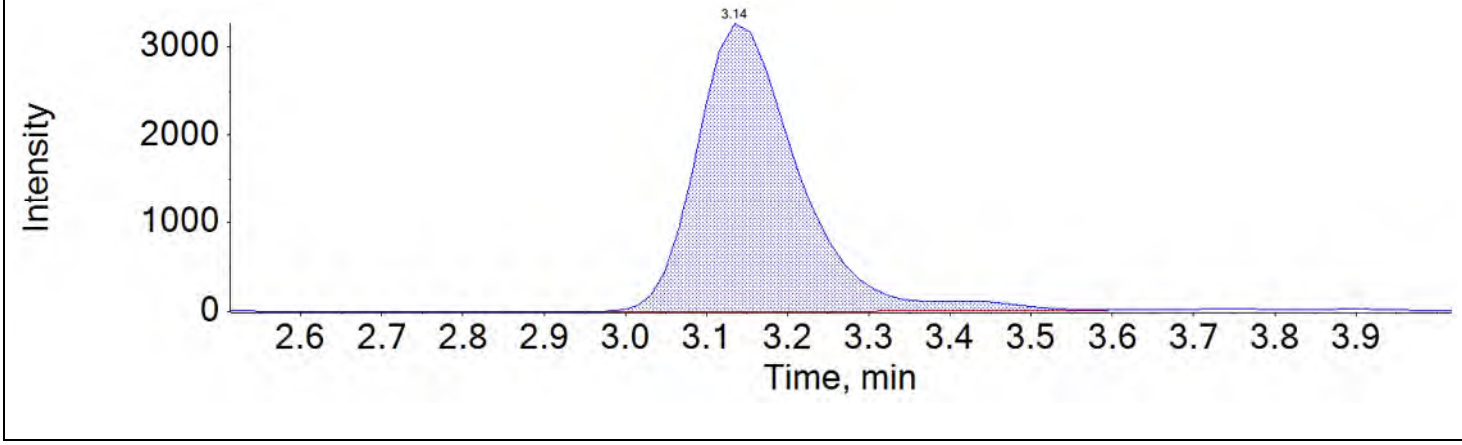
Sample Name	J6167-FS(0)	**Injection Vial**	26
Sample ID	NAWC-050718-FRB-356	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:31:47	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

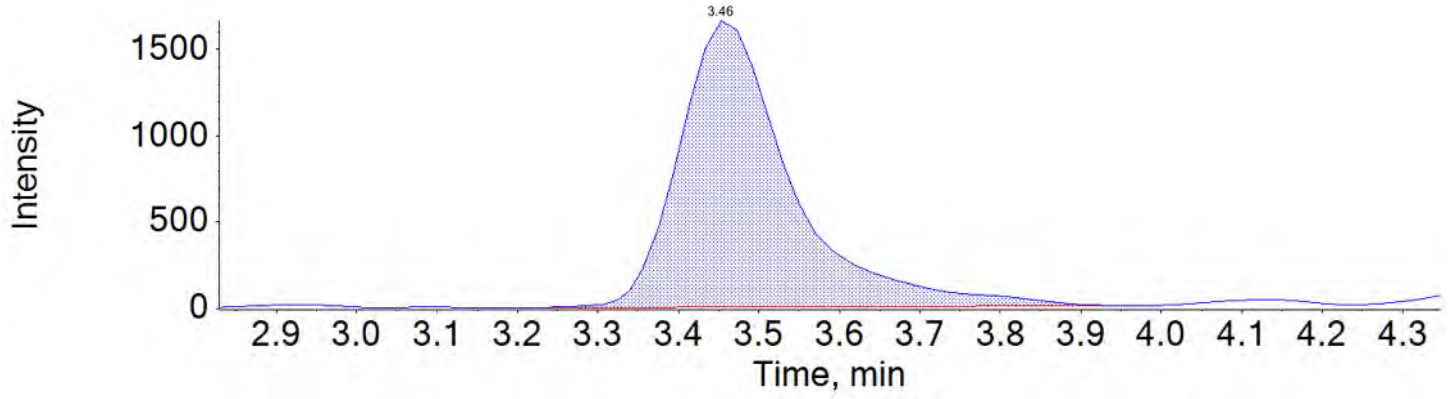


BATTELLE

Chromatogram Report

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d5-EtFOSAA 589.0 / 419.0



BATTELLE

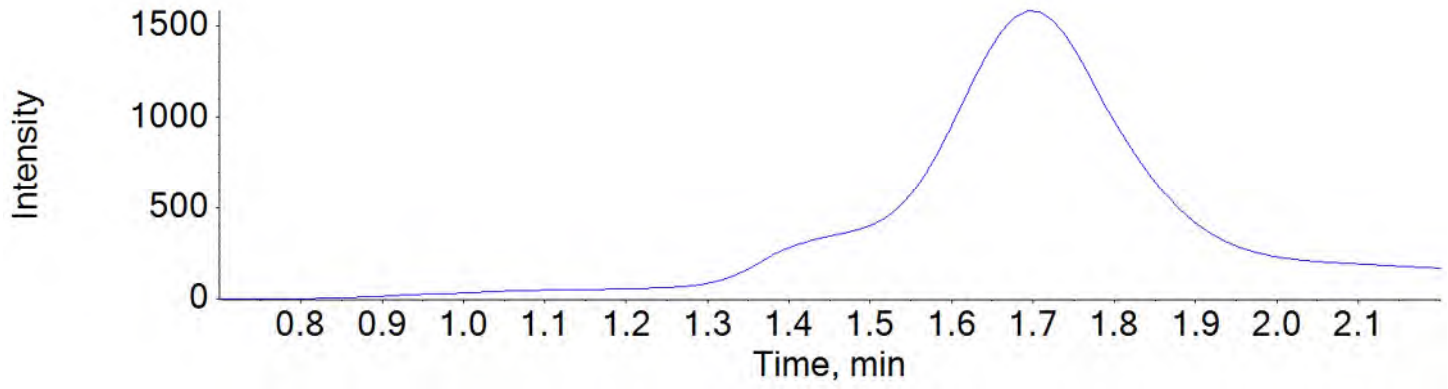
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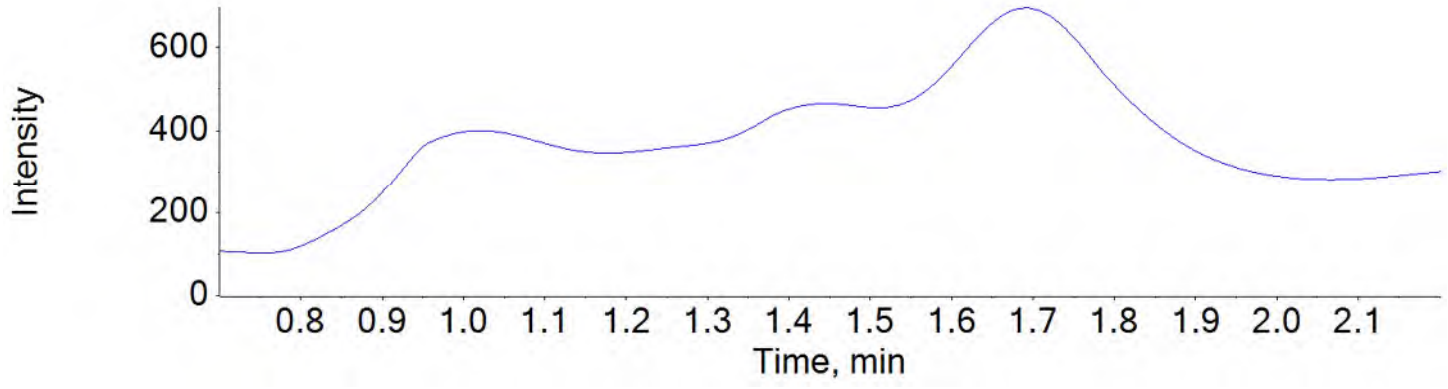
Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

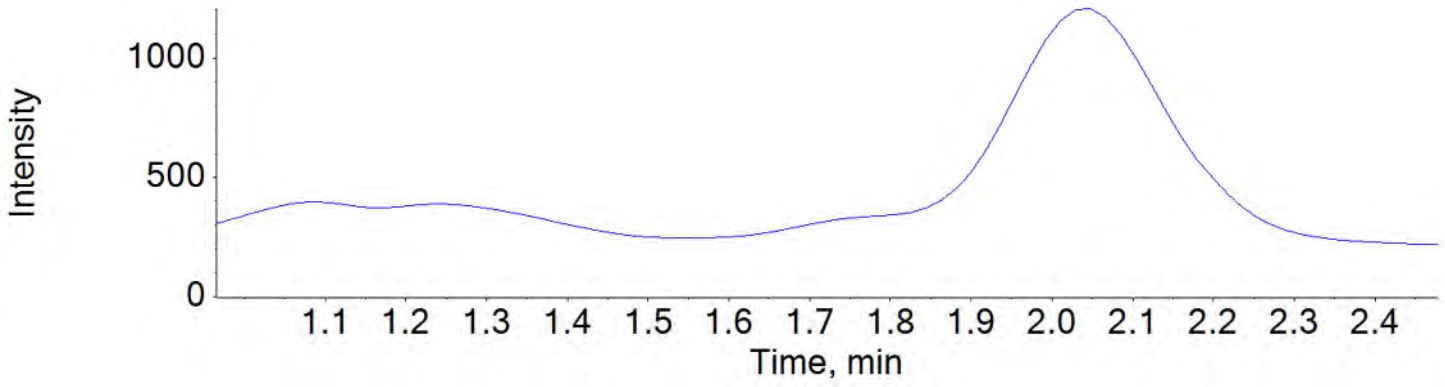


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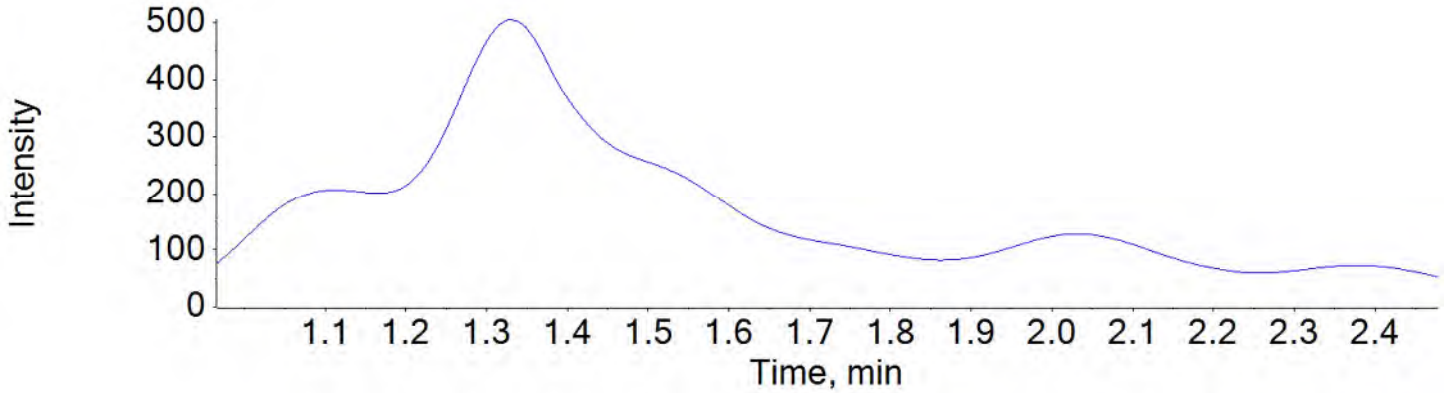
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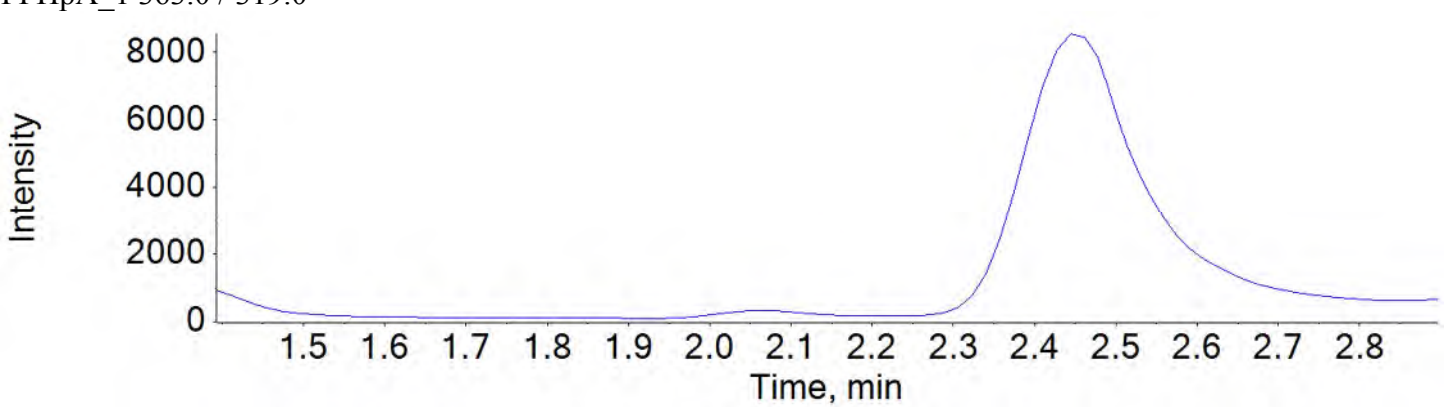
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

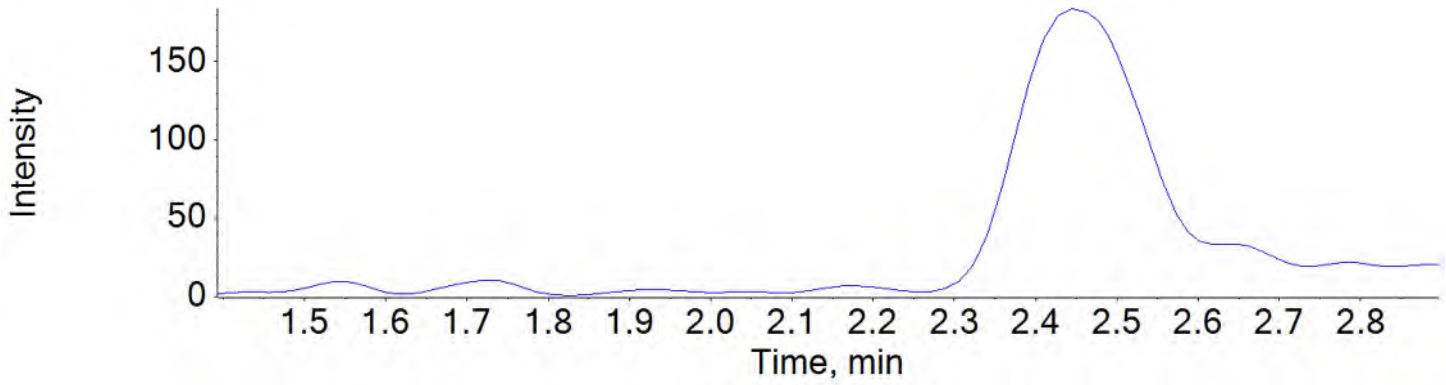


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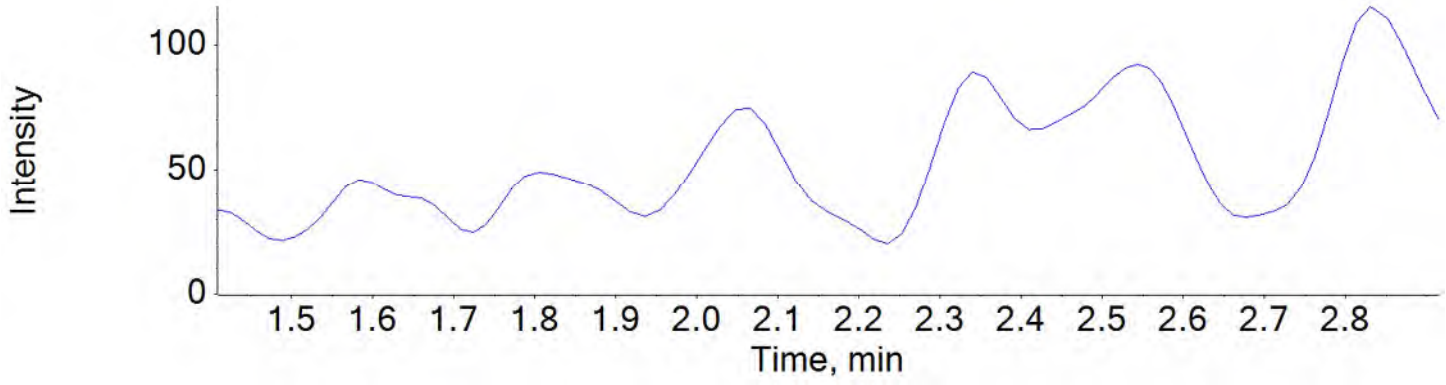
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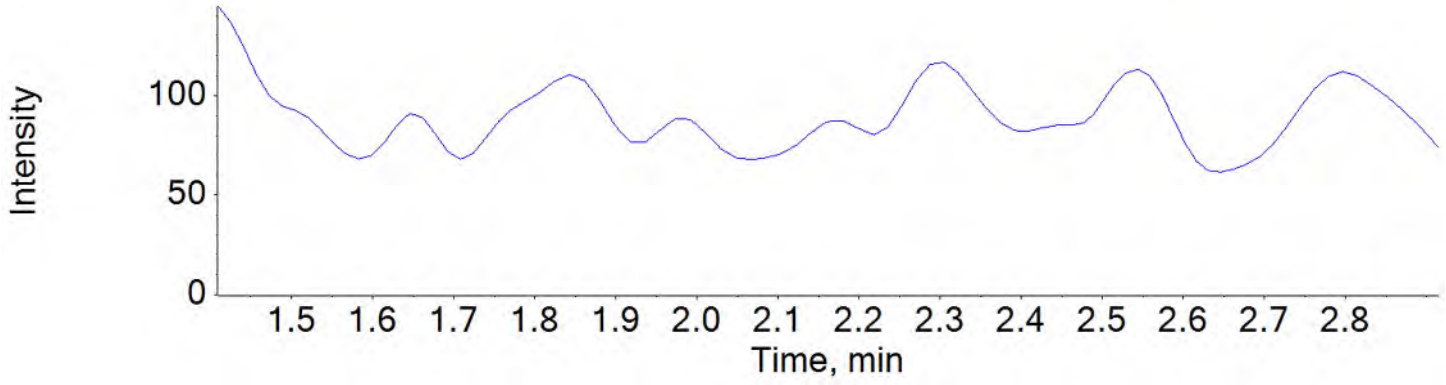
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

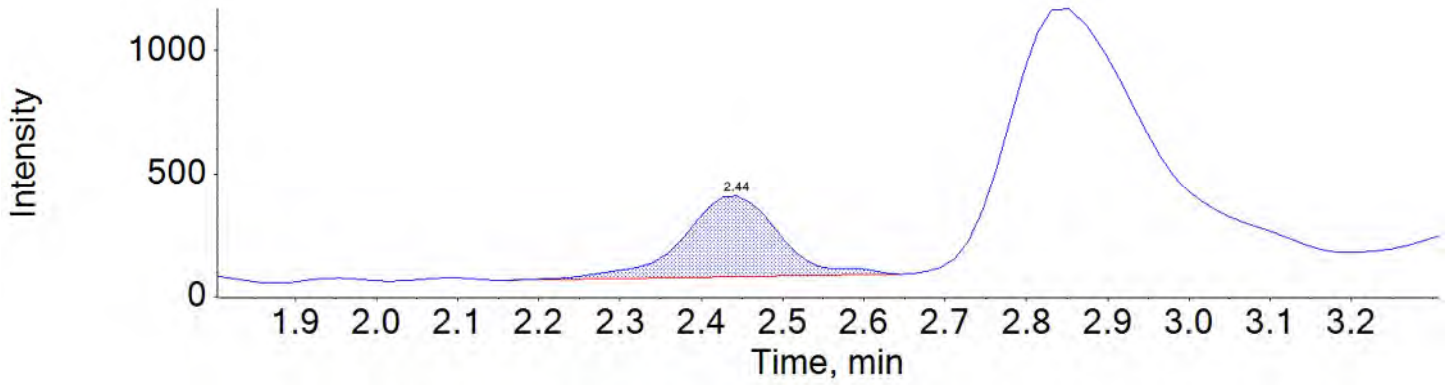


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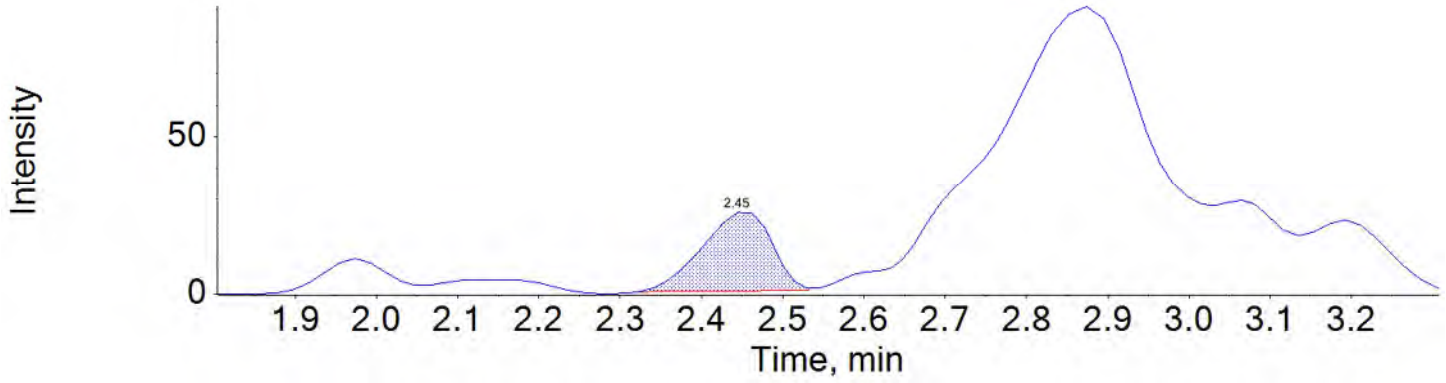
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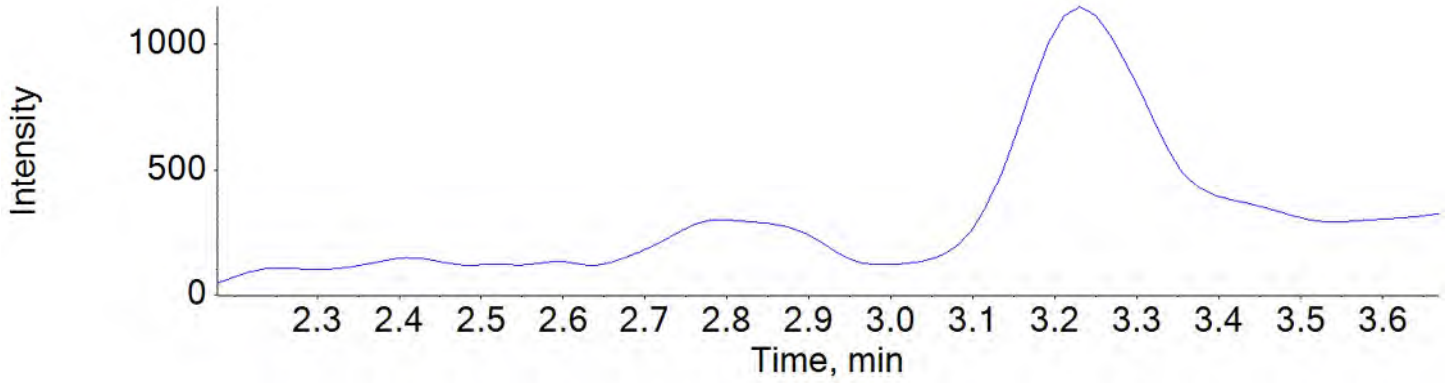
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

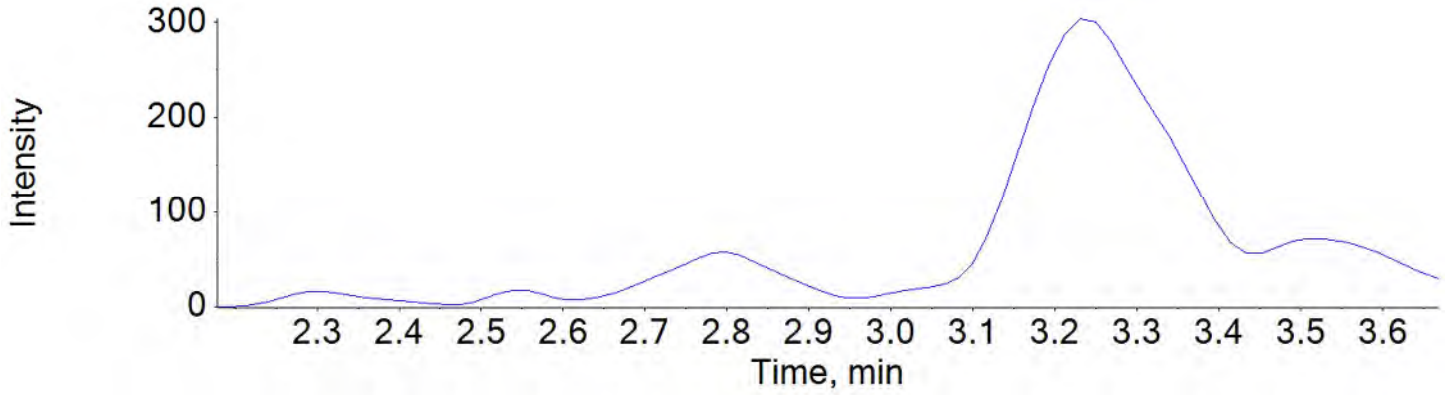


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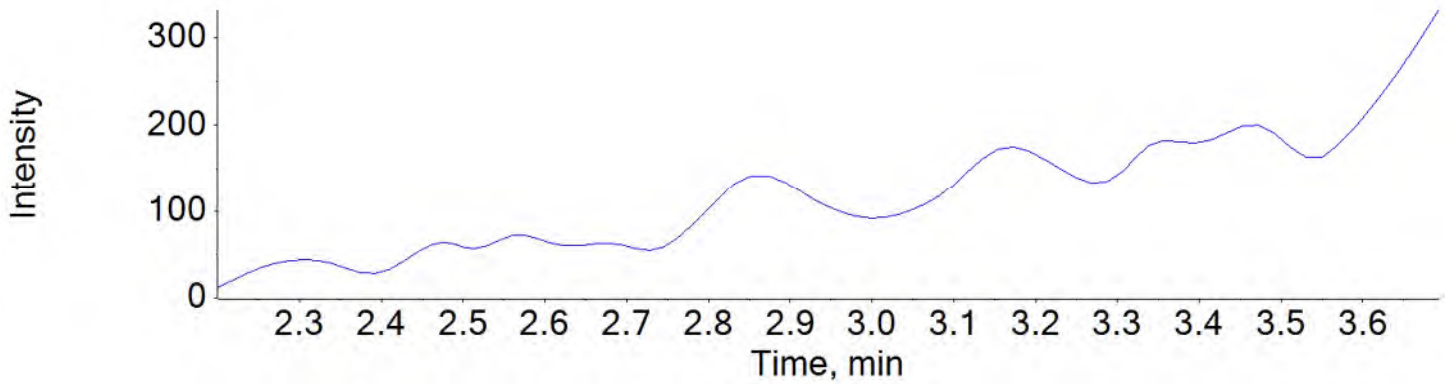
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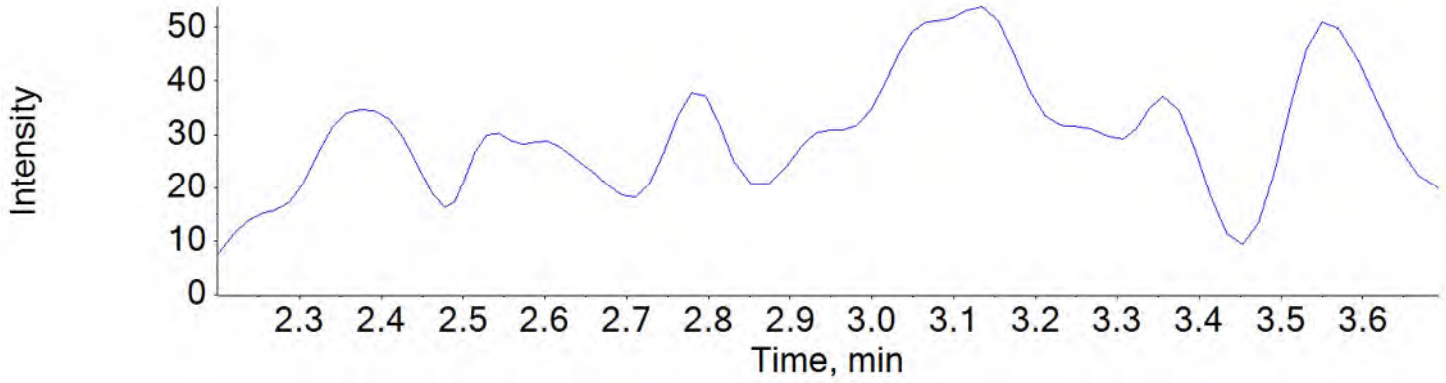
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

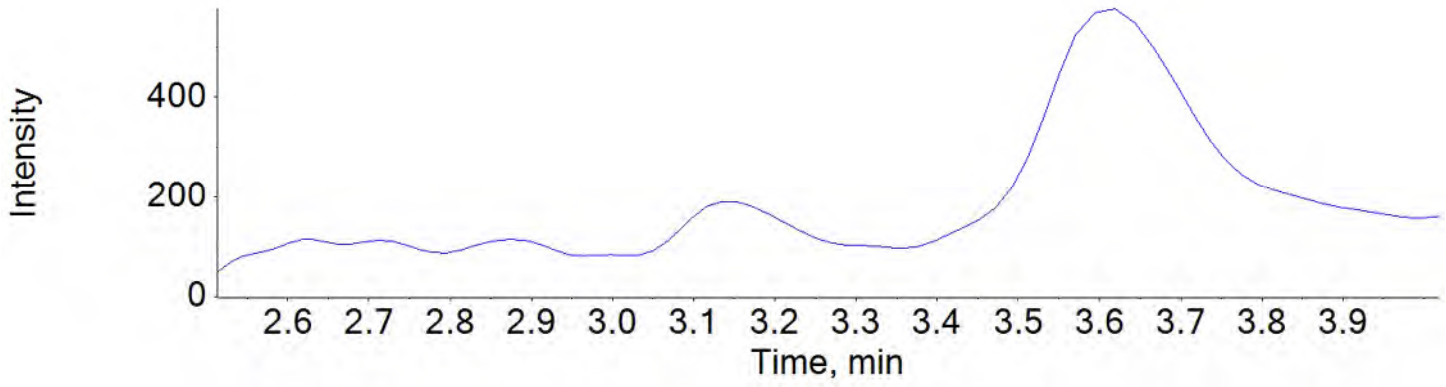


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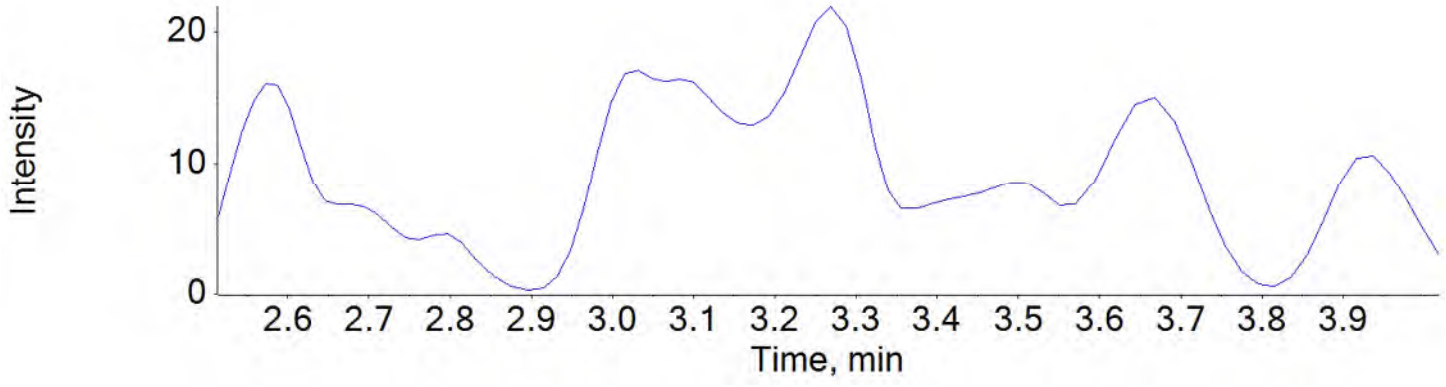
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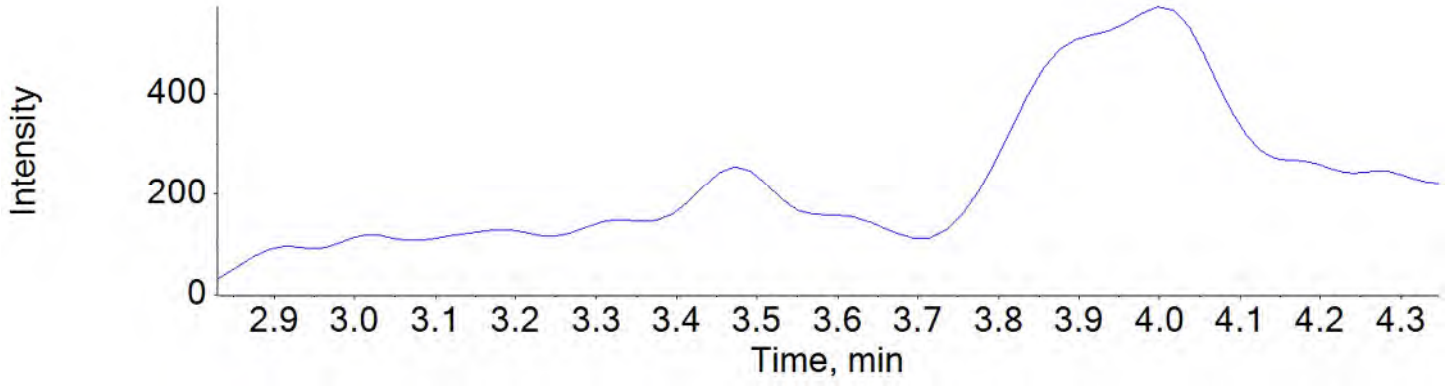
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

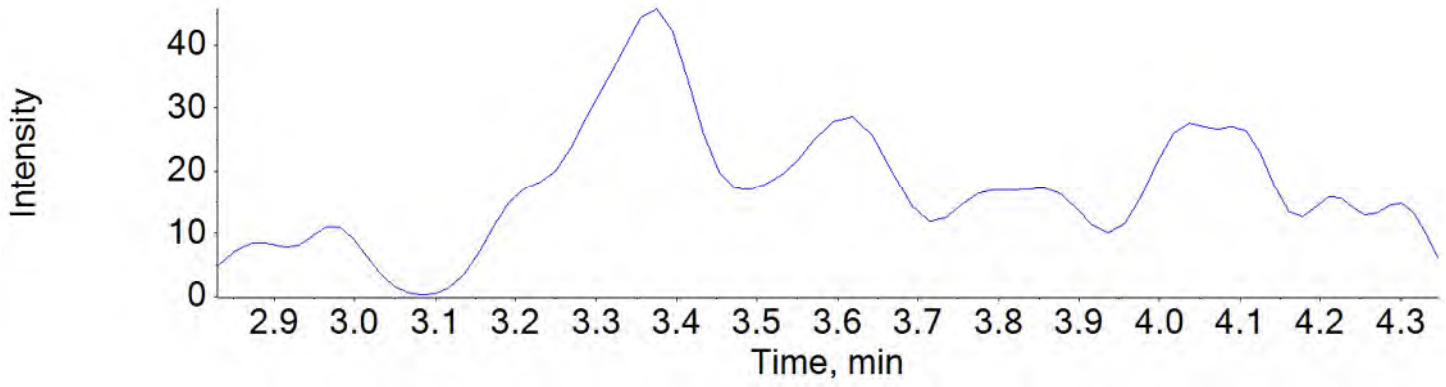


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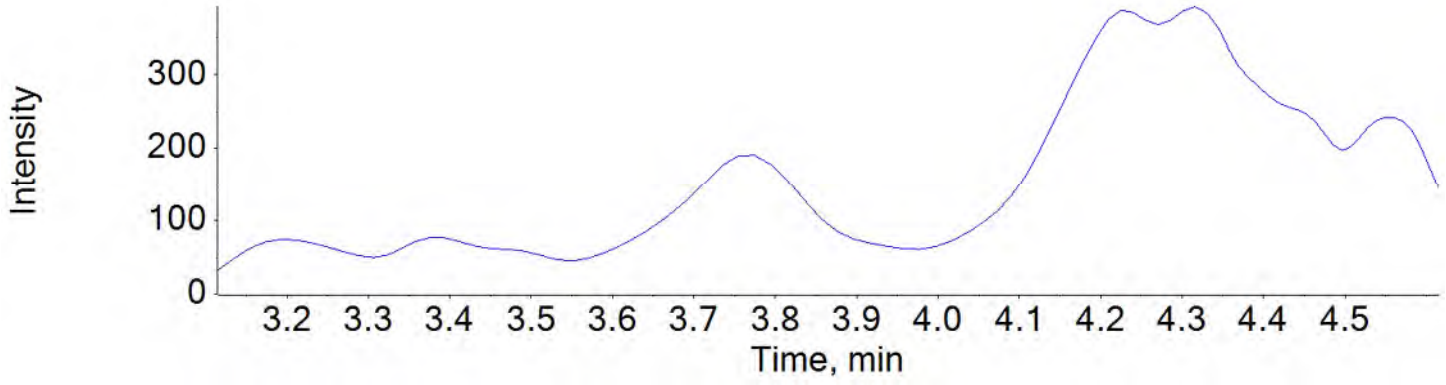
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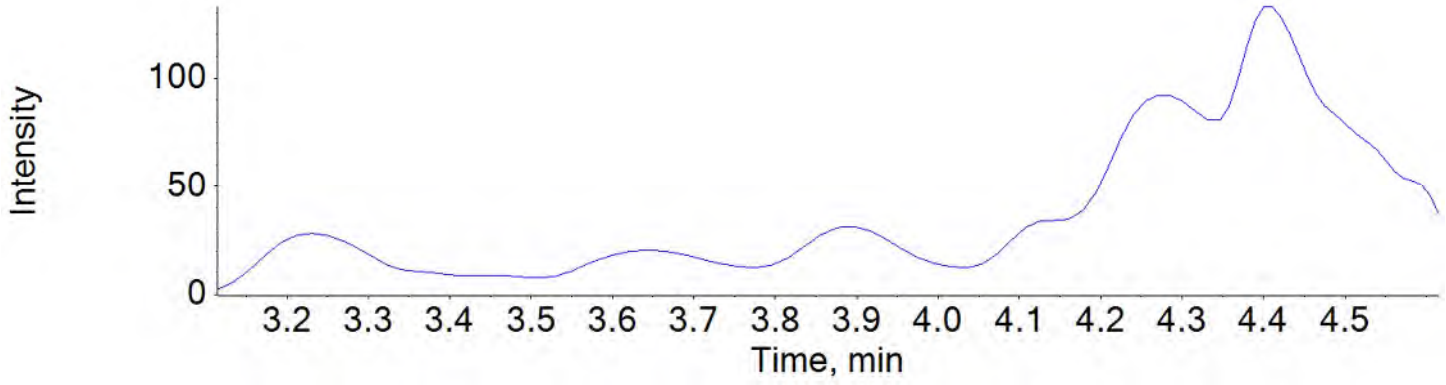
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

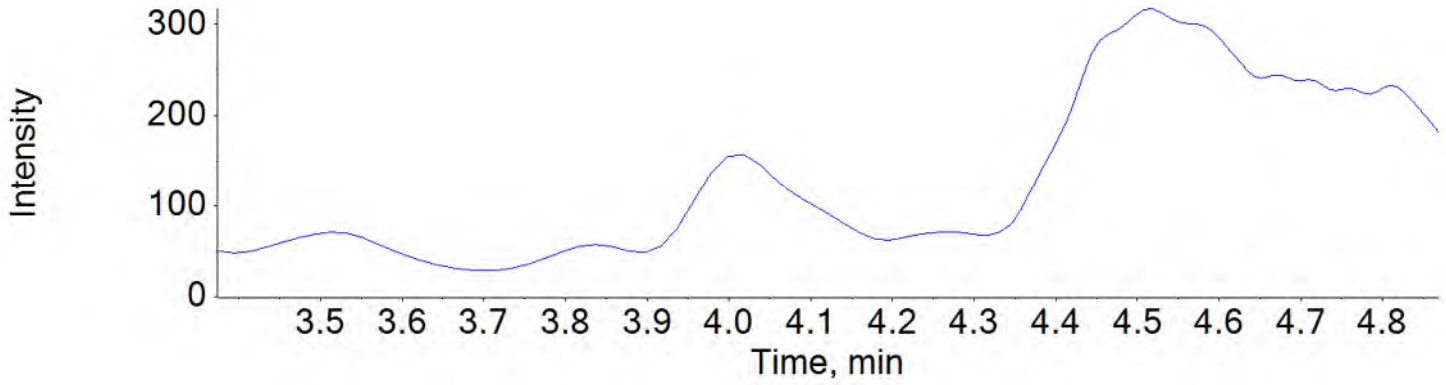


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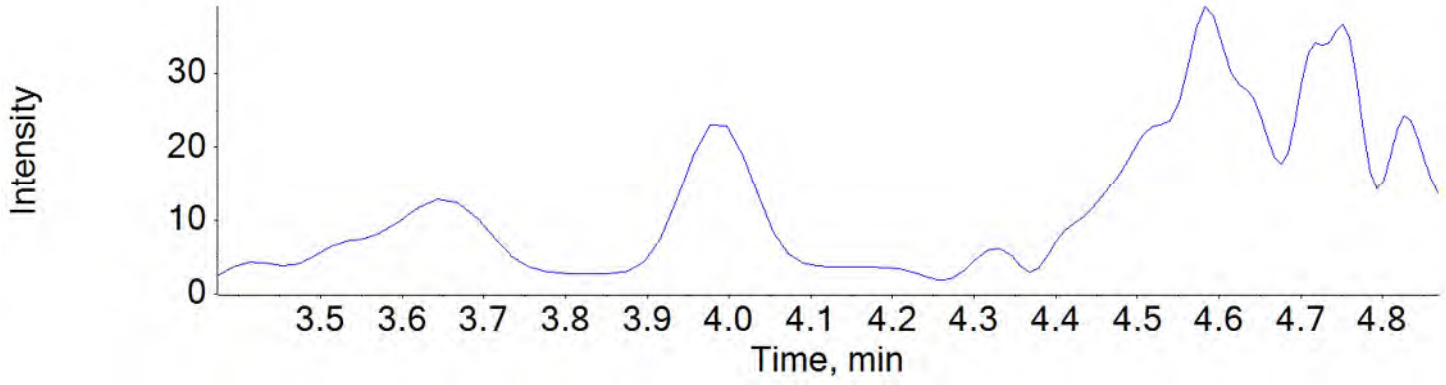
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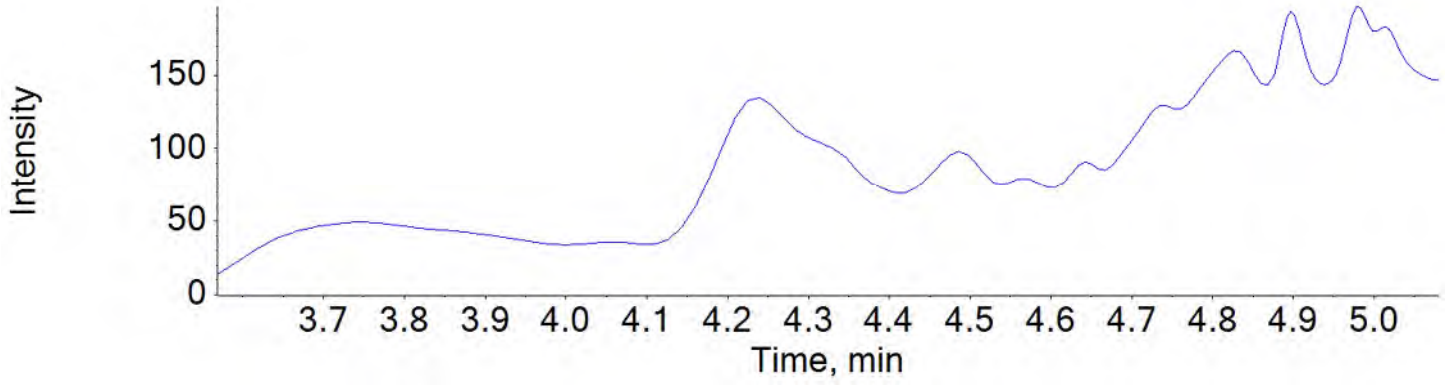
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

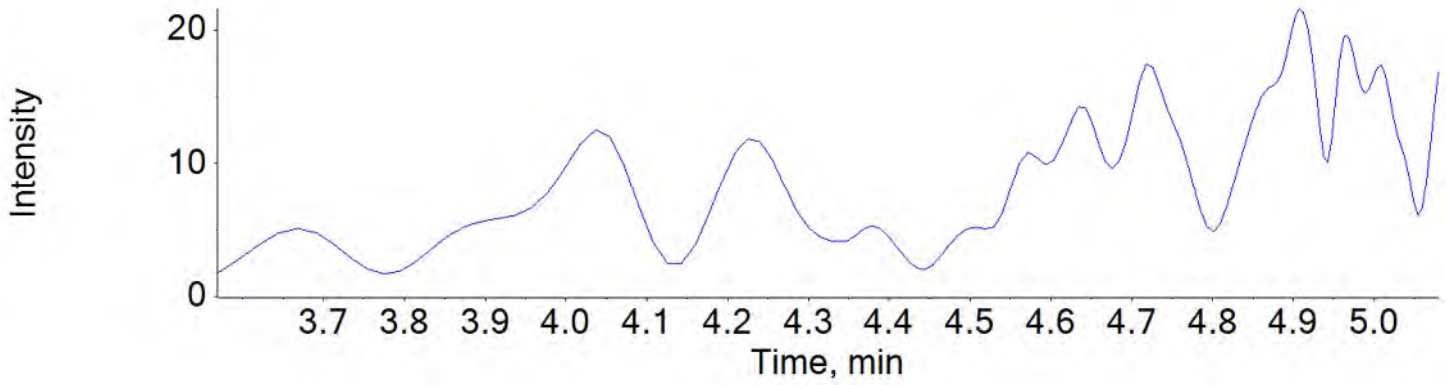


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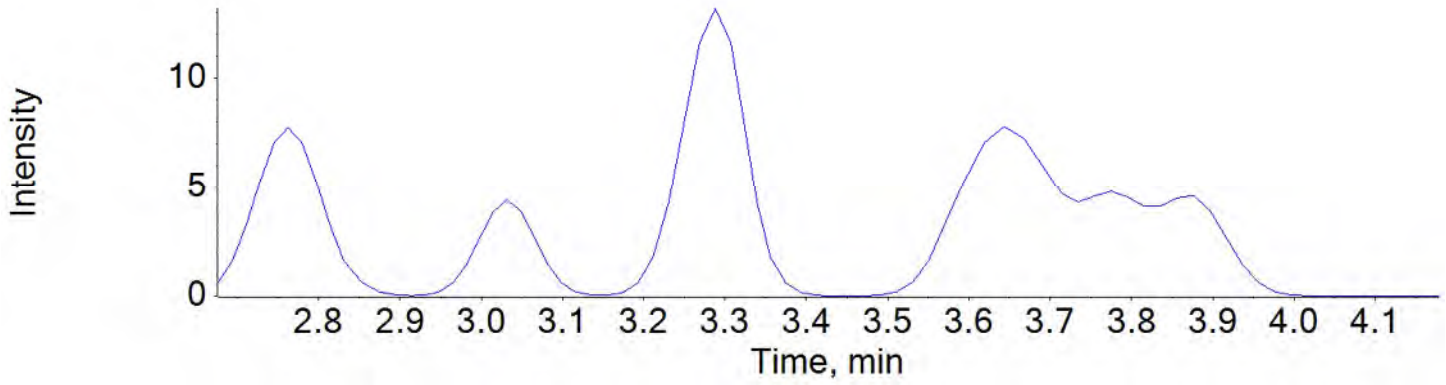
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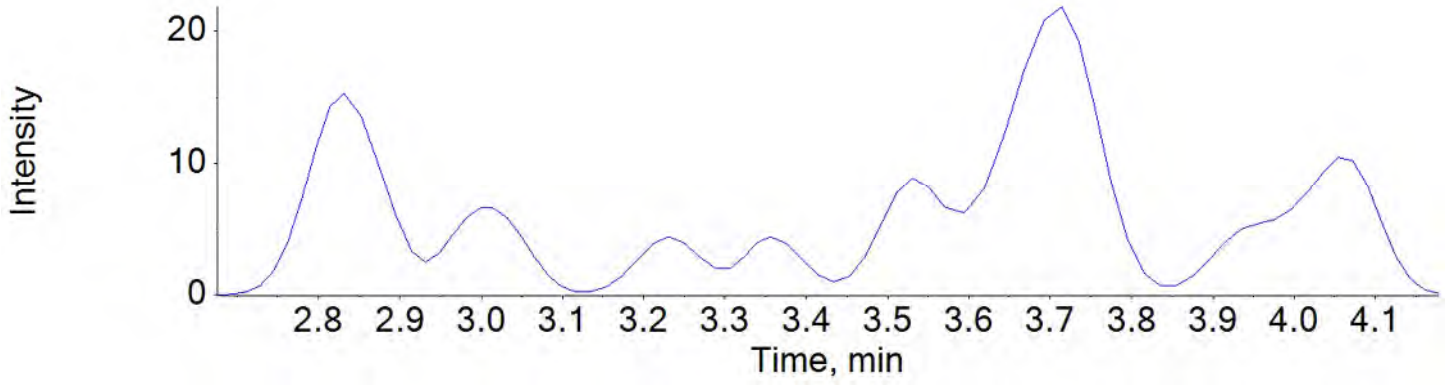
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

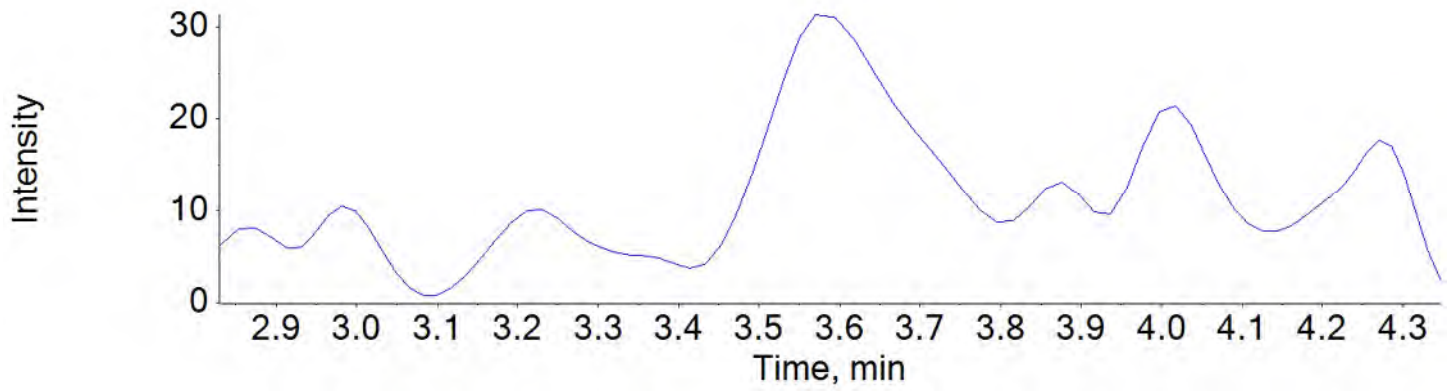


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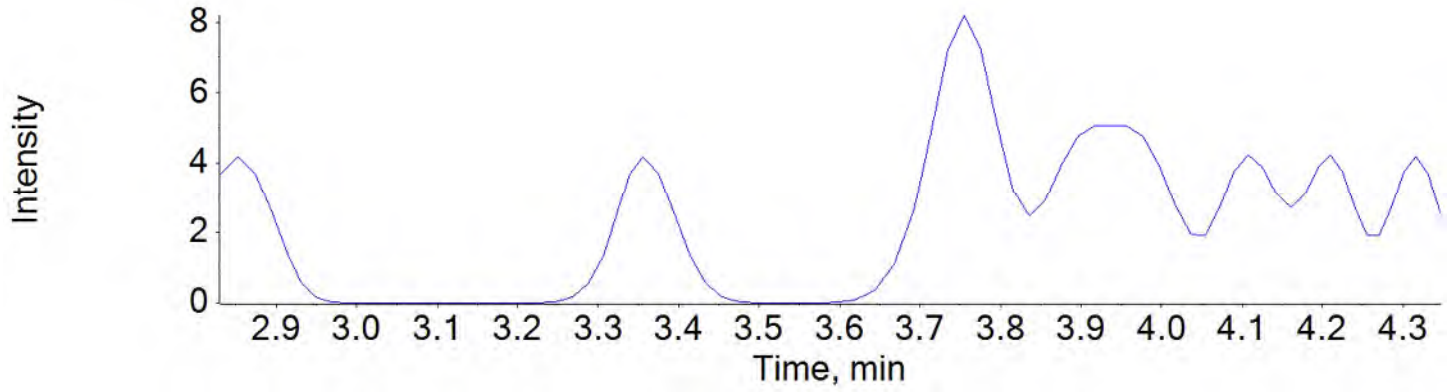
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NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

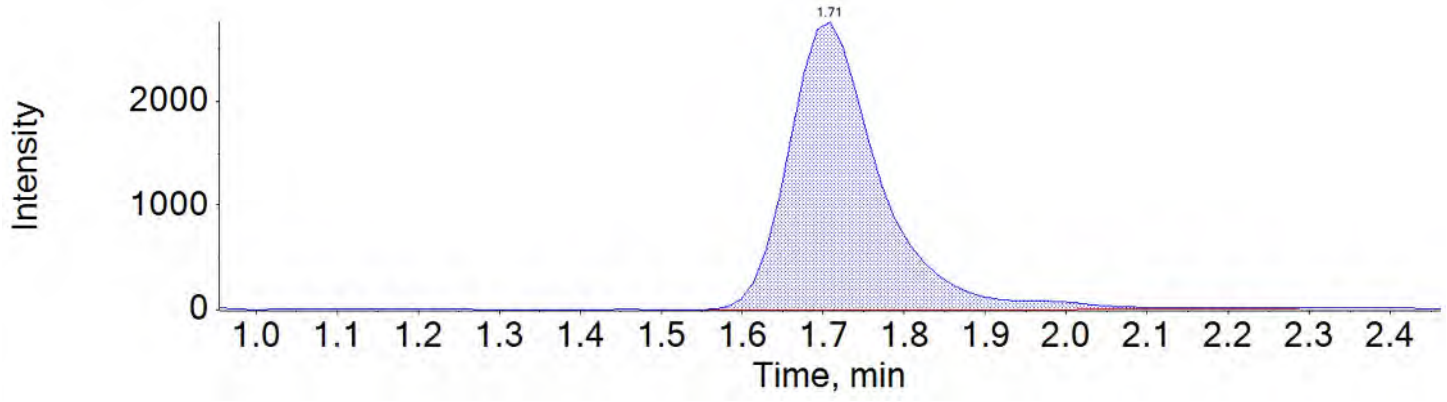
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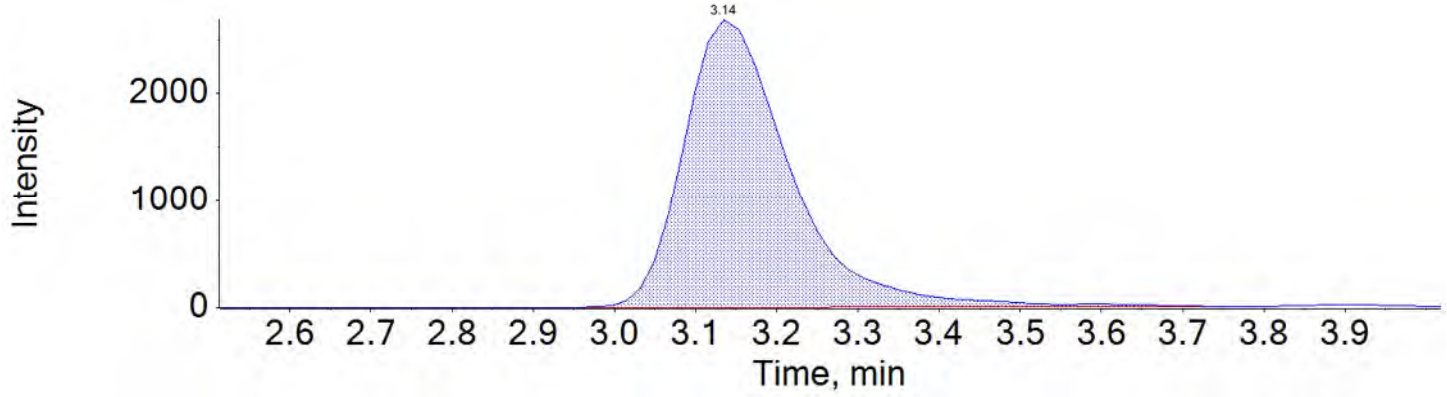
Sample Name	J6169-FS(0)	**Injection Vial**	27
Sample ID	NAWC-050718-FRB-289	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:40:42	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

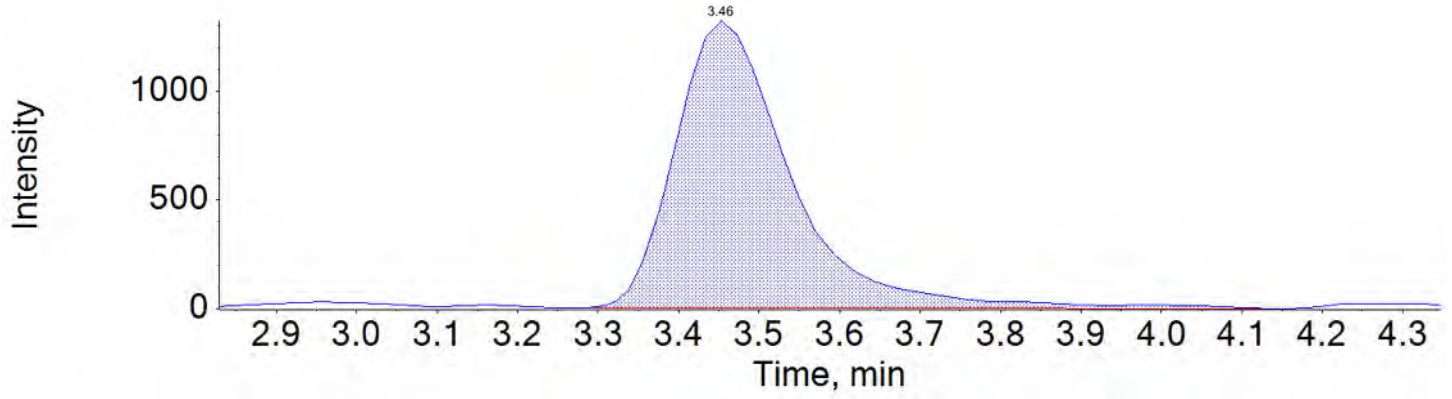


BATTELLE

Chromatogram Report

Created with Analyst Reporter
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d5-EtFOSAA 589.0 / 419.0



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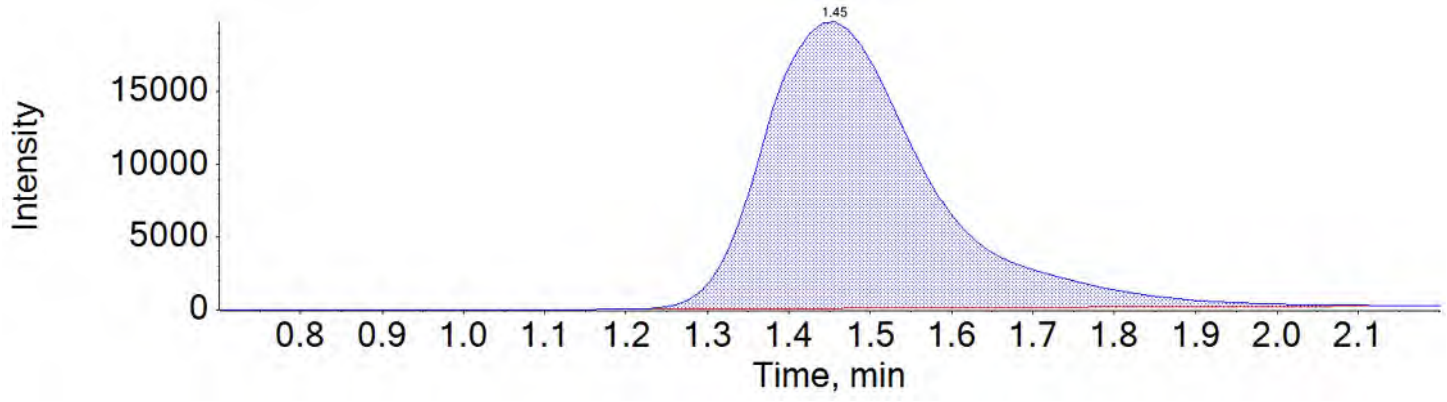
Chromatogram Report

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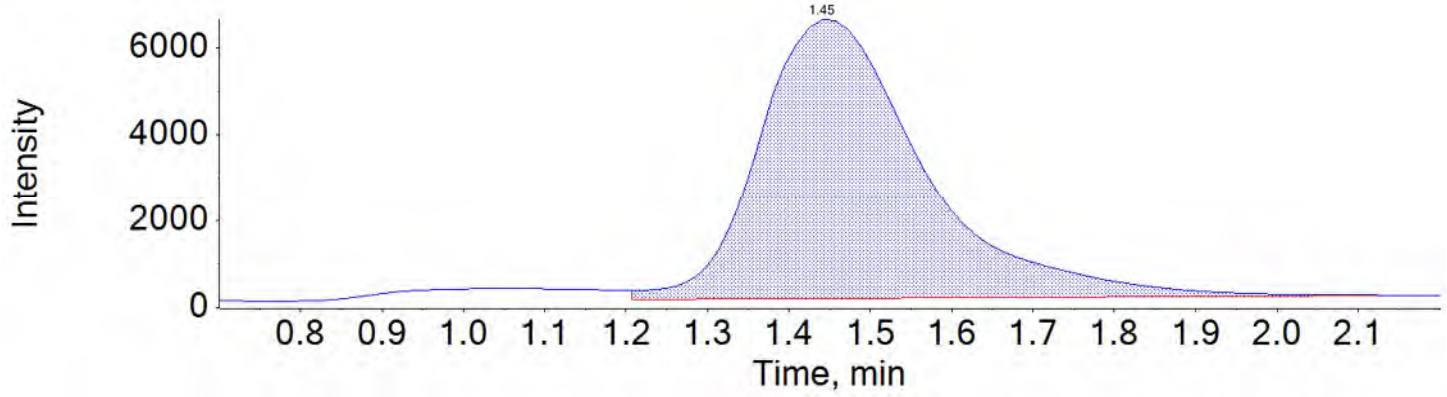
Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Chromatograms

PFBS_1 298.9 / 80.0



PFBS_2 298.9 / 99.0

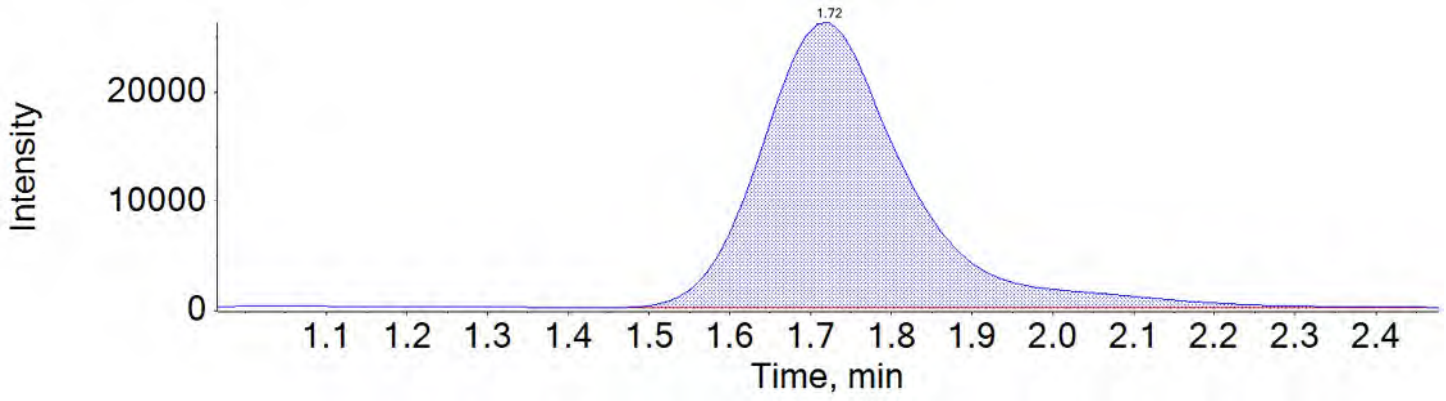


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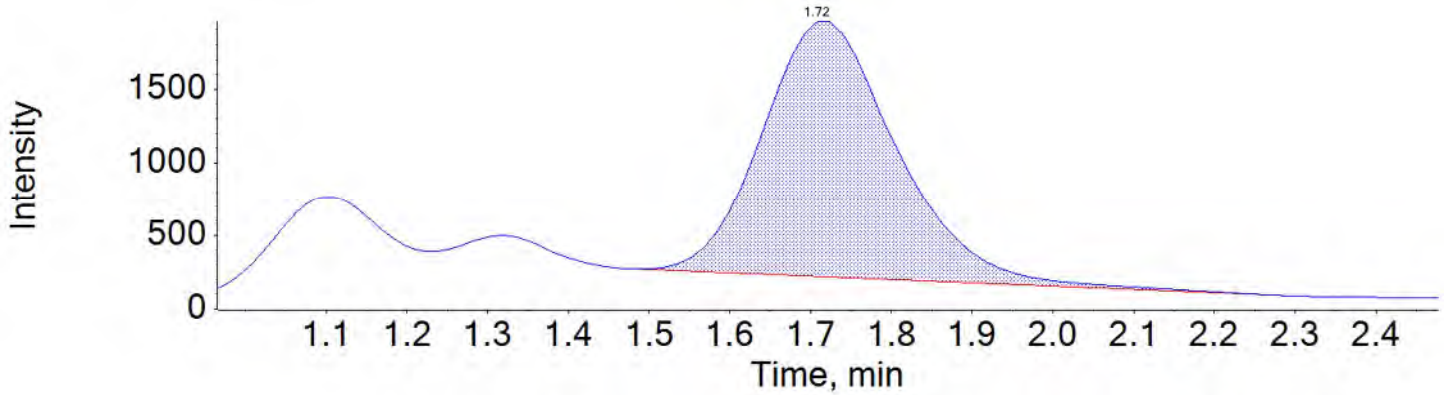
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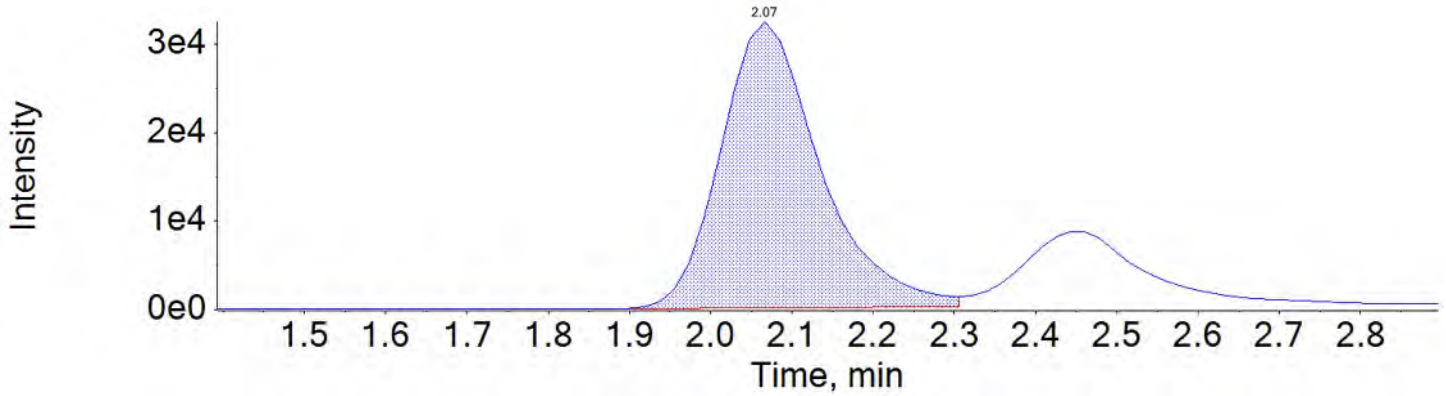
PFHxA_1 313.0 / 269.0



PFHxA_2 313.0 / 119.0



PFHpA_1 363.0 / 319.0

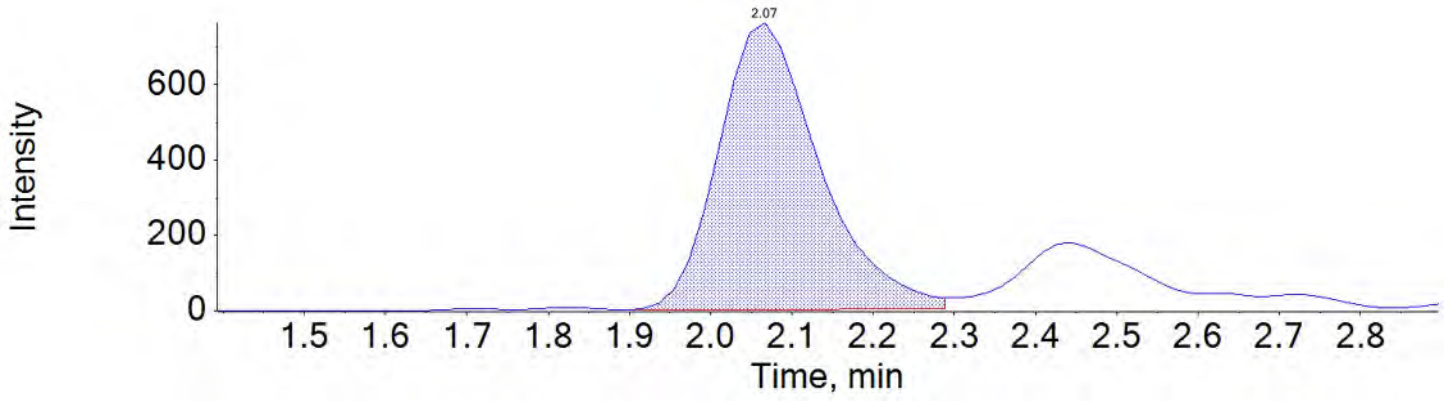


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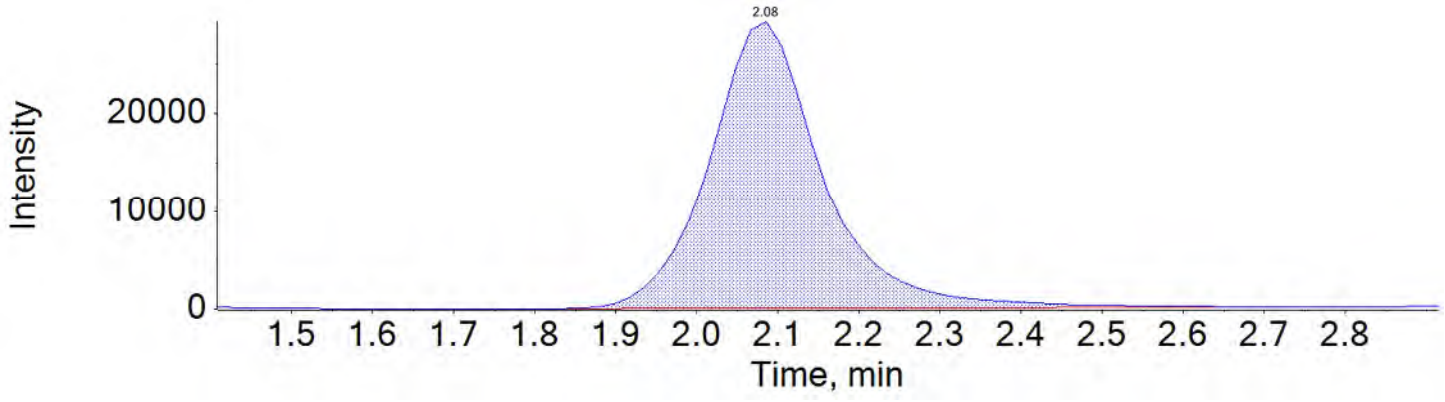
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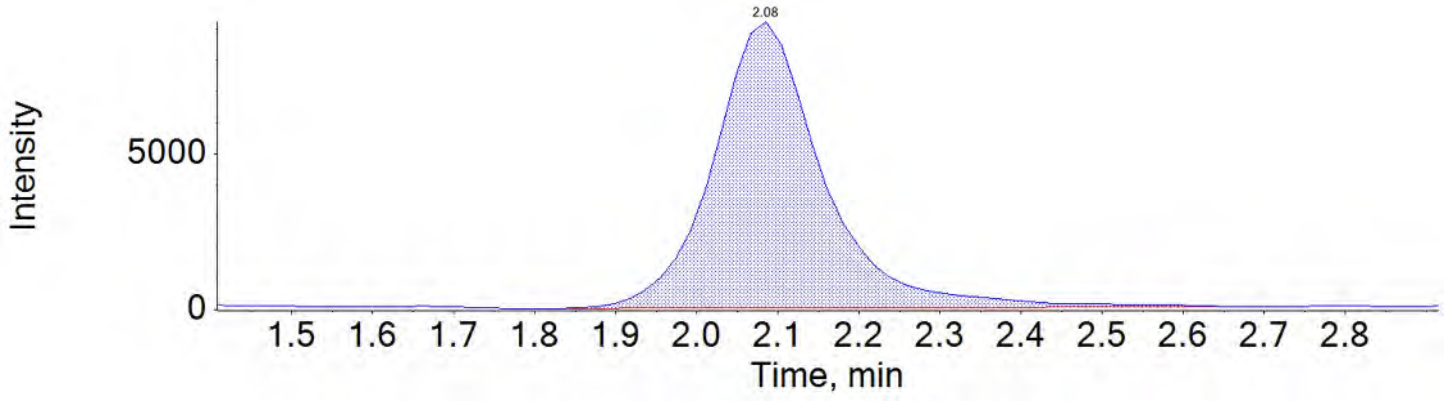
PFHpA_2 363.0 / 169.0



PFHxS_1 399.0 / 80.0



PFHxS_2 399.0 / 99.0

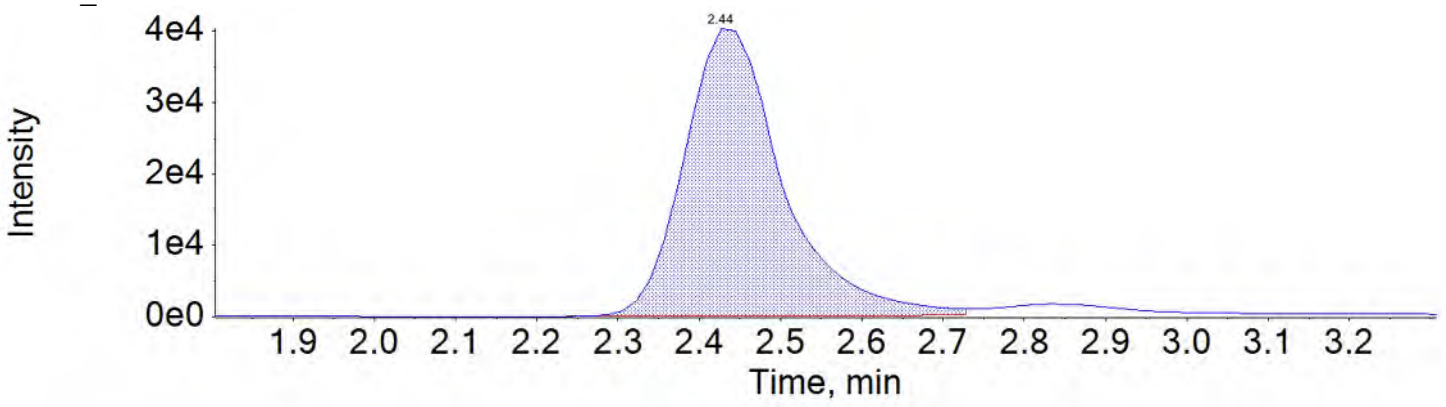


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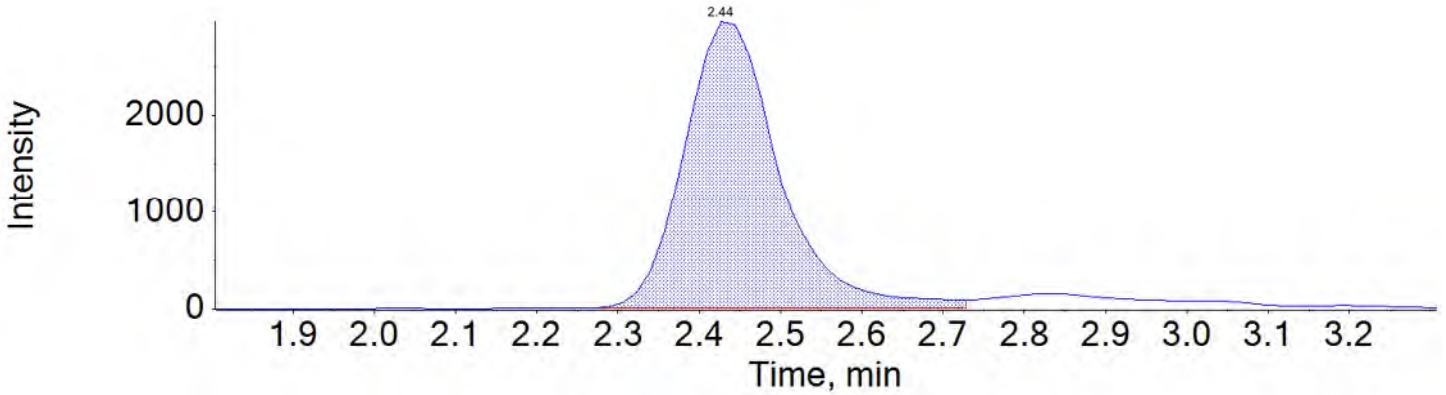
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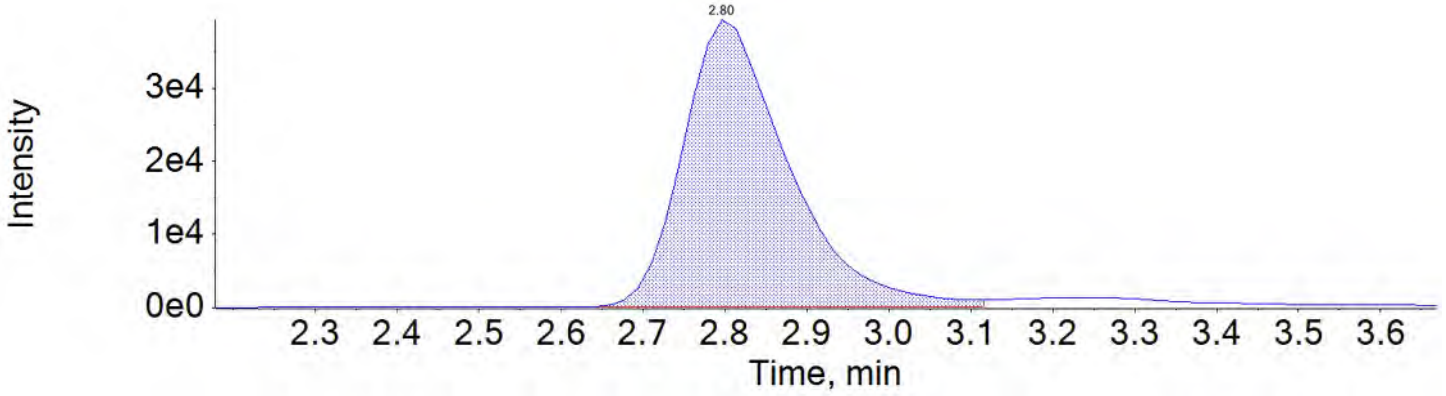
PFOA_1 413.0 / 369.0



PFOA_2 413.0 / 169.0



PFNA_1 463.0 / 419.0

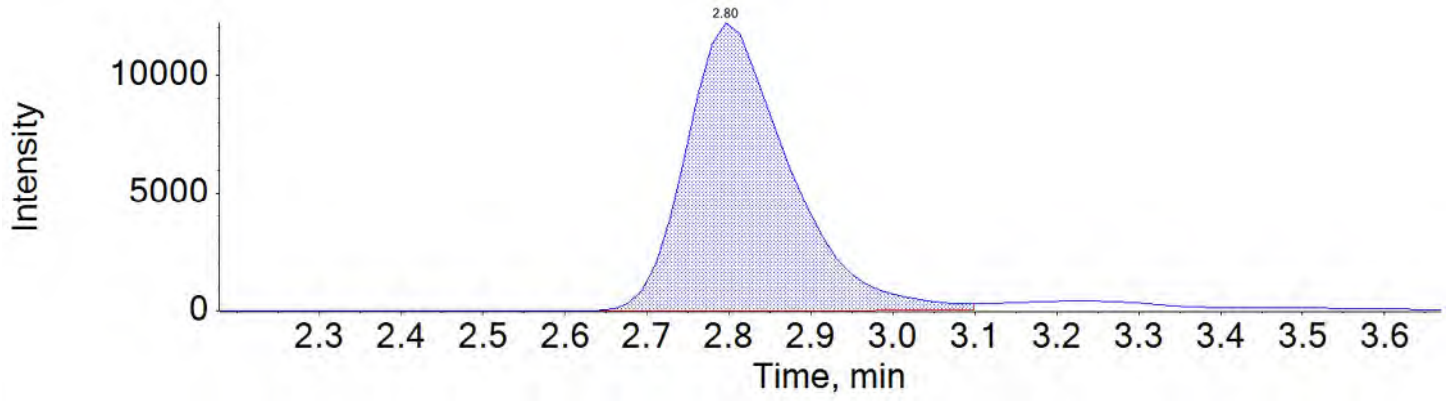


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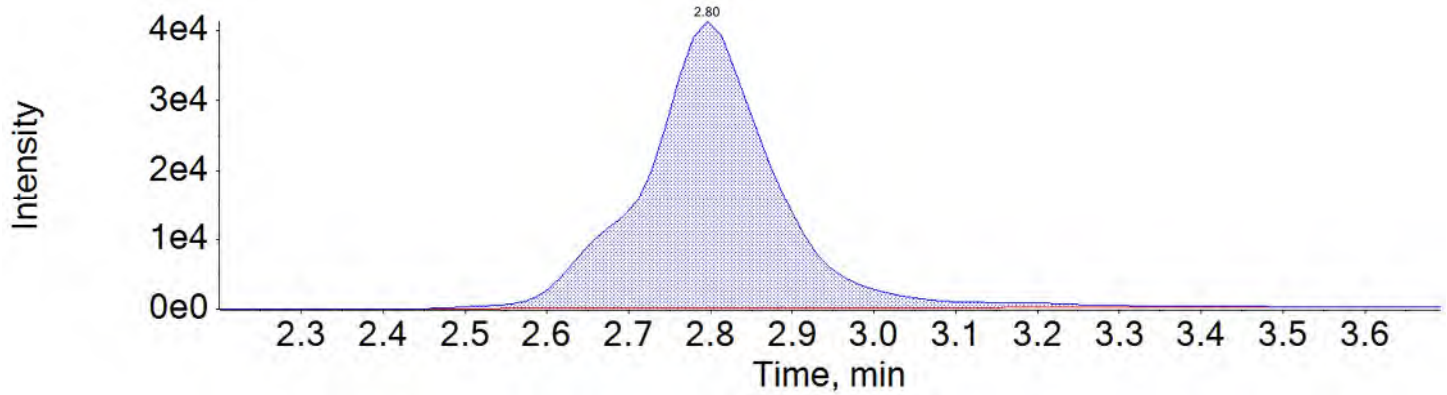
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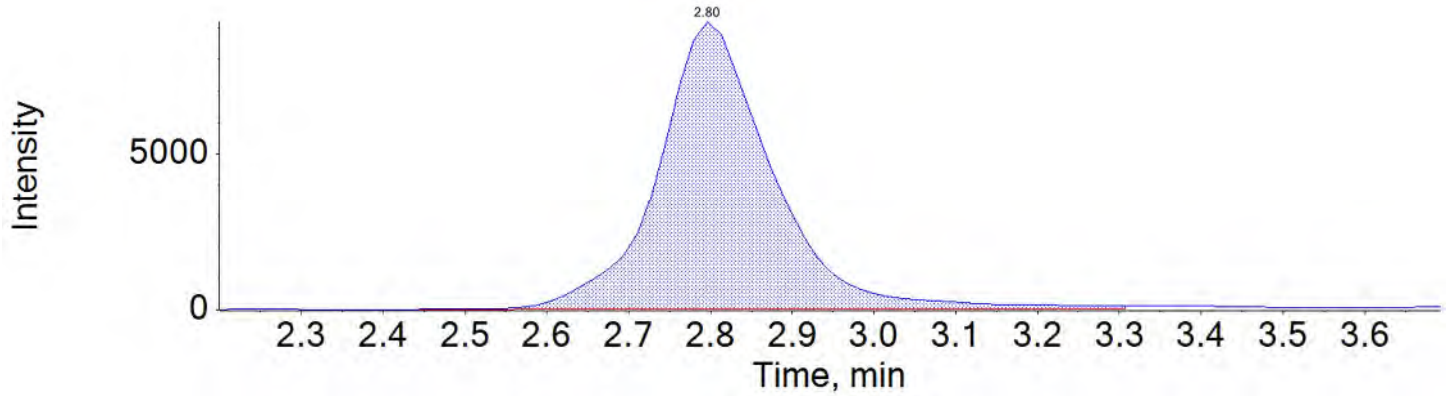
PFNA_2 463.0 / 219.0



PFOS_1 499.0 / 80.0



PFOS_2 499.0 / 99.0

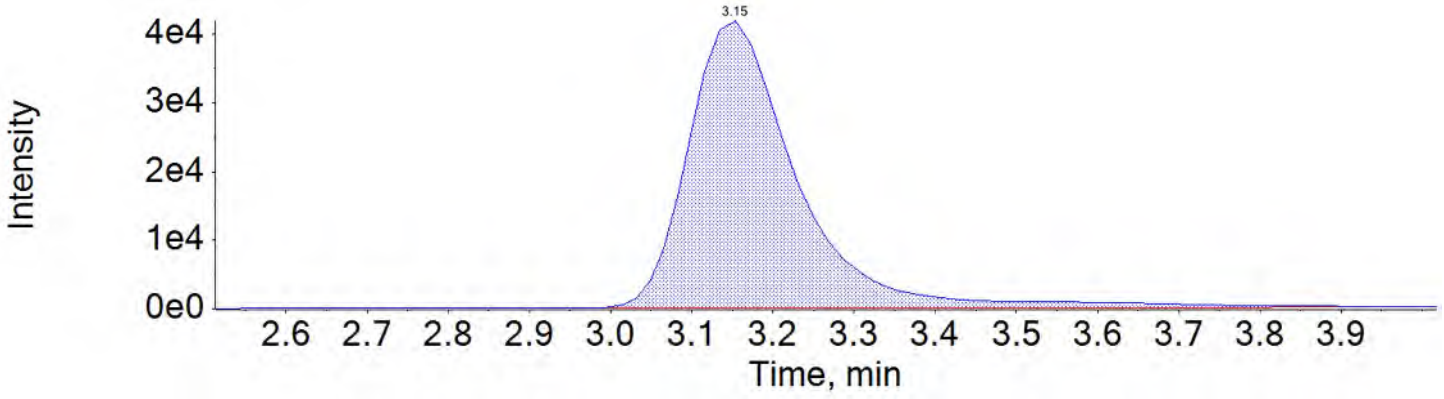


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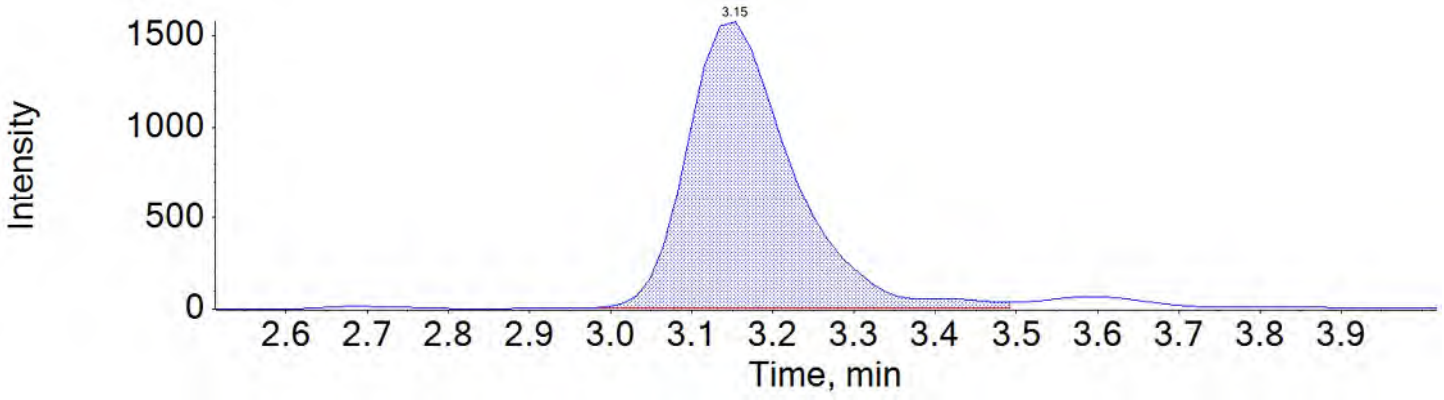
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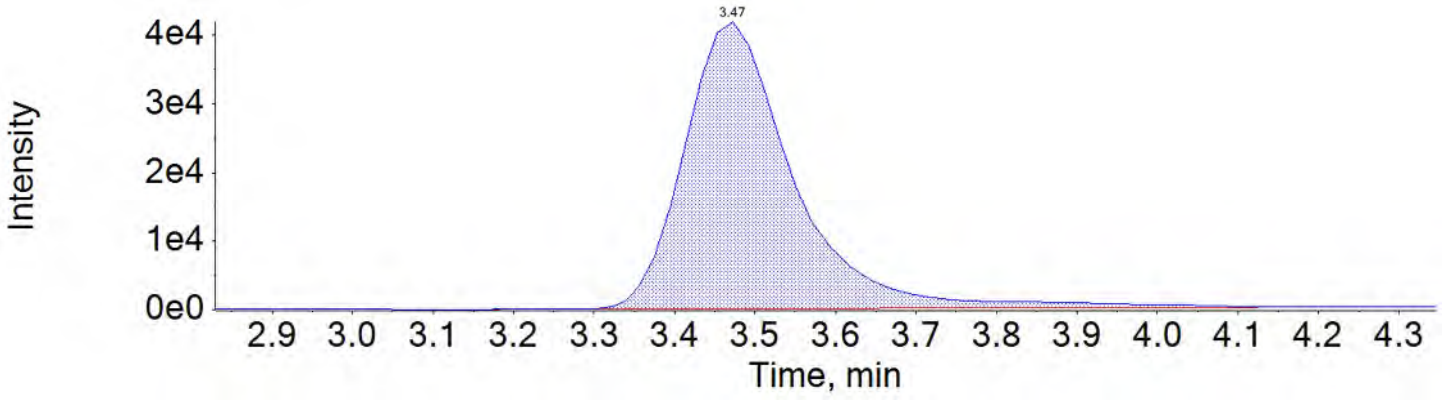
PFDA_1 513.0 / 469.0



PFDA_2 513.0 / 219.0



PFUnA_1 563.0 / 519.0

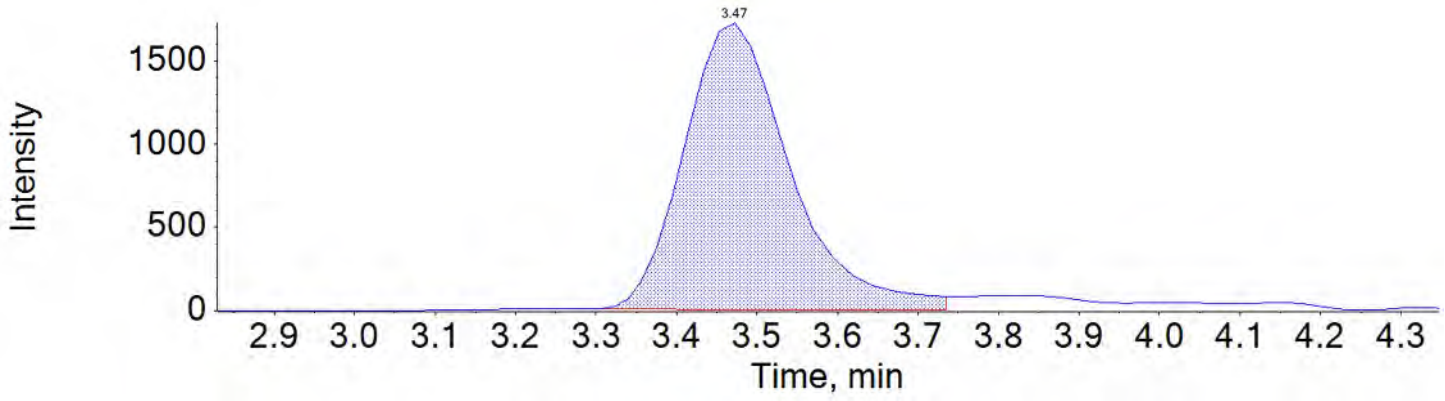


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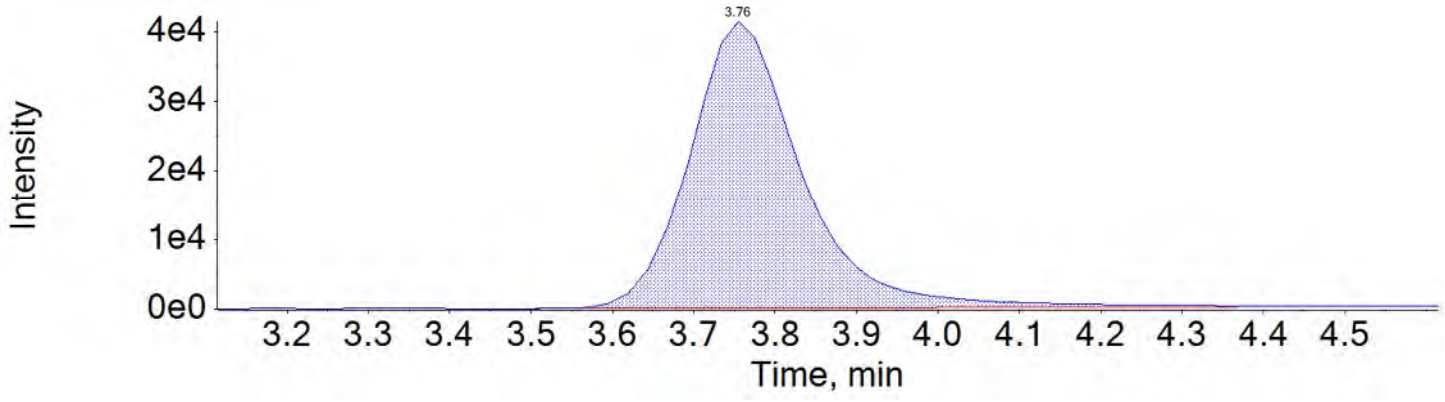
Chromatogram Report

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Printed: 24/05/2018 10:57:46 AM

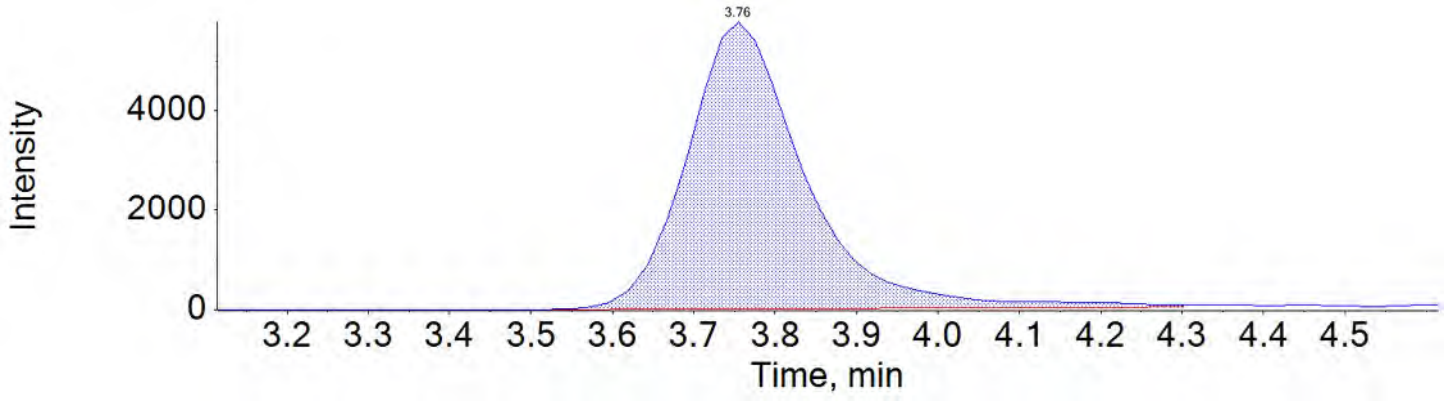
PFUnA_2 563.0 / 269.0



PFDoA_1 613.0 / 569.0



PFDoA_2 613.0 / 319.0

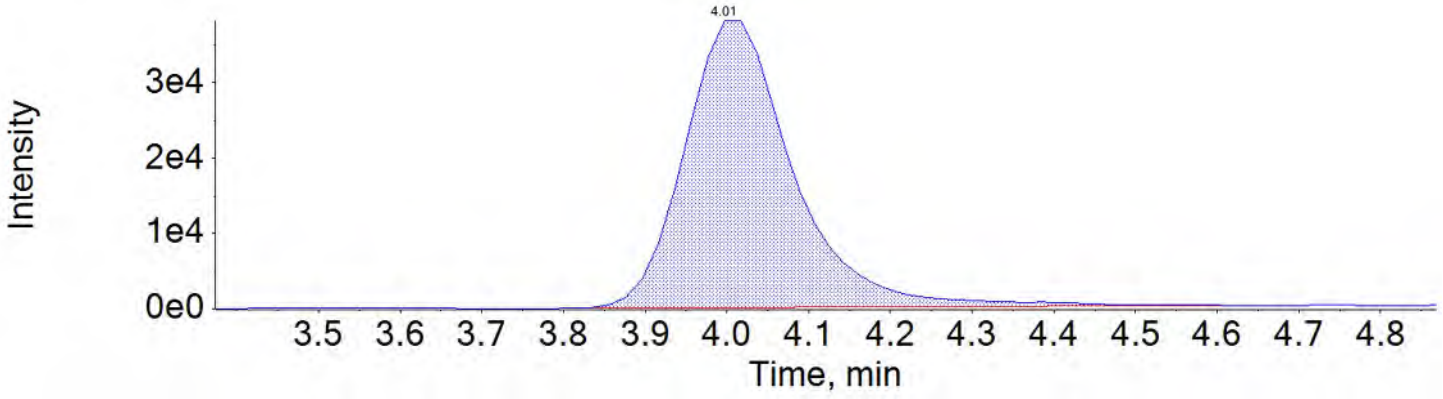


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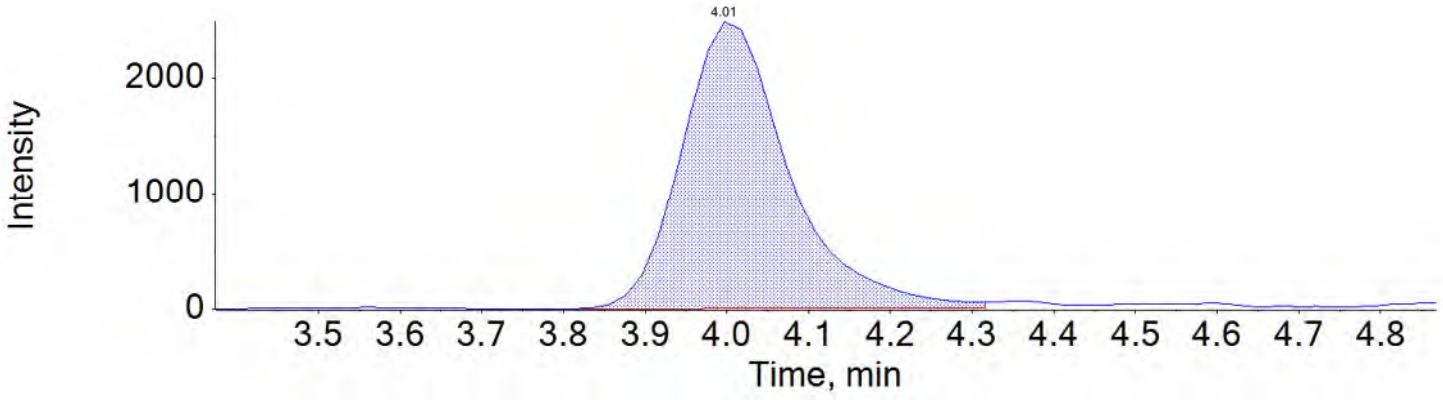
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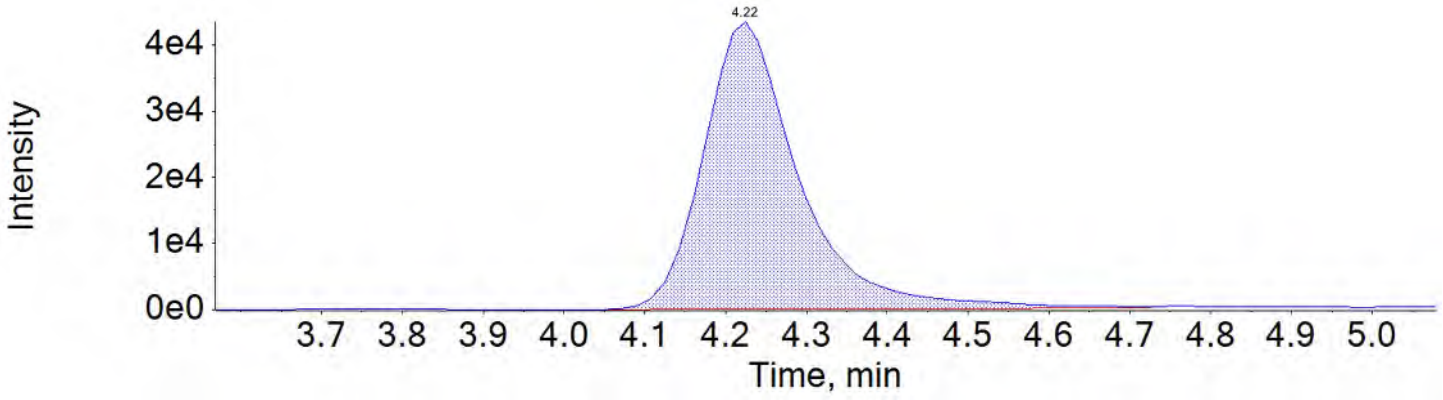
PFTrDA_1 663.0 / 619.0



PFTrDA_2 663.0 / 169.0



PFTeDA_1 713.0 / 669.0

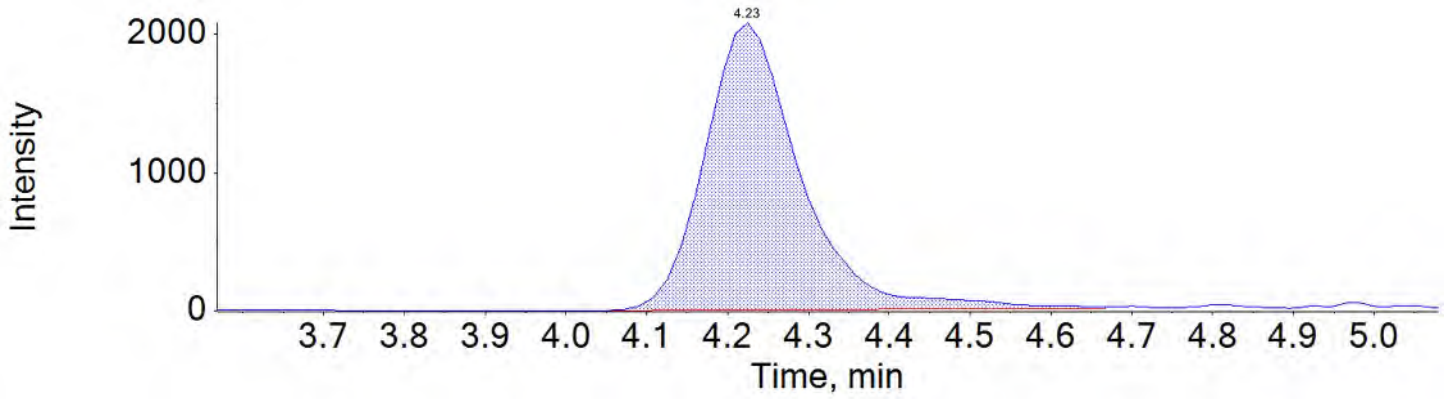


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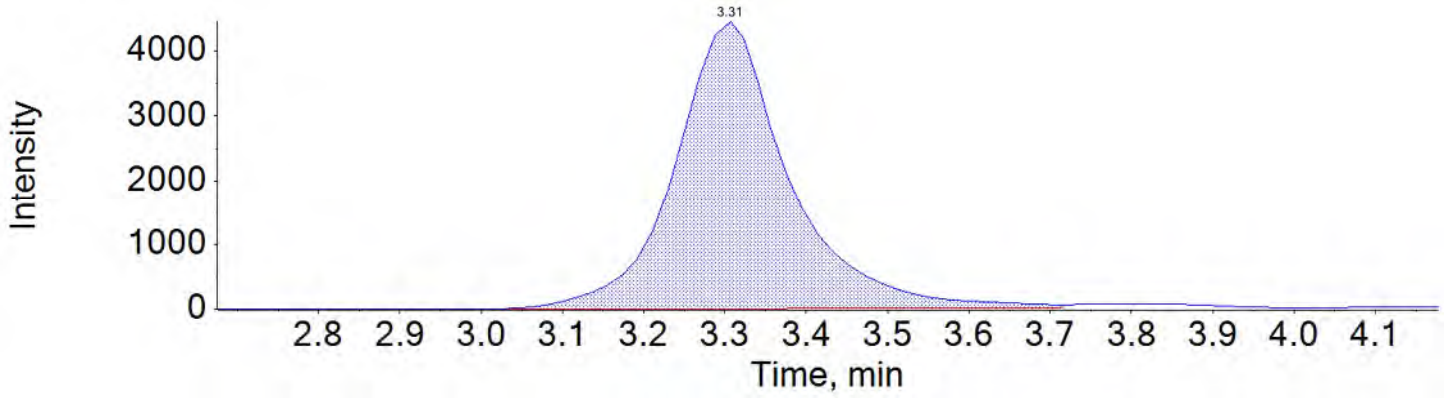
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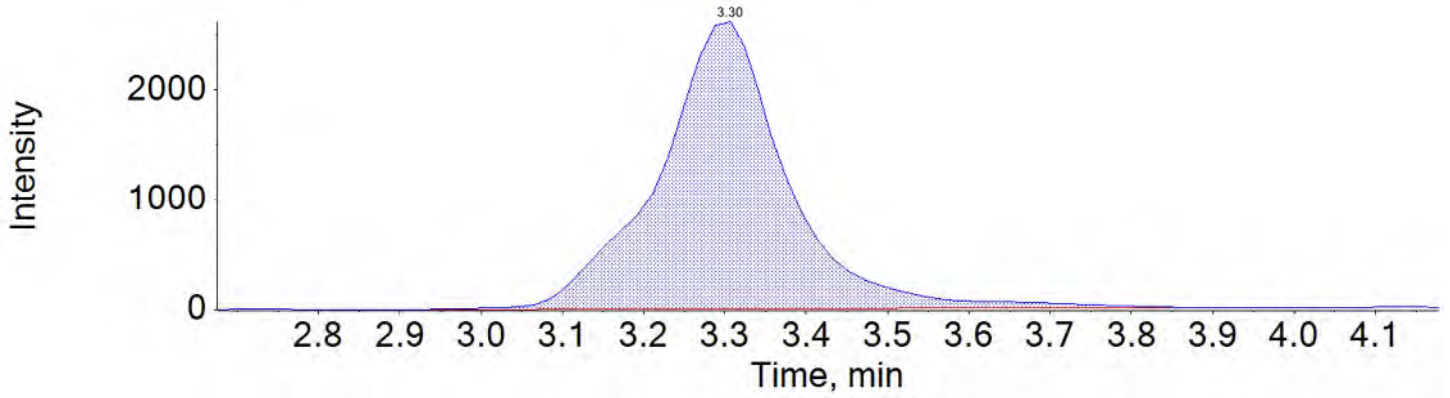
PFTeDA_2 713.0 / 169.0



NMeFOSAA_1 570.0 / 419.0



NMeFOSAA_2 570.0 / 512.0

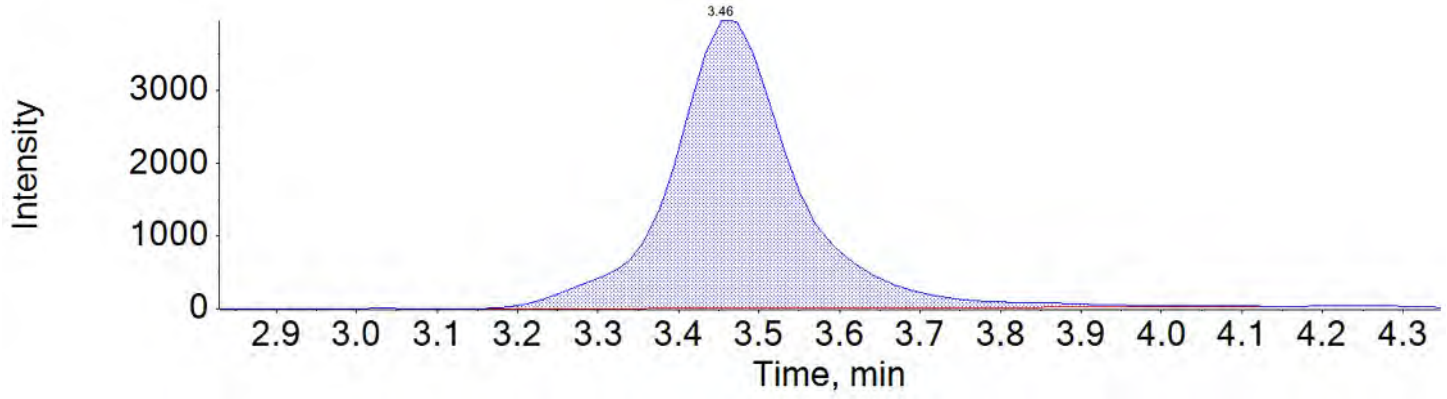


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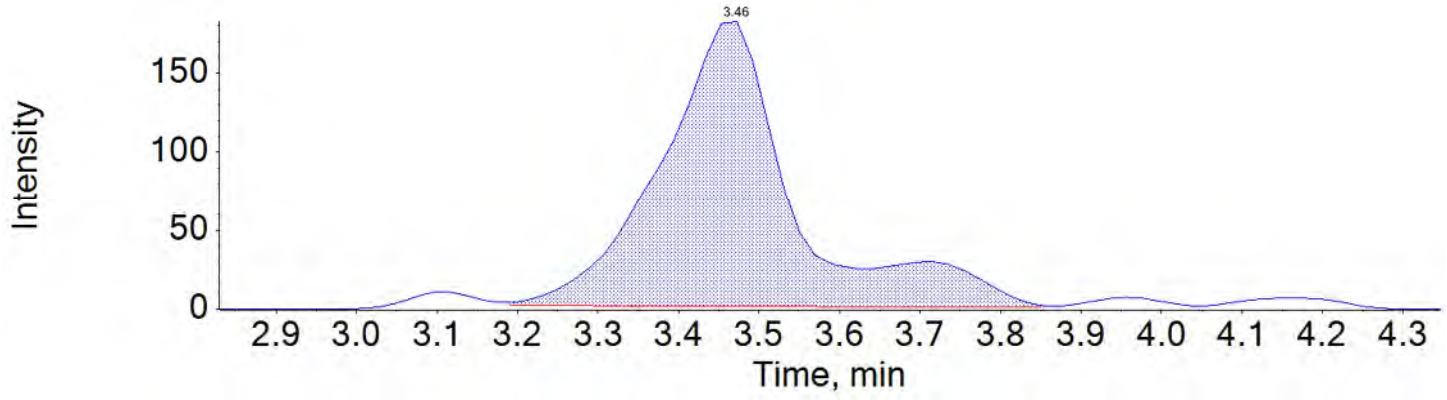
Chromatogram Report

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Printed: 24/05/2018 10:57:46 AM

NEtFOSAA_1 584.0 / 419.0



NEtFOSAA_2 584.0 / 483.0



BATTELLE

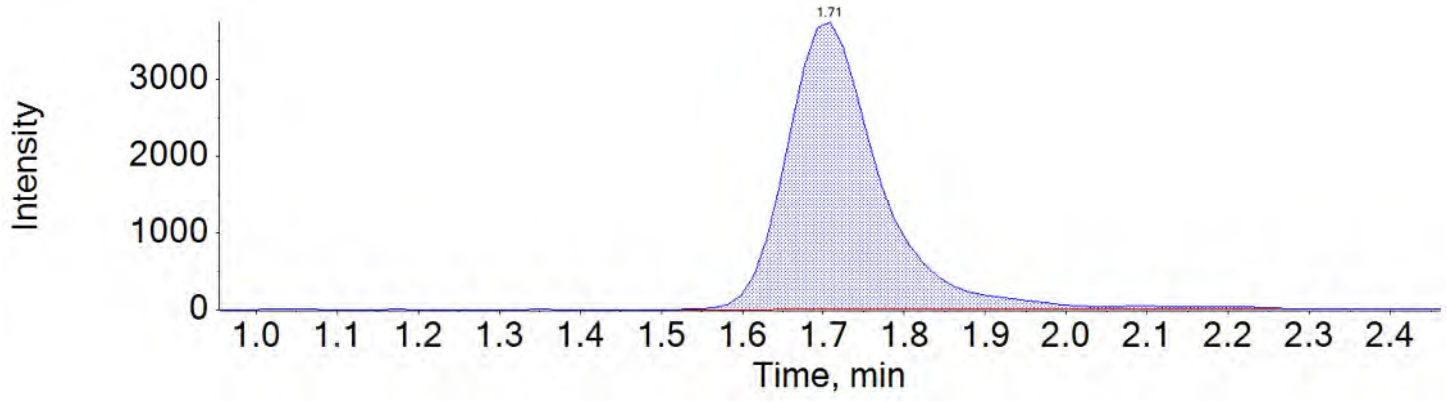
Chromatogram Report

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Printed: 24/05/2018 10:56:42 AM

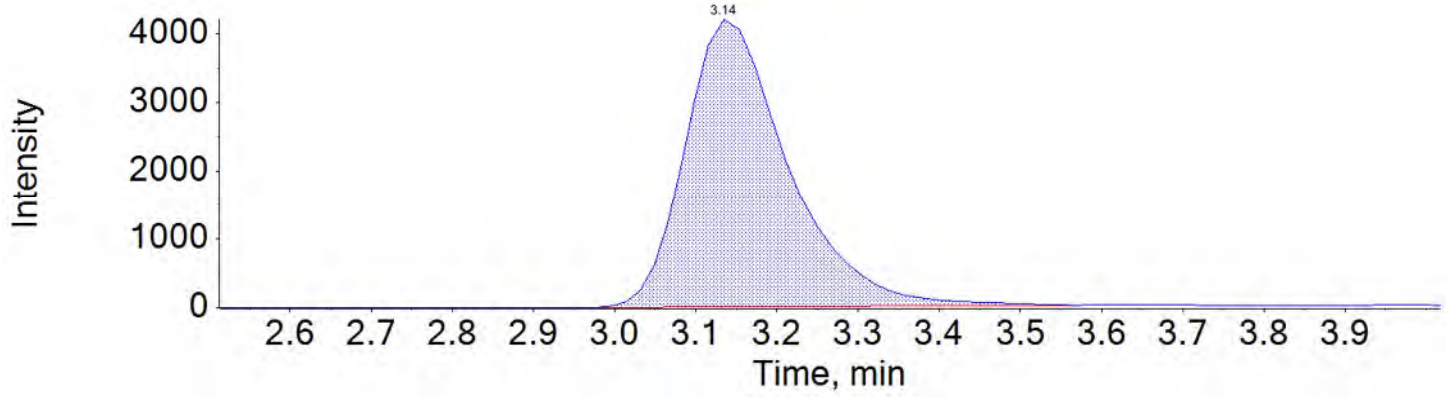
Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Chromatograms

13C2-PFHxA 315.0 / 270.0



13C2-PFDA 515.0 / 470.0

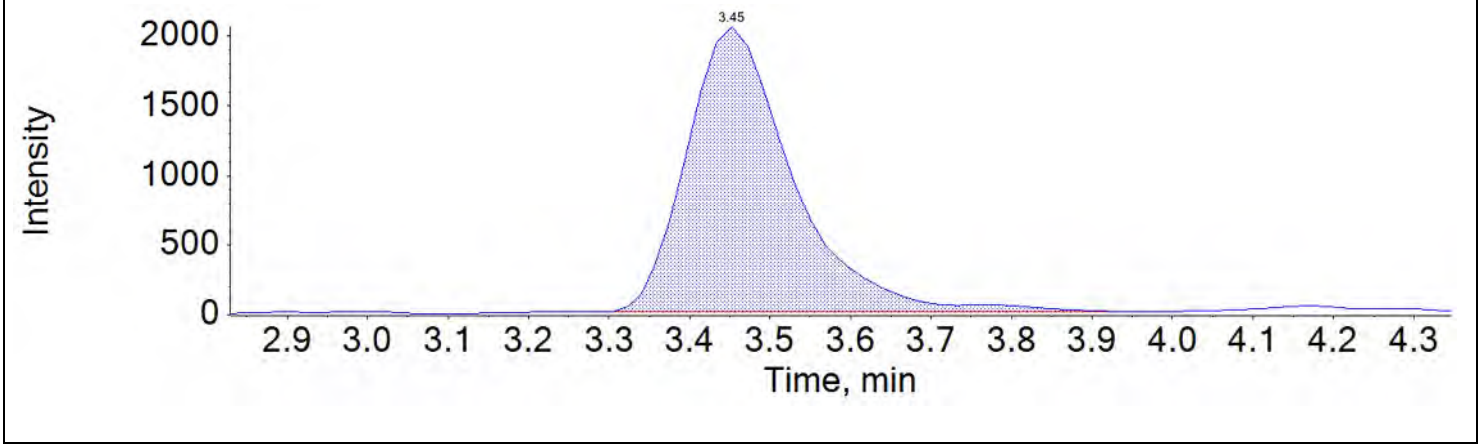


BATTELLE

Chromatogram Report

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Printed: 24/05/2018 10:56:42 AM

d5-EtFOSAA 589.0 / 419.0



Unused Data

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-316			
Battelle ID	J6149-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.255			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	110			
13C2-PFDA	94			
d5-EtFOSAA	103			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-180			
Battelle ID	J6151-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	117			
13C2-PFDA	103			
d5-EtFOSAA	90			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-275			
Battelle ID	J6153-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	113			
13C2-PFDA	103			
d5-EtFOSAA	102			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-145			
Battelle ID	J6155-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	79			
13C2-PFDA	90			
d5-EtFOSAA	93			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-357			
Battelle ID	J6157-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	108			
13C2-PFDA	103			
d5-EtFOSAA	101			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-162			
Battelle ID	J6159-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	113			
13C2-PFDA	98			
d5-EtFOSAA	87			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0800			
Battelle ID	J6161-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.255			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	109			
13C2-PFDA	100			
d5-EtFOSAA	103			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0335			
Battelle ID	J6163-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	107			
d5-EtFOSAA	85			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-3556			
Battelle ID	J6165-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	90			
13C2-PFDA	91			
d5-EtFOSAA	100			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-356			
Battelle ID	J6167-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	116			
13C2-PFDA	98			
d5-EtFOSAA	85			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-289			
Battelle ID	J6169-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	105			
13C2-PFDA	94			
d5-EtFOSAA	95			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Procedural Blank			
Battelle ID	CQ774PB-FS			
Sample Type	PB			
Collection Date	05/15/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	WATER			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	111
13C2-PFDA	108
d5-EtFOSAA	110

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	Laboratory Control Sample					
Battelle ID	CQ775LCS-FS					
Sample Type	LCS					
Collection Date	05/15/2018					
Extraction Date	05/15/2018					
Analysis Date	05/17/2018					
Analytical Instrument	Sciex 5500 LC/MS/MS					
% Moisture	NA					
Matrix	WATER					
Sample Size	0.250					
Size Unit-Basis	L				Control Limits	
Units	ng/L	Target	Recovery	Qual	Lower	Upper
PFHxA	13.47	15.00	90		70	130
PFHpA	13.02	15.00	87		70	130
PFOA	12.71	15.00	85		70	130
PFNA	13.05	15.00	87		70	130
PFDA	12.77	15.00	85		70	130
PFUnA	12.54	15.00	84		70	130
PFDoA	12.83	15.00	86		70	130
PFTrDA	13.89	15.00	93		70	130
PFTeDA	18.68	15.00	125		70	130
NMeFOSAA	14.87	15.00	99		70	130
NEtFOSAA	14.56	15.00	97		70	130
PFBS	12.17	13.28	92		70	130
PFHxS	12.13	14.18	86		70	130
PFOS	11.63	14.33	81		70	130

Surrogate Recoveries (%)

13C2-PFHxA	106
13C2-PFDA	104
d5-EtFOSAA	116

BATTELLE
It can be done

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highers concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the Limit of Quantitation (LOQ)
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Method detection limit (MDL) value, MDL reported

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TETRA TECH

INTERNAL CORRESPONDENCE

TO: **A. FREBOWITZ** **DATE:** **JUNE 8, 2018**

FROM: **TERRI L. SOLOMON** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAS JRB WILLOW GROVE
SAMPLE DELIVERY GROUPS (SDGs) 18-0313, 18-0316

SAMPLES:

SDG 18-0313
12/Drinking Water

NAWC-050718-RW-145	NAWC-050718-RW-162
NAWC-050718-RW-180	NAWC-050718-RW-275
NAWC-050718-RW-289	NAWC-050718-RW-316
NAWC-050718-RW-356	NAWC-050718-RW-357
WGNA-050718-DUP-35	WGNA-050718-RW-0335
WGNA-050718-RW-0800	WGNA-050718-RW-3556

SDG 18-0316
11/Field Reagent Blank (FRB)

NAWC-050718-FRB-145	NAWC-050718-FRB-162
NAWC-050718-FRB-180	NAWC-050718-FRB-275
NAWC-050718-FRB-289	NAWC-050718-FRB-316
NAWC-050718-FRB-356	NAWC-050718-FRB-357
WGNA-050718-FRB-0335	WGNA-050718-FRB-0800
WGNA-050718-FRB-3556	

Overview

The sample sets for NAS JRB Willow Grove, SDGs 18-0313 and 18-0316, consisted of twelve (12) drinking water samples and eleven (11) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorooctane sulfonic acid (PFOS) n-ethylperfluorooctane sulfonamidoacetate (NMeFOSA), n-methylperfluorooctane sulfonamidoacetate (NMeFOSA), perfluorodecanoic acid (PFDA), perfluorododecanoic acid (PFDoA), perfluorohexanoic acid (PFHxA), perfluorotetradecanoic acid (PFTeDA), perfluorotridecanoic acid (PFTrDA) and perfluoroundecanoic acid (PFUnA). One (1) field duplicate pair, NAWC-050718-RW-275 / WGNA-050718-DUP-35 was included in this SDG.

The samples were collected by Tetra Tech on May 7, 2018 and analyzed by Battelle Norwell Operations. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, mass calibration, mass spectral acquisition rate, tune check, instrument sensitivity check, initial/continuing calibrations, ion transition check, laboratory method/FRBs, surrogate spike recoveries (extracted internal standard recoveries), laboratory control sample results, matrix spike / matrix spike duplicate recoveries, injected internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

None.

Minor

The surrogate spike recoveries for 13C2-PFHxA were greater than the 130% quality control limit for samples NAWC-050718-RW-275, NAWC-050718-RW-357, NAWC-050718-RW-162, NAWC-050718-RW-356 and WGNA-050718-DUP-35. The detected results reported in the affected samples were qualified as estimated (J).

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated (J).

Notes

The laboratory uses a primary transition for the quantitation of each analyte and a secondary transition for confirmation.

Samples with detections and their associated FRBs are summarized below. No detected results were present in the FRBs.

Sample	Associated FRB
NAWC-050718-RW-145	NAWC-050718-FRB-145
NAWC-050718-RW-162	NAWC-050718-FRB-162
NAWC-050718-RW-180	NAWC-050718-FRB-180
NAWC-050718-RW-275	NAWC-050718-FRB-275
NAWC-050718-RW-289	NAWC-050718-FRB-289
NAWC-050718-RW-316	NAWC-050718-FRB-316
NAWC-050718-RW-356	NAWC-050718-FRB-356
NAWC-050718-RW-357	NAWC-050718-FRB-357
WGNA-050718-DUP-35	NAWC-050718-FRB-275
WGNA-050718-RW-0335	WGNA-050718-FRB-0335
WGNA-050718-RW-0800	WGNA-050718-FRB-0800
WGNA-050718-RW-3556	WGNA-050718-FRB-3556

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

The buffering agent Trizma was added to all drinking water samples.

Executive Summary

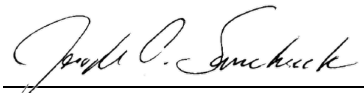
Laboratory Performance: The surrogate recovery for 13C2-PFHxA was above the 130% quality control limit for several samples.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories version 5.1" (2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator



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

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

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-050718-RW-145			NAWC-050718-RW-162			NAWC-050718-RW-180			NAWC-050718-RW-275		
SDG: 18-0313	LAB_ID	J6154-FS			J6158-FS			J6150-FS			J6152-FS		
FRACTION: PFAS	SAMP_DATE	5/7/2018			5/7/2018			5/7/2018			5/7/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		18.64			12.87	J	R	19.77			15.09	J	R
PERFLUOROBUTANESULFONIC ACID (PFBS)		10.27			9.1	J	R	14.92			12.85	J	R
PERFLUORODECANOIC ACID (PFDA)		0.57	J	P	1	U		1	U		1	J	RP
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		6.54			3.94	J	R	8.88			5.44	J	R
PERFLUOROHEXANESULFONIC ACID (PFHXS)		8.56			13.69	J	R	12.68			7.69	J	R
PERFLUOROHEXANOIC ACID (PFHXA)		9.19			6.78	J	R	14.93			10.14	J	R
PERFLUORONONANOIC ACID (PFNA)		2.88			1.83	J	PR	3.33			2.85	J	R
PERFLUOROOCTANESULFONIC ACID (PFOS)		17.04			30.68	J	R	28.97			19.02	J	R
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U		1	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-050718-RW-289			NAWC-050718-RW-316			NAWC-050718-RW-356			NAWC-050718-RW-357		
SDG: 18-0313	LAB_ID	J6168-FS			J6148-FS			J6166-FS			J6156-FS		
FRACTION: PFAS	SAMP_DATE	5/7/2018			5/7/2018			5/7/2018			5/7/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		5.47			16.15			9.45	J	R	11.61	J	R
PERFLUOROBUTANESULFONIC ACID (PFBS)		4.15			6.83			3.18	J	R	7.5	J	R
PERFLUORODECANOIC ACID (PFDA)		1	U		1	U		1	U		0.42	J	PR
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U		1	U	R
PERFLUOROHEPTANOIC ACID (PFHPA)		1.5	J	P	7.04			2.74	J	R	4.28	J	R
PERFLUOROHEXANESULFONIC ACID (PFHXS)		3.75			25.12			3.92	J	R	12.06	J	R
PERFLUOROHEXANOIC ACID (PFHXA)		2.11	J	P	14.7			4.26	J	R	10.06	J	R
PERFLUORONONANOIC ACID (PFNA)		0.94	J	P	2.26	J	P	1.06	J	PR	1.31	J	PR
PERFLUOROOCTANESULFONIC ACID (PFOS)		10.99			32.92			7.94	J	R	9.78	J	R
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U		1	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-050718-DUP-35			WGNA-050718-RW-0335			WGNA-050718-RW-0800			WGNA-050718-RW-3556		
SDG: 18-0313	LAB_ID	J6170-FS			J6162-FS			J6160-FS			J6164-FS		
FRACTION: PFAS	SAMP_DATE	5/7/2018			5/7/2018			5/7/2018			5/7/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	NAWC-050718-RW-275											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		13.21	J	R	22.49			14.73			7.77		
PERFLUOROBUTANESULFONIC ACID (PFBS)		12.58	J	R	11.74			23.13			8.69		
PERFLUORODECANOIC ACID (PFDA)		0.91	J	P	1	U		0.45	J	P	1	U	
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		5.07	J	R	7.28			5.38			3.27		
PERFLUOROHEXANESULFONIC ACID (PFHXS)		7.85	J	R	7.86			9.29			2.38	J	P
PERFLUOROHEXANOIC ACID (PFHXA)		9.11	J	R	12.83			8.53			5.69		
PERFLUORONONANOIC ACID (PFNA)		2.59	J	R	2.8			1.89	J	P	1.26	J	P
PERFLUOROOCTANESULFONIC ACID (PFOS)		19.67	J	R	19.22			19.76			5.94		
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U		1	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-050718-FRB-145			NAWC-050718-FRB-162			NAWC-050718-FRB-180			NAWC-050718-FRB-275		
SDG: 18-0316	LAB_ID	J6155-FS			J6159-FS			J6151-FS			J6153-FS		
FRACTION: PFAS	SAMP_DATE	5/7/2018			5/7/2018			5/7/2018			5/7/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1	U		1	U		1	U		1	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.5	U		0.5	U		0.5	U		0.5	U	
PERFLUORODECANOIC ACID (PFDA)		1	U		1	U		1	U		1	U	
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1	U		1	U		1	U		1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		1	U		1	U		1	U		1	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.5	U		0.5	U		0.5	U		0.5	U	
PERFLUORONONANOIC ACID (PFNA)		1	U		1	U		1	U		1	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		1	U		1	U		1	U		1	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U		1	U	

PROJ_NO: 08005-WE04	NSAMPLE	NAWC-050718-FRB-289			NAWC-050718-FRB-316			NAWC-050718-FRB-356			NAWC-050718-FRB-357		
SDG: 18-0316	LAB_ID	J6169-FS			J6149-FS			J6167-FS			J6157-FS		
FRACTION: PFAS	SAMP_DATE	5/7/2018			5/7/2018			5/7/2018			5/7/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1	U		1	U		1	U		1	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.5	U		0.5	U		0.5	U		0.5	U	
PERFLUORODECANOIC ACID (PFDA)		1	U		1	U		1	U		1	U	
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1	U		1	U		1	U		1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		1	U		1	U		1	U		1	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.5	U		0.5	U		0.5	U		0.5	U	
PERFLUORONONANOIC ACID (PFNA)		1	U		1	U		1	U		1	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		1	U		1	U		1	U		1	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U		1	U	

PROJ_NO: 08005-WE04	NSAMPLE	WGNA-050718-FRB-0335			WGNA-050718-FRB-0800			WGNA-050718-FRB-3556		
SDG: 18-0316	LAB_ID	J6163-FS			J6161-FS			J6165-FS		
FRACTION: PFAS	SAMP_DATE	5/7/2018			5/7/2018			5/7/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		1	U		1	U		1	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1	U		1	U		1	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1	U		1	U		1	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.5	U		0.5	U		0.5	U	
PERFLUORODECANOIC ACID (PFDA)		1	U		1	U		1	U	
PERFLUORODODECANOIC ACID (PFDOA)		1	U		1	U		1	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1	U		1	U		1	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		1	U		1	U		1	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.5	U		0.5	U		0.5	U	
PERFLUORONONANOIC ACID (PFNA)		1	U		1	U		1	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		1	U		1	U		1	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.5	U		1.5	U		1.5	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		1	U		1	U		1	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1	U		1	U		1	U	

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-316			
Battelle ID	J6148-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.285			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	14.70	0.22	0.50	2.50
PFHpA	7.04	0.34	1.00	2.50
PFOA	16.15	0.38	1.00	2.50
PFNA	2.26 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	6.83	0.21	0.50	2.50
PFHxS	25.12	0.34	1.00	2.50
PFOS	32.92	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	104			
13C2-PFPNA	87			
d5-EtFOSAA	90			

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BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-180			
Battelle ID	J6150-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	14.93	0.22	0.50	2.50
PFHpA	8.88	0.34	1.00	2.50
PFOA	19.77	0.38	1.00	2.50
PFNA	3.33	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	14.92	0.21	0.50	2.50
PFHxS	12.68	0.34	1.00	2.50
PFOS	28.97	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	128			
13C2-PFNA	101			
d5-EtFOSAA	98			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-275				
Battelle ID	J6152-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/10/2018				
Analysis Date	05/14/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.280				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	10.14	J	0.22	0.50	2.50
PFHpA	5.44	J	0.34	1.00	2.50
PFOA	15.09	J	0.38	1.00	2.50
PFNA	2.85	J	0.37	1.00	2.50
PFDA	1.00	J	0.39	1.00	2.50
PFUnA	0.38	U	0.38	1.00	2.50
PFDoA	0.42	U	0.42	1.00	2.50
PFTrDA	0.42	U	0.42	1.00	2.50
PFTeDA	0.73	U	0.73	1.50	2.50
NMeFOSAA	0.42	U	0.42	1.00	2.50
NEtFOSAA	0.44	U	0.44	1.00	2.50
PFBS	12.85	J	0.21	0.50	2.50
PFHxS	7.69	J	0.34	1.00	2.50
PFOS	19.02	J	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	138				
13C2-PFNA	114				
d5-EtFOSAA	113				

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-145			
Battelle ID	J6154-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	9.19	0.22	0.50	2.50
PFHpA	6.54	0.34	1.00	2.50
PFOA	18.64	0.38	1.00	2.50
PFNA	2.88	0.37	1.00	2.50
PFDA	0.57 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	10.27	0.21	0.50	2.50
PFHxS	8.56	0.34	1.00	2.50
PFOS	17.04	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	128			
13C2-PFNA	96			
d5-EtFOSAA	98			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-357				
Battelle ID	J6156-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/10/2018				
Analysis Date	05/14/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.270				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	10.06	J	0.22	0.50	2.50
PFHpA	4.28	J	0.34	1.00	2.50
PFOA	11.61	J	0.38	1.00	2.50
PFNA	1.31 J		0.37	1.00	2.50
PFDA	0.42 J		0.39	1.00	2.50
PFUnA	0.38 U		0.38	1.00	2.50
PFDoA	0.42 U		0.42	1.00	2.50
PFTrDA	0.42 U		0.42	1.00	2.50
PFTeDA	0.73 U		0.73	1.50	2.50
NMeFOSAA	0.42 U		0.42	1.00	2.50
NEtFOSAA	0.44 U		0.44	1.00	2.50
PFBS	7.50	J	0.21	0.50	2.50
PFHxS	12.06	J	0.34	1.00	2.50
PFOS	9.78	J	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	137				
13C2-PFNA	108				
d5-EtFOSAA	80				

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-162				
Battelle ID	J6158-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/10/2018				
Analysis Date	05/14/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.280				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	6.78	J	0.22	0.50	2.50
PFHpA	3.94	J	0.34	1.00	2.50
PFOA	12.87	J	0.38	1.00	2.50
PFNA	1.83	J	0.37	1.00	2.50
PFDA	0.39	U	0.39	1.00	2.50
PFUnA	0.38	U	0.38	1.00	2.50
PFDoA	0.42	U	0.42	1.00	2.50
PFTrDA	0.42	U	0.42	1.00	2.50
PFTeDA	0.73	U	0.73	1.50	2.50
NMeFOSAA	0.42	U	0.42	1.00	2.50
NEtFOSAA	0.44	U	0.44	1.00	2.50
PFBS	9.10	J	0.21	0.50	2.50
PFHxS	13.69	J	0.34	1.00	2.50
PFOS	30.68	J	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	132				
13C2-PFNA	95				
d5-EtFOSAA	90				

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-RW-0800			
Battelle ID	J6160-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.285			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	8.53	0.22	0.50	2.50
PFHpA	5.38	0.34	1.00	2.50
PFOA	14.73	0.38	1.00	2.50
PFNA	1.89 J	0.37	1.00	2.50
PFDA	0.45 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	23.13	0.21	0.50	2.50
PFHxS	9.29	0.34	1.00	2.50
PFOS	19.76	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	121			
13C2-PFNA	107			
d5-EtFOSAA	97			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-RW-0335			
Battelle ID	J6162-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	12.83	0.22	0.50	2.50
PFHpA	7.28	0.34	1.00	2.50
PFOA	22.49	0.38	1.00	2.50
PFNA	2.80	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	11.74	0.21	0.50	2.50
PFHxS	7.86	0.34	1.00	2.50
PFOS	19.22	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	126			
13C2-PFNA	92			
d5-EtFOSAA	89			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-RW-3556				
Battelle ID	J6164-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/10/2018				
Analysis Date	05/14/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.260				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	5.69	J	0.22	0.50	2.50
PFHpA	3.27	J	0.34	1.00	2.50
PFOA	7.77	J	0.38	1.00	2.50
PFNA	1.26 J		0.37	1.00	2.50
PFDA	0.39 U		0.39	1.00	2.50
PFUnA	0.38 U		0.38	1.00	2.50
PFDoA	0.42 U		0.42	1.00	2.50
PFTrDA	0.42 U		0.42	1.00	2.50
PFTeDA	0.73 U		0.73	1.50	2.50
NMeFOSAA	0.42 U		0.42	1.00	2.50
NEtFOSAA	0.44 U		0.44	1.00	2.50
PFBS	8.69	J	0.21	0.50	2.50
PFHxS	2.38 J		0.34	1.00	2.50
PFOS	5.94	J	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	117				
13C2-PFNA	83				
d5-EtFOSAA	91				

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-356			
Battelle ID	J6166-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.275			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	4.26	0.22	0.50	2.50
PFHpA	2.74	0.34	1.00	2.50
PFOA	9.45	0.38	1.00	2.50
PFNA	1.06 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	3.18	0.21	0.50	2.50
PFHxS	3.92	0.34	1.00	2.50
PFOS	7.94	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	132			
13C2-PFNA	109			
d5-EtFOSAA	105			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-289			
Battelle ID	J6168-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	2.11 J	0.22	0.50	2.50
PFHpA	1.50 J	0.34	1.00	2.50
PFOA	5.47	0.38	1.00	2.50
PFNA	0.94 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	4.15	0.21	0.50	2.50
PFHxS	3.75	0.34	1.00	2.50
PFOS	10.99	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	112			
13C2-PFNA	94			
d5-EtFOSAA	93			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-DUP-35				
Battelle ID	J6170-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/10/2018				
Analysis Date	05/14/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.280				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	9.11	J	0.22	0.50	2.50
PFHpA	5.07	J	0.34	1.00	2.50
PFOA	13.21	J	0.38	1.00	2.50
PFNA	2.59	J	0.37	1.00	2.50
PFDA	0.91	J	0.39	1.00	2.50
PFUnA	0.38	U	0.38	1.00	2.50
PFDoA	0.42	U	0.42	1.00	2.50
PFTrDA	0.42	U	0.42	1.00	2.50
PFTeDA	0.73	U	0.73	1.50	2.50
NMeFOSAA	0.42	U	0.42	1.00	2.50
NEtFOSAA	0.44	U	0.44	1.00	2.50
PFBS	12.58	J	0.21	0.50	2.50
PFHxS	7.85	J	0.34	1.00	2.50
PFOS	19.67	J	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	134				
13C2-PFNA	105				
d5-EtFOSAA	110				

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-316			
Battelle ID	J6149-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.255			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	110			
13C2-PFDA	94			
d5-EtFOSAA	103			

06/08/2018

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-180			
Battelle ID	J6151-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	117			
13C2-PFDA	103			
d5-EtFOSAA	90			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-275			
Battelle ID	J6153-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	113			
13C2-PFDA	103			
d5-EtFOSAA	102			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-145			
Battelle ID	J6155-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	79			
13C2-PFDA	90			
d5-EtFOSAA	93			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-357			
Battelle ID	J6157-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	108			
13C2-PFDA	103			
d5-EtFOSAA	101			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-162			
Battelle ID	J6159-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	113			
13C2-PFDA	98			
d5-EtFOSAA	87			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

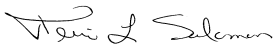
Client ID	WGNA-050718-FRB-0800			
Battelle ID	J6161-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.255			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	109			
13C2-PFDA	100			
d5-EtFOSAA	103			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0335			
Battelle ID	J6163-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	107			
d5-EtFOSAA	85			



06/08/2018

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-3556
Battelle ID	J6165-FS
Sample Type	SA
Collection Date	05/07/2018
Extraction Date	05/15/2018
Analysis Date	05/17/2018
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	DW
Sample Size	0.250
Size Unit-Basis	L

Units	ng/L		MDL	LOD	LOQ
PFHxA	0.22	U	0.22	0.50	2.50
PFHpA	0.34	U	0.34	1.00	2.50
PFOA	0.38	U	0.38	1.00	2.50
PFNA	0.37	U	0.37	1.00	2.50
PFDA	0.39	U	0.39	1.00	2.50
PFUnA	0.38	U	0.38	1.00	2.50
PFDoA	0.42	U	0.42	1.00	2.50
PFTrDA	0.42	U	0.42	1.00	2.50
PFTeDA	0.73	U	0.73	1.50	2.50
NMeFOSAA	0.42	U	0.42	1.00	2.50
NEtFOSAA	0.44	U	0.44	1.00	2.50
PFBS	0.21	U	0.21	0.50	2.50
PFHxS	0.34	U	0.34	1.00	2.50
PFOS	0.30	U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	90
13C2-PFDA	91
d5-EtFOSAA	100

06/08/2018

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-356			
Battelle ID	J6167-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	116			
13C2-PFDA	98			
d5-EtFOSAA	85			

06/08/2018

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-289			
Battelle ID	J6169-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	105			
13C2-PFDA	94			
d5-EtFOSAA	95			

06/08/2018

Appendix B

Results as Reported by the Laboratory

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-316			
Battelle ID	J6148-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.285			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	14.70	0.22	0.50	2.50
PFHpA	7.04	0.34	1.00	2.50
PFOA	16.15	0.38	1.00	2.50
PFNA	2.26 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	6.83	0.21	0.50	2.50
PFHxS	25.12	0.34	1.00	2.50
PFOS	32.92	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	104			
13C2-PFPNA	87			
d5-EtFOSAA	90			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-180			
Battelle ID	J6150-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	14.93	0.22	0.50	2.50
PFHpA	8.88	0.34	1.00	2.50
PFOA	19.77	0.38	1.00	2.50
PFNA	3.33	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	14.92	0.21	0.50	2.50
PFHxS	12.68	0.34	1.00	2.50
PFOS	28.97	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	128			
13C2-PFNA	101			
d5-EtFOSAA	98			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-275			
Battelle ID	J6152-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	10.14	0.22	0.50	2.50
PFHpA	5.44	0.34	1.00	2.50
PFOA	15.09	0.38	1.00	2.50
PFNA	2.85	0.37	1.00	2.50
PFDA	1.00 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	12.85	0.21	0.50	2.50
PFHxS	7.69	0.34	1.00	2.50
PFOS	19.02	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	138			
13C2-PFNA	114			
d5-EtFOSAA	113			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-145			
Battelle ID	J6154-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	9.19	0.22	0.50	2.50
PFHpA	6.54	0.34	1.00	2.50
PFOA	18.64	0.38	1.00	2.50
PFNA	2.88	0.37	1.00	2.50
PFDA	0.57 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	10.27	0.21	0.50	2.50
PFHxS	8.56	0.34	1.00	2.50
PFOS	17.04	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	128			
13C2-PFNA	96			
d5-EtFOSAA	98			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-357			
Battelle ID	J6156-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	10.06	0.22	0.50	2.50
PFHpA	4.28	0.34	1.00	2.50
PFOA	11.61	0.38	1.00	2.50
PFNA	1.31 J	0.37	1.00	2.50
PFDA	0.42 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	7.50	0.21	0.50	2.50
PFHxS	12.06	0.34	1.00	2.50
PFOS	9.78	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	137			
13C2-PFNA	108			
d5-EtFOSAA	80			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-162			
Battelle ID	J6158-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	6.78	0.22	0.50	2.50
PFHpA	3.94	0.34	1.00	2.50
PFOA	12.87	0.38	1.00	2.50
PFNA	1.83 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	9.10	0.21	0.50	2.50
PFHxS	13.69	0.34	1.00	2.50
PFOS	30.68	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	132			
13C2-PFNA	95			
d5-EtFOSAA	90			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-RW-0800			
Battelle ID	J6160-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.285			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	8.53	0.22	0.50	2.50
PFHpA	5.38	0.34	1.00	2.50
PFOA	14.73	0.38	1.00	2.50
PFNA	1.89 J	0.37	1.00	2.50
PFDA	0.45 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	23.13	0.21	0.50	2.50
PFHxS	9.29	0.34	1.00	2.50
PFOS	19.76	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	121			
13C2-PFNA	107			
d5-EtFOSAA	97			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-RW-0335			
Battelle ID	J6162-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.270			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	12.83	0.22	0.50	2.50
PFHpA	7.28	0.34	1.00	2.50
PFOA	22.49	0.38	1.00	2.50
PFNA	2.80	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	11.74	0.21	0.50	2.50
PFHxS	7.86	0.34	1.00	2.50
PFOS	19.22	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	126			
13C2-PFNA	92			
d5-EtFOSAA	89			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-RW-3556			
Battelle ID	J6164-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.260			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	5.69	0.22	0.50	2.50
PFHpA	3.27	0.34	1.00	2.50
PFOA	7.77	0.38	1.00	2.50
PFNA	1.26 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	8.69	0.21	0.50	2.50
PFHxS	2.38 J	0.34	1.00	2.50
PFOS	5.94	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	117			
13C2-PFNA	83			
d5-EtFOSAA	91			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-356			
Battelle ID	J6166-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.275			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	4.26	0.22	0.50	2.50
PFHpA	2.74	0.34	1.00	2.50
PFOA	9.45	0.38	1.00	2.50
PFNA	1.06 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	3.18	0.21	0.50	2.50
PFHxS	3.92	0.34	1.00	2.50
PFOS	7.94	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	132			
13C2-PFNA	109			
d5-EtFOSAA	105			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	NAWC-050718-RW-289			
Battelle ID	J6168-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	2.11 J	0.22	0.50	2.50
PFHpA	1.50 J	0.34	1.00	2.50
PFOA	5.47	0.38	1.00	2.50
PFNA	0.94 J	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	4.15	0.21	0.50	2.50
PFHxS	3.75	0.34	1.00	2.50
PFOS	10.99	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	112			
13C2-PFNA	94			
d5-EtFOSAA	93			

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	WGNA-050718-DUP-35			
Battelle ID	J6170-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.280			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	9.11	0.22	0.50	2.50
PFHpA	5.07	0.34	1.00	2.50
PFOA	13.21	0.38	1.00	2.50
PFNA	2.59	0.37	1.00	2.50
PFDA	0.91 J	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	12.58	0.21	0.50	2.50
PFHxS	7.85	0.34	1.00	2.50
PFOS	19.67	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	134			
13C2-PFNA	105			
d5-EtFOSAA	110			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-316
Battelle ID	J6149-FS
Sample Type	SA
Collection Date	05/07/2018
Extraction Date	05/15/2018
Analysis Date	05/17/2018
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	DW
Sample Size	0.255
Size Unit-Basis	L

Units	ng/L		MDL	LOD	LOQ
PFHxA	0.22	U	0.22	0.50	2.50
PFHpA	0.34	U	0.34	1.00	2.50
PFOA	0.38	U	0.38	1.00	2.50
PFNA	0.37	U	0.37	1.00	2.50
PFDA	0.39	U	0.39	1.00	2.50
PFUnA	0.38	U	0.38	1.00	2.50
PFDoA	0.42	U	0.42	1.00	2.50
PFTrDA	0.42	U	0.42	1.00	2.50
PFTeDA	0.73	U	0.73	1.50	2.50
NMeFOSAA	0.42	U	0.42	1.00	2.50
NEtFOSAA	0.44	U	0.44	1.00	2.50
PFBS	0.21	U	0.21	0.50	2.50
PFHxS	0.34	U	0.34	1.00	2.50
PFOS	0.30	U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	110
13C2-PFDA	94
d5-EtFOSAA	103

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-180			
Battelle ID	J6151-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	117			
13C2-PFDA	103			
d5-EtFOSAA	90			

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-275			
Battelle ID	J6153-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	113			
13C2-PFDA	103			
d5-EtFOSAA	102			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-145			
Battelle ID	J6155-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	79			
13C2-PFDA	90			
d5-EtFOSAA	93			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-357				
Battelle ID	J6157-FS				
Sample Type	SA				
Collection Date	05/07/2018				
Extraction Date	05/15/2018				
Analysis Date	05/17/2018				
Analytical Instrument	Sciex 5500 LC/MS/MS				
% Moisture	NA				
Matrix	DW				
Sample Size	0.250				
Size Unit-Basis	L				
Units	ng/L		MDL	LOD	LOQ
PFHxA	0.22	U	0.22	0.50	2.50
PFHpA	0.34	U	0.34	1.00	2.50
PFOA	0.38	U	0.38	1.00	2.50
PFNA	0.37	U	0.37	1.00	2.50
PFDA	0.39	U	0.39	1.00	2.50
PFUnA	0.38	U	0.38	1.00	2.50
PFDoA	0.42	U	0.42	1.00	2.50
PFTrDA	0.42	U	0.42	1.00	2.50
PFTeDA	0.73	U	0.73	1.50	2.50
NMeFOSAA	0.42	U	0.42	1.00	2.50
NEtFOSAA	0.44	U	0.44	1.00	2.50
PFBS	0.21	U	0.21	0.50	2.50
PFHxS	0.34	U	0.34	1.00	2.50
PFOS	0.30	U	0.30	1.00	2.50
Surrogate Recoveries (%)					
13C2-PFHxA	108				
13C2-PFDA	103				
d5-EtFOSAA	101				

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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-162			
Battelle ID	J6159-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	113			
13C2-PFDA	98			
d5-EtFOSAA	87			

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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0800			
Battelle ID	J6161-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.255			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	109			
13C2-PFDA	100			
d5-EtFOSAA	103			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-0335			
Battelle ID	J6163-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	115			
13C2-PFDA	107			
d5-EtFOSAA	85			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	WGNA-050718-FRB-3556			
Battelle ID	J6165-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	90			
13C2-PFDA	91			
d5-EtFOSAA	100			

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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-356			
Battelle ID	J6167-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	116			
13C2-PFDA	98			
d5-EtFOSAA	85			

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Client ID	NAWC-050718-FRB-289			
Battelle ID	J6169-FS			
Sample Type	SA			
Collection Date	05/07/2018			
Extraction Date	05/15/2018			
Analysis Date	05/17/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	DW			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50
Surrogate Recoveries (%)				
13C2-PFHxA	105			
13C2-PFDA	94			
d5-EtFOSAA	95			

Appendix C

Support Documentation

ANALYTE	ORIGINAL 050718-RW-275	DUPLICATE 050718-DUP-35	RL	RPD	RPD > 50%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
PENTADECAFLUOROOCTANOIC ACID (PFOA)	15.09	13.21	2.5	13.286	FALSE	TRUE	TRUE	FALSE
PERFLUOROBUTANESULFONIC ACID (PFBS)	12.85	12.58	2.5	2.123	FALSE	TRUE	TRUE	FALSE
PERFLUORODECANOIC ACID (PFDA)	1	0.91	2.5	9.424	FALSE	FALSE	FALSE	FALSE
PERFLUOROHEPTANOIC ACID (PFHPA)	5.44	5.07	2.5	7.041	FALSE	TRUE	TRUE	FALSE
PERFLUOROHEXANESULFONIC ACID (PFHXS)	7.69	7.85	2.5	2.059	FALSE	TRUE	TRUE	FALSE
PERFLUOROHEXANOIC ACID (PFHXA)	10.14	9.11	2.5	10.701	FALSE	TRUE	TRUE	FALSE
PERFLUORONONANOIC ACID (PFNA)	2.85	2.59	2.5	9.559	FALSE	FALSE	FALSE	FALSE
PERFLUOROOCTANESULFONIC ACID (PFOS)	19.02	19.67	2.5	3.360	FALSE	TRUE	TRUE	FALSE

Battelle

The Business of Innovation

Chain-of-Custody

Client Contact Information
Andy Frebowitz
234 Mall Boulevard, Suite 260
King of Prussia, PA 19406
610-382-1170

Project Manager: Jonathan Thorn
Sampler Information (print name): Mary Kay Bond
Phone: 610-382-1169
Email: mary.bond@tetratech.com
Turnaround Time (TAT) Requested: 21 days
Normal ☑ Priority ☐ RUSH ☐
Time Zone: Eastern

Project Name: WE04
Project No.: 112G08005-WE04

Sampling Site: WE04

Site Information: NAS JRB Willow Grove/NAWC Warminster

COC #

Page# 1 of 1

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Preservation: Trizma	Analysis: PFAS EPA 537 14 analytes	
NAWC-050718-RW-316 J6148	5/7/2018	10:10	G	DW	2		X	
NAWC-050718-FRB-316 J6149	5/7/2018	10:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-180 J6150	5/7/2018	10:40	G	DW	2		X	
NAWC-050718-FRB-180 J6151	5/7/2018	10:35	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-275 J6152	5/7/2018	11:10	G	DW	2		X	
NAWC-050718-FRB-275 J6153	5/7/2018	11:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-145 J6154	5/7/2018	12:40	G	DW	2		X	
NAWC-050718-FRB-145 J6155	5/7/2018	12:35	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-357 J6156	5/7/2018	13:10	G	DW	2		X	
NAWC-050718-FRB-357 J6157	5/7/2018	13:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-162 J6158	5/7/2018	13:40	G	DW	2		X	
NAWC-050718-FRB-162 J6159	5/7/2018	13:35	G	DW	2		X	Field Reagent Blank
WGNA-050718-RW-0800 J6160	5/7/2018	14:10	G	DW	2		X	
WGNA-050718-FRB-0800 J6161	5/7/2018	14:05	G	DW	2		X	Field Reagent Blank
WGNA-050718-RW-0335 J6162	5/7/2018	14:40	G	DW	2		X	
WGNA-050718-FRB-0335 J6163	5/7/2018	14:35	G	DW	2		X	Field Reagent Blank
WGNA-050718-RW-3556 J6164	5/7/2018	15:10	G	DW	2		X	
WGNA-050718-FRB-3556 J6165	5/7/2018	15:05	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-356 J6166	5/7/2018	15:40	G	DW	2		X	
NAWC-050718-FRB-356 J6167	5/7/2018	15:35	G	DW	2		X	Field Reagent Blank
NAWC-050718-RW-289 J6168	5/7/2018	16:10	G	DW	2		X	
NAWC-050718-FRB-289 J6169	5/7/2018	16:05	G	DW	2		X	Field Reagent Blank
WGNA-050718-DUP-35 J6170	5/7/2018	7:00	G	DW	2		X	Duplicate

Receipt Temperature:(°C): 0.9 , 1.2

Samples Intact: Yes - No

Samples on Ice: Yes - No

Receipt Comments:

Relinquished by (Print/Sign):	Company:	Date/Time:	Received by (Print/Sign):	Company:	Date/Time:
Mary Kay Bond	Tetra Tech	05/07/2018 16:00	Matt Schmitz	Battelle	5/8/18 1030

Comments: FedEx Tracking #7721 6462 7152

QA/QC Summary
Batch 18-0313

Project:	CTO-WE04 Naval Air Station Joint Reserve Base Willow Grove
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	DW
Data Set:	DP-18-0112
Analytical SOP:	5-371
Method Reference:	USEPA 537 rev. 1.1, QSM 5.1

Sample Custody

Collection Date	Receipt Date	Temp (°C)
5/7/2018	5/8/2018	0.9, 1.2

Corrective Actions	None
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	FRB samples associated with these samples are extracted in SDG 18-0316

METHOD SUMMARIES

Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with methanol. Extracts were split and concentrated to dryness under nitrogen with a water bath set between 60 °C and 65 °C, reconstituted with 96:4 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	None.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on the Sciex 5500. The confirmation ion ratio was above 50% RPD for the following samples and analytes: NAWC-050718-RW-316 for PFOA and PFDA NAWC-050718-RW-357 for PFOA NAWC-050718-RW-162 for PFDA WGNA-050718-RW-0335 for PFOA WGNA-050718-RW-3556 for PFHpA and PFOA NAWC -050718-RW-356 for PFOA and PFDA NAWC -050718-RW-289 for PFOA

	Extraction Date(s)	Analysis Date(s)
Holding Times	5/10/2018	5/14/2018

QA/QC Summary
Batch 18-0313

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ 1/3 the MRL	No exceedances noted.
	No comments.
Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
70-130% of true value	No exceedances noted.
	No comments.

Matrix Spike (MS) / Duplicate (MSD)	A MS/MSD were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. The relative percent difference was calculated to measure precision.
70-130% of true value, RPD ≤ 30%	No exceedances noted.
	MS/MSD samples were not collected for this SDG.

Surrogates Standard Analytes	Labelled surrogate compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
70-130% of true value	No exceedances noted.
	No Comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
ICal high and low points RPD ≤20%, 50-150% of average area of the ICAL and 70-140% of most recent CCV	No exceedances noted.
	No Comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
R^2 >0.99 Target and SIS compounds +/- 30% of true value, Low point 50-150% of true value	No exceedances noted.
	No comments.

QA/QC Summary
Batch 18-0313

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
Target and SIS compounds +/- 30% of true value	No exceedances noted.
	No comments.
Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
Target and SIS compounds +/- 30% of true value Low point 50-150% of true value	No exceedances noted.
	No comments.

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BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	Naval Air Station Joint Reserve Base Wi	**Data Set Number:**	DP-18-0112
Project Number:	100117920-WE04	**Prep Batch Number:**	18-0313
Entered By:	Denise Schumitz	**Entered On:**	05/17/2018
Test Code (Matrix Type):	Master_371(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
DMS 6/21/2018

JV64 is not being used in the calibration curve for PFHxA, PFOA, PFDA, and PFTeDA. There is no impact on the data once this point is removed from the calibration.
DMS 6/21/2018

JV65 is not bing used in the calibration curve for PFHxA and PFDA. There is no impact on the data once this point is removed from the calibration.
DMS 6/21/2018

JV64 has an ion ratio <50% for NMeFOSAA and PFUnA.
DMS 6/21/2018

Sample J6164 has an ion ratio <50% for PFHpA.
DMS 6/21/2018

Samples J6148, J6156, J6162, J6164, J6166 and J6168 have an ion ratio <50% for PFOA.
DMS 6/21/2018

Sample J6148, J6158 an dJ6166 have an ion ratio <50% for PFDA.
DMS 6/21/2018

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.05.27 12:05:59 -04'00'

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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Number: 100117920-WE04
Preparation Batch: 18-0313
Data Set: DP-18-0112
Test Code: Master_371

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	0	None
Matrix Spike / Matrix Spike Duplicate Recovery	NA	None
Matrix Spike / Matrix Spike Duplicate Precision	NA	None
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	NA	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

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BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0313

WE04 PFAS Analysis

DW

Sample ID	Description
CQ755PB-FS	Procedural Blank
CQ756LCS-FS	Laboratory Control Sample
J6148-FS	NAWC-050718-RW-316
J6150-FS	NAWC-050718-RW-180
J6152-FS	NAWC-050718-RW-275
J6154-FS	NAWC-050718-RW-145
J6156-FS	NAWC-050718-RW-357
J6158-FS	NAWC-050718-RW-162
J6160-FS	WGNA-050718-RW-0800
J6162-FS	WGNA-050718-RW-0335
J6164-FS	WGNA-050718-RW-3556
J6166-FS	NAWC-050718-RW-356
J6168-FS	NAWC-050718-RW-289
J6170-FS	WGNA-050718-DUP-35

Samples Assigned By: Stephanie Schultz Date : May 9, 2018

Comments:

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04
Preparation Batch: 18-0313
Data Set: DP-18-0112

	CQ755PB-FS (Procedural Blank)	CQ756LCS-FS (Laboratory Control Sample)	J6148-FS (NAWC-050718-RW-316)	J6150-FS (NAWC-050718-RW-180)	J6152-FS (NAWC-050718-RW-275)	J6154-FS (NAWC-050718-RW-145)
PFHxA	-	L	L	L	L	L
PFHpA	-	L	L	L	L	L
PFOA	-	L	L	L	L	L
PFNA	-	L	L	L	L	L
PFDA	-	L	-	-	L	L
PFUnA	-	L	-	-	-	-
PFDoA	-	L	-	-	-	-
PFTrDA	-	L	-	-	-	-
PFTeDA	-	L	-	-	-	-
NMeFOSAA	-	L	-	-	-	-
NEtFOSAA	-	L	-	-	-	-
PFBS	-	L	L	L	L	L
PFHxS	-	L	L	L	L	L
PFOS	-	L	L/Br	L/Br	L/Br	L/Br

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04
Preparation Batch: 18-0313
Data Set: DP-18-0

	J6156-FS (NAWC-050718-RW-357)	J6158-FS (NAWC-050718-RW-162)	J6160-FS (WGNA-050718-RW-0800)	J6162-FS (WGNA-050718-RW-0335)	J6164-FS (WGNA-050718-RW-3556)	J6166-FS (NAWC-050718-RW-356)	J6168-FS (NAWC-050718-RW-289)	J6170-FS (WGNA-050718-DUP-35)
PFHxA	L	L	L	L	L	L	L	L
PFHpA	L	L	L	L	L	L	L	L
PFOA	L	L	L	L	L	L	L	L
PFNA	L	L	L	L	L	L	L	L
PFDA	L	L	L	L	L	L	L	L
PFUnA	-	-	-	-	-	-	-	-
PFDoA	-	-	-	-	-	-	-	-
PFTrDA	-	-	-	-	-	-	-	-
PFTeDA	-	-	-	-	-	-	-	-
NMeFOSAA	-	-	-	-	-	-	-	-
NEtFOSAA	-	-	-	-	-	-	-	-
PFBS	L	L	L	L	L	L	L	L
PFHxS	L	L	L	L	L	L	L	L
PFOS	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

BATTELLE
It can be done

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	Procedural Blank			
Battelle ID	CQ755PB-FS			
Sample Type	PB			
Collection Date	05/10/2018			
Extraction Date	05/10/2018			
Analysis Date	05/14/2018			
Analytical Instrument	Sciex 5500 LC/MS/MS			
% Moisture	NA			
Matrix	WATER			
Sample Size	0.250			
Size Unit-Basis	L			
Units	ng/L	MDL	LOD	LOQ
PFHxA	0.22 U	0.22	0.50	2.50
PFHpA	0.34 U	0.34	1.00	2.50
PFOA	0.38 U	0.38	1.00	2.50
PFNA	0.37 U	0.37	1.00	2.50
PFDA	0.39 U	0.39	1.00	2.50
PFUnA	0.38 U	0.38	1.00	2.50
PFDoA	0.42 U	0.42	1.00	2.50
PFTrDA	0.42 U	0.42	1.00	2.50
PFTeDA	0.73 U	0.73	1.50	2.50
NMeFOSAA	0.42 U	0.42	1.00	2.50
NEtFOSAA	0.44 U	0.44	1.00	2.50
PFBS	0.21 U	0.21	0.50	2.50
PFHxS	0.34 U	0.34	1.00	2.50
PFOS	0.30 U	0.30	1.00	2.50

Surrogate Recoveries (%)

13C2-PFHxA	107
13C2-PFDA	108
d5-EtFOSAA	91

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Client ID	Laboratory Control Sample					
Battelle ID	CQ756LCS-FS					
Sample Type	LCS					
Collection Date	05/10/2018					
Extraction Date	05/10/2018					
Analysis Date	05/14/2018					
Analytical Instrument	Sciex 5500 LC/MS/MS					
% Moisture	NA					
Matrix	WATER					
Sample Size	0.250					
Size Unit-Basis	L				Control Limits	
Units	ng/L	Target	Recovery	Qual	Lower	Upper
PFHxA	16.05	15.00	107		70	130
PFHpA	14.89	15.00	99		70	130
PFOA	15.17	15.00	101		70	130
PFNA	15.73	15.00	105		70	130
PFDA	15.51	15.00	103		70	130
PFUnA	14.75	15.00	98		70	130
PFDoA	14.90	15.00	99		70	130
PFTrDA	14.59	15.00	97		70	130
PFTeDA	16.76	15.00	112		70	130
NMeFOSAA	17.70	15.00	118		70	130
NEtFOSAA	16.48	15.00	110		70	130
PFBS	14.28	13.28	108		70	130
PFHxS	15.14	14.18	107		70	130
PFOS	13.81	14.33	96		70	130
Surrogate Recoveries (%)						
13C2-PFHxA	105					
13C2-PFDA	104					
d5-EtFOSAA	95					

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/14/18 11:29	13C2-PFOA	34,698.30	-	
JV65	L2	5/14/18 11:38	13C2-PFOA	33,573.03	-	
JV66	L3	5/14/18 11:47	13C2-PFOA	29,649.37	-	
JV67	L4	5/14/18 11:56	13C2-PFOA	41,395.56	-	
JV68	L5	5/14/18 12:05	13C2-PFOA	30,280.34	-	
JV69	L6	5/14/18 12:14	13C2-PFOA	37,534.68	-	
JV70	L7	5/14/18 12:23	13C2-PFOA	29,423.02	-	
JV71	L8	5/14/18 12:32	13C2-PFOA	39,891.91	-	
JV72	L9	5/14/18 12:41	13C2-PFOA	40,992.20	16.6	PASS

Average	Lower	Upper
35,270.93	17,635.47	52,906.40

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/14/18 11:29	13C2-PFOA	34,698.30	17,635.47	52,906.40		21,196.24	42,392.48	
JV65	L2	5/14/18 11:38	13C2-PFOA	33,573.03	17,635.47	52,906.40		21,196.24	42,392.48	
JV66	L3	5/14/18 11:47	13C2-PFOA	29,649.37	17,635.47	52,906.40		21,196.24	42,392.48	
JV67	L4	5/14/18 11:56	13C2-PFOA	41,395.56	17,635.47	52,906.40		21,196.24	42,392.48	
JV68	L5	5/14/18 12:05	13C2-PFOA	30,280.34	17,635.47	52,906.40		21,196.24	42,392.48	
JV69	L6	5/14/18 12:14	13C2-PFOA	37,534.68	17,635.47	52,906.40		21,196.24	42,392.48	
JV70	L7	5/14/18 12:23	13C2-PFOA	29,423.02	17,635.47	52,906.40		21,196.24	42,392.48	
JV71	L8	5/14/18 12:32	13C2-PFOA	39,891.91	17,635.47	52,906.40		21,196.24	42,392.48	
JV72	L9	5/14/18 12:41	13C2-PFOA	40,992.20	17,635.47	52,906.40		21,196.24	42,392.48	
JV63 ICC	ICC	5/14/18 12:50	13C2-PFOA	37,388.34	17,635.47	52,906.40		21,196.24	42,392.48	
CQ755PB-FS(0)	Procedural Blank	5/14/18 13:08	13C2-PFOA	35,848.65	17,635.47	52,906.40		21,196.24	42,392.48	
CQ756LCS-FS(0)	Laboratory Control Sample	5/14/18 13:17	13C2-PFOA	29,877.62	17,635.47	52,906.40		21,196.24	42,392.48	
J6148-FS(0)	NAWC-050718-RW-316	5/14/18 13:26	13C2-PFOA	36,858.30	17,635.47	52,906.40		21,196.24	42,392.48	
J6150-FS(0)	NAWC-050718-RW-180	5/14/18 13:35	13C2-PFOA	34,064.10	17,635.47	52,906.40		21,196.24	42,392.48	
J6152-FS(0)	NAWC-050718-RW-275	5/14/18 13:43	13C2-PFOA	24,285.52	17,635.47	52,906.40		21,196.24	42,392.48	
J6154-FS(0)	NAWC-050718-RW-145	5/14/18 13:52	13C2-PFOA	33,518.97	17,635.47	52,906.40		21,196.24	42,392.48	
J6156-FS(0)	NAWC-050718-RW-357	5/14/18 14:01	13C2-PFOA	24,248.05	17,635.47	52,906.40		21,196.24	42,392.48	
J6158-FS(0)	NAWC-050718-RW-162	5/14/18 14:10	13C2-PFOA	35,845.05	17,635.47	52,906.40		21,196.24	42,392.48	
JV69 CCV	CCV	5/14/18 14:19	13C2-PFOA	37,224.64	17,635.47	52,906.40		21,196.24	42,392.48	
J6160-FS(0)	WGNA-050718-RW-0800	5/14/18 14:37	13C2-PFOA	31,443.44	17,635.47	52,906.40		26,057.25	52,114.50	
J6162-FS(0)	WGNA-050718-RW-0335	5/14/18 14:46	13C2-PFOA	37,992.76	17,635.47	52,906.40		26,057.25	52,114.50	
J6164-FS(0)	WGNA-050718-RW-3556	5/14/18 14:55	13C2-PFOA	30,729.65	17,635.47	52,906.40		26,057.25	52,114.50	
J6166-FS(0)	NAWC-050718-RW-356	5/14/18 15:04	13C2-PFOA	27,240.70	17,635.47	52,906.40		26,057.25	52,114.50	
J6168-FS(0)	NAWC-050718-RW-289	5/14/18 15:13	13C2-PFOA	34,960.30	17,635.47	52,906.40		26,057.25	52,114.50	
J6170-FS(0)	WGNA-050718-DUP-35	5/14/18 15:22	13C2-PFOA	31,796.45	17,635.47	52,906.40		26,057.25	52,114.50	
JV68 CCV	CCV	5/14/18 15:30	13C2-PFOA	37,508.63	17,635.47	52,906.40		26,057.25	52,114.50	

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/14/18 11:29	13C4-PFOS	104,334.94	-	
JV65	L2	5/14/18 11:38	13C4-PFOS	98,871.27	-	
JV66	L3	5/14/18 11:47	13C4-PFOS	90,792.83	-	
JV67	L4	5/14/18 11:56	13C4-PFOS	116,199.13	-	
JV68	L5	5/14/18 12:05	13C4-PFOS	92,291.39	-	
JV69	L6	5/14/18 12:14	13C4-PFOS	111,784.92	-	
JV70	L7	5/14/18 12:23	13C4-PFOS	88,194.77	-	
JV71	L8	5/14/18 12:32	13C4-PFOS	110,166.97	-	
JV72	L9	5/14/18 12:41	13C4-PFOS	116,123.32	10.7	PASS

Average	Lower	Upper
103,195.50	51,597.75	154,793.25

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/14/18 11:29	13C4-PFOS	104,334.94	51,597.75	154,793.25		64,603.97	129,207.95	
JV65	L2	5/14/18 11:38	13C4-PFOS	98,871.27	51,597.75	154,793.25		64,603.97	129,207.95	
JV66	L3	5/14/18 11:47	13C4-PFOS	90,792.83	51,597.75	154,793.25		64,603.97	129,207.95	
JV67	L4	5/14/18 11:56	13C4-PFOS	116,199.13	51,597.75	154,793.25		64,603.97	129,207.95	
JV68	L5	5/14/18 12:05	13C4-PFOS	92,291.39	51,597.75	154,793.25		64,603.97	129,207.95	
JV69	L6	5/14/18 12:14	13C4-PFOS	111,784.92	51,597.75	154,793.25		64,603.97	129,207.95	
JV70	L7	5/14/18 12:23	13C4-PFOS	88,194.77	51,597.75	154,793.25		64,603.97	129,207.95	
JV71	L8	5/14/18 12:32	13C4-PFOS	110,166.97	51,597.75	154,793.25		64,603.97	129,207.95	
JV72	L9	5/14/18 12:41	13C4-PFOS	116,123.32	51,597.75	154,793.25		64,603.97	129,207.95	
JV63 ICC	ICC	5/14/18 12:50	13C4-PFOS	112,208.04	51,597.75	154,793.25		64,603.97	129,207.95	
CQ755PB-FS(0)	Procedural Blank	5/14/18 13:08	13C4-PFOS	111,731.01	51,597.75	154,793.25		64,603.97	129,207.95	
CQ756LCS-FS(0)	Laboratory Control Sample	5/14/18 13:17	13C4-PFOS	80,170.42	51,597.75	154,793.25		64,603.97	129,207.95	
J6148-FS(0)	NAWC-050718-RW-316	5/14/18 13:26	13C4-PFOS	97,479.82	51,597.75	154,793.25		64,603.97	129,207.95	
J6150-FS(0)	NAWC-050718-RW-180	5/14/18 13:35	13C4-PFOS	97,536.34	51,597.75	154,793.25		64,603.97	129,207.95	
J6152-FS(0)	NAWC-050718-RW-275	5/14/18 13:43	13C4-PFOS	79,659.10	51,597.75	154,793.25		64,603.97	129,207.95	
J6154-FS(0)	NAWC-050718-RW-145	5/14/18 13:52	13C4-PFOS	93,168.05	51,597.75	154,793.25		64,603.97	129,207.95	
J6156-FS(0)	NAWC-050718-RW-357	5/14/18 14:01	13C4-PFOS	71,904.49	51,597.75	154,793.25		64,603.97	129,207.95	
J6158-FS(0)	NAWC-050718-RW-162	5/14/18 14:10	13C4-PFOS	100,729.16	51,597.75	154,793.25		64,603.97	129,207.95	
JV69 CCV	CCV	5/14/18 14:19	13C4-PFOS	113,429.56	51,597.75	154,793.25		64,603.97	129,207.95	
J6160-FS(0)	WGNA-050718-RW-0800	5/14/18 14:37	13C4-PFOS	91,010.65	51,597.75	154,793.25		79,400.69	158,801.38	
J6162-FS(0)	WGNA-050718-RW-0335	5/14/18 14:46	13C4-PFOS	106,801.49	51,597.75	154,793.25		79,400.69	158,801.38	
J6164-FS(0)	WGNA-050718-RW-3556	5/14/18 14:55	13C4-PFOS	84,581.13	51,597.75	154,793.25		79,400.69	158,801.38	
J6166-FS(0)	NAWC-050718-RW-356	5/14/18 15:04	13C4-PFOS	86,631.83	51,597.75	154,793.25		79,400.69	158,801.38	
J6168-FS(0)	NAWC-050718-RW-289	5/14/18 15:13	13C4-PFOS	95,267.28	51,597.75	154,793.25		79,400.69	158,801.38	
J6170-FS(0)	WGNA-050718-DUP-35	5/14/18 15:22	13C4-PFOS	92,164.56	51,597.75	154,793.25		79,400.69	158,801.38	
JV68 CCV	CCV	5/14/18 15:30	13C4-PFOS	110,468.54	51,597.75	154,793.25		79,400.69	158,801.38	

Project Client: Tetra Tech
Project Client: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Client: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/14/18 11:29	d3-MeFOSAA	35,968.44	-	
JV65	L2	5/14/18 11:38	d3-MeFOSAA	30,241.50	-	
JV66	L3	5/14/18 11:47	d3-MeFOSAA	28,007.84	-	
JV67	L4	5/14/18 11:56	d3-MeFOSAA	36,150.49	-	
JV68	L5	5/14/18 12:05	d3-MeFOSAA	30,317.42	-	
JV69	L6	5/14/18 12:14	d3-MeFOSAA	36,296.34	-	
JV70	L7	5/14/18 12:23	d3-MeFOSAA	27,471.55	-	
JV71	L8	5/14/18 12:32	d3-MeFOSAA	34,679.62	-	
JV72	L9	5/14/18 12:41	d3-MeFOSAA	37,693.37	4.7	PASS

Average	Lower	Upper
32,980.73	16,490.37	49,471.10

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/14/18 11:29	d3-MeFOSAA	35,968.44	16,490.37	49,471.10		21,222.19	42,444.39	
JV65	L2	5/14/18 11:38	d3-MeFOSAA	30,241.50	16,490.37	49,471.10		21,222.19	42,444.39	
JV66	L3	5/14/18 11:47	d3-MeFOSAA	28,007.84	16,490.37	49,471.10		21,222.19	42,444.39	
JV67	L4	5/14/18 11:56	d3-MeFOSAA	36,150.49	16,490.37	49,471.10		21,222.19	42,444.39	
JV68	L5	5/14/18 12:05	d3-MeFOSAA	30,317.42	16,490.37	49,471.10		21,222.19	42,444.39	
JV69	L6	5/14/18 12:14	d3-MeFOSAA	36,296.34	16,490.37	49,471.10		21,222.19	42,444.39	
JV70	L7	5/14/18 12:23	d3-MeFOSAA	27,471.55	16,490.37	49,471.10		21,222.19	42,444.39	
JV71	L8	5/14/18 12:32	d3-MeFOSAA	34,679.62	16,490.37	49,471.10		21,222.19	42,444.39	
JV72	L9	5/14/18 12:41	d3-MeFOSAA	37,693.37	16,490.37	49,471.10		21,222.19	42,444.39	
JV63 ICC	ICC	5/14/18 12:50	d3-MeFOSAA	34,401.63	16,490.37	49,471.10		21,222.19	42,444.39	
CQ755PB-FS(0)	Procedural Blank	5/14/18 13:08	d3-MeFOSAA	35,000.18	16,490.37	49,471.10		21,222.19	42,444.39	
CQ756LCS-FS(0)	Laboratory Control Sample	5/14/18 13:17	d3-MeFOSAA	26,521.45	16,490.37	49,471.10		21,222.19	42,444.39	
J6148-FS(0)	NAWC-050718-RW-316	5/14/18 13:26	d3-MeFOSAA	28,397.36	16,490.37	49,471.10		21,222.19	42,444.39	
J6150-FS(0)	NAWC-050718-RW-180	5/14/18 13:35	d3-MeFOSAA	30,315.36	16,490.37	49,471.10		21,222.19	42,444.39	
J6152-FS(0)	NAWC-050718-RW-275	5/14/18 13:43	d3-MeFOSAA	25,531.81	16,490.37	49,471.10		21,222.19	42,444.39	
J6154-FS(0)	NAWC-050718-RW-145	5/14/18 13:52	d3-MeFOSAA	30,882.72	16,490.37	49,471.10		21,222.19	42,444.39	
J6156-FS(0)	NAWC-050718-RW-357	5/14/18 14:01	d3-MeFOSAA	25,387.66	16,490.37	49,471.10		21,222.19	42,444.39	
J6158-FS(0)	NAWC-050718-RW-162	5/14/18 14:10	d3-MeFOSAA	35,413.81	16,490.37	49,471.10		21,222.19	42,444.39	
JV69 CCV	CCV	5/14/18 14:19	d3-MeFOSAA	31,738.59	16,490.37	49,471.10		21,222.19	42,444.39	
J6160-FS(0)	WGNA-050718-RW-0800	5/14/18 14:37	d3-MeFOSAA	26,555.02	16,490.37	49,471.10		22,217.01	44,434.03	
J6162-FS(0)	WGNA-050718-RW-0335	5/14/18 14:46	d3-MeFOSAA	33,982.85	16,490.37	49,471.10		22,217.01	44,434.03	
J6164-FS(0)	WGNA-050718-RW-3556	5/14/18 14:55	d3-MeFOSAA	24,586.57	16,490.37	49,471.10		22,217.01	44,434.03	
J6166-FS(0)	NAWC-050718-RW-356	5/14/18 15:04	d3-MeFOSAA	24,181.64	16,490.37	49,471.10		22,217.01	44,434.03	
J6168-FS(0)	NAWC-050718-RW-289	5/14/18 15:13	d3-MeFOSAA	30,500.70	16,490.37	49,471.10		22,217.01	44,434.03	
J6170-FS(0)	WGNA-050718-DUP-35	5/14/18 15:22	d3-MeFOSAA	31,134.03	16,490.37	49,471.10		22,217.01	44,434.03	
JV68 CCV	CCV	5/14/18 15:30	d3-MeFOSAA	33,881.63	16,490.37	49,471.10		22,217.01	44,434.03	

BATTELLE

Summary Asymmetry Report

Created with Analyst Reporter
Printed: 17/05/2018 11:41:30 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 12:23:30 PM	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.47	1.48	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.75	1.34	0.8 – 1.5

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 17/05/2018 11:42:46 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 12:23:30 PM	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.47	36	>10
PFBS_2	298.9 / 99.0	1.47	35	>10
PFHxA_1	313.0 / 269.0	1.75	102	>10
PFHxA_2	313.0 / 119.0	1.75	41	>10
PFHpA_1	363.0 / 319.0	2.11	32	>10
PFHpA_2	363.0 / 169.0	2.11	32	>10
PFHxS_1	399.0 / 80.0	2.12	60	>10
PFHxS_2	399.0 / 99.0	2.12	56	>10
PFOA_1	413.0 / 369.0	2.49	61	>10
PFOA_2	413.0 / 169.0	2.49	33	>10
PFNA_1	463.0 / 419.0	2.86	56	>10
PFNA_2	463.0 / 219.0	2.86	55	>10
PFOS_1	499.0 / 80.0	2.86	65	>10
PFOS_2	499.0 / 99.0	2.86	50	>10
PFDA_1	513.0 / 469.0	3.22	55	>10
PFDA_2	513.0 / 219.0	3.21	38	>10
PFUnA_1	563.0 / 519.0	3.53	55	>10
PFUnA_2	563.0 / 269.0	3.53	36	>10
PFDoA_1	613.0 / 569.0	3.82	67	>10
PFDoA_2	613.0 / 319.0	3.82	48	>10
PFTrDA_1	663.0 / 619.0	4.08	76	>10
PFTrDA_2	663.0 / 169.0	4.08	33	>10
PFTeDA_1	713.0 / 669.0	4.30	61	>10
PFTeDA_2	713.0 / 169.0	4.30	51	>10
NMeFOSAA_1	570.0 / 419.0	3.36	57	>10
NMeFOSAA_2	570.0 / 512.0	3.36	58	>10
NEtFOSAA_1	584.0 / 419.0	3.53	54	>10
NEtFOSAA_2	584.0 / 483.0	3.52	35	>10

Analytical Transitions for PFAS in drinking water

SOP 5-371 (EPA 537 Version 1.1)

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFBS	375-73-5	Target	298.9.0 / 80.0	298.9.0 / 99.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
13C2-PFHxA	NA	SIS	315.0 / 270.0	NA
13C2-PFDA	NA	SIS	515.0 / 470.0	NA
d5-EtFOSAA	NA	SIS	589.0 / 419.0	NA
$^{13}C_2$-PFOA	NA	IS	415.0 / 270.0	NA
$^{13}C_4$-PFOS	NA	IS	503.0 / 80.0	NA
d3-MeFOSAA	NA	IS	573.0 / 419.0	NA

BATTELLE DETECTION LIMITS FOR PFAS IN DRINKING WATER

Battelle SOP 5-371 (EPA Method 537 Version 1.1)

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)	MRL (ng/L)
PFHxA	307-24-4	0.22	0.5	2.5	2.5
PFHpA	375-85-9	0.34	1.0	2.5	2.5
PFOA	335-67-1	0.38	1.0	2.5	2.5
PFNA	375-95-1	0.37	1.0	2.5	2.5
PFDA	335-76-2	0.39	1.0	2.5	2.5
PFUnA	2058-94-8	0.38	1.0	2.5	2.5
PFDoA	307-55-1	0.42	1.0	2.5	2.5
PFTrDA	72629-94-8	0.42	1.0	2.5	2.5
PFTeDA	376-06-7	0.73	1.5	2.5	2.5
NMeFOSAA	2355-31-9	0.42	1.0	2.5	2.5
NEtFOSAA	2991-50-6	0.44	1.0	2.5	2.5
PFBS	375-73-5	0.21	0.5	2.5	2.5
PFHxS	3871-99-6	0.34	1.0	2.5	2.5
PFOS	1763-23-1	0.30	1.0	2.5	2.5

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

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ID 626 04/18

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

Mass Calibration and Tune Check

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	22-Feb-2017

Request ID:	3683
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____

_____

_____

_____

Performed By: Kaustubh Dhayagude **Date:** 22-Feb-2017

Approved By :_____ **Date:** _____

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.5	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.9	Read Only
☑ CAD Medium	2.4	Read Only
☑ CAD High	3.4	Read Only
☑ CAD 12	3.4	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.64 e6	Read Only	0.8095	Read Only
Q1 500.380	2.40 e7	Read Only	0.8592	Read Only
Q1 906.673	2.86 e7	Read Only	0.9633	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.26 e6	Read Only	0.6252	Read Only
Q3 500.380	2.19 e7	Read Only	0.7275	Read Only
Q3 906.673	3.02 e7	Read Only	0.7662	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__19.51%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.43 e7	Read Only	0.9981	Read Only
MS/MS 195.1	1.45 e7	Read Only	0.6582	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.43 e7	Read Only	0.7330	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.22 e7	Read Only	0.8138	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.35 e6	Read Only	0.6495	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	2.1	Read Only
☑ CAD Medium	2.6	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.94 e6	≥1.2^{e}6	0.6933	0.6 to 0.8
Q1 500.380	2.25 e7	≥9.0^{e}6	0.7444	0.6 to 0.8
Q1 906.673	2.74 e7	≥1.4^{e}7	0.7347	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7656	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	4.54 e6	≥1.2^{e}6	0.6390	0.6 to 0.8
Q3 500.380	2.13 e7	≥9.0^{e}6	0.7008	0.6 to 0.8
Q3 906.673	3.04 e7	≥1.4^{e}7	0.7683	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.51 e8	≥6.8^{e}7	0.7118	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 16.93% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.74 e7	N/A	0.7667	Read Only
MS/MS 195.1	9.72 e6	N/A	0.6751	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.31 e7	≥1.0^{e}7	0.6895	0.6 to 0.8
Q1 933.636	1000	50	6.32 e7	≥4.0^{e}7	0.6740	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.70 e7	≥8.0^{e}6	0.7665	0.6 to 0.8
Q3 933.636	1000	50	7.41 e7	≥4.0^{e}7	0.7292	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.08 e6	≥7.2 ^{e}6	0.1302	<0.35
ER 922.010	0.05	3.89 e7	≥2.8 ^{e}6	0.2603	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.55 e7	≥2.4 ^{e}7	0.3740	<0.65
ER 922.010	0.05	2.37 e8	≥6.8 ^{e}7	0.5407	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.05 e8	≥4.4 ^{e}7	0.1840	<0.35
ER 601.978	0.05	7.74 e7	≥5.6 ^{e}7	0.1849	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.43 e8	≥1.2 ^{e}8	0.4382	<0.65
ER 601.978	0.05	2.55 e8	≥1.6 ^{e}8	0.6205	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.5 e6	≥2.0 e6	> 4.0 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.2 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	1.19 e8	Fragment Intensity	> 4.4 e6	≥1.6x 10e6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

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BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0313

WE04 PFAS Analysis

DW

SOP Numbers (see workplan for modifications)

VOASOP No. 5-371

This Batch Contains The Following Samples:		
CQ755PB-FS	J6156-FS	J6168-FS
CQ756LCS-FS	J6158-FS	J6170-FS
J6148-FS	J6160-FS	
J6150-FS	J6162-FS	
J6152-FS	J6164-FS	
J6154-FS	J6166-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	05/16/2018	DMS

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0313

WE04 PFAS Analysis

DW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CQ755PB-FS	Procedural Blank	250.0	NA	--	05/10/18 SAS
CQ756LCS-FS	Laboratory Control Sample	250.0	NA	--	05/10/18 SAS
J6148-FS	NAWC-050718-RW-316	285.0	1	C	05/11/18 SAS
J6150-FS	NAWC-050718-RW-180	280.0	1	C	05/11/18 SAS
J6152-FS	NAWC-050718-RW-275	280.0	1	C	05/11/18 SAS
J6154-FS	NAWC-050718-RW-145	280.0	1	C	05/11/18 SAS
J6156-FS	NAWC-050718-RW-357	270.0	1	C	05/11/18 SAS
J6158-FS	NAWC-050718-RW-162	280.0	1	C	05/11/18 SAS
J6160-FS	WGNA-050718-RW-0800	285.0	1	C	05/11/18 SAS
J6162-FS	WGNA-050718-RW-0335	270.0	1	C	05/11/18 SAS
J6164-FS	WGNA-050718-RW-3556	260.0	1	C	05/11/18 SAS
J6166-FS	NAWC-050718-RW-356	275.0	1	C	05/11/18 SAS
J6168-FS	NAWC-050718-RW-289	280.0	1	C	05/11/18 SAS
J6170-FS	WGNA-050718-DUP-35	280.0	1	C	05/11/18 SAS

Comments:

Sample ID:	Comments:
CQ755PB-FS	1.27g Trizma(170526-01) weighed on BAL-009
CQ756LCS-FS	1.23g Trizma(170526-01) weighed on BAL-009

Samples Assigned By Stephanie Schultz Date : May 9, 2018

* - "C" = Sample is Consumed

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0313
WE04 PFAS Analysis
DW

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CQ755PB-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
CQ756LCS-FS	JV41	LCS/MS	1	75	05/10/18 SAS	JCT	NA
CQ756LCS-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6148-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6150-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6152-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6154-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6156-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6158-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6160-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6162-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6164-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6166-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6168-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA
J6170-FS	JV60	SIS	1	50	05/10/18 SAS	JCT	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
JV41	Pipette	I0793912B
JV60	Pipette	I0793912B

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It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0313

WE04 PFAS Analysis

DW

Sample ID	1st Extraction	2nd Extraction	3rd Extraction	Conc. ID	Turbo °C	Turbo PSI	KD °C	Comment
CQ755PB-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
CQ756LCS-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6148-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6150-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6152-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6154-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6156-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6158-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6160-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6162-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6164-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6166-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6168-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA
J6170-FS	05/10/18 SAS	NA	NA	NA	NA	NA	NA	NA

Solvents/Reagent Preparations:

Name	ID	Expires	Lot No	Procedure	Comments
Pre-packed SPE Column	RP-180510-1	05/10/18	S214-0071	Pre-packed SPE Column	

Solvents/Reagents:

Name	Lot No	Comments
Methanol (HPLC) (180227-02)	178212	

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It can be done

BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0313

WE04 PFAS Analysis

DW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CQ755PB-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
CQ756LCS-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6148-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6150-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6152-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6154-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6156-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6158-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6160-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6162-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6164-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6166-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6168-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT
J6170-FS(0)	950	50	JV59	50	1	1000	1.000	05/14/18 SAS	JCT

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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Sequence Report

Created with Analyst Reporter
Printed: 17/05/2018 11:43:52 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH		5/14/2018 11:20:57 AM	5-0371.dam	18-0313.wiff
2	JV64	L1	5/14/2018 11:29:54 AM	5-0371.dam	18-0313.wiff
3	JV65	L2	5/14/2018 11:38:49 AM	5-0371.dam	18-0313.wiff
4	JV66	L3	5/14/2018 11:47:45 AM	5-0371.dam	18-0313.wiff
5	JV67	L4	5/14/2018 11:56:42 AM	5-0371.dam	18-0313.wiff
6	JV68	L5	5/14/2018 12:05:38 PM	5-0371.dam	18-0313.wiff
7	JV69	L6	5/14/2018 12:14:33 PM	5-0371.dam	18-0313.wiff
8	JV70	L7	5/14/2018 12:23:30 PM	5-0371.dam	18-0313.wiff
9	JV71	L8	5/14/2018 12:32:26 PM	5-0371.dam	18-0313.wiff
10	JV72	L9	5/14/2018 12:41:22 PM	5-0371.dam	18-0313.wiff
11	JV63 ICC	ICC	5/14/2018 12:50:20 PM	5-0371.dam	18-0313.wiff
1	MeOH		5/14/2018 12:59:16 PM	5-0371.dam	18-0313.wiff
12	CQ755PB-FS(0)	Procedural Blank	5/14/2018 1:08:14 PM	5-0371.dam	18-0313.wiff
13	CQ756LCS-FS(0)	Laboratory Control Sample	5/14/2018 1:17:09 PM	5-0371.dam	18-0313.wiff
14	J6148-FS(0)	NAWC-050718-RW-316	5/14/2018 1:26:05 PM	5-0371.dam	18-0313.wiff
15	J6150-FS(0)	NAWC-050718-RW-180	5/14/2018 1:35:01 PM	5-0371.dam	18-0313.wiff
16	J6152-FS(0)	NAWC-050718-RW-275	5/14/2018 1:43:56 PM	5-0371.dam	18-0313.wiff
17	J6154-FS(0)	NAWC-050718-RW-145	5/14/2018 1:52:52 PM	5-0371.dam	18-0313.wiff
18	J6156-FS(0)	NAWC-050718-RW-357	5/14/2018 2:01:46 PM	5-0371.dam	18-0313.wiff
19	J6158-FS(0)	NAWC-050718-RW-162	5/14/2018 2:10:41 PM	5-0371.dam	18-0313.wiff
7	JV69 CCV	CCV	5/14/2018 2:19:36 PM	5-0371.dam	18-0313.wiff
1	MeOH		5/14/2018 2:28:30 PM	5-0371.dam	18-0313.wiff
20	J6160-FS(0)	WGNA-050718-RW-0800	5/14/2018 2:37:26 PM	5-0371.dam	18-0313.wiff
21	J6162-FS(0)	WGNA-050718-RW-0335	5/14/2018 2:46:22 PM	5-0371.dam	18-0313.wiff
22	J6164-FS(0)	WGNA-050718-RW-3556	5/14/2018 2:55:18 PM	5-0371.dam	18-0313.wiff
23	J6166-FS(0)	NAWC-050718-RW-356	5/14/2018 3:04:13 PM	5-0371.dam	18-0313.wiff
24	J6168-FS(0)	NAWC-050718-RW-	5/14/2018 3:13:09	5-0371.dam	18-0313.wiff

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Sequence Report

Created with Analyst Reporter
Printed: 17/05/2018 11:43:52 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
		289	PM		
25	J6170-FS(0)	WGNA-050718-DUP-35	5/14/2018 3:22:03 PM	5-0371.dam	18-0313.wiff
6	JV68 CCV	CCV	5/14/2018 3:30:58 PM	5-0371.dam	18-0313.wiff

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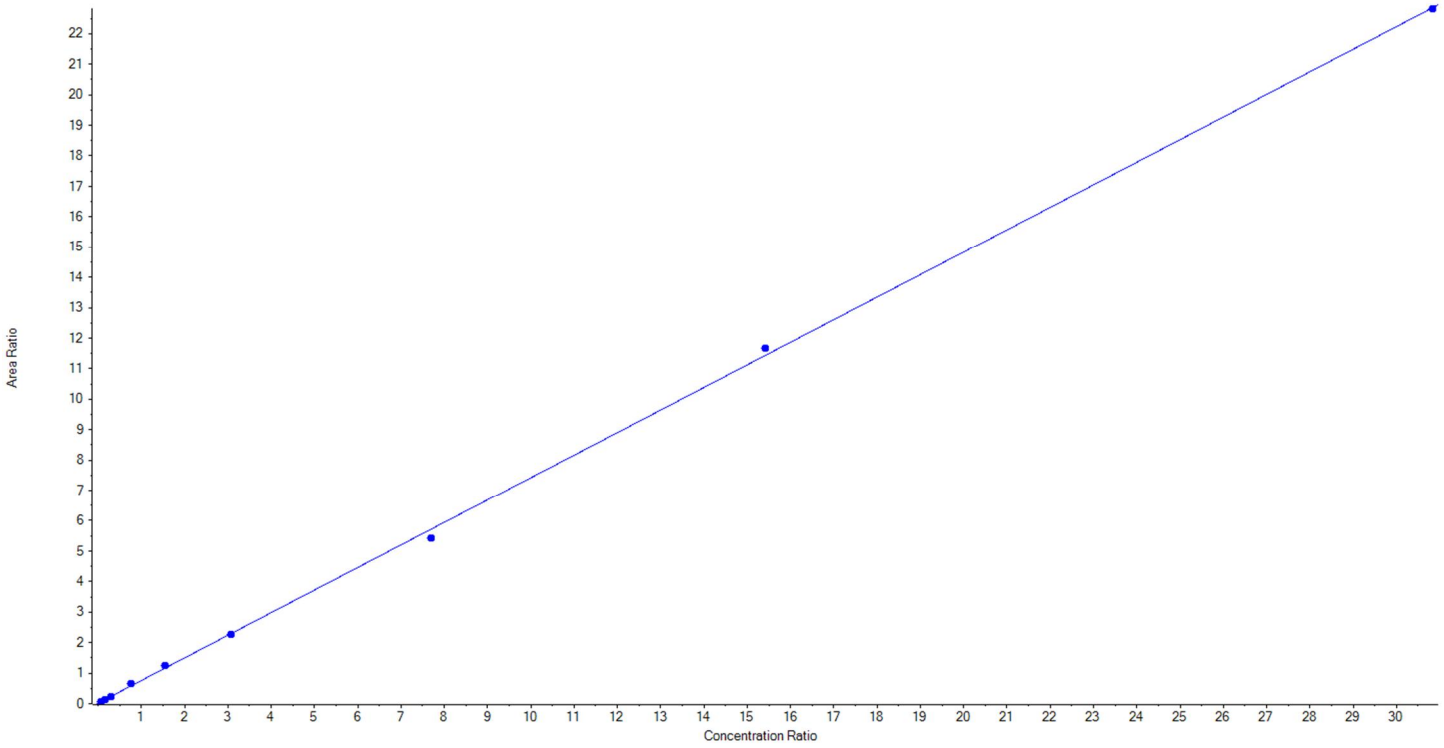
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/05/2018 2:44:19 PM

Analyte Name	PFBS_1	**Data File**	18-0313.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0313_Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.74054 x + 0.01745 (r = 0.99950) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.15	22.804779	103.0
3	JV65	L2	True	44.30	38.779769	87.5
4	JV66	L3	True	88.60	83.589043	94.3
5	JV67	L4	True	221.50	248.105496	112.0
6	JV68	L5	True	443.00	480.862156	108.6
7	JV69	L6	True	885.00	867.003654	98.0
8	JV70	L7	True	2212.50	2093.047764	94.6
9	JV71	L8	True	4425.00	4522.222161	102.2
10	JV72	L9	True	8850.00	8835.635177	99.8



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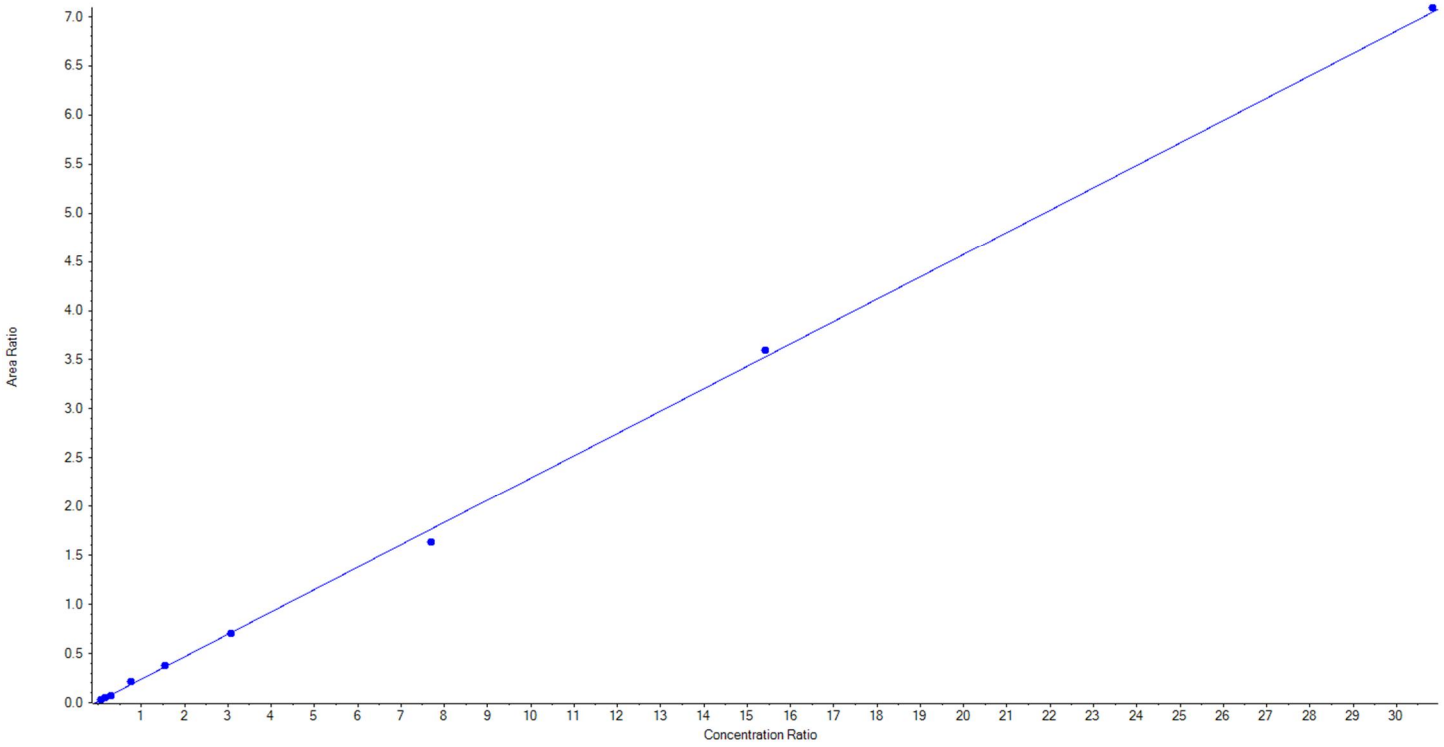
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/05/2018 2:44:19 PM

Analyte Name	PFBS_2	**Data File**	18-0313.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0313_Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.22816 x + 0.01086 (r = 0.99931) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.15	20.300377	91.7
3	JV65	L2	True	44.30	46.075180	104.0
4	JV66	L3	True	88.60	81.857187	92.4
5	JV67	L4	True	221.50	251.465679	113.5
6	JV68	L5	True	443.00	467.377936	105.5
7	JV69	L6	True	885.00	869.552481	98.3
8	JV70	L7	True	2212.50	2036.632463	92.1
9	JV71	L8	True	4425.00	4512.772938	102.0
10	JV72	L9	True	8850.00	8906.015758	100.6



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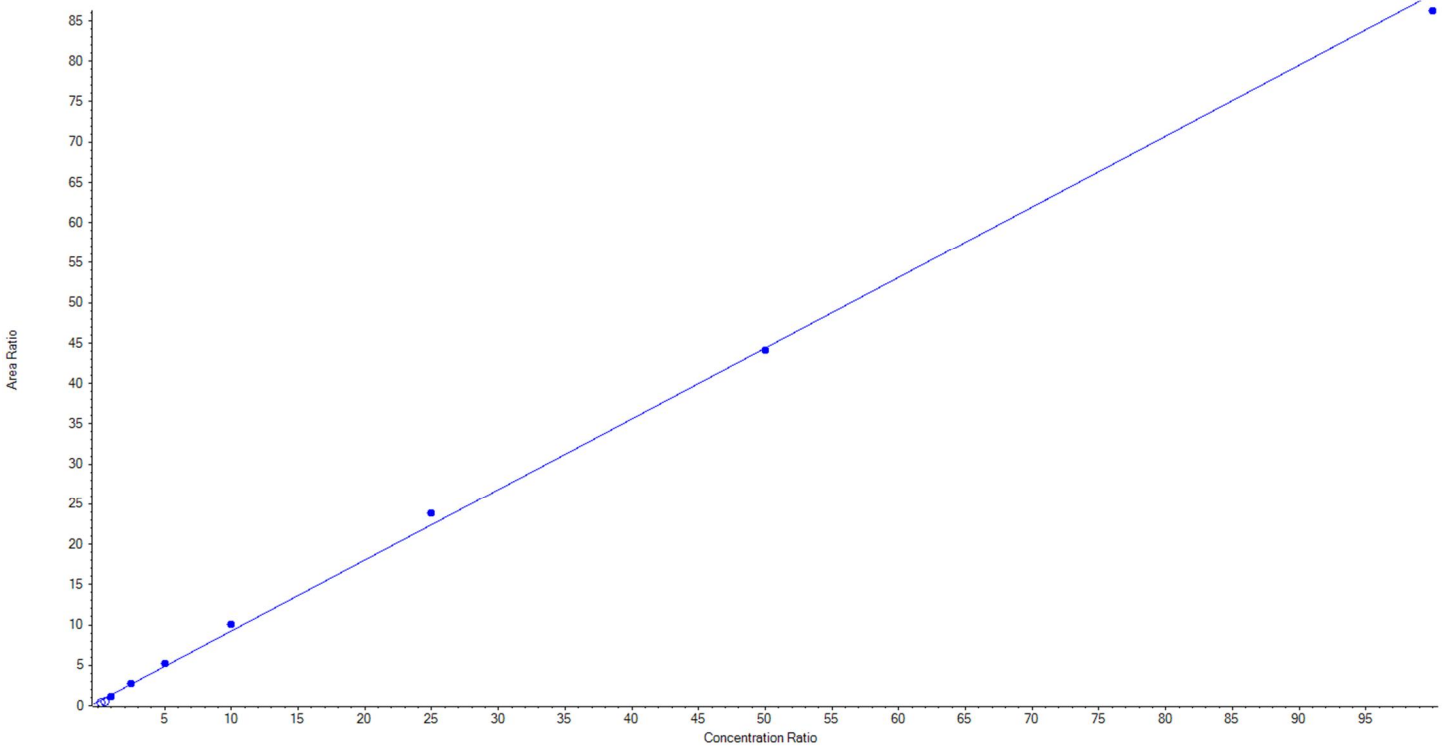
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/05/2018 2:44:19 PM

Analyte Name	PFHxA_1	**Data File**	18-0313.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.87836 x + 0.46617 (r = 0.99905) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	< 0	N/A
3	JV65	L2	False	50.00	2.575840	5.2
4	JV66	L3	True	100.00	78.986357	79.0
5	JV67	L4	True	250.00	251.390112	100.6
6	JV68	L5	True	500.00	541.056673	108.2
7	JV69	L6	True	1000.00	1089.329496	108.9
8	JV70	L7	True	2500.00	2659.394351	106.4
9	JV71	L8	True	5000.00	4963.910989	99.3
10	JV72	L9	True	10000.00	9765.932022	97.7



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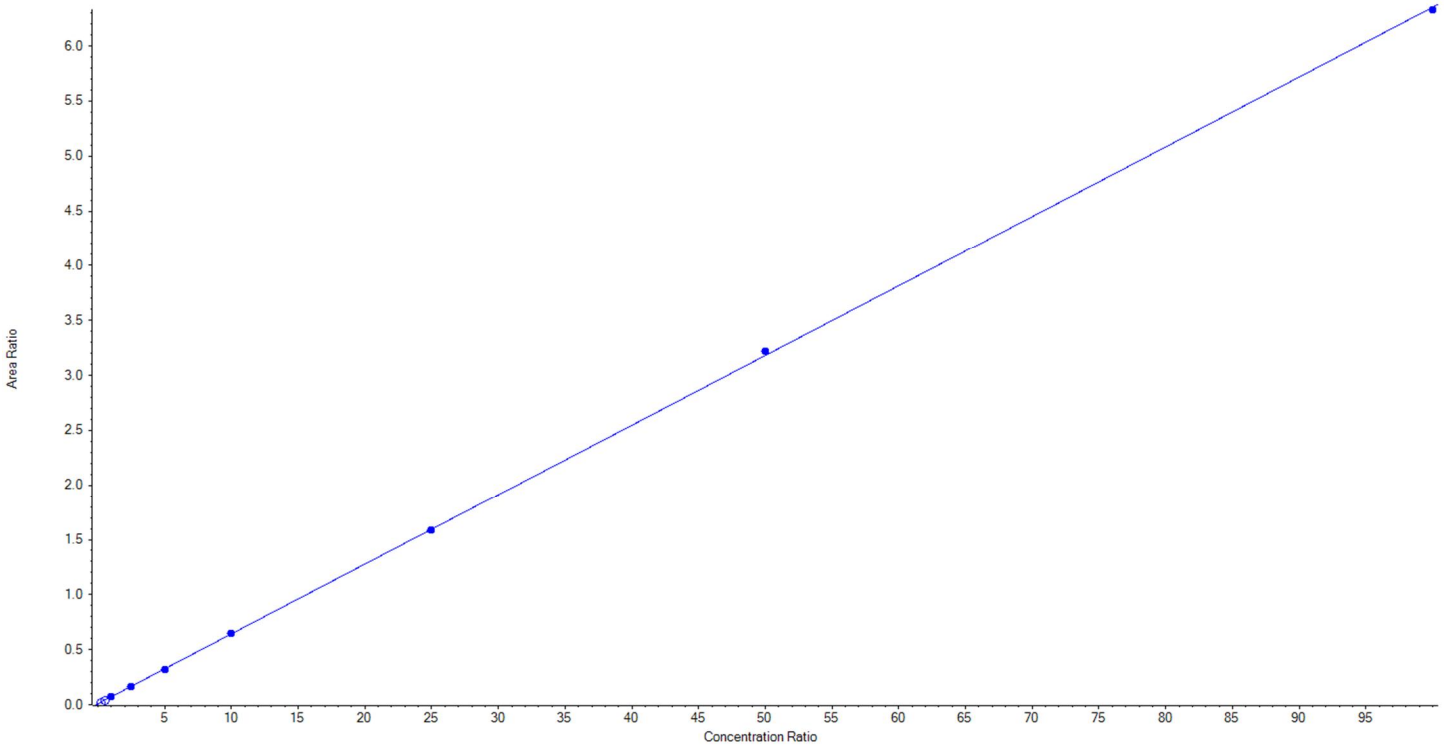
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Analyte Name	PFHxA_2	**Data File**	18-0313.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06343 x + 0.00880 (r = 0.99997) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	11.923343	47.7
3	JV65	L2	False	50.00	45.290432	90.6
4	JV66	L3	True	100.00	100.733035	100.7
5	JV67	L4	True	250.00	251.163821	100.5
6	JV68	L5	True	500.00	492.679342	98.5
7	JV69	L6	True	1000.00	1000.547914	100.1
8	JV70	L7	True	2500.00	2487.113791	99.5
9	JV71	L8	True	5000.00	5054.860411	101.1
10	JV72	L9	True	10000.00	9962.901685	99.6



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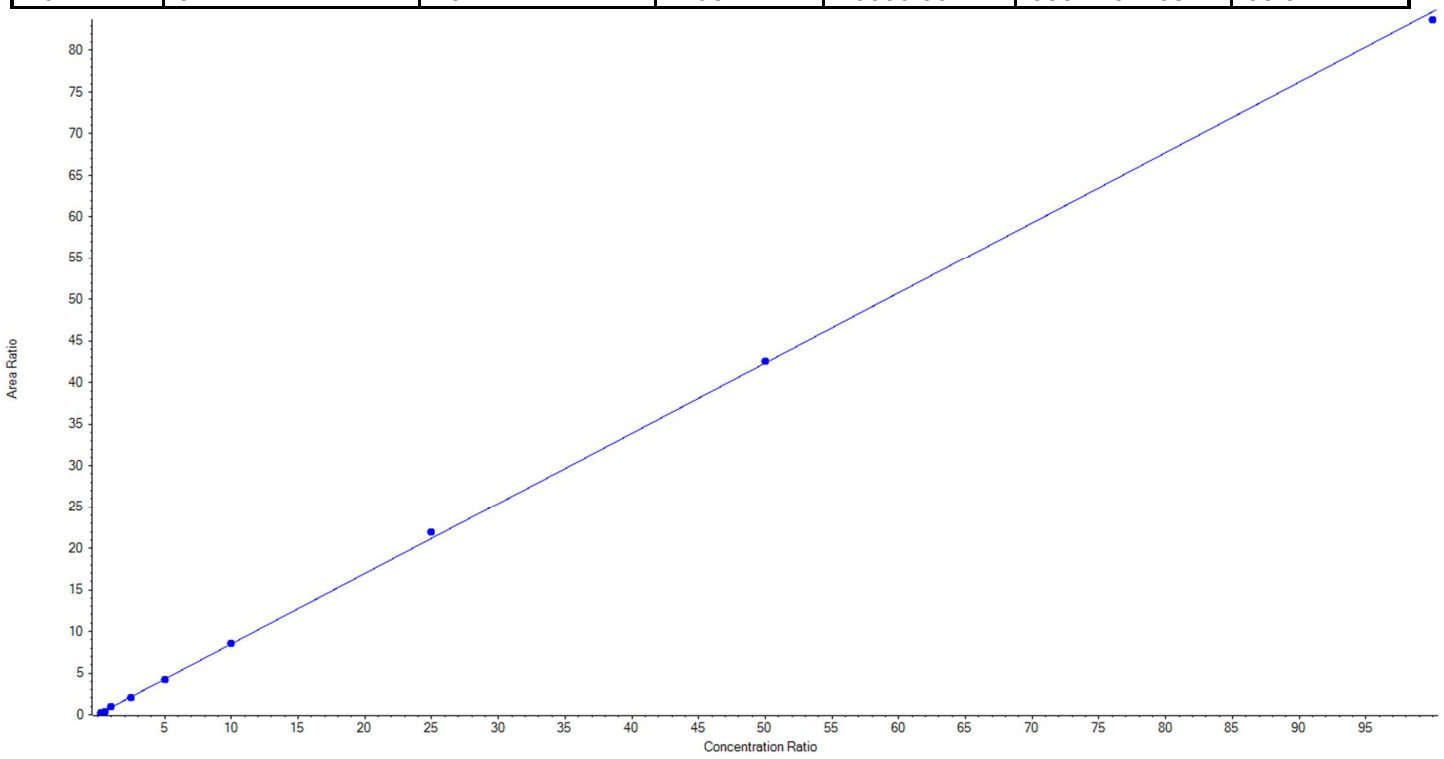
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/05/2018 2:44:19 PM

Analyte Name	PFHpA_1	**Data File**	18-0313.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.84607 x + 0.04250 (r = 0.99981) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	26.704376	106.8
3	JV65	L2	True	50.00	42.475329	85.0
4	JV66	L3	True	100.00	108.532311	108.5
5	JV67	L4	True	250.00	243.123776	97.3
6	JV68	L5	True	500.00	493.515333	98.7
7	JV69	L6	True	1000.00	1007.476703	100.8
8	JV70	L7	True	2500.00	2589.189046	103.6
9	JV71	L8	True	5000.00	5029.188658	100.6
10	JV72	L9	True	10000.00	9884.794468	98.9



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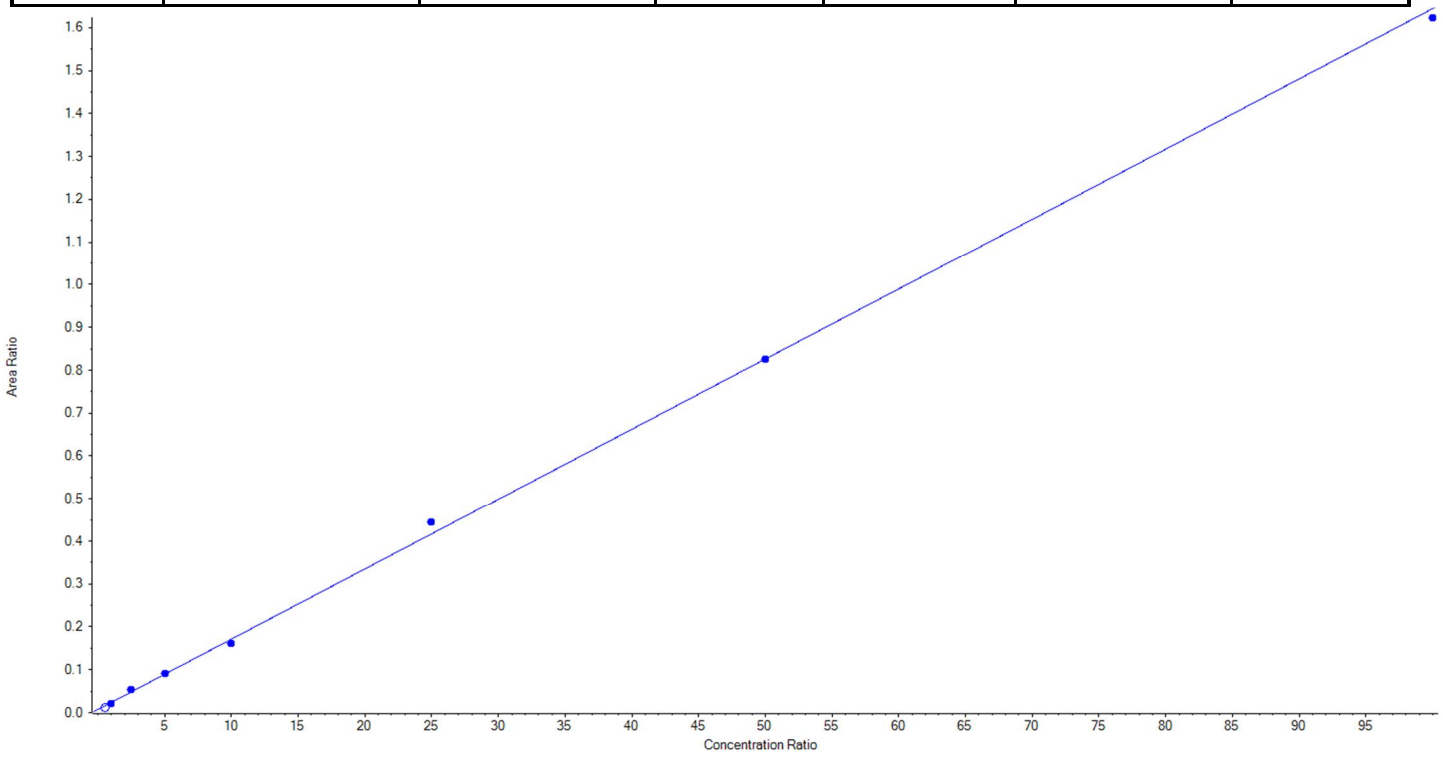
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Analyte Name	PFHpA_2	**Data File**	18-0313.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.01637 x + 0.00763 (r = 0.99929) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	N/A	N/A
3	JV65	L2	False	50.00	21.602557	43.2
4	JV66	L3	True	100.00	85.606667	85.6
5	JV67	L4	True	250.00	285.895686	114.4
6	JV68	L5	True	500.00	504.096919	100.8
7	JV69	L6	True	1000.00	938.783794	93.9
8	JV70	L7	True	2500.00	2665.862470	106.6
9	JV71	L8	True	5000.00	5000.525187	100.0
10	JV72	L9	True	10000.00	9869.229277	98.7



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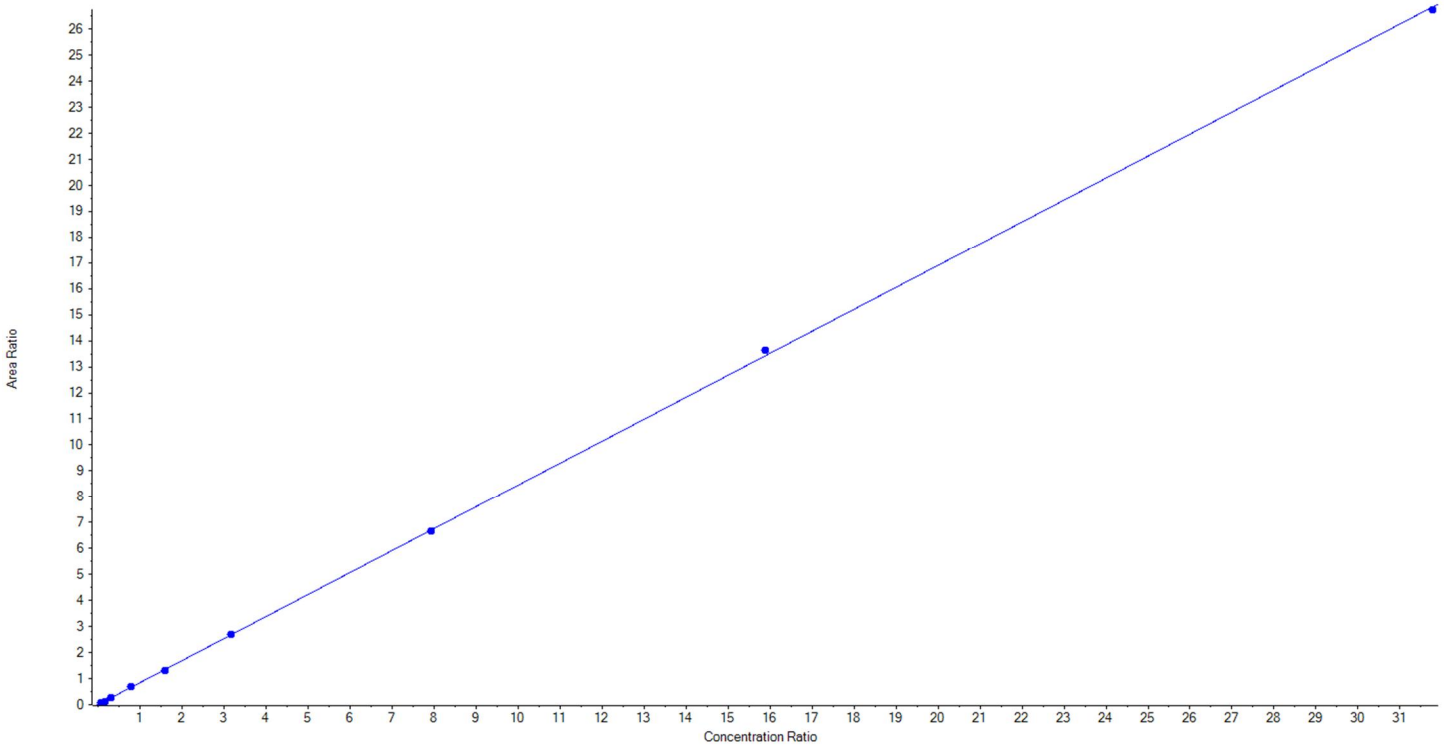
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Analyte Name	PFHxS_1	**Data File**	18-0313.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0313_Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.84495 x + 0.00149 (r = 0.99992) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.80	23.034700	101.0
3	JV65	L2	True	45.60	44.607323	97.8
4	JV66	L3	True	91.20	90.397278	99.1
5	JV67	L4	True	228.00	241.239806	105.8
6	JV68	L5	True	456.00	439.233831	96.3
7	JV69	L6	True	912.00	910.143123	99.8
8	JV70	L7	True	2280.00	2258.577450	99.1
9	JV71	L8	True	4560.00	4626.551146	101.5
10	JV72	L9	True	9120.00	9081.815342	99.6



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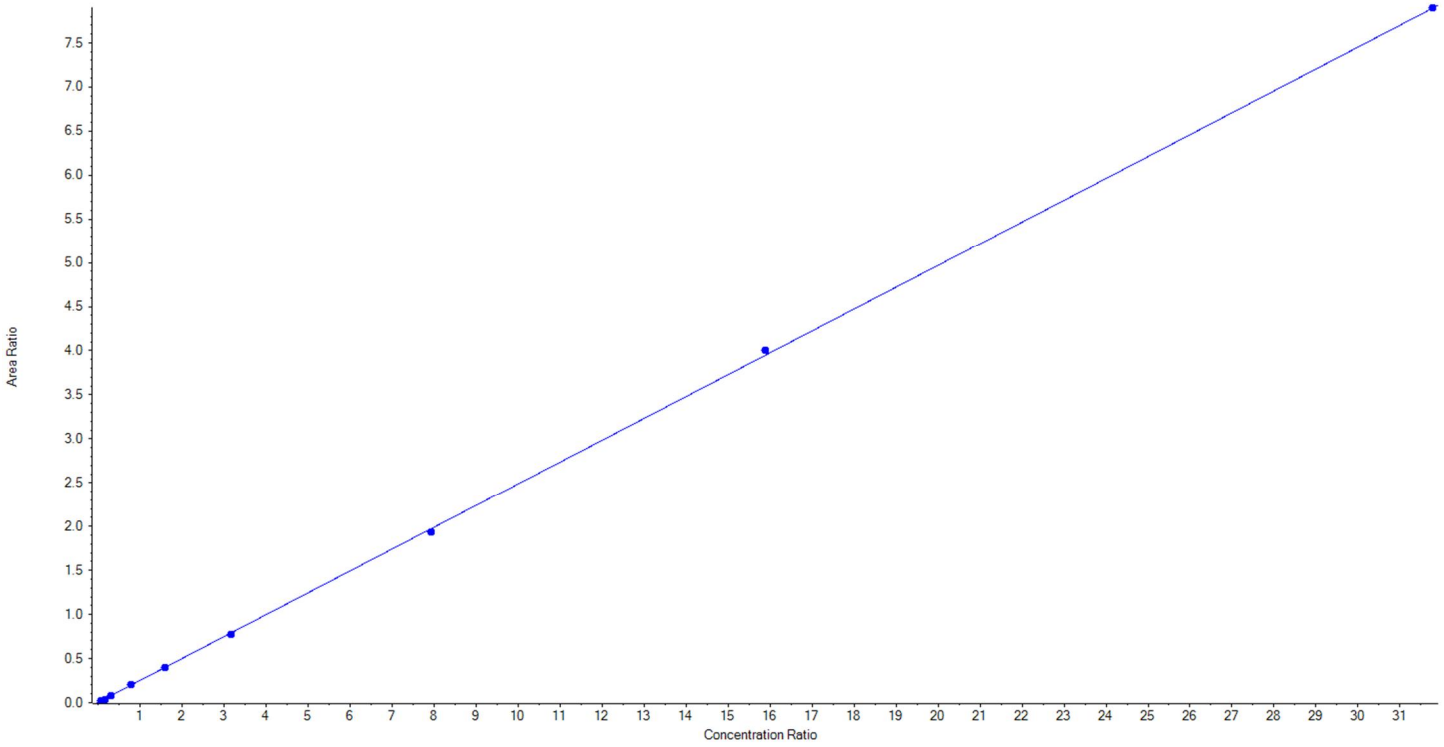
Calibration Summary Report

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Analyte Name	PFHxS_2	**Data File**	18-0313.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0313_Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.24827 x + 0.00372 (r = 0.99990) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.80	26.747945	117.3
3	JV65	L2	True	45.60	39.964480	87.6
4	JV66	L3	True	91.20	89.427525	98.1
5	JV67	L4	True	228.00	227.854457	99.9
6	JV68	L5	True	456.00	453.922143	99.5
7	JV69	L6	True	912.00	893.198688	97.9
8	JV70	L7	True	2280.00	2238.129172	98.2
9	JV71	L8	True	4560.00	4621.692989	101.4
10	JV72	L9	True	9120.00	9124.662600	100.1



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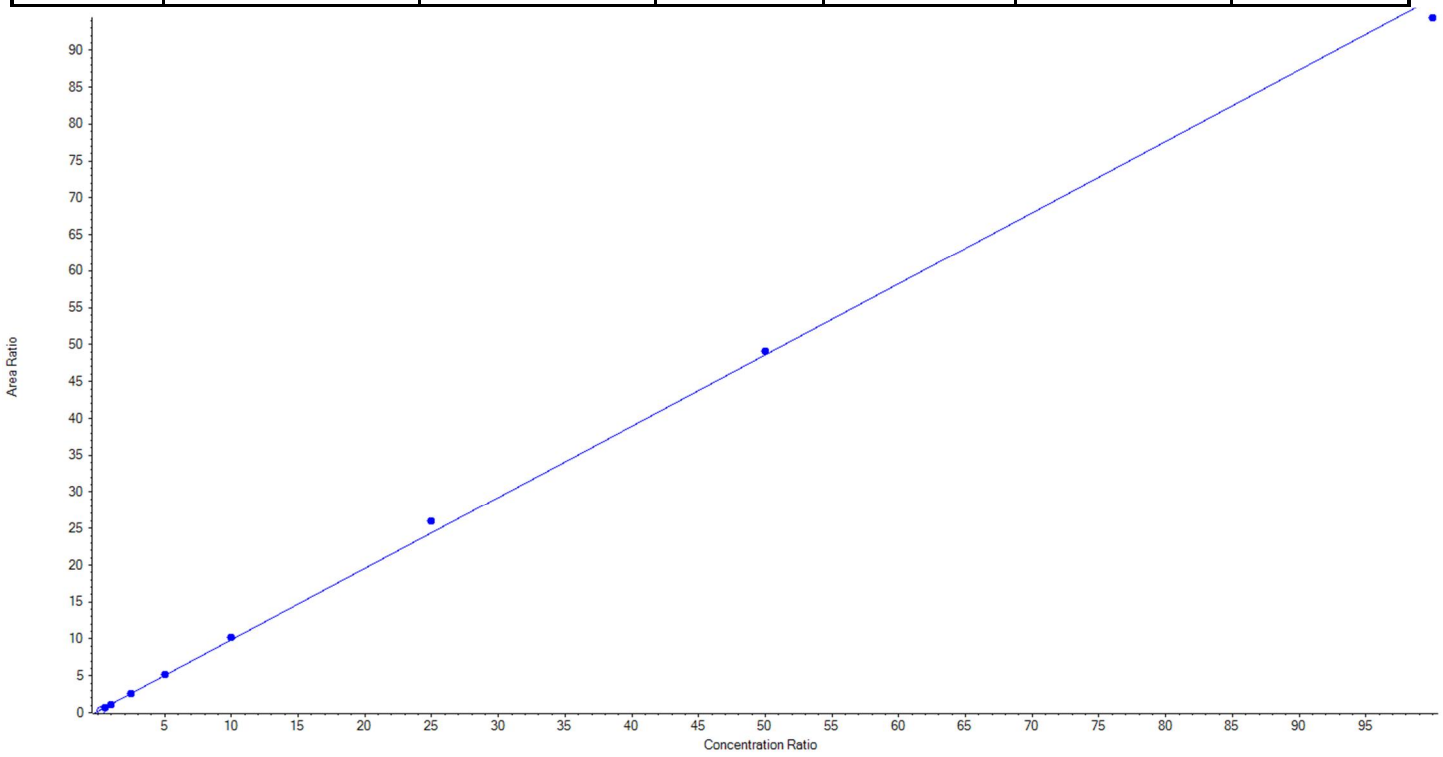
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/05/2018 2:44:19 PM

Analyte Name	PFOA_1	**Data File**	18-0313.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.96808 x + 0.19816 (r = 0.99938) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	11.153654	44.6
3	JV65	L2	True	50.00	46.676599	93.4
4	JV66	L3	True	100.00	95.581325	95.6
5	JV67	L4	True	250.00	245.690478	98.3
6	JV68	L5	True	500.00	519.420773	103.9
7	JV69	L6	True	1000.00	1037.136408	103.7
8	JV70	L7	True	2500.00	2669.265130	106.8
9	JV71	L8	True	5000.00	5055.859138	101.1
10	JV72	L9	True	10000.00	9730.370148	97.3



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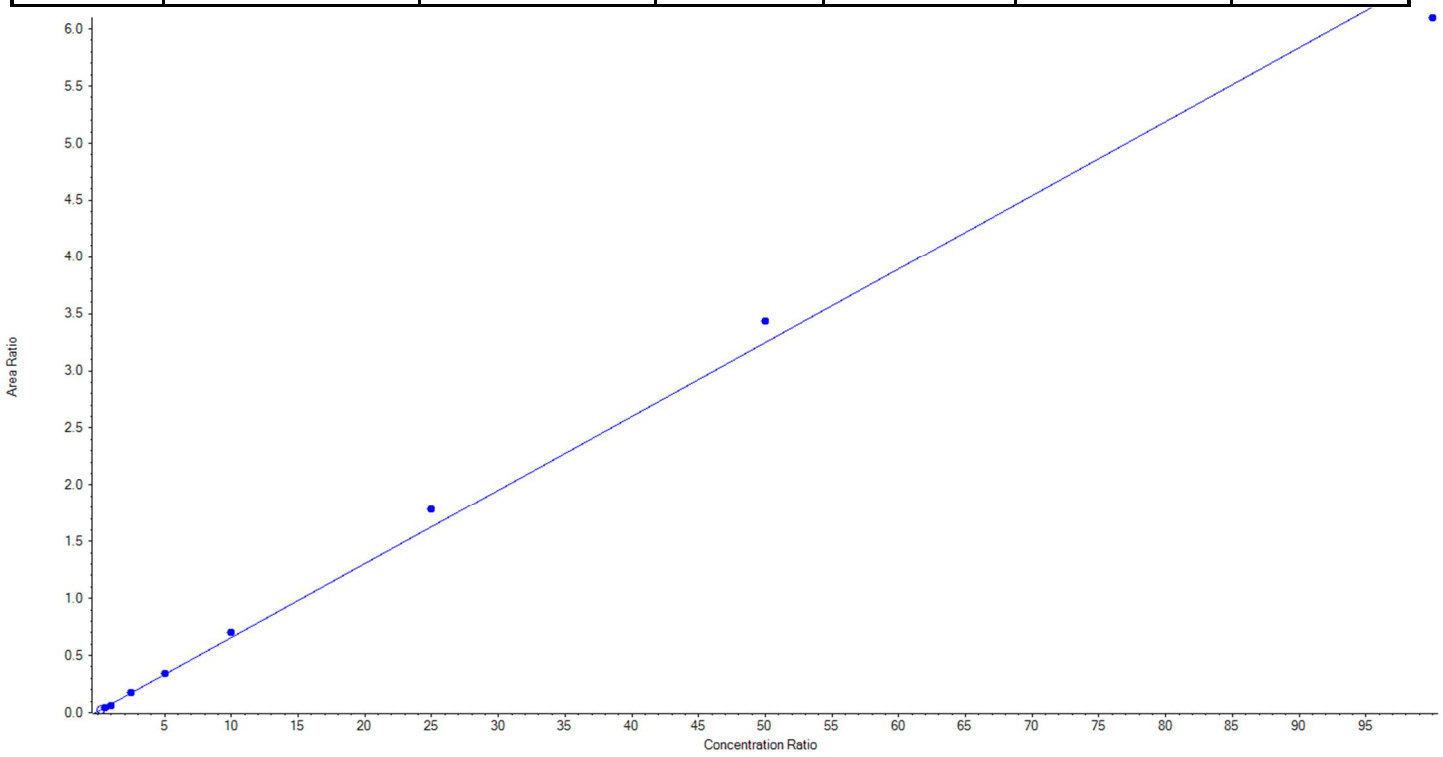
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Analyte Name	PFOA_2	**Data File**	18-0313.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06473 x + 0.01078 (r = 0.99767) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	22.005638	88.0
3	JV65	L2	True	50.00	46.540813	93.1
4	JV66	L3	True	100.00	82.992508	83.0
5	JV67	L4	True	250.00	261.053614	104.4
6	JV68	L5	True	500.00	517.072576	103.4
7	JV69	L6	True	1000.00	1070.067858	107.0
8	JV70	L7	True	2500.00	2733.741648	109.4
9	JV71	L8	True	5000.00	5284.814305	105.7
10	JV72	L9	True	10000.00	9403.716678	94.0



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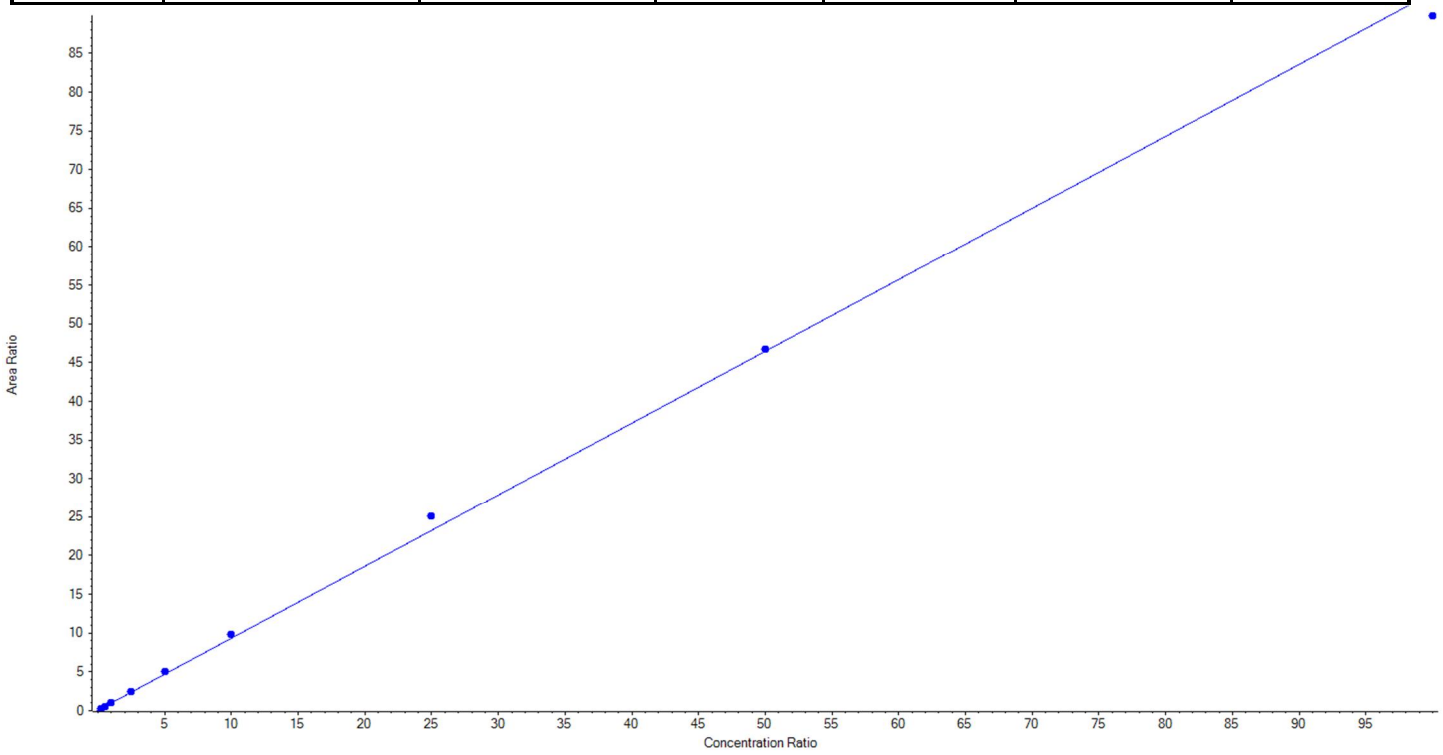
Calibration Summary Report

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Analyte Name	PFNA_1	**Data File**	18-0313.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.92776 x + 0.06645 (r = 0.99904) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	24.411469	97.7
3	JV65	L2	True	50.00	41.743202	83.5
4	JV66	L3	True	100.00	98.979777	99.0
5	JV67	L4	True	250.00	251.354806	100.5
6	JV68	L5	True	500.00	542.040106	108.4
7	JV69	L6	True	1000.00	1053.161797	105.3
8	JV70	L7	True	2500.00	2705.262997	108.2
9	JV71	L8	True	5000.00	5033.084124	100.7
10	JV72	L9	True	10000.00	9674.961722	96.8



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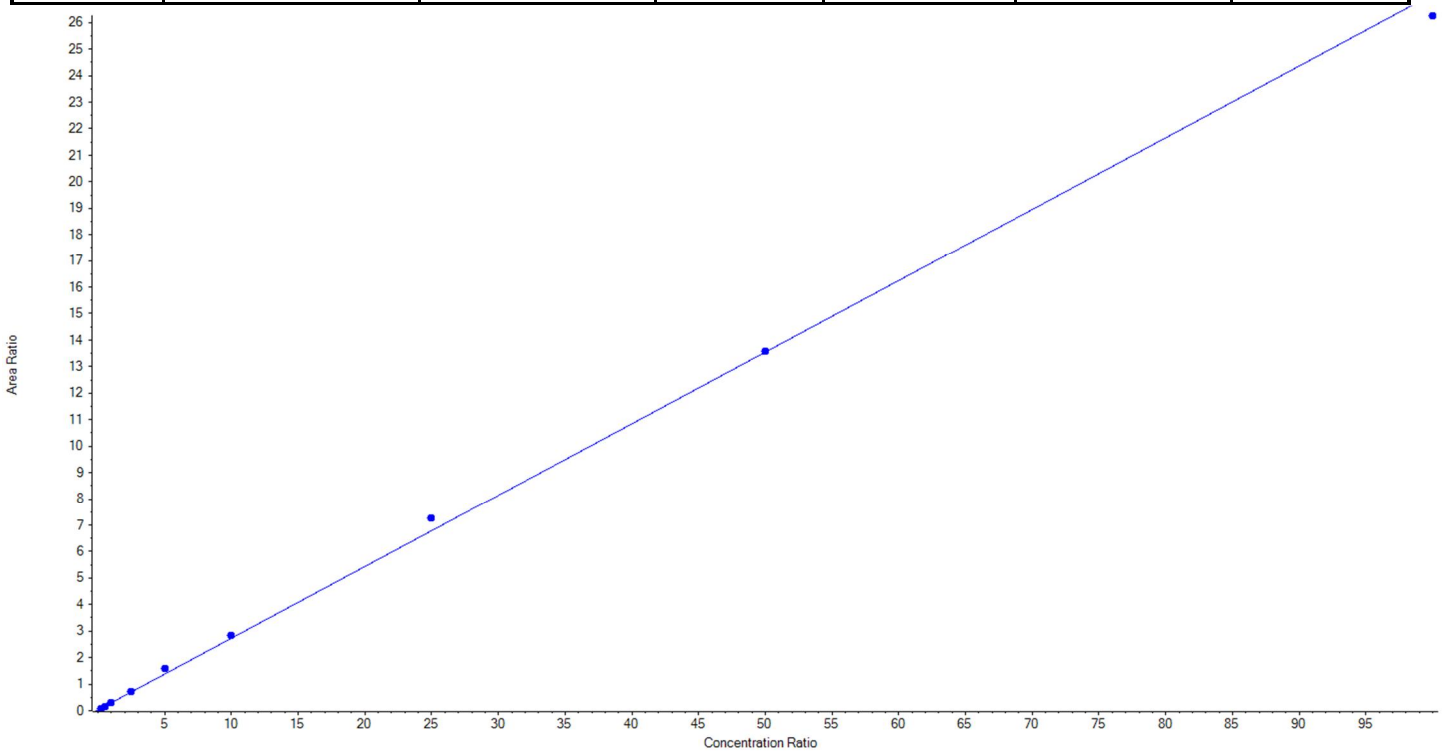
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Analyte Name	PFNA_2	**Data File**	18-0313.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.27039 x + 0.02695 (r = 0.99905) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	20.218296	80.9
3	JV65	L2	True	50.00	45.960397	91.9
4	JV66	L3	True	100.00	101.932105	101.9
5	JV67	L4	True	250.00	255.674001	102.3
6	JV68	L5	True	500.00	572.533150	114.5
7	JV69	L6	True	1000.00	1042.596703	104.3
8	JV70	L7	True	2500.00	2675.736272	107.0
9	JV71	L8	True	5000.00	5010.507489	100.2
10	JV72	L9	True	10000.00	9699.841587	97.0



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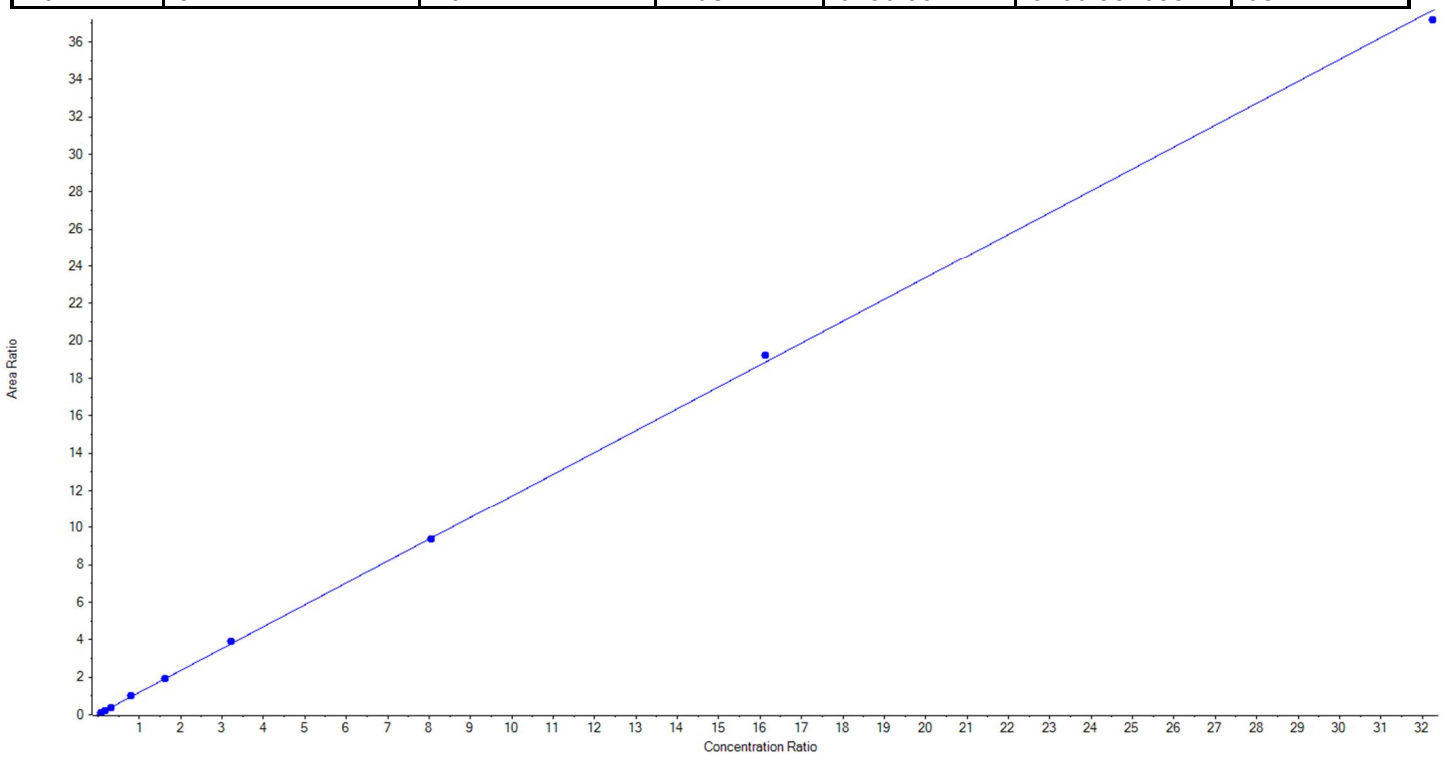
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Analyte Name	PFOS_1	**Data File**	18-0313.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0313_Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.16765 x + 0.02406 (r = 0.99981) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	23.15	23.361262	100.9
3	JV65	L2	True	46.30	42.153986	91.1
4	JV66	L3	True	92.60	88.414386	95.5
5	JV67	L4	True	231.50	248.496910	107.3
6	JV68	L5	True	463.00	472.188043	102.0
7	JV69	L6	True	925.60	954.991600	103.2
8	JV70	L7	True	2314.00	2301.735042	99.5
9	JV71	L8	True	4628.00	4717.827738	101.9
10	JV72	L9	True	9256.00	9130.981033	98.7



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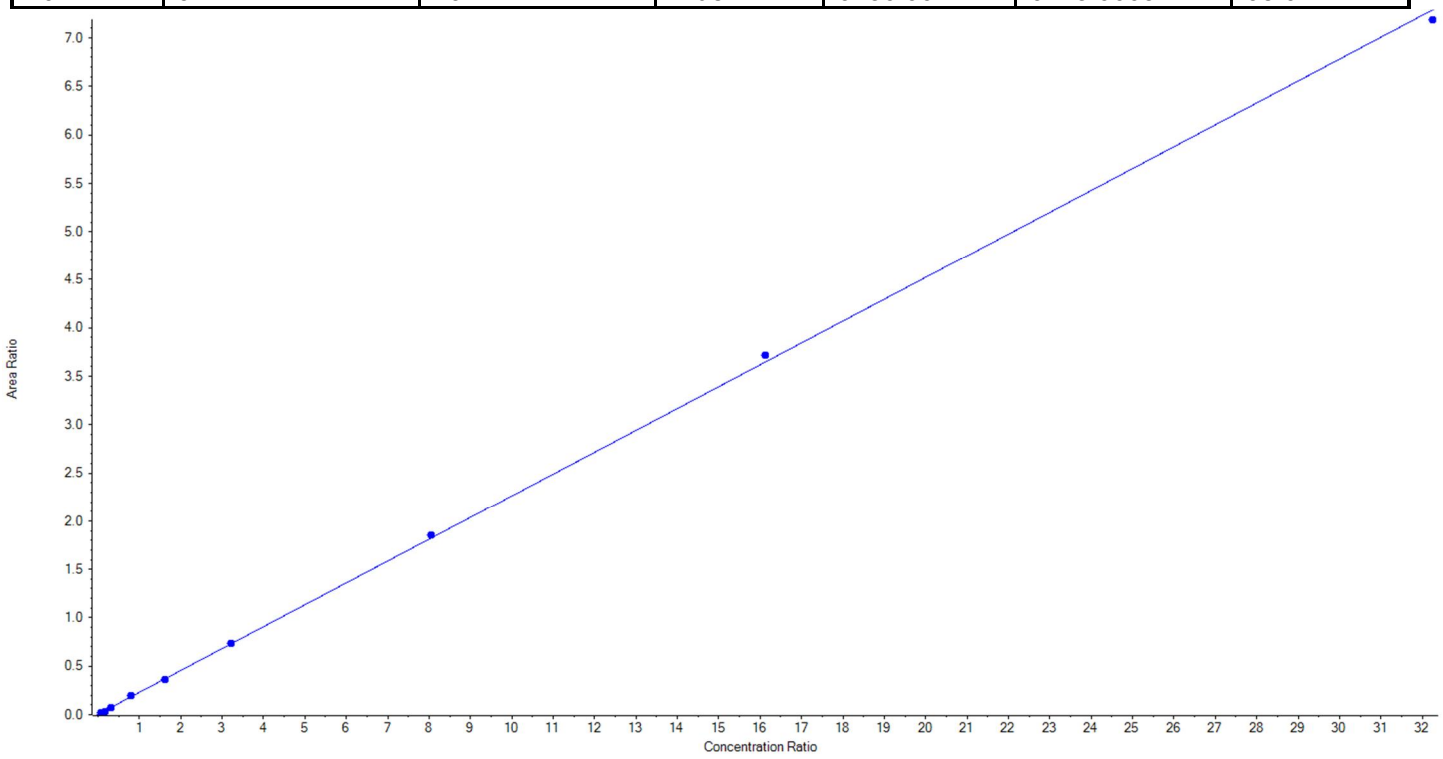
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Analyte Name	PFOS_2	**Data File**	18-0313.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0313_Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.22592 x + 0.00424 (r = 0.99977) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	23.15	25.835005	111.6
3	JV65	L2	True	46.30	37.607900	81.2
4	JV66	L3	True	92.60	92.009960	99.4
5	JV67	L4	True	231.50	248.837656	107.5
6	JV68	L5	True	463.00	455.023640	98.3
7	JV69	L6	True	925.60	923.897296	99.8
8	JV70	L7	True	2314.00	2352.785599	101.7
9	JV71	L8	True	4628.00	4719.092631	102.0
10	JV72	L9	True	9256.00	9125.060312	98.6



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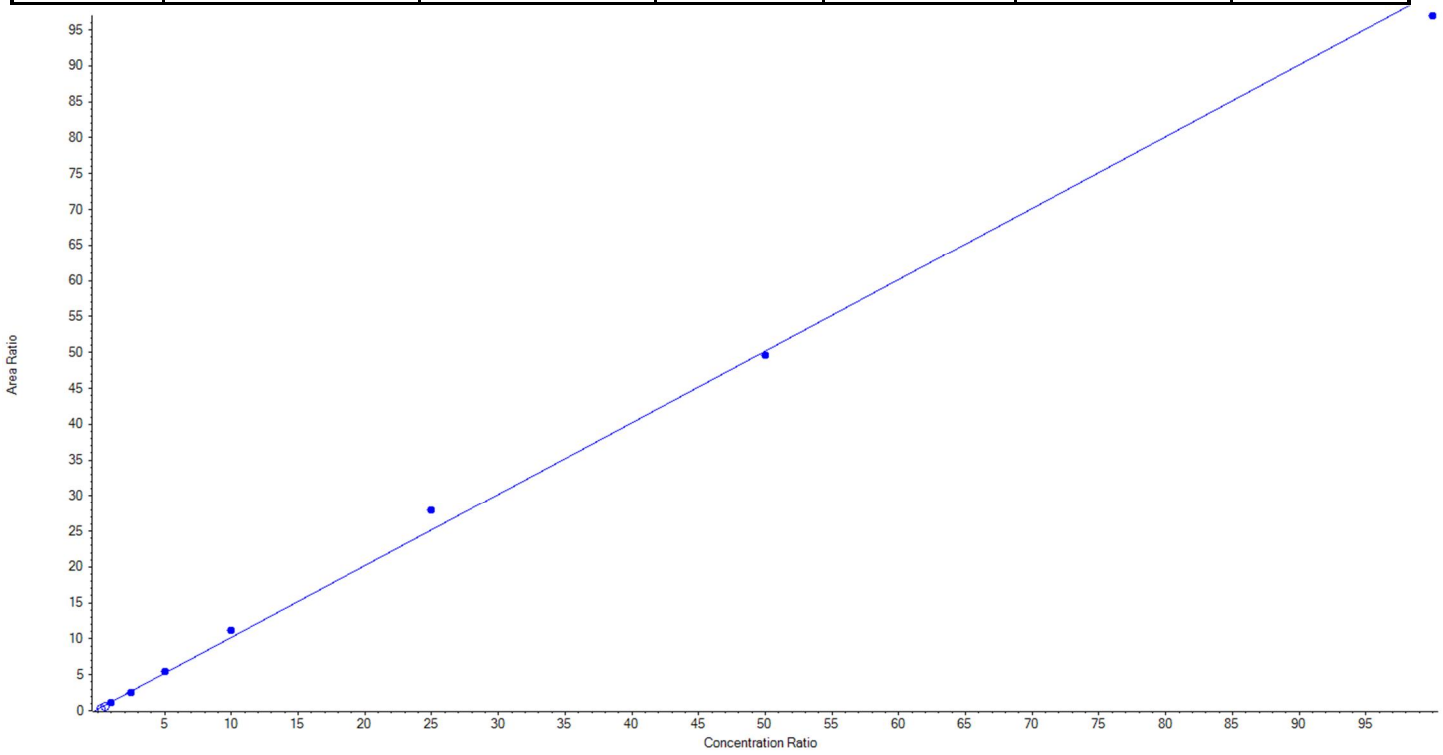
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Analyte Name	PFDA_1	**Data File**	18-0313.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.99919 x + 0.21544 (r = 0.99832) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	10.368703	41.5
3	JV65	L2	False	50.00	31.340650	62.7
4	JV66	L3	True	100.00	85.661929	85.7
5	JV67	L4	True	250.00	230.445171	92.2
6	JV68	L5	True	500.00	529.199399	105.8
7	JV69	L6	True	1000.00	1093.183122	109.3
8	JV70	L7	True	2500.00	2780.129248	111.2
9	JV71	L8	True	5000.00	4948.282902	99.0
10	JV72	L9	True	10000.00	9683.098229	96.8



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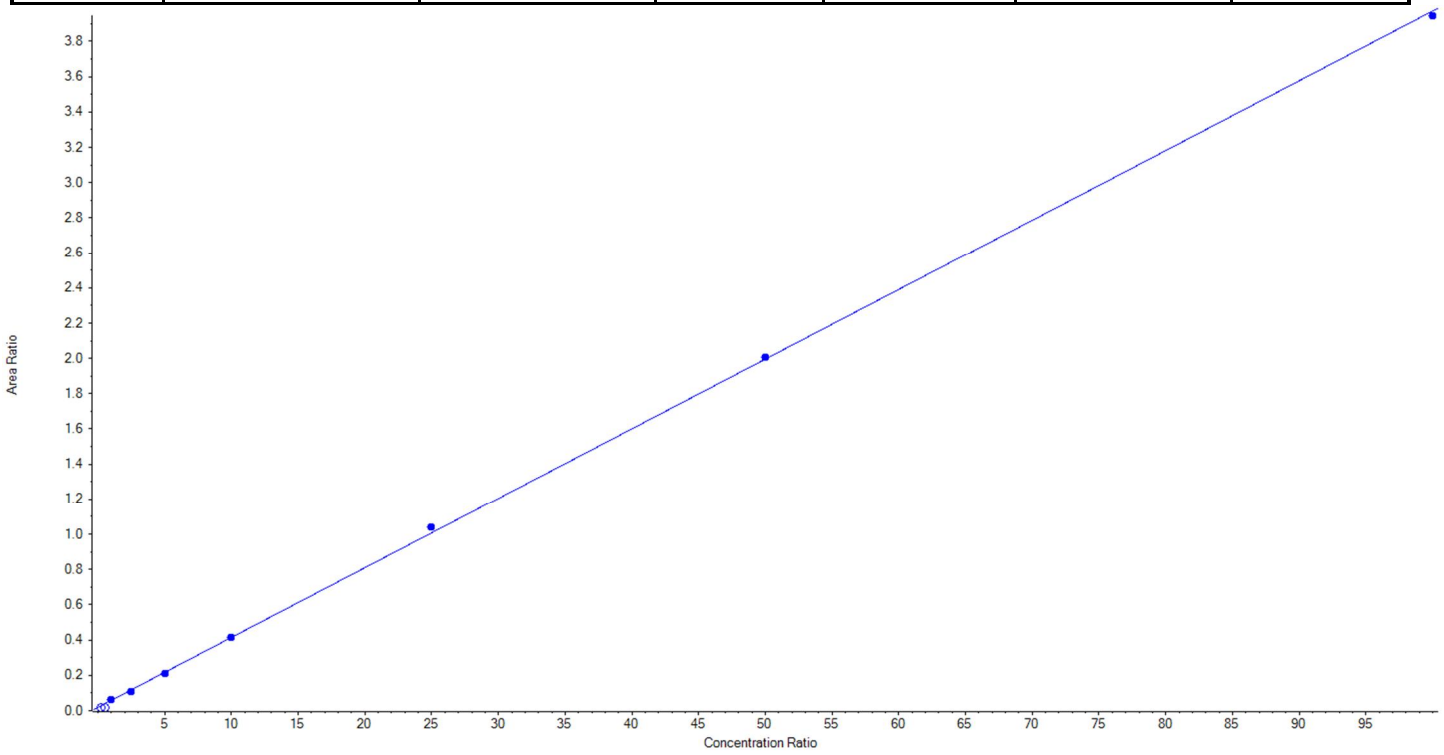
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Analyte Name	PFDA_2	**Data File**	18-0313.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.03953 x + 0.01934 (r = 0.99980) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	< 0	N/A
3	JV65	L2	False	50.00	< 0	N/A
4	JV66	L3	True	100.00	109.576482	109.6
5	JV67	L4	True	250.00	225.898181	90.4
6	JV68	L5	True	500.00	485.438921	97.1
7	JV69	L6	True	1000.00	1002.397258	100.2
8	JV70	L7	True	2500.00	2575.357213	103.0
9	JV71	L8	True	5000.00	5020.912753	100.4
10	JV72	L9	True	10000.00	9930.419191	99.3



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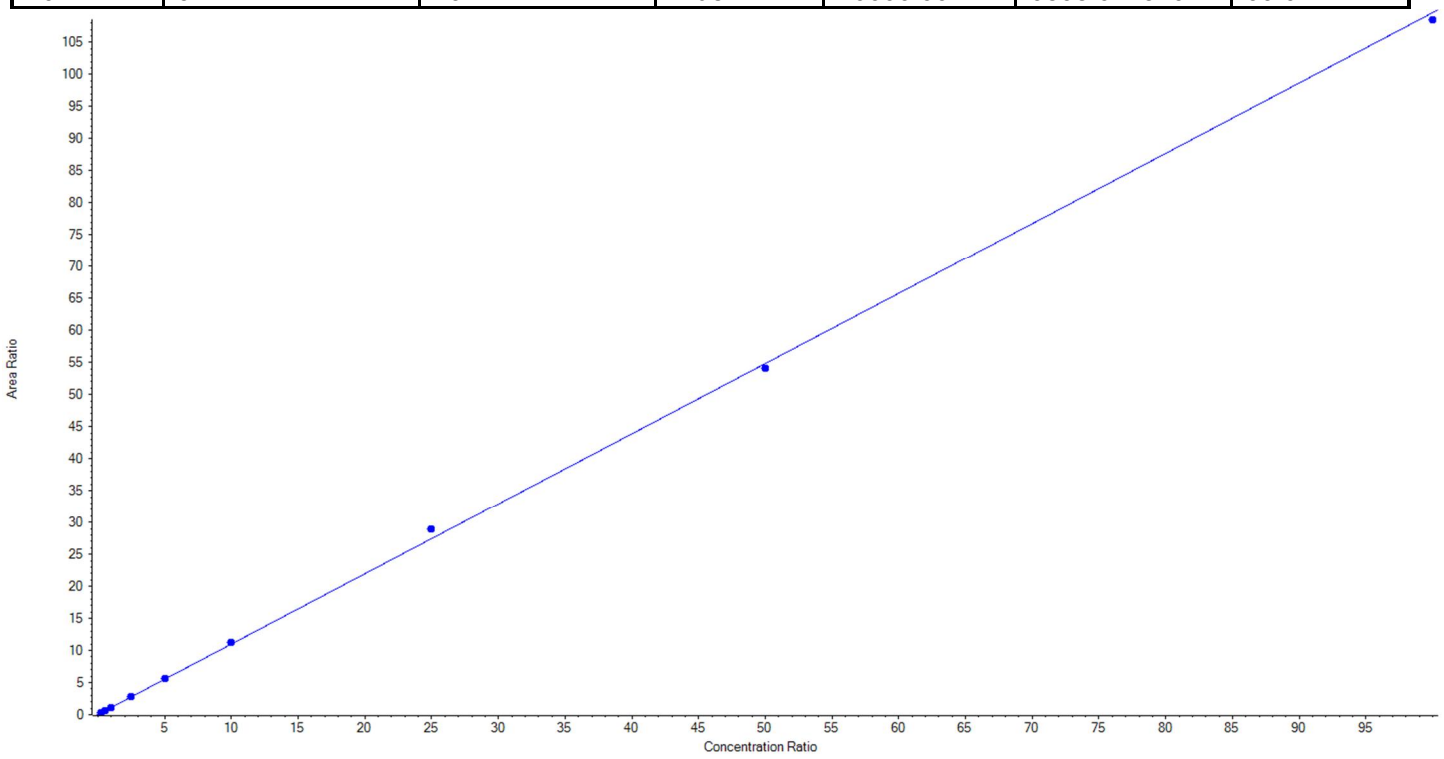
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Analyte Name	PFUnA_1	**Data File**	18-0313.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.09588 x + 0.04114 (r = 0.99970) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	24.333102	97.3
3	JV65	L2	True	50.00	47.670455	95.3
4	JV66	L3	True	100.00	97.714264	97.7
5	JV67	L4	True	250.00	255.004410	102.0
6	JV68	L5	True	500.00	512.965489	102.6
7	JV69	L6	True	1000.00	1017.920510	101.8
8	JV70	L7	True	2500.00	2640.922188	105.6
9	JV71	L8	True	5000.00	4930.392260	98.6
10	JV72	L9	True	10000.00	9898.077320	99.0



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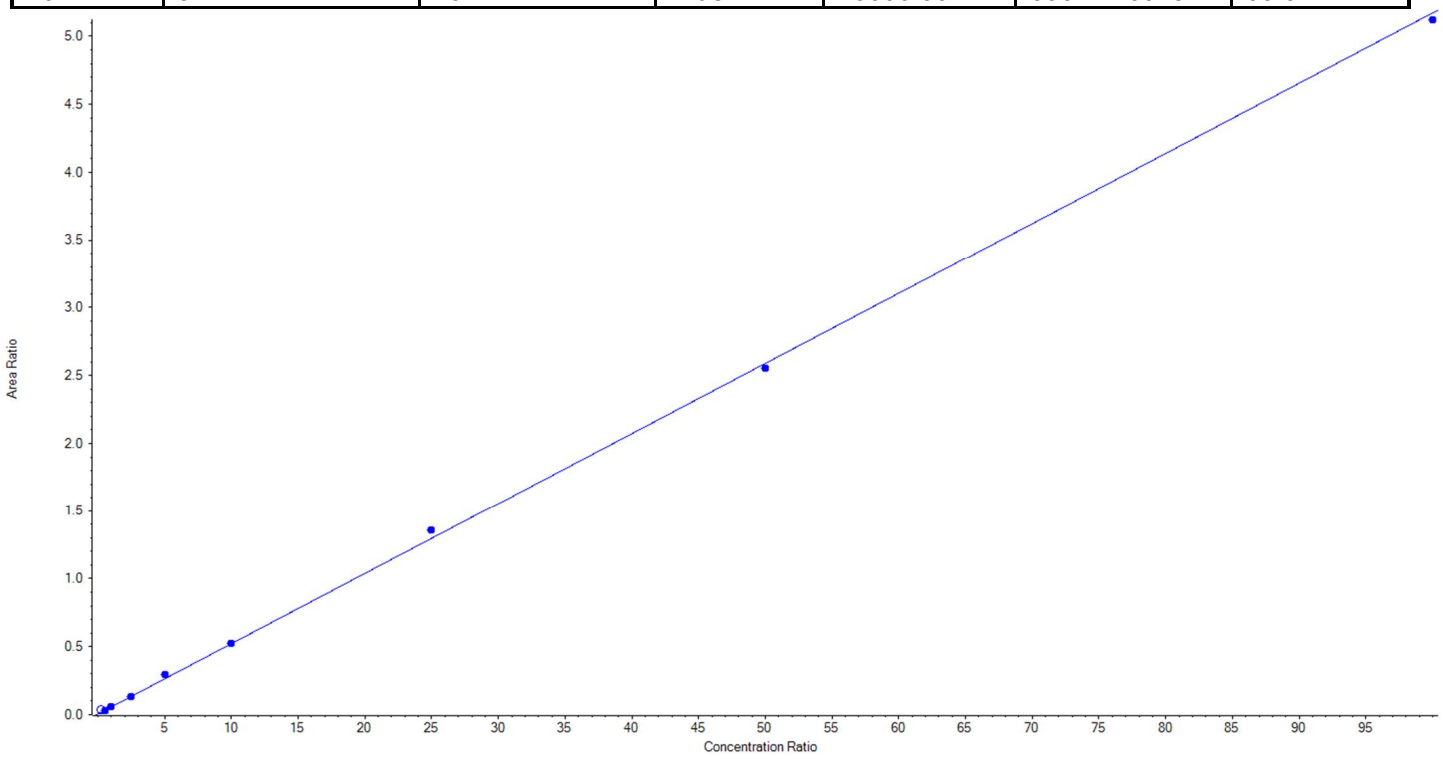
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Analyte Name	PFUnA_2	**Data File**	18-0313.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05167 x + 0.00535 (r = 0.99953) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	54.213071	216.9
3	JV65	L2	True	50.00	42.011553	84.0
4	JV66	L3	True	100.00	100.910898	100.9
5	JV67	L4	True	250.00	250.795438	100.3
6	JV68	L5	True	500.00	562.545175	112.5
7	JV69	L6	True	1000.00	1000.374015	100.0
8	JV70	L7	True	2500.00	2617.419524	104.7
9	JV71	L8	True	5000.00	4924.516855	98.5
10	JV72	L9	True	10000.00	9901.426543	99.0



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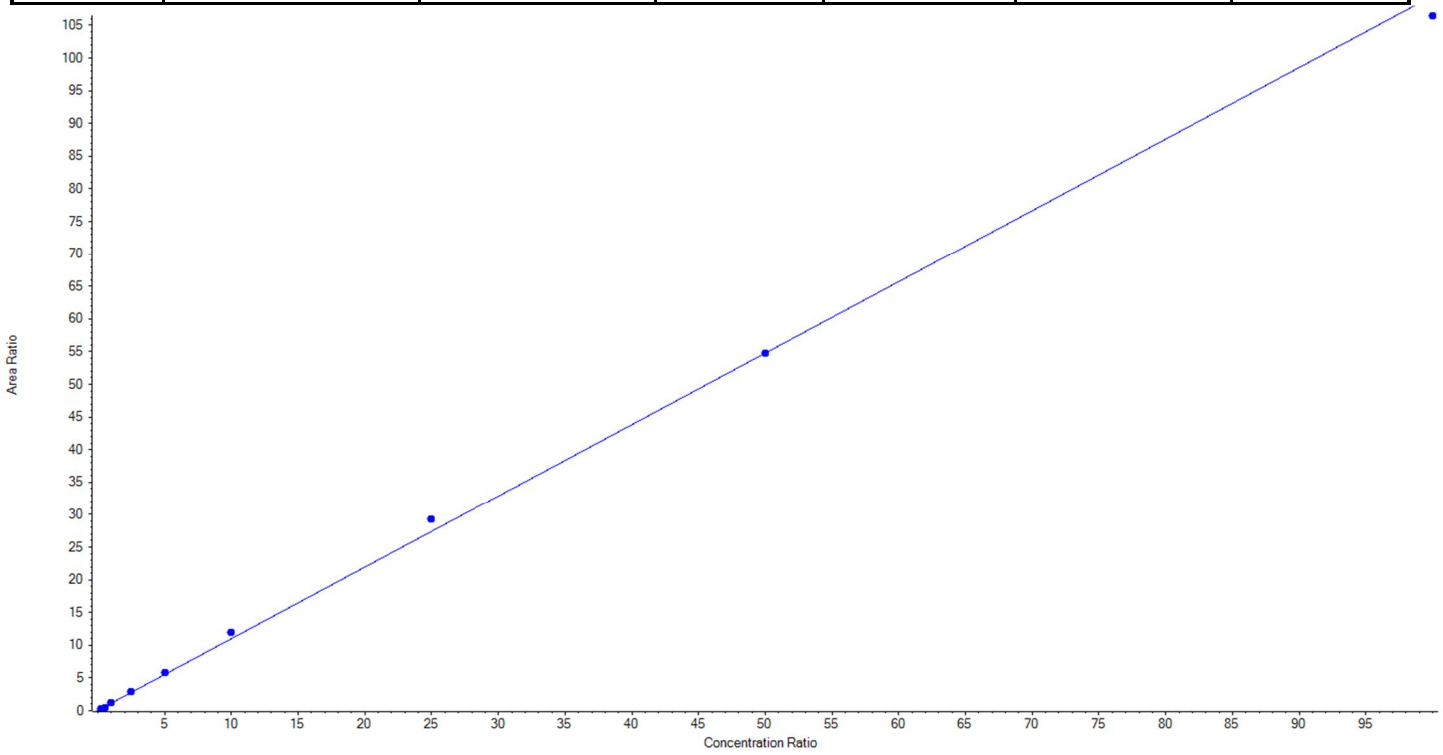
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Analyte Name	PFDoA_1	**Data File**	18-0313.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.09433 x + 0.06074 (r = 0.99915) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	24.809504	99.2
3	JV65	L2	True	50.00	39.835097	79.7
4	JV66	L3	True	100.00	101.286712	101.3
5	JV67	L4	True	250.00	254.074231	101.6
6	JV68	L5	True	500.00	526.830587	105.4
7	JV69	L6	True	1000.00	1087.157146	108.7
8	JV70	L7	True	2500.00	2674.514086	107.0
9	JV71	L8	True	5000.00	4994.806618	99.9
10	JV72	L9	True	10000.00	9721.686021	97.2



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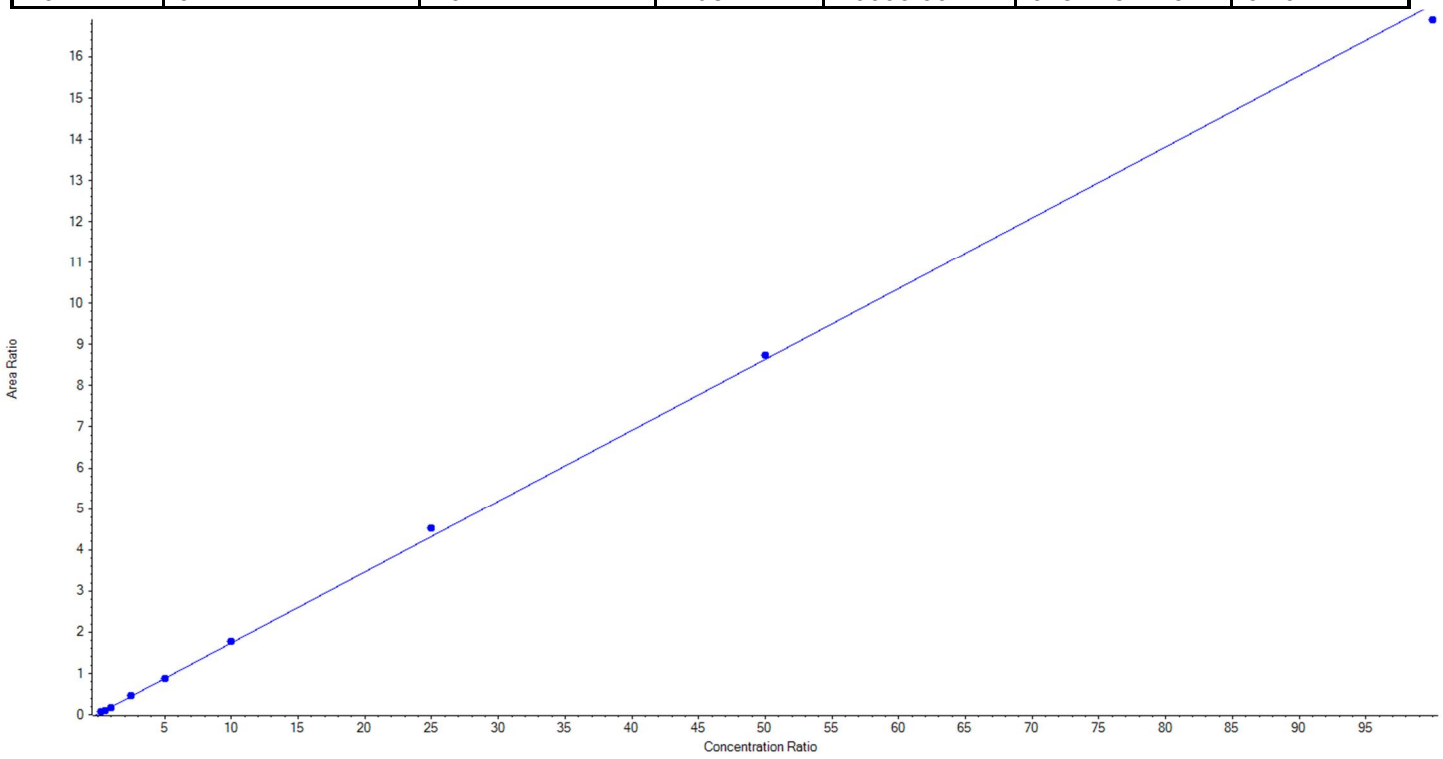
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Analyte Name	PFDoA_2	**Data File**	18-0313.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.17249 x + 0.01513 (r = 0.99963) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	26.532344	106.1
3	JV65	L2	True	50.00	42.462843	84.9
4	JV66	L3	True	100.00	96.476731	96.5
5	JV67	L4	True	250.00	263.226499	105.3
6	JV68	L5	True	500.00	506.075964	101.2
7	JV69	L6	True	1000.00	1020.038165	102.0
8	JV70	L7	True	2500.00	2621.333582	104.9
9	JV71	L8	True	5000.00	5061.671458	101.2
10	JV72	L9	True	10000.00	9787.182415	97.9



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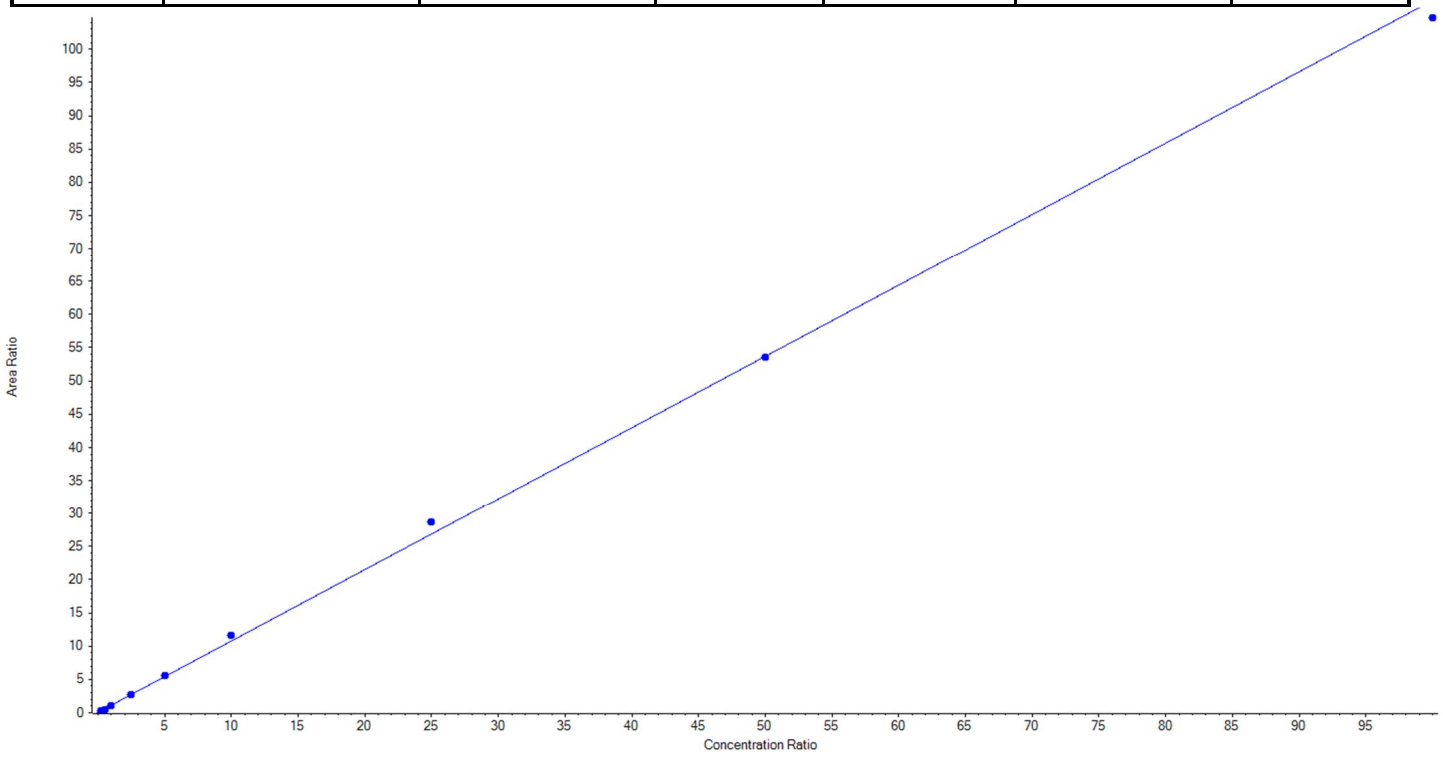
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Analyte Name	PFTrDA_1	**Data File**	18-0313.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.07282 x + 0.05063 (r = 0.99932) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.203429	100.8
3	JV65	L2	True	50.00	43.998106	88.0
4	JV66	L3	True	100.00	97.376116	97.4
5	JV67	L4	True	250.00	245.734116	98.3
6	JV68	L5	True	500.00	515.430124	103.1
7	JV69	L6	True	1000.00	1085.235268	108.5
8	JV70	L7	True	2500.00	2661.601187	106.5
9	JV71	L8	True	5000.00	4994.249530	99.9
10	JV72	L9	True	10000.00	9756.172124	97.6



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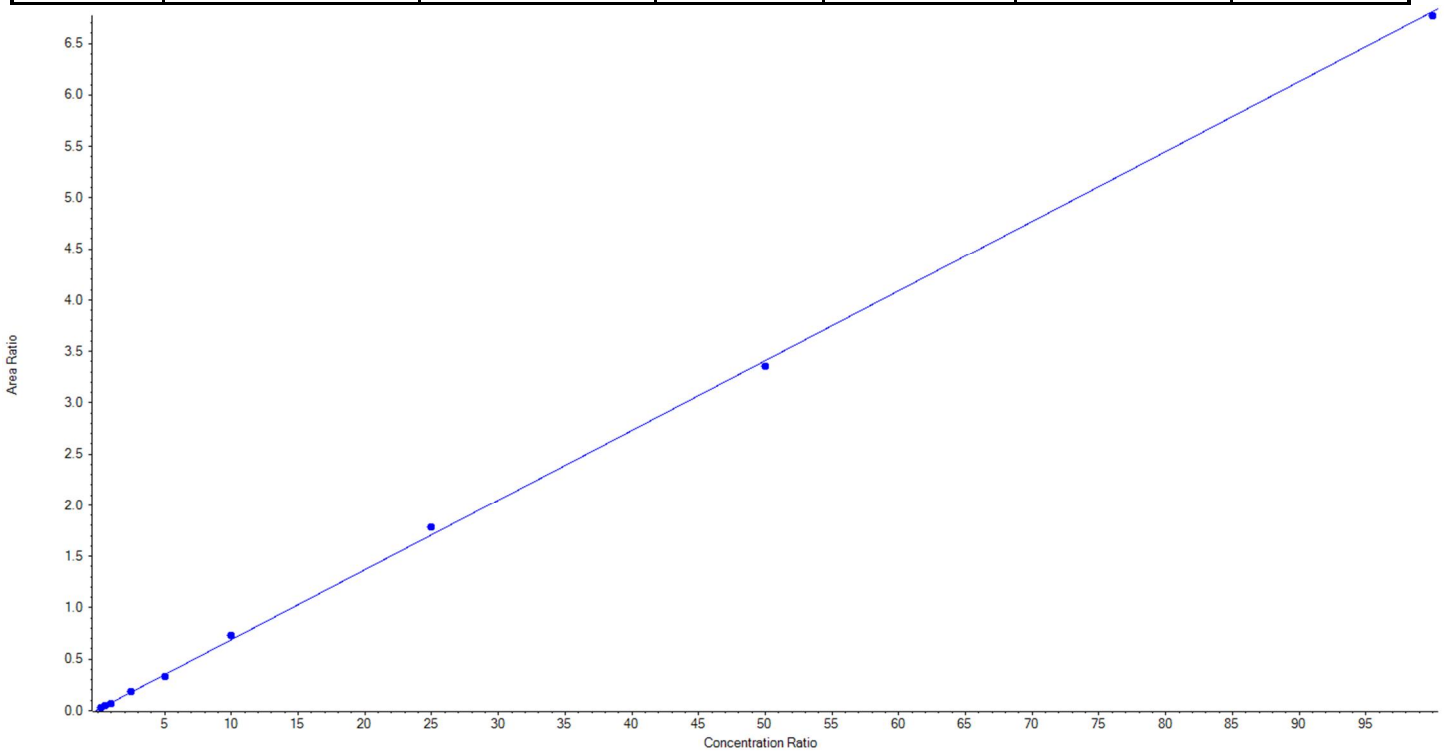
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Analyte Name	PFTrDA_2	**Data File**	18-0313.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06800 x + 0.01002 (r = 0.99958) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	27.141621	108.6
3	JV65	L2	True	50.00	52.520940	105.0
4	JV66	L3	True	100.00	80.738653	80.7
5	JV67	L4	True	250.00	254.680571	101.9
6	JV68	L5	True	500.00	475.884832	95.2
7	JV69	L6	True	1000.00	1065.280060	106.5
8	JV70	L7	True	2500.00	2604.777878	104.2
9	JV71	L8	True	5000.00	4924.491415	98.5
10	JV72	L9	True	10000.00	9939.484030	99.4



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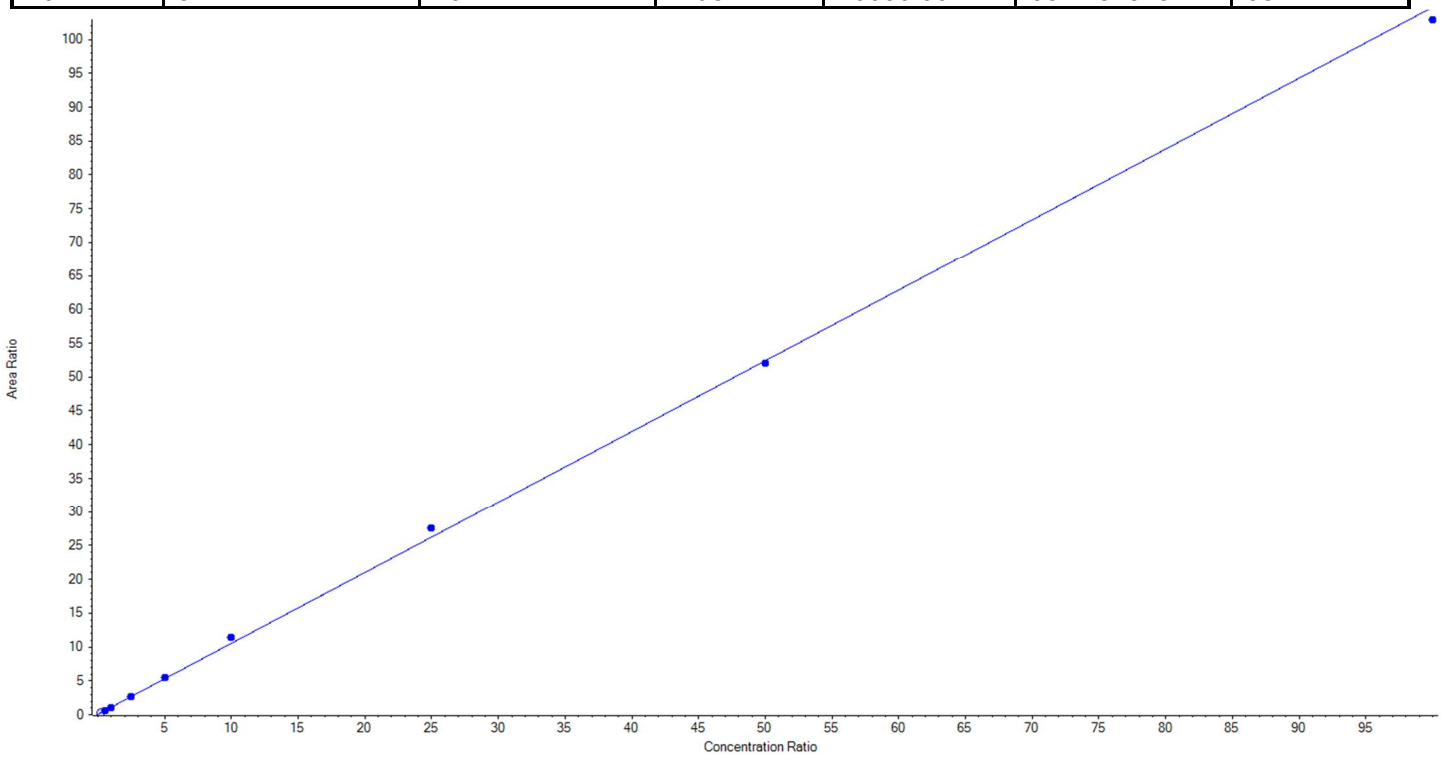
Calibration Summary Report

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Analyte Name	PFTeDA_1	**Data File**	18-0313.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.04679 x + 0.07024 (r = 0.99948) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	23.929635	95.7
3	JV65	L2	True	50.00	43.700214	87.4
4	JV66	L3	True	100.00	99.162152	99.2
5	JV67	L4	True	250.00	246.757950	98.7
6	JV68	L5	True	500.00	520.679296	104.1
7	JV69	L6	True	1000.00	1080.886811	108.1
8	JV70	L7	True	2500.00	2628.108012	105.1
9	JV71	L8	True	5000.00	4957.832384	99.2
10	JV72	L9	True	10000.00	9822.873181	98.2



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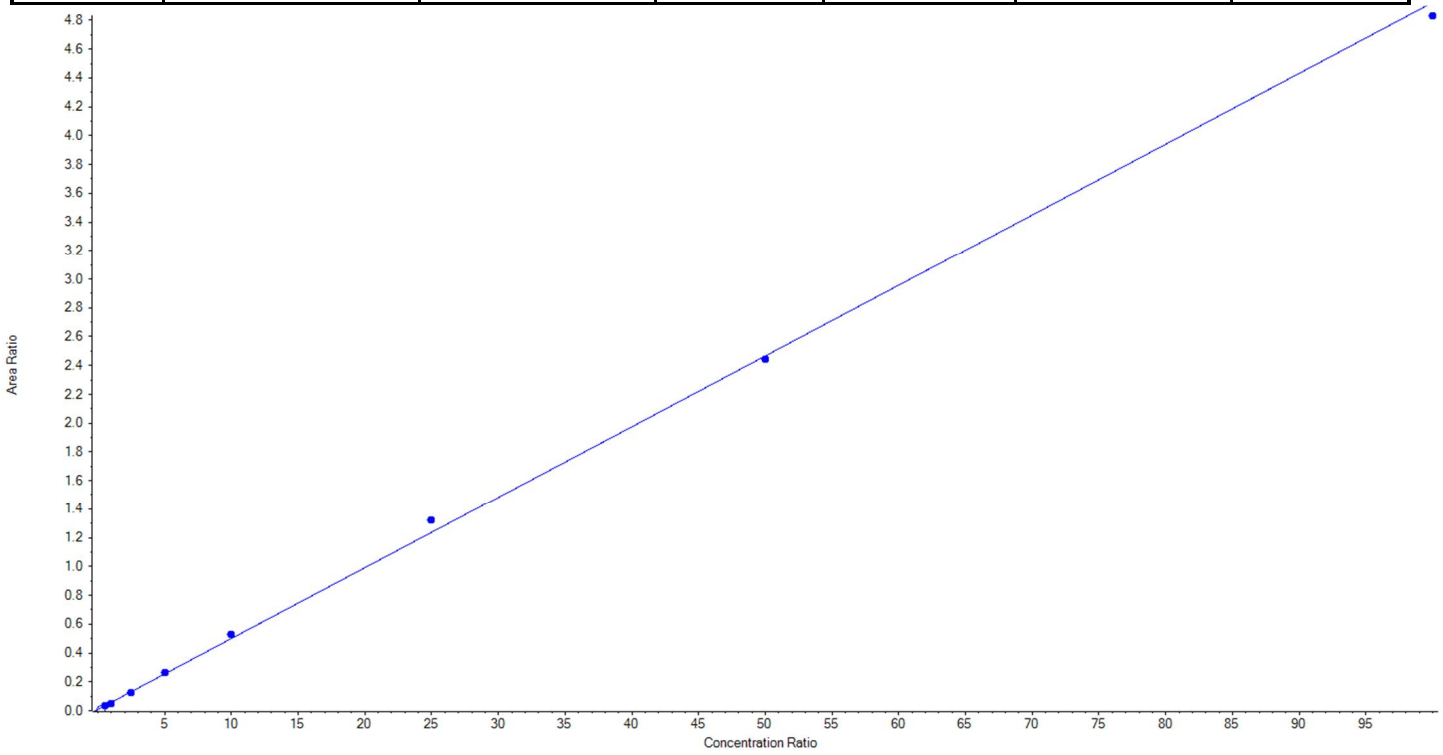
Calibration Summary Report

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Printed: 23/05/2018 2:44:19 PM

Analyte Name	PFTeDA_2	**Data File**	18-0313.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0313_Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.04914 x + 0.00899 (r = 0.99930) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	1.189372	4.8
3	JV65	L2	True	50.00	53.808904	107.6
4	JV66	L3	True	100.00	81.366098	81.4
5	JV67	L4	True	250.00	242.225032	96.9
6	JV68	L5	True	500.00	517.332905	103.5
7	JV69	L6	True	1000.00	1064.697063	106.5
8	JV70	L7	True	2500.00	2674.759141	107.0
9	JV71	L8	True	5000.00	4954.132013	99.1
10	JV72	L9	True	10000.00	9811.678844	98.1



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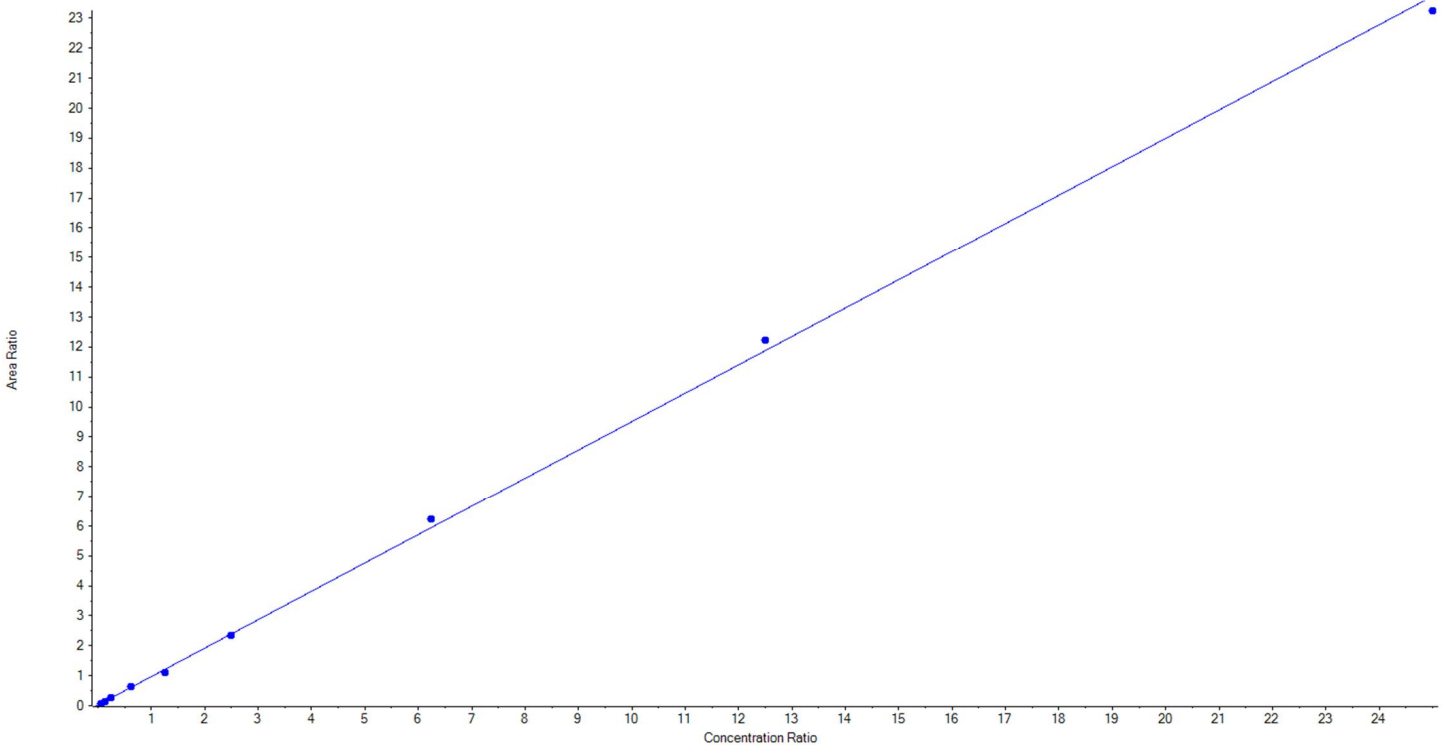
Calibration Summary Report

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Printed: 23/05/2018 2:44:19 PM

Analyte Name	NMeFOSAA_1	**Data File**	18-0313.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0313_Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.94846 x + 0.02409 (r = 0.99947) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	24.648457	98.6
3	JV65	L2	True	50.00	52.409646	104.8
4	JV66	L3	True	100.00	100.762487	100.8
5	JV67	L4	True	250.00	253.928545	101.6
6	JV68	L5	True	500.00	452.857852	90.6
7	JV69	L6	True	1000.00	979.361667	97.9
8	JV70	L7	True	2500.00	2623.979649	105.0
9	JV71	L8	True	5000.00	5141.553388	102.8
10	JV72	L9	True	10000.00	9795.498310	98.0



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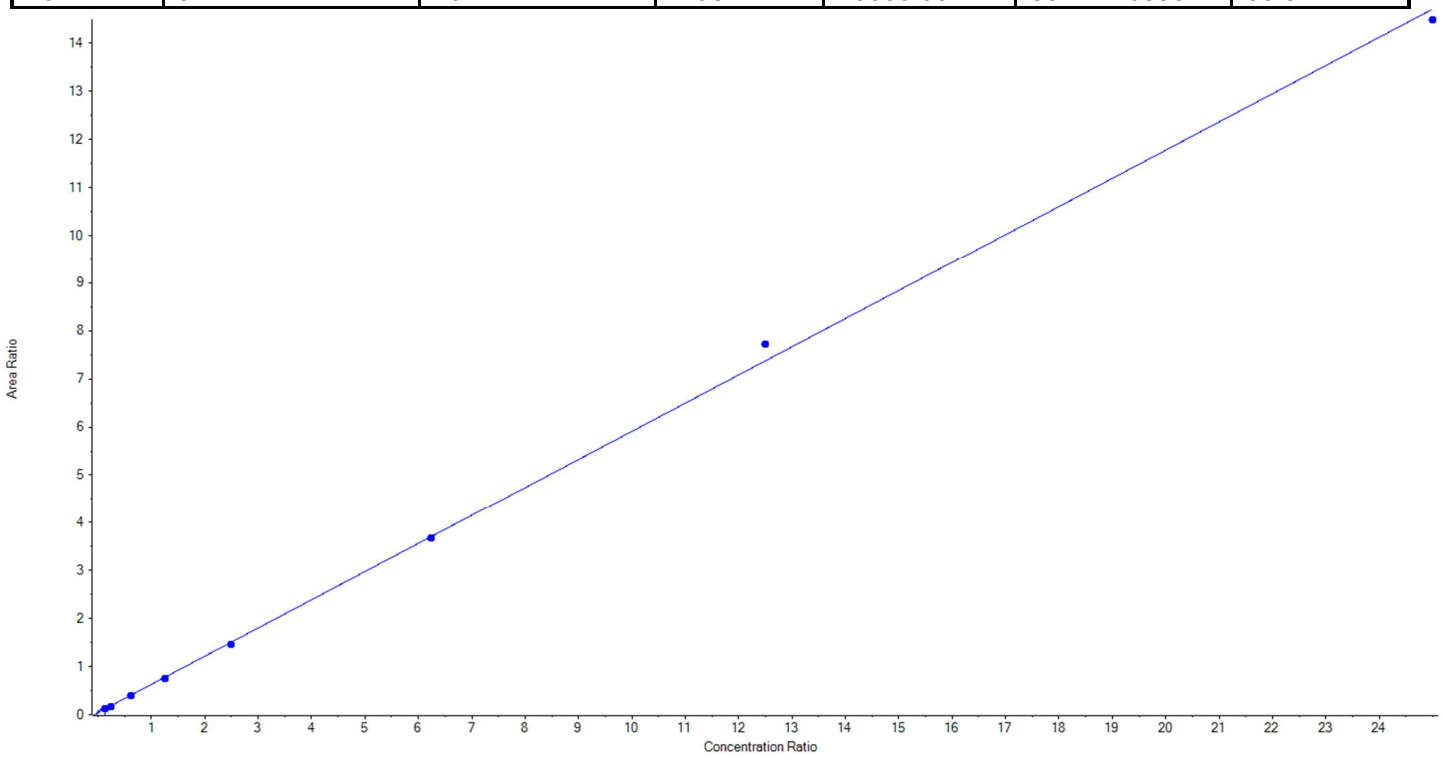
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/05/2018 2:44:19 PM

Analyte Name	NMeFOSAA_2	**Data File**	18-0313.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0313_Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.58675 x + 0.04231 (r = 0.99949) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	< 0	N/A
3	JV65	L2	True	50.00	59.265228	118.5
4	JV66	L3	True	100.00	88.696165	88.7
5	JV67	L4	True	250.00	244.943682	98.0
6	JV68	L5	True	500.00	476.879086	95.4
7	JV69	L6	True	1000.00	970.886314	97.1
8	JV70	L7	True	2500.00	2480.966798	99.2
9	JV71	L8	True	5000.00	5230.915871	104.6
10	JV72	L9	True	10000.00	9847.446856	98.5



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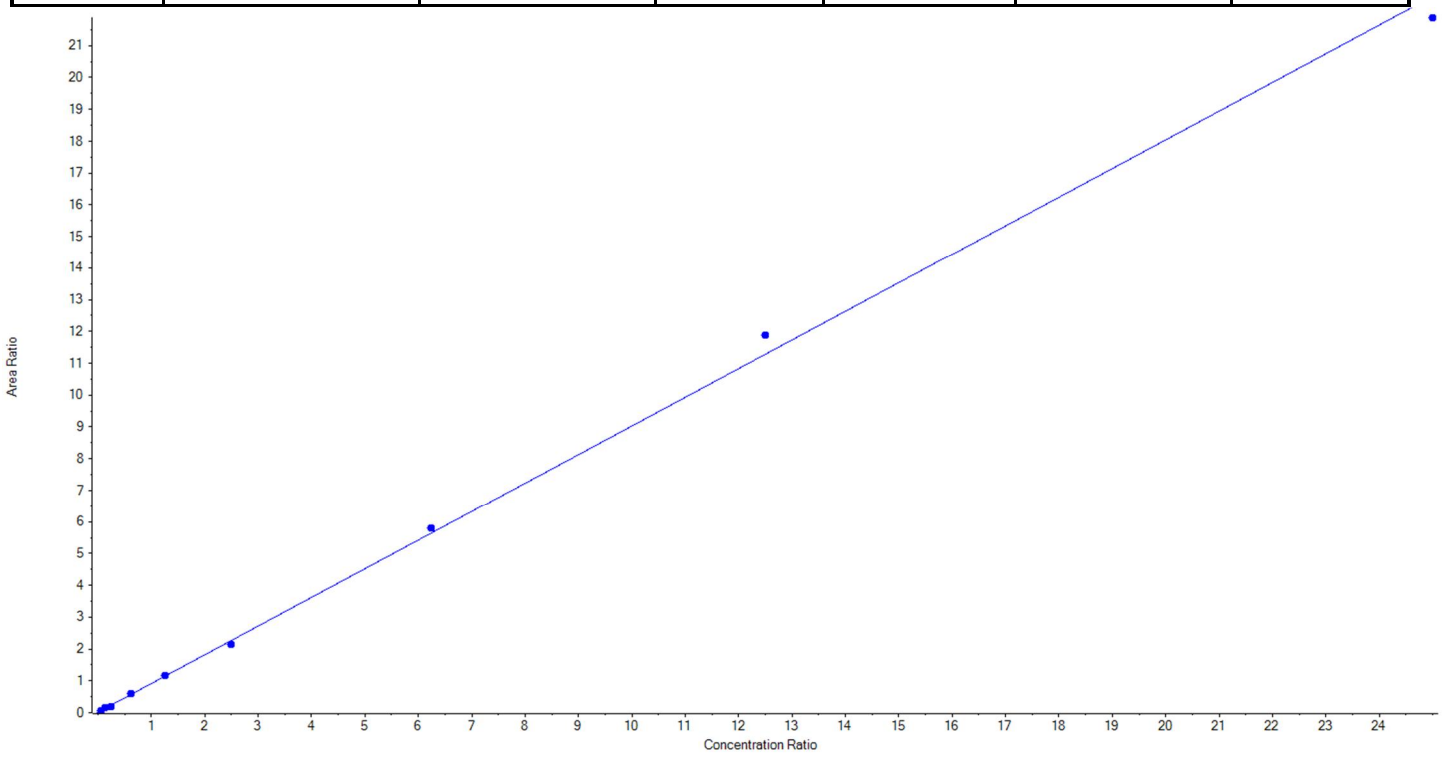
Calibration Summary Report

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Analyte Name	NEtFOSAA_1	**Data File**	18-0313.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0313_Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.90138 x + 0.01437 (r = 0.99896) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	21.319053	85.3
3	JV65	L2	True	50.00	64.299976	128.6
4	JV66	L3	True	100.00	76.835912	76.8
5	JV67	L4	True	250.00	265.899538	106.4
6	JV68	L5	True	500.00	514.051353	102.8
7	JV69	L6	True	1000.00	951.455825	95.2
8	JV70	L7	True	2500.00	2567.794899	102.7
9	JV71	L8	True	5000.00	5262.702481	105.3
10	JV72	L9	True	10000.00	9700.640962	97.0



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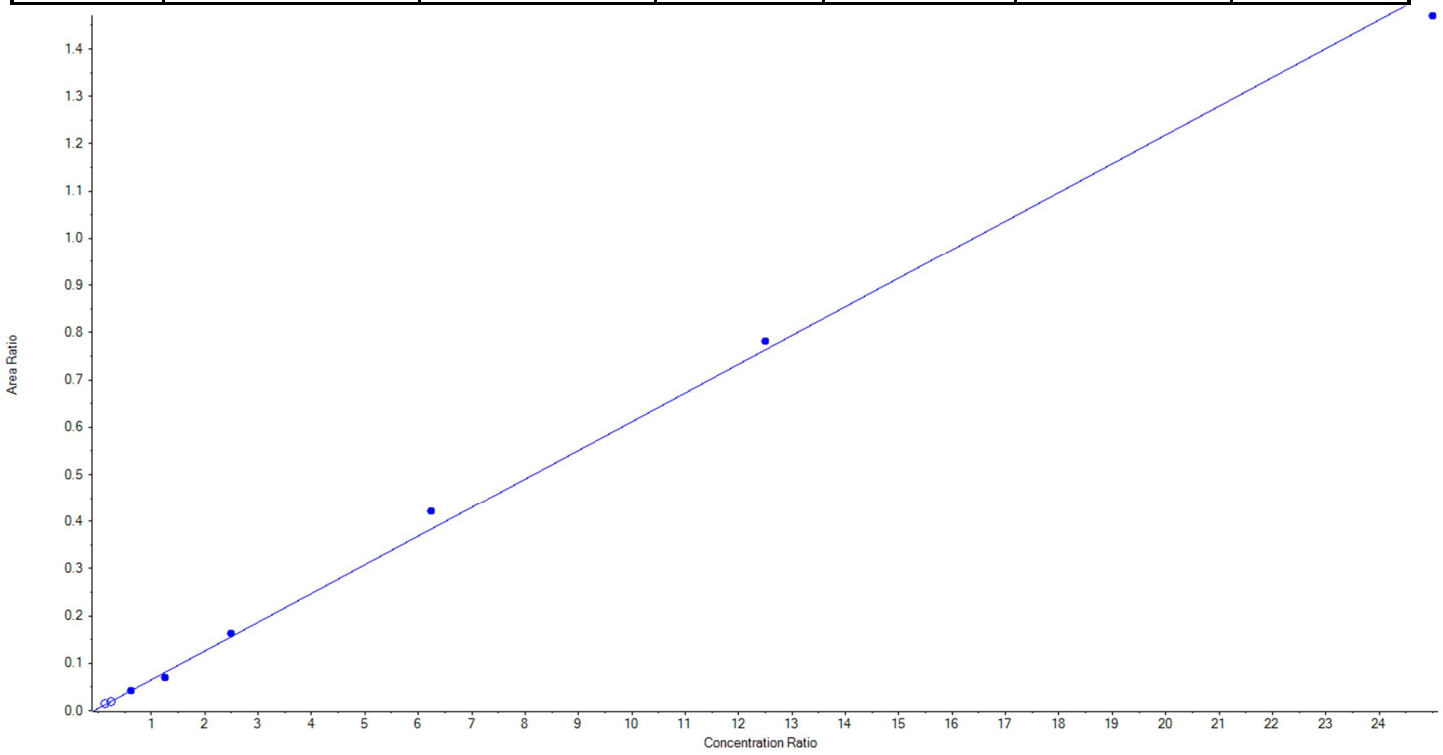
Calibration Summary Report

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Printed: 23/05/2018 2:44:19 PM

Analyte Name	NEtFOSAA_2	**Data File**	18-0313.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0313_Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/14/2018 11:20:57 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06071 x + 0.00441 (r = 0.99828) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	N/A	N/A
3	JV65	L2	False	50.00	65.966292	131.9
4	JV66	L3	False	100.00	94.303580	94.3
5	JV67	L4	True	250.00	251.980572	100.8
6	JV68	L5	True	500.00	430.232147	86.1
7	JV69	L6	True	1000.00	1043.578594	104.4
8	JV70	L7	True	2500.00	2744.280900	109.8
9	JV71	L8	True	5000.00	5123.296865	102.5
10	JV72	L9	True	10000.00	9656.630922	96.6



	Drinking Water Calibration Curve Concentrations (ng/L)								
	JV64	JV65	JV66	JV67	JV68	JV69	JV70	JV71	JV72
PFHxA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFHpA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFOA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFNA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFUnA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDoA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTrDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTeDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NMeFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NEtFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFBS	22.15	44.30	88.60	221.50	443.00	885.00	2,212.50	4,425.00	8,850.00
PFHxS (branched)	22.80	45.60	91.20	228.00	456.00	912.00	2,280.00	4,560.00	9,120.00
PFOS (branched)	23.15	46.30	92.60	231.50	463.00	925.60	2,314.00	4,628.00	9,256.00
	Surrogates								
13C2-PFHxA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C2-PFDA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
d5-EtFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00
	Internal Standards								
13C2-PFOA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C4-PFOS	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
d3-MeFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00

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Summary Ion Ratio Report

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Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T11:29:54	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.49	PFBS	0.354	0.327	ü
PFHxA_1	313.0 / 269.0	1.79	PFHxA			
PFHxA_2	313.0 / 119.0	1.77	PFHxA	0.051	0.066	ü
PFHpA_1	363.0 / 319.0	2.12	PFHpA			
PFHpA_2	363.0 / 169.0	2.54	PFHpA	0.027	0.021	ü
PFHxS_1	399.0 / 80.0	2.14	PFHxS			
PFHxS_2	399.0 / 99.0	2.13	PFHxS	0.388	0.304	ü
PFOA_1	413.0 / 369.0	2.90	PFOA			
PFOA_2	413.0 / 169.0	2.90	PFOA	0.087	0.066	ü
PFNA_1	463.0 / 419.0	3.29	PFNA			
PFNA_2	463.0 / 219.0	3.28	PFNA	0.338	0.305	ü
PFOS_1	499.0 / 80.0	2.88	PFOS			
PFOS_2	499.0 / 99.0	2.89	PFOS	0.206	0.192	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.26	PFDA	0.059	0.042	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.60	PFUnA	0.108	0.048	
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.85	PFDoA	0.183	0.162	ü
PFTrDA_1	663.0 / 619.0	4.11	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.10	PFTrDA	0.089	0.068	ü
PFTeDA_1	713.0 / 669.0	4.33	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.030	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.37	NMeFOSAA	0.253	0.664	
NEtFOSAA_1	584.0 / 419.0	3.56	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.36	NEtFOSSA	0.062	0.080	ü

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Summary Ion Ratio Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T11:38:49	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.48	PFBS	0.404	0.327	ü
PFHxA_1	313.0 / 269.0	1.79	PFHxA			
PFHxA_2	313.0 / 119.0	1.79	PFHxA	0.077	0.066	ü
PFHpA_1	363.0 / 319.0	2.12	PFHpA			
PFHpA_2	363.0 / 169.0	2.11	PFHpA	0.028	0.021	ü
PFHxS_1	399.0 / 80.0	2.14	PFHxS			
PFHxS_2	399.0 / 99.0	2.13	PFHxS	0.288	0.304	ü
PFOA_1	413.0 / 369.0	2.50	PFOA			
PFOA_2	413.0 / 169.0	2.51	PFOA	0.063	0.066	ü
PFNA_1	463.0 / 419.0	2.88	PFNA			
PFNA_2	463.0 / 219.0	2.88	PFNA	0.333	0.305	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.173	0.192	ü
PFDA_1	513.0 / 469.0	3.24	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.036	0.042	ü
PFUnA_1	563.0 / 519.0	3.56	PFUnA			
PFUnA_2	563.0 / 269.0	3.50	PFUnA	0.048	0.048	ü
PFDoA_1	613.0 / 569.0	3.85	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.178	0.162	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.088	0.068	ü
PFTeDA_1	713.0 / 669.0	4.33	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.067	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.39	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.41	NMeFOSAA	0.871	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.55	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.60	NEtFOSSA	0.089	0.080	ü

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Summary Ion Ratio Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T11:47:45	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.49	PFBS			
PFBS_2	298.9 / 99.0	1.48	PFBS	0.326	0.327	ü
PFHxA_1	313.0 / 269.0	1.80	PFHxA			
PFHxA_2	313.0 / 119.0	1.78	PFHxA	0.063	0.066	ü
PFHpA_1	363.0 / 319.0	2.12	PFHpA			
PFHpA_2	363.0 / 169.0	2.11	PFHpA	0.023	0.021	ü
PFHxS_1	399.0 / 80.0	2.13	PFHxS			
PFHxS_2	399.0 / 99.0	2.14	PFHxS	0.303	0.304	ü
PFOA_1	413.0 / 369.0	2.50	PFOA			
PFOA_2	413.0 / 169.0	2.50	PFOA	0.057	0.066	ü
PFNA_1	463.0 / 419.0	2.88	PFNA			
PFNA_2	463.0 / 219.0	2.88	PFNA	0.307	0.299	ü
PFOS_1	499.0 / 80.0	2.87	PFOS			
PFOS_2	499.0 / 99.0	2.87	PFOS	0.200	0.192	ü
PFDA_1	513.0 / 469.0	3.23	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.059	0.042	ü
PFUnA_1	563.0 / 519.0	3.55	PFUnA			
PFUnA_2	563.0 / 269.0	3.56	PFUnA	0.052	0.048	ü
PFDoA_1	613.0 / 569.0	3.84	PFDoA			
PFDoA_2	613.0 / 319.0	3.84	PFDoA	0.155	0.162	ü
PFTrDA_1	663.0 / 619.0	4.10	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.09	PFTrDA	0.059	0.068	ü
PFTeDA_1	713.0 / 669.0	4.32	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.32	PFTeDA	0.044	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.38	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.38	NMeFOSAA	0.656	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.54	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.47	NEtFOSSA	0.100	0.068	ü

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Summary Ion Ratio Report

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Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T11:56:42	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.47	PFBS	0.321	0.327	ü
PFHxA_1	313.0 / 269.0	1.76	PFHxA			
PFHxA_2	313.0 / 119.0	1.76	PFHxA	0.063	0.066	ü
PFHpA_1	363.0 / 319.0	2.11	PFHpA			
PFHpA_2	363.0 / 169.0	2.11	PFHpA	0.026	0.021	ü
PFHxS_1	399.0 / 80.0	2.13	PFHxS			
PFHxS_2	399.0 / 99.0	2.13	PFHxS	0.282	0.304	ü
PFOA_1	413.0 / 369.0	2.49	PFOA			
PFOA_2	413.0 / 169.0	2.49	PFOA	0.070	0.066	ü
PFNA_1	463.0 / 419.0	2.87	PFNA			
PFNA_2	463.0 / 219.0	2.87	PFNA	0.300	0.305	ü
PFOS_1	499.0 / 80.0	2.86	PFOS			
PFOS_2	499.0 / 99.0	2.86	PFOS	0.193	0.192	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.043	0.042	ü
PFUnA_1	563.0 / 519.0	3.54	PFUnA			
PFUnA_2	563.0 / 269.0	3.54	PFUnA	0.048	0.048	ü
PFDoA_1	613.0 / 569.0	3.83	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.165	0.162	ü
PFTrDA_1	663.0 / 619.0	4.08	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.068	0.068	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.048	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.37	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.641	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSSA	0.070	0.080	ü

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Summary Ion Ratio Report

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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:05:38	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.48	PFBS			
PFBS_2	298.9 / 99.0	1.47	PFBS	0.304	0.327	ü
PFHxA_1	313.0 / 269.0	1.76	PFHxA			
PFHxA_2	313.0 / 119.0	1.75	PFHxA	0.062	0.066	ü
PFHpA_1	363.0 / 319.0	2.11	PFHpA			
PFHpA_2	363.0 / 169.0	2.11	PFHpA	0.021	0.021	ü
PFHxS_1	399.0 / 80.0	2.12	PFHxS			
PFHxS_2	399.0 / 99.0	2.13	PFHxS	0.306	0.304	ü
PFOA_1	413.0 / 369.0	2.49	PFOA			
PFOA_2	413.0 / 169.0	2.49	PFOA	0.066	0.066	ü
PFNA_1	463.0 / 419.0	2.87	PFNA			
PFNA_2	463.0 / 219.0	2.87	PFNA	0.309	0.305	ü
PFOS_1	499.0 / 80.0	2.86	PFOS			
PFOS_2	499.0 / 99.0	2.86	PFOS	0.186	0.192	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.23	PFDA	0.038	0.042	ü
PFUnA_1	563.0 / 519.0	3.54	PFUnA			
PFUnA_2	563.0 / 269.0	3.54	PFUnA	0.052	0.048	ü
PFDoA_1	613.0 / 569.0	3.83	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.152	0.162	ü
PFTrDA_1	663.0 / 619.0	4.08	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.060	0.068	ü
PFTeDA_1	713.0 / 669.0	4.31	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.048	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.37	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.676	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.52	NEtFOSSA	0.059	0.080	ü

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Summary Ion Ratio Report

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Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:14:33	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.47	PFBS	0.311	0.327	ü
PFHxA_1	313.0 / 269.0	1.75	PFHxA			
PFHxA_2	313.0 / 119.0	1.75	PFHxA	0.064	0.066	ü
PFHpA_1	363.0 / 319.0	2.11	PFHpA			
PFHpA_2	363.0 / 169.0	2.11	PFHpA	0.019	0.021	ü
PFHxS_1	399.0 / 80.0	2.12	PFHxS			
PFHxS_2	399.0 / 99.0	2.13	PFHxS	0.290	0.304	ü
PFOA_1	413.0 / 369.0	2.49	PFOA			
PFOA_2	413.0 / 169.0	2.49	PFOA	0.069	0.066	ü
PFNA_1	463.0 / 419.0	2.87	PFNA			
PFNA_2	463.0 / 219.0	2.87	PFNA	0.289	0.305	ü
PFOS_1	499.0 / 80.0	2.86	PFOS			
PFOS_2	499.0 / 99.0	2.86	PFOS	0.187	0.192	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.22	PFDA	0.037	0.042	ü
PFUnA_1	563.0 / 519.0	3.54	PFUnA			
PFUnA_2	563.0 / 269.0	3.54	PFUnA	0.047	0.048	ü
PFDoA_1	613.0 / 569.0	3.83	PFDoA			
PFDoA_2	613.0 / 319.0	3.83	PFDoA	0.148	0.162	ü
PFTrDA_1	663.0 / 619.0	4.08	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.063	0.068	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.047	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.37	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.625	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSSA	0.075	0.080	ü

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Summary Ion Ratio Report

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Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:23:30	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.47	PFBS	0.301	0.327	ü
PFHxA_1	313.0 / 269.0	1.75	PFHxA			
PFHxA_2	313.0 / 119.0	1.75	PFHxA	0.067	0.066	ü
PFHpA_1	363.0 / 319.0	2.11	PFHpA			
PFHpA_2	363.0 / 169.0	2.11	PFHpA	0.020	0.021	ü
PFHxS_1	399.0 / 80.0	2.12	PFHxS			
PFHxS_2	399.0 / 99.0	2.12	PFHxS	0.292	0.304	ü
PFOA_1	413.0 / 369.0	2.49	PFOA			
PFOA_2	413.0 / 169.0	2.49	PFOA	0.068	0.066	ü
PFNA_1	463.0 / 419.0	2.86	PFNA			
PFNA_2	463.0 / 219.0	2.86	PFNA	0.289	0.305	ü
PFOS_1	499.0 / 80.0	2.86	PFOS			
PFOS_2	499.0 / 99.0	2.86	PFOS	0.198	0.192	ü
PFDA_1	513.0 / 469.0	3.22	PFDA			
PFDA_2	513.0 / 219.0	3.21	PFDA	0.037	0.042	ü
PFUnA_1	563.0 / 519.0	3.53	PFUnA			
PFUnA_2	563.0 / 269.0	3.53	PFUnA	0.047	0.048	ü
PFDoA_1	613.0 / 569.0	3.82	PFDoA			
PFDoA_2	613.0 / 319.0	3.82	PFDoA	0.155	0.162	ü
PFTrDA_1	663.0 / 619.0	4.08	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.062	0.068	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.048	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.36	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.589	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.52	NEtFOSSA	0.073	0.080	ü

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Summary Ion Ratio Report

Created with Analyst Reporter
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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:32:26	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.46	PFBS			
PFBS_2	298.9 / 99.0	1.46	PFBS	0.308	0.327	ü
PFHxA_1	313.0 / 269.0	1.74	PFHxA			
PFHxA_2	313.0 / 119.0	1.74	PFHxA	0.073	0.066	ü
PFHpA_1	363.0 / 319.0	2.10	PFHpA			
PFHpA_2	363.0 / 169.0	2.10	PFHpA	0.019	0.021	ü
PFHxS_1	399.0 / 80.0	2.12	PFHxS			
PFHxS_2	399.0 / 99.0	2.12	PFHxS	0.294	0.304	ü
PFOA_1	413.0 / 369.0	2.48	PFOA			
PFOA_2	413.0 / 169.0	2.48	PFOA	0.070	0.066	ü
PFNA_1	463.0 / 419.0	2.86	PFNA			
PFNA_2	463.0 / 219.0	2.86	PFNA	0.290	0.305	ü
PFOS_1	499.0 / 80.0	2.85	PFOS			
PFOS_2	499.0 / 99.0	2.85	PFOS	0.194	0.192	ü
PFDA_1	513.0 / 469.0	3.21	PFDA			
PFDA_2	513.0 / 219.0	3.21	PFDA	0.040	0.042	ü
PFUnA_1	563.0 / 519.0	3.54	PFUnA			
PFUnA_2	563.0 / 269.0	3.53	PFUnA	0.047	0.048	ü
PFDoA_1	613.0 / 569.0	3.82	PFDoA			
PFDoA_2	613.0 / 319.0	3.82	PFDoA	0.160	0.162	ü
PFTrDA_1	663.0 / 619.0	4.08	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.08	PFTrDA	0.063	0.068	ü
PFTeDA_1	713.0 / 669.0	4.30	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.30	PFTeDA	0.047	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.36	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.36	NMeFOSAA	0.632	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.53	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.52	NEtFOSSA	0.066	0.080	ü

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Summary Ion Ratio Report

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Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:41:22	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.46	PFBS			
PFBS_2	298.9 / 99.0	1.45	PFBS	0.311	0.327	ü
PFHxA_1	313.0 / 269.0	1.74	PFHxA			
PFHxA_2	313.0 / 119.0	1.74	PFHxA	0.073	0.066	ü
PFHpA_1	363.0 / 319.0	2.10	PFHpA			
PFHpA_2	363.0 / 169.0	2.10	PFHpA	0.019	0.021	ü
PFHxS_1	399.0 / 80.0	2.11	PFHxS			
PFHxS_2	399.0 / 99.0	2.11	PFHxS	0.295	0.304	ü
PFOA_1	413.0 / 369.0	2.48	PFOA			
PFOA_2	413.0 / 169.0	2.48	PFOA	0.065	0.066	ü
PFNA_1	463.0 / 419.0	2.85	PFNA			
PFNA_2	463.0 / 219.0	2.85	PFNA	0.292	0.305	ü
PFOS_1	499.0 / 80.0	2.84	PFOS			
PFOS_2	499.0 / 99.0	2.85	PFOS	0.193	0.192	ü
PFDA_1	513.0 / 469.0	3.20	PFDA			
PFDA_2	513.0 / 219.0	3.20	PFDA	0.041	0.042	ü
PFUnA_1	563.0 / 519.0	3.52	PFUnA			
PFUnA_2	563.0 / 269.0	3.52	PFUnA	0.047	0.048	ü
PFDoA_1	613.0 / 569.0	3.81	PFDoA			
PFDoA_2	613.0 / 319.0	3.81	PFDoA	0.159	0.162	ü
PFTrDA_1	663.0 / 619.0	4.07	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.06	PFTrDA	0.065	0.068	ü
PFTeDA_1	713.0 / 669.0	4.29	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.28	PFTeDA	0.047	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.35	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.35	NMeFOSAA	0.623	0.664	ü
NEtFOSAA_1	584.0 / 419.0	3.52	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.51	NEtFOSSA	0.067	0.080	ü

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QC Summary Report

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Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:50:20	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.46	805.907678	885.00	91.06
PFBS_2	298.9 / 99.0	1.46	825.071704	885.00	93.23
PFHxA_1	313.0 / 269.0	1.75	962.249904	1000.00	96.22
PFHxA_2	313.0 / 119.0	1.74	1015.156998	1000.00	101.52
PFHpA_1	363.0 / 319.0	2.10	933.247533	1000.00	93.32
PFHpA_2	363.0 / 169.0	2.10	933.903106	1000.00	93.39
PFHxS_1	399.0 / 80.0	2.12	861.806904	912.00	94.50
PFHxS_2	399.0 / 99.0	2.12	826.048162	912.00	90.58
PFOA_1	413.0 / 369.0	2.48	941.626058	1000.00	94.16
PFOA_2	413.0 / 169.0	2.48	1065.520264	1000.00	106.55
PFNA_1	463.0 / 419.0	2.85	969.501428	1000.00	96.95
PFNA_2	463.0 / 219.0	2.85	1015.813698	1000.00	101.58
PFOS_1	499.0 / 80.0	2.85	830.716293	925.60	89.75
PFOS_2	499.0 / 99.0	2.85	936.586590	925.60	101.19
PFDA_1	513.0 / 469.0	3.21	952.414243	1000.00	95.24
PFDA_2	513.0 / 219.0	3.21	866.424928	1000.00	86.64
PFUnA_1	563.0 / 519.0	3.53	983.154309	1000.00	98.32
PFUnA_2	563.0 / 269.0	3.53	953.567429	1000.00	95.36
PFDoA_1	613.0 / 569.0	3.81	985.864788	1000.00	98.59
PFDoA_2	613.0 / 319.0	3.81	953.497275	1000.00	95.35
PFTrDA_1	663.0 / 619.0	4.07	976.486543	1000.00	97.65
PFTrDA_2	663.0 / 169.0	4.07	961.413908	1000.00	96.14
PFTeDA_1	713.0 / 669.0	4.29	938.482516	1000.00	93.85
PFTeDA_2	713.0 / 169.0	4.28	952.593795	1000.00	95.26
NMeFOSAA_1	570.0 / 419.0	3.36	1109.562943	1000.00	110.96
NMeFOSAA_2	570.0 / 512.0	3.36	980.360841	1000.00	98.04
NEtFOSAA_1	584.0 / 419.0	3.52	1088.808929	1000.00	108.88
NEtFOSAA_2	584.0 / 483.0	3.52	957.541377	1000.00	95.75

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QC Summary Report

Created with Analyst Reporter
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Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T12:50:20	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.73	92.204529	100.00	92.20
13C2-PFDA	515.0 / 470.0	3.19	92.949919	100.00	92.95
d5-EtFOSAA	589.0 / 419.0	3.51	381.212971	400.00	95.30

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QC Summary Report

Created with Analyst Reporter
Printed: 27/05/2018 1:14:05 PM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T14:19:36	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.46	899.387330	885.00	101.63
PFBS_2	298.9 / 99.0	1.45	900.526623	885.00	101.75
PFHxA_1	313.0 / 269.0	1.74	1183.308886	1000.00	118.33
PFHxA_2	313.0 / 119.0	1.73	1192.266265	1000.00	119.23
PFHpA_1	363.0 / 319.0	2.09	1094.466247	1000.00	109.45
PFHpA_2	363.0 / 169.0	2.09	1068.460245	1000.00	106.85
PFHxS_1	399.0 / 80.0	2.10	913.078700	912.00	100.12
PFHxS_2	399.0 / 99.0	2.11	872.644722	912.00	95.68
PFOA_1	413.0 / 369.0	2.47	1115.848591	1000.00	111.58
PFOA_2	413.0 / 169.0	2.47	1136.973471	1000.00	113.70
PFNA_1	463.0 / 419.0	2.84	1171.510532	1000.00	117.15
PFNA_2	463.0 / 219.0	2.84	1212.351411	1000.00	121.24
PFOS_1	499.0 / 80.0	2.84	946.924957	925.60	102.30
PFOS_2	499.0 / 99.0	2.84	945.562142	925.60	102.16
PFDA_1	513.0 / 469.0	3.20	1186.150677	1000.00	118.62
PFDA_2	513.0 / 219.0	3.20	1102.602568	1000.00	110.26
PFUnA_1	563.0 / 519.0	3.51	1152.561588	1000.00	115.26
PFUnA_2	563.0 / 269.0	3.51	1141.269070	1000.00	114.13
PFDoA_1	613.0 / 569.0	3.80	1144.819746	1000.00	114.48
PFDoA_2	613.0 / 319.0	3.80	1111.307165	1000.00	111.13
PFTrDA_1	663.0 / 619.0	4.05	1134.100929	1000.00	113.41
PFTrDA_2	663.0 / 169.0	4.05	1115.502894	1000.00	111.55
PFTeDA_1	713.0 / 669.0	4.27	1145.940772	1000.00	114.59
PFTeDA_2	713.0 / 169.0	4.27	1129.570434	1000.00	112.96
NMeFOSAA_1	570.0 / 419.0	3.34	1244.481183	1000.00	124.45
NMeFOSAA_2	570.0 / 512.0	3.34	1216.883830	1000.00	121.69
NEtFOSAA_1	584.0 / 419.0	3.51	1169.751144	1000.00	116.98
NEtFOSAA_2	584.0 / 483.0	3.49	1069.898281	1000.00	106.99

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QC Summary Report

Created with Analyst Reporter
Printed: 27/05/2018 1:13:05 PM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T14:19:36	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.72	107.339437	100.00	107.34
13C2-PFDA	515.0 / 470.0	3.18	100.831039	100.00	100.83
d5-EtFOSAA	589.0 / 419.0	3.50	427.992074	400.00	107.00

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 27/05/2018 1:14:08 PM

Sample Name	JV68 CCV	**Injection Vial**	6
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T15:30:58	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.45	440.416958	443.00	99.42
PFBS_2	298.9 / 99.0	1.45	434.150471	443.00	98.00
PFHxA_1	313.0 / 269.0	1.73	499.036672	500.00	99.81
PFHxA_2	313.0 / 119.0	1.73	528.285027	500.00	105.66
PFHpA_1	363.0 / 319.0	2.09	471.408594	500.00	94.28
PFHpA_2	363.0 / 169.0	2.08	558.410072	500.00	111.68
PFHxS_1	399.0 / 80.0	2.10	441.193340	456.00	96.75
PFHxS_2	399.0 / 99.0	2.10	428.872944	456.00	94.05
PFOA_1	413.0 / 369.0	2.46	469.777523	500.00	93.96
PFOA_2	413.0 / 169.0	2.46	515.299469	500.00	103.06
PFNA_1	463.0 / 419.0	2.83	523.788059	500.00	104.76
PFNA_2	463.0 / 219.0	2.83	505.535719	500.00	101.11
PFOS_1	499.0 / 80.0	2.83	460.723951	463.00	99.51
PFOS_2	499.0 / 99.0	2.83	477.544848	463.00	103.14
PFDA_1	513.0 / 469.0	3.18	489.972812	500.00	97.99
PFDA_2	513.0 / 219.0	3.18	465.489745	500.00	93.10
PFUnA_1	563.0 / 519.0	3.50	518.325361	500.00	103.67
PFUnA_2	563.0 / 269.0	3.50	471.585271	500.00	94.32
PFDoA_1	613.0 / 569.0	3.79	476.947097	500.00	95.39
PFDoA_2	613.0 / 319.0	3.79	505.027230	500.00	101.01
PFTrDA_1	663.0 / 619.0	4.04	479.806082	500.00	95.96
PFTrDA_2	663.0 / 169.0	4.03	501.939831	500.00	100.39
PFTeDA_1	713.0 / 669.0	4.25	485.629530	500.00	97.13
PFTeDA_2	713.0 / 169.0	4.25	486.803296	500.00	97.36
NMeFOSAA_1	570.0 / 419.0	3.34	487.813835	500.00	97.56
NMeFOSAA_2	570.0 / 512.0	3.34	448.600228	500.00	89.72
NEtFOSAA_1	584.0 / 419.0	3.50	482.711585	500.00	96.54
NEtFOSAA_2	584.0 / 483.0	3.49	625.585443	500.00	125.12

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QC Summary Report

Created with Analyst Reporter
Printed: 27/05/2018 1:13:08 PM

Sample Name	JV68 CCV	**Injection Vial**	6
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T15:30:58	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.71	95.522162	100.00	95.52
13C2-PFDA	515.0 / 470.0	3.17	92.313155	100.00	92.31
d5-EtFOSAA	589.0 / 419.0	3.49	357.700451	400.00	89.43

QA/QC Summary
Batch 18-0316

Project:	CTO-WE04 Naval Air Station Joint Reserve Base Willow Grove
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	DW
Data Set:	DP-18-0117
Analytical SOP:	5-371
Method Reference:	USEPA 537 rev. 1.1, QSM 5.1

Sample Custody

Collection Date	Receipt Date	Temp (°C)
5/7/2018	5/8/2018	0.9, 1.2

Corrective Actions	None
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	Field samples related to these FRB samples reported in SDG 18-0313

METHOD SUMMARIES

Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with methanol. Extracts were split and concentrated to dryness under nitrogen with a water bath set between 60 °C and 65 °C, reconstituted with 96:4 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	None.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on the Sciex 5500. Individual ion ratios were outside of the 50% RPD criteria for the following samples and analytes, however, all hits were below the detection limits: Procedural Blank (CQ774PB) - PFOA NAWC-050718-FRB-180 (J6151) - PFOA NAWC-050718-FRB-145 (J6155) - PFOA NAWC-050718-FRB-357 (J6157) – PFOA, PFNA NAWC-050718-FRB-162 (J6159) - PFNA WGNA-050718-FRB-0800 (J6161) - PFOA WGNA-050718-FRB-3556 (J6165) - PFOA NAWC-050718-FRB-356 (J6167) - PFOA

Holding Times	Extraction Date(s)	Analysis Date(s)
	5/15/2018	5/17/2018

QA/QC Summary
Batch 18-0316

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ 1/3 the MRL	No exceedances noted.
	No comments.
Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
70-130% of true value	No exceedances noted.
	No comments.

Surrogates Standard Analytes	Labelled surrogate compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
70-130% of true value	No exceedances noted.
	No Comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
ICal high and low points RPD ≤20%, 50-150% of average area of the ICAL and 70-140% of most recent CCV	No exceedances noted.
	No Comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
R^2 >0.99 Target and SIS compounds +/- 30% of true value, Low point 50-150% of true value	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
Target and SIS compounds +/- 30% of true value	No exceedances noted.
	No comments.
Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.

QA/QC Summary
Batch 18-0316

Target and SIS compounds +/- 30% of true value Low point 50-150% of true value	No exceedances noted.
	No comments.

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MISCELLANEOUS DOCUMENTATION FORM

Project Title:	Naval Air Station Joint Reserve Base Wi	**Data Set Number:**	DP-18-0117
Project Number:	100117920-WE04	**Prep Batch Number:**	18-0316
Entered By:	Denise Schumitz	**Entered On:**	05/24/2018
Test Code (Matrix Type):	Master_371(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
DMS 6/24/2018

JV64 is not being used in the calibration curve for PFBS and NMeFOSAA. There is no impact on the data once this point is removed from the calibration.
DMS 6/23/2018

JV65 is not being used in the calibration curve for NMeFOSAA. There is no impact on the data once this point is removed from the calibration.
DMS 6/23/2018

Ion ratios greater than 50% for PFOA are noted in samples CQ774PB, J6151, J6155, J6157, J6161, J6165, J6167 and J6169.
DMS 6/23/2018

Ion ratios greater than 50% for PFNA are noted in samples J6157 and J6159.
DMS 6/23/2018

Ion ratio greater than 50% for PFDA is noted in JV66.
DMS 6/23/2018

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.05.29 11:07:31 -04'00'

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Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project Number: 100117920-WE04
Preparation Batch: 18-0316
Data Set: DP-18-0117
Test Code: Master_371

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	0	None
Matrix Spike / Matrix Spike Duplicate Recovery	NA	None
Matrix Spike / Matrix Spike Duplicate Precision	NA	None
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	NA	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0316
Data Set: DP-18-0117

	CQ774PB-FS (Procedural Blank)	CQ775LCS-FS (Laboratory Control Sample)	J6149-FS (NAWC-050718-FRB-316)	J6151-FS (NAWC-050718-FRB-180)	J6153-FS (NAWC-050718-FRB-275)	J6155-FS (NAWC-050718-FRB-145)
PFHxA	-	L	-	-	-	-
PFHpA	-	L	-	-	-	-
PFOA	-	L	-	-	-	-
PFNA	-	L	-	-	-	-
PFDA	-	L	-	-	-	-
PFUnA	-	L	-	-	-	-
PFDoA	-	L	-	-	-	-
PFTrDA	-	L	-	-	-	-
PFTeDA	-	L	-	-	-	-
NMeFOSAA	-	L	-	-	-	-
NEtFOSAA	-	L	-	-	-	-
PFBS	-	L	-	-	-	-
PFHxS	-	L	-	-	-	-
PFOS	-	L/Br	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04
Preparation Batch: 18-0316
Data Set: DP-18-0

	J6157-FS (NAWC-050718-FRB-357)	J6159-FS (NAWC-050718-FRB-162)	J6161-FS (WGNA-050718-FRB-0800)	J6163-FS (WGNA-050718-FRB-0335)	J6165-FS (WGNA-050718-FRB-3556)	J6167-FS (NAWC-050718-FRB-356)	J6169-FS (NAWC-050718-FRB-289)
PFHxA	-	-	-	-	-	-	-
PFHpA	-	-	-	-	-	-	-
PFOA	-	-	-	-	-	-	-
PFNA	-	-	-	-	-	-	-
PFDA	-	-	-	-	-	-	-
PFUnA	-	-	-	-	-	-	-
PFDoA	-	-	-	-	-	-	-
PFTrDA	-	-	-	-	-	-	-
PFTeDA	-	-	-	-	-	-	-
NMeFOSAA	-	-	-	-	-	-	-
NEtFOSAA	-	-	-	-	-	-	-
PFBS	-	-	-	-	-	-	-
PFHxS	-	-	-	-	-	-	-
PFOS	-	-	-	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

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BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Sample ID	Description
CQ774PB-FS	Procedural Blank
CQ775LCS-FS	Laboratory Control Sample
J6149-FS	NAWC-050718-FRB-316
J6151-FS	NAWC-050718-FRB-180
J6153-FS	NAWC-050718-FRB-275
J6155-FS	NAWC-050718-FRB-145
J6157-FS	NAWC-050718-FRB-357
J6159-FS	NAWC-050718-FRB-162
J6161-FS	WGNA-050718-FRB-0800
J6163-FS	WGNA-050718-FRB-0335
J6165-FS	WGNA-050718-FRB-3556
J6167-FS	NAWC-050718-FRB-356
J6169-FS	NAWC-050718-FRB-289

Samples Assigned By: Stephanie Schultz Date : May 15, 2018

Comments:

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/17/18 9:20	13C4-PFOS	106,482.72	-	
JV65	L2	5/17/18 9:29	13C4-PFOS	119,997.89	-	
JV66	L3	5/17/18 9:38	13C4-PFOS	122,253.98	-	
JV67	L4	5/17/18 9:47	13C4-PFOS	102,094.68	-	
JV68	L5	5/17/18 9:56	13C4-PFOS	111,836.08	-	
JV69	L6	5/17/18 10:05	13C4-PFOS	114,992.54	-	
JV70	L7	5/17/18 10:14	13C4-PFOS	110,302.85	-	
JV71	L8	5/17/18 10:23	13C4-PFOS	100,136.69	-	
JV72	L9	5/17/18 10:31	13C4-PFOS	115,397.28	8.0	PASS

Average	Lower	Upper
111,499.41	55,749.71	167,249.12

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/17/18 9:20	13C4-PFOS	106,482.72	55,749.71	167,249.12		78,285.26	156,570.51	
JV65	L2	5/17/18 9:29	13C4-PFOS	119,997.89	55,749.71	167,249.12		78,285.26	156,570.51	
JV66	L3	5/17/18 9:38	13C4-PFOS	122,253.98	55,749.71	167,249.12		78,285.26	156,570.51	
JV67	L4	5/17/18 9:47	13C4-PFOS	102,094.68	55,749.71	167,249.12		78,285.26	156,570.51	
JV68	L5	5/17/18 9:56	13C4-PFOS	111,836.08	55,749.71	167,249.12		78,285.26	156,570.51	
JV69	L6	5/17/18 10:05	13C4-PFOS	114,992.54	55,749.71	167,249.12		78,285.26	156,570.51	
JV70	L7	5/17/18 10:14	13C4-PFOS	110,302.85	55,749.71	167,249.12		78,285.26	156,570.51	
JV71	L8	5/17/18 10:23	13C4-PFOS	100,136.69	55,749.71	167,249.12		78,285.26	156,570.51	
JV72	L9	5/17/18 10:31	13C4-PFOS	115,397.28	55,749.71	167,249.12		78,285.26	156,570.51	
JV63 ICC	ICC	5/17/18 10:40	13C4-PFOS	113,811.02	55,749.71	167,249.12		78,285.26	156,570.51	
CQ774PB-FS(0)	Procedural Blank	5/17/18 14:35	13C4-PFOS	105,807.87	55,749.71	167,249.12		78,285.26	156,570.51	
CQ775LCS-FS(0)	Laboratory Control Sample	5/17/18 14:44	13C4-PFOS	84,608.36	55,749.71	167,249.12		78,285.26	156,570.51	
J6149-FS(0)	NAWC-050718-FRB-316	5/17/18 14:53	13C4-PFOS	95,906.86	55,749.71	167,249.12		78,285.26	156,570.51	
J6151-FS(0)	NAWC-050718-FRB-180	5/17/18 15:02	13C4-PFOS	82,833.06	55,749.71	167,249.12		78,285.26	156,570.51	
J6153-FS(0)	NAWC-050718-FRB-275	5/17/18 15:11	13C4-PFOS	89,739.14	55,749.71	167,249.12		78,285.26	156,570.51	
J6155-FS(0)	NAWC-050718-FRB-145	5/17/18 15:20	13C4-PFOS	83,891.29	55,749.71	167,249.12		78,285.26	156,570.51	
J6157-FS(0)	NAWC-050718-FRB-357	5/17/18 15:29	13C4-PFOS	87,652.64	55,749.71	167,249.12		78,285.26	156,570.51	
J6159-FS(0)	NAWC-050718-FRB-162	5/17/18 15:38	13C4-PFOS	99,454.46	55,749.71	167,249.12		78,285.26	156,570.51	
JV70 CCV	CCV	5/17/18 15:47	13C4-PFOS	114,163.67	55,749.71	167,249.12		78,285.26	156,570.51	
J6161-FS(0)	WGNA-050718-FRB-0800	5/17/18 16:04	13C4-PFOS	109,563.37	55,749.71	167,249.12		79,914.57	159,829.14	
J6163-FS(0)	WGNA-050718-FRB-0335	5/17/18 16:13	13C4-PFOS	94,266.70	55,749.71	167,249.12		79,914.57	159,829.14	
J6165-FS(0)	WGNA-050718-FRB-3556	5/17/18 16:22	13C4-PFOS	84,277.54	55,749.71	167,249.12		79,914.57	159,829.14	
J6167-FS(0)	NAWC-050718-FRB-356	5/17/18 16:31	13C4-PFOS	98,363.28	55,749.71	167,249.12		79,914.57	159,829.14	
J6169-FS(0)	NAWC-050718-FRB-289	5/17/18 16:40	13C4-PFOS	85,338.73	55,749.71	167,249.12		79,914.57	159,829.14	
JV69 CCV	CCV	5/17/18 16:49	13C4-PFOS	121,671.75	55,749.71	167,249.12		79,914.57	159,829.14	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/17/18 9:20	13C2-PFOA	28,448.80	-	
JV65	L2	5/17/18 9:29	13C2-PFOA	30,346.55	-	
JV66	L3	5/17/18 9:38	13C2-PFOA	31,920.71	-	
JV67	L4	5/17/18 9:47	13C2-PFOA	28,765.39	-	
JV68	L5	5/17/18 9:56	13C2-PFOA	33,859.37	-	
JV69	L6	5/17/18 10:05	13C2-PFOA	32,336.53	-	
JV70	L7	5/17/18 10:14	13C2-PFOA	32,706.57	-	
JV71	L8	5/17/18 10:23	13C2-PFOA	29,031.43	-	
JV72	L9	5/17/18 10:31	13C2-PFOA	33,993.78	17.8	PASS

Average	Lower	Upper
31,267.68	15,633.84	46,901.52

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/17/18 9:20	13C2-PFOA	28,448.80	15,633.84	46,901.52		23,701.56	47,403.12	
JV65	L2	5/17/18 9:29	13C2-PFOA	30,346.55	15,633.84	46,901.52		23,701.56	47,403.12	
JV66	L3	5/17/18 9:38	13C2-PFOA	31,920.71	15,633.84	46,901.52		23,701.56	47,403.12	
JV67	L4	5/17/18 9:47	13C2-PFOA	28,765.39	15,633.84	46,901.52		23,701.56	47,403.12	
JV68	L5	5/17/18 9:56	13C2-PFOA	33,859.37	15,633.84	46,901.52		23,701.56	47,403.12	
JV69	L6	5/17/18 10:05	13C2-PFOA	32,336.53	15,633.84	46,901.52		23,701.56	47,403.12	
JV70	L7	5/17/18 10:14	13C2-PFOA	32,706.57	15,633.84	46,901.52		23,701.56	47,403.12	
JV71	L8	5/17/18 10:23	13C2-PFOA	29,031.43	15,633.84	46,901.52		23,701.56	47,403.12	
JV72	L9	5/17/18 10:31	13C2-PFOA	33,993.78	15,633.84	46,901.52		23,701.56	47,403.12	
JV63 ICC	ICC	5/17/18 10:40	13C2-PFOA	35,067.86	15,633.84	46,901.52		23,701.56	47,403.12	
CQ774PB-FS(0)	Procedural Blank	5/17/18 14:35	13C2-PFOA	29,243.16	15,633.84	46,901.52		23,701.56	47,403.12	
CQ775LCS-FS(0)	Laboratory Control Sample	5/17/18 14:44	13C2-PFOA	25,000.07	15,633.84	46,901.52		23,701.56	47,403.12	
J6149-FS(0)	NAWC-050718-FRB-316	5/17/18 14:53	13C2-PFOA	29,366.38	15,633.84	46,901.52		23,701.56	47,403.12	
J6151-FS(0)	NAWC-050718-FRB-180	5/17/18 15:02	13C2-PFOA	23,903.88	15,633.84	46,901.52		23,701.56	47,403.12	
J6153-FS(0)	NAWC-050718-FRB-275	5/17/18 15:11	13C2-PFOA	25,373.77	15,633.84	46,901.52		23,701.56	47,403.12	
J6155-FS(0)	NAWC-050718-FRB-145	5/17/18 15:20	13C2-PFOA	24,418.17	15,633.84	46,901.52		23,701.56	47,403.12	
J6157-FS(0)	NAWC-050718-FRB-357	5/17/18 15:29	13C2-PFOA	24,844.34	15,633.84	46,901.52		23,701.56	47,403.12	
J6159-FS(0)	NAWC-050718-FRB-162	5/17/18 15:38	13C2-PFOA	27,428.30	15,633.84	46,901.52		23,701.56	47,403.12	
JV70 CCV	CCV	5/17/18 15:47	13C2-PFOA	31,530.88	15,633.84	46,901.52		23,701.56	47,403.12	
J6161-FS(0)	WGNA-050718-FRB-0800	5/17/18 16:04	13C2-PFOA	30,018.42	15,633.84	46,901.52		22,071.62	44,143.23	
J6163-FS(0)	WGNA-050718-FRB-0335	5/17/18 16:13	13C2-PFOA	25,903.21	15,633.84	46,901.52		22,071.62	44,143.23	
J6165-FS(0)	WGNA-050718-FRB-3556	5/17/18 16:22	13C2-PFOA	25,672.65	15,633.84	46,901.52		22,071.62	44,143.23	
J6167-FS(0)	NAWC-050718-FRB-356	5/17/18 16:31	13C2-PFOA	27,021.98	15,633.84	46,901.52		22,071.62	44,143.23	
J6169-FS(0)	NAWC-050718-FRB-289	5/17/18 16:40	13C2-PFOA	24,296.54	15,633.84	46,901.52		22,071.62	44,143.23	
JV69 CCV	CCV	5/17/18 16:49	13C2-PFOA	33,798.22	15,633.84	46,901.52		22,071.62	44,143.23	

Project Client: Tetra Tech
Project Name: Naval Air Station Joint Reserve Base Willow Grove, PA
Project No.: 100117920-WE04

Sample Name	Sample ID	Analysis Date	Analyte	Area	RPD (L1/L9)	
JV64	L1	5/17/18 9:20	d3-MeFOSAA	16,123.52	-	
JV65	L2	5/17/18 9:29	d3-MeFOSAA	17,769.57	-	
JV66	L3	5/17/18 9:38	d3-MeFOSAA	19,084.74	-	
JV67	L4	5/17/18 9:47	d3-MeFOSAA	17,771.51	-	
JV68	L5	5/17/18 9:56	d3-MeFOSAA	18,199.88	-	
JV69	L6	5/17/18 10:05	d3-MeFOSAA	17,045.59	-	
JV70	L7	5/17/18 10:14	d3-MeFOSAA	18,272.74	-	
JV71	L8	5/17/18 10:23	d3-MeFOSAA	15,851.69	-	
JV72	L9	5/17/18 10:31	d3-MeFOSAA	18,290.15	12.6	PASS

Average	Lower	Upper
17,601.04	8,800.52	26,401.56

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier	CCV Lower	CCV Upper	Qualifier
JV64	L1	5/17/18 9:20	d3-MeFOSAA	16,123.52	8,800.52	26,401.56		12,739.92	25,479.83	
JV65	L2	5/17/18 9:29	d3-MeFOSAA	17,769.57	8,800.52	26,401.56		12,739.92	25,479.83	
JV66	L3	5/17/18 9:38	d3-MeFOSAA	19,084.74	8,800.52	26,401.56		12,739.92	25,479.83	
JV67	L4	5/17/18 9:47	d3-MeFOSAA	17,771.51	8,800.52	26,401.56		12,739.92	25,479.83	
JV68	L5	5/17/18 9:56	d3-MeFOSAA	18,199.88	8,800.52	26,401.56		12,739.92	25,479.83	
JV69	L6	5/17/18 10:05	d3-MeFOSAA	17,045.59	8,800.52	26,401.56		12,739.92	25,479.83	
JV70	L7	5/17/18 10:14	d3-MeFOSAA	18,272.74	8,800.52	26,401.56		12,739.92	25,479.83	
JV71	L8	5/17/18 10:23	d3-MeFOSAA	15,851.69	8,800.52	26,401.56		12,739.92	25,479.83	
JV72	L9	5/17/18 10:31	d3-MeFOSAA	18,290.15	8,800.52	26,401.56		12,739.92	25,479.83	
JV63 ICC	ICC	5/17/18 10:40	d3-MeFOSAA	18,230.15	8,800.52	26,401.56		12,739.92	25,479.83	
CQ774PB-FS(0)	Procedural Blank	5/17/18 14:35	d3-MeFOSAA	16,567.01	8,800.52	26,401.56		12,739.92	25,479.83	
CQ775LCS-FS(0)	Laboratory Control Sample	5/17/18 14:44	d3-MeFOSAA	13,002.05	8,800.52	26,401.56		12,739.92	25,479.83	
J6149-FS(0)	NAWC-050718-FRB-316	5/17/18 14:53	d3-MeFOSAA	15,391.10	8,800.52	26,401.56		12,739.92	25,479.83	
J6151-FS(0)	NAWC-050718-FRB-180	5/17/18 15:02	d3-MeFOSAA	13,679.60	8,800.52	26,401.56		12,739.92	25,479.83	
J6153-FS(0)	NAWC-050718-FRB-275	5/17/18 15:11	d3-MeFOSAA	14,186.77	8,800.52	26,401.56		12,739.92	25,479.83	
J6155-FS(0)	NAWC-050718-FRB-145	5/17/18 15:20	d3-MeFOSAA	13,091.39	8,800.52	26,401.56		12,739.92	25,479.83	
J6157-FS(0)	NAWC-050718-FRB-357	5/17/18 15:29	d3-MeFOSAA	14,843.43	8,800.52	26,401.56		12,739.92	25,479.83	
J6159-FS(0)	NAWC-050718-FRB-162	5/17/18 15:38	d3-MeFOSAA	17,200.62	8,800.52	26,401.56		12,739.92	25,479.83	
JV70 CCV	CCV	5/17/18 15:47	d3-MeFOSAA	17,173.89	8,800.52	26,401.56		12,739.92	25,479.83	
J6161-FS(0)	WGNA-050718-FRB-0800	5/17/18 16:04	d3-MeFOSAA	17,311.56	8,800.52	26,401.56		12,021.72	24,043.45	
J6163-FS(0)	WGNA-050718-FRB-0335	5/17/18 16:13	d3-MeFOSAA	16,167.71	8,800.52	26,401.56		12,021.72	24,043.45	
J6165-FS(0)	WGNA-050718-FRB-3556	5/17/18 16:22	d3-MeFOSAA	12,300.76	8,800.52	26,401.56		12,021.72	24,043.45	
J6167-FS(0)	NAWC-050718-FRB-356	5/17/18 16:31	d3-MeFOSAA	17,743.88	8,800.52	26,401.56		12,021.72	24,043.45	
J6169-FS(0)	NAWC-050718-FRB-289	5/17/18 16:40	d3-MeFOSAA	13,101.61	8,800.52	26,401.56		12,021.72	24,043.45	
JV69 CCV	CCV	5/17/18 16:49	d3-MeFOSAA	17,006.92	8,800.52	26,401.56		12,021.72	24,043.45	

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Summary Asymmetry Report

Created with Analyst Reporter
Printed: 24/05/2018 10:52:17 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 10:14:08 AM	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.44	1.49	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.71	1.34	0.8 – 1.5

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 24/05/2018 10:50:50 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 10:14:08 AM	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.44	40	>10
PFBS_2	298.9 / 99.0	1.43	74	>10
PFHxA_1	313.0 / 269.0	1.71	34	>10
PFHxA_2	313.0 / 119.0	1.71	52	>10
PFHpA_1	363.0 / 319.0	2.06	25	>10
PFHpA_2	363.0 / 169.0	2.06	28	>10
PFHxS_1	399.0 / 80.0	2.07	59	>10
PFHxS_2	399.0 / 99.0	2.07	41	>10
PFOA_1	413.0 / 369.0	2.43	33	>10
PFOA_2	413.0 / 169.0	2.43	34	>10
PFNA_1	463.0 / 419.0	2.80	30	>10
PFNA_2	463.0 / 219.0	2.80	30	>10
PFOS_1	499.0 / 80.0	2.80	59	>10
PFOS_2	499.0 / 99.0	2.80	51	>10
PFDA_1	513.0 / 469.0	3.15	56	>10
PFDA_2	513.0 / 219.0	3.15	38	>10
PFUnA_1	563.0 / 519.0	3.47	58	>10
PFUnA_2	563.0 / 269.0	3.47	28	>10
PFDoA_1	613.0 / 569.0	3.76	52	>10
PFDoA_2	613.0 / 319.0	3.76	36	>10
PFTrDA_1	663.0 / 619.0	4.01	59	>10
PFTrDA_2	663.0 / 169.0	4.01	44	>10
PFTeDA_1	713.0 / 669.0	4.23	62	>10
PFTeDA_2	713.0 / 169.0	4.23	57	>10
NMeFOSAA_1	570.0 / 419.0	3.30	48	>10
NMeFOSAA_2	570.0 / 512.0	3.30	52	>10
NEtFOSAA_1	584.0 / 419.0	3.46	37	>10
NEtFOSAA_2	584.0 / 483.0	3.46	40	>10

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 24/05/2018 10:51:26 AM

Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 10:14:08 AM	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFHxA	315.0 / 270.0	1.69	47	>10
13C2-PFDA	515.0 / 470.0	3.14	38	>10
d5-EtFOSAA	589.0 / 419.0	3.46	34	>10

BATTELLE DETECTION LIMITS FOR PFAS IN DRINKING WATER

Battelle SOP 5-371 (EPA Method 537 Version 1.1)

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)	MRL (ng/L)
PFHxA	307-24-4	0.22	0.5	2.5	2.5
PFHpA	375-85-9	0.34	1.0	2.5	2.5
PFOA	335-67-1	0.38	1.0	2.5	2.5
PFNA	375-95-1	0.37	1.0	2.5	2.5
PFDA	335-76-2	0.39	1.0	2.5	2.5
PFUnA	2058-94-8	0.38	1.0	2.5	2.5
PFDoA	307-55-1	0.42	1.0	2.5	2.5
PFTrDA	72629-94-8	0.42	1.0	2.5	2.5
PFTeDA	376-06-7	0.73	1.5	2.5	2.5
NMeFOSAA	2355-31-9	0.42	1.0	2.5	2.5
NEtFOSAA	2991-50-6	0.44	1.0	2.5	2.5
PFBS	375-73-5	0.21	0.5	2.5	2.5
PFHxS	3871-99-6	0.34	1.0	2.5	2.5
PFOS	1763-23-1	0.30	1.0	2.5	2.5

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

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ID 626 04/18

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Analytical Transitions for PFAS in drinking water

SOP 5-371 (EPA 537 Version 1.1)

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFBS	375-73-5	Target	298.9.0 / 80.0	298.9.0 / 99.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
13C2-PFHxA	NA	SIS	315.0 / 270.0	NA
13C2-PFDA	NA	SIS	515.0 / 470.0	NA
d5-EtFOSAA	NA	SIS	589.0 / 419.0	NA
$^{13}C_2$-PFOA	NA	IS	415.0 / 270.0	NA
$^{13}C_4$-PFOS	NA	IS	503.0 / 80.0	NA
d3-MeFOSAA	NA	IS	573.0 / 419.0	NA

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

Mass Calibration and Tune Check

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	22-Feb-2017

Request ID:	3683
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____
_____
_____
_____

Performed By: Kaustubh Dhayagude **Date:** 22-Feb-2017

Approved By :_____ **Date:** _____

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.5	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.9	Read Only
☑ CAD Medium	2.4	Read Only
☑ CAD High	3.4	Read Only
☑ CAD 12	3.4	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.64 e6	Read Only	0.8095	Read Only
Q1 500.380	2.40 e7	Read Only	0.8592	Read Only
Q1 906.673	2.86 e7	Read Only	0.9633	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.26 e6	Read Only	0.6252	Read Only
Q3 500.380	2.19 e7	Read Only	0.7275	Read Only
Q3 906.673	3.02 e7	Read Only	0.7662	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__19.51%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.43 e7	Read Only	0.9981	Read Only
MS/MS 195.1	1.45 e7	Read Only	0.6582	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.43 e7	Read Only	0.7330	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.22 e7	Read Only	0.8138	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.35 e6	Read Only	0.6495	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	2.1	Read Only
☑ CAD Medium	2.6	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.94 e6	≥1.2^{e}6	0.6933	0.6 to 0.8
Q1 500.380	2.25 e7	≥9.0^{e}6	0.7444	0.6 to 0.8
Q1 906.673	2.74 e7	≥1.4^{e}7	0.7347	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7656	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	4.54 e6	≥1.2^{e}6	0.6390	0.6 to 0.8
Q3 500.380	2.13 e7	≥9.0^{e}6	0.7008	0.6 to 0.8
Q3 906.673	3.04 e7	≥1.4^{e}7	0.7683	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.51 e8	≥6.8^{e}7	0.7118	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 16.93% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.74 e7	N/A	0.7667	Read Only
MS/MS 195.1	9.72 e6	N/A	0.6751	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.31 e7	≥1.0^{e}7	0.6895	0.6 to 0.8
Q1 933.636	1000	50	6.32 e7	≥4.0^{e}7	0.6740	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.70 e7	≥8.0^{e}6	0.7665	0.6 to 0.8
Q3 933.636	1000	50	7.41 e7	≥4.0^{e}7	0.7292	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.08 e6	≥7.2 ^{e}6	0.1302	<0.35
ER 922.010	0.05	3.89 e7	≥2.8 ^{e}6	0.2603	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.55 e7	≥2.4 ^{e}7	0.3740	<0.65
ER 922.010	0.05	2.37 e8	≥6.8 ^{e}7	0.5407	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.05 e8	≥4.4 ^{e}7	0.1840	<0.35
ER 601.978	0.05	7.74 e7	≥5.6 ^{e}7	0.1849	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.43 e8	≥1.2 ^{e}8	0.4382	<0.65
ER 601.978	0.05	2.55 e8	≥1.6 ^{e}8	0.6205	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.5 e6	≥2.0 e6	> 4.0 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.2 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	1.19 e8	Fragment Intensity	> 4.4 e6	≥1.6x 10e6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

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BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	**Project No.(s)**
Naval Air Station Joint Reserve Base Willow Grove, PA	100117920-WE04

18-0316

WE04 PFAS Analysis

DW

SOP Numbers (see workplan for modifications)

VOASOP No. 5-371

This Batch Contains The Following Samples:		
CQ774PB-FS	J6157-FS	J6169-FS
CQ775LCS-FS	J6159-FS	
J6149-FS	J6161-FS	
J6151-FS	J6163-FS	
J6153-FS	J6165-FS	
J6155-FS	J6167-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	05/21/2018	DMS

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BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s)
Naval Air Station Joint Reserve Base Willow Grove, PA

Project No.(s)
100117920-WE04

18-0316

WE04 PFAS Analysis

DW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CQ774PB-FS	Procedural Blank	250.0	NA	--	05/15/18 SAS
CQ775LCS-FS	Laboratory Control Sample	250.0	NA	--	05/15/18 SAS
J6149-FS	NAWC-050718-FRB-316	255.0	1	C	05/16/18 SAS
J6151-FS	NAWC-050718-FRB-180	250.0	1	C	05/16/18 SAS
J6153-FS	NAWC-050718-FRB-275	250.0	1	C	05/16/18 SAS
J6155-FS	NAWC-050718-FRB-145	250.0	1	C	05/16/18 SAS
J6157-FS	NAWC-050718-FRB-357	250.0	1	C	05/16/18 SAS
J6159-FS	NAWC-050718-FRB-162	250.0	1	C	05/16/18 SAS
J6161-FS	WGNA-050718-FRB-0800	255.0	1	C	05/16/18 SAS
J6163-FS	WGNA-050718-FRB-0335	250.0	1	C	05/16/18 SAS
J6165-FS	WGNA-050718-FRB-3556	250.0	1	C	05/16/18 SAS
J6167-FS	NAWC-050718-FRB-356	250.0	1	C	05/16/18 SAS
J6169-FS	NAWC-050718-FRB-289	250.0	1	C	05/16/18 SAS

Comments:

Sample ID:	Comments:
CQ774PB-FS	1.23g Trizma(170526-01) weighed on BAL-009
CQ775LCS-FS	1.27g Trizma(170526-01) weighed on BAL-009

Samples Assigned By Stephanie Schultz Date : May 15, 2018

* - "C" = Sample is Consumed

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Sequence Report

Created with Analyst Reporter
Printed: 24/05/2018 11:06:41 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH		5/17/2018 9:11:38 AM	5-0371.dam	18-0287.wiff
2	JV64	L1	5/17/2018 9:20:34 AM	5-0371.dam	18-0287.wiff
3	JV65	L2	5/17/2018 9:29:29 AM	5-0371.dam	18-0287.wiff
4	JV66	L3	5/17/2018 9:38:24 AM	5-0371.dam	18-0287.wiff
5	JV67	L4	5/17/2018 9:47:21 AM	5-0371.dam	18-0287.wiff
6	JV68	L5	5/17/2018 9:56:17 AM	5-0371.dam	18-0287.wiff
7	JV69	L6	5/17/2018 10:05:12 AM	5-0371.dam	18-0287.wiff
8	JV70	L7	5/17/2018 10:14:08 AM	5-0371.dam	18-0287.wiff
9	JV71	L8	5/17/2018 10:23:03 AM	5-0371.dam	18-0287.wiff
10	JV72	L9	5/17/2018 10:31:58 AM	5-0371.dam	18-0287.wiff
11	JV63 ICC	ICC	5/17/2018 10:40:54 AM	5-0371.dam	18-0287.wiff
1	MeOH		5/17/2018 10:49:49 AM	5-0371.dam	18-0287.wiff
15	CQ774PB-FS(0)	Procedural Blank	5/17/2018 2:35:34 PM	5-0371.dam	18-0315.wiff
16	CQ775LCS-FS(0)	Laboratory Control Sample	5/17/2018 2:44:30 PM	5-0371.dam	18-0315.wiff
17	J6149-FS(0)	NAWC-050718-FRB-316	5/17/2018 2:53:26 PM	5-0371.dam	18-0315.wiff
18	J6151-FS(0)	NAWC-050718-FRB-180	5/17/2018 3:02:22 PM	5-0371.dam	18-0315.wiff
19	J6153-FS(0)	NAWC-050718-FRB-275	5/17/2018 3:11:18 PM	5-0371.dam	18-0315.wiff
20	J6155-FS(0)	NAWC-050718-FRB-145	5/17/2018 3:20:15 PM	5-0371.dam	18-0315.wiff
21	J6157-FS(0)	NAWC-050718-FRB-357	5/17/2018 3:29:12 PM	5-0371.dam	18-0315.wiff
22	J6159-FS(0)	NAWC-050718-FRB-162	5/17/2018 3:38:10 PM	5-0371.dam	18-0315.wiff
8	JV70 CCV	CCV	5/17/2018 3:47:06 PM	5-0371.dam	18-0315.wiff
1	MeOH		5/17/2018 3:56:03 PM	5-0371.dam	18-0315.wiff
23	J6161-FS(0)	WGNA-050718-FRB-0800	5/17/2018 4:04:58 PM	5-0371.dam	18-0315.wiff
24	J6163-FS(0)	WGNA-050718-FRB-0335	5/17/2018 4:13:55 PM	5-0371.dam	18-0315.wiff
25	J6165-FS(0)	WGNA-050718-FRB-3556	5/17/2018 4:22:52 PM	5-0371.dam	18-0315.wiff
26	J6167-FS(0)	NAWC-050718-FRB-356	5/17/2018 4:31:47 PM	5-0371.dam	18-0315.wiff
27	J6169-FS(0)	NAWC-050718-FRB-	5/17/2018 4:40:42	5-0371.dam	18-0315.wiff

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Sequence Report

Created with Analyst Reporter
Printed: 24/05/2018 11:06:41 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
		289	PM		
7	JV69 CCV	CCV	5/17/2018 4:49:36 PM	5-0371.dam	18-0315.wiff

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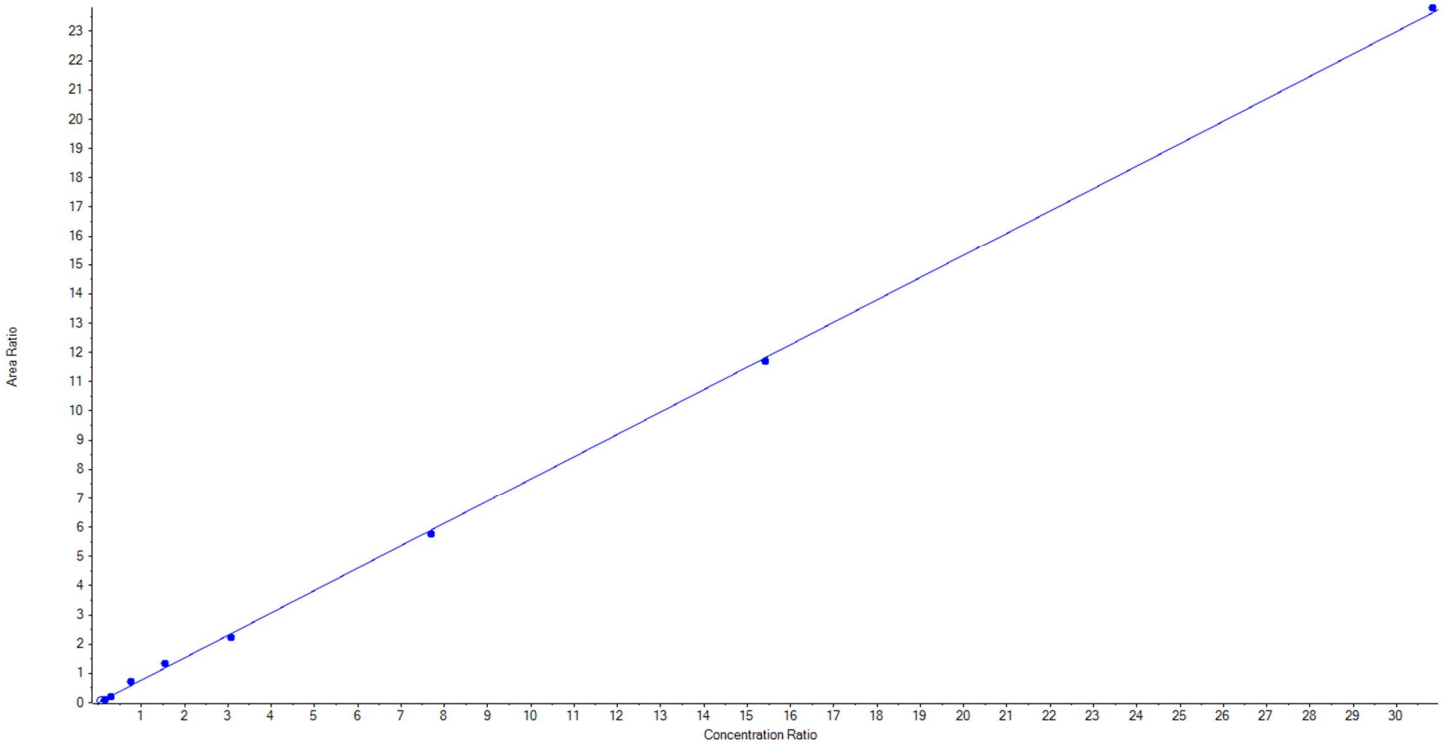
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFBS_1	**Data File**	18-0287.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.76645 x + -8.51923e-4 (r = 0.99924) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	22.15	23.483107	106.0
3	JV65	L2	True	44.30	38.690092	87.3
4	JV66	L3	True	88.60	77.119919	87.0
5	JV67	L4	True	221.50	270.479947	122.1
6	JV68	L5	True	443.00	494.830183	111.7
7	JV69	L6	True	885.00	836.047360	94.5
8	JV70	L7	True	2212.50	2161.273577	97.7
9	JV71	L8	True	4425.00	4377.980502	98.9
10	JV72	L9	True	8850.00	8913.478420	100.7



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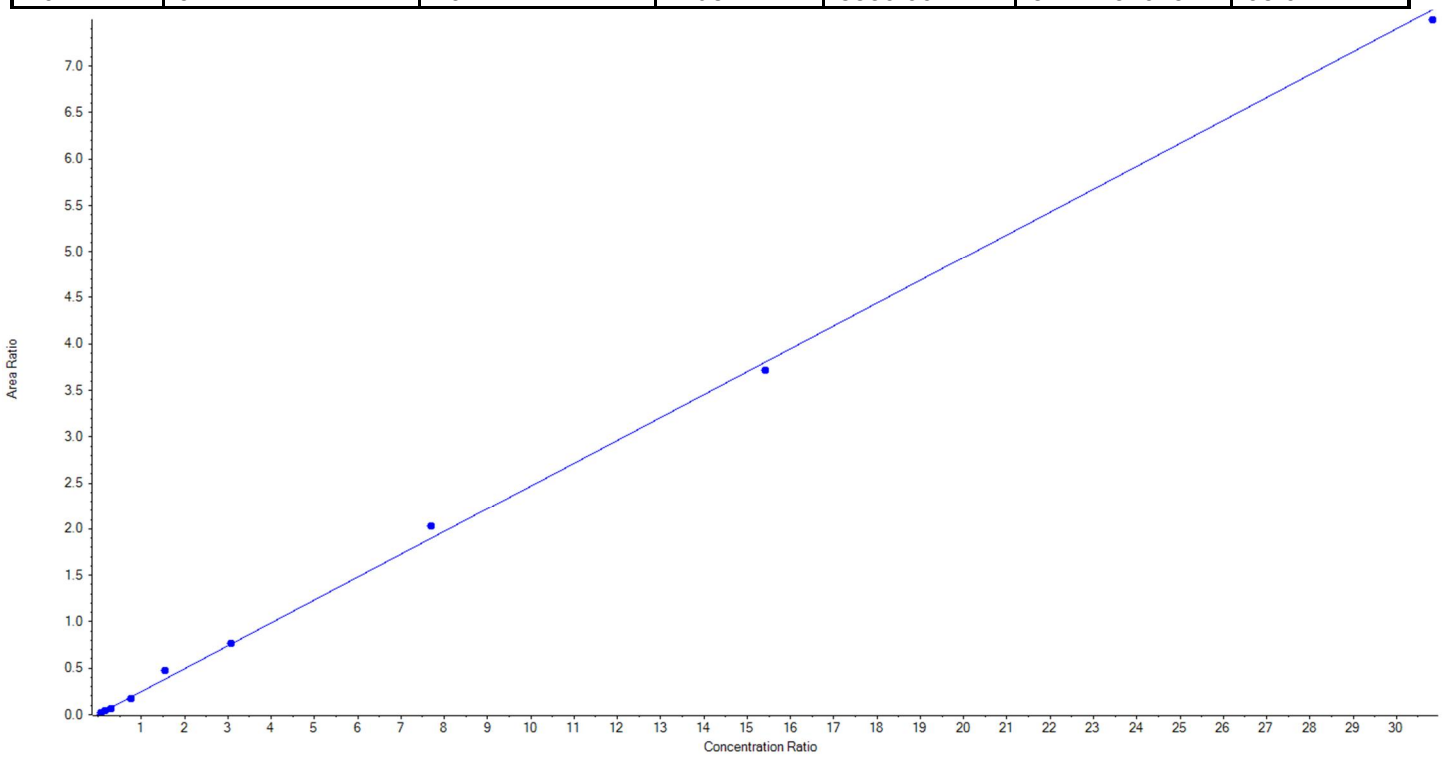
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFBS_2	**Data File**	18-0287.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.24667 x + 6.62243e-4 (r = 0.99862) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.15	18.520807	83.6
3	JV65	L2	True	44.30	49.623047	112.0
4	JV66	L3	True	88.60	77.085462	87.0
5	JV67	L4	True	221.50	198.376185	89.6
6	JV68	L5	True	443.00	551.358297	124.5
7	JV69	L6	True	885.00	888.633944	100.4
8	JV70	L7	True	2212.50	2357.741880	106.6
9	JV71	L8	True	4425.00	4327.956354	97.8
10	JV72	L9	True	8850.00	8722.754023	98.6



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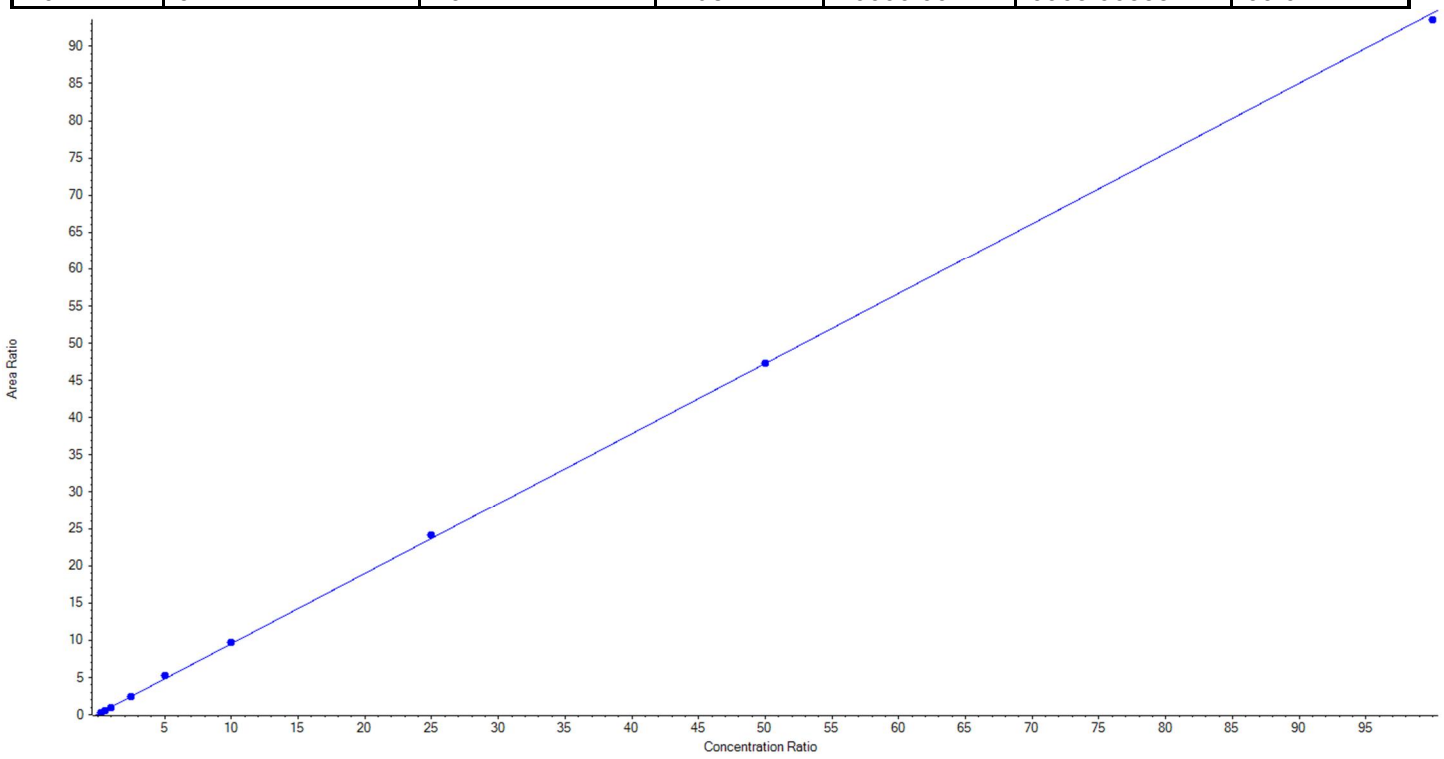
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHxA_1	**Data File**	18-0287.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.94368 x + 0.09434 (r = 0.99980) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.353288	101.4
3	JV65	L2	True	50.00	48.230678	96.5
4	JV66	L3	True	100.00	92.729568	92.7
5	JV67	L4	True	250.00	242.616322	97.1
6	JV68	L5	True	500.00	547.608857	109.5
7	JV69	L6	True	1000.00	1021.164999	102.1
8	JV70	L7	True	2500.00	2539.791620	101.6
9	JV71	L8	True	5000.00	5004.441317	100.1
10	JV72	L9	True	10000.00	9903.063352	99.0



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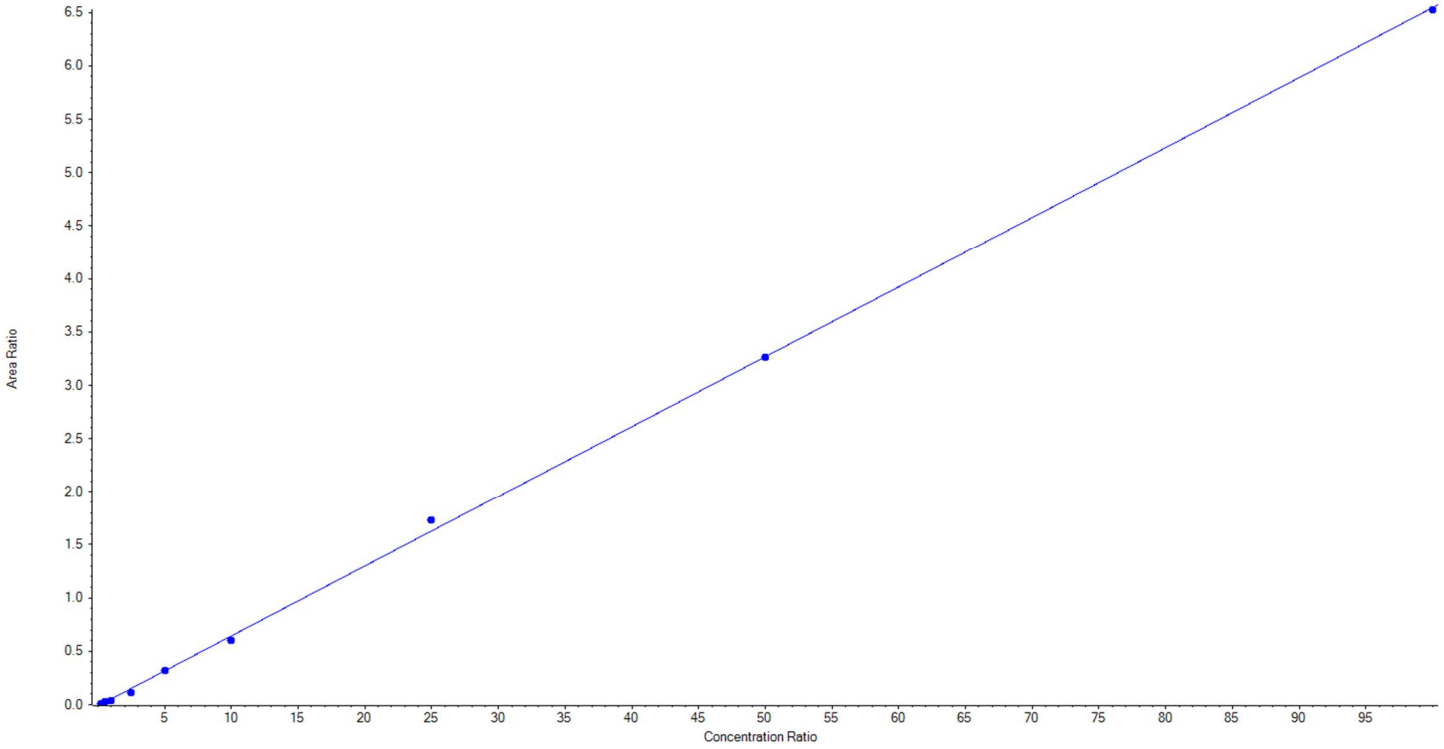
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Analyte Name	PFHxA_2	**Data File**	18-0287.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06557 x + -0.01141 (r = 0.99883) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	32.175804	128.7
3	JV65	L2	True	50.00	62.207726	124.4
4	JV66	L3	True	100.00	71.281276	71.3
5	JV67	L4	True	250.00	187.631333	75.1
6	JV68	L5	True	500.00	501.920797	100.4
7	JV69	L6	True	1000.00	939.982193	94.0
8	JV70	L7	True	2500.00	2662.599478	106.5
9	JV71	L8	True	5000.00	4998.914969	100.0
10	JV72	L9	True	10000.00	9968.286425	99.7



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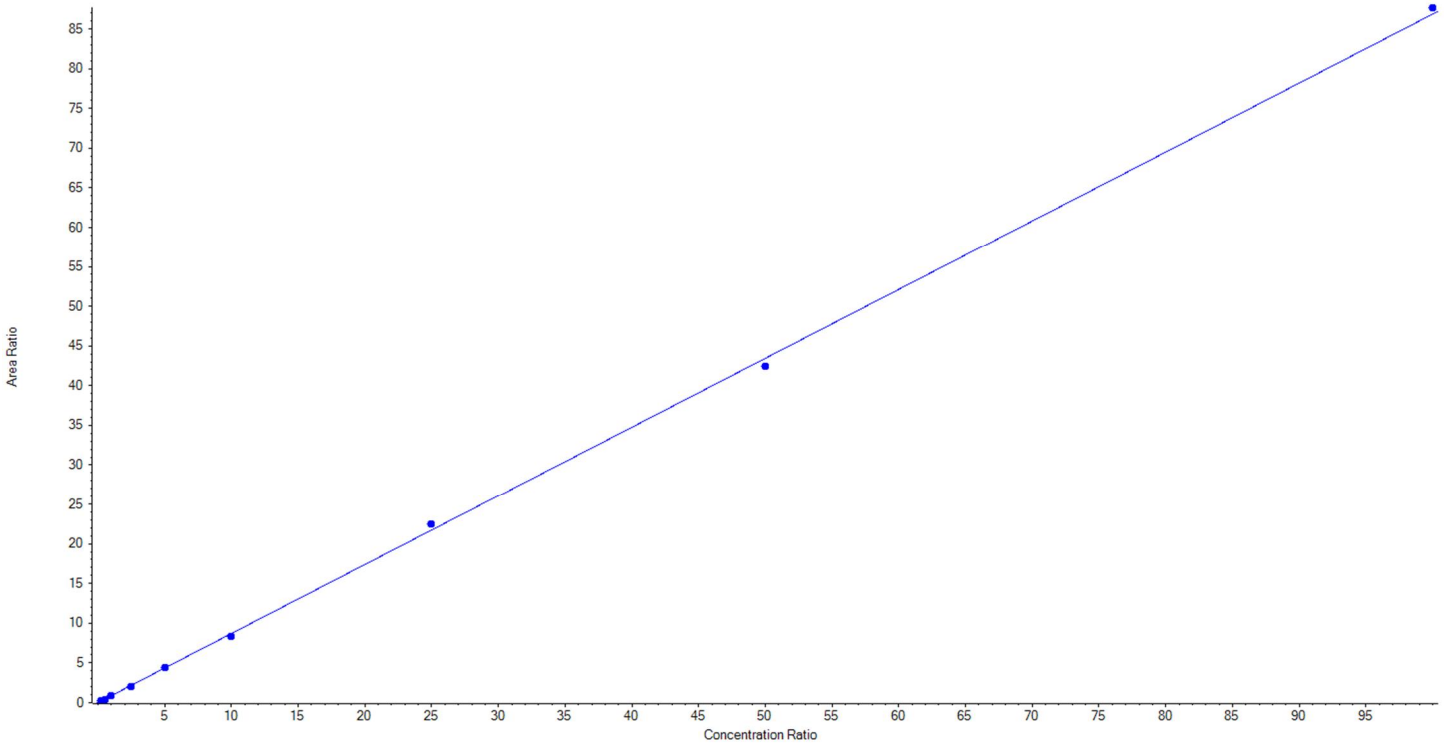
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Analyte Name	PFHpA_1	**Data File**	18-0287.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.86846 x + 0.01868 (r = 0.99968) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	30.745121	123.0
3	JV65	L2	True	50.00	45.261637	90.5
4	JV66	L3	True	100.00	94.999992	95.0
5	JV67	L4	True	250.00	230.401025	92.2
6	JV68	L5	True	500.00	507.718530	101.5
7	JV69	L6	True	1000.00	958.469829	95.9
8	JV70	L7	True	2500.00	2585.103762	103.4
9	JV71	L8	True	5000.00	4881.799777	97.6
10	JV72	L9	True	10000.00	10090.500327	100.9



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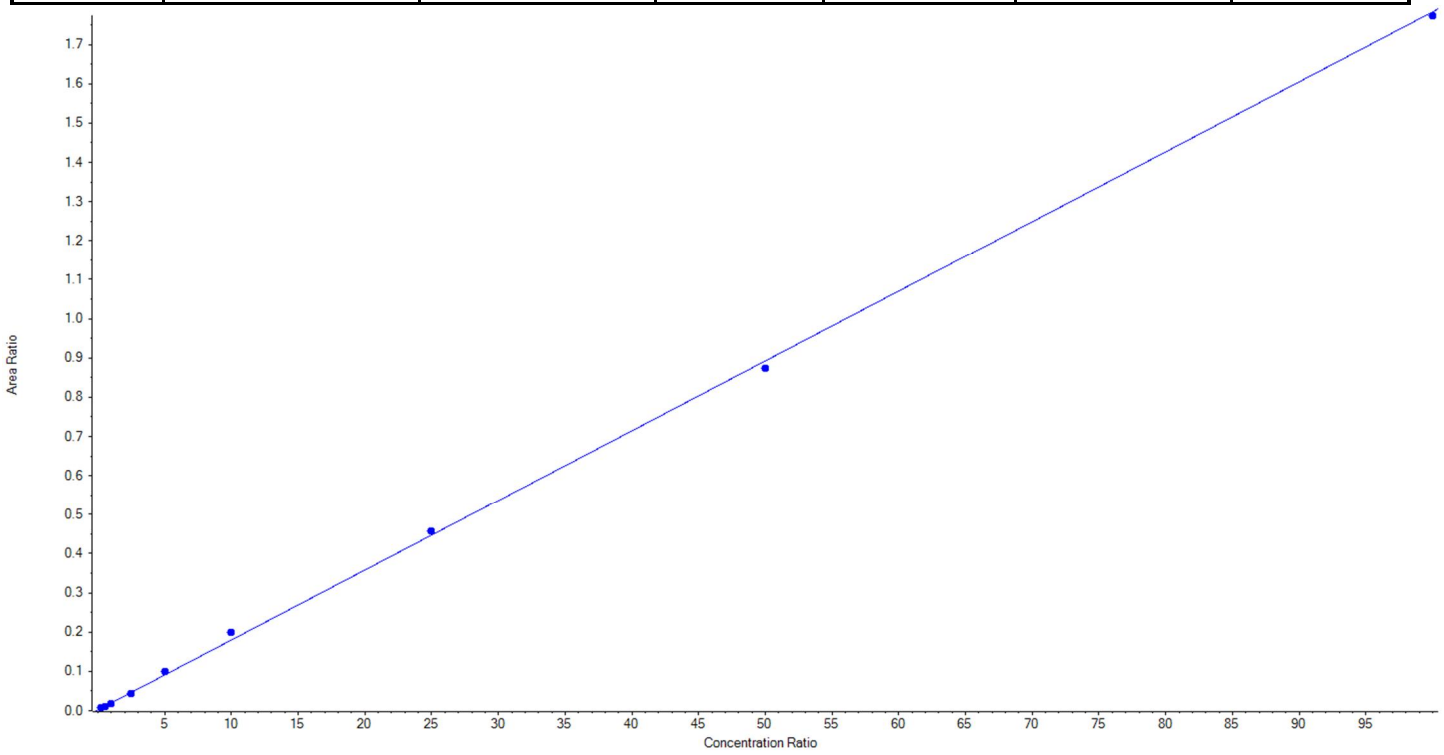
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFHpA_2	**Data File**	18-0287.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.01781 x + 0.00179 (r = 0.99935) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	28.647339	114.6
3	JV65	L2	True	50.00	44.765389	89.5
4	JV66	L3	True	100.00	84.456300	84.5
5	JV67	L4	True	250.00	230.303823	92.1
6	JV68	L5	True	500.00	549.021210	109.8
7	JV69	L6	True	1000.00	1101.666841	110.2
8	JV70	L7	True	2500.00	2552.091209	102.1
9	JV71	L8	True	5000.00	4890.698476	97.8
10	JV72	L9	True	10000.00	9943.349413	99.4



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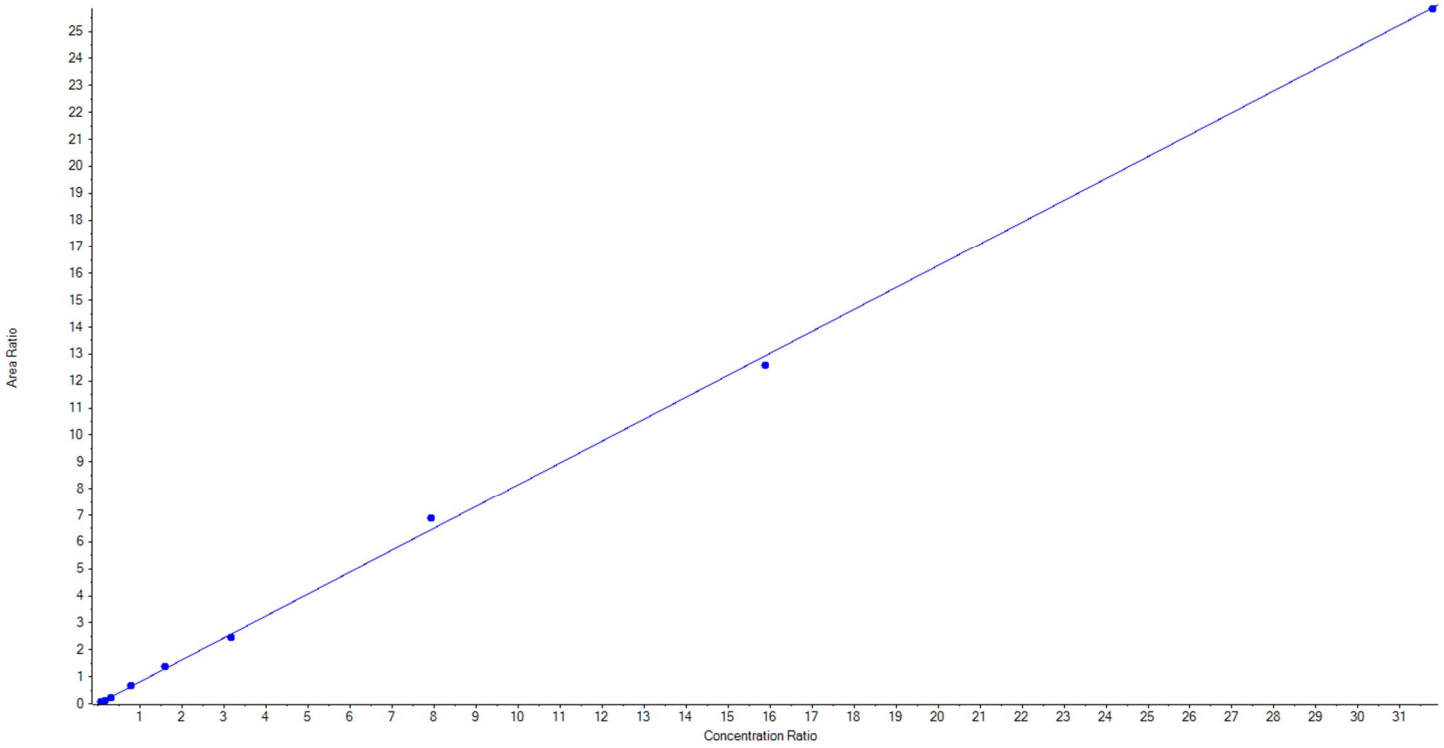
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Analyte Name	PFHxS_1	**Data File**	18-0287.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.81452 x + -0.00421 (r = 0.99944) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.80	24.720628	108.4
3	JV65	L2	True	45.60	40.923316	89.7
4	JV66	L3	True	91.20	84.560191	92.7
5	JV67	L4	True	228.00	234.300477	102.8
6	JV68	L5	True	456.00	490.468001	107.6
7	JV69	L6	True	912.00	867.632050	95.1
8	JV70	L7	True	2280.00	2426.969740	106.5
9	JV71	L8	True	4560.00	4439.462493	97.4
10	JV72	L9	True	9120.00	9106.563104	99.9



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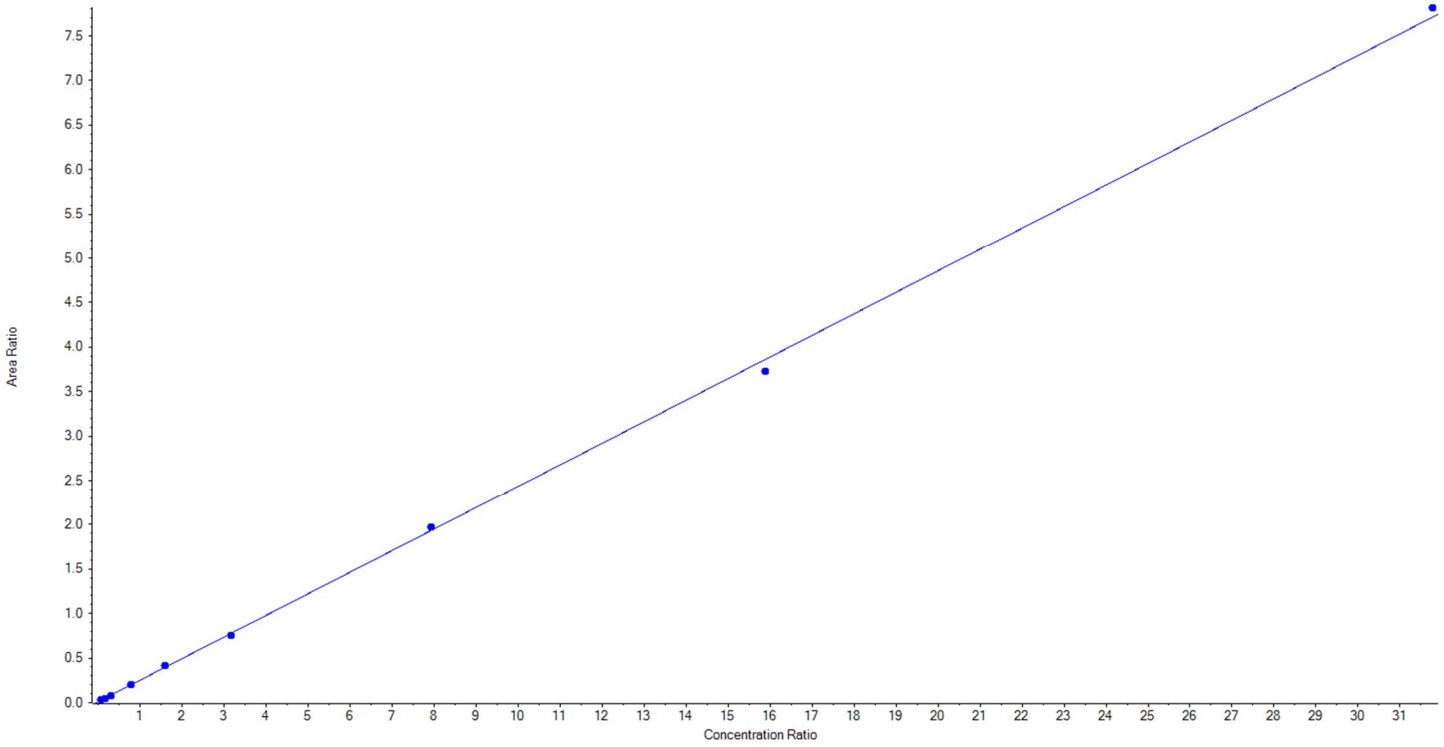
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Analyte Name	PFHxS_2	**Data File**	18-0287.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.24236 x + 0.00960 (r = 0.99962) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	22.80	25.925035	113.7
3	JV65	L2	True	45.60	42.715296	93.7
4	JV66	L3	True	91.20	79.822448	87.5
5	JV67	L4	True	228.00	232.286071	101.9
6	JV68	L5	True	456.00	484.419318	106.2
7	JV69	L6	True	912.00	887.969901	97.4
8	JV70	L7	True	2280.00	2321.581504	101.8
9	JV71	L8	True	4560.00	4397.947134	96.5
10	JV72	L9	True	9120.00	9242.933292	101.4



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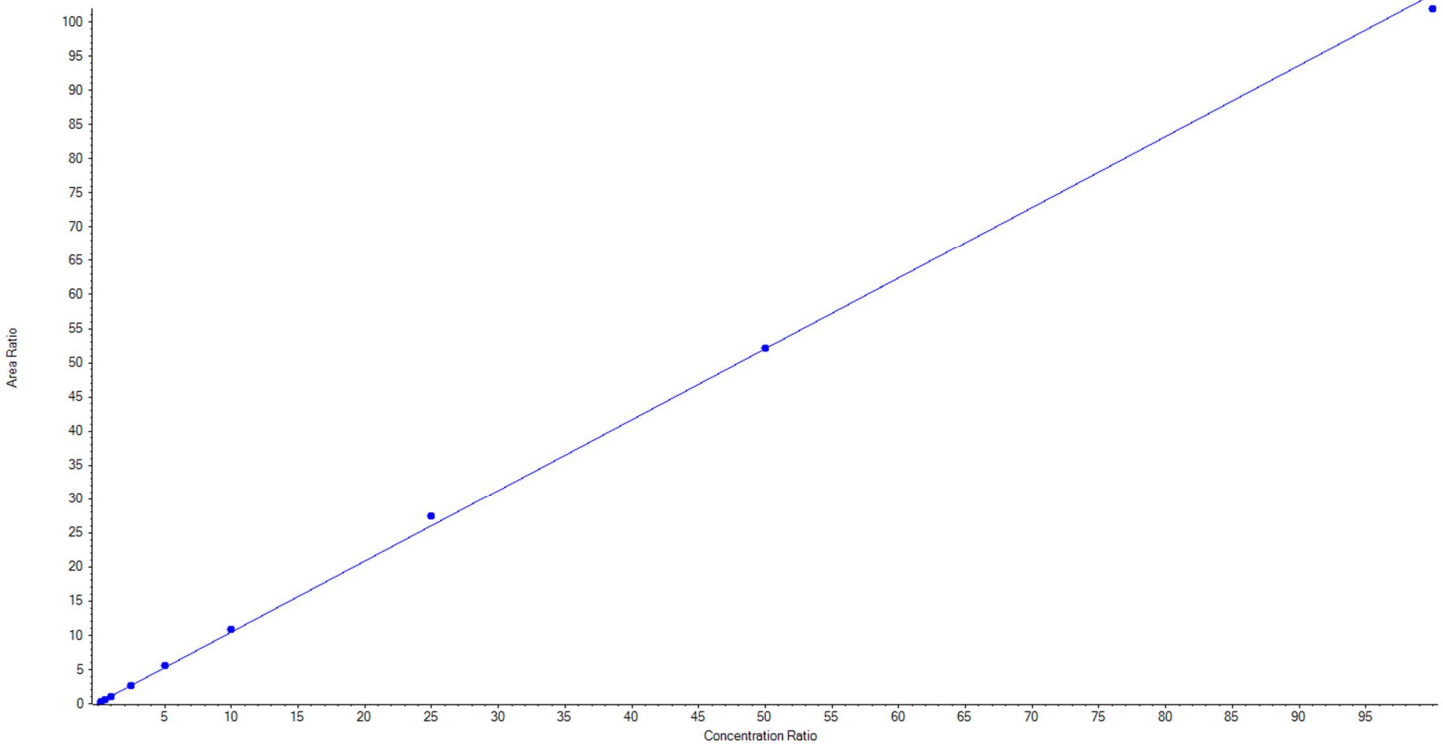
Calibration Summary Report

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Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFOA_1	**Data File**	18-0287.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.03975 x + 0.07616 (r = 0.99957) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	26.708862	106.8
3	JV65	L2	True	50.00	42.899544	85.8
4	JV66	L3	True	100.00	94.094405	94.1
5	JV67	L4	True	250.00	251.494624	100.6
6	JV68	L5	True	500.00	525.460651	105.1
7	JV69	L6	True	1000.00	1039.091021	103.9
8	JV70	L7	True	2500.00	2636.449272	105.5
9	JV71	L8	True	5000.00	5012.599247	100.3
10	JV72	L9	True	10000.00	9796.202374	98.0



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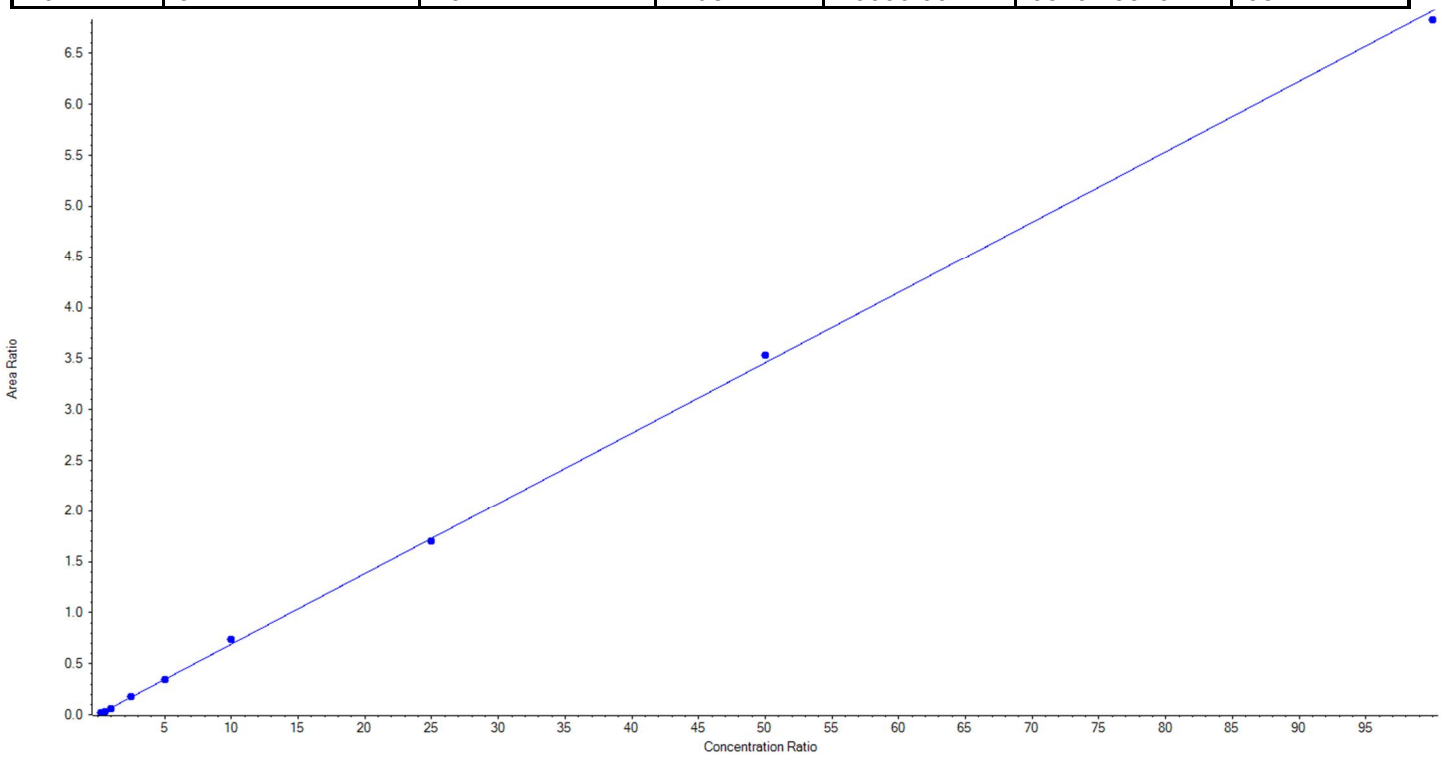
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFOA_2	**Data File**	18-0287.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.06919 x + -6.10299e-4 (r = 0.99963) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	30.244231	121.0
3	JV65	L2	True	50.00	39.807292	79.6
4	JV66	L3	True	100.00	91.316603	91.3
5	JV67	L4	True	250.00	253.258834	101.3
6	JV68	L5	True	500.00	501.014564	100.2
7	JV69	L6	True	1000.00	1073.277778	107.3
8	JV70	L7	True	2500.00	2461.920179	98.5
9	JV71	L8	True	5000.00	5103.925253	102.1
10	JV72	L9	True	10000.00	9870.235267	98.7



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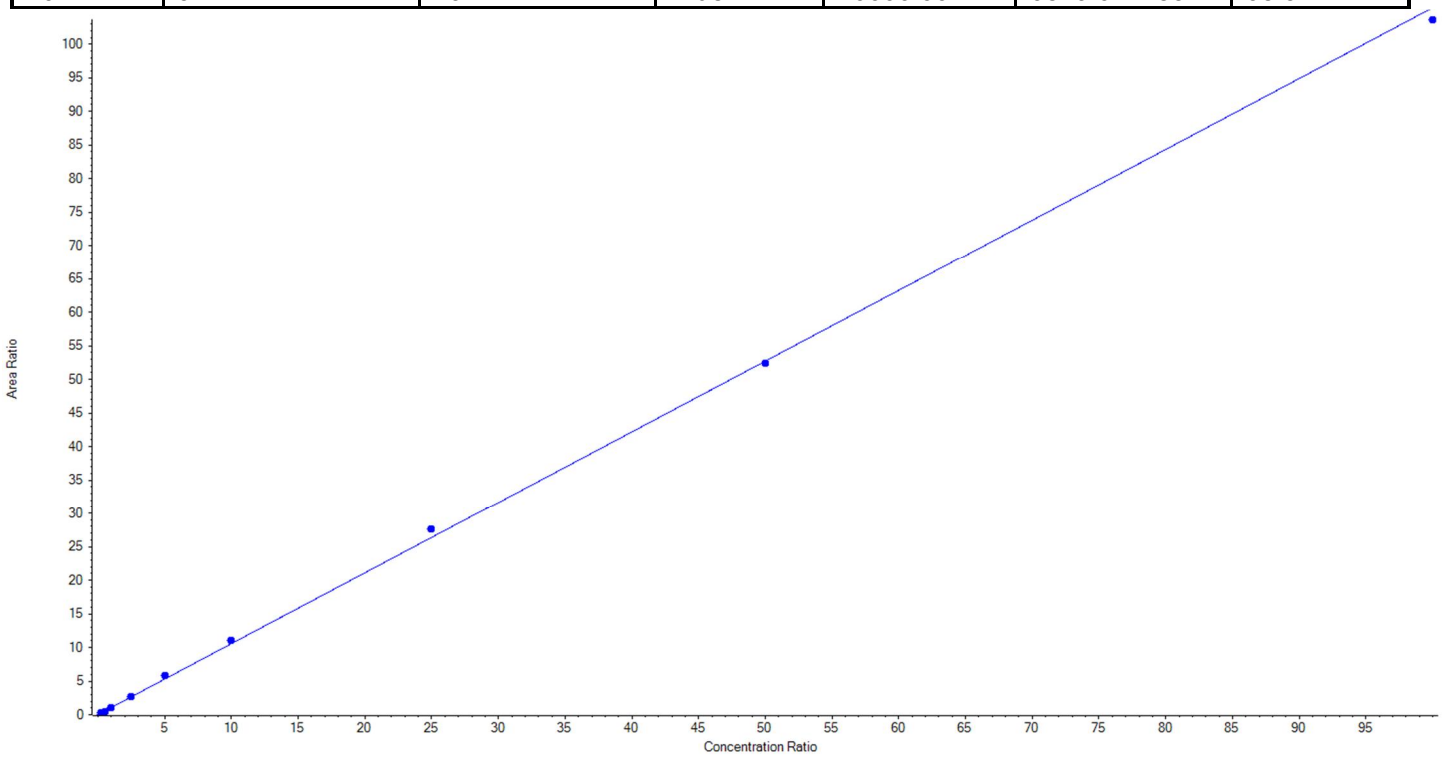
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFNA_1	**Data File**	18-0287.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.05388 x + 0.02887 (r = 0.99958) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	22.448588	89.8
3	JV65	L2	True	50.00	45.828516	91.7
4	JV66	L3	True	100.00	101.744372	101.7
5	JV67	L4	True	250.00	252.109959	100.8
6	JV68	L5	True	500.00	548.360364	109.7
7	JV69	L6	True	1000.00	1039.938157	104.0
8	JV70	L7	True	2500.00	2614.669594	104.6
9	JV71	L8	True	5000.00	4970.858264	99.4
10	JV72	L9	True	10000.00	9829.042185	98.3



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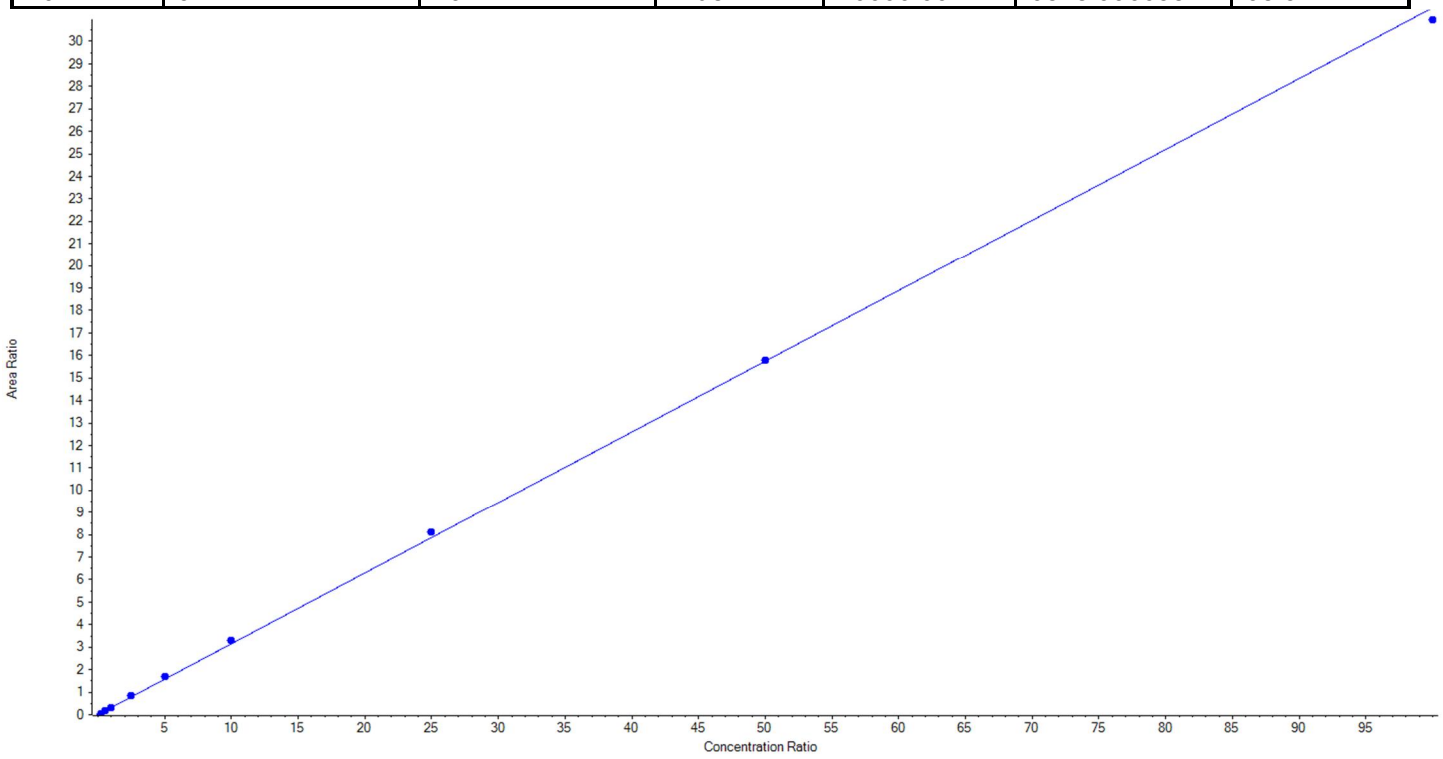
Calibration Summary Report

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Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFNA_2	**Data File**	18-0287.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.31494 x + 0.00205 (r = 0.99965) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	17.606402	70.4
3	JV65	L2	True	50.00	55.585100	111.2
4	JV66	L3	True	100.00	100.725248	100.7
5	JV67	L4	True	250.00	263.453692	105.4
6	JV68	L5	True	500.00	532.054934	106.4
7	JV69	L6	True	1000.00	1044.980309	104.5
8	JV70	L7	True	2500.00	2573.326453	102.9
9	JV71	L8	True	5000.00	5008.271225	100.2
10	JV72	L9	True	10000.00	9828.996638	98.3



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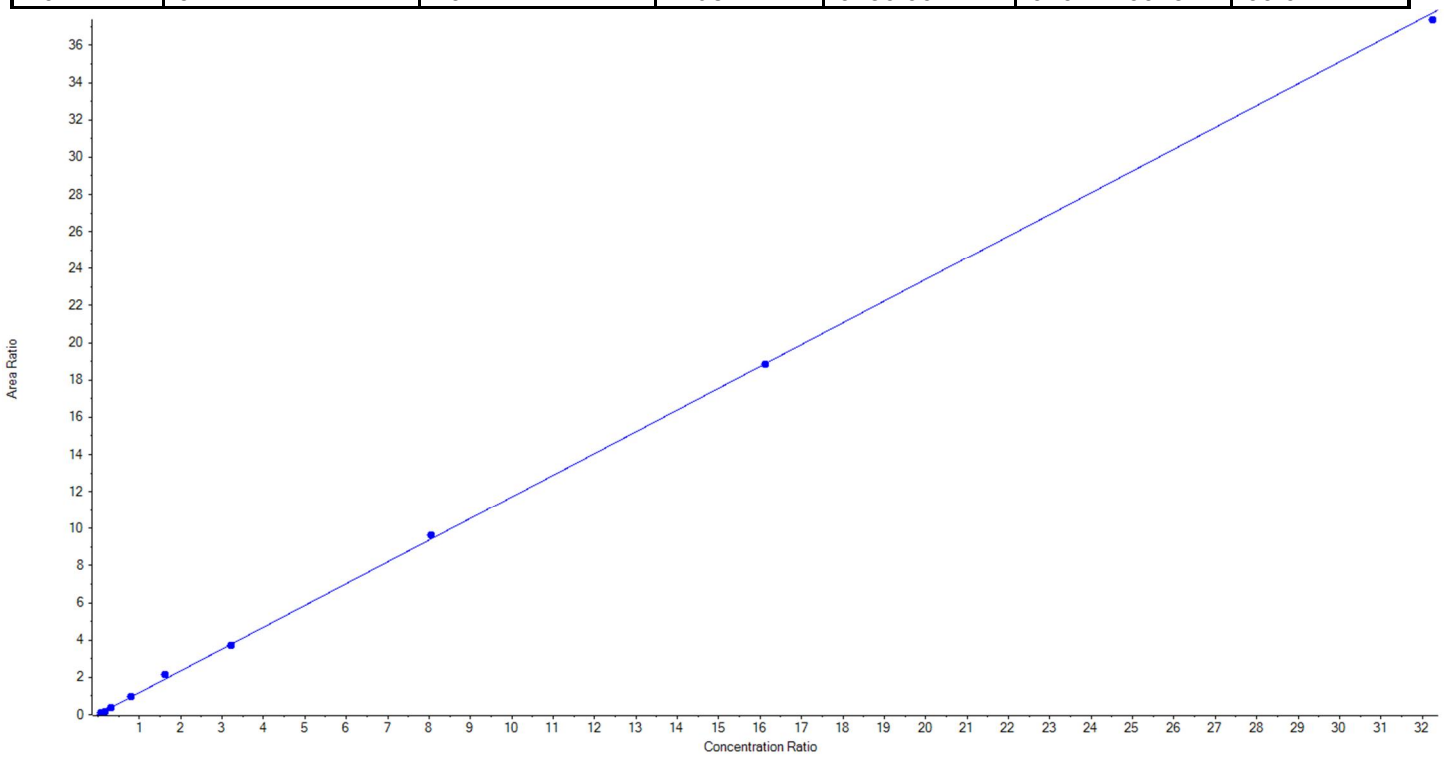
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Analyte Name	PFOS_1	**Data File**	18-0287.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.16999 x + 0.01017 (r = 0.99966) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	23.15	23.088724	99.7
3	JV65	L2	True	46.30	42.127787	91.0
4	JV66	L3	True	92.60	87.472091	94.5
5	JV67	L4	True	231.50	234.830537	101.4
6	JV68	L5	True	463.00	526.238813	113.7
7	JV69	L6	True	925.60	911.789563	98.5
8	JV70	L7	True	2314.00	2367.443455	102.3
9	JV71	L8	True	4628.00	4622.929105	99.9
10	JV72	L9	True	9256.00	9164.229925	99.0



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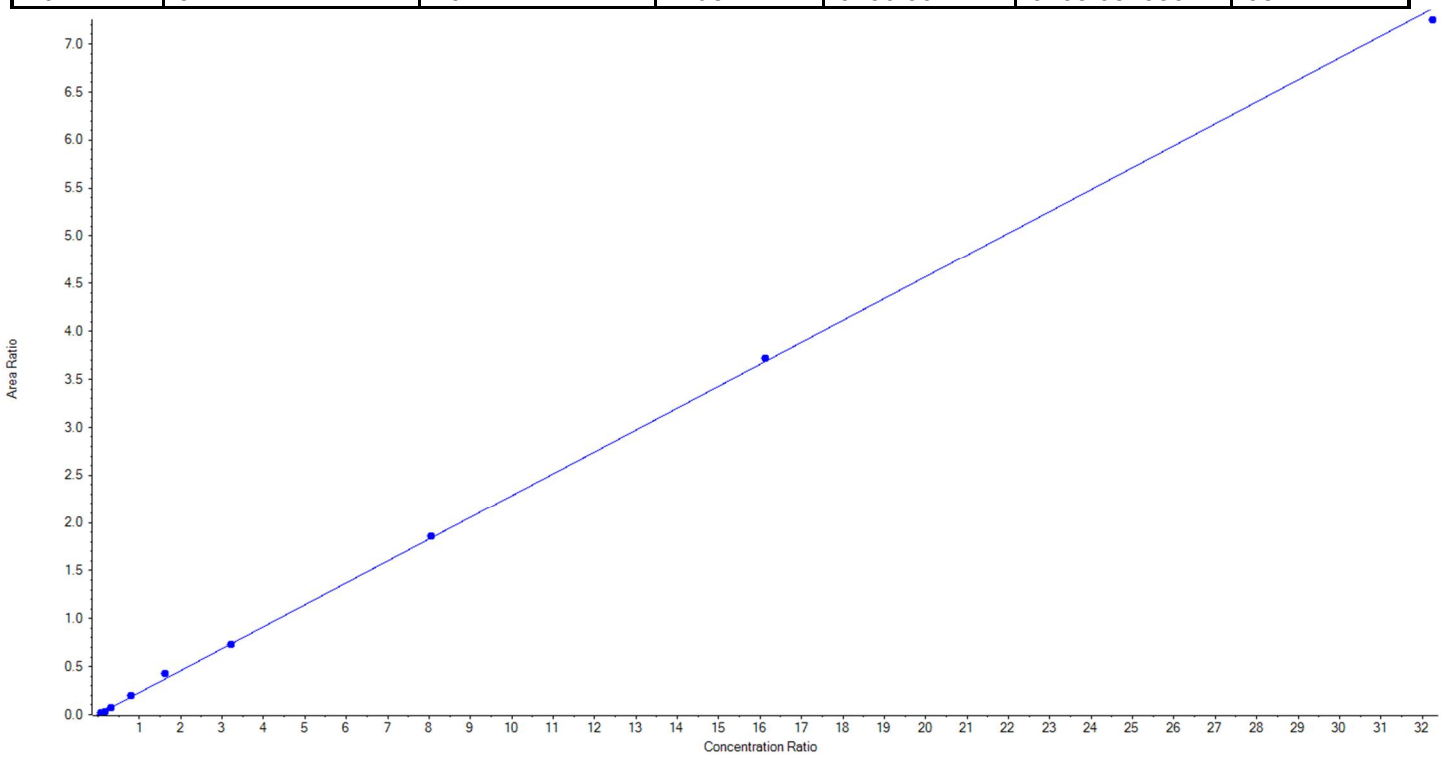
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Analyte Name	PFOS_2	**Data File**	18-0287.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0316Base
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.22845 x + 0.00142 (r = 0.99952) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	23.15	19.073086	82.4
3	JV65	L2	True	46.30	42.754548	92.3
4	JV66	L3	True	92.60	95.652663	103.3
5	JV67	L4	True	231.50	246.896117	106.7
6	JV68	L5	True	463.00	534.354893	115.4
7	JV69	L6	True	925.60	920.517935	99.5
8	JV70	L7	True	2314.00	2338.375483	101.1
9	JV71	L8	True	4628.00	4674.443945	101.0
10	JV72	L9	True	9256.00	9108.081330	98.4



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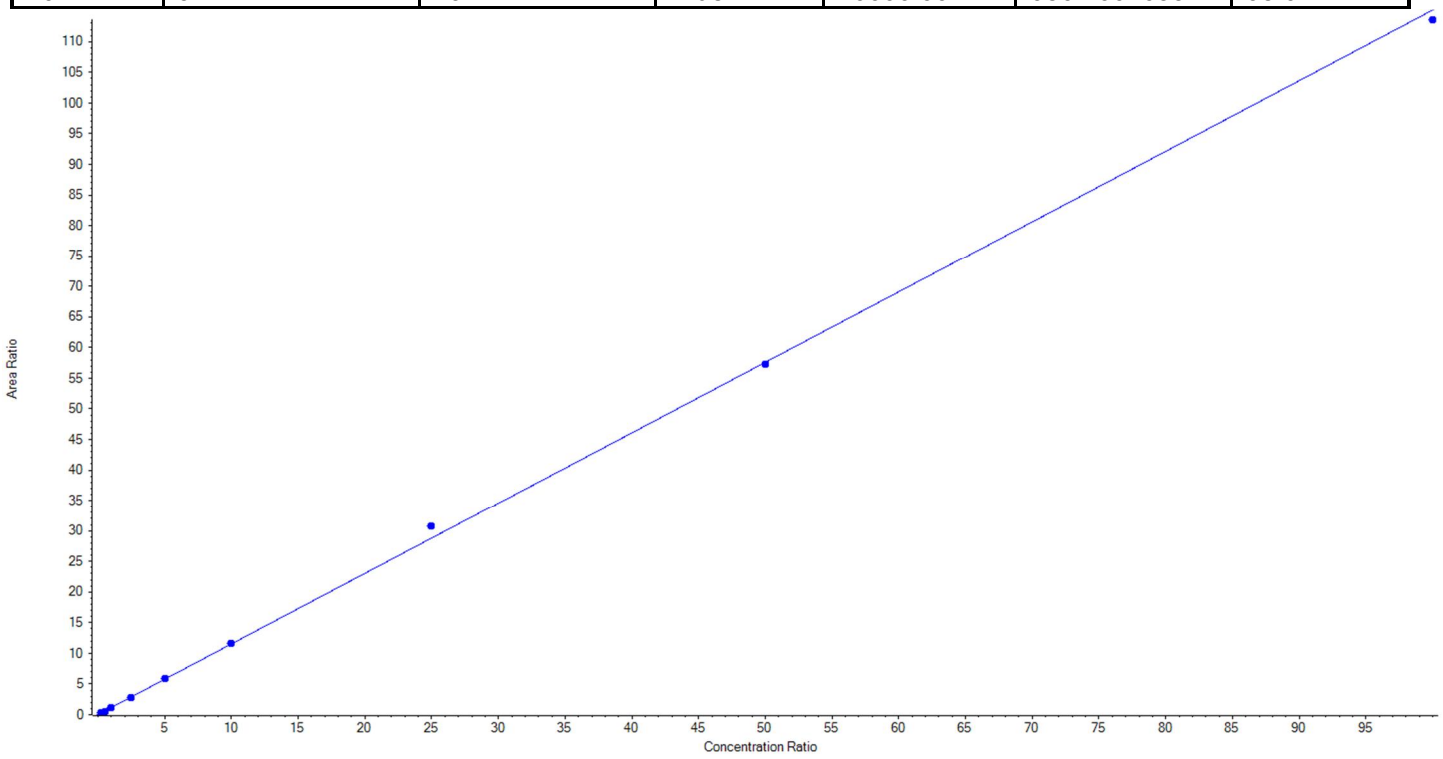
Calibration Summary Report

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Analyte Name	PFDA_1	**Data File**	18-0287.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.15138 x + 0.01830 (r = 0.99962) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.780783	103.1
3	JV65	L2	True	50.00	47.741972	95.5
4	JV66	L3	True	100.00	97.400854	97.4
5	JV67	L4	True	250.00	240.150008	96.1
6	JV68	L5	True	500.00	512.308119	102.5
7	JV69	L6	True	1000.00	1009.776029	101.0
8	JV70	L7	True	2500.00	2663.600645	106.5
9	JV71	L8	True	5000.00	4966.639934	99.3
10	JV72	L9	True	10000.00	9861.601655	98.6



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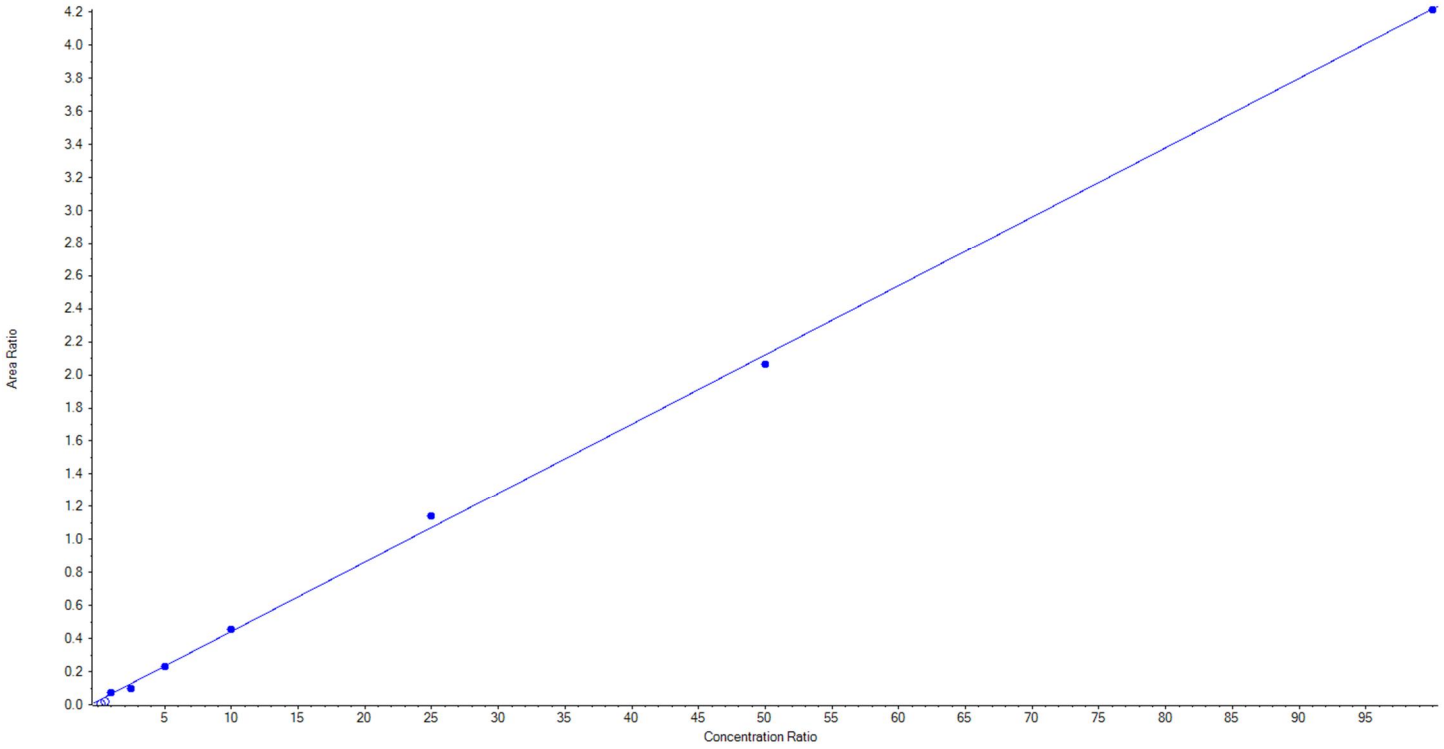
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Analyte Name	PFDA_2	**Data File**	18-0287.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.04195 x + 0.02344 (r = 0.99882) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	< 0	N/A
3	JV65	L2	False	50.00	< 0	N/A
4	JV66	L3	True	100.00	120.282787	120.3
5	JV67	L4	True	250.00	181.707950	72.7
6	JV68	L5	True	500.00	500.313071	100.1
7	JV69	L6	True	1000.00	1031.439826	103.1
8	JV70	L7	True	2500.00	2669.043842	106.8
9	JV71	L8	True	5000.00	4859.355694	97.2
10	JV72	L9	True	10000.00	9987.856830	99.9



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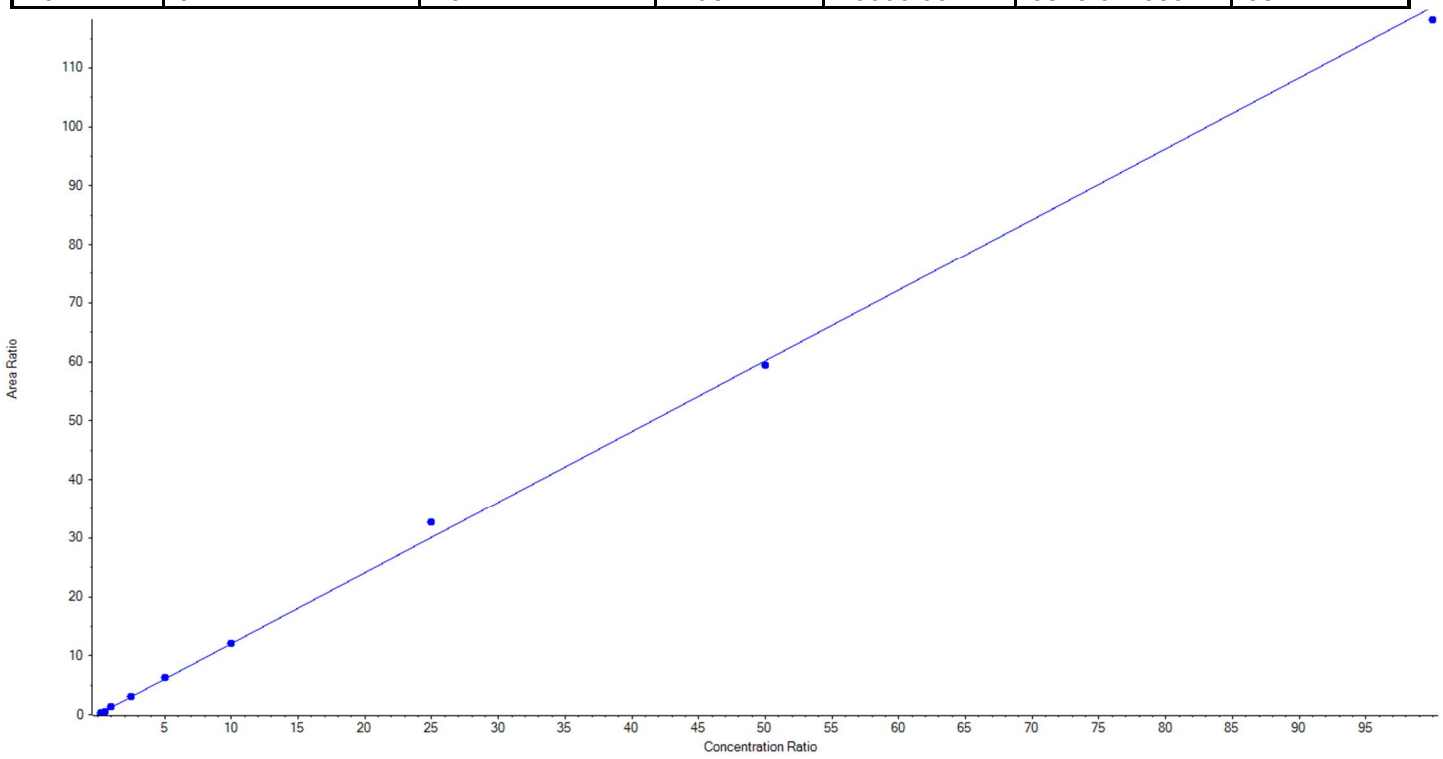
Calibration Summary Report

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Analyte Name	PFUnA_1	**Data File**	18-0287.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.20316 x + 0.01632 (r = 0.99933) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	21.476403	85.9
3	JV65	L2	True	50.00	46.942062	93.9
4	JV66	L3	True	100.00	105.088967	105.1
5	JV67	L4	True	250.00	259.283618	103.7
6	JV68	L5	True	500.00	528.597710	105.7
7	JV69	L6	True	1000.00	1005.384599	100.5
8	JV70	L7	True	2500.00	2708.602972	108.3
9	JV71	L8	True	5000.00	4930.949311	98.6
10	JV72	L9	True	10000.00	9818.674359	98.2



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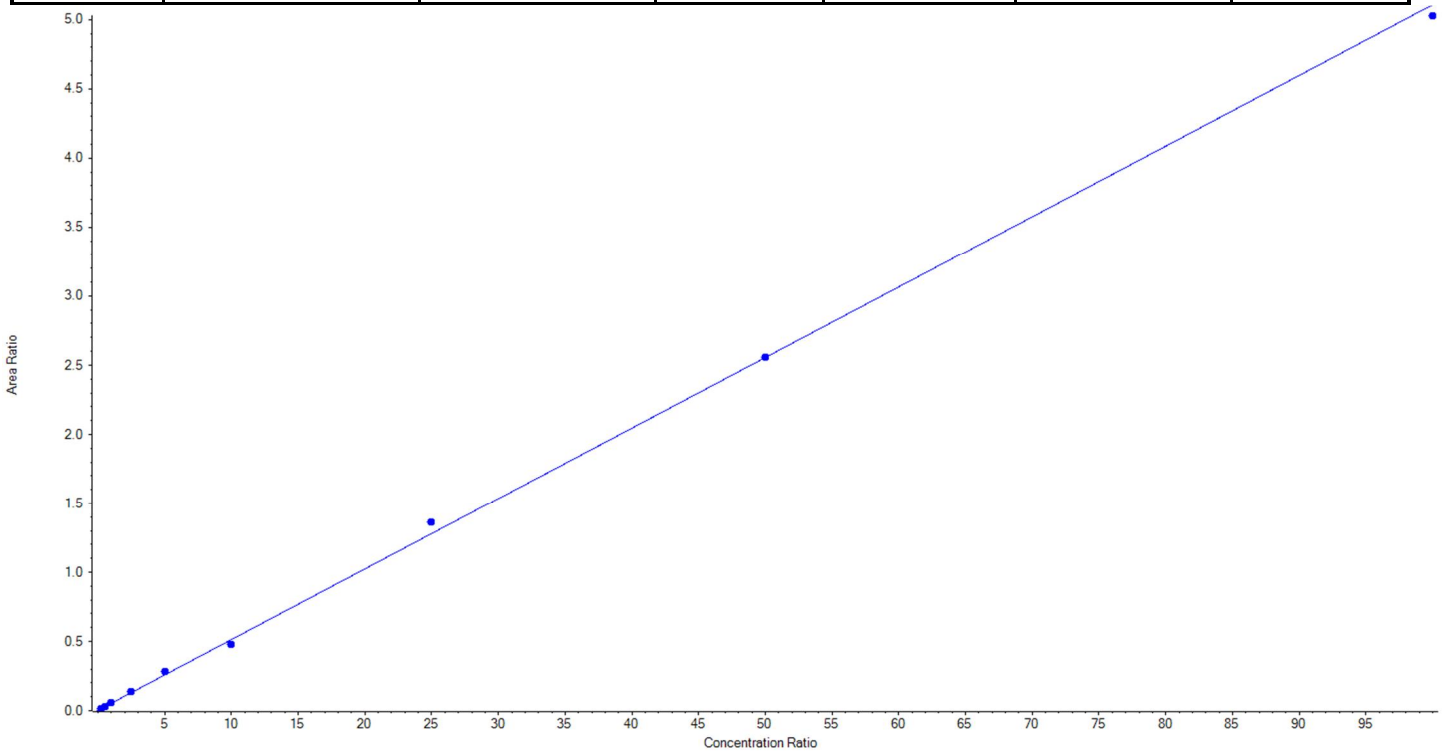
Calibration Summary Report

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Analyte Name	PFUnA_2	**Data File**	18-0287.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05105 x + 0.00264 (r = 0.99930) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	18.744641	75.0
3	JV65	L2	True	50.00	49.810694	99.6
4	JV66	L3	True	100.00	112.965030	113.0
5	JV67	L4	True	250.00	264.209742	105.7
6	JV68	L5	True	500.00	544.666363	108.9
7	JV69	L6	True	1000.00	929.274388	92.9
8	JV70	L7	True	2500.00	2660.578162	106.4
9	JV71	L8	True	5000.00	5001.977143	100.0
10	JV72	L9	True	10000.00	9842.773836	98.4



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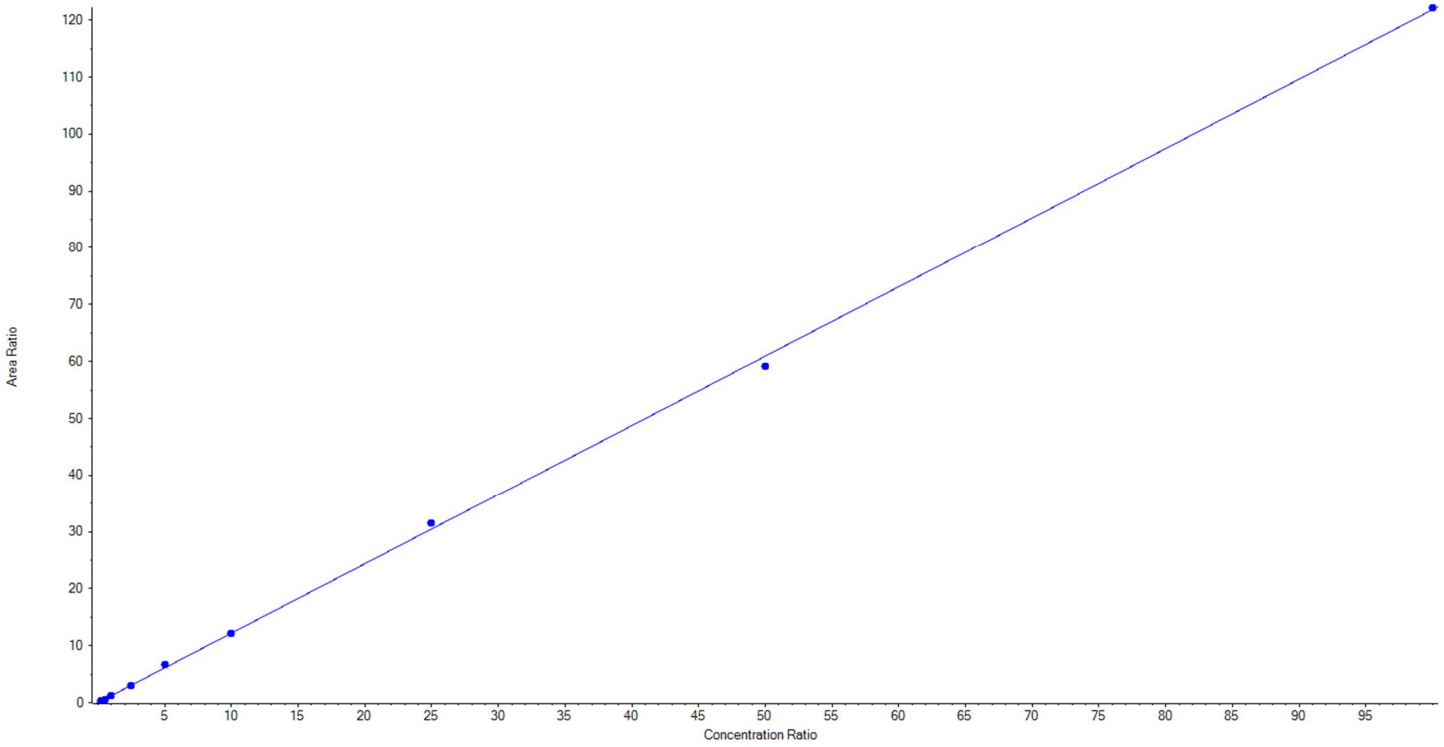
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFDoA_1	**Data File**	18-0287.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.21825 x + 0.01097 (r = 0.99971) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	22.899081	91.6
3	JV65	L2	True	50.00	49.230961	98.5
4	JV66	L3	True	100.00	100.630285	100.6
5	JV67	L4	True	250.00	251.821712	100.7
6	JV68	L5	True	500.00	543.205579	108.6
7	JV69	L6	True	1000.00	993.526410	99.4
8	JV70	L7	True	2500.00	2578.802928	103.2
9	JV71	L8	True	5000.00	4858.808287	97.2
10	JV72	L9	True	10000.00	10026.074758	100.3



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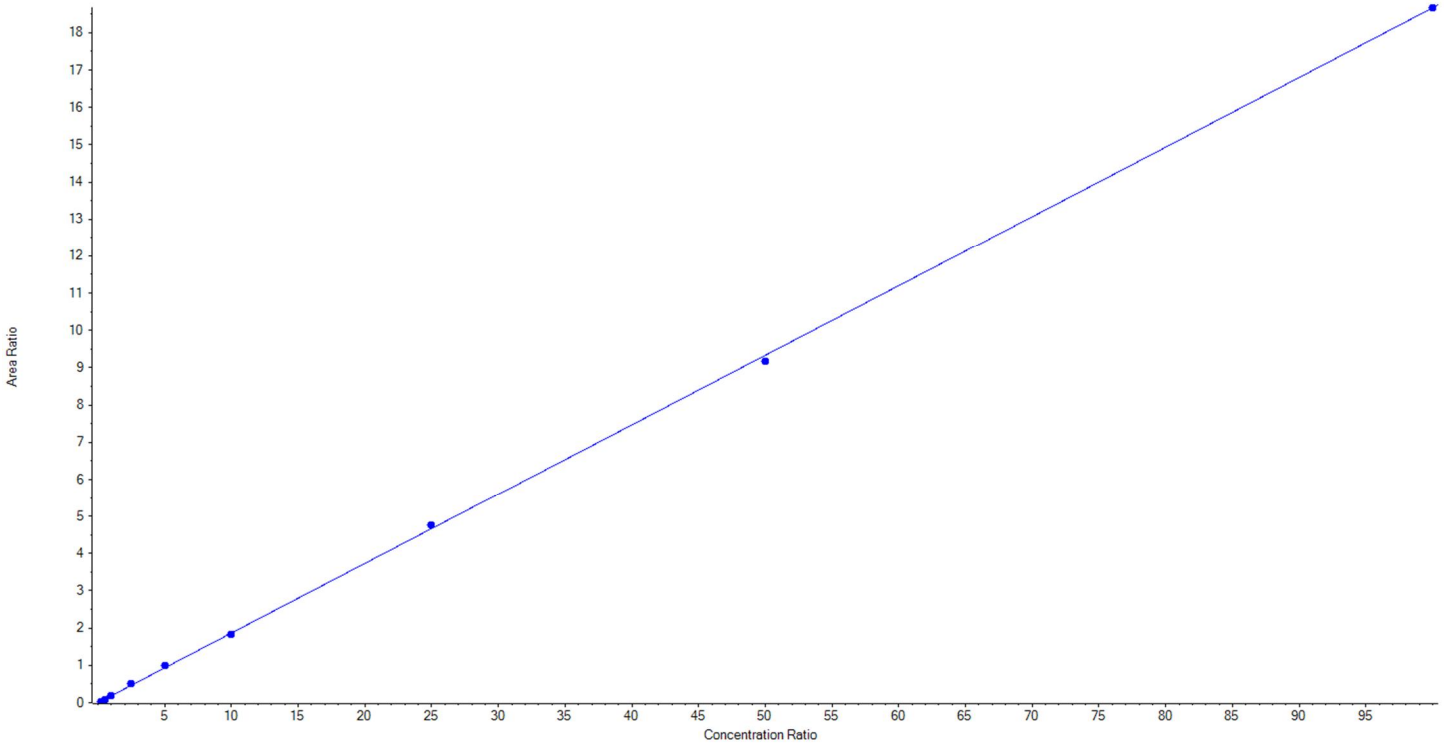
Calibration Summary Report

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Analyte Name	PFDoA_2	**Data File**	18-0287.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.18668 x + -5.27718e-4 (r = 0.99978) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	21.198571	84.8
3	JV65	L2	True	50.00	48.544516	97.1
4	JV66	L3	True	100.00	104.886111	104.9
5	JV67	L4	True	250.00	268.108635	107.2
6	JV68	L5	True	500.00	540.076896	108.0
7	JV69	L6	True	1000.00	977.473712	97.8
8	JV70	L7	True	2500.00	2546.512918	101.9
9	JV71	L8	True	5000.00	4918.186485	98.4
10	JV72	L9	True	10000.00	10000.012156	100.0



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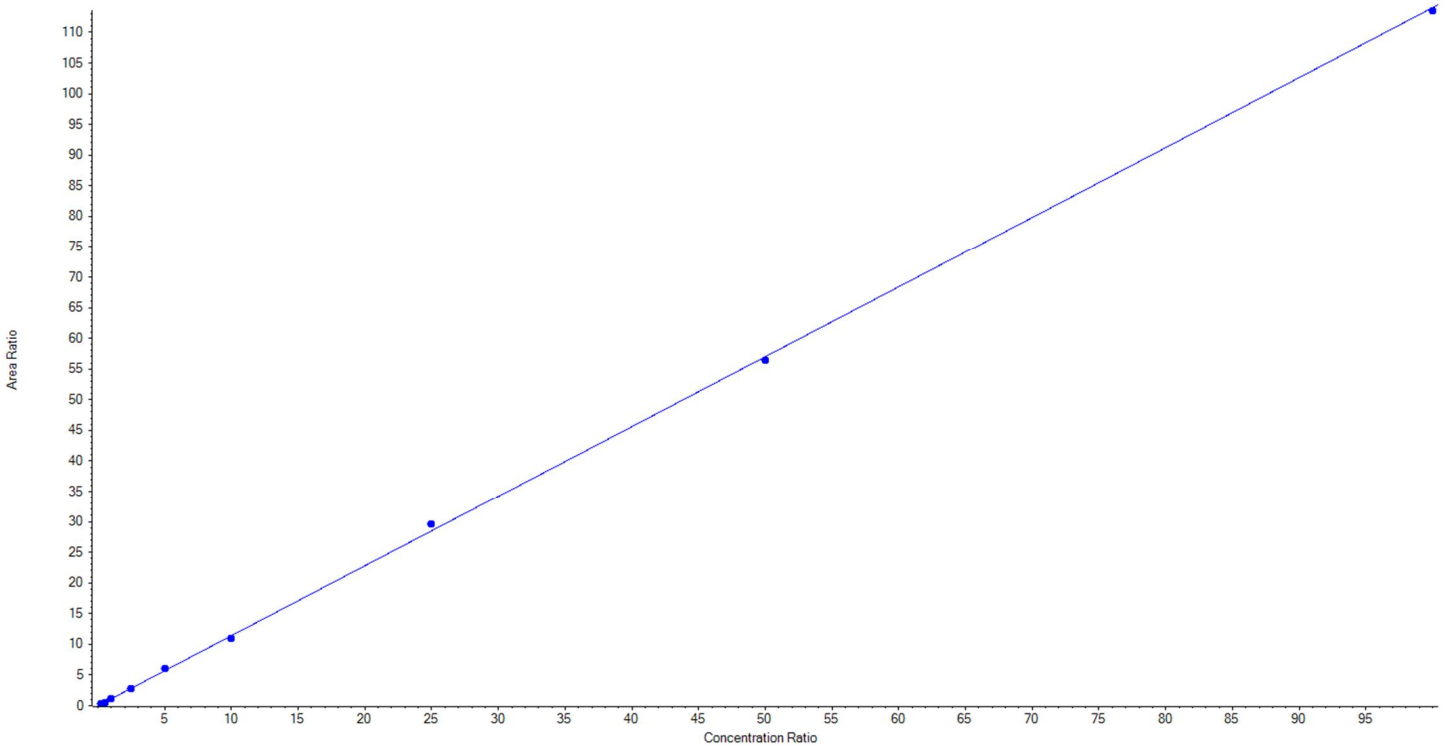
Calibration Summary Report

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Analyte Name	PFTrDA_1	**Data File**	18-0287.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.14025 x + -0.00563 (r = 0.99975) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	23.303615	93.2
3	JV65	L2	True	50.00	49.441089	98.9
4	JV66	L3	True	100.00	101.743185	101.7
5	JV67	L4	True	250.00	250.416518	100.2
6	JV68	L5	True	500.00	536.739235	107.4
7	JV69	L6	True	1000.00	961.587378	96.2
8	JV70	L7	True	2500.00	2599.762848	104.0
9	JV71	L8	True	5000.00	4947.640990	99.0
10	JV72	L9	True	10000.00	9954.365142	99.5



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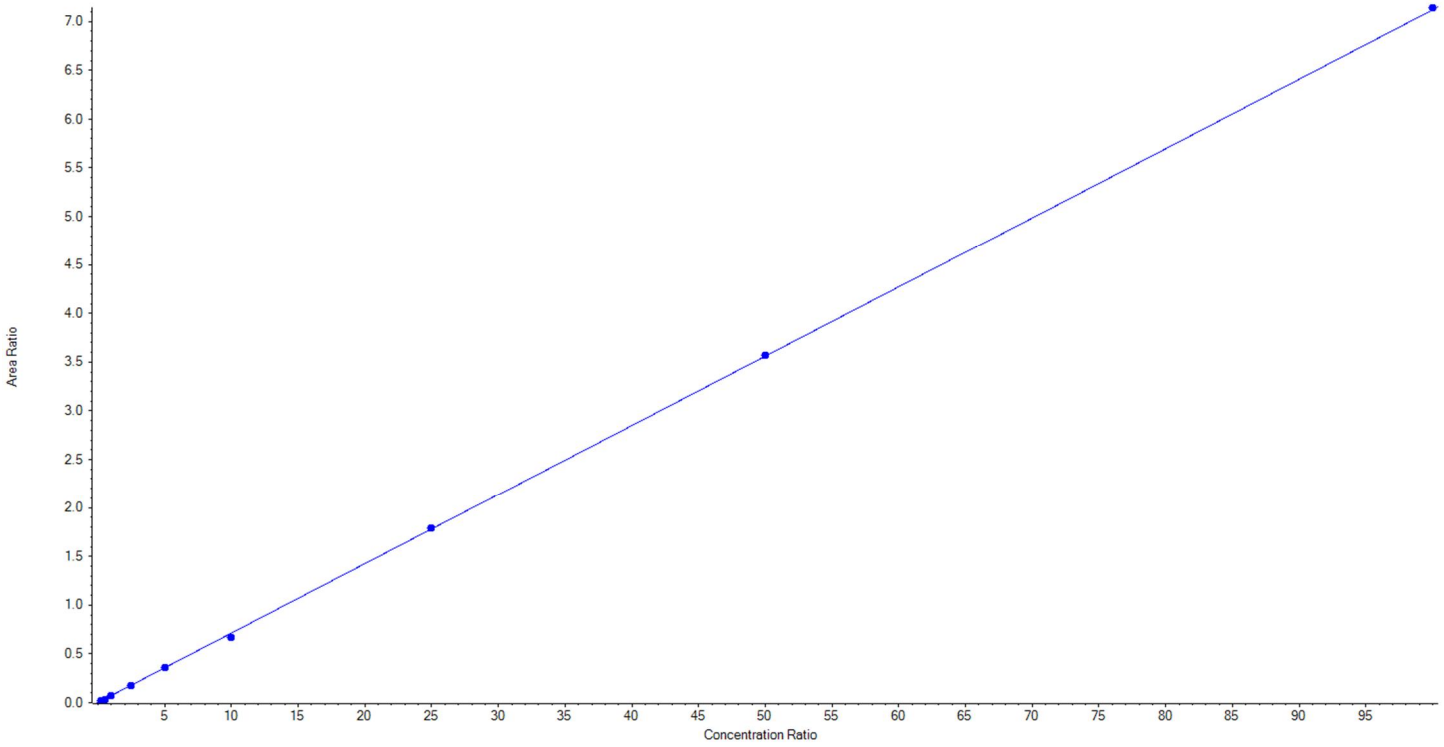
Calibration Summary Report

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Analyte Name	PFTrDA_2	**Data File**	18-0287.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.07119 x + 0.00179 (r = 0.99985) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	28.219861	112.9
3	JV65	L2	True	50.00	44.534197	89.1
4	JV66	L3	True	100.00	104.781408	104.8
5	JV67	L4	True	250.00	242.644756	97.1
6	JV68	L5	True	500.00	505.553916	101.1
7	JV69	L6	True	1000.00	939.542406	94.0
8	JV70	L7	True	2500.00	2511.903429	100.5
9	JV71	L8	True	5000.00	5019.349063	100.4
10	JV72	L9	True	10000.00	10028.470965	100.3



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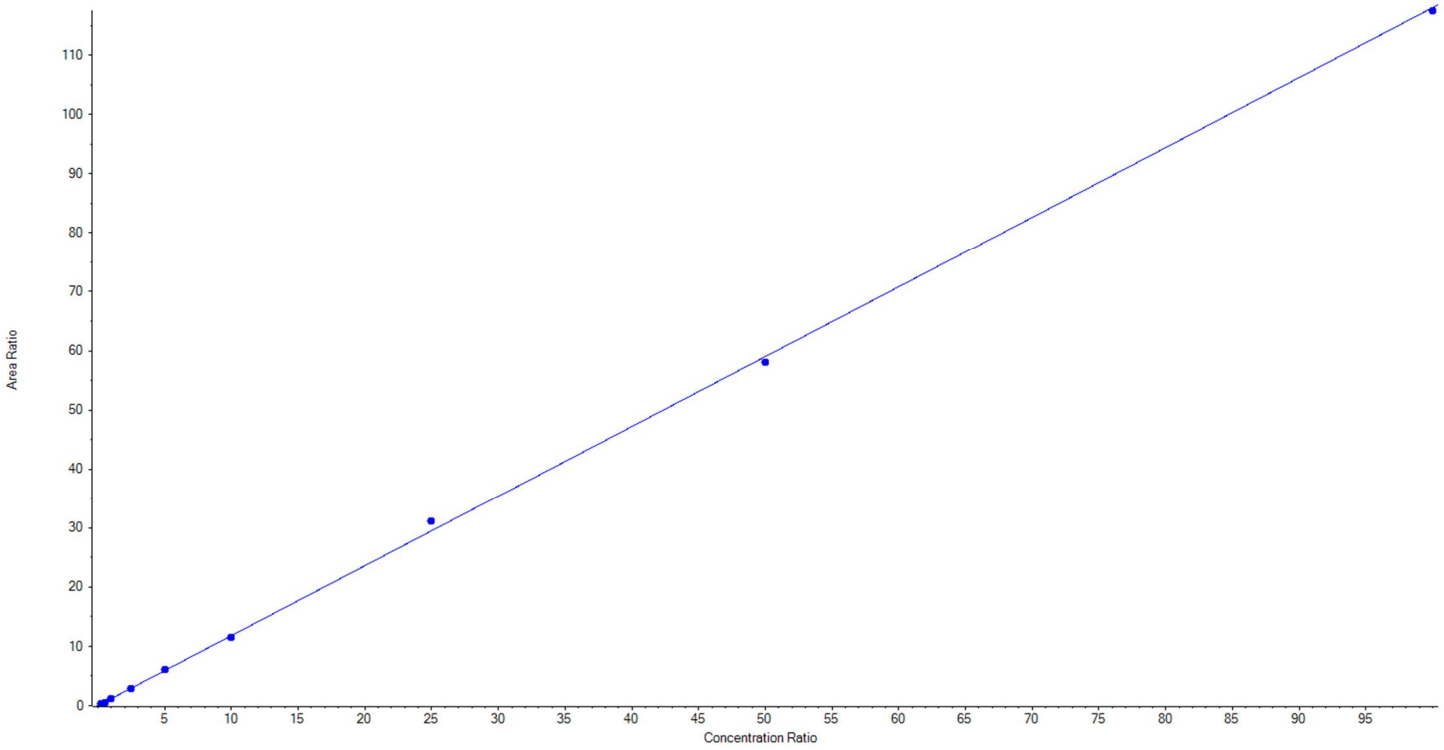
Calibration Summary Report

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Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFTeDA_1	**Data File**	18-0287.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.17996 x + 0.00995 (r = 0.99970) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	24.735841	98.9
3	JV65	L2	True	50.00	47.529454	95.1
4	JV66	L3	True	100.00	103.219818	103.2
5	JV67	L4	True	250.00	248.573936	99.4
6	JV68	L5	True	500.00	512.080787	102.4
7	JV69	L6	True	1000.00	972.640447	97.3
8	JV70	L7	True	2500.00	2644.160657	105.8
9	JV71	L8	True	5000.00	4918.111573	98.4
10	JV72	L9	True	10000.00	9953.947488	99.5



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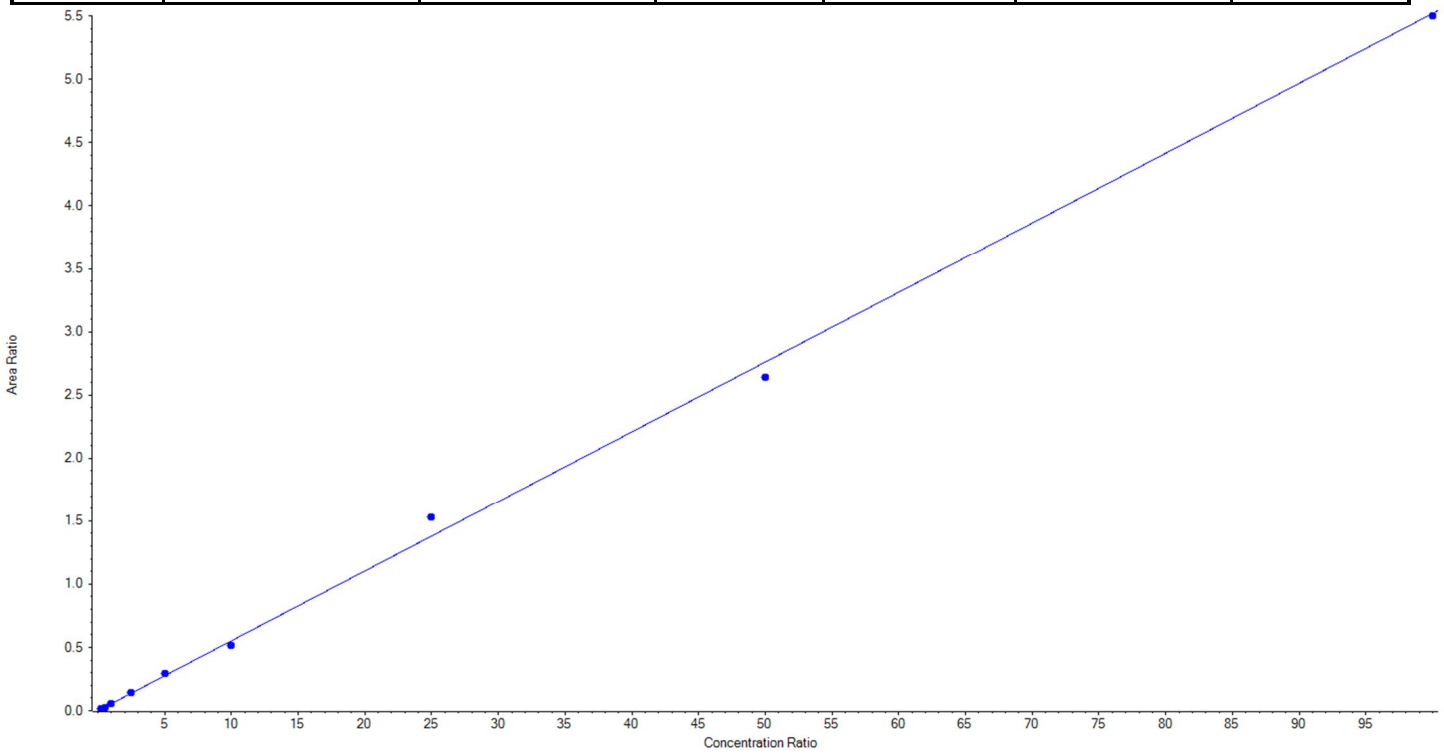
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	PFTeDA_2	**Data File**	18-0287.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0316Base
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.05522 x + -2.53563e-4 (r = 0.99873) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.372335	101.5
3	JV65	L2	True	50.00	41.421057	82.8
4	JV66	L3	True	100.00	105.755853	105.8
5	JV67	L4	True	250.00	257.279859	102.9
6	JV68	L5	True	500.00	534.349917	106.9
7	JV69	L6	True	1000.00	939.252895	93.9
8	JV70	L7	True	2500.00	2771.350611	110.9
9	JV71	L8	True	5000.00	4784.927639	95.7
10	JV72	L9	True	10000.00	9965.289833	99.7



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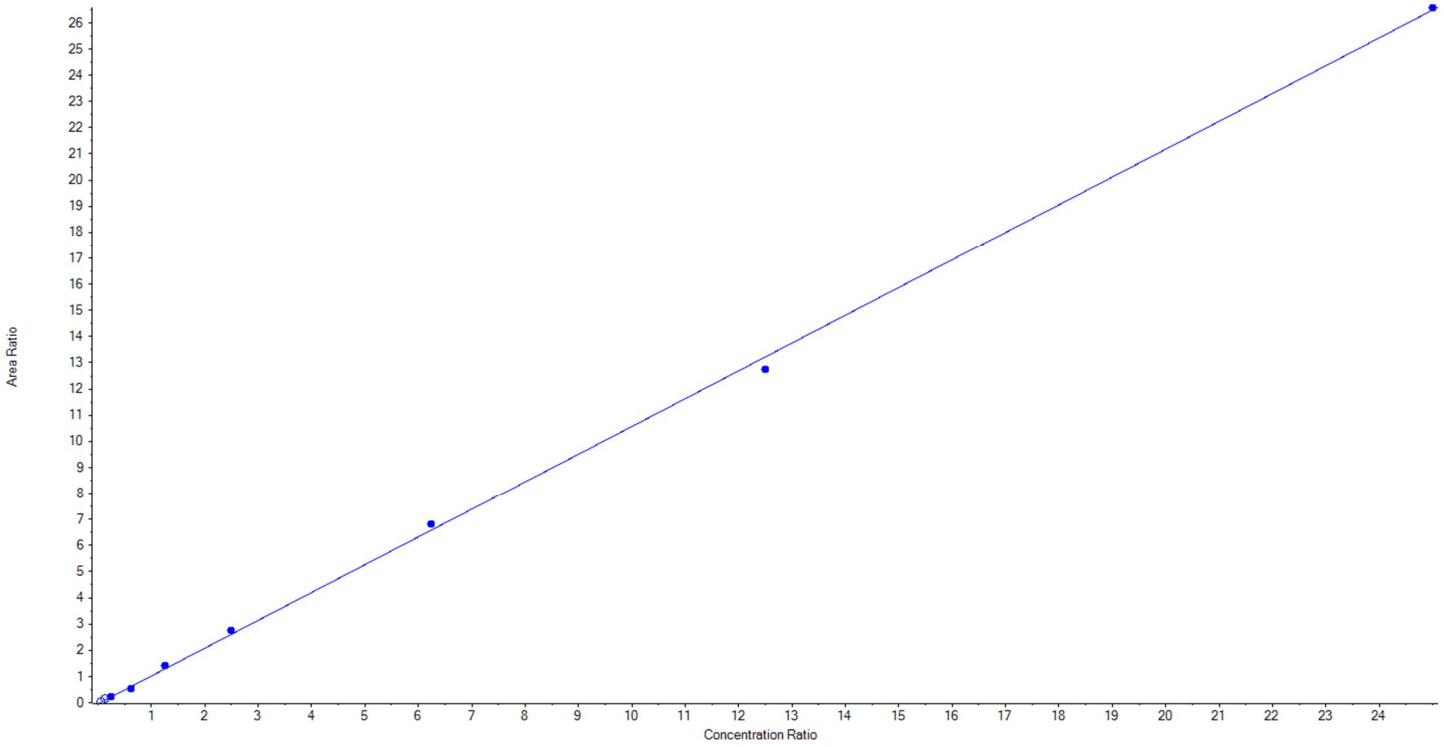
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NMeFOSAA_1	**Data File**	18-0287.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.06117 x + -0.04402 (r = 0.99943) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	False	25.00	33.804476	135.2
3	JV65	L2	False	50.00	75.638920	151.3
4	JV66	L3	True	100.00	96.476906	96.5
5	JV67	L4	True	250.00	223.748795	89.5
6	JV68	L5	True	500.00	543.743514	108.8
7	JV69	L6	True	1000.00	1052.710998	105.3
8	JV70	L7	True	2500.00	2582.869250	103.3
9	JV71	L8	True	5000.00	4818.449837	96.4
10	JV72	L9	True	10000.00	10032.000701	100.3



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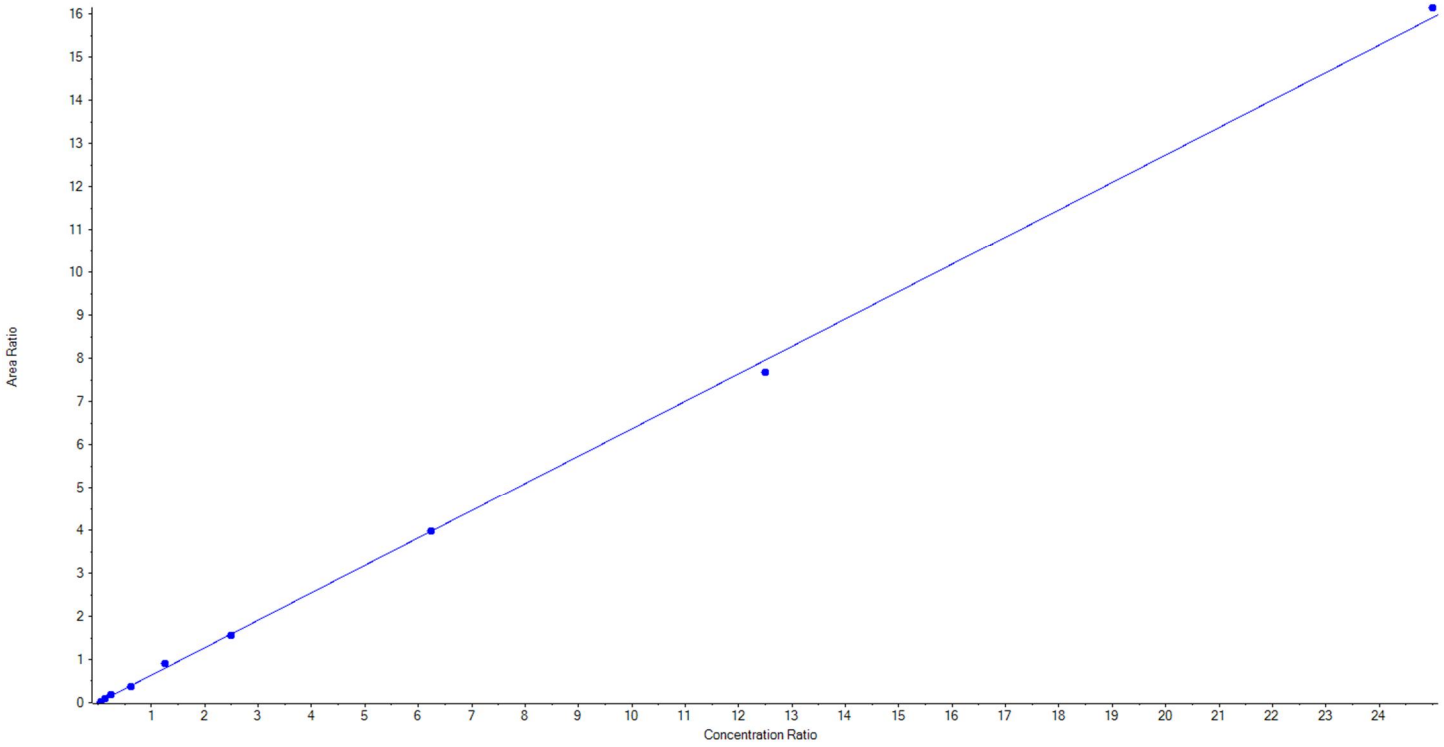
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NMeFOSAA_2	**Data File**	18-0287.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.63652 x + 2.66585e-4 (r = 0.99944) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	20.981286	83.9
3	JV65	L2	True	50.00	51.560465	103.1
4	JV66	L3	True	100.00	111.874753	111.9
5	JV67	L4	True	250.00	230.145813	92.1
6	JV68	L5	True	500.00	563.501107	112.7
7	JV69	L6	True	1000.00	984.601410	98.5
8	JV70	L7	True	2500.00	2502.038421	100.1
9	JV71	L8	True	5000.00	4817.598080	96.4
10	JV72	L9	True	10000.00	10142.698664	101.4



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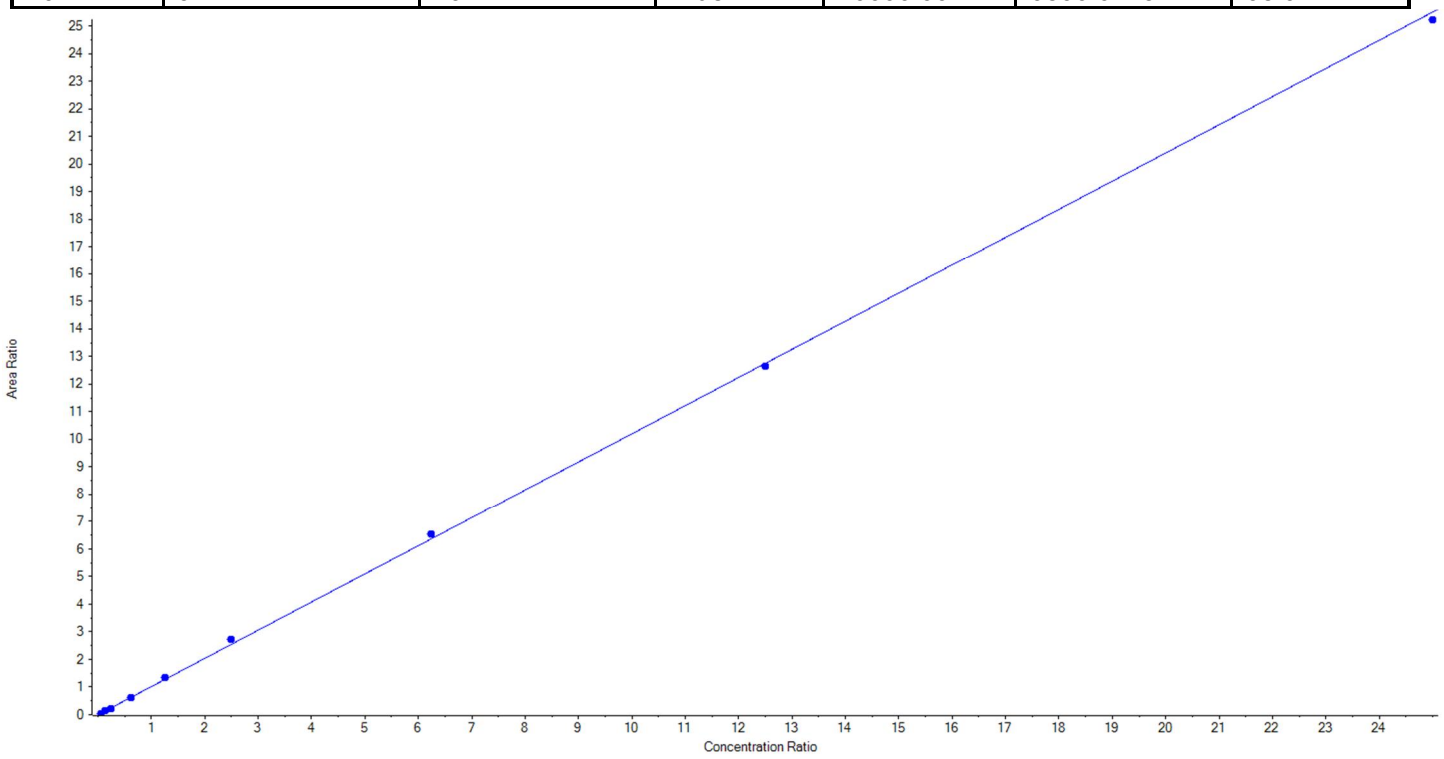
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NEtFOSAA_1	**Data File**	18-0287.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 1.02015 x + -0.00244 (r = 0.99960) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	19.766835	79.1
3	JV65	L2	True	50.00	59.290846	118.6
4	JV66	L3	True	100.00	92.324906	92.3
5	JV67	L4	True	250.00	238.820153	95.5
6	JV68	L5	True	500.00	533.733349	106.8
7	JV69	L6	True	1000.00	1071.478343	107.2
8	JV70	L7	True	2500.00	2565.600521	102.6
9	JV71	L8	True	5000.00	4953.962734	99.1
10	JV72	L9	True	10000.00	9890.022314	98.9



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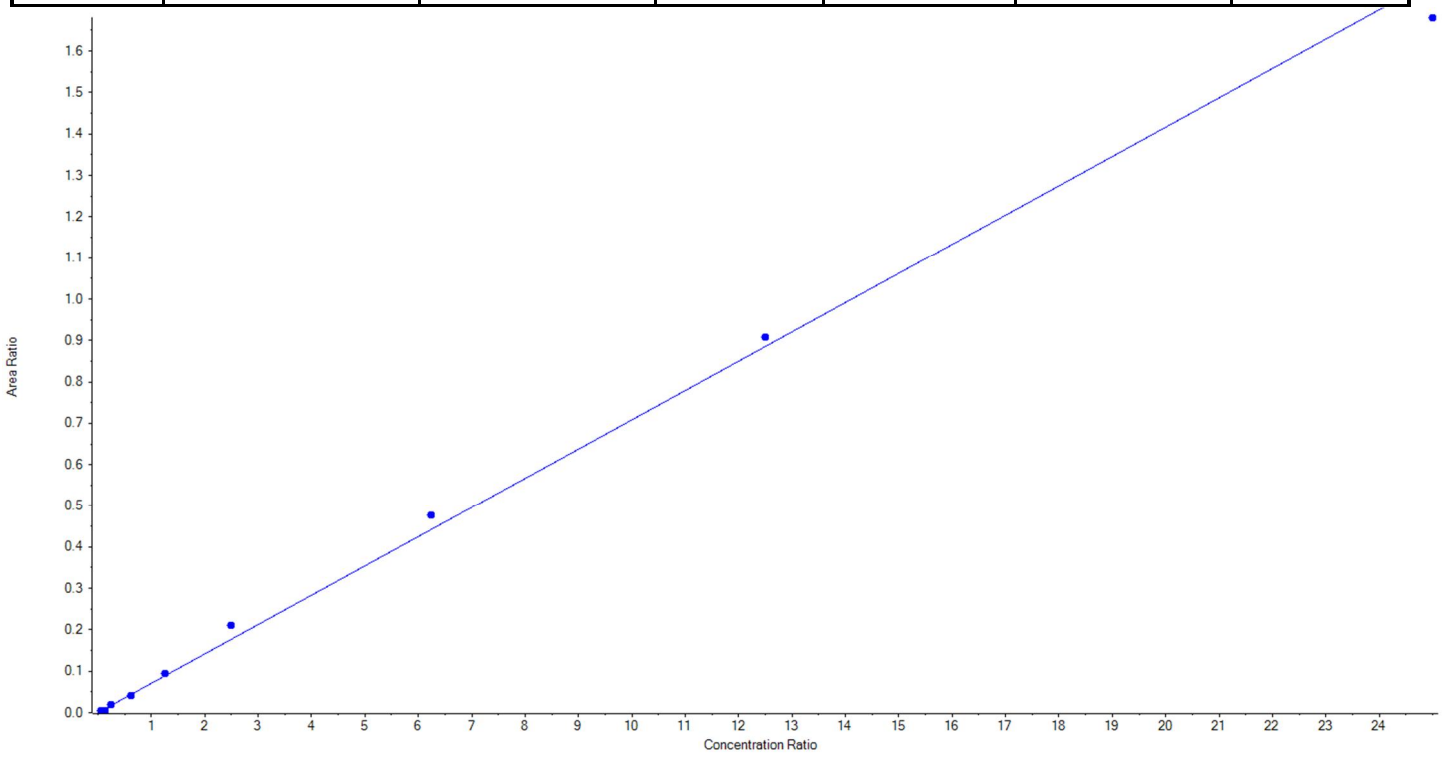
Calibration Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:08:41 AM

Analyte Name	NEtFOSAA_2	**Data File**	18-0287.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0316Base
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	5/17/2018 9:11:38 AM	**Acquisition Method**	5-0371.dam

Regression Equation: y = 0.07082 x + 4.14020e-5 (r = 0.99757) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	JV64	L1	True	25.00	25.182661	100.7
3	JV65	L2	True	50.00	32.517054	65.0
4	JV66	L3	True	100.00	113.389105	113.4
5	JV67	L4	True	250.00	226.023527	90.4
6	JV68	L5	True	500.00	535.608828	107.1
7	JV69	L6	True	1000.00	1182.728888	118.3
8	JV70	L7	True	2500.00	2687.401954	107.5
9	JV71	L8	True	5000.00	5132.452168	102.7
10	JV72	L9	True	10000.00	9489.695816	94.9



	Drinking Water Calibration Curve Concentrations (ng/L)								
	JV64	**JV65**	**JV66**	**JV67**	**JV68**	**JV69**	**JV70**	**JV71**	**JV72**
PFHxA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFHpA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFOA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFNA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFUnA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFDoA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTrDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFTeDA	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NMeFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
NEtFOSAA (branched)	25.00	50.00	100.00	250.00	500.00	1,000.00	2,500.00	5,000.00	10,000.00
PFBS	22.15	44.30	88.60	221.50	443.00	885.00	2,212.50	4,425.00	8,850.00
PFHxS (branched)	22.80	45.60	91.20	228.00	456.00	912.00	2,280.00	4,560.00	9,120.00
PFOS (branched)	23.15	46.30	92.60	231.50	463.00	925.60	2,314.00	4,628.00	9,256.00
	Surrogates								
13C2-PFHxA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C2-PFDA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
d5-EtFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00
	Internal Standards								
13C2-PFOA	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
13C4-PFOS	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00	287.00
d3-MeFOSAA	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00

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Summary Ion Ratio Report

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Sample Name	JV64	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:20:34	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.46	PFBS			
PFBS_2	298.9 / 99.0	1.45	PFBS	0.268	0.327	ü
PFHxA_1	313.0 / 269.0	1.74	PFHxA			
PFHxA_2	313.0 / 119.0	1.73	PFHxA	0.029	0.056	ü
PFHpA_1	363.0 / 319.0	2.08	PFHpA			
PFHpA_2	363.0 / 169.0	2.08	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.09	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.478	0.335	ü
PFOA_1	413.0 / 369.0	2.45	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.057	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.82	PFNA	0.217	0.294	ü
PFOS_1	499.0 / 80.0	2.81	PFOS			
PFOS_2	499.0 / 99.0	2.81	PFOS	0.159	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.19	PFDA	0.023	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.46	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.78	PFDoA	0.135	0.152	ü
PFTrDA_1	663.0 / 619.0	4.03	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.084	0.064	ü
PFTeDA_1	713.0 / 669.0	4.25	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.25	PFTeDA	0.046	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.34	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.34	NMeFOSAA	0.737	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.48	NEtFOSSA	0.094	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV65	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:29:29	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.45	PFBS	0.423	0.327	ü
PFHxA_1	313.0 / 269.0	1.72	PFHxA			
PFHxA_2	313.0 / 119.0	1.70	PFHxA	0.054	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.408	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.052	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.346	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.82	PFOS	0.195	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.19	PFDA	0.031	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.48	PFUnA	0.048	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.77	PFDoA	0.148	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.060	0.064	ü
PFTeDA_1	713.0 / 669.0	4.24	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.24	PFTeDA	0.040	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.32	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.32	NMeFOSAA	0.526	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.51	NEtFOSSA	0.039	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV66	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:38:24	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.48	PFBS			
PFBS_2	298.9 / 99.0	1.47	PFBS	0.326	0.327	ü
PFHxA_1	313.0 / 269.0	1.72	PFHxA			
PFHxA_2	313.0 / 119.0	1.72	PFHxA	0.036	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.08	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.327	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.45	PFOA	0.059	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.81	PFNA	0.290	0.294	ü
PFOS_1	499.0 / 80.0	2.81	PFOS			
PFOS_2	499.0 / 99.0	2.81	PFOS	0.212	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.17	PFDA	0.065	0.041	
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.48	PFUnA	0.047	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.77	PFDoA	0.158	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.066	0.064	ü
PFTeDA_1	713.0 / 669.0	4.24	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.24	PFTeDA	0.047	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.32	NMeFOSAA	0.841	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.53	NEtFOSSA	0.086	0.071	ü

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Summary Ion Ratio Report

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Printed: 29/05/2018 9:39:05 AM

Sample Name	JV67	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:47:21	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.47	PFBS			
PFBS_2	298.9 / 99.0	1.46	PFBS	0.237	0.327	ü
PFHxA_1	313.0 / 269.0	1.73	PFHxA			
PFHxA_2	313.0 / 119.0	1.72	PFHxA	0.047	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.07	PFHpA	0.021	0.022	ü
PFHxS_1	399.0 / 80.0	2.09	PFHxS			
PFHxS_2	399.0 / 99.0	2.09	PFHxS	0.311	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.45	PFOA	0.065	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.81	PFNA	0.310	0.294	ü
PFOS_1	499.0 / 80.0	2.81	PFOS			
PFOS_2	499.0 / 99.0	2.81	PFOS	0.205	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.16	PFDA	0.036	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.48	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.77	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.162	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.061	0.064	ü
PFTeDA_1	713.0 / 669.0	4.24	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.048	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.667	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.48	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.45	NEtFOSSA	0.066	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV68	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T09:56:17	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.359	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.060	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.023	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.302	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.063	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.289	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.198	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.16	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.044	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.152	0.152	ü
PFTrDA_1	663.0 / 619.0	4.02	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.02	PFTrDA	0.059	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.049	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.30	NMeFOSAA	0.641	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.48	NEtFOSSA	0.070	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV69	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:05:12	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.343	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.062	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.024	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.309	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.068	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.300	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.197	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.039	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.151	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.061	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.045	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.570	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.45	NEtFOSSA	0.077	0.071	ü

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Summary Ion Ratio Report

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Sample Name	JV70	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:14:08	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.43	PFBS	0.351	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.072	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.07	PFHxS			
PFHxS_2	399.0 / 99.0	2.07	PFHxS	0.286	0.335	ü
PFOA_1	413.0 / 369.0	2.43	PFOA			
PFOA_2	413.0 / 169.0	2.43	PFOA	0.062	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.294	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.193	0.194	ü
PFDA_1	513.0 / 469.0	3.15	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.037	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.042	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.151	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.060	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.049	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.30	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.30	NMeFOSAA	0.585	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.46	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.073	0.071	ü

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Summary Ion Ratio Report

Created with Analyst Reporter
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Sample Name	JV71	**Injection Vial**	9
Sample ID	L8	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:23:03	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.45	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.318	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.069	0.056	ü
PFHpA_1	363.0 / 319.0	2.07	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.021	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.296	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.068	0.062	ü
PFNA_1	463.0 / 419.0	2.81	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.301	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.197	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.15	PFDA	0.036	0.041	ü
PFUnA_1	563.0 / 519.0	3.47	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.043	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.155	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.063	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.046	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.602	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.072	0.071	ü

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Summary Ion Ratio Report

Created with Analyst Reporter
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Sample Name	JV72	**Injection Vial**	10
Sample ID	L9	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:31:58	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.44	PFBS			
PFBS_2	298.9 / 99.0	1.44	PFBS	0.315	0.327	ü
PFHxA_1	313.0 / 269.0	1.71	PFHxA			
PFHxA_2	313.0 / 119.0	1.71	PFHxA	0.070	0.056	ü
PFHpA_1	363.0 / 319.0	2.06	PFHpA			
PFHpA_2	363.0 / 169.0	2.06	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.08	PFHxS			
PFHxS_2	399.0 / 99.0	2.08	PFHxS	0.302	0.335	ü
PFOA_1	413.0 / 369.0	2.44	PFOA			
PFOA_2	413.0 / 169.0	2.44	PFOA	0.067	0.062	ü
PFNA_1	463.0 / 419.0	2.80	PFNA			
PFNA_2	463.0 / 219.0	2.80	PFNA	0.299	0.294	ü
PFOS_1	499.0 / 80.0	2.80	PFOS			
PFOS_2	499.0 / 99.0	2.80	PFOS	0.194	0.194	ü
PFDA_1	513.0 / 469.0	3.16	PFDA			
PFDA_2	513.0 / 219.0	3.16	PFDA	0.037	0.041	ü
PFUnA_1	563.0 / 519.0	3.48	PFUnA			
PFUnA_2	563.0 / 269.0	3.47	PFUnA	0.043	0.044	ü
PFDoA_1	613.0 / 569.0	3.76	PFDoA			
PFDoA_2	613.0 / 319.0	3.76	PFDoA	0.153	0.152	ü
PFTrDA_1	663.0 / 619.0	4.01	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.01	PFTrDA	0.063	0.064	ü
PFTeDA_1	713.0 / 669.0	4.23	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.23	PFTeDA	0.047	0.046	ü
NMeFOSAA_1	570.0 / 419.0	3.31	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.31	NMeFOSAA	0.608	0.642	ü
NEtFOSAA_1	584.0 / 419.0	3.47	NEtFOSSA			
NEtFOSAA_2	584.0 / 483.0	3.46	NEtFOSSA	0.067	0.071	ü

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QC Summary Report

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Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.44	901.851676	885.00	101.90
PFBS_2	298.9 / 99.0	1.44	918.307737	885.00	103.76
PFHxA_1	313.0 / 269.0	1.71	951.549680	1000.00	95.15
PFHxA_2	313.0 / 119.0	1.71	942.165072	1000.00	94.22
PFHpA_1	363.0 / 319.0	2.06	872.686188	1000.00	87.27
PFHpA_2	363.0 / 169.0	2.06	946.636265	1000.00	94.66
PFHxS_1	399.0 / 80.0	2.08	896.220615	912.00	98.27
PFHxS_2	399.0 / 99.0	2.08	883.956996	912.00	96.93
PFOA_1	413.0 / 369.0	2.43	898.740895	1000.00	89.87
PFOA_2	413.0 / 169.0	2.43	903.113647	1000.00	90.31
PFNA_1	463.0 / 419.0	2.80	933.155583	1000.00	93.32
PFNA_2	463.0 / 219.0	2.80	912.518493	1000.00	91.25
PFOS_1	499.0 / 80.0	2.80	877.977513	925.60	94.85
PFOS_2	499.0 / 99.0	2.80	949.188735	925.60	102.55
PFDA_1	513.0 / 469.0	3.15	935.035030	1000.00	93.50
PFDA_2	513.0 / 219.0	3.15	853.902376	1000.00	85.39
PFUnA_1	563.0 / 519.0	3.47	899.041959	1000.00	89.90
PFUnA_2	563.0 / 269.0	3.47	921.161237	1000.00	92.12
PFDoA_1	613.0 / 569.0	3.76	939.203264	1000.00	93.92
PFDoA_2	613.0 / 319.0	3.76	933.405461	1000.00	93.34
PFTrDA_1	663.0 / 619.0	4.01	907.522118	1000.00	90.75
PFTrDA_2	663.0 / 169.0	4.01	881.226616	1000.00	88.12
PFTeDA_1	713.0 / 669.0	4.23	878.562702	1000.00	87.86
PFTeDA_2	713.0 / 169.0	4.23	896.542887	1000.00	89.65
NMeFOSAA_1	570.0 / 419.0	3.31	1037.863357	1000.00	103.79
NMeFOSAA_2	570.0 / 512.0	3.31	978.255006	1000.00	97.83
NEtFOSAA_1	584.0 / 419.0	3.47	1101.385563	1000.00	110.14
NEtFOSAA_2	584.0 / 483.0	3.46	760.930454	1000.00	76.09

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QC Summary Report

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Sample Name	JV63 ICC	**Injection Vial**	11
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T10:40:54	**Data File**	18-0287.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	95.781622	100.00	95.78
13C2-PFDA	515.0 / 470.0	3.14	96.598799	100.00	96.60
d5-EtFOSAA	589.0 / 419.0	3.46	454.100896	400.00	113.53

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:44 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.45	2389.280653	2212.50	107.99
PFBS_2	298.9 / 99.0	1.44	2336.102989	2212.50	105.59
PFHxA_1	313.0 / 269.0	1.71	2895.179038	2500.00	115.81
PFHxA_2	313.0 / 119.0	1.71	2757.167581	2500.00	110.29
PFHpA_1	363.0 / 319.0	2.07	2689.724123	2500.00	107.59
PFHpA_2	363.0 / 169.0	2.07	2957.239736	2500.00	118.29
PFHxS_1	399.0 / 80.0	2.08	2362.465731	2280.00	103.62
PFHxS_2	399.0 / 99.0	2.08	2385.168075	2280.00	104.61
PFOA_1	413.0 / 369.0	2.44	2782.126442	2500.00	111.29
PFOA_2	413.0 / 169.0	2.44	2852.993105	2500.00	114.12
PFNA_1	463.0 / 419.0	2.81	2907.125755	2500.00	116.29
PFNA_2	463.0 / 219.0	2.81	2920.415932	2500.00	116.82
PFOS_1	499.0 / 80.0	2.80	2507.720205	2314.00	108.37
PFOS_2	499.0 / 99.0	2.80	2473.922064	2314.00	106.91
PFDA_1	513.0 / 469.0	3.15	2773.485338	2500.00	110.94
PFDA_2	513.0 / 219.0	3.15	3034.005413	2500.00	121.36
PFUnA_1	563.0 / 519.0	3.47	2679.223951	2500.00	107.17
PFUnA_2	563.0 / 269.0	3.47	2779.161095	2500.00	111.17
PFDoA_1	613.0 / 569.0	3.76	2772.264301	2500.00	110.89
PFDoA_2	613.0 / 319.0	3.76	2887.210254	2500.00	115.49
PFTrDA_1	663.0 / 619.0	4.01	2674.074282	2500.00	106.96
PFTrDA_2	663.0 / 169.0	4.01	2725.782470	2500.00	109.03
PFTeDA_1	713.0 / 669.0	4.23	2609.373592	2500.00	104.37
PFTeDA_2	713.0 / 169.0	4.23	2706.104274	2500.00	108.24
NMeFOSAA_1	570.0 / 419.0	3.31	2597.213173	2500.00	103.89
NMeFOSAA_2	570.0 / 512.0	3.30	2695.202915	2500.00	107.81
NEtFOSAA_1	584.0 / 419.0	3.47	2612.985642	2500.00	104.52
NEtFOSAA_2	584.0 / 483.0	3.46	2545.488986	2500.00	101.82

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:15:35 AM

Sample Name	JV70 CCV	**Injection Vial**	8
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T15:47:06	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.70	110.534591	100.00	110.53
13C2-PFDA	515.0 / 470.0	3.14	110.333291	100.00	110.33
d5-EtFOSAA	589.0 / 419.0	3.46	439.232673	400.00	109.81

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:14:47 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.45	847.605926	885.00	95.77
PFBS_2	298.9 / 99.0	1.45	870.715187	885.00	98.39
PFHxA_1	313.0 / 269.0	1.72	1022.006730	1000.00	102.20
PFHxA_2	313.0 / 119.0	1.72	930.277456	1000.00	93.03
PFHpA_1	363.0 / 319.0	2.07	933.467426	1000.00	93.35
PFHpA_2	363.0 / 169.0	2.07	1082.067179	1000.00	108.21
PFHxS_1	399.0 / 80.0	2.08	827.092317	912.00	90.69
PFHxS_2	399.0 / 99.0	2.08	833.132346	912.00	91.35
PFOA_1	413.0 / 369.0	2.44	958.563866	1000.00	95.86
PFOA_2	413.0 / 169.0	2.44	1030.464497	1000.00	103.05
PFNA_1	463.0 / 419.0	2.80	980.054277	1000.00	98.01
PFNA_2	463.0 / 219.0	2.80	1003.390952	1000.00	100.34
PFOS_1	499.0 / 80.0	2.80	903.095244	925.60	97.57
PFOS_2	499.0 / 99.0	2.80	917.814249	925.60	99.16
PFDA_1	513.0 / 469.0	3.15	999.131055	1000.00	99.91
PFDA_2	513.0 / 219.0	3.15	948.230292	1000.00	94.82
PFUnA_1	563.0 / 519.0	3.47	970.375319	1000.00	97.04
PFUnA_2	563.0 / 269.0	3.47	907.593320	1000.00	90.76
PFDoA_1	613.0 / 569.0	3.76	959.999246	1000.00	96.00
PFDoA_2	613.0 / 319.0	3.76	919.087660	1000.00	91.91
PFTrDA_1	663.0 / 619.0	4.01	919.035872	1000.00	91.90
PFTrDA_2	663.0 / 169.0	4.01	939.185778	1000.00	93.92
PFTeDA_1	713.0 / 669.0	4.22	893.932506	1000.00	89.39
PFTeDA_2	713.0 / 169.0	4.23	916.714584	1000.00	91.67
NMeFOSAA_1	570.0 / 419.0	3.31	985.067572	1000.00	98.51
NMeFOSAA_2	570.0 / 512.0	3.30	1057.975878	1000.00	105.80
NEtFOSAA_1	584.0 / 419.0	3.46	978.433968	1000.00	97.84
NEtFOSAA_2	584.0 / 483.0	3.46	695.333625	1000.00	69.53

Not used for samples.

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QC Summary Report

Created with Analyst Reporter
Printed: 24/05/2018 11:15:50 AM

Sample Name	JV69 CCV	**Injection Vial**	7
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-17T16:49:36	**Data File**	18-0315.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0316_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFHxA	315.0 / 270.0	1.71	104.338054	100.00	104.34
13C2-PFDA	515.0 / 470.0	3.14	101.559171	100.00	101.56
d5-EtFOSAA	589.0 / 419.0	3.45	417.852873	400.00	104.46

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Summary Quant Report

Created with Analyst Reporter
Printed: 23/05/2018 2:48:28 PM

Sample Calculation

Sample Name	J6148-FS(0)	**Injection Vial**	14
Sample ID	NAWC-050718-RW-316	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-05-14T13:26:05	**Data File**	18-0313.wiff
Acquisition Method	5-0371.dam	**Result Table**	18-0313_Base
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.46	491659.18	1947.953430	311.9	false
PFBS_2	298.9 / 99.0	1.46	151011.73	1934.967632	478.4	false
PFHxA_1	313.0 / 269.0	1.74	1373573.21	4189.631616	404.5	false
PFHxA_2	313.0 / 119.0	1.74	93862.93	4000.785589	447.4	false
PFHpA_1	363.0 / 319.0	2.10	626938.85	2005.387237	226.2	false
PFHpA_2	363.0 / 169.0	2.09	16244.42	2646.052841	273.7	false
PFHxS_1	399.0 / 80.0	2.11	2054505.64	7158.366521	385.8	false
PFHxS_2	399.0 / 99.0	2.11	580157.25	6875.560120	418.2	false
PFOA_1	413.0 / 369.0	2.47	1649246.42	4601.630824	390.2	false
PFOA_2	413.0 / 169.0	2.45	164270.03	6868.953710	522.3	false
PFNA_1	463.0 / 419.0	2.85	222849.34	644.524888	185.0	false
PFNA_2	463.0 / 219.0	2.85	66331.69	655.612956	335.4	false
PFOS_1	499.0 / 80.0	2.80	3723209.66	9382.050761	370.9	false
PFOS_2	499.0 / 99.0	2.84	612334.86	7974.569699	394.8	false
PFDA_1	513.0 / 469.0	3.21	13865.55	16.087824	51.4	false
PFDA_2	513.0 / 219.0	3.22	1163.45	30.932675	44.5	false
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	true
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	true
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true

Sample calc PFOA 16.15 ng/L
y=0.96808x+0.0.19816

((1649246.42/36858.30)-0.19816)/0.96808)*100*0.001/0.285 = 16.146 ng/L

LCS PFOA 101% 15.17/15*100=101%

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0316							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-050718-FRB-0800	Water for QC samples	Field Reagent Blank	7-May-18	PFAS_QSM5.1	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0316							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-050718-FRB-3556	Water for QC samples	Field Reagent Blank	7-May-18	PFAS_QSM5.1	Perfluoroalkyl Compounds
MID_ATLANTIC	WILLOW_GROVE_NAS	18-0316							N6247016D9008	WE04	TETRA TECH, INC.	WGNA-050718-FRB-0335	Water for QC samples	Field Reagent Blank	7-May-18	PFAS_QSM5.1	Perfluoroalkyl Compounds