Naval Facilities Engineering Command

Off-base Drinking Water Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG 1701826

Marine Corps Outlying Landing Field Atlantic
MCAS Cherry Point NC

February 2019

December 11, 2017

Vista Work Order No. 1701826

Ms. Tiffany Hill
CH2M Hill
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on December 02, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'CTO-08/MCOLF ATLANTIC PFAS INV.'.

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

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

Sincerely,

Karen J. Volpendesta for

Martha Maier
Laboratory Director

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

Vista Work Order No. 1701826
Case Narrative

Sample Condition on Receipt:

Twelve drinking water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The client confirmed that the sample IDs on the container label ID are correct.

Analytical Notes:

EPA Method 537

The samples were extracted and analyzed for PFBS, PFOA and PFOS using EPA Method 537.

Holding Times

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

Quality Control

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

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

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

The Laboratory Fortified Sample Matrix (LFSM) and Laboratory Fortified Sample Matrix Duplicate (LFSMD) associated with these samples has been reported in Vista Work Order #1701807.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1701826-01	CH-AT-2RW40-1217	01-Dec-17 09:57	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-02	CH-AT-2FB40-1217	01-Dec-17 09:57	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-03	CH-AT-1RW115-1217	01-Dec-17 11:11	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-04	CH-AT-1FB115-1217	01-Dec-17 11:12	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-05	CH-AT-2RW41-1217	01-Dec-17 10:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-06	CH-AT-2FB41-1217	01-Dec-17 10:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-07	CH-AT-2RW39-1217	01-Dec-17 09:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-08	CH-AT-2FB39-1217	01-Dec-17 09:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-09	CH-AT-1RW114-1217	01-Dec-17 10:22	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-10	CH-AT-1FB114-1217	01-Dec-17 10:23	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-11	CH-AT-1RW113-1217	01-Dec-17 09:25	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-12	CH-AT-1FB113-1217	01-Dec-17 09:26	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water

Laboratory Data

Lab Sample: B7L0015-BLK1
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.443	5.00	10.0		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1
PFOA	ND	1.08	5.00	10.0		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1
PFOS	ND	1.04	5.00	10.0		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1

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

Sample ID: LFB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water

Laboratory Data

Lab Sample: B7L0015-BS1
Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	18.7	17.7	106	70-130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1
PFOA	23.1	20.0	116	70-130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1
PFOS	16.8	18.5	90.9	70-130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1
Labeled Standards	**Type**		**% Rec**	**Limits**	**Qualifiers**	**Batch**	**Extracted**	**Samp Size**	**Analyzed**	**Dilution**
13C2-PFHxA	SURR		96.0	70- 130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1

Sample ID: CH-AT-2RW40-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:57

Laboratory Data

Lab Sample: 1701826-01
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.455	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1
PFOA	ND	1.11	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1
PFOS	ND	1.07	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1

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

Sample ID: CH-AT-2FB40-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:57

Laboratory Data

Lab Sample: 1701826-02
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.446	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1
PFOA	ND	1.09	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1
PFOS	ND	1.05	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1

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

Sample ID: CH-AT-1RW115-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 11:11

Laboratory Data

Lab Sample: 1701826-03
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.470	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1
PFOA	ND	1.15	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1
PFOS	ND	1.10	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.1	70 - 130		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1

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

Sample ID: CH-AT-1FB115-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 11:12

Laboratory Data

Lab Sample: 1701826-04
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.442	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1
PFOA	ND	1.08	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1
PFOS	ND	1.04	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1

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

Sample ID: CH-AT-2RW41-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:36

Laboratory Data

Lab Sample: 1701826-05
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.455	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1
PFOA	ND	1.11	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1
PFOS	ND	1.07	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1

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

Sample ID: CH-AT-2FB41-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:36

Laboratory Data

Lab Sample: 1701826-06
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.463	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1
PFOA	ND	1.13	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1
PFOS	ND	1.09	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1

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

Sample ID: CH-AT-2RW39-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:36

Laboratory Data

Lab Sample: 1701826-07
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.448	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1
PFOA	ND	1.09	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1
PFOS	ND	1.05	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1

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

Sample ID: CH-AT-2FB39-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:36

Laboratory Data

Lab Sample: 1701826-08
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.437	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1
PFOA	ND	1.07	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1
PFOS	ND	1.03	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	110	70 - 130		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1

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

Sample ID: CH-AT-1RW114-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:22

Laboratory Data

Lab Sample: 1701826-09
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.465	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1
PFOA	ND	1.13	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1
PFOS	ND	1.09	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1

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

Sample ID: CH-AT-1FB114-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:23

Laboratory Data

Lab Sample: 1701826-10
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.429	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1
PFOA	ND	1.05	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1
PFOS	ND	1.01	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1

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

Sample ID: CH-AT-1RW113-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:25

Laboratory Data

Lab Sample: 1701826-11
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.440	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1
PFOA	ND	1.07	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1
PFOS	ND	1.03	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1

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

Sample ID: CH-AT-1FB113-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:26

Laboratory Data

Lab Sample: 1701826-12
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.439	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1
PFOA	ND	1.07	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1
PFOS	ND	1.03	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1

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

DATA QUALIFIERS & ABBREVIATIONS

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

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

CERTIFICATIONS

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

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

NELAP Accredited Test Methods

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

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

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

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

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

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

Submit by Email*

Vista 12/01/17 COOLER #2 679580-15.FI.FS

FOR LABORATORY USE ONLY
Laboratory Project ID: 1701826 Temp 3.5 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

CHAIN OF CUSTODY RECORD

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

Project I.D.: CTO-08/MCOLF ATLANTIC PFAS INV. P.O. #: 100006-7-106051 Sampler: K.Rabe/A.Seay + C.CONDER/M.CAM (Name)

Invoice to: Name	Company	Address	City	State	Zip	Ph#	Fax #
Tiffany Hill	CH2M HILL	1100 NE Circle Blvd	Corvallis	OR		541-768-3109	

Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
David Lubell	12/01/17	1500	Ian Aguelles	12/2/17	0953
Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

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

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

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No.: 7887 1715 2344

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA1613 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 TOTALS	EPA1668 COPLANAR PCBs	EPA1668 209 CONGENERS	EPA1668 PBDE	EPA1668 PAH	EPA1614 WHO-29	CARB429 PFOA, PFOS, PFBS	EPA 537 DW only
CH-AT-2RW40-1117	12/01/17	0957		2	P	DW																x	
CH-AT-2FB40-1117	12/01/17	0957		2	P	DW																x	
CH-AT-1RW115-1117	12/01/17	1111		2	P	DW																x	
CH-AT-1FB115-1117	12/01/17	1112		2	P	DW																x	
CH-AT-2RW41-1117	12/01/17	1036		2	P	DW																x	
CH-AT-2FB41-1117	12/01/17	1036		2	P	DW																x	
CH-AT-2RW39-1117	12/01/17	0936		2	P	DW																x	
CH-AT-2FB39-1117	12/01/17	0936		2	P	DW																x	
CH-AT-1RW114-1117	12/01/17	1022		2	P	DW																x	
CH-AT-1FB114-1117	12/01/17	1023		2	P	DW																x	

Special Instructions/Comments:
PFOA/PFOS/PFBS DRINKING WATER ANALYSIS

SEND DOCUMENTATION AND RESULTS TO:
Name: Tiffany Hill
Company: CH2M HILL
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@CH2M.com

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

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

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

Submit by Email*

Vista 12/01/17 COOLER #2 679580.15.FI.FS

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project ID: 1701826 Temp 3.5 °C
Storage ID: WR-8 Storage Secured: Yes ☑ No ☐

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

Project I.D.: CTO-08/MCOLF ATLANTIC PFAS INV. P.O. #: 100006-7-106051 Sampler: K.Rabe/A.Seay (Name)

Invoice to: Name	Company	Address	City	State	Zip	Ph#	Fax #
Tiffany Hill	CH2M HILL	1100 NE Circle Blvd	Corvallis	OR		541-768-3109	

Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
David Lubell	12/01/17	1500		12/2/17	0453
Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

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

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

Method of Shipment: FEDEX

Tracking No.: 7887 7715 2344

ATTN: Martha Maier

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA1613 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 TOTALS	EPA1668 COPLANAR PCBs	EPA1668 209 CONGENERS	EPA1614 PBDE	CARB429 PAH	EPA 537 (DW ONLY) WHO-29 (EPA PFOS PFBS)
CH-AT-1RW113-1117	12/01/17	0925		2	P	DW															X
CH-AT-2FB113-1117	12/01/17	0926		2	P	DW															X
				2	P	DW															X
				2	P	DW															X
				2	P	DW															X
				2	P	DW															X
				2	P	DW															X
				2	P	DW															X
				2	P	DW															X
				2	P	DW															X

Special Instructions/Comments:
PFOA/PFOS/PFBS DRINKING WATER ANALYSIS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@CH2M.com

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

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

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

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1701826 **TAT** 7

Samples Arrival:	**Date/Time** 12/2/17 0987	**Initials:** IA	**Location:** WR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 12/2/17 1034	**Initials:** BSB	**Location:** WR-2 **Shelf/Rack:** B5

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

Temp °C: 3.4 (uncorrected)	**Time:** 0956	**Thermometer ID:** IR-1
Temp °C: 3.5 (corrected)	**Probe used:** Yes☐ No☑	

	YES	NO	NA
Adequate Sample Volume Received? A/B	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # 7887 1715 2344	✓		
Sample Container Intact?	✓		✓
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?	✓		

Preservation Documented:	$Na_2S_2O_3$	(Trizma)	None	(Yes)	No	NA
Shipping Container	(Vista)	Client	(Retain)	Return	Dispose	

Comments:

Chain of Custody Anomaly/Sample Acceptance Form

Vista Analytical Laboratory

CH2M Hill
Tiffany Hill
tiffany.hill@ch2m.com
(541) 768-3109

Workorder Number: 1701826
Date Received: 02-Dec-17 09:37
Documented by/date: B.Benedict 12/02/2017

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.

Thank you,

Martha Maier
mmaier@vista-analytical.com
916-673-1520

[X] Sample IDs on Chain of Custody do not match Sample Container Labels

Chain of Custody ID	Container Label ID
CH-AT-2RW40-1117	CH-AT-2RW40-**12**17
CH-AT-2FB40-1117	CH-AT-2FB40-**12**17
CH-AT-1RW115-1117	CH-AT-1RW115-**12**17
CH-AT-1FB115-1117	CH-AT-1FB115-**12**17
CH-AT-2RW41-1117	CH-AT-2RW41-**12**17
CH-AT-2FB41-1117	CH-AT-2FB41-**12**17
CH-AT-2RW39-1117	CH-AT-2RW39-**12**17
CH-AT-2FB39-1117	CH-AT-2FB39-**12**17
CH-AT-1RW114-1117	CH-AT-1RW114-**12**17
CH-AT-1FB114-1117	CH-AT-1FB114-**12**17
CH-AT-1RW113-1117	CH-AT-1RW113-**12**17
CH-AT-1FB113-1117	CH-AT-1FB113-**12**17

Client Authorization

Proceed with Analysis: (YES) NO Signature and Date Ramya Mita 12-4-17

Client Comments/Instructions per client email on 12-4-17, the sample IDs on the container labels are correct.

December 11, 2017

Vista Work Order No. 1701826

Ms. Tiffany Hill
CH2M Hill
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on December 02, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'CTO-08/MCOLF ATLANTIC PFAS INV.'.

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

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

Sincerely,

Karen J. Volpendesta for

Martha Maier
Laboratory Director

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

Vista Work Order No. 1701826
Case Narrative

Sample Condition on Receipt:

Twelve drinking water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The client confirmed that the sample IDs on the container label ID are correct.

Analytical Notes:

EPA Method 537

The samples were extracted and analyzed for PFBS, PFOA and PFOS using EPA Method 537.

Holding Times

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

Quality Control

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

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

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

The Laboratory Fortified Sample Matrix (LFSM) and Laboratory Fortified Sample Matrix Duplicate (LFSMD) associated with these samples has been reported in Vista Work Order #1701807.

TABLE OF CONTENTS

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1701826-01	CH-AT-2RW40-1217	01-Dec-17 09:57	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-02	CH-AT-2FB40-1217	01-Dec-17 09:57	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-03	CH-AT-1RW115-1217	01-Dec-17 11:11	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-04	CH-AT-1FB115-1217	01-Dec-17 11:12	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-05	CH-AT-2RW41-1217	01-Dec-17 10:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-06	CH-AT-2FB41-1217	01-Dec-17 10:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-07	CH-AT-2RW39-1217	01-Dec-17 09:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-08	CH-AT-2FB39-1217	01-Dec-17 09:36	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-09	CH-AT-1RW114-1217	01-Dec-17 10:22	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-10	CH-AT-1FB114-1217	01-Dec-17 10:23	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-11	CH-AT-1RW113-1217	01-Dec-17 09:25	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701826-12	CH-AT-1FB113-1217	01-Dec-17 09:26	02-Dec-17 09:37	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water

Laboratory Data

Lab Sample: B7L0015-BLK1
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.443	5.00	10.0		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1
PFOA	ND	1.08	5.00	10.0		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1
PFOS	ND	1.04	5.00	10.0		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7L0015	05-Dec-17	0.250 L	08-Dec-17 10:17	1

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

Sample ID: LFB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water

Laboratory Data

Lab Sample: B7L0015-BS1
Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	18.7	17.7	106	70-130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1
PFOA	23.1	20.0	116	70-130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1
PFOS	16.8	18.5	90.9	70-130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1
Labeled Standards	**Type**		**% Rec**	**Limits**	**Qualifiers**	**Batch**	**Extracted**	**Samp Size**	**Analyzed**	**Dilution**
13C2-PFHxA	SURR		96.0	70- 130		B7L0015	05-Dec-17	0.250 L	07-Dec-17 14:49	1

Sample ID: CH-AT-2RW40-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:57

Laboratory Data

Lab Sample: 1701826-01
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.455	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1
PFOA	ND	1.11	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1
PFOS	ND	1.07	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1

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

Sample ID: CH-AT-2FB40-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:57

Laboratory Data

Lab Sample: 1701826-02
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.446	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1
PFOA	ND	1.09	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1
PFOS	ND	1.05	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1

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

Sample ID: CH-AT-1RW115-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 11:11

Laboratory Data

Lab Sample: 1701826-03
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.470	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1
PFOA	ND	1.15	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1
PFOS	ND	1.10	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.1	70 - 130		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1

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

Sample ID: CH-AT-1FB115-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 11:12

Laboratory Data

Lab Sample: 1701826-04
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.442	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1
PFOA	ND	1.08	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1
PFOS	ND	1.04	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1

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

Sample ID: CH-AT-2RW41-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:36

Laboratory Data

Lab Sample: 1701826-05
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.455	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1
PFOA	ND	1.11	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1
PFOS	ND	1.07	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1

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

Sample ID: CH-AT-2FB41-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:36

Laboratory Data

Lab Sample: 1701826-06
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.463	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1
PFOA	ND	1.13	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1
PFOS	ND	1.09	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1

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

Sample ID: CH-AT-2RW39-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:36

Laboratory Data

Lab Sample: 1701826-07
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.448	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1
PFOA	ND	1.09	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1
PFOS	ND	1.05	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1

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

Sample ID: CH-AT-2FB39-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:36

Laboratory Data

Lab Sample: 1701826-08
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.437	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1
PFOA	ND	1.07	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1
PFOS	ND	1.03	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	110	70 - 130		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1

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

Sample ID: CH-AT-1RW114-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:22

Laboratory Data

Lab Sample: 1701826-09
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.465	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1
PFOA	ND	1.13	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1
PFOS	ND	1.09	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1

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

Sample ID: CH-AT-1FB114-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:23

Laboratory Data

Lab Sample: 1701826-10
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.429	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1
PFOA	ND	1.05	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1
PFOS	ND	1.01	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1

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

Sample ID: CH-AT-1RW113-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:25

Laboratory Data

Lab Sample: 1701826-11
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.440	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1
PFOA	ND	1.07	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1
PFOS	ND	1.03	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1

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

Sample ID: CH-AT-1FB113-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:26

Laboratory Data

Lab Sample: 1701826-12
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.439	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1
PFOA	ND	1.07	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1
PFOS	ND	1.03	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1

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

DATA QUALIFIERS & ABBREVIATIONS

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

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

CERTIFICATIONS

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

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

NELAP Accredited Test Methods

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

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

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

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

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

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

Submit by Email*

Vista 12/01/17 COOLER #2 679580.15.FI.FS

FOR LABORATORY USE ONLY
Laboratory Project ID: 1701826 Temp 3.5 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

CHAIN OF CUSTODY RECORD

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

Project I.D.: CTO-08/MCOLF ATLANTIC PFAS INV. P.O. #: 100006-7-106051 Sampler: K.Rabe/A.Seay + C.CONDER/M.CRAM (Name)

Invoice to: Name	Company	Address	City	State	Zip	Ph#	Fax #
Tiffany Hill	CH2M HILL	1100 NE Circle Blvd	Corvallis	OR		541-768-3109	

Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
David Lubell	12/01/17	1500	Ian Aguelles	12/1/17	0953
Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

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

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

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No.: 7887 1715 2314

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA1613 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 TOTALS	EPA1668 COPLANAR PCBs	EPA1668 209 CONGENERS	EPA1668 PBDE	EPA1668 PAH	EPA1668 WHO-29	CARB429 PFOA, PFOS, PFBS	EPA 537 DW only
CH-AT-2RW40-1117	12/01/17	0957		2	P	DW															x		
CH-AT-2FB40-1117	12/01/17	0957		2	P	DW															x		
CH-AT-1RW115-1117	12/01/17	1111		2	P	DW															x		
CH-AT-1FB115-1117	12/01/17	1112		2	P	DW															x		
CH-AT-2RW41-1117	12/01/17	1036		2	P	DW															x		
CH-AT-2FB41-1117	12/01/17	1036		2	P	DW															x		
CH-AT-2RW39-1117	12/01/17	0936		2	P	DW															x		
CH-AT-2FB39-1117	12/01/17	0936		2	P	DW															x		
CH-AT-1RW114-1117	12/01/17	1022		2	P	DW															x		
CH-AT-1FB114-1117	12/01/17	1023		2	P	DW															x		

Special Instructions/Comments:
PFOA/PFOS/PFBS DRINKING WATER ANALYSIS

SEND DOCUMENTATION AND RESULTS TO:
Name: Tiffany Hill
Company: CH2M HILL
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@CH2M.com

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

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

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

Submit by Email*

Vista 12/01/17 COOLER #2 679580.15.FI.FS

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY
Laboratory Project ID: 1701826 Temp 3.5 °C
Storage ID: WR-8 Storage Secured: Yes ☑ No ☐

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

Project I.D.: CTO-08/MCOLF ATLANTIC PFAS INV. P.O. #: 100006-7-106051 Sampler: K.Rabe/A.Seay (Name)

Invoice to: Name	Company	Address	City	State	Zip	Ph#	Fax #
Tiffany Hill	CH2M HILL	1100 NE Circle Blvd	Corvallis	OR		541-768-3109	

Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
David Lubell	12/01/17	1500		12/2/17	0453
Relinquished by: (Printed Name and Signature)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

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

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

Method of Shipment: FEDEX

Tracking No.: 7887 7715 2344

ATTN: Martha Maier

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	EPA1613 2378-TCDD	EPA1613 2378-TCDD/TCDF	EPA1613 PCDD/PCDF	EPA8290 2378-TCDD	EPA8290 2378-TCDD/TCDF	EPA8290 PCDD/PCDF	EPA8280 2378-TCDD	EPA8280 2378-TCDD/TCDF	EPA8280 PCDD/PCDF	EPA1668 TOTALS	EPA1668 COPLANAR PCBs	EPA1668 209 CONGENERS	EPA1614 PBDE	CARB429 PAH	EPA 537 (DW ONLY) WHO-29 (EPA PFOS/PFBS)
CH-AT-1RW113-1117	12/01/17	0925		2	P	DW															x
CH-AT-2FB113-1117	12/01/17	0926		2	P	DW															x
				2	P	DW															x
				2	P	DW															x
				2	P	DW															x
				2	P	DW															x
				2	P	DW															x
				2	P	DW															x
				2	P	DW															x
				2	P	DW															x

Special Instructions/Comments:
PFOA/PFOS/PFBS DRINKING WATER ANALYSIS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL
Address: 1100 NE Circle Blvd Suite 300
City: Corvallis State: OR Zip: 97330
Phone: 541-768-3109 Fax:
Email: Tiffany.Hill@CH2M.com

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

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

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

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1701826 **TAT** 7

Samples Arrival:	**Date/Time** 12/2/17 0987	**Initials:** IA	**Location:** WR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 12/2/17 1034	**Initials:** BSB	**Location:** WR-2 **Shelf/Rack:** B5

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

Temp °C: 3.4 (uncorrected)	**Time:** 0956	**Thermometer ID:** IR-1
Temp °C: 3.5 (corrected)	**Probe used:** Yes☐ No☑	

	YES	NO	NA
Adequate Sample Volume Received? A/B	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill — Trk # 7887 1715 2344	✓		
Sample Container Intact?	✓		✓
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?	✓		

Preservation Documented:	$Na_2S_2O_3$	(Trizma)	None	(Yes)	No	NA
Shipping Container	(Vista)	Client	(Retain)	Return	Dispose	

Comments:

Chain of Custody Anomaly/Sample Acceptance Form

Vista Analytical Laboratory

CH2M Hill
Tiffany Hill
tiffany.hill@ch2m.com
(541) 768-3109

Workorder Number: 1701826
Date Received: 02-Dec-17 09:37
Documented by/date: B.Benedict 12/02/2017

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.

Thank you,

Martha Maier
mmaier@vista-analytical.com
916-673-1520

[X] Sample IDs on Chain of Custody do not match Sample Container Labels

Chain of Custody ID	Container Label ID
CH-AT-2RW40-1117	CH-AT-2RW40-**12**17
CH-AT-2FB40-1117	CH-AT-2FB40-**12**17
CH-AT-1RW115-1117	CH-AT-1RW115-**12**17
CH-AT-1FB115-1117	CH-AT-1FB115-**12**17
CH-AT-2RW41-1117	CH-AT-2RW41-**12**17
CH-AT-2FB41-1117	CH-AT-2FB41-**12**17
CH-AT-2RW39-1117	CH-AT-2RW39-**12**17
CH-AT-2FB39-1117	CH-AT-2FB39-**12**17
CH-AT-1RW114-1117	CH-AT-1RW114-**12**17
CH-AT-1FB114-1117	CH-AT-1FB114-**12**17
CH-AT-1RW113-1117	CH-AT-1RW113-**12**17
CH-AT-1FB113-1117	CH-AT-1FB113-**12**17

Client Authorization

Proceed with Analysis: (YES) NO Signature and Date Ramya Mita 12-4-17

Client Comments/Instructions per client email on 12-4-17, the sample IDs on the container labels are correct.

EXTRACTION INFORMATION

Process Sheet

Workorder: 1701826

RUSH

Prep Expiration: 2017-Dec-15
Client: CH2M Hill

Workorder Due: 09-Dec-17 00:00

TAT: 7

Method: **537 PFAS DW DoD Unmodified**
Matrix: **Drinking Water**
Client Matrix: Drinking Water

Prep Batch: B7L0015

Prep Data Entered: KC 12/6/17
Date and Initials

Version: PFOA, PFOS, & PFBS
DoD: DoD QSM 5.1

Initial Sequence: _____

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
1701826-01	"A"	☐	☐	CH-AT-2RW40-1117	"CH-AT-2RW40-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-02		☐	☐	CH-AT-2FB40-1117	"CH-AT-2FB40-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-03		☐	☐	CH-AT-1RW115-1117	"CH-AT-1RW115-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-04		☐	☐	CH-AT-1FB115-1117	"CH-AT-1FB115-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-05		☐	☐	CH-AT-2RW41-1117	"CH-AT-2RW41-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-06		☐	☐	CH-AT-2FB41-1117	"CH-AT-2FB41-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-07		☐	☐	CH-AT-2RW39-1117	"CH-AT-2RW39-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-08		☐	☐	CH-AT-2FB39-1117	"CH-AT-2FB39-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-09		☐	☐	CH-AT-1RW114-1117	"CH-AT-1RW114-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-10		☐	☐	CH-AT-1FB114-1117	"CH-AT-1FB114-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-11		☐	☐	CH-AT-1RW113-1117	"CH-AT-1RW113-1217"	WR-2 B-5	HDPE Bottle, 250 mL
1701826-12		☐	☐	CH-AT-1FB113-1117	"CH-AT-1FB113-1217"	WR-2 B-5	HDPE Bottle, 250 mL

Pre-Prep Check Out: HN 12/5/17
Pre-Prep Check In: NA

Prep Check Out: NA
Prep Check In: NA

Prep Reconciled Initals/Date: HN 12/5/17
Spike Reconciled Initals/Date: HC 12.5.17
VialBoxID: Bender

PREPARATION BENCH SHEET

Matrix: Drinking Water

Method: 537 PFAS DW DoD Unmodified

B7L0015

Chemist: HC

Prep Date/Time: 04-Dec-17 18:07 ~~12/4~~ 12/5/17 1045 HC

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HRMS-8

Cen	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☐	B7L0015-BLK1 (B)	NA	NA	(0.250)	HC HN ~~12/4/17~~ 12/5/17	HN 12/5/17	HC 12/6/17
☐	B7L0015-BS1 (A)	↓	↓	(0.250)			
☑	B7L0015-MS1 1701807-07	274.53	27.57	0.246 96			
☑	B7L0015-MSD1 1701807-07	278.20	27.56	0.250 64			
☐	1701807-01	272.51	27.42	0.245 09			
☐	1701807-02	272.85	27.77	0.245 08			
☐	1701807-03	279.70	27.77	0.251 93			
☐	1701807-04	279.15	27.60	0.251 55			
☑	1701807-05	270.32	27.96	0.242 36			
☐	1701807-06	277.21	27.64	0.249 57			
☑	1701807-07	270.79	28.17	0.242 62			
☐	1701807-08	275.01	27.44	0.247 57			
☐	1701826-01	270.68	27.44	0.243 24 ✓			
☐	1701826-02	275.34	26.98	0.248 36 ✓			
☐	1701826-03	263.70	27.92	0.235 78 ✓			
☐	1701826-04	277.68	27.09	0.250 59 ✓			

SS/IS: 17K3043, 10mL (V1)

NS: 17I2602, 20mL

IS/RS: 17L0516, 20µL (V1)

SPE Chem: Strata-X 33µm 500mg 6mL

Lot#: S17-001561

Ele SOLV: MeOH

Lot#: DT189

Final Volume(s): 1mL

Notes: (A) 1.25 g Trizma added HN 12/5/17

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

PREPARATION BENCH SHEET

Matrix: Drinking Water

Method: 537 PFAS DW DoD Unmodified

B7L0015

Chemist: TC

Prep Date/Time: 04-Dec-17 18:07 12-5-17 1045 TC

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HRMS-8

Cen	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☐	1701826-05	271.39	28.09	0.24330 ✓	TC HN 12-5-17	HN 12/5/17	TC 12-6-17
☐	1701826-06	266.96	27.68	0.23928 ✓			
☐	1701826-07	275.19	28.09	0.24710 ✓			
☐	1701826-08	280.24	27.03	0.25321 ✓			
☐	1701826-09	266.11	27.83	0.23828 ✓			
☐	1701826-10	285.83	27.71	0.25812 ✓			
☐	1701826-11	279.81	27.94	0.25187 ✓			
☐	1701826-12	279.10	27.10	0.25200 ✓			

SS/IS: 17K3043, 10mL (V1)

NS: 17I2602, 20mL

IS/RS: 17L0516, 20µL (V1)

SPE Chem: Strata-X 33µm 500mg 6mL

Lot#: 517-001561

Ele SOLV: MeOH

Lot#: DT189

Final Volume(s) 1mL

Notes:

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

Batch: B7L0015

Matrix: Drinking Water

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1701807-01	0.24509 ✓	NA	NA	1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-02	0.24508 ✓	"	"	1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-03	0.25193 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-04	0.25155 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-05	0.24236 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-06	0.24957 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-07	0.24262 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701807-08	0.24757 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-01	0.24324 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-02	0.24836 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-03	0.23578 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-04	0.25059 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-05	0.2433 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-06	0.23928 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-07	0.2471 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-08	0.25321 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-09	0.23828 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-10	0.25812 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-11	0.25187 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
1701826-12	0.252 ✓			1000	05-Dec-17 18:45	HAC			Drinking Water	537 PFAS DW DoD Unmoc
B7L0015-BLK1	0.25 ✓			1000	05-Dec-17 18:45	HAC				QC
B7L0015-BS1	0.25 ✓			1000	05-Dec-17 18:45	HAC	17I2602 ✓	20 ✓		QC
B7L0015-MS1	0.24696 ✓			1000	05-Dec-17 18:45	HAC	17I2602 ✓	20 ✓		QC
B7L0015-MSD1	0.25064 ✓			1000	05-Dec-17 18:45	HAC	17I2602 ✓	20 ✓		QC

KC 12/6/17

SAMPLE DATA –EPA METHOD 537

Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-3.qld

Last Altered: Sunday, December 10, 2017 08:57:22 Pacific Standard Time
Printed: Sunday, December 10, 2017 08:58:41 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_4, Date: 08-Dec-2017, Time: 10:17:38, ID: B7L0015-BLK1 LRB 0.25, Description: LRB

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.11e3		0.2500	3.03				
2	2	PFOA	413 > 368.7	4.02e1	9.13e3		0.2500	4.32	4.32	0.0440	0.227	
3	3	PFOS	499 >79.9		9.11e3		0.2500	4.73				
4	4	13C2-PFHxA	315 > 269.8	3.88e3	9.13e3	0.424	0.2500	3.38	3.37	4.25	40.1	100.3
5	5	13C2-PFDA	515.1 > 469.9	4.22e3	9.13e3	0.478	0.2500	4.95	4.96	4.62	38.7	96.7
6	6	13C2-PFOA	414.9 > 369.7	9.13e3	9.13e3	1.000	0.2500	4.41	4.32	10.0	40.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.11e3	9.11e3	1.000	0.2500	4.81	4.73	28.7	115	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

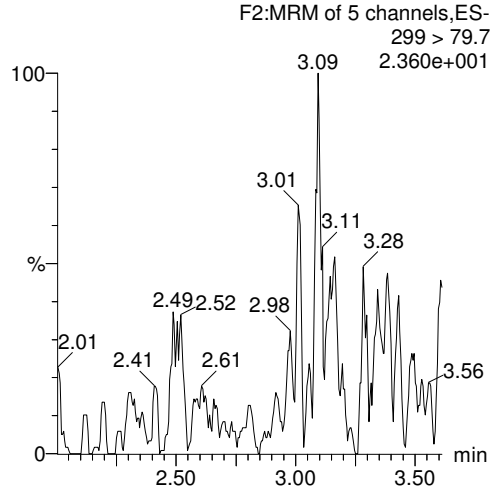
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-3.qld

Last Altered: Sunday, December 10, 2017 08:57:22 Pacific Standard Time
Printed: Sunday, December 10, 2017 08:58:41 Pacific Standard Time

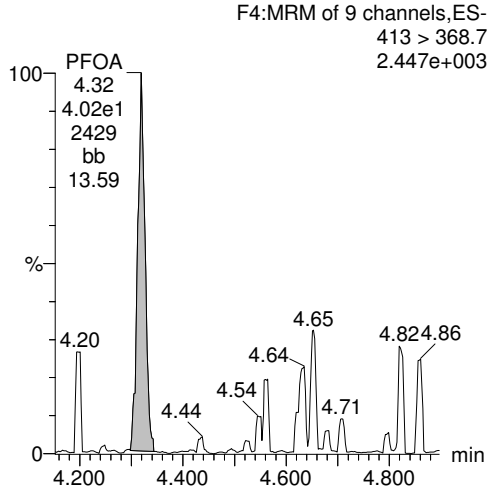
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_4, Date: 08-Dec-2017, Time: 10:17:38, ID: B7L0015-BLK1 LRB 0.25, Description: LRB

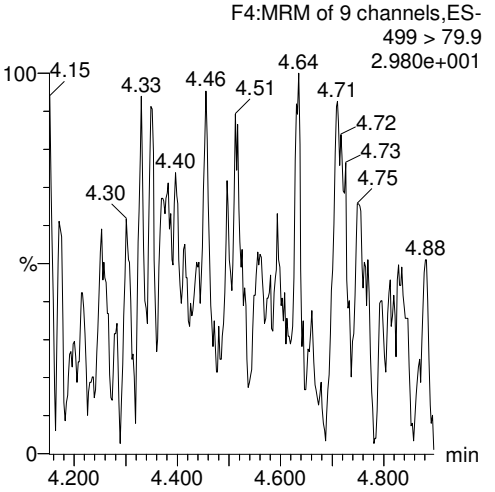
PFBS



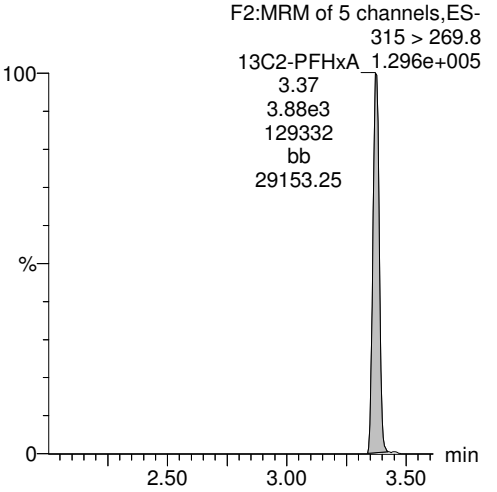
PFOA



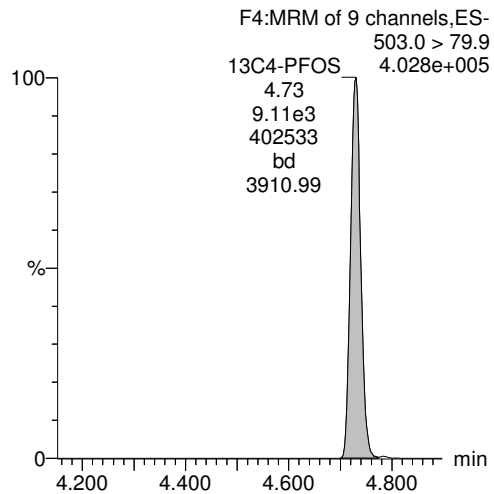
PFOS



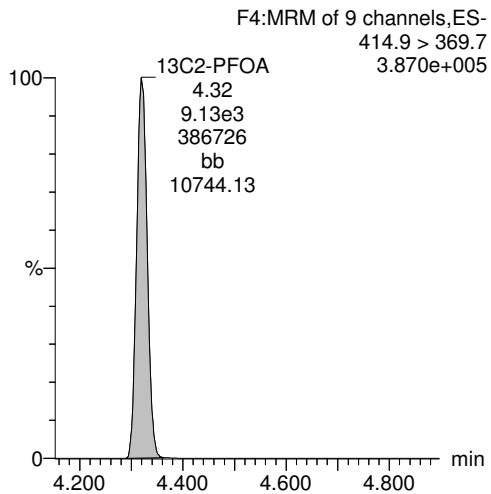
13C2-PFHxA



13C4-PFOS



13C2-PFOA



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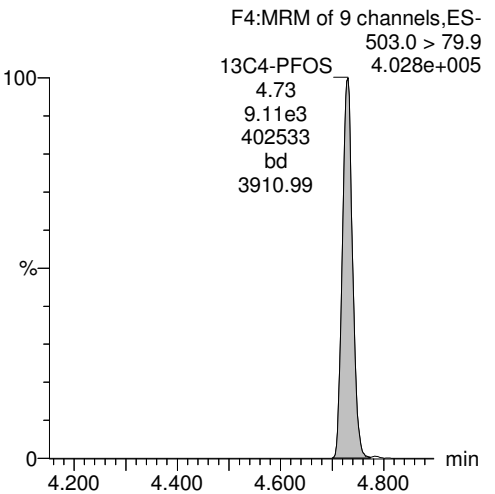
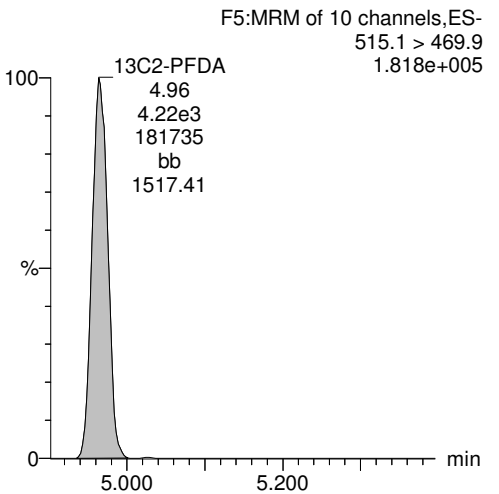


13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/9/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-4.qld

Last Altered: Friday, December 08, 2017 10:32:17 Pacific Standard Time
Printed: Friday, December 08, 2017 10:32:54 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_4, Date: 07-Dec-2017, Time: 14:49:20, ID: B7L0015-BS1 LFB 0.25, Description: LFB

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	1.57e3	1.01e4		0.2500	3.03	3.02	4.48	18.7	105.7
2	2	PFOA	413 > 368.7	4.28e3	9.58e3		0.2500	4.33	4.32	4.47	23.1	115.5
3	3	PFOS	499 >79.9	1.96e3	1.01e4		0.2500	4.73	4.73	5.58	16.8	90.8
4	4	13C2-PFHxA	315 > 269.8	3.90e3	9.58e3	0.424	0.2500	3.39	3.38	4.07	38.4	96.0
5	5	13C2-PFDA	515.1 > 469.9	4.78e3	9.58e3	0.478	0.2500	4.96	4.97	4.99	41.7	104.3
6	6	13C2-PFOA	414.9 > 369.7	9.58e3	9.58e3	1.000	0.2500	4.41	4.33	10.0	40.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2500	4.81	4.73	28.7	115	100.0

GM 12/8/17

Vista Analytical Laboratory

Rev'd: MM 12/9/17

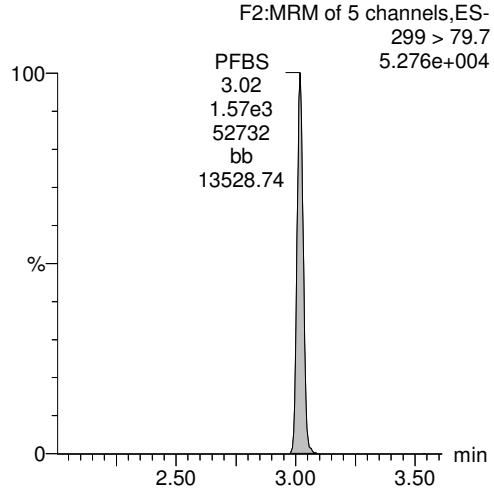
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-4.qld

Last Altered: Friday, December 08, 2017 10:32:17 Pacific Standard Time
Printed: Friday, December 08, 2017 10:32:54 Pacific Standard Time

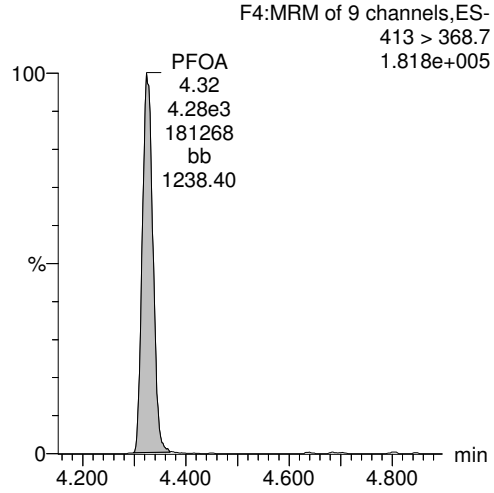
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_4, Date: 07-Dec-2017, Time: 14:49:20, ID: B7L0015-BS1 LFB 0.25, Description: LFB

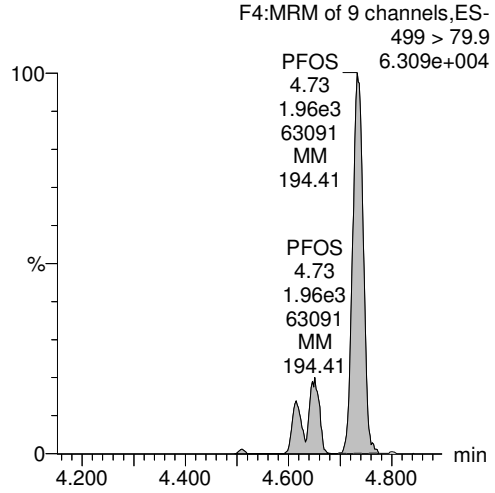
PFBS



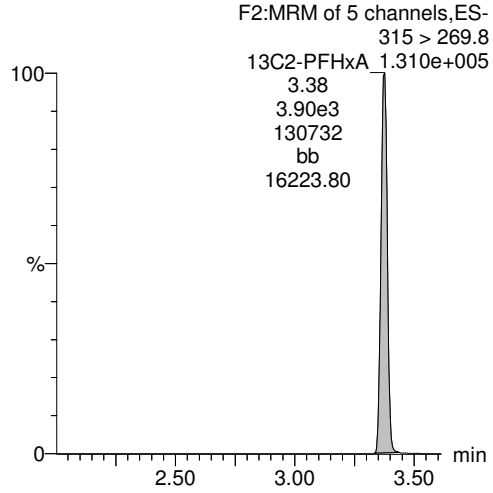
PFOA



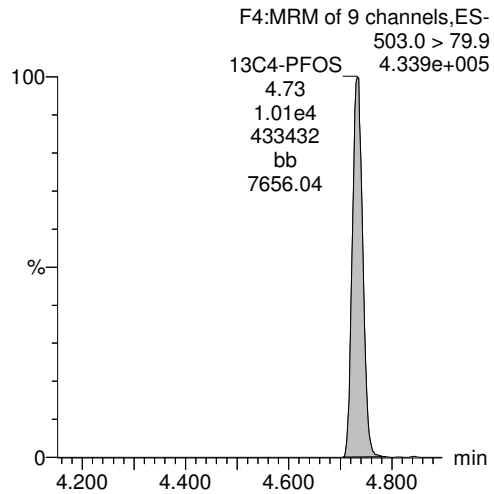
PFOS



13C2-PFHxA



13C4-PFOS



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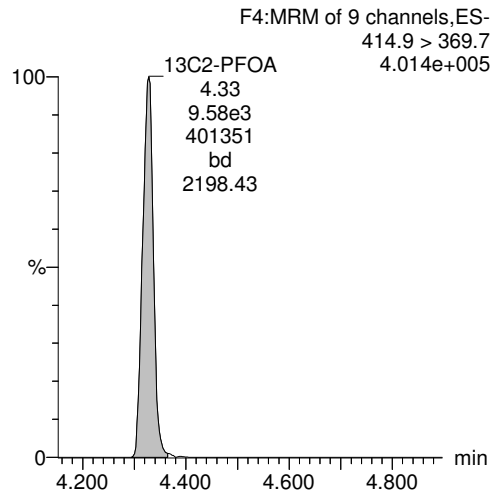

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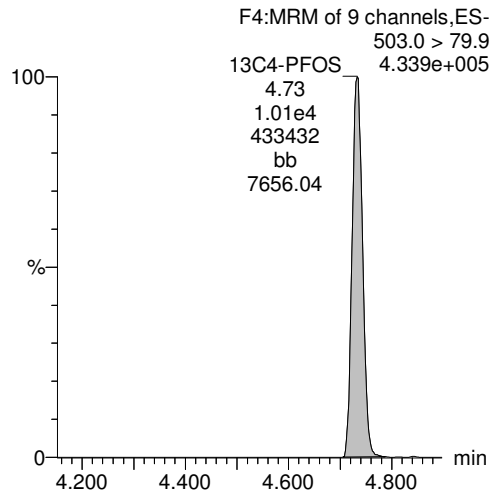

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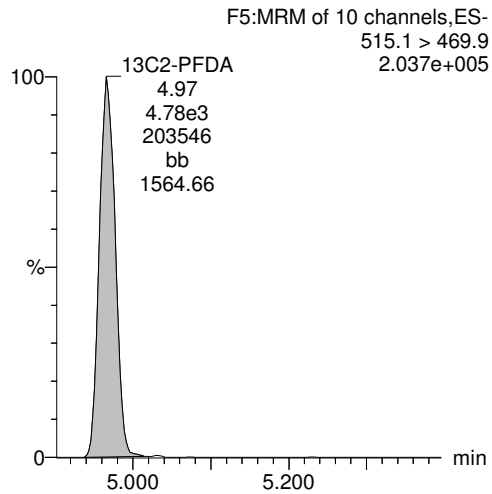


GM 12/8/17

Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-16.qld

Last Altered: Sunday, December 10, 2017 09:33:02 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:33:54 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_16, Date: 07-Dec-2017, Time: 17:18:54, ID: 1701826-01 CH-AT-2RW40-1217 0.24324, Description: CH-AT-2RW40-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2432	3.03				
2	2	PFOA	413 > 368.7	5.38e1	9.29e3		0.2432	4.32	4.33	0.0579	0.308	
3	3	PFOS	499 >79.9	1.43e0	1.01e4		0.2432	4.73	4.72	0.00408	0.0125	
4	4	13C2-PFHxA	315 > 269.8	4.22e3	9.29e3	0.424	0.2432	3.38	3.37	4.55	44.1	107.3
5	5	13C2-PFDA	515.1 > 469.9	4.85e3	9.29e3	0.478	0.2432	4.95	4.97	5.22	44.9	109.2
6	6	13C2-PFOA	414.9 > 369.7	9.29e3	9.29e3	1.000	0.2432	4.41	4.32	10.0	41.1	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2432	4.81	4.73	28.7	118	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

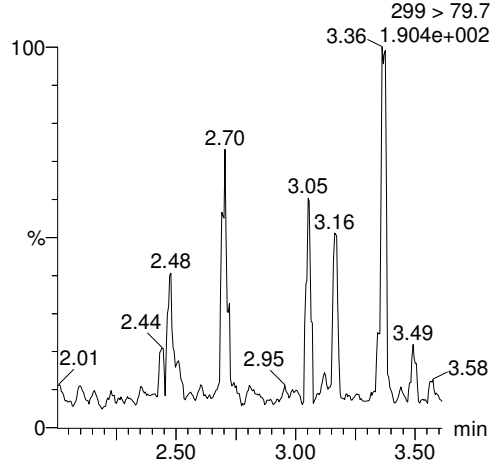
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-16.qld

Last Altered: Sunday, December 10, 2017 09:33:02 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:33:54 Pacific Standard Time

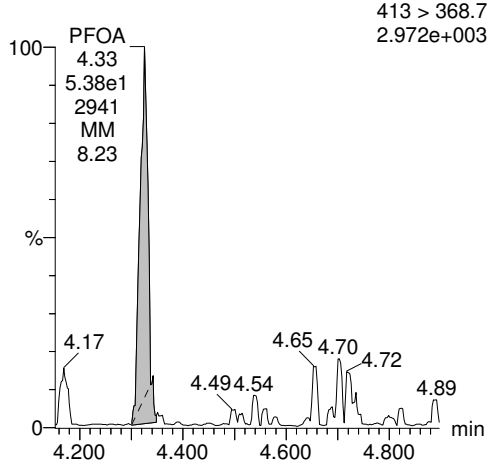
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_16, Date: 07-Dec-2017, Time: 17:18:54, ID: 1701826-01 CH-AT-2RW40-1217 0.24324, Description: CH-AT-2RW40-1217

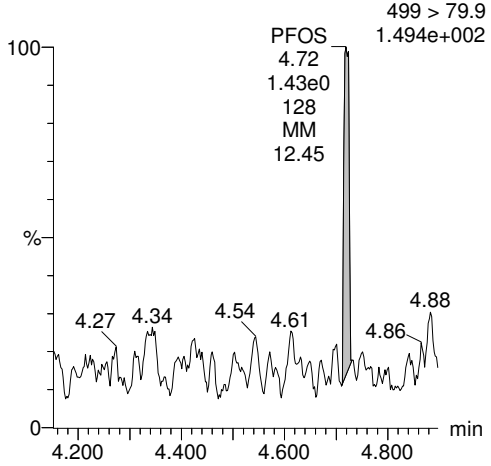
PFBS



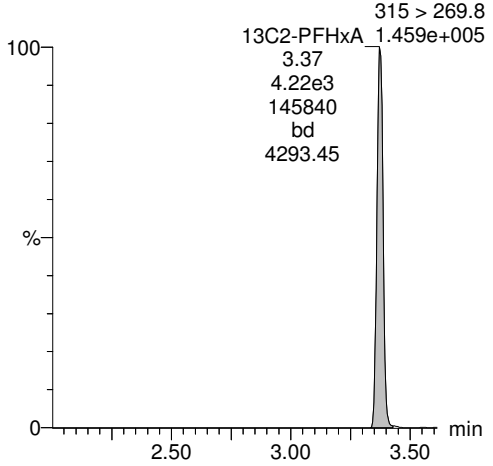
PFOA



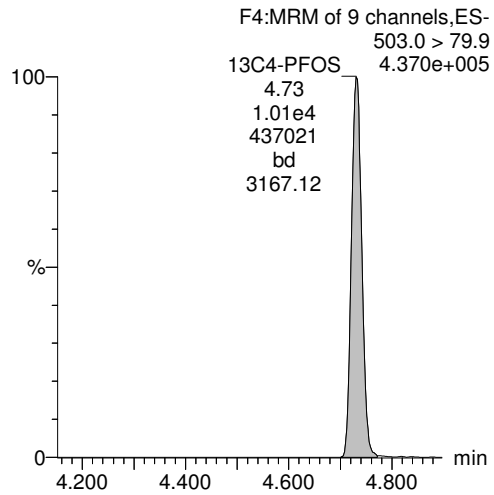
PFOS



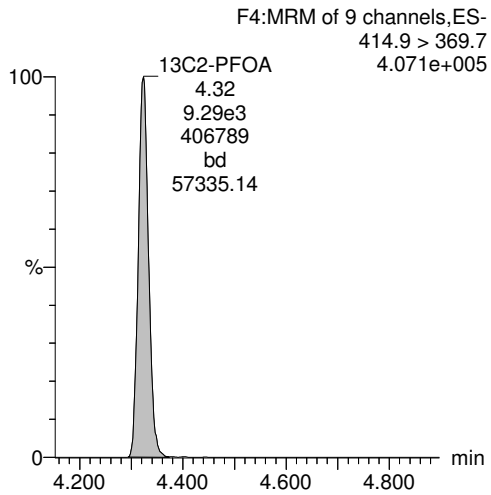
13C2-PFHxA



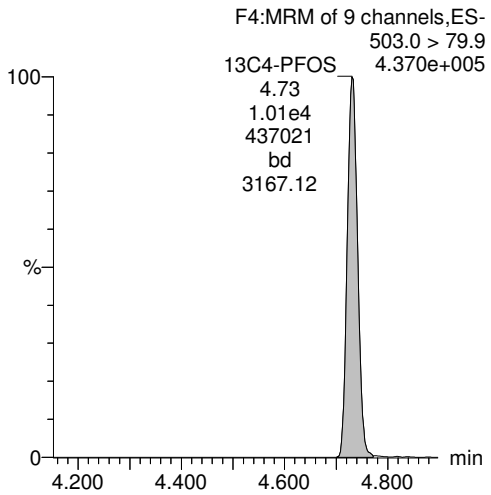
13C4-PFOS



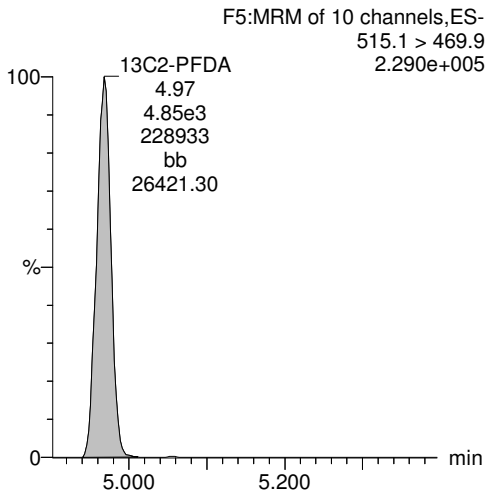
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-10.qld

Last Altered: Sunday, December 10, 2017 09:51:36 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:52:07 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_10, Date: 08-Dec-2017, Time: 11:32:19, ID: 1701826-02 CH-AT-2FB40-1217 0.24836, Description: CH-AT-2FB40-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.02e4		0.2484	3.03				
2	2	PFOA	413 > 368.7	7.54e1	9.80e3		0.2484	4.32	4.32	0.0769	0.400	
3	3	PFOS	499 >79.9		1.02e4		0.2484	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.43e3	9.80e3	0.424	0.2484	3.38	3.38	4.52	42.9	106.6
5	5	13C2-PFDA	515.1 > 469.9	5.04e3	9.80e3	0.478	0.2484	4.95	4.97	5.14	43.3	107.5
6	6	13C2-PFOA	414.9 > 369.7	9.80e3	9.80e3	1.000	0.2484	4.41	4.32	10.0	40.3	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.02e4	1.02e4	1.000	0.2484	4.81	4.73	28.7	116	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

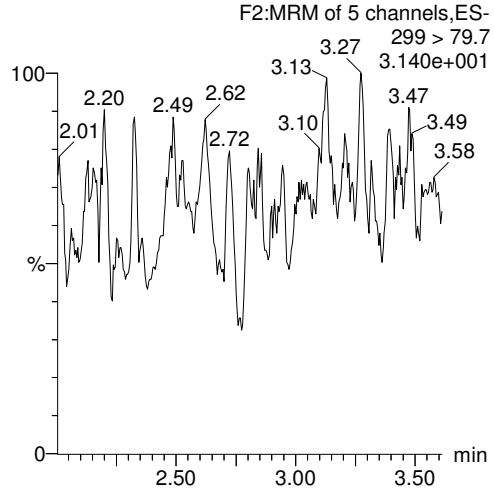
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-10.qld

Last Altered: Sunday, December 10, 2017 09:51:36 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:52:07 Pacific Standard Time

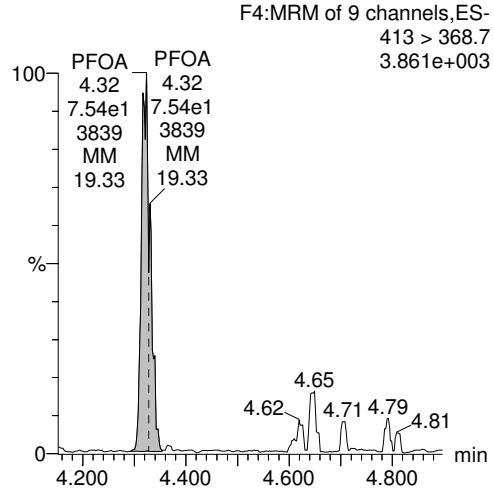
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_10, Date: 08-Dec-2017, Time: 11:32:19, ID: 1701826-02 CH-AT-2FB40-1217 0.24836, Description: CH-AT-2FB40-1217

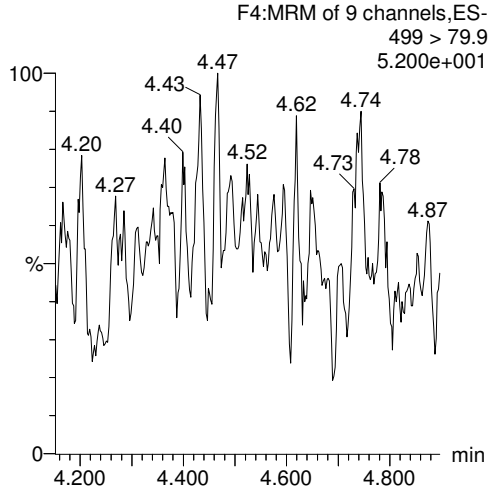
PFBS



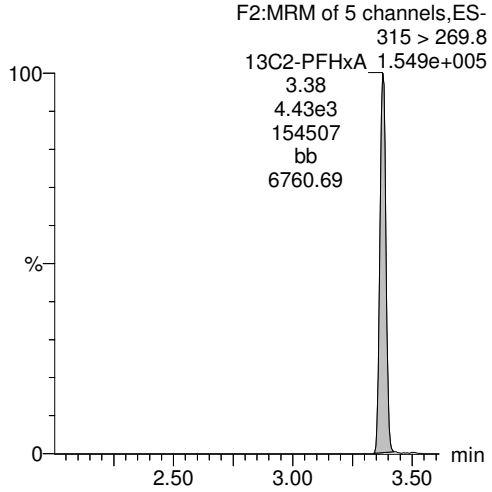
PFOA



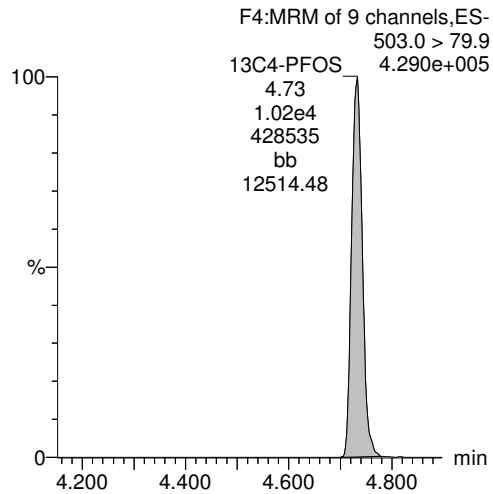
PFOS



13C2-PFHxA



13C4-PFOS



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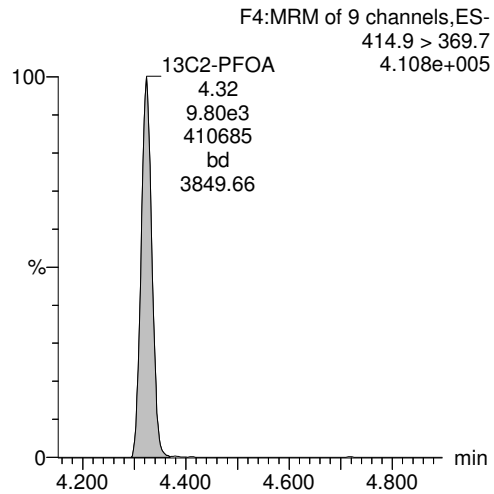

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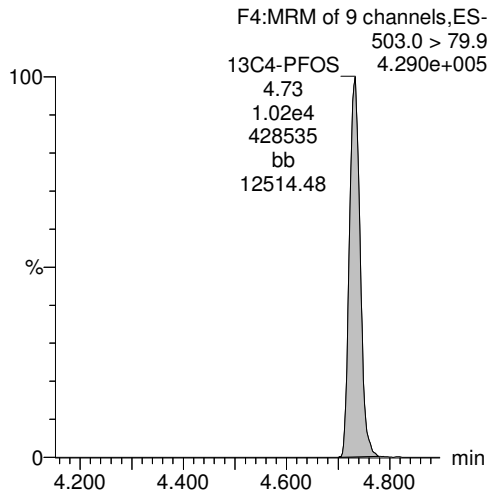
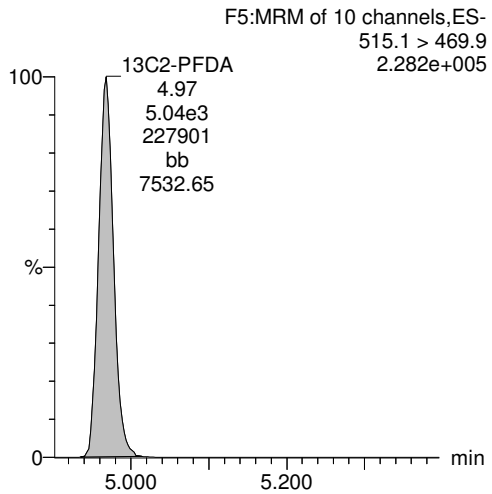


13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-11.qld

Last Altered: Sunday, December 10, 2017 09:54:15 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:54:36 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_11, Date: 08-Dec-2017, Time: 11:44:44, ID: 1701826-03 CH-AT-1RW115-1217 0.23578, Description: CH-AT-1RW115-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.00e4		0.2358	3.03				
2	2	PFOA	413 > 368.7	4.25e1	9.40e3		0.2358	4.32	4.33	0.0452	0.247	
3	3	PFOS	499 >79.9	3.80e0	1.00e4		0.2358	4.73	4.74	0.0109	0.0343	
4	4	13C2-PFHxA	315 > 269.8	3.87e3	9.40e3	0.424	0.2358	3.38	3.38	4.11	41.2	97.1
5	5	13C2-PFDA	515.1 > 469.9	4.50e3	9.40e3	0.478	0.2358	4.95	4.97	4.79	42.5	100.2
6	6	13C2-PFOA	414.9 > 369.7	9.40e3	9.40e3	1.000	0.2358	4.41	4.32	10.0	42.4	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.00e4	1.00e4	1.000	0.2358	4.81	4.73	28.7	122	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

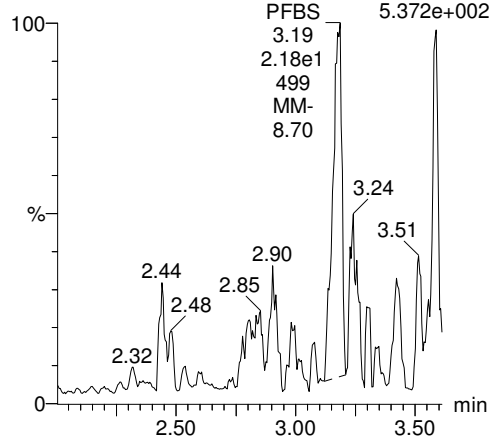
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-11.qld

Last Altered: Sunday, December 10, 2017 09:54:15 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:54:36 Pacific Standard Time

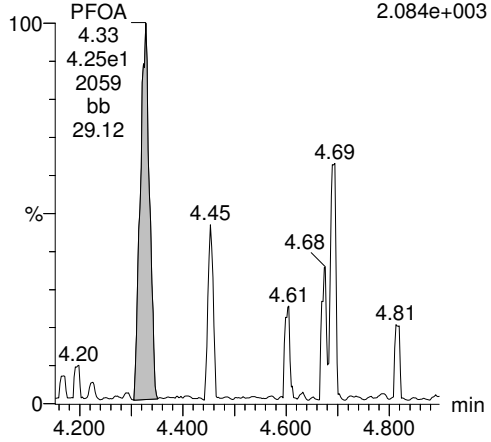
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_11, Date: 08-Dec-2017, Time: 11:44:44, ID: 1701826-03 CH-AT-1RW115-1217 0.23578, Description: CH-AT-1RW115-1217

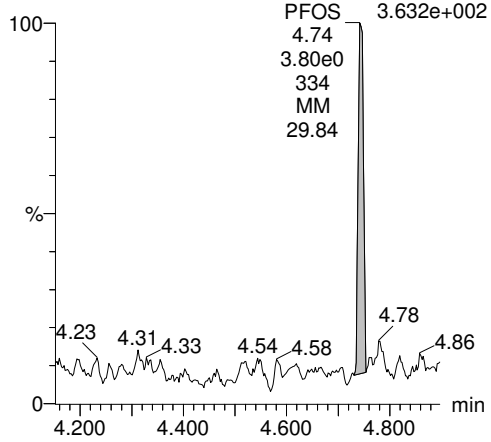
PFBS



PFOA



PFOS



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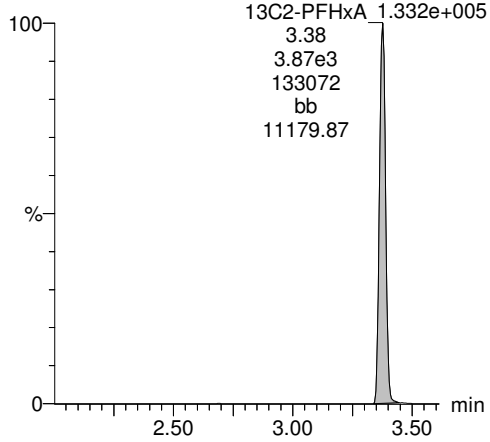

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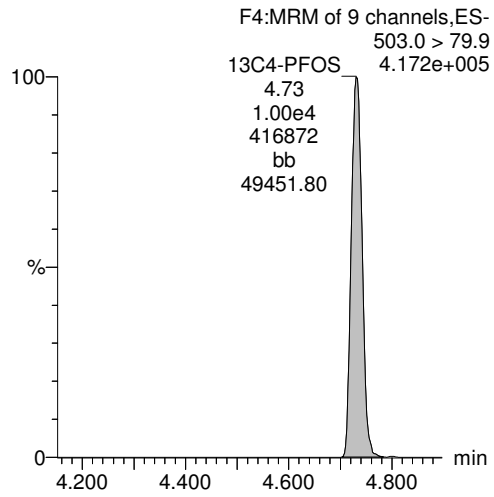

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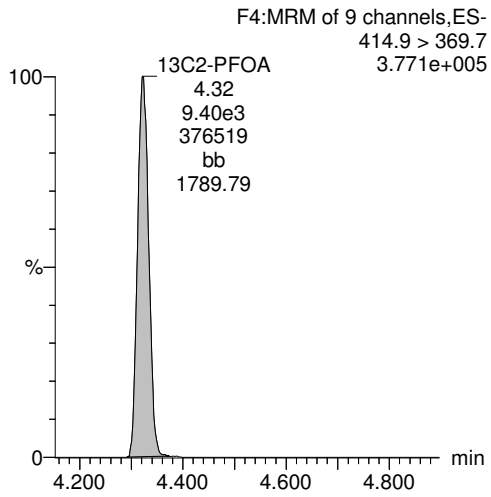
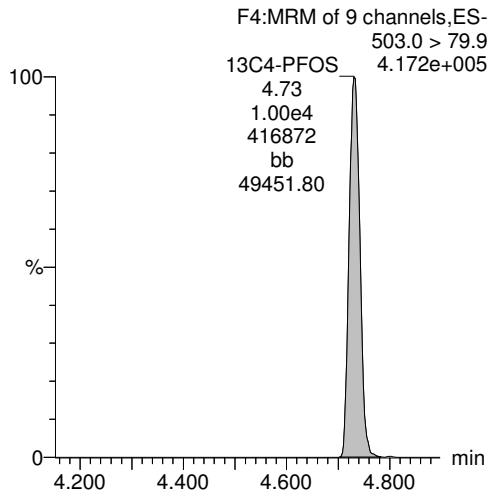
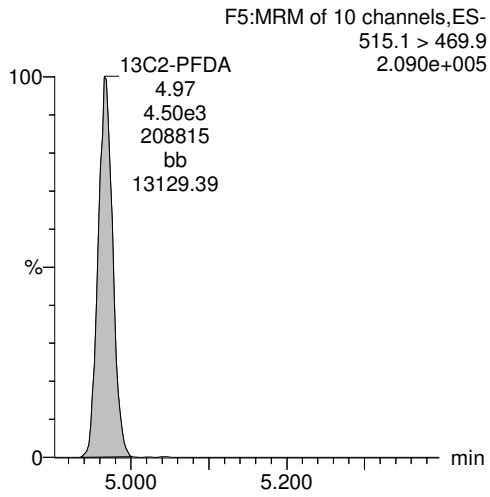


13C4-PFOS



13C2-PFDA



GM 12/10/17

Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-19.qld

Last Altered: Sunday, December 10, 2017 09:35:30 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:35:59 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_19, Date: 07-Dec-2017, Time: 17:56:10, ID: 1701826-04 CH-AT-1FB115-1217 0.25059, Description: CH-AT-1FB115-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2506	3.03				
2	2	PFOA	413 > 368.7	5.83e1	9.29e3		0.2506	4.32	4.32	0.0627	0.324	
3	3	PFOS	499 >79.9		1.01e4		0.2506	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.21e3	9.29e3	0.424	0.2506	3.38	3.38	4.54	42.7	107.0
5	5	13C2-PFDA	515.1 > 469.9	4.76e3	9.29e3	0.478	0.2506	4.95	4.97	5.12	42.8	107.2
6	6	13C2-PFOA	414.9 > 369.7	9.29e3	9.29e3	1.000	0.2506	4.41	4.32	10.0	39.9	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2506	4.81	4.73	28.7	115	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

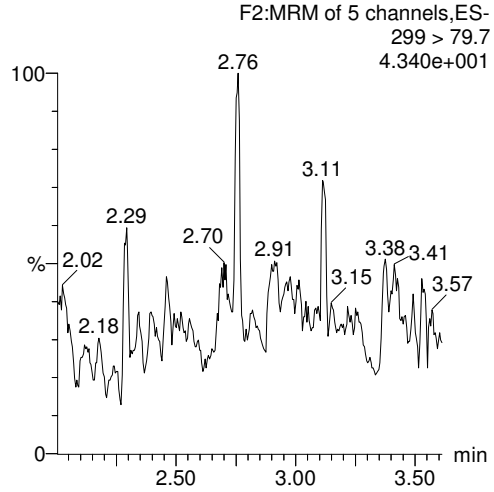
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-19.qld

Last Altered: Sunday, December 10, 2017 09:35:30 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:35:59 Pacific Standard Time

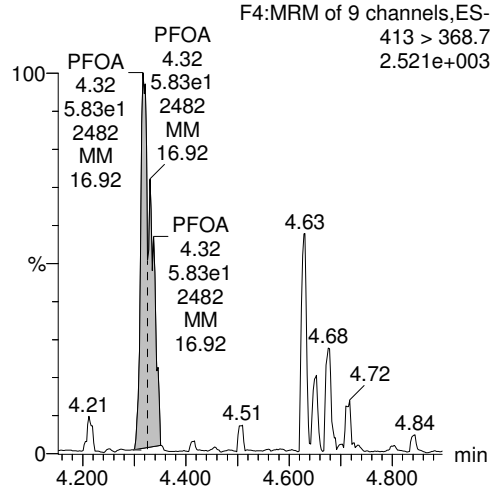
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_19, Date: 07-Dec-2017, Time: 17:56:10, ID: 1701826-04 CH-AT-1FB115-1217 0.25059, Description: CH-AT-1FB115-1217

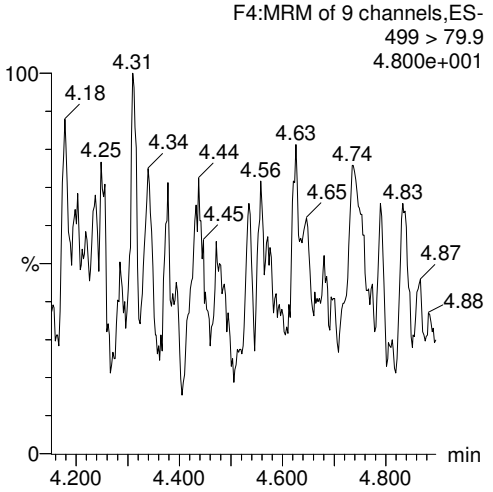
PFBS



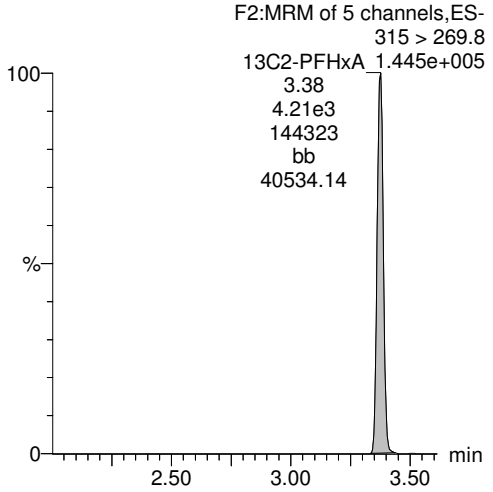
PFOA



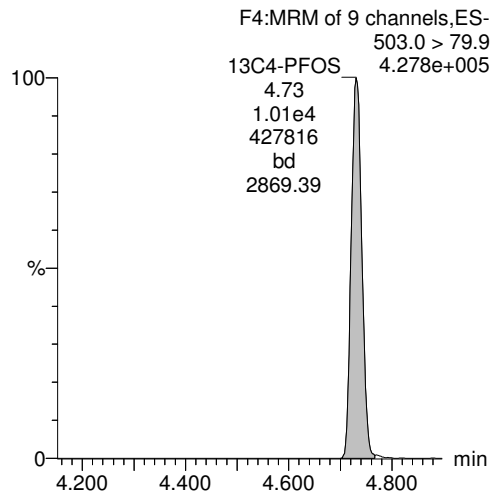
PFOS



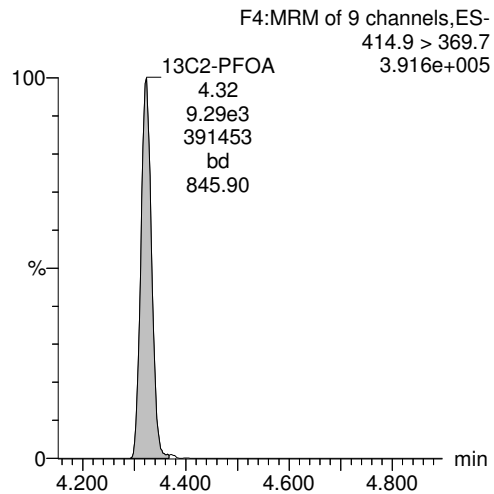
13C2-PFHxA



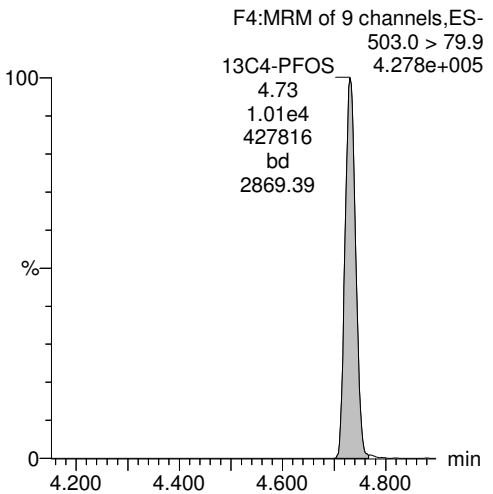
13C4-PFOS



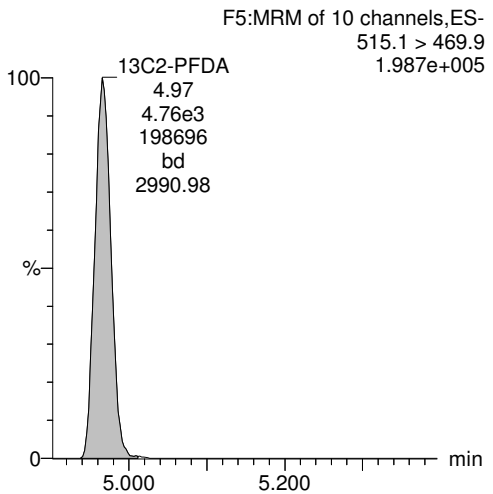
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-20.qld

Last Altered: Sunday, December 10, 2017 09:40:46 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:41:10 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_20, Date: 07-Dec-2017, Time: 18:08:35, ID: 1701826-05 CH-AT-2RW41-1217 0.2433, Description: CH-AT-2RW41-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2433	3.03				
2	2	PFOA	413 > 368.7	7.53e1	9.55e3		0.2433	4.32	4.32	0.0789	0.419	
3	3	PFOS	499 >79.9		1.01e4		0.2433	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.11e3	9.55e3	0.424	0.2433	3.38	3.37	4.31	41.8	101.6
5	5	13C2-PFDA	515.1 > 469.9	4.87e3	9.55e3	0.478	0.2433	4.95	4.97	5.11	43.9	106.8
6	6	13C2-PFOA	414.9 > 369.7	9.55e3	9.55e3	1.000	0.2433	4.41	4.32	10.0	41.1	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2433	4.81	4.73	28.7	118	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

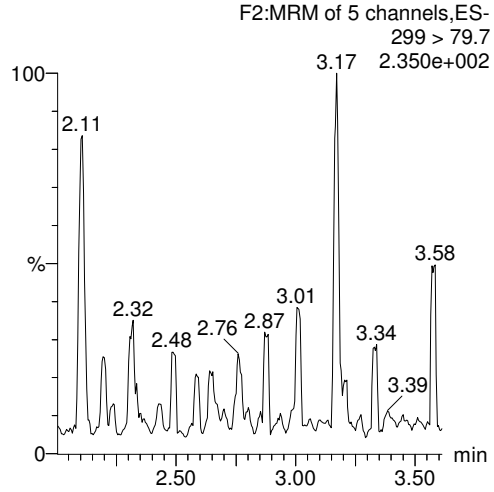
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-20.qld

Last Altered: Sunday, December 10, 2017 09:40:46 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:41:10 Pacific Standard Time

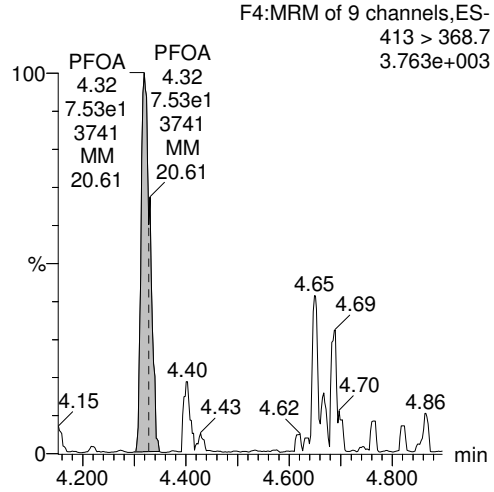
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_20, Date: 07-Dec-2017, Time: 18:08:35, ID: 1701826-05 CH-AT-2RW41-1217 0.2433, Description: CH-AT-2RW41-1217

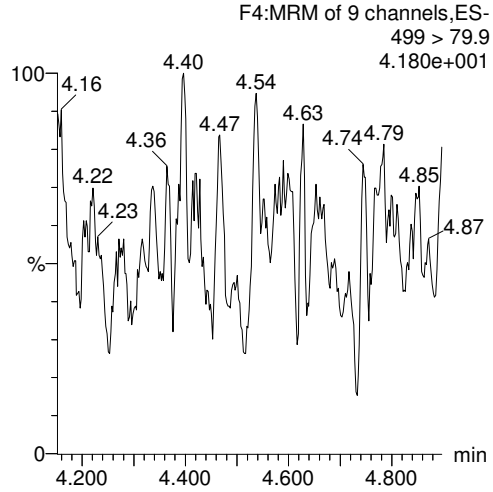
PFBS



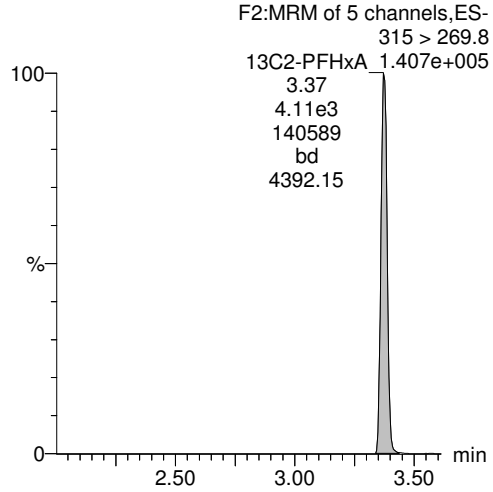
PFOA



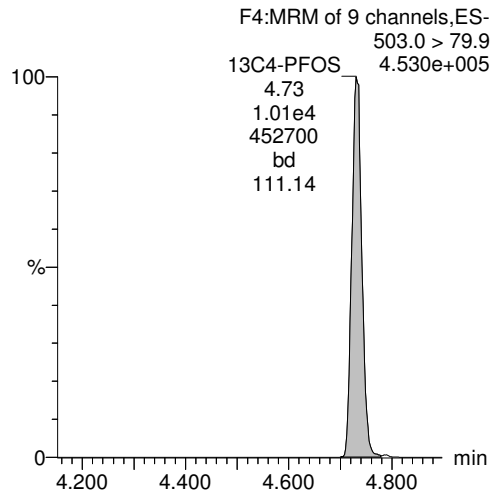
PFOS



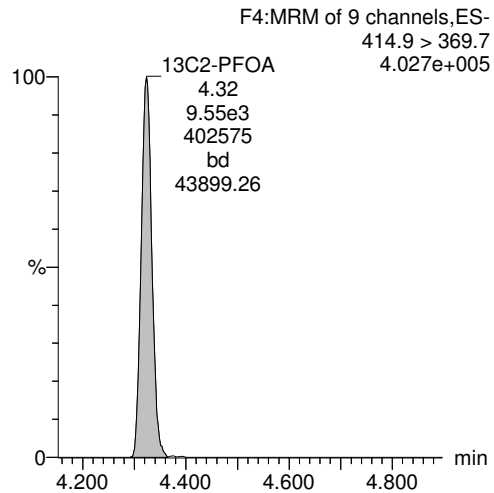
13C2-PFHxA



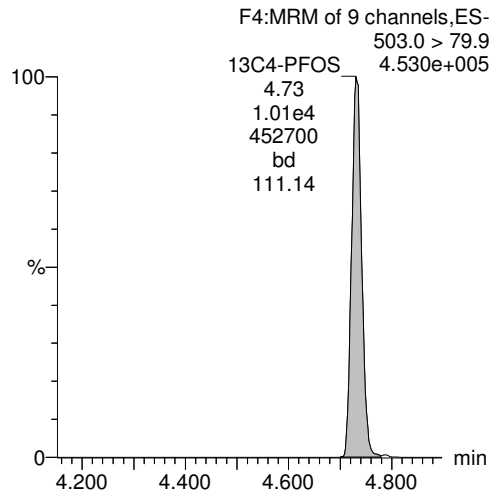
13C4-PFOS



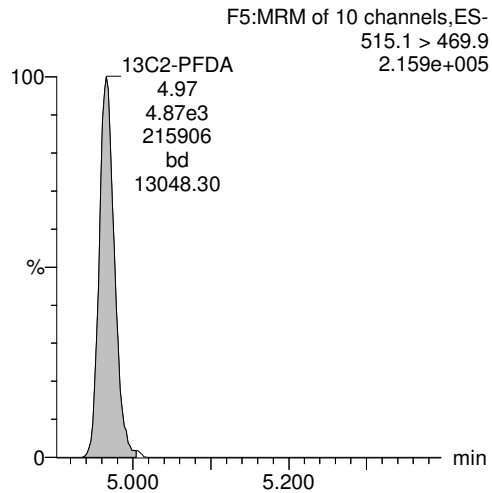
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-12.qld

Last Altered: Sunday, December 10, 2017 09:56:03 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:56:35 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_12, Date: 08-Dec-2017, Time: 11:57:09, ID: 1701826-06 CH-AT-2FB41-1217 0.23928, Description: CH-AT-2FB41-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.89e3		0.2393	3.03				
2	2	PFOA	413 > 368.7	2.86e1	9.97e3		0.2393	4.32	4.32	0.0287	0.155	
3	3	PFOS	499 >79.9		9.89e3		0.2393	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.36e3	9.97e3	0.424	0.2393	3.38	3.38	4.38	43.2	103.3
5	5	13C2-PFDA	515.1 > 469.9	4.85e3	9.97e3	0.478	0.2393	4.95	4.97	4.86	42.5	101.7
6	6	13C2-PFOA	414.9 > 369.7	9.97e3	9.97e3	1.000	0.2393	4.41	4.32	10.0	41.8	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.89e3	9.89e3	1.000	0.2393	4.81	4.73	28.7	120	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

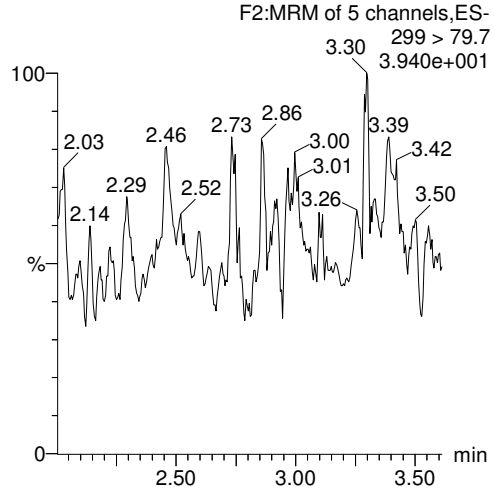
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-12.qld

Last Altered: Sunday, December 10, 2017 09:56:03 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:56:35 Pacific Standard Time

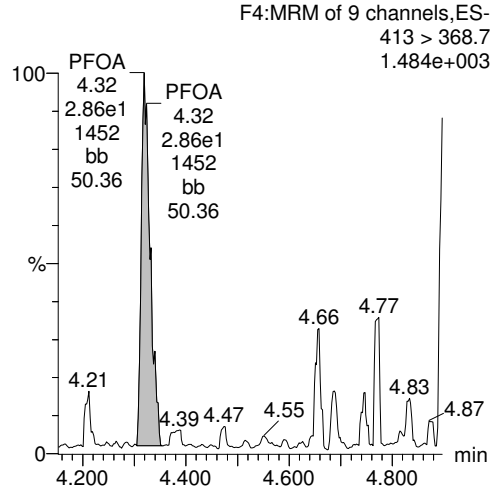
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_12, Date: 08-Dec-2017, Time: 11:57:09, ID: 1701826-06 CH-AT-2FB41-1217 0.23928, Description: CH-AT-2FB41-1217

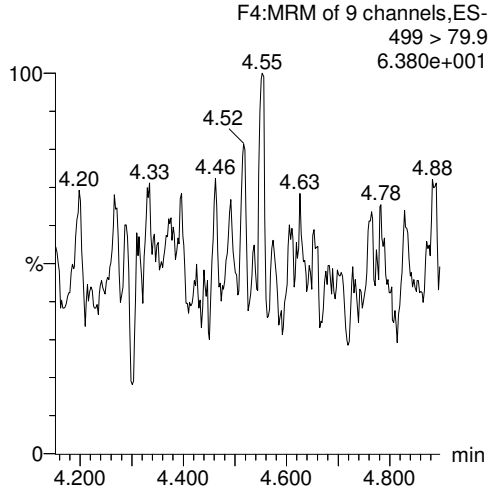
PFBS



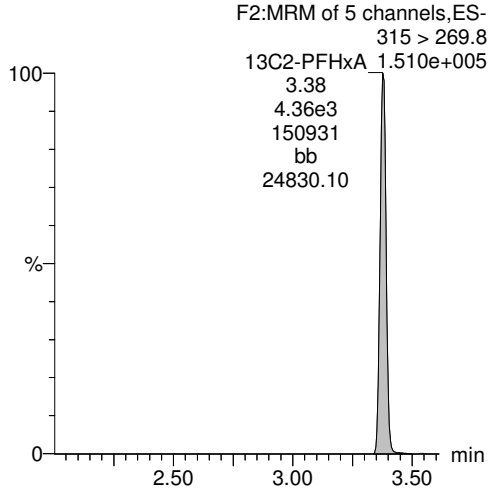
PFOA



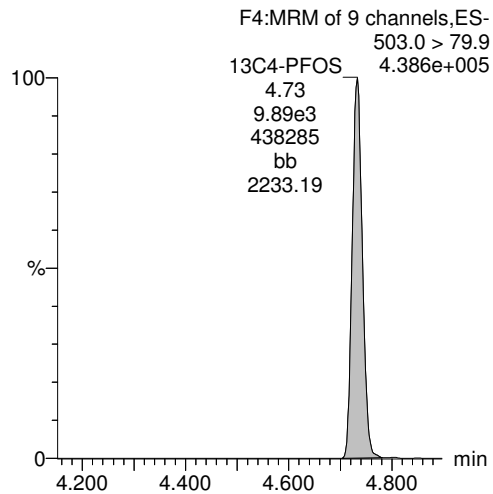
PFOS



13C2-PFHxA



13C4-PFOS



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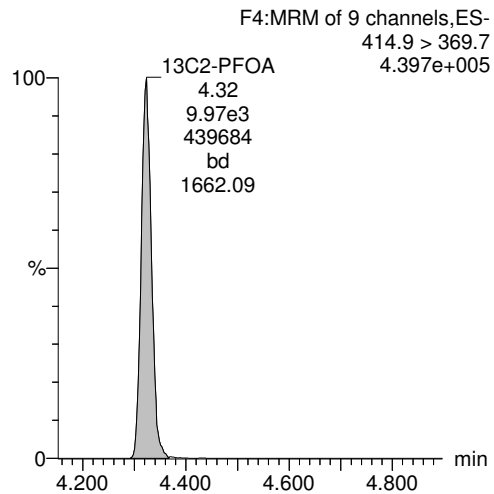
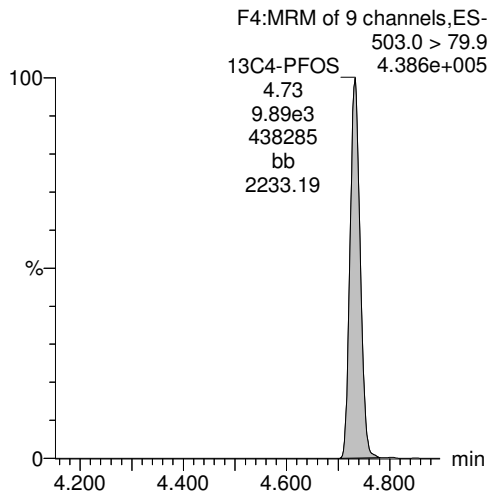
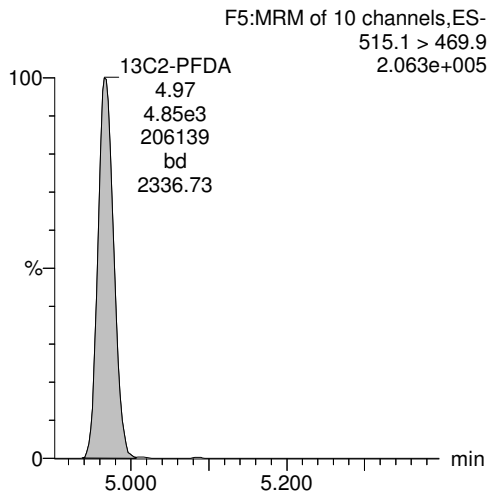


13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-22.qld

Last Altered: Sunday, December 10, 2017 09:42:13 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:42:39 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_22, Date: 07-Dec-2017, Time: 18:33:26, ID: 1701826-07 CH-AT-2RW39-1217 0.2471, Description: CH-AT-2RW39-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2471	3.03				
2	2	PFOA	413 > 368.7	4.29e1	9.80e3		0.2471	4.32	4.33	0.0438	0.229	
3	3	PFOS	499 >79.9		1.01e4		0.2471	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.22e3	9.80e3	0.424	0.2471	3.38	3.37	4.31	41.2	101.7
5	5	13C2-PFDA	515.1 > 469.9	4.41e3	9.80e3	0.478	0.2471	4.95	4.97	4.50	38.1	94.2
6	6	13C2-PFOA	414.9 > 369.7	9.80e3	9.80e3	1.000	0.2471	4.41	4.32	10.0	40.5	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2471	4.81	4.73	28.7	116	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

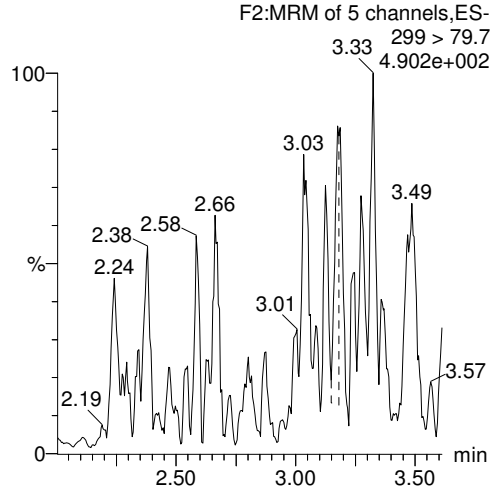
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-22.qld

Last Altered: Sunday, December 10, 2017 09:42:13 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:42:39 Pacific Standard Time

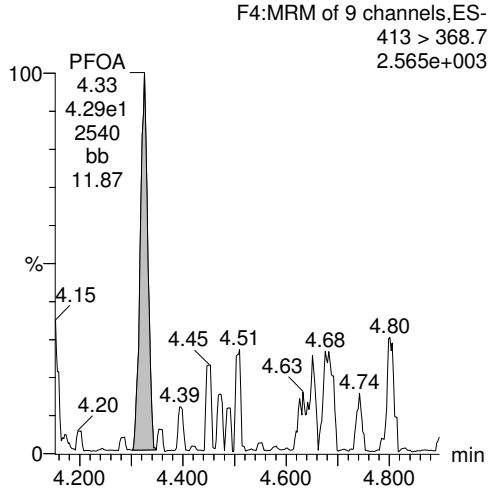
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_22, Date: 07-Dec-2017, Time: 18:33:26, ID: 1701826-07 CH-AT-2RW39-1217 0.2471, Description: CH-AT-2RW39-1217

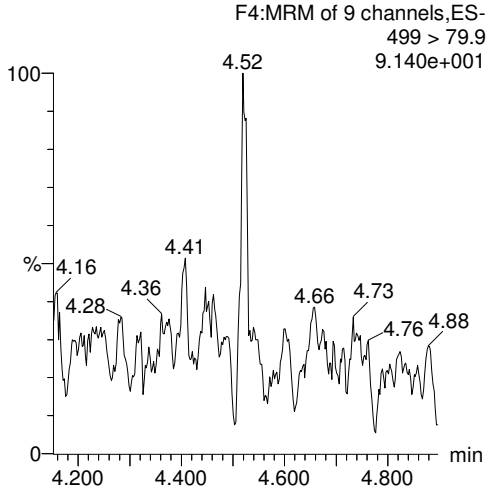
PFBS



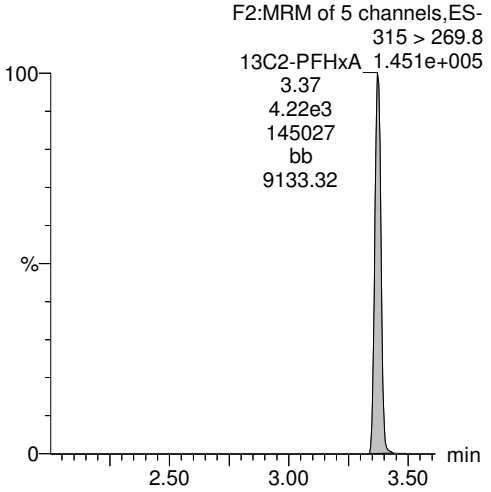
PFOA



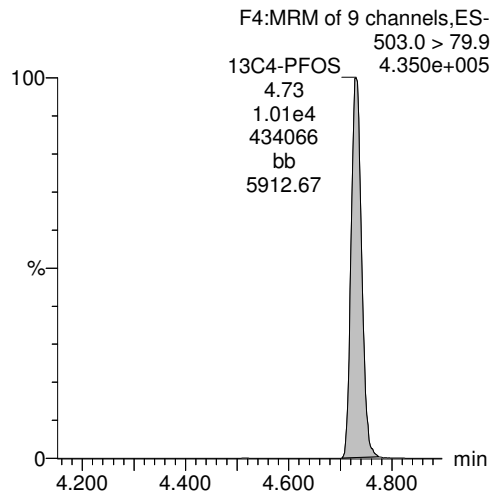
PFOS



13C2-PFHxA



13C4-PFOS



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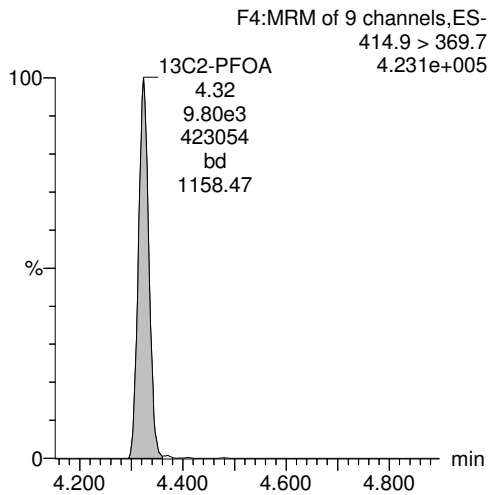
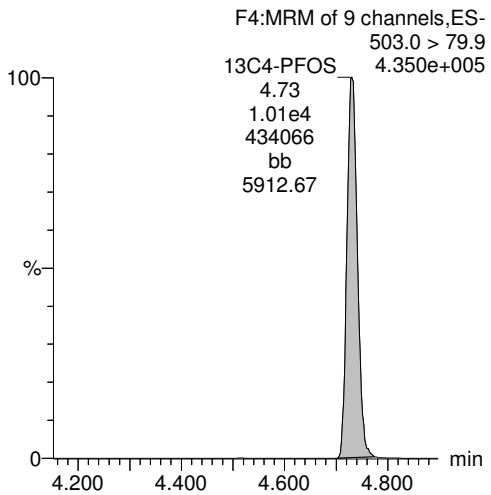
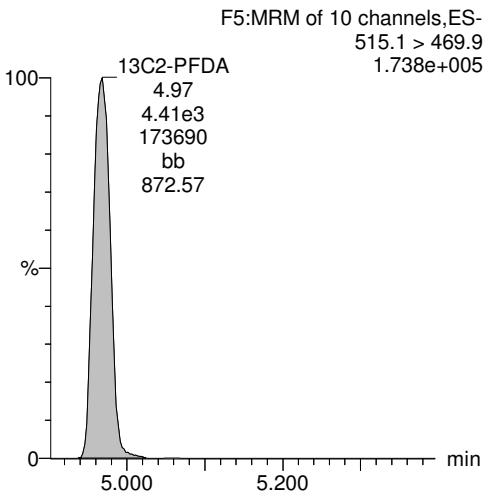


13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-23.qld

Last Altered: Sunday, December 10, 2017 09:44:43 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:44:55 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_23, Date: 07-Dec-2017, Time: 18:45:53, ID: 1701826-08 CH-AT-2FB39-1217 0.25321, Description: CH-AT-2FB39-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2532	3.03				
2	2	PFOA	413 > 368.7	5.51e1	9.14e3		0.2532	4.32	4.33	0.0603	0.308	
3	3	PFOS	499 >79.9		1.01e4		0.2532	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.27e3	9.14e3	0.424	0.2532	3.38	3.38	4.67	43.5	110.2
5	5	13C2-PFDA	515.1 > 469.9	4.47e3	9.14e3	0.478	0.2532	4.95	4.97	4.89	40.4	102.3
6	6	13C2-PFOA	414.9 > 369.7	9.14e3	9.14e3	1.000	0.2532	4.41	4.32	10.0	39.5	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2532	4.81	4.73	28.7	113	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

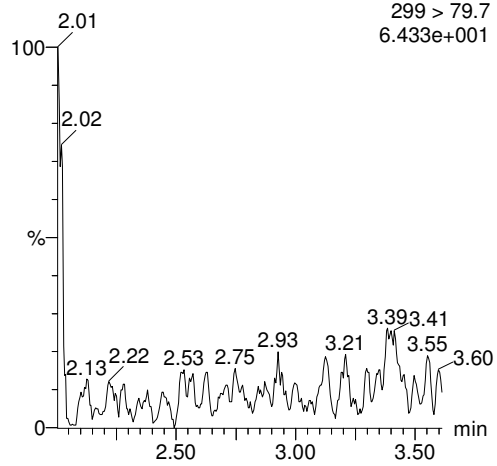
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-23.qld

Last Altered: Sunday, December 10, 2017 09:44:43 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:44:55 Pacific Standard Time

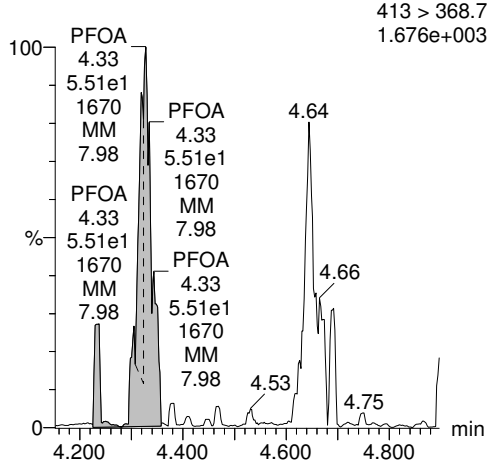
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_23, Date: 07-Dec-2017, Time: 18:45:53, ID: 1701826-08 CH-AT-2FB39-1217 0.25321, Description: CH-AT-2FB39-1217

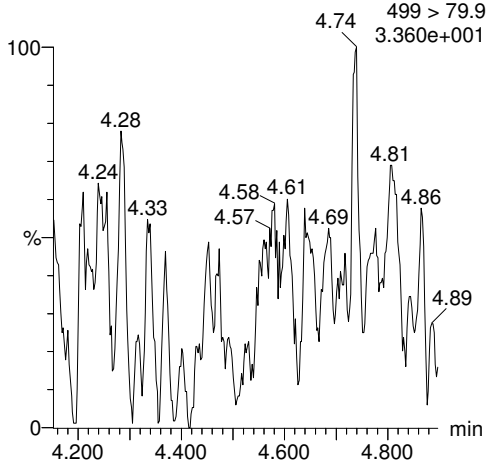
PFBS



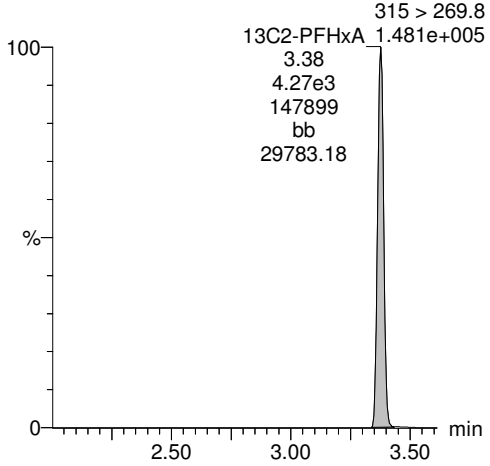
PFOA



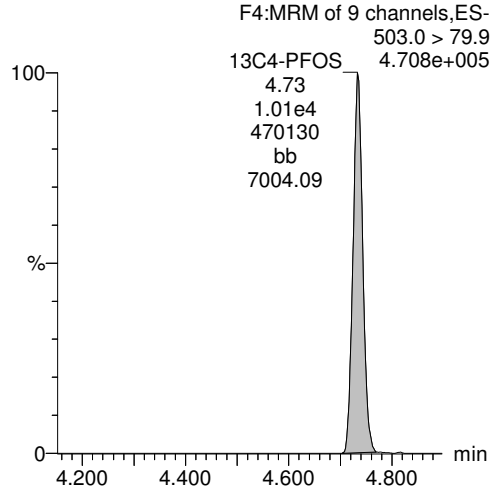
PFOS



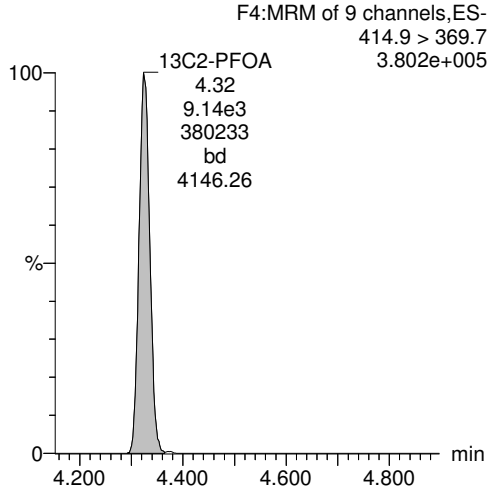
13C2-PFHxA



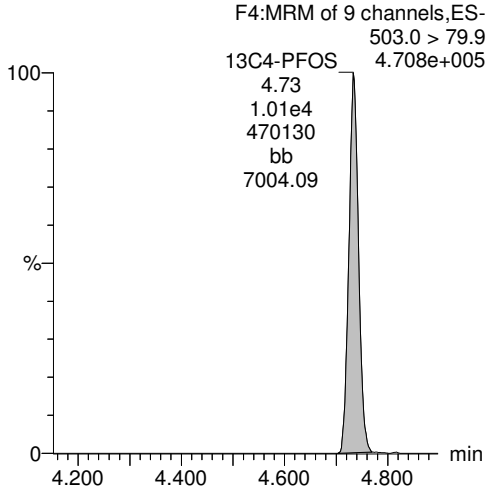
13C4-PFOS



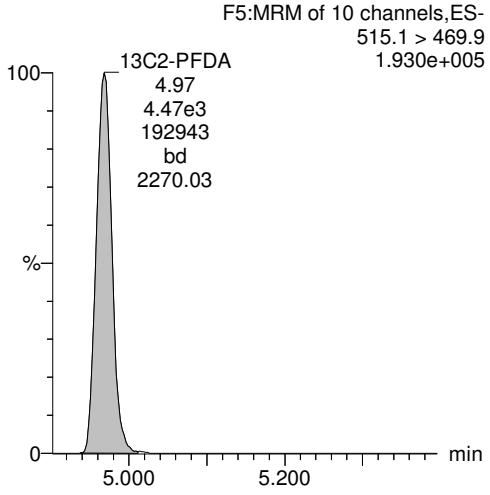
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-13.qld

Last Altered: Sunday, December 10, 2017 09:58:30 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:58:54 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_13, Date: 08-Dec-2017, Time: 12:09:35, ID: 1701826-09 CH-AT-1RW114-1217 0.23828, Description: CH-AT-1RW114-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.10e4		0.2383	3.03				
2	2	PFOA	413 > 368.7	6.37e1	9.78e3		0.2383	4.32	4.33	0.0651	0.353	
3	3	PFOS	499 >79.9		1.10e4		0.2383	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.45e3	9.78e3	0.424	0.2383	3.38	3.38	4.55	45.0	107.3
5	5	13C2-PFDA	515.1 > 469.9	5.09e3	9.78e3	0.478	0.2383	4.95	4.97	5.20	45.6	108.7
6	6	13C2-PFOA	414.9 > 369.7	9.78e3	9.78e3	1.000	0.2383	4.41	4.32	10.0	42.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.10e4	1.10e4	1.000	0.2383	4.81	4.73	28.7	120	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

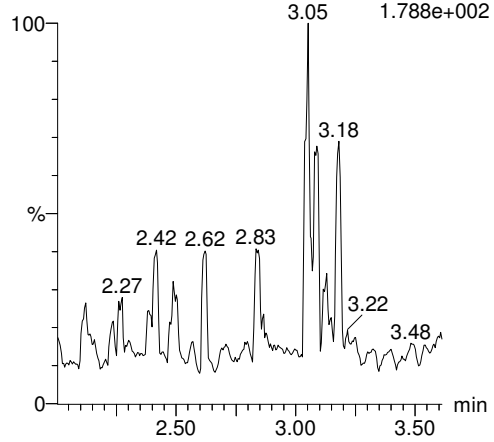
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-13.qld

Last Altered: Sunday, December 10, 2017 09:58:30 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:58:54 Pacific Standard Time

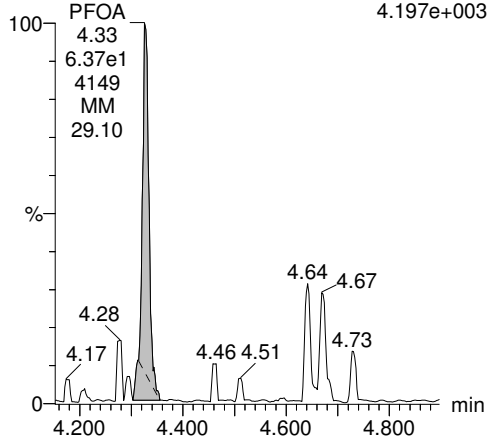
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_13, Date: 08-Dec-2017, Time: 12:09:35, ID: 1701826-09 CH-AT-1RW114-1217 0.23828, Description: CH-AT-1RW114-1217

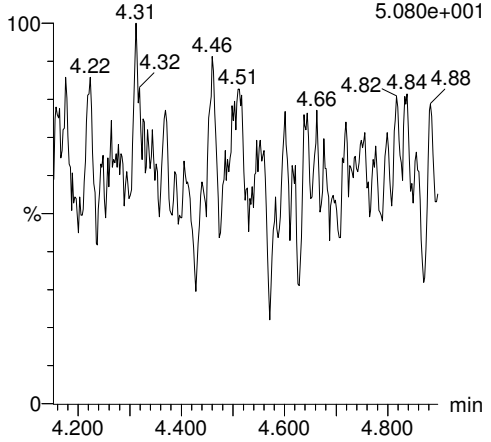
PFBS



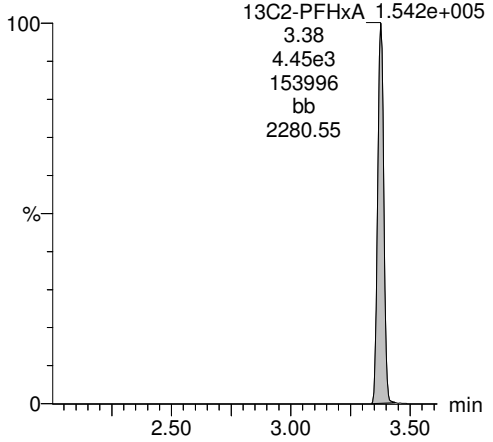
PFOA



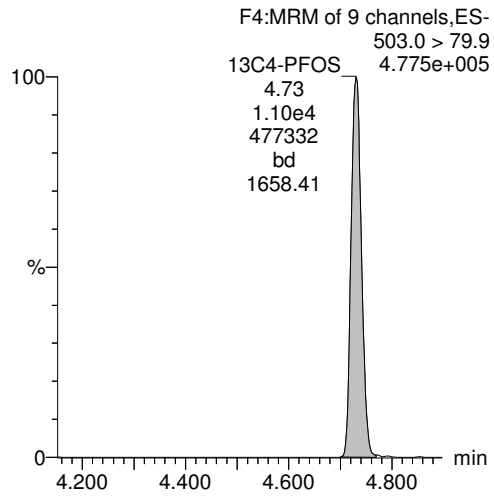
PFOS



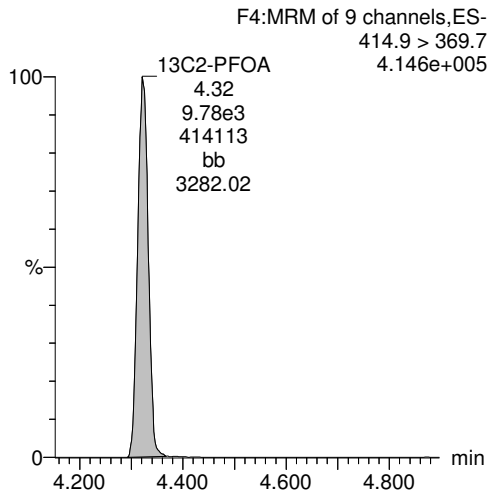
13C2-PFHxA



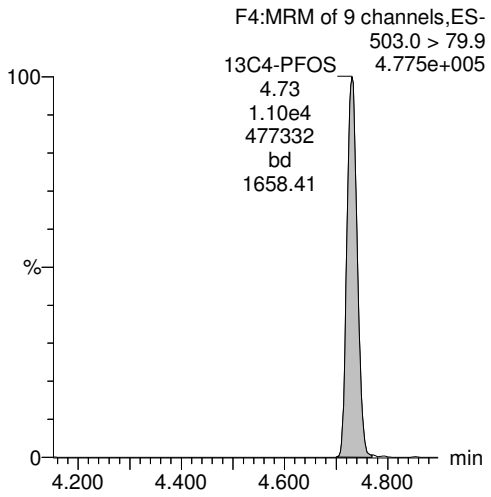
13C4-PFOS



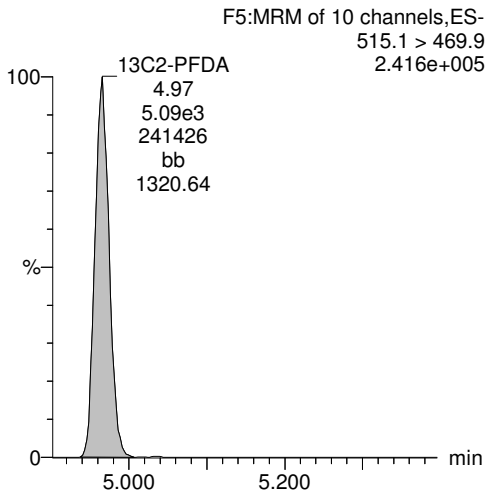
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-14.qld

Last Altered: Sunday, December 10, 2017 10:00:23 Pacific Standard Time
Printed: Sunday, December 10, 2017 10:00:50 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_14, Date: 08-Dec-2017, Time: 12:22:03, ID: 1701826-10 CH-AT-1FB114-1217 0.25812, Description: CH-AT-1FB114-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2581	3.03				
2	2	PFOA	413 > 368.7	4.04e1	9.56e3		0.2581	4.32	4.33	0.0422	0.211	
3	3	PFOS	499 >79.9		1.01e4		0.2581	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.29e3	9.56e3	0.424	0.2581	3.38	3.38	4.49	41.0	105.9
5	5	13C2-PFDA	515.1 > 469.9	4.63e3	9.56e3	0.478	0.2581	4.95	4.96	4.84	39.2	101.3
6	6	13C2-PFOA	414.9 > 369.7	9.56e3	9.56e3	1.000	0.2581	4.41	4.32	10.0	38.7	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2581	4.81	4.73	28.7	111	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

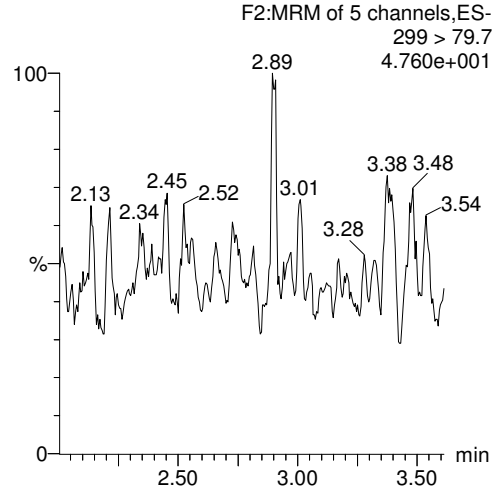
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-14.qld

Last Altered: Sunday, December 10, 2017 10:00:23 Pacific Standard Time
Printed: Sunday, December 10, 2017 10:00:50 Pacific Standard Time

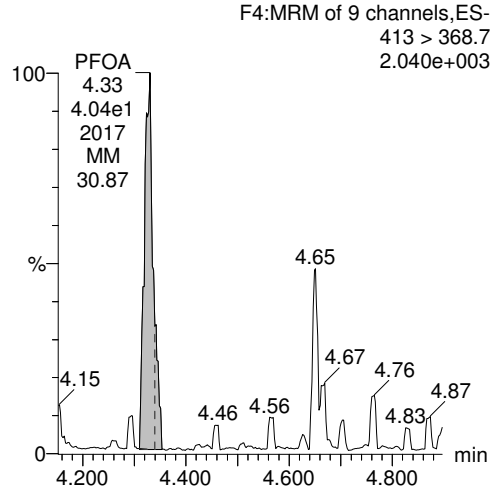
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_14, Date: 08-Dec-2017, Time: 12:22:03, ID: 1701826-10 CH-AT-1FB114-1217 0.25812, Description: CH-AT-1FB114-1217

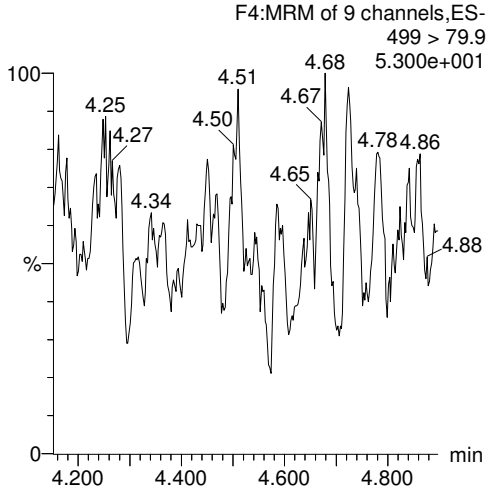
PFBS



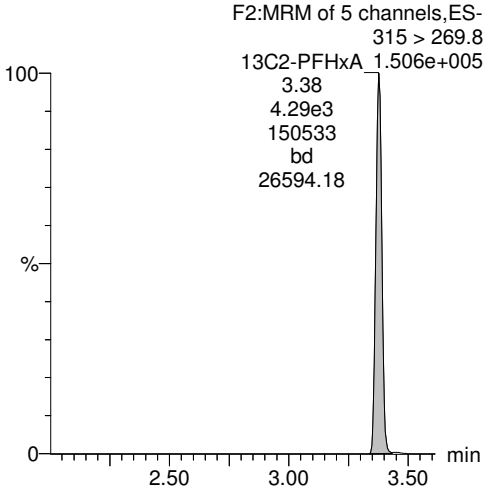
PFOA



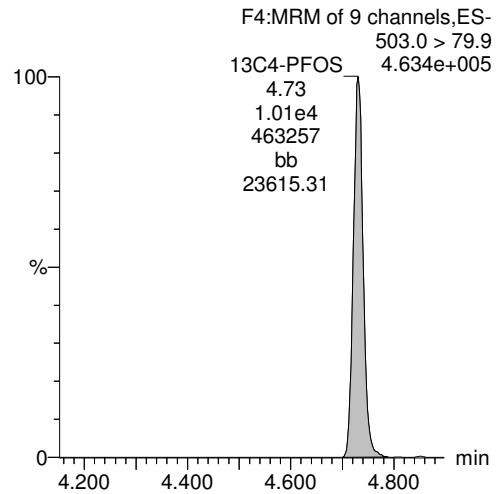
PFOS



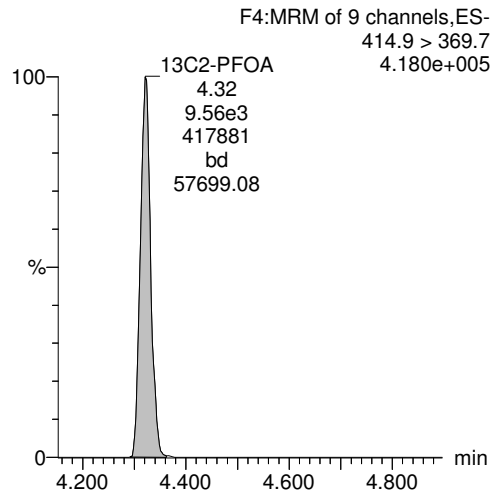
13C2-PFHxA



13C4-PFOS



13C2-PFOA



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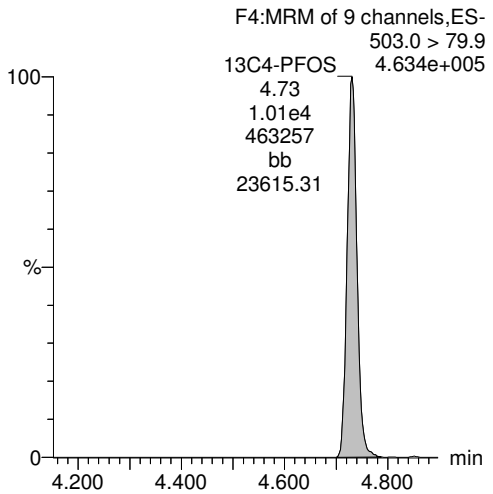
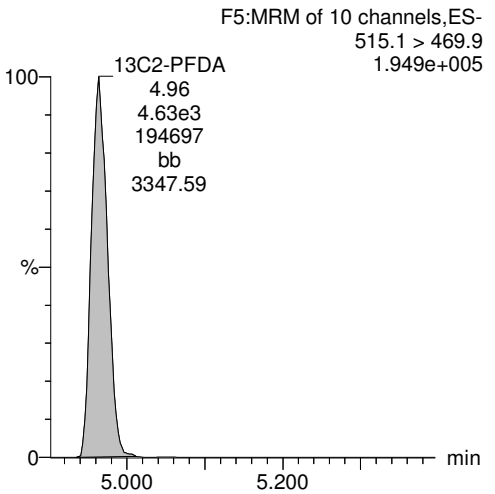


13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-26.qld

Last Altered: Sunday, December 10, 2017 09:46:28 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:47:28 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_26, Date: 07-Dec-2017, Time: 19:23:11, ID: 1701826-11 CH-AT-1RW113-1217 0.25187, Description: CH-AT-1RW113-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.94e3		0.2519	3.03				
2	2	PFOA	413 > 368.7	7.44e1	1.00e4		0.2519	4.32	4.33	0.0743	0.381	
3	3	PFOS	499 >79.9		9.94e3		0.2519	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.26e3	1.00e4	0.424	0.2519	3.38	3.37	4.25	39.8	100.3
5	5	13C2-PFDA	515.1 > 469.9	4.43e3	1.00e4	0.478	0.2519	4.95	4.97	4.43	36.7	92.5
6	6	13C2-PFOA	414.9 > 369.7	1.00e4	1.00e4	1.000	0.2519	4.41	4.32	10.0	39.7	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.94e3	9.94e3	1.000	0.2519	4.81	4.73	28.7	114	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

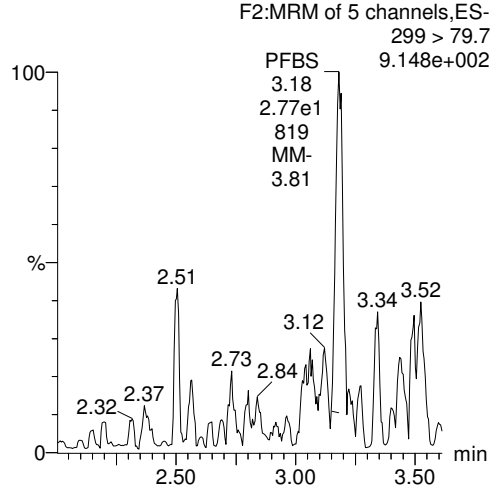
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-26.qld

Last Altered: Sunday, December 10, 2017 09:46:28 Pacific Standard Time
Printed: Sunday, December 10, 2017 09:47:28 Pacific Standard Time

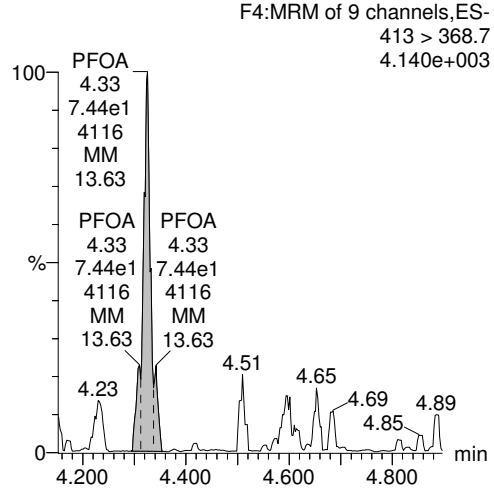
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_26, Date: 07-Dec-2017, Time: 19:23:11, ID: 1701826-11 CH-AT-1RW113-1217 0.25187, Description: CH-AT-1RW113-1217

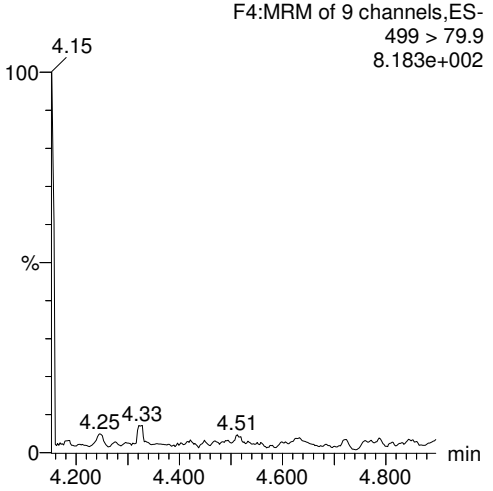
PFBS



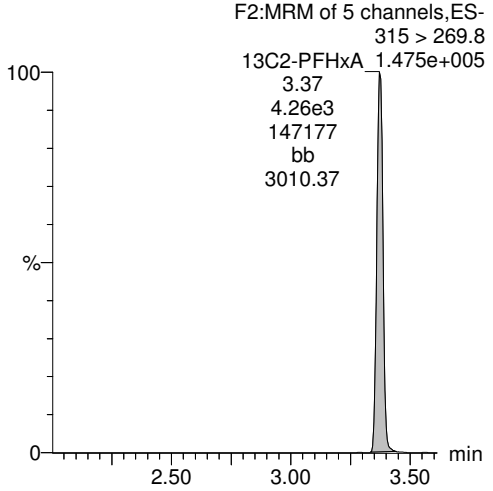
PFOA



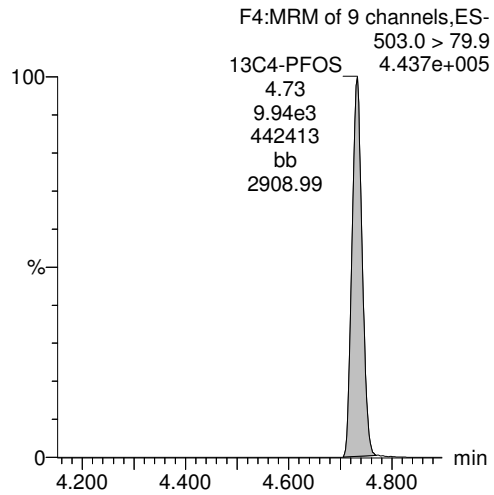
PFOS



13C2-PFHxA



13C4-PFOS



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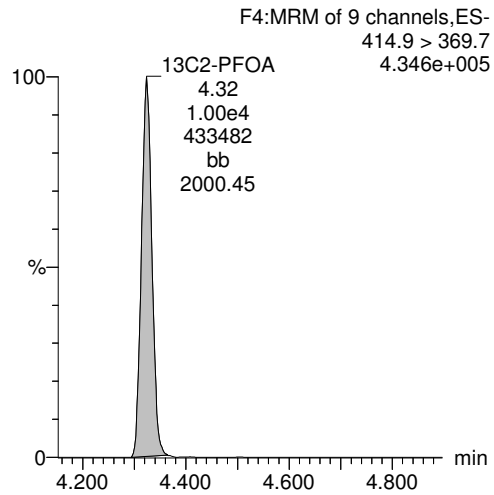

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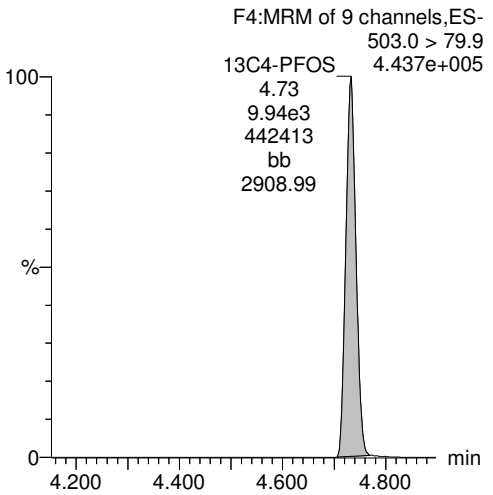

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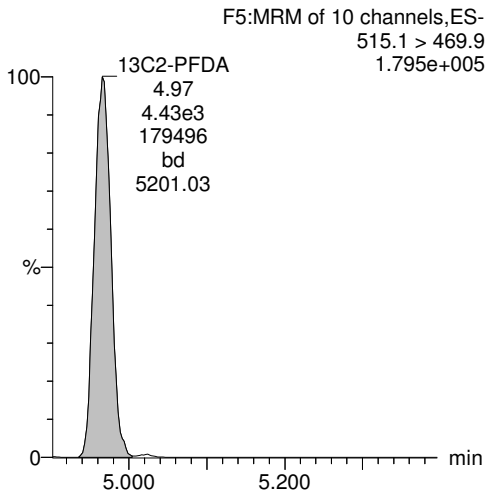


Vista Analytical Laboratory

Rev'd: MM 12/10/17

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-15.qld

Last Altered: Sunday, December 10, 2017 10:02:20 Pacific Standard Time
Printed: Sunday, December 10, 2017 10:03:11 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_15, Date: 08-Dec-2017, Time: 12:34:30, ID: 1701826-12 CH-AT-1FB113-1217 0.252, Description: CH-AT-1FB113-1217

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.08e4		0.2520	3.03				
2	2	PFOA	413 > 368.7	2.50e1	9.46e3		0.2520	4.32	4.32	0.0265	0.136	
3	3	PFOS	499 >79.9		1.08e4		0.2520	4.73				
4	4	13C2-PFHxA	315 > 269.8	4.15e3	9.46e3	0.424	0.2520	3.38	3.38	4.39	41.1	103.5
5	5	13C2-PFDA	515.1 > 469.9	4.78e3	9.46e3	0.478	0.2520	4.95	4.97	5.05	41.9	105.6
6	6	13C2-PFOA	414.9 > 369.7	9.46e3	9.46e3	1.000	0.2520	4.41	4.32	10.0	39.7	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.08e4	1.08e4	1.000	0.2520	4.81	4.73	28.7	114	100.0

Vista Analytical Laboratory

Rev'd: MM 12/10/17

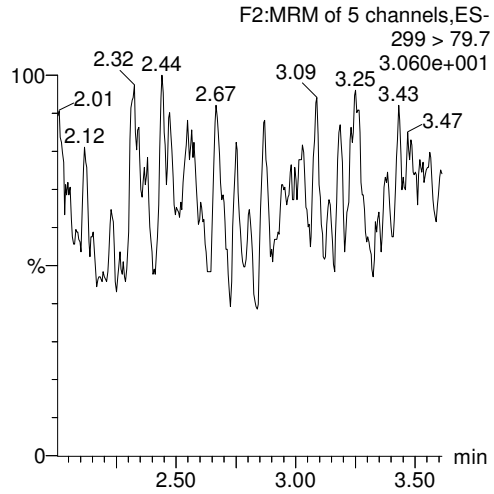
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-15.qld

Last Altered: Sunday, December 10, 2017 10:02:20 Pacific Standard Time
Printed: Sunday, December 10, 2017 10:03:11 Pacific Standard Time

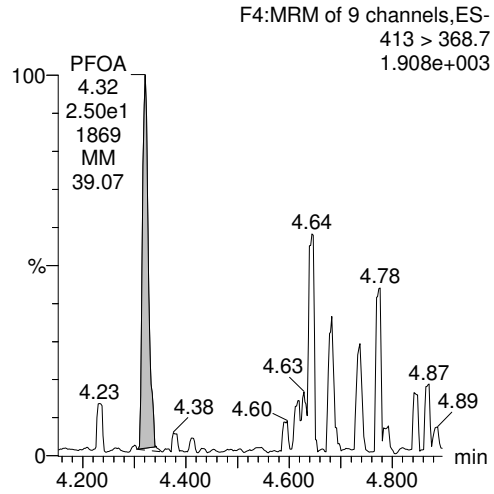
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_15, Date: 08-Dec-2017, Time: 12:34:30, ID: 1701826-12 CH-AT-1FB113-1217 0.252, Description: CH-AT-1FB113-1217

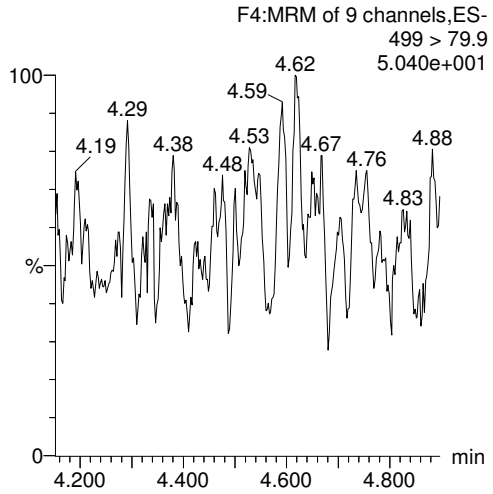
PFBS



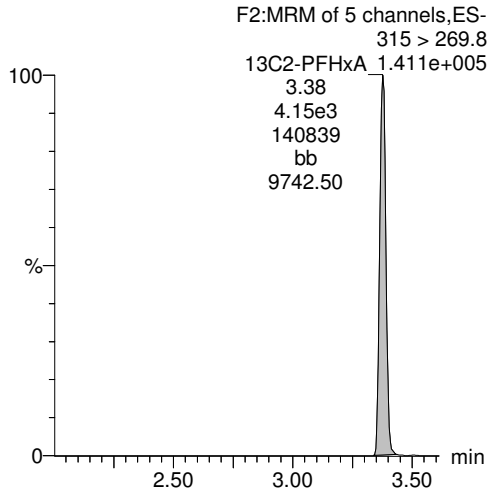
PFOA



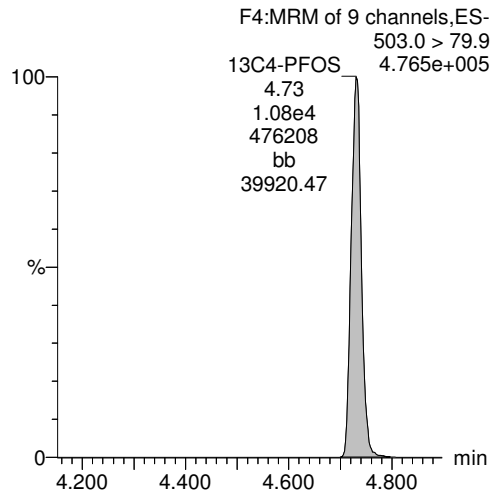
PFOS



13C2-PFHxA



13C4-PFOS



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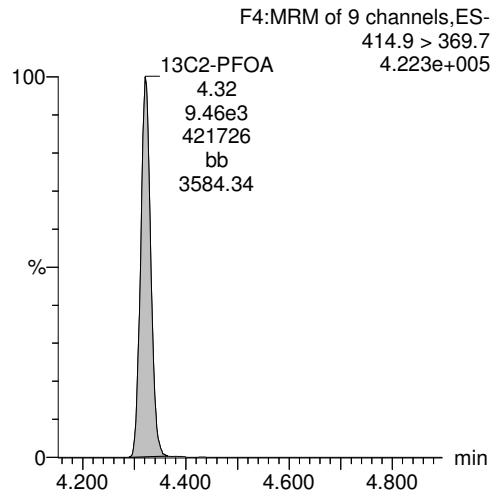

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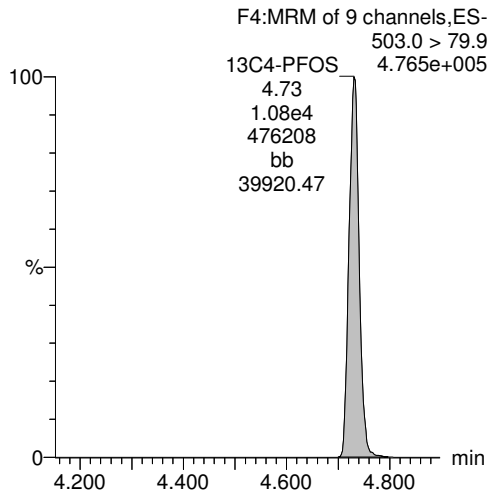

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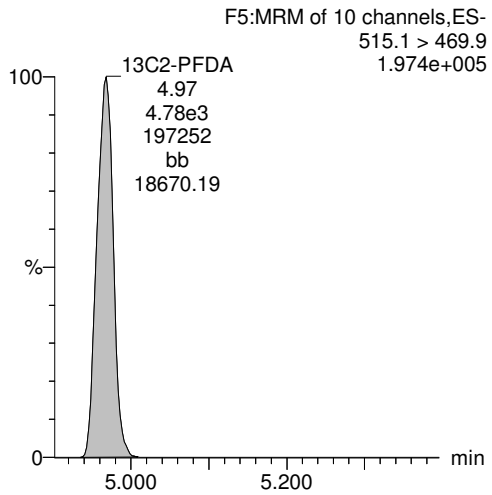

INJECTION INTERNAL STANDARD (IIS) AREAS,

AND

CONTINUTING CALIBRATION VERIFICATIONS CCV)

IS Area

Ical

Compound 6: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ical Area	Area%
1	ST171207G3-1 PFC CS-1 537 17K3024	171207G3_	Analyte	10	4.33	12885.36	12885.36	11328.26	113.75
2	IPA	171207G3_	Analyte	10				11328.26	0.00
3	B7L0015-BS1 LFB 0.25	171207G3_	Analyte	10	4.33	9583.238	9583.238	11328.26	84.60
4	B7L0015-BLK1 LRB 0.25	171207G3_	Analyte	10	4.33	9197.732	9197.732	11328.26	81.19
5	B7L0015-MS1 LFSM 0.24696	171207G3_	Analyte	10	4.32	9622.813	9622.813	11328.26	84.95
6	B7L0015-MSD1 LFSMD 0.25064	171207G3_	Analyte	10	4.33	9265.601	9265.601	11328.26	81.79
7	1701807-01 CH-AT-1RW94-1117 0.24509	171207G3_	Analyte	10	4.33	9776.346	9776.346	11328.26	86.30
8	1701807-02 CH-AT-1FB94-1117 0.24508	171207G3_	Analyte	10	4.32	8725.691	8725.691	11328.26	77.03
9	1701807-03 CH-AT-1RW95-1117 0.25193	171207G3_	Analyte	10	4.32	9033.678	9033.678	11328.26	79.74
10	1701807-04 CH-AT-1FB95-1117 0.25155	171207G3_	Analyte	10	4.32	8827.292	8827.292	11328.26	77.92
11	1701807-05 CH-AT-1RW96-1117 0.24236	171207G3_	Analyte	10	4.33	8980.292	8980.292	11328.26	79.27
12	1701807-06 CH-AT-1FB96-1117 0.24957	171207G3_	Analyte	10	4.32	10279.1	10279.1	11328.26	90.74
13	1701807-07 CH-AT-1RW97-1117 0.24262	171207G3_	Analyte	10	4.32	9227.577	9227.577	11328.26	81.46
14	1701807-08 CH-AT-1FB97-1117 0.24757	171207G3_	Analyte	10	4.33	9119.604	9119.604	11328.26	80.50
15	1701826-01 CH-AT-2RW40-1217 0.24324	171207G3_	Analyte	10	4.32	9289.931	9289.931	11328.26	82.01
16	1701826-02 CH-AT-2FB40-1217 0.24836	171207G3_	Analyte	10	4.32	8111.358	8111.358	11328.26	71.60
17	1701826-03 CH-AT-1RW115-1217 0.23578	171207G3_	Analyte	10	4.32	8629.051	8629.051	11328.26	76.17
18	1701826-04 CH-AT-1FB115-1217 0.25059	171207G3_	Analyte	10	4.32	9285.475	9285.475	11328.26	81.97
19	1701826-05 CH-AT-2RW41-1217 0.2433	171207G3_	Analyte	10	4.32	9547.839	9547.839	11328.26	84.28
20	1701826-06 CH-AT-2FB41-1217 0.23928	171207G3_	Analyte	10	4.32	9623.723	9623.723	11328.26	84.95
21	1701826-07 CH-AT-2RW39-1217 0.2471	171207G3_	Analyte	10	4.32	9798.919	9798.919	11328.26	86.50
22	1701826-08 CH-AT-2FB39-1217 0.25321	171207G3_	Analyte	10	4.32	9135.841	9135.841	11328.26	80.65
23	1701826-09 CH-AT-1RW114-1217 0.23828	171207G3_	Analyte	10	4.33	9384.96	9384.96	11328.26	82.85
24	1701826-10 CH-AT-1FB114-1217 0.25812	171207G3_	Analyte	10	4.33	8627.353	8627.353	11328.26	76.16
25	1701826-11 CH-AT-1RW113-1217 0.25187	171207G3_	Analyte	10	4.32	10013.83	10013.83	11328.26	88.40
26	1701826-12 CH-AT-1FB113-1217 0.252	171207G3_	Analyte	10	4.33	9343.38	9343.38	11328.26	82.48
27	IPA	171207G3_	Analyte	10				11328.26	0.00

GM 12/8/17

28	ST171207G3-2 PFC CS3 17K3027	171207G3_	Analyte	10	4.33	10795.81	10795.81	11328.26	95.30
29	IPA	171207G3_	Analyte	10				11328.26	0.00
30	B7L0025-BS1 LFB 0.25	171207G3_	Analyte	10	4.33	9831.949	9831.949	11328.26	86.79
31	B7L0025-BLK1 LRB 0.25	171207G3_	Analyte	10	4.33	8941.108	8941.108	11328.26	78.93
32	B7L0025-MS1 LFSM 0.24324	171207G3_	Analyte	10	4.33	8630.11	8630.11	11328.26	76.18
33	B7L0025-MSD1 LFSMD 0.25571	171207G3_	Analyte	10	4.33	9645.423	9645.423	11328.26	85.14
34	1701814-01 CH-AT-1RW109-1117 0.24963	171207G3_	Analyte	10	4.33	9574.236	9574.236	11328.26	84.52
35	1701814-02 CH-AT-1FB109-1117 0.25812	171207G3_	Analyte	10	4.33	10808.15	10808.15	11328.26	95.41
36	1701814-03 CH-AT-1RW110-1117 0.24886	171207G3_	Analyte	10	4.33	9586.044	9586.044	11328.26	84.62
37	1701814-04 CH-AT-1FB110-1117 0.24932	171207G3_	Analyte	10	4.33	9955.102	9955.102	11328.26	87.88
38	1701814-05 CH-AT-1RW111-1117 0.24827	171207G3_	Analyte	10	4.33	9818.604	9818.604	11328.26	86.67
39	1701814-06 CH-AT-1FB111-1117 0.2532	171207G3_	Analyte	10	4.33	9058.298	9058.298	11328.26	79.96
40	1701814-07 CH-AT-1RW112-1117 0.25353	171207G3_	Analyte	10	4.33	9091.133	9091.133	11328.26	80.25
41	1701814-08 CH-AT-1FB112-1117 0.262	171207G3_	Analyte	10	4.33	9752.02	9752.02	11328.26	86.09
42	1701814-09 CH-AT-1RW107-1117 0.26323	171207G3_	Analyte	10	4.33	9503.17	9503.17	11328.26	83.89
43	1701814-10 CH-AT-1FB107-1117 0.26258	171207G3_	Analyte	10	4.33	9725.189	9725.189	11328.26	85.85
44	1701814-11 CH-AT-1RW108-1117 0.25898	171207G3_	Analyte	10	4.32	9870.169	9870.169	11328.26	87.13
45	1701814-12 CH-AT-1FB108-1117 0.25727	171207G3_	Analyte	10	4.33	8884.244	8884.244	11328.26	78.43
46	IPA	171207G3_	Analyte	10	4.32	6.233	6.233	11328.26	0.06
47	B7L0016-BS1 LFB 0.25	171207G3_	Analyte	10	4.33	9704.101	9704.101	11328.26	85.66
48	B7L0016-BSD1 LFBD 0.25	171207G3_	Analyte	10	4.33	9055.565	9055.565	11328.26	79.94
49	B7L0016-BLK1 LRB 0.25	171207G3_	Analyte	10	4.32	9162.609	9162.609	11328.26	80.88
50	1701813-01 CH-AT-2RW20-1117 0.25836	171207G3_	Analyte	10	4.32	8643.122	8643.122	11328.26	76.30
51	1701813-02 CH-AT-2FB20-1117 0.2625	171207G3_	Analyte	10	4.32	9319.82	9319.82	11328.26	82.27
52	1701813-03 CH-AT-2RW21-1117 0.25745	171207G3_	Analyte	10	4.32	9469.031	9469.031	11328.26	83.59
53	1701813-04 CH-AT-2FB21-1117 0.25393	171207G3_	Analyte	10	4.32	9719.193	9719.193	11328.26	85.80
54	1701813-05 CH-AT-2RW22-1117 0.25543	171207G3_	Analyte	10	4.32	10031.35	10031.35	11328.26	88.55
55	1701813-06 CH-AT-2FB22-1117 0.25226	171207G3_	Analyte	10	4.33	9373.374	9373.374	11328.26	82.74
56	1701813-07 CH-AT-2RW23-1117 0.25821	171207G3_	Analyte	10	4.32	9521.089	9521.089	11328.26	84.05
57	1701813-08 CH-AT-2FB23-1117 0.24936	171207G3_	Analyte	10	4.32	9222.847	9222.847	11328.26	81.41
58	IPA	171207G3_	Analyte	10				11328.26	0.00
59	ST171207G3-3 PFC CS5 537 17K3029	171207G3_	Analyte	10	4.32	11546.32	11546.32	11328.26	101.92
60	IPA	171207G3_	Analyte	10				11328.26	0.00

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Compound 7: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ical Area	Area %
1	ST171207G3-1 PFC CS-1 537 17K3024	171207G3_	Analyte	28.7	4.73	14224.38	14224.38	11379.03	125.01
2	IPA	171207G3_	Analyte	28.7				11379.03	0.00
3	B7L0015-BS1 LFB 0.25	171207G3_	Analyte	28.7	4.73	10082.32	10082.32	11379.03	88.60
4	B7L0015-BLK1 LRB 0.25	171207G3_	Analyte	28.7	4.73	9285.92	9285.92	11379.03	81.61
5	B7L0015-MS1 LFSM 0.24696	171207G3_	Analyte	28.7	4.73	10850.02	10850.02	11379.03	95.35
6	B7L0015-MSD1 LFSMD 0.25064	171207G3_	Analyte	28.7	4.73	9616.275	9616.275	11379.03	84.51
7	1701807-01 CH-AT-1RW94-1117 0.24509	171207G3_	Analyte	28.7	4.74	10308.69	10308.69	11379.03	90.59
8	1701807-02 CH-AT-1FB94-1117 0.24508	171207G3_	Analyte	28.7	4.74	9347.48	9347.48	11379.03	82.15
9	1701807-03 CH-AT-1RW95-1117 0.25193	171207G3_	Analyte	28.7	4.73	10137.02	10137.02	11379.03	89.09
10	1701807-04 CH-AT-1FB95-1117 0.25155	171207G3_	Analyte	28.7	4.73	10377.24	10377.24	11379.03	91.20
11	1701807-05 CH-AT-1RW96-1117 0.24236	171207G3_	Analyte	28.7	4.73	9394.615	9394.615	11379.03	82.56
12	1701807-06 CH-AT-1FB96-1117 0.24957	171207G3_	Analyte	28.7	4.73	10136.2	10136.2	11379.03	89.08
13	1701807-07 CH-AT-1RW97-1117 0.24262	171207G3_	Analyte	28.7	4.73	10734.53	10734.53	11379.03	94.34
14	1701807-08 CH-AT-1FB97-1117 0.24757	171207G3_	Analyte	28.7	4.73	9549.839	9549.839	11379.03	83.92
15	1701826-01 CH-AT-2RW40-1217 0.24324	171207G3_	Analyte	28.7	4.73	10068.19	10068.19	11379.03	88.48
16	1701826-02 CH-AT-2FB40-1217 0.24836	171207G3_	Analyte	28.7	4.73	9359.739	9359.739	11379.03	82.25
17	1701826-03 CH-AT-1RW115-1217 0.23578	171207G3_	Analyte	28.7	4.73	9438.006	9438.006	11379.03	82.94
18	1701826-04 CH-AT-1FB115-1217 0.25059	171207G3_	Analyte	28.7	4.73	10093.32	10093.32	11379.03	88.70
19	1701826-05 CH-AT-2RW41-1217 0.2433	171207G3_	Analyte	28.7	4.73	10126.32	10126.32	11379.03	88.99
20	1701826-06 CH-AT-2FB41-1217 0.23928	171207G3_	Analyte	28.7	4.73	9822.364	9822.364	11379.03	86.32
21	1701826-07 CH-AT-2RW39-1217 0.2471	171207G3_	Analyte	28.7	4.73	10131.71	10131.71	11379.03	89.04
22	1701826-08 CH-AT-2FB39-1217 0.25321	171207G3_	Analyte	28.7	4.73	10091.7	10091.7	11379.03	88.69
23	1701826-09 CH-AT-1RW114-1217 0.23828	171207G3_	Analyte	28.7	4.74	9812.958	9812.958	11379.03	86.24
24	1701826-10 CH-AT-1FB114-1217 0.25812	171207G3_	Analyte	28.7	4.73	9066.185	9066.185	11379.03	79.67
25	1701826-11 CH-AT-1RW113-1217 0.25187	171207G3_	Analyte	28.7	4.73	10034.41	10034.41	11379.03	88.18
26	1701826-12 CH-AT-1FB113-1217 0.252	171207G3_	Analyte	28.7	4.73	9830.374	9830.374	11379.03	86.39
27	IPA	171207G3_	Analyte	28.7				11379.03	0.00
28	ST171207G3-2 PFC CS3 17K3027	171207G3_	Analyte	28.7	4.73	10876.77	10876.77	11379.03	95.59
29	IPA	171207G3_	Analyte	28.7				11379.03	0.00
30	B7L0025-BS1 LFB 0.25	171207G3_	Analyte	28.7	4.73	9881.715	9881.715	11379.03	86.84

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31	B7L0025-BLK1 LRB 0.25	171207G3_	Analyte	28.7	4.73	9023.005	9023.005	11379.03	79.30
32	B7L0025-MS1 LFSM 0.24324	171207G3_	Analyte	28.7	4.73	8871.453	8871.453	11379.03	77.96
33	B7L0025-MSD1 LFSMD 0.25571	171207G3_	Analyte	28.7	4.73	10228.98	10228.98	11379.03	89.89
34	1701814-01 CH-AT-1RW109-1117 0.24963	171207G3_	Analyte	28.7	4.73	10051.86	10051.86	11379.03	88.34
35	1701814-02 CH-AT-1FB109-1117 0.25812	171207G3_	Analyte	28.7	4.73	9997.502	9997.502	11379.03	87.86
36	1701814-03 CH-AT-1RW110-1117 0.24886	171207G3_	Analyte	28.7	4.73	9624.115	9624.115	11379.03	84.58
37	1701814-04 CH-AT-1FB110-1117 0.24932	171207G3_	Analyte	28.7	4.74	9882.266	9882.266	11379.03	86.85
38	1701814-05 CH-AT-1RW111-1117 0.24827	171207G3_	Analyte	28.7	4.73	10704.49	10704.49	11379.03	94.07
39	1701814-06 CH-AT-1FB111-1117 0.2532	171207G3_	Analyte	28.7	4.73	9627.133	9627.133	11379.03	84.60
40	1701814-07 CH-AT-1RW112-1117 0.25353	171207G3_	Analyte	28.7	4.73	10692.3	10692.3	11379.03	93.96
41	1701814-08 CH-AT-1FB112-1117 0.262	171207G3_	Analyte	28.7	4.74	9348.494	9348.494	11379.03	82.16
42	1701814-09 CH-AT-1RW107-1117 0.26323	171207G3_	Analyte	28.7	4.74	10485.2	10485.2	11379.03	92.14
43	1701814-10 CH-AT-1FB107-1117 0.26258	171207G3_	Analyte	28.7	4.73	9883.447	9883.447	11379.03	86.86
44	1701814-11 CH-AT-1RW108-1117 0.25898	171207G3_	Analyte	28.7	4.73	9600.3	9600.3	11379.03	84.37
45	1701814-12 CH-AT-1FB108-1117 0.25727	171207G3_	Analyte	28.7	4.73	10877.11	10877.11	11379.03	95.59
46	IPA	171207G3_	Analyte	28.7				11379.03	0.00
47	B7L0016-BS1 LFB 0.25	171207G3_	Analyte	28.7	4.73	9312.42	9312.42	11379.03	81.84
48	B7L0016-BSD1 LFBD 0.25	171207G3_	Analyte	28.7	4.73	9072.752	9072.752	11379.03	79.73
49	B7L0016-BLK1 LRB 0.25	171207G3_	Analyte	28.7	4.73	9805.952	9805.952	11379.03	86.18
50	1701813-01 CH-AT-2RW20-1117 0.25836	171207G3_	Analyte	28.7	4.73	9398.167	9398.167	11379.03	82.59
51	1701813-02 CH-AT-2FB20-1117 0.2625	171207G3_	Analyte	28.7	4.73	10054.08	10054.08	11379.03	88.36
52	1701813-03 CH-AT-2RW21-1117 0.25745	171207G3_	Analyte	28.7	4.73	10212.46	10212.46	11379.03	89.75
53	1701813-04 CH-AT-2FB21-1117 0.25393	171207G3_	Analyte	28.7	4.73	9620.399	9620.399	11379.03	84.54
54	1701813-05 CH-AT-2RW22-1117 0.25543	171207G3_	Analyte	28.7	4.73	9572.242	9572.242	11379.03	84.12
55	1701813-06 CH-AT-2FB22-1117 0.25226	171207G3_	Analyte	28.7	4.74	9707.207	9707.207	11379.03	85.31
56	1701813-07 CH-AT-2RW23-1117 0.25821	171207G3_	Analyte	28.7	4.73	10145.85	10145.85	11379.03	89.16
57	1701813-08 CH-AT-2FB23-1117 0.24936	171207G3_	Analyte	28.7	4.74	10387.99	10387.99	11379.03	91.29
58	IPA	171207G3_	Analyte	28.7				11379.03	0.00
59	ST171207G3-3 PFC CS5 537 17K3029	171207G3_	Analyte	28.7	4.73	10464.51	10464.51	11379.03	91.96
60	IPA	171207G3_	Analyte	28.7				11379.03	0.00

Ccal

Compound 6: 13C2-PFOA ST171207G3-1 PFC CS-1 537 17K3024

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	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area%
1	ST171207G3-1 PFC CS-1 537 17K3024	171207G3_	Analyte	10	4.33	12885.36	12885.36	12885.36	100.00
2	IPA	171207G3_	Analyte	10				12885.36	0.00
3	B7L0015-BS1 LFB 0.25	171207G3_	Analyte	10	4.33	9583.238	9583.238	12885.36	74.37
4	B7L0015-BLK1 LRB 0.25	171207G3_	Analyte	10	4.33	9197.732	9197.732	12885.36	71.38
5	B7L0015-MS1 LFSM 0.24696	171207G3_	Analyte	10	4.32	9622.813	9622.813	12885.36	74.68
6	B7L0015-MSD1 LFSMD 0.25064	171207G3_	Analyte	10	4.33	9265.601	9265.601	12885.36	71.91
7	1701807-01 CH-AT-1RW94-1117 0.24509	171207G3_	Analyte	10	4.33	9776.346	9776.346	12885.36	75.87
8	1701807-02 CH-AT-1FB94-1117 0.24508	171207G3_	Analyte	10	4.32	8725.691	8725.691	12885.36	67.72
9	1701807-03 CH-AT-1RW95-1117 0.25193	171207G3_	Analyte	10	4.32	9033.678	9033.678	12885.36	70.11
10	1701807-04 CH-AT-1FB95-1117 0.25155	171207G3_	Analyte	10	4.32	8827.292	8827.292	12885.36	68.51
11	1701807-05 CH-AT-1RW96-1117 0.24236	171207G3_	Analyte	10	4.33	8980.292	8980.292	12885.36	69.69
12	1701807-06 CH-AT-1FB96-1117 0.24957	171207G3_	Analyte	10	4.32	10279.1	10279.1	12885.36	79.77
13	1701807-07 CH-AT-1RW97-1117 0.24262	171207G3_	Analyte	10	4.32	9227.577	9227.577	12885.36	71.61
14	1701807-08 CH-AT-1FB97-1117 0.24757	171207G3_	Analyte	10	4.33	9119.604	9119.604	12885.36	70.77
15	1701826-01 CH-AT-2RW40-1217 0.24324	171207G3_	Analyte	10	4.32	9289.931	9289.931	12885.36	72.10
16	1701826-02 CH-AT-2FB40-1217 0.24836	171207G3_	Analyte	10	4.32	8111.358	8111.358	12885.36	62.95
17	1701826-03 CH-AT-1RW115-1217 0.23578	171207G3_	Analyte	10	4.32	8629.051	8629.051	12885.36	66.97
18	1701826-04 CH-AT-1FB115-1217 0.25059	171207G3_	Analyte	10	4.32	9285.475	9285.475	12885.36	72.06
19	1701826-05 CH-AT-2RW41-1217 0.2433	171207G3_	Analyte	10	4.32	9547.839	9547.839	12885.36	74.10
20	1701826-06 CH-AT-2FB41-1217 0.23928	171207G3_	Analyte	10	4.32	9623.723	9623.723	12885.36	74.69
21	1701826-07 CH-AT-2RW39-1217 0.2471	171207G3_	Analyte	10	4.32	9798.919	9798.919	12885.36	76.05
22	1701826-08 CH-AT-2FB39-1217 0.25321	171207G3_	Analyte	10	4.32	9135.841	9135.841	12885.36	70.90
23	1701826-09 CH-AT-1RW114-1217 0.23828	171207G3_	Analyte	10	4.33	9384.96	9384.96	12885.36	72.83
24	1701826-10 CH-AT-1FB114-1217 0.25812	171207G3_	Analyte	10	4.33	8627.353	8627.353	12885.36	66.95
25	1701826-11 CH-AT-1RW113-1217 0.25187	171207G3_	Analyte	10	4.32	10013.83	10013.83	12885.36	77.71
26	1701826-12 CH-AT-1FB113-1217 0.252	171207G3_	Analyte	10	4.33	9343.38	9343.38	12885.36	72.51
27	IPA	171207G3_	Analyte	10				12885.36	0.00
28	ST171207G3-2 PFC CS3 17K3027	171207G3_	Analyte	10	4.33	10795.81	10795.81	12885.36	83.78

ST171207G3-2 PFC CS3 17K3027

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area%
28	ST171207G3-2 PFC CS3 17K3027	171207G3_	Analyte	10	4.33	10795.81	10795.81	10795.81	100.00

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29	IPA	171207G3_	Analyte	10				10795.81	0.00
30	B7L0025-BS1 LFB 0.25	171207G3_	Analyte	10	4.33	9831.949	9831.949	10795.81	91.07
31	B7L0025-BLK1 LRB 0.25	171207G3_	Analyte	10	4.33	8969.35	8969.35	10795.81	83.08
32	B7L0025-MS1 LFSM 0.24324	171207G3_	Analyte	10	4.33	8630.11	8630.11	10795.81	79.94
33	B7L0025-MSD1 LFSMD 0.25571	171207G3_	Analyte	10	4.33	9645.423	9645.423	10795.81	89.34
34	1701814-01 CH-AT-1RW109-1117 0.24963	171207G3_	Analyte	10	4.33	9574.236	9574.236	10795.81	88.68
35	1701814-02 CH-AT-1FB109-1117 0.25812	171207G3_	Analyte	10	4.33	10808.15	10808.15	10795.81	100.11
36	1701814-03 CH-AT-1RW110-1117 0.24886	171207G3_	Analyte	10	4.33	9586.044	9586.044	10795.81	88.79
37	1701814-04 CH-AT-1FB110-1117 0.24932	171207G3_	Analyte	10	4.33	9955.102	9955.102	10795.81	92.21
38	1701814-05 CH-AT-1RW111-1117 0.24827	171207G3_	Analyte	10	4.33	9818.604	9818.604	10795.81	90.95
39	1701814-06 CH-AT-1FB111-1117 0.2532	171207G3_	Analyte	10	4.33	9058.298	9058.298	10795.81	83.91
40	1701814-07 CH-AT-1RW112-1117 0.25353	171207G3_	Analyte	10	4.33	9091.133	9091.133	10795.81	84.21
41	1701814-08 CH-AT-1FB112-1117 0.262	171207G3_	Analyte	10	4.33	9752.02	9752.02	10795.81	90.33
42	1701814-09 CH-AT-1RW107-1117 0.26323	171207G3_	Analyte	10	4.33	9503.17	9503.17	10795.81	88.03
43	1701814-10 CH-AT-1FB107-1117 0.26258	171207G3_	Analyte	10	4.33	9725.189	9725.189	10795.81	90.08
44	1701814-11 CH-AT-1RW108-1117 0.25898	171207G3_	Analyte	10	4.32	9870.169	9870.169	10795.81	91.43
45	1701814-12 CH-AT-1FB108-1117 0.25727	171207G3_	Analyte	10	4.33	8884.244	8884.244	10795.81	82.29
46	IPA	171207G3_	Analyte	10	4.32	6.233	6.233	10795.81	0.06
47	B7L0016-BS1 LFB 0.25	171207G3_	Analyte	10	4.33	9704.101	9704.101	10795.81	89.89
48	B7L0016-BSD1 LFBD 0.25	171207G3_	Analyte	10	4.33	9055.565	9055.565	10795.81	83.88
49	B7L0016-BLK1 LRB 0.25	171207G3_	Analyte	10	4.32	9162.609	9162.609	10795.81	84.87
50	1701813-01 CH-AT-2RW20-1117 0.25836	171207G3_	Analyte	10	4.32	8643.122	8643.122	10795.81	80.06
51	1701813-02 CH-AT-2FB20-1117 0.2625	171207G3_	Analyte	10	4.32	9319.82	9319.82	10795.81	86.33
52	1701813-03 CH-AT-2RW21-1117 0.25745	171207G3_	Analyte	10	4.32	9469.031	9469.031	10795.81	87.71
53	1701813-04 CH-AT-2FB21-1117 0.25393	171207G3_	Analyte	10	4.32	9719.193	9719.193	10795.81	90.03
54	1701813-05 CH-AT-2RW22-1117 0.25543	171207G3_	Analyte	10	4.32	10031.35	10031.35	10795.81	92.92
55	1701813-06 CH-AT-2FB22-1117 0.25226	171207G3_	Analyte	10	4.33	9373.374	9373.374	10795.81	86.82
56	1701813-07 CH-AT-2RW23-1117 0.25821	171207G3_	Analyte	10	4.32	9521.089	9521.089	10795.81	88.19
57	1701813-08 CH-AT-2FB23-1117 0.24936	171207G3_	Analyte	10	4.32	9222.847	9222.847	10795.81	85.43
58	IPA	171207G3_	Analyte	10				10795.81	0.00
59	ST171207G3-3 PFC CS5 537 17K3029	171207G3_	Analyte	10	4.32	11546.32	11546.32	10795.81	106.95
60	IPA	171207G3_	Analyte	10				10795.81	0.00

Compound 7: 13C4-PFOS

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ST171207G3-1 PFC CS-1 537 17K3024

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area %
1	ST171207G3-1 PFC CS-1 537 17K3024	171207G3_	Analyte	28.7	4.73	14224.38	14224.38	14224.38	100.00
2	IPA	171207G3_	Analyte	28.7				14224.38	0.00
3	B7L0015-BS1 LFB 0.25	171207G3_	Analyte	28.7	4.73	10082.32	10082.32	14224.38	70.88
4	B7L0015-BLK1 LRB 0.25	171207G3_	Analyte	28.7	4.73	9285.92	9285.92	14224.38	65.28
5	B7L0015-MS1 LFSM 0.24696	171207G3_	Analyte	28.7	4.73	10850.02	10850.02	14224.38	76.28
6	B7L0015-MSD1 LFSMD 0.25064	171207G3_	Analyte	28.7	4.73	9616.275	9616.275	14224.38	67.60
7	1701807-01 CH-AT-1RW94-1117 0.24509	171207G3_	Analyte	28.7	4.74	10308.69	10308.69	14224.38	72.47
8	1701807-02 CH-AT-1FB94-1117 0.24508	171207G3_	Analyte	28.7	4.74	9347.48	9347.48	14224.38	65.71
9	1701807-03 CH-AT-1RW95-1117 0.25193	171207G3_	Analyte	28.7	4.73	10137.02	10137.02	14224.38	71.27
10	1701807-04 CH-AT-1FB95-1117 0.25155	171207G3_	Analyte	28.7	4.73	10377.24	10377.24	14224.38	72.95
11	1701807-05 CH-AT-1RW96-1117 0.24236	171207G3_	Analyte	28.7	4.73	9394.615	9394.615	14224.38	66.05
12	1701807-06 CH-AT-1FB96-1117 0.24957	171207G3_	Analyte	28.7	4.73	10136.2	10136.2	14224.38	71.26
13	1701807-07 CH-AT-1RW97-1117 0.24262	171207G3_	Analyte	28.7	4.73	10734.53	10734.53	14224.38	75.47
14	1701807-08 CH-AT-1FB97-1117 0.24757	171207G3_	Analyte	28.7	4.73	9549.839	9549.839	14224.38	67.14
15	1701826-01 CH-AT-2RW40-1217 0.24324	171207G3_	Analyte	28.7	4.73	10068.19	10068.19	14224.38	70.78
16	1701826-02 CH-AT-2FB40-1217 0.24836	171207G3_	Analyte	28.7	4.73	9359.739	9359.739	14224.38	65.80
17	1701826-03 CH-AT-1RW115-1217 0.23578	171207G3_	Analyte	28.7	4.73	9438.006	9438.006	14224.38	66.35
18	1701826-04 CH-AT-1FB115-1217 0.25059	171207G3_	Analyte	28.7	4.73	10093.32	10093.32	14224.38	70.96
19	1701826-05 CH-AT-2RW41-1217 0.2433	171207G3_	Analyte	28.7	4.73	10126.32	10126.32	14224.38	71.19
20	1701826-06 CH-AT-2FB41-1217 0.23928	171207G3_	Analyte	28.7	4.73	9822.364	9822.364	14224.38	69.05
21	1701826-07 CH-AT-2RW39-1217 0.2471	171207G3_	Analyte	28.7	4.73	10131.71	10131.71	14224.38	71.23
22	1701826-08 CH-AT-2FB39-1217 0.25321	171207G3_	Analyte	28.7	4.73	10091.7	10091.7	14224.38	70.95
23	1701826-09 CH-AT-1RW114-1217 0.23828	171207G3_	Analyte	28.7	4.74	9812.958	9812.958	14224.38	68.99
24	1701826-10 CH-AT-1FB114-1217 0.25812	171207G3_	Analyte	28.7	4.73	9066.185	9066.185	14224.38	63.74
25	1701826-11 CH-AT-1RW113-1217 0.25187	171207G3_	Analyte	28.7	4.73	10034.41	10034.41	14224.38	70.54
26	1701826-12 CH-AT-1FB113-1217 0.252	171207G3_	Analyte	28.7	4.73	9830.374	9830.374	14224.38	69.11
27	IPA	171207G3_	Analyte	28.7				14224.38	0.00
28	ST171207G3-2 PFC CS3 17K3027	171207G3_	Analyte	28.7	4.73	10876.77	10876.77	14224.38	76.47

ST171207G3-2 PFC CS3 17K3027

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area %
28	ST171207G3-2 PFC CS3 17K3027	171207G3_	Analyte	28.7	4.73	10876.77	10876.77	10876.77	100.00

GM 12/8/17

29	IPA	171207G3_	Analyte	28.7				10876.77	0.00
30	B7L0025-BS1 LFB 0.25	171207G3_	Analyte	28.7	4.73	9881.715	9881.715	10876.77	90.85
31	B7L0025-BLK1 LRB 0.25	171207G3_	Analyte	28.7	4.73	9023.005	9023.005	10876.77	82.96
32	B7L0025-MS1 LFSM 0.24324	171207G3_	Analyte	28.7	4.73	8871.453	8871.453	10876.77	81.56
33	B7L0025-MSD1 LFSMD 0.25571	171207G3_	Analyte	28.7	4.73	10228.98	10228.98	10876.77	94.04
34	1701814-01 CH-AT-1RW109-1117 0.24963	171207G3_	Analyte	28.7	4.73	10051.86	10051.86	10876.77	92.42
35	1701814-02 CH-AT-1FB109-1117 0.25812	171207G3_	Analyte	28.7	4.73	9997.502	9997.502	10876.77	91.92
36	1701814-03 CH-AT-1RW110-1117 0.24886	171207G3_	Analyte	28.7	4.73	9624.115	9624.115	10876.77	88.48
37	1701814-04 CH-AT-1FB110-1117 0.24932	171207G3_	Analyte	28.7	4.74	9882.266	9882.266	10876.77	90.86
38	1701814-05 CH-AT-1RW111-1117 0.24827	171207G3_	Analyte	28.7	4.73	10704.49	10704.49	10876.77	98.42
39	1701814-06 CH-AT-1FB111-1117 0.2532	171207G3_	Analyte	28.7	4.73	9627.133	9627.133	10876.77	88.51
40	1701814-07 CH-AT-1RW112-1117 0.25353	171207G3_	Analyte	28.7	4.73	10692.3	10692.3	10876.77	98.30
41	1701814-08 CH-AT-1FB112-1117 0.262	171207G3_	Analyte	28.7	4.74	9348.494	9348.494	10876.77	85.95
42	1701814-09 CH-AT-1RW107-1117 0.26323	171207G3_	Analyte	28.7	4.74	10485.2	10485.2	10876.77	96.40
43	1701814-10 CH-AT-1FB107-1117 0.26258	171207G3_	Analyte	28.7	4.73	9883.447	9883.447	10876.77	90.87
44	1701814-11 CH-AT-1RW108-1117 0.25898	171207G3_	Analyte	28.7	4.73	9600.3	9600.3	10876.77	88.26
45	1701814-12 CH-AT-1FB108-1117 0.25727	171207G3_	Analyte	28.7	4.73	10877.11	10877.11	10876.77	100.00
46	IPA	171207G3_	Analyte	28.7				10876.77	0.00
47	B7L0016-BS1 LFB 0.25	171207G3_	Analyte	28.7	4.73	9312.42	9312.42	10876.77	85.62
48	B7L0016-BSD1 LFBD 0.25	171207G3_	Analyte	28.7	4.73	9072.752	9072.752	10876.77	83.41
49	B7L0016-BLK1 LRB 0.25	171207G3_	Analyte	28.7	4.73	9805.952	9805.952	10876.77	90.16
50	1701813-01 CH-AT-2RW20-1117 0.25836	171207G3_	Analyte	28.7	4.73	9398.167	9398.167	10876.77	86.41
51	1701813-02 CH-AT-2FB20-1117 0.2625	171207G3_	Analyte	28.7	4.73	10054.08	10054.08	10876.77	92.44
52	1701813-03 CH-AT-2RW21-1117 0.25745	171207G3_	Analyte	28.7	4.73	10212.46	10212.46	10876.77	93.89
53	1701813-04 CH-AT-2FB21-1117 0.25393	171207G3_	Analyte	28.7	4.73	9620.399	9620.399	10876.77	88.45
54	1701813-05 CH-AT-2RW22-1117 0.25543	171207G3_	Analyte	28.7	4.73	9572.242	9572.242	10876.77	88.01
55	1701813-06 CH-AT-2FB22-1117 0.25226	171207G3_	Analyte	28.7	4.74	9707.207	9707.207	10876.77	89.25
56	1701813-07 CH-AT-2RW23-1117 0.25821	171207G3_	Analyte	28.7	4.73	10145.85	10145.85	10876.77	93.28
57	1701813-08 CH-AT-2FB23-1117 0.24936	171207G3_	Analyte	28.7	4.74	10387.99	10387.99	10876.77	95.51
58	IPA	171207G3_	Analyte	28.7				10876.77	0.00
59	ST171207G3-3 PFC CS5 537 17K3029	171207G3_	Analyte	28.7	4.73	10464.51	10464.51	10876.77	96.21
60	IPA	171207G3_	Analyte	28.7				10876.77	0.00

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Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-2.qld

Last Altered: Friday, December 08, 2017 09:53:27 Pacific Standard Time
Printed: Friday, December 08, 2017 09:57:55 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_2, Date: 07-Dec-2017, Time: 14:24:26, ID: ST171207G3-1 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	6.87e2	1.44e4		1.0000	3.03	3.02	1.37	1.42	80.1
2	2	PFOA	413 > 368.7	2.14e3	1.30e4		1.0000	4.33	4.33	1.65	2.13	106.6
3	3	PFOS	499 >79.9	1.02e3	1.44e4		1.0000	4.73	4.74	2.04	1.53	82.4
4	4	13C2-PFHxA	315 > 269.8	5.69e3	1.30e4	0.424	1.0000	3.39	3.38	4.38	10.3	103.4
5	5	13C2-PFDA	515.1 > 469.9	6.66e3	1.30e4	0.478	1.0000	4.96	4.97	5.13	10.7	107.2
6	6	13C2-PFOA	414.9 > 369.7	1.30e4	1.30e4	1.000	1.0000	4.41	4.33	10.0	10.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.44e4	1.44e4	1.000	1.0000	4.81	4.73	28.7	28.7	100.0

70-130

dm 12/8/17

VJA 12/08/2017

LC Calibration Standards Review Checklist Q1

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	????? NA
Calibration ID: ST171207G3-3/1 (Am 12/8/17)	(L) M H	☑	☑	☑	☑	☑	☑	☐
Calibration ID: -2	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID: -3	L M (H)	☑	☑ (A)	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/5/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: JA - 12/08/2017
Initials/Date

Comments: DW L3
(A) PFBS, PFOA >130%.

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, December 08, 2017 10:12:58 Pacific Standard Time
Printed: Friday, December 08, 2017 10:14:59 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	171207G3_1	IPA	07-Dec-17	14:11:58
2	171207G3_2	ST171207G3-1 PFC CS-1 537 17K3024	07-Dec-17	14:24:26
3	171207G3_3	IPA	07-Dec-17	14:36:50
4	171207G3_4	B7L0015-BS1 LFB 0.25	07-Dec-17	14:49:20
5	171207G3_5	B7L0015-BLK1 LRB 0.25	07-Dec-17	15:01:46
6	171207G3_6	B7L0015-MS1 LFSM 0.24696	07-Dec-17	15:14:14
7	171207G3_7	B7L0015-MSD1 LFSMD 0.25064	07-Dec-17	15:26:41
8	171207G3_8	1701807-01 CH-AT-1RW94-1117 0.24509	07-Dec-17	15:39:08
9	171207G3_9	1701807-02 CH-AT-1FB94-1117 0.24508	07-Dec-17	15:51:37
10	171207G3_10	1701807-03 CH-AT-1RW95-1117 0.25193	07-Dec-17	16:04:02
11	171207G3_11	1701807-04 CH-AT-1FB95-1117 0.25155	07-Dec-17	16:16:26
12	171207G3_12	1701807-05 CH-AT-1RW96-1117 0.24236	07-Dec-17	16:29:04
13	171207G3_13	1701807-06 CH-AT-1FB96-1117 0.24957	07-Dec-17	16:41:30
14	171207G3_14	1701807-07 CH-AT-1RW97-1117 0.24262	07-Dec-17	16:53:56
15	171207G3_15	1701807-08 CH-AT-1FB97-1117 0.24757	07-Dec-17	17:06:26
16	171207G3_16	1701826-01 CH-AT-2RW40-1217 0.24324	07-Dec-17	17:18:54
17	171207G3_17	1701826-02 CH-AT-2FB40-1217 0.24836	07-Dec-17	17:31:22
18	171207G3_18	1701826-03 CH-AT-1RW115-1217 0.23578	07-Dec-17	17:43:46
19	171207G3_19	1701826-04 CH-AT-1FB115-1217 0.25059	07-Dec-17	17:56:10
20	171207G3_20	1701826-05 CH-AT-2RW41-1217 0.2433	07-Dec-17	18:08:35
21	171207G3_21	1701826-06 CH-AT-2FB41-1217 0.23928	07-Dec-17	18:21:01
22	171207G3_22	1701826-07 CH-AT-2RW39-1217 0.2471	07-Dec-17	18:33:26
23	171207G3_23	1701826-08 CH-AT-2FB39-1217 0.25321	07-Dec-17	18:45:53
24	171207G3_24	1701826-09 CH-AT-1RW114-1217 0.23828	07-Dec-17	18:58:20
25	171207G3_25	1701826-10 CH-AT-1FB114-1217 0.25812	07-Dec-17	19:10:48
26	171207G3_26	1701826-11 CH-AT-1RW113-1217 0.25187	07-Dec-17	19:23:11
27	171207G3_27	1701826-12 CH-AT-1FB113-1217 0.252	07-Dec-17	19:35:34
28	171207G3_28	IPA	07-Dec-17	19:47:59
29	171207G3_29	ST171207G3-2 PFC CS3 17K3027	07-Dec-17	20:00:25
30	171207G3_30	IPA	07-Dec-17	20:12:51
31	171207G3_31	B7L0025-BS1 LFB 0.25	07-Dec-17	20:25:20

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, December 08, 2017 10:12:58 Pacific Standard Time
Printed: Friday, December 08, 2017 10:14:59 Pacific Standard Time

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
32	171207G3_32	B7L0025-BLK1 LRB 0.25	07-Dec-17	20:37:45
33	171207G3_33	B7L0025-MS1 LFSM 0.24324	07-Dec-17	20:50:11
34	171207G3_34	B7L0025-MSD1 LFSMD 0.25571	07-Dec-17	21:02:37
35	171207G3_35	1701814-01 CH-AT-1RW109-1117 0.24963	07-Dec-17	21:15:04
36	171207G3_36	1701814-02 CH-AT-1FB109-1117 0.25812	07-Dec-17	21:27:30
37	171207G3_37	1701814-03 CH-AT-1RW110-1117 0.24886	07-Dec-17	21:39:54
38	171207G3_38	1701814-04 CH-AT-1FB110-1117 0.24932	07-Dec-17	21:52:18
39	171207G3_39	1701814-05 CH-AT-1RW111-1117 0.24827	07-Dec-17	22:04:43
40	171207G3_40	1701814-06 CH-AT-1FB111-1117 0.2532	07-Dec-17	22:17:09
41	171207G3_41	1701814-07 CH-AT-1RW112-1117 0.25353	07-Dec-17	22:29:34
42	171207G3_42	1701814-08 CH-AT-1FB112-1117 0.262	07-Dec-17	22:41:59
43	171207G3_43	1701814-09 CH-AT-1RW107-1117 0.26323	07-Dec-17	22:54:26
44	171207G3_44	1701814-10 CH-AT-1FB107-1117 0.26258	07-Dec-17	23:06:54
45	171207G3_45	1701814-11 CH-AT-1RW108-1117 0.25898	07-Dec-17	23:19:18
46	171207G3_46	1701814-12 CH-AT-1FB108-1117 0.25727	07-Dec-17	23:31:42
47	171207G3_47	IPA	07-Dec-17	23:44:07
48	171207G3_48	B7L0016-BS1 LFB 0.25	07-Dec-17	23:56:35
49	171207G3_49	B7L0016-BSD1 LFBD 0.25	08-Dec-17	00:09:00
50	171207G3_50	B7L0016-BLK1 LRB 0.25	08-Dec-17	00:21:26
51	171207G3_51	1701813-01 CH-AT-2RW20-1117 0.25836	08-Dec-17	00:33:52
52	171207G3_52	1701813-02 CH-AT-2FB20-1117 0.2625	08-Dec-17	00:46:19
53	171207G3_53	1701813-03 CH-AT-2RW21-1117 0.25745	08-Dec-17	00:58:45
54	171207G3_54	1701813-04 CH-AT-2FB21-1117 0.25393	08-Dec-17	01:11:11
55	171207G3_55	1701813-05 CH-AT-2RW22-1117 0.25543	08-Dec-17	01:23:39
56	171207G3_59	1701813-06 CH-AT-2FB22-1117 0.25226	08-Dec-17	01:36:08
57	171207G3_60	1701813-07 CH-AT-2RW23-1117 0.25821	08-Dec-17	01:48:36
58	171207G3_61	1701813-08 CH-AT-2FB23-1117 0.24936	08-Dec-17	02:01:00
59	171207G3_56	IPA	08-Dec-17	02:13:25
60	171207G3_57	ST171207G3-3 PFC CS5 537 17K3029	08-Dec-17	02:26:08
61	171207G3_58	IPA	08-Dec-17	02:38:38

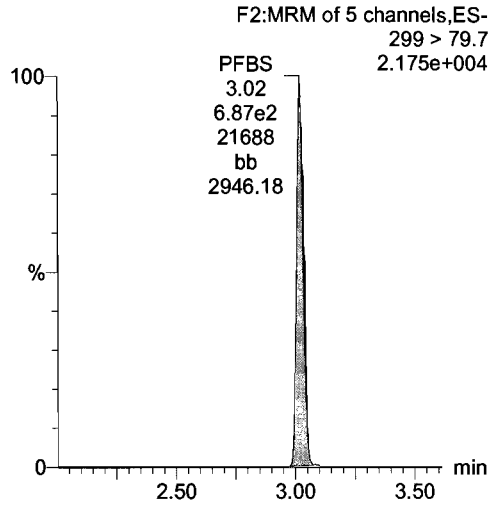
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-2.qld

Last Altered: Friday, December 08, 2017 09:53:27 Pacific Standard Time
Printed: Friday, December 08, 2017 09:57:55 Pacific Standard Time

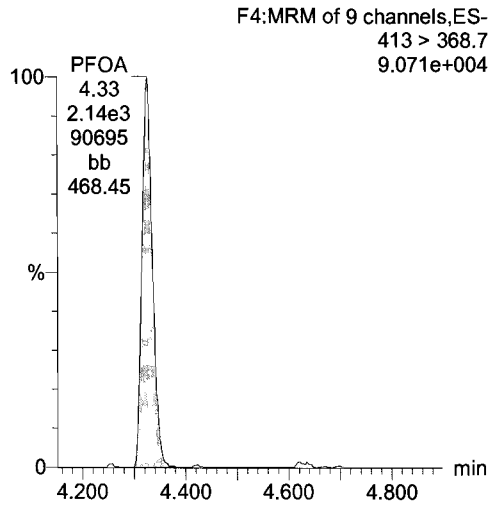
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_2, Date: 07-Dec-2017, Time: 14:24:26, ID: ST171207G3-1 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

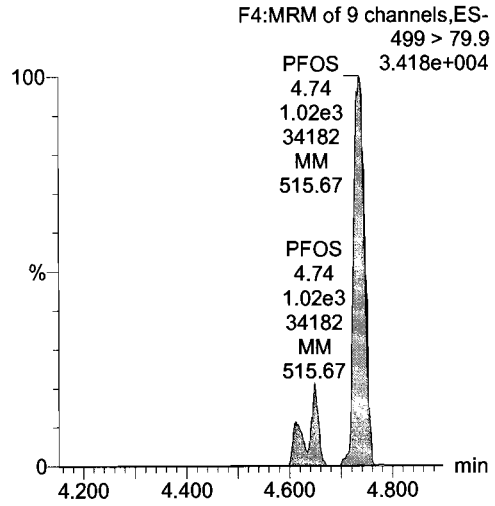
PFBS



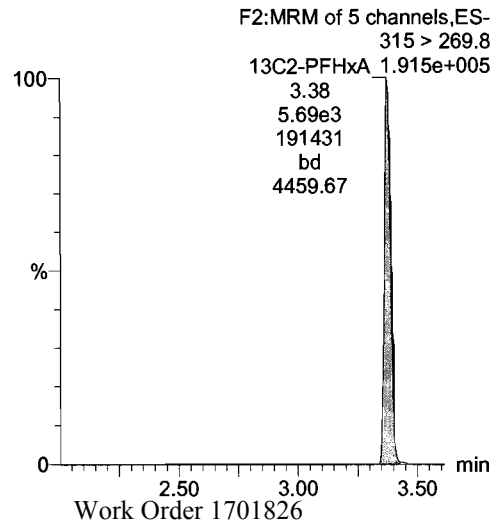
PFOA



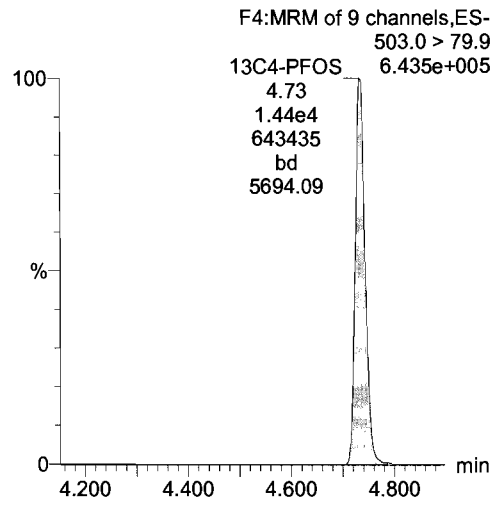
PFOS



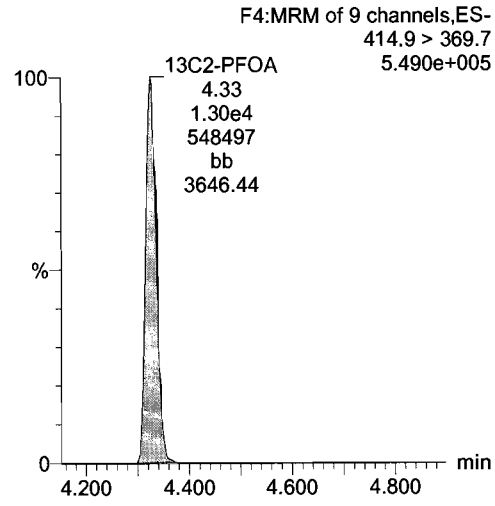
13C2-PFHxA



13C4-PFOS



13C2-PFOA

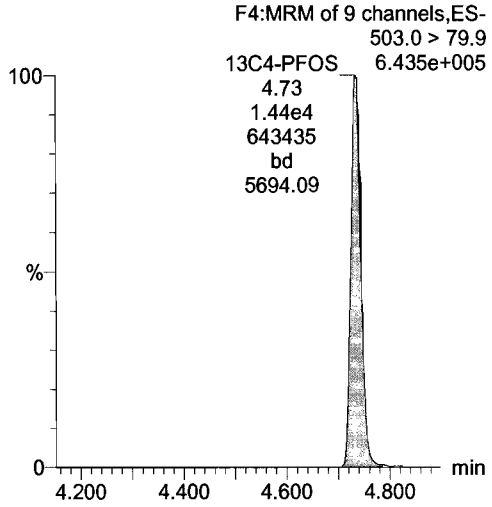


Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-2.qld

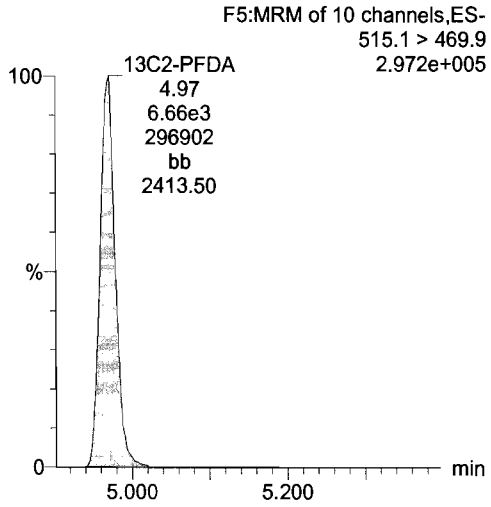
Last Altered: Friday, December 08, 2017 09:53:27 Pacific Standard Time
Printed: Friday, December 08, 2017 09:57:55 Pacific Standard Time

Name: 171207G3_2, Date: 07-Dec-2017, Time: 14:24:26, ID: ST171207G3-1 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-29.qld

Last Altered: Friday, December 08, 2017 09:58:42 Pacific Standard Time
Printed: Friday, December 08, 2017 09:58:54 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_29, Date: 07-Dec-2017, Time: 20:00:25, ID: ST171207G3-2 PFC CS3 17K3027, Description: PFC CS3 17K3027

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	1.43e4	1.09e4		1.0000	3.03	3.01	37.8	44.9	101.6
2	2	PFOA	413 > 368.7	4.41e4	1.08e4		1.0000	4.33	4.33	40.9	53.1	106.1
3	3	PFOS	499 >79.9	2.06e4	1.09e4		1.0000	4.73	4.74	54.4	45.8	99.1
4	4	13C2-PFHxA	315 > 269.8	4.53e3	1.08e4	0.424	1.0000	3.39	3.38	4.19	9.90	99.0
5	5	13C2-PFDA	515.1 > 469.9	5.40e3	1.08e4	0.478	1.0000	4.96	4.97	5.00	10.5	104.6
6	6	13C2-PFOA	414.9 > 369.7	1.08e4	1.08e4	1.000	1.0000	4.41	4.33	10.0	10.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.09e4	1.09e4	1.000	1.0000	4.81	4.73	28.7	28.7	100.0

70-130

dlm 12/9/17

JA 12/08/2017

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, December 08, 2017 10:12:58 Pacific Standard Time
Printed: Friday, December 08, 2017 10:14:59 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	171207G3_1	IPA	07-Dec-17	14:11:58
2	171207G3_2	ST171207G3-1 PFC CS-1 537 17K3024	07-Dec-17	14:24:26
3	171207G3_3	IPA	07-Dec-17	14:36:50
4	171207G3_4	B7L0015-BS1 LFB 0.25	07-Dec-17	14:49:20
5	171207G3_5	B7L0015-BLK1 LRB 0.25	07-Dec-17	15:01:46
6	171207G3_6	B7L0015-MS1 LFSM 0.24696	07-Dec-17	15:14:14
7	171207G3_7	B7L0015-MSD1 LFSMD 0.25064	07-Dec-17	15:26:41
8	171207G3_8	1701807-01 CH-AT-1RW94-1117 0.24509	07-Dec-17	15:39:08
9	171207G3_9	1701807-02 CH-AT-1FB94-1117 0.24508	07-Dec-17	15:51:37
10	171207G3_10	1701807-03 CH-AT-1RW95-1117 0.25193	07-Dec-17	16:04:02
11	171207G3_11	1701807-04 CH-AT-1FB95-1117 0.25155	07-Dec-17	16:16:26
12	171207G3_12	1701807-05 CH-AT-1RW96-1117 0.24236	07-Dec-17	16:29:04
13	171207G3_13	1701807-06 CH-AT-1FB96-1117 0.24957	07-Dec-17	16:41:30
14	171207G3_14	1701807-07 CH-AT-1RW97-1117 0.24262	07-Dec-17	16:53:56
15	171207G3_15	1701807-08 CH-AT-1FB97-1117 0.24757	07-Dec-17	17:06:26
16	171207G3_16	1701826-01 CH-AT-2RW40-1217 0.24324	07-Dec-17	17:18:54
17	171207G3_17	1701826-02 CH-AT-2FB40-1217 0.24836	07-Dec-17	17:31:22
18	171207G3_18	1701826-03 CH-AT-1RW115-1217 0.23578	07-Dec-17	17:43:46
19	171207G3_19	1701826-04 CH-AT-1FB115-1217 0.25059	07-Dec-17	17:56:10
20	171207G3_20	1701826-05 CH-AT-2RW41-1217 0.2433	07-Dec-17	18:08:35
21	171207G3_21	1701826-06 CH-AT-2FB41-1217 0.23928	07-Dec-17	18:21:01
22	171207G3_22	1701826-07 CH-AT-2RW39-1217 0.2471	07-Dec-17	18:33:26
23	171207G3_23	1701826-08 CH-AT-2FB39-1217 0.25321	07-Dec-17	18:45:53
24	171207G3_24	1701826-09 CH-AT-1RW114-1217 0.23828	07-Dec-17	18:58:20
25	171207G3_25	1701826-10 CH-AT-1FB114-1217 0.25812	07-Dec-17	19:10:48
26	171207G3_26	1701826-11 CH-AT-1RW113-1217 0.25187	07-Dec-17	19:23:11
27	171207G3_27	1701826-12 CH-AT-1FB113-1217 0.252	07-Dec-17	19:35:34
28	171207G3_28	IPA	07-Dec-17	19:47:59
29	171207G3_29	ST171207G3-2 PFC CS3 17K3027	07-Dec-17	20:00:25
30	171207G3_30	IPA	07-Dec-17	20:12:51
31	171207G3_31	B7L0025-BS1 LFB 0.25	07-Dec-17	20:25:20

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, December 08, 2017 10:12:58 Pacific Standard Time
Printed: Friday, December 08, 2017 10:14:59 Pacific Standard Time

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
32	171207G3_32	B7L0025-BLK1 LRB 0.25	07-Dec-17	20:37:45
33	171207G3_33	B7L0025-MS1 LFSM 0.24324	07-Dec-17	20:50:11
34	171207G3_34	B7L0025-MSD1 LFSMD 0.25571	07-Dec-17	21:02:37
35	171207G3_35	1701814-01 CH-AT-1RW109-1117 0.24963	07-Dec-17	21:15:04
36	171207G3_36	1701814-02 CH-AT-1FB109-1117 0.25812	07-Dec-17	21:27:30
37	171207G3_37	1701814-03 CH-AT-1RW110-1117 0.24886	07-Dec-17	21:39:54
38	171207G3_38	1701814-04 CH-AT-1FB110-1117 0.24932	07-Dec-17	21:52:18
39	171207G3_39	1701814-05 CH-AT-1RW111-1117 0.24827	07-Dec-17	22:04:43
40	171207G3_40	1701814-06 CH-AT-1FB111-1117 0.2532	07-Dec-17	22:17:09
41	171207G3_41	1701814-07 CH-AT-1RW112-1117 0.25353	07-Dec-17	22:29:34
42	171207G3_42	1701814-08 CH-AT-1FB112-1117 0.262	07-Dec-17	22:41:59
43	171207G3_43	1701814-09 CH-AT-1RW107-1117 0.26323	07-Dec-17	22:54:26
44	171207G3_44	1701814-10 CH-AT-1FB107-1117 0.26258	07-Dec-17	23:06:54
45	171207G3_45	1701814-11 CH-AT-1RW108-1117 0.25898	07-Dec-17	23:19:18
46	171207G3_46	1701814-12 CH-AT-1FB108-1117 0.25727	07-Dec-17	23:31:42
47	171207G3_47	IPA	07-Dec-17	23:44:07
48	171207G3_48	B7L0016-BS1 LFB 0.25	07-Dec-17	23:56:35
49	171207G3_49	B7L0016-BSD1 LFBD 0.25	08-Dec-17	00:09:00
50	171207G3_50	B7L0016-BLK1 LRB 0.25	08-Dec-17	00:21:26
51	171207G3_51	1701813-01 CH-AT-2RW20-1117 0.25836	08-Dec-17	00:33:52
52	171207G3_52	1701813-02 CH-AT-2FB20-1117 0.2625	08-Dec-17	00:46:19
53	171207G3_53	1701813-03 CH-AT-2RW21-1117 0.25745	08-Dec-17	00:58:45
54	171207G3_54	1701813-04 CH-AT-2FB21-1117 0.25393	08-Dec-17	01:11:11
55	171207G3_55	1701813-05 CH-AT-2RW22-1117 0.25543	08-Dec-17	01:23:39
56	171207G3_59	1701813-06 CH-AT-2FB22-1117 0.25226	08-Dec-17	01:36:08
57	171207G3_60	1701813-07 CH-AT-2RW23-1117 0.25821	08-Dec-17	01:48:36
58	171207G3_61	1701813-08 CH-AT-2FB23-1117 0.24936	08-Dec-17	02:01:00
59	171207G3_56	IPA	08-Dec-17	02:13:25
60	171207G3_57	ST171207G3-3 PFC CS5 537 17K3029	08-Dec-17	02:26:08
61	171207G3_58	IPA	08-Dec-17	02:38:38

Vista Analytical Laboratory

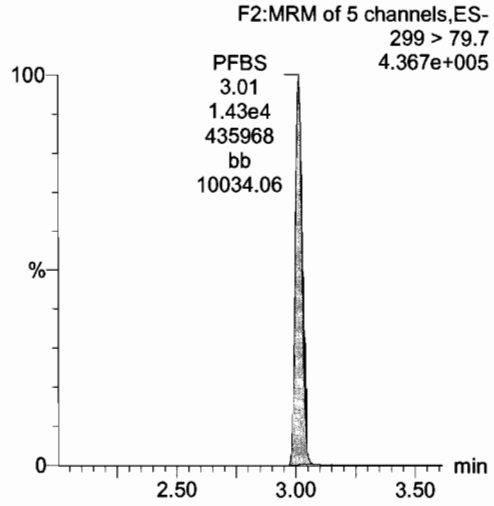
Dataset: U:\G1.PRO\Results\2017\171207G3\171207G1-29.qld

Last Altered: Friday, December 08, 2017 09:58:42 Pacific Standard Time
Printed: Friday, December 08, 2017 09:58:54 Pacific Standard Time

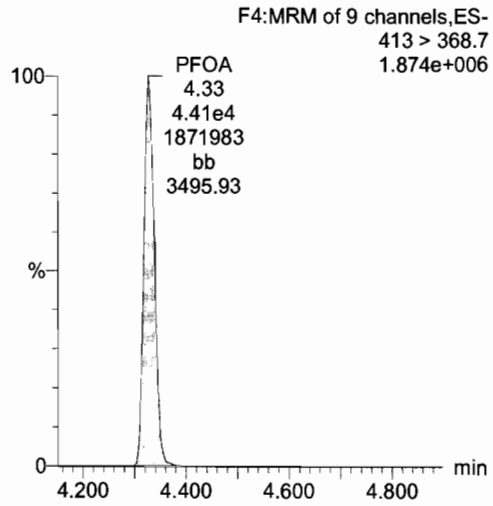
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171207G3_29, Date: 07-Dec-2017, Time: 20:00:25, ID: ST171207G3-2 PFC CS3 17K3027, Description: PFC CS3 17K3027

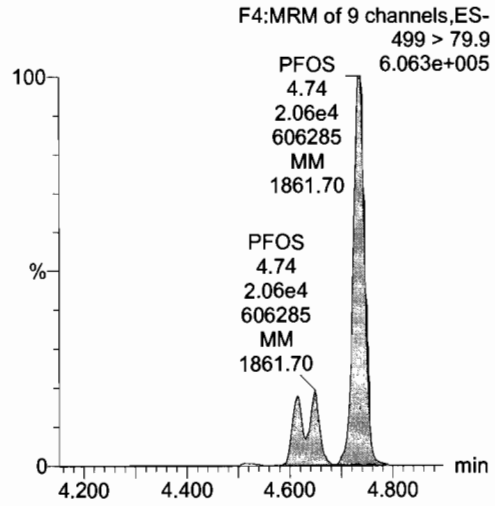
PFBS



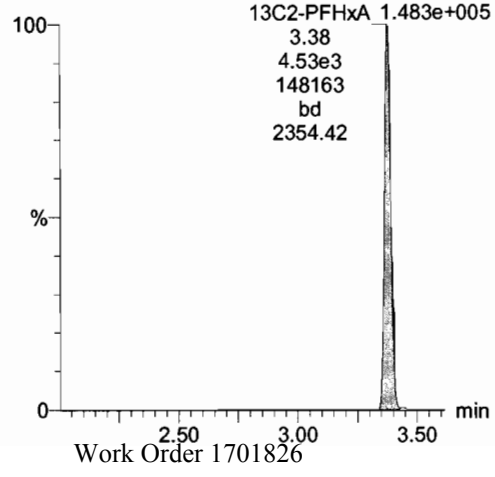
PFOA



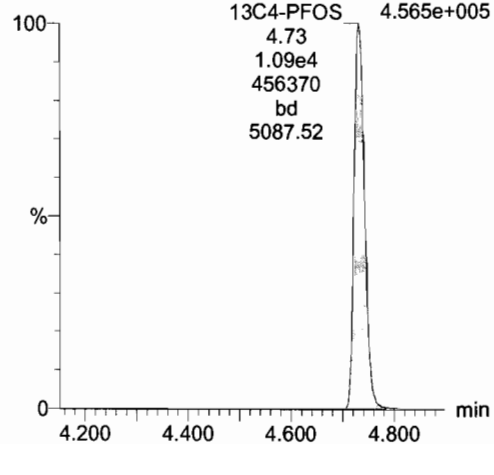
PFOS



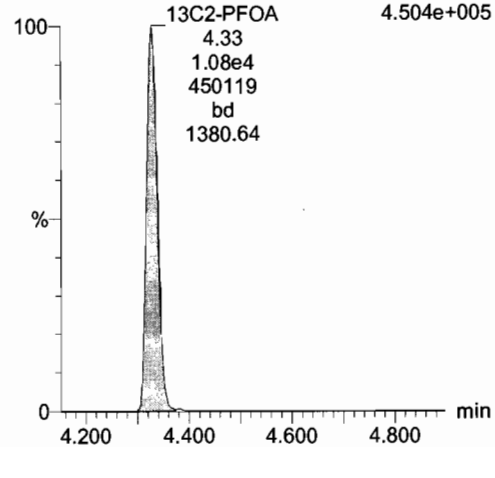
13C2-PFHxA



13C4-PFOS



13C2-PFOA



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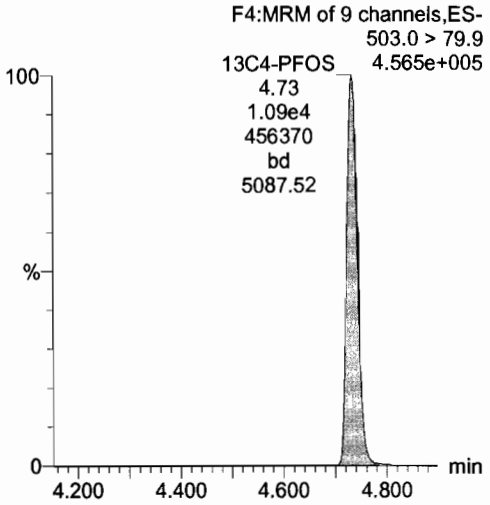
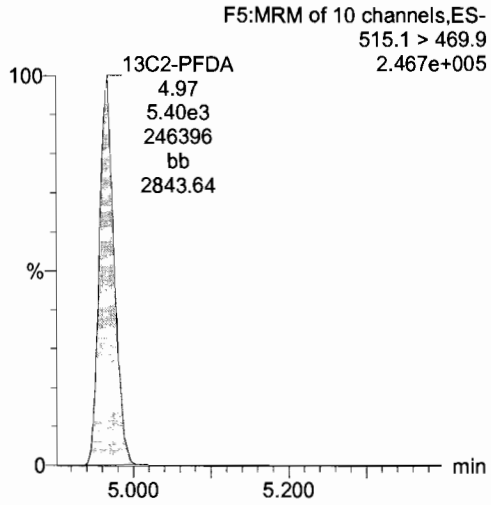
Last Altered: Friday, December 08, 2017 09:58:42 Pacific Standard Time
Printed: Friday, December 08, 2017 09:58:54 Pacific Standard Time

Name: 171207G3_29, Date: 07-Dec-2017, Time: 20:00:25, ID: ST171207G3-2 PFC CS3 17K3027, Description: PFC CS3 17K3027

13C4-PFOS



13C2-PFDA



IS Area

Ical

Compound 6: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ical Area	Area %
1	ST171208G1-1 PFC CS-1 537 17K3024	171208G1_	Analyte	10	4.31	12627.65	12627.65	11328.26	111.4704
2	IPA	171208G1_	Analyte	10	4.32	3.073	3.073	11328.26	0.027127
3	B7L0015-BLK1 LRB 0.25	171208G1_	Analyte	10	4.32	9138.599	9138.599	11328.26	80.67083
4	B7L0015-MSD1 LFSMD 0.25064	171208G1_	Analyte	10	4.32	8731.165	8731.165	11328.26	77.07421
5	1701807-02 CH-AT-1FB94-1117 0.24508	171208G1_	Analyte	10	4.32	9187.688	9187.688	11328.26	81.10416
6	1701807-04 CH-AT-1FB95-1117 0.25155	171208G1_	Analyte	10	4.32	10397.54	10397.54	11328.26	91.78411
7	1701807-05 CH-AT-1RW96-1117 0.24236	171208G1_	Analyte	10	4.32	9647.853	9647.853	11328.26	85.16626
8	1701807-08 CH-AT-1FB97-1117 0.24757	171208G1_	Analyte	10	4.32	9641.529	9641.529	11328.26	85.11043
9	1701826-02 CH-AT-2FB40-1217 0.24836	171208G1_	Analyte	10	4.32	9837.729	9837.729	11328.26	86.84238
10	1701826-03 CH-AT-1RW115-1217 0.23578	171208G1_	Analyte	10	4.32	9461.793	9461.793	11328.26	83.52382
11	1701826-06 CH-AT-2FB41-1217 0.23928	171208G1_	Analyte	10	4.32	9968.256	9968.256	11328.26	87.99461
12	1701826-09 CH-AT-1RW114-1217 0.23828	171208G1_	Analyte	10	4.32	9783.975	9783.975	11328.26	86.36787
13	1701826-10 CH-AT-1FB114-1217 0.25812	171208G1_	Analyte	10	4.32	9517.647	9517.647	11328.26	84.01687
14	1701826-12 CH-AT-1FB113-1217 0.252	171208G1_	Analyte	10	4.32	9469.968	9469.968	11328.26	83.59598
15	1701813-09 CH-AT-2RW24-1117 0.25492	171208G1_	Analyte	10	4.33	9098.896	9098.896	11328.26	80.32035
16	1701813-10 CH-AT-2FB24-1117 0.26256	171208G1_	Analyte	10	4.32	9099.724	9099.724	11328.26	80.32766
17	1701813-11 CH-AT-2RW25-1117 0.25755	171208G1_	Analyte	10	4.32	9430.05	9430.05	11328.26	83.24361
18	1701813-12 CH-AT-2FB25-1117 0.25959	171208G1_	Analyte	10	4.32	9429.335	9429.335	11328.26	83.23729
19	1701813-13 CH-AT-2RW26-1117 0.25763	171208G1_	Analyte	10	4.32	9282.278	9282.278	11328.26	81.93915
20	1701813-14 CH-AT-2FB26-1117 0.25837	171208G1_	Analyte	10	4.32	9703.113	9703.113	11328.26	85.65406
21	1701813-15 CH-AT-2RW27-1117 0.25746	171208G1_	Analyte	10	4.32	9555.123	9555.123	11328.26	84.34769
22	1701813-16 CH-AT-2FB27-1117 0.25485	171208G1_	Analyte	10	4.32	8856.009	8856.009	11328.26	78.17627
23	1701813-17 CH-AT-2RW28-1117 0.25423	171208G1_	Analyte	10	4.32	9233.376	9233.376	11328.26	81.50747
24	1701813-18 CH-AT-2FB28-1117 0.26414	171208G1_	Analyte	10	4.32	9201.825	9201.825	11328.26	81.22895
25	1701813-19 CH-AT-2RW29-1117 0.23697	171208G1_	Analyte	10	4.32	8897.581	8897.581	11328.26	78.54324
26	1701813-20 CH-AT-2FB29-1117 0.26487	171208G1_	Analyte	10	4.33	8700.753	8700.753	11328.26	76.80575
27	IPA	171208G1_	Analyte	10	4.21	0.572	0.572	11328.26	0.005049

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28	ST171208G1-2 PFC CS3 17K3027	171208G1_	Analyte	10	4.32	10921.65	10921.65	11328.26	96.41069

Compound 7: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ical Area	Area %
1	ST171208G1-1 PFC CS-1 537 17K3024	171208G1_	Analyte	28.7	4.73	12906.77	12906.77	11328.26	113.9343
2	IPA	171208G1_	Analyte	28.7	4.7	2.492	2.492	11328.26	0.021998
3	B7L0015-BLK1 LRB 0.25	171208G1_	Analyte	28.7	4.73	9169.549	9169.549	11328.26	80.94404
4	B7L0015-MSD1 LFSMD 0.25064	171208G1_	Analyte	28.7	4.73	10026.97	10026.97	11328.26	88.51293
5	1701807-02 CH-AT-1FB94-1117 0.24508	171208G1_	Analyte	28.7	4.73	9389.564	9389.564	11328.26	82.88622
6	1701807-04 CH-AT-1FB95-1117 0.25155	171208G1_	Analyte	28.7	4.73	11082.12	11082.12	11328.26	97.82726
7	1701807-05 CH-AT-1RW96-1117 0.24236	171208G1_	Analyte	28.7	4.73	10108.59	10108.59	11328.26	89.23341
8	1701807-08 CH-AT-1FB97-1117 0.24757	171208G1_	Analyte	28.7	4.73	10493.58	10493.58	11328.26	92.63191
9	1701826-02 CH-AT-2FB40-1217 0.24836	171208G1_	Analyte	28.7	4.73	10273.69	10273.69	11328.26	90.69083
10	1701826-03 CH-AT-1RW115-1217 0.23578	171208G1_	Analyte	28.7	4.73	10051.58	10051.58	11328.26	88.73014
11	1701826-06 CH-AT-2FB41-1217 0.23928	171208G1_	Analyte	28.7	4.73	9895.271	9895.271	11328.26	87.35034
12	1701826-09 CH-AT-1RW114-1217 0.23828	171208G1_	Analyte	28.7	4.73	11053.61	11053.61	11328.26	97.57554
13	1701826-10 CH-AT-1FB114-1217 0.25812	171208G1_	Analyte	28.7	4.73	10120.03	10120.03	11328.26	89.33443
14	1701826-12 CH-AT-1FB113-1217 0.252	171208G1_	Analyte	28.7	4.73	10792.6	10792.6	11328.26	95.2715
15	1701813-09 CH-AT-2RW24-1117 0.25492	171208G1_	Analyte	28.7	4.73	10228.03	10228.03	11328.26	90.28776
16	1701813-10 CH-AT-2FB24-1117 0.26256	171208G1_	Analyte	28.7	4.73	8833.352	8833.352	11328.26	77.97626
17	1701813-11 CH-AT-2RW25-1117 0.25755	171208G1_	Analyte	28.7	4.73	10453.59	10453.59	11328.26	92.27889
18	1701813-12 CH-AT-2FB25-1117 0.25959	171208G1_	Analyte	28.7	4.73	9192.003	9192.003	11328.26	81.14225
19	1701813-13 CH-AT-2RW26-1117 0.25763	171208G1_	Analyte	28.7	4.73	10303.61	10303.61	11328.26	90.95496
20	1701813-14 CH-AT-2FB26-1117 0.25837	171208G1_	Analyte	28.7	4.73	9442.297	9442.297	11328.26	83.35172
21	1701813-15 CH-AT-2RW27-1117 0.25746	171208G1_	Analyte	28.7	4.73	10128.21	10128.21	11328.26	89.40657
22	1701813-16 CH-AT-2FB27-1117 0.25485	171208G1_	Analyte	28.7	4.73	9320.671	9320.671	11328.26	82.27806
23	1701813-17 CH-AT-2RW28-1117 0.25423	171208G1_	Analyte	28.7	4.73	10254.94	10254.94	11328.26	90.52529
24	1701813-18 CH-AT-2FB28-1117 0.26414	171208G1_	Analyte	28.7	4.73	9809.184	9809.184	11328.26	86.5904
25	1701813-19 CH-AT-2RW29-1117 0.23697	171208G1_	Analyte	28.7	4.73	9728.569	9728.569	11328.26	85.87878
26	1701813-20 CH-AT-2FB29-1117 0.26487	171208G1_	Analyte	28.7	4.74	9553.583	9553.583	11328.26	84.33409
27	IPA	171208G1_	Analyte	28.7	4.67	1.828	1.828	11328.26	0.016137
28	ST171208G1-2 PFC CS3 17K3027	171208G1_	Analyte	28.7	4.73	11845.05	11845.05	11328.26	104.5619

Ccal

Compound 6: 13C2-PFOA ST171208G1-1 PFC CS-1 537 17K3024

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area %
1	ST171208G1-1 PFC CS-1 537 17K3024	171208G1_	Analyte	10	4.31	12627.65	12627.65	12627.65	100
2	IPA	171208G1_	Analyte	10	4.32	3.073	3.073	12627.65	0.024335
3	B7L0015-BLK1 LRB 0.25	171208G1_	Analyte	10	4.32	9138.599	9138.599	12627.65	72.36975
4	B7L0015-MSD1 LFSMD 0.25064	171208G1_	Analyte	10	4.32	8731.165	8731.165	12627.65	69.14322
5	1701807-02 CH-AT-1FB94-1117 0.24508	171208G1_	Analyte	10	4.32	9187.688	9187.688	12627.65	72.75849
6	1701807-04 CH-AT-1FB95-1117 0.25155	171208G1_	Analyte	10	4.32	10397.54	10397.54	12627.65	82.33946
7	1701807-05 CH-AT-1RW96-1117 0.24236	171208G1_	Analyte	10	4.32	9647.853	9647.853	12627.65	76.40259
8	1701807-08 CH-AT-1FB97-1117 0.24757	171208G1_	Analyte	10	4.32	9641.529	9641.529	12627.65	76.35251
9	1701826-02 CH-AT-2FB40-1217 0.24836	171208G1_	Analyte	10	4.32	9837.729	9837.729	12627.65	77.90625
10	1701826-03 CH-AT-1RW115-1217 0.23578	171208G1_	Analyte	10	4.32	9461.793	9461.793	12627.65	74.92916
11	1701826-06 CH-AT-2FB41-1217 0.23928	171208G1_	Analyte	10	4.32	9968.256	9968.256	12627.65	78.93991
12	1701826-09 CH-AT-1RW114-1217 0.23828	171208G1_	Analyte	10	4.32	9783.975	9783.975	12627.65	77.48056
13	1701826-10 CH-AT-1FB114-1217 0.25812	171208G1_	Analyte	10	4.32	9517.647	9517.647	12627.65	75.37148
14	1701826-12 CH-AT-1FB113-1217 0.252	171208G1_	Analyte	10	4.32	9469.968	9469.968	12627.65	74.9939
15	1701813-09 CH-AT-2RW24-1117 0.25492	171208G1_	Analyte	10	4.33	9098.896	9098.896	12627.65	72.05533
16	1701813-10 CH-AT-2FB24-1117 0.26256	171208G1_	Analyte	10	4.32	9099.724	9099.724	12627.65	72.06189
17	1701813-11 CH-AT-2RW25-1117 0.25755	171208G1_	Analyte	10	4.32	9430.05	9430.05	12627.65	74.67778
18	1701813-12 CH-AT-2FB25-1117 0.25959	171208G1_	Analyte	10	4.32	9429.335	9429.335	12627.65	74.67212
19	1701813-13 CH-AT-2RW26-1117 0.25763	171208G1_	Analyte	10	4.32	9282.278	9282.278	12627.65	73.50756
20	1701813-14 CH-AT-2FB26-1117 0.25837	171208G1_	Analyte	10	4.32	9703.113	9703.113	12627.65	76.84021
21	1701813-15 CH-AT-2RW27-1117 0.25746	171208G1_	Analyte	10	4.32	9555.123	9555.123	12627.65	75.66825
22	1701813-16 CH-AT-2FB27-1117 0.25485	171208G1_	Analyte	10	4.32	8856.009	8856.009	12627.65	70.13188
23	1701813-17 CH-AT-2RW28-1117 0.25423	171208G1_	Analyte	10	4.32	9233.376	9233.376	12627.65	73.1203
24	1701813-18 CH-AT-2FB28-1117 0.26414	171208G1_	Analyte	10	4.32	9201.825	9201.825	12627.65	72.87044
25	1701813-19 CH-AT-2RW29-1117 0.23697	171208G1_	Analyte	10	4.32	8897.581	8897.581	12627.65	70.46109
26	1701813-20 CH-AT-2FB29-1117 0.26487	171208G1_	Analyte	10	4.33	8700.753	8700.753	12627.65	68.90239
27	IPA	171208G1_	Analyte	10	4.21	0.572	0.572	12627.65	0.00453
28	ST171208G1-2 PFC CS3 17K3027	171208G1_	Analyte	10	4.32	10921.65	10921.65	12627.65	86.48997

GM 12/8/17

Compound 7: 13C4-PFOS ST171208G1-1 PFC CS-1 537 17K3024

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area %
1	ST171208G1-1 PFC CS-1 537 17K3024	171208G1_	Analyte	28.7	4.73	12906.77	12906.77	12906.77	100
2	IPA	171208G1_	Analyte	28.7	4.7	2.492	2.492	12906.77	0.019308
3	B7L0015-BLK1 LRB 0.25	171208G1_	Analyte	28.7	4.73	9169.549	9169.549	12906.77	71.04447
4	B7L0015-MSD1 LFSMD 0.25064	171208G1_	Analyte	28.7	4.73	10026.97	10026.97	12906.77	77.68768
5	1701807-02 CH-AT-1FB94-1117 0.24508	171208G1_	Analyte	28.7	4.73	9389.564	9389.564	12906.77	72.74912
6	1701807-04 CH-AT-1FB95-1117 0.25155	171208G1_	Analyte	28.7	4.73	11082.12	11082.12	12906.77	85.86286
7	1701807-05 CH-AT-1RW96-1117 0.24236	171208G1_	Analyte	28.7	4.73	10108.59	10108.59	12906.77	78.32004
8	1701807-08 CH-AT-1FB97-1117 0.24757	171208G1_	Analyte	28.7	4.73	10493.58	10493.58	12906.77	81.3029
9	1701826-02 CH-AT-2FB40-1217 0.24836	171208G1_	Analyte	28.7	4.73	10273.69	10273.69	12906.77	79.59922
10	1701826-03 CH-AT-1RW115-1217 0.23578	171208G1_	Analyte	28.7	4.73	10051.58	10051.58	12906.77	77.87833
11	1701826-06 CH-AT-2FB41-1217 0.23928	171208G1_	Analyte	28.7	4.73	9895.271	9895.271	12906.77	76.66727
12	1701826-09 CH-AT-1RW114-1217 0.23828	171208G1_	Analyte	28.7	4.73	11053.61	11053.61	12906.77	85.64192
13	1701826-10 CH-AT-1FB114-1217 0.25812	171208G1_	Analyte	28.7	4.73	10120.03	10120.03	12906.77	78.40871
14	1701826-12 CH-AT-1FB113-1217 0.252	171208G1_	Analyte	28.7	4.73	10792.6	10792.6	12906.77	83.61967
15	1701813-09 CH-AT-2RW24-1117 0.25492	171208G1_	Analyte	28.7	4.73	10228.03	10228.03	12906.77	79.24545
16	1701813-10 CH-AT-2FB24-1117 0.26256	171208G1_	Analyte	28.7	4.73	8833.352	8833.352	12906.77	68.43966
17	1701813-11 CH-AT-2RW25-1117 0.25755	171208G1_	Analyte	28.7	4.73	10453.59	10453.59	12906.77	80.99306
18	1701813-12 CH-AT-2FB25-1117 0.25959	171208G1_	Analyte	28.7	4.73	9192.003	9192.003	12906.77	71.21844
19	1701813-13 CH-AT-2RW26-1117 0.25763	171208G1_	Analyte	28.7	4.73	10303.61	10303.61	12906.77	79.83105
20	1701813-14 CH-AT-2FB26-1117 0.25837	171208G1_	Analyte	28.7	4.73	9442.297	9442.297	12906.77	73.15769
21	1701813-15 CH-AT-2RW27-1117 0.25746	171208G1_	Analyte	28.7	4.73	10128.21	10128.21	12906.77	78.47203
22	1701813-16 CH-AT-2FB27-1117 0.25485	171208G1_	Analyte	28.7	4.73	9320.671	9320.671	12906.77	72.21535
23	1701813-17 CH-AT-2RW28-1117 0.25423	171208G1_	Analyte	28.7	4.73	10254.94	10254.94	12906.77	79.45393
24	1701813-18 CH-AT-2FB28-1117 0.26414	171208G1_	Analyte	28.7	4.73	9809.184	9809.184	12906.77	76.00028
25	1701813-19 CH-AT-2RW29-1117 0.23697	171208G1_	Analyte	28.7	4.73	9728.569	9728.569	12906.77	75.37569
26	1701813-20 CH-AT-2FB29-1117 0.26487	171208G1_	Analyte	28.7	4.74	9553.583	9553.583	12906.77	74.01992
27	IPA	171208G1_	Analyte	28.7	4.67	1.828	1.828	12906.77	0.014163
28	ST171208G1-2 PFC CS3 17K3027	171208G1_	Analyte	28.7	4.73	11845.05	11845.05	12906.77	91.77387

GM 12/8/17

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-2.qld

Last Altered: Sunday, December 10, 2017 08:43:38 Pacific Standard Time
Printed: Monday, December 11, 2017 09:30:58 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_2, Date: 08-Dec-2017, Time: 09:52:47, ID: ST171208G1-1 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

	# Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1 PFBS	299 > 79.7	6.94e2	1.35e4		1.0000	3.03	3.01	1.47	1.52	86.0
2	2 PFOA	413 > 368.7	2.23e3	1.34e4		1.0000	4.31	4.31	1.67	2.16	107.8
3	3 PFOS	499 >79.9	9.43e2	1.35e4		1.0000	4.73	4.73	2.00	1.50	80.9
4	4 13C2-PFHxA	315 > 269.8	5.83e3	1.34e4	0.424	1.0000	3.37	3.37	4.36	10.3	102.9
5	5 13C2-PFDA	515.1 > 469.9	6.86e3	1.34e4	0.478	1.0000	4.94	4.96	5.13	10.7	107.3
6	6 13C2-PFOA	414.9 > 369.7	1.34e4	1.34e4	1.000	1.0000	4.41	4.31	10.0	10.0	100.0
7	7 13C4-PFOS	503.0 > 79.9	1.35e4	1.35e4	1.000	1.0000	4.81	4.73	28.7	28.7	100.0

70-130

DM 12/11/17

VJA. 12/11/2017

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, December 11, 2017 09:32:18 Pacific Standard Time
Printed: Monday, December 11, 2017 09:33:00 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Compound name: PFBS

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1	171208G1_1	IPA	08-Dec-17	09:40:19
2	171208G1_2	ST171208G1-1 PFC CS-1 537 17K3024	08-Dec-17	09:52:47
3	171208G1_3	IPA	08-Dec-17	10:05:10
4	171208G1_4	B7L0015-BLK1 LRB 0.25	08-Dec-17	10:17:38
5	171208G1_5	B7L0015-MSD1 LFSMD 0.25064	08-Dec-17	10:30:04
6	171208G1_6	1701807-02 CH-AT-1FB94-1117 0.24508	08-Dec-17	10:42:32
7	171208G1_7	1701807-04 CH-AT-1FB95-1117 0.25155	08-Dec-17	10:54:59
8	171208G1_8	1701807-05 CH-AT-1RW96-1117 0.24236	08-Dec-17	11:07:27
9	171208G1_9	1701807-08 CH-AT-1FB97-1117 0.24757	08-Dec-17	11:19:55
10	171208G1_10	1701826-02 CH-AT-2FB40-1217 0.24836	08-Dec-17	11:32:19
11	171208G1_11	1701826-03 CH-AT-1RW115-1217 0.23578	08-Dec-17	11:44:44
12	171208G1_12	1701826-06 CH-AT-2FB41-1217 0.23928	08-Dec-17	11:57:09
13	171208G1_13	1701826-09 CH-AT-1RW114-1217 0.23828	08-Dec-17	12:09:35
14	171208G1_14	1701826-10 CH-AT-1FB114-1217 0.25812	08-Dec-17	12:22:03
15	171208G1_15	1701826-12 CH-AT-1FB113-1217 0.252	08-Dec-17	12:34:30
16	171208G1_16	1701813-09 CH-AT-2RW24-1117 0.25492	08-Dec-17	12:46:57
17	171208G1_17	1701813-10 CH-AT-2FB24-1117 0.26256	08-Dec-17	12:59:25
18	171208G1_18	1701813-11 CH-AT-2RW25-1117 0.25755	08-Dec-17	13:11:49
19	171208G1_19	1701813-12 CH-AT-2FB25-1117 0.25959	08-Dec-17	13:24:14
20	171208G1_20	1701813-13 CH-AT-2RW26-1117 0.25763	08-Dec-17	13:36:38
21	171208G1_21	1701813-14 CH-AT-2FB26-1117 0.25837	08-Dec-17	13:49:03
22	171208G1_22	1701813-15 CH-AT-2RW27-1117 0.25746	08-Dec-17	14:01:29
23	171208G1_23	1701813-16 CH-AT-2FB27-1117 0.25485	08-Dec-17	14:13:55
24	171208G1_24	1701813-17 CH-AT-2RW28-1117 0.25423	08-Dec-17	14:26:23
25	171208G1_25	1701813-18 CH-AT-2FB28-1117 0.26414	08-Dec-17	14:38:52
26	171208G1_26	1701813-19 CH-AT-2RW29-1117 0.23697	08-Dec-17	14:51:15
27	171208G1_27	1701813-20 CH-AT-2FB29-1117 0.26487	08-Dec-17	15:03:39
28	171208G1_28	IPA	08-Dec-17	15:16:04
29	171208G1_29	ST171208G1-2 PFC CS3 17K3027	08-Dec-17	15:28:31
30	171208G1_30	IPA	08-Dec-17	15:40:56

LC Calibration Standards Review Checklist Q1

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	S717120861-1	(L) M H	☒ NA	☐	☑	☑	☑	☑	☐
Calibration ID:	-2	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/5/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: JA 12/11/2017
Initials/Date

Comments: DW-L3

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-2.qld

Last Altered: Sunday, December 10, 2017 08:43:38 Pacific Standard Time
Printed: Monday, December 11, 2017 09:30:58 Pacific Standard Time

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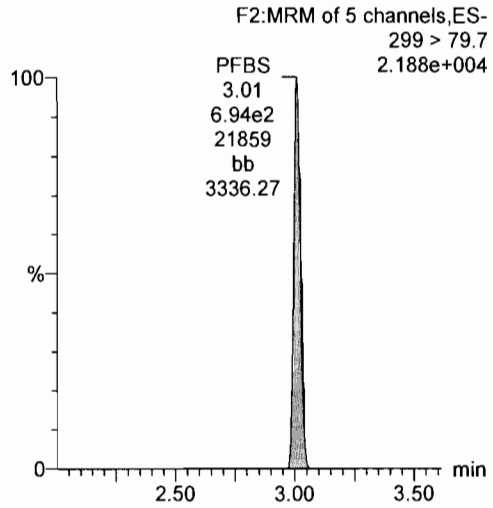
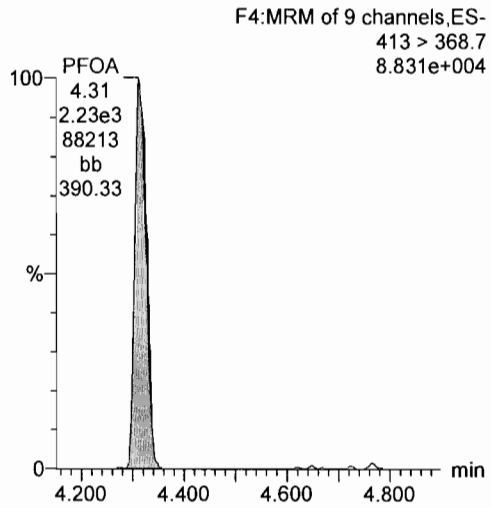
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_2, Date: 08-Dec-2017, Time: 09:52:47, ID: ST171208G1-1 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

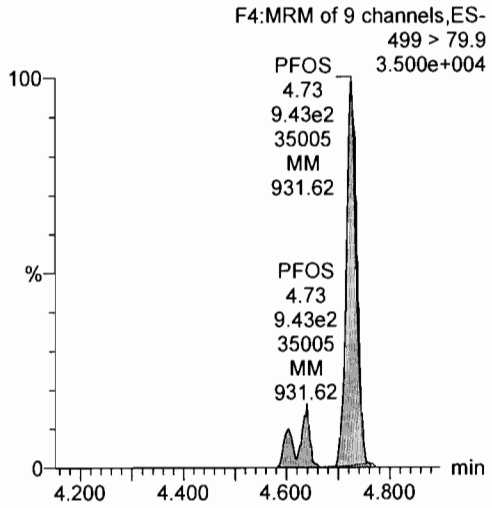
PFBS



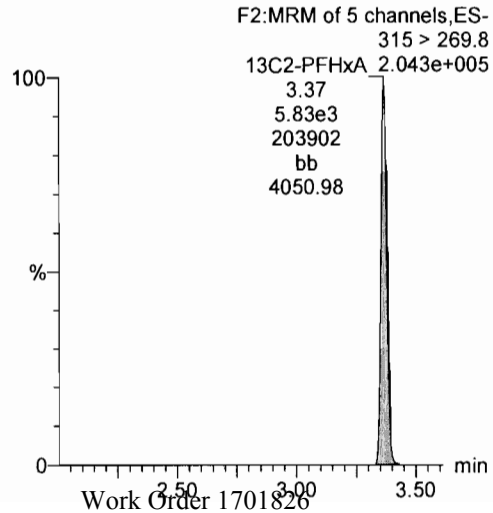
PFOA



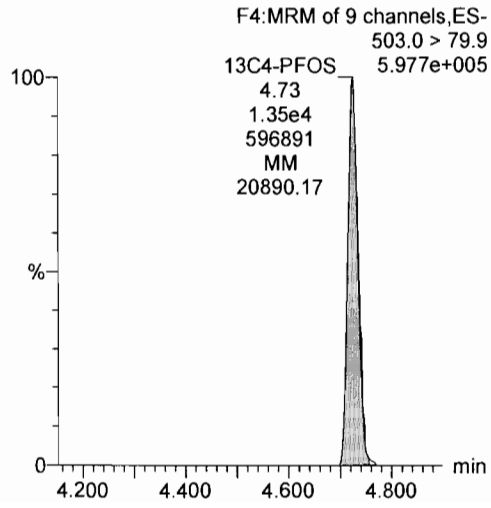
PFOS



13C2-PFHxA



13C4-PFOS



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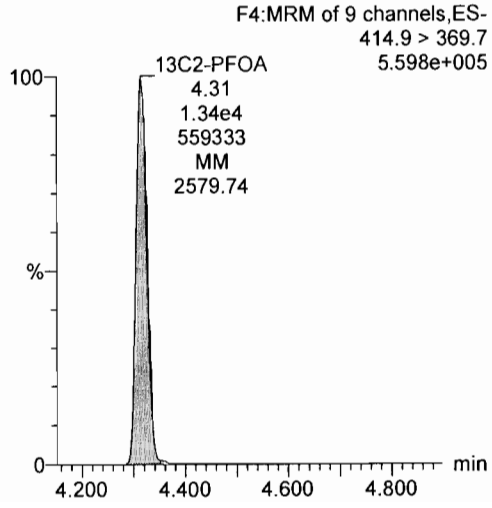

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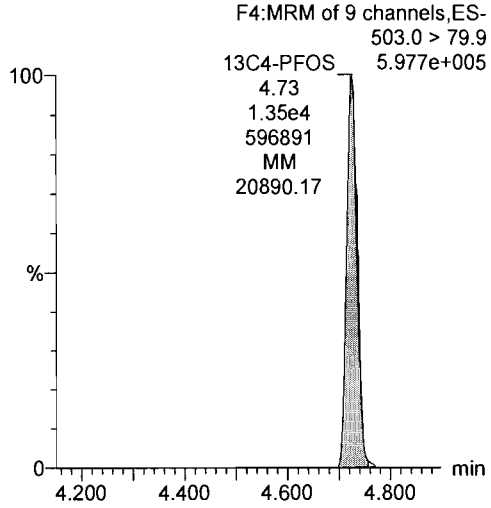
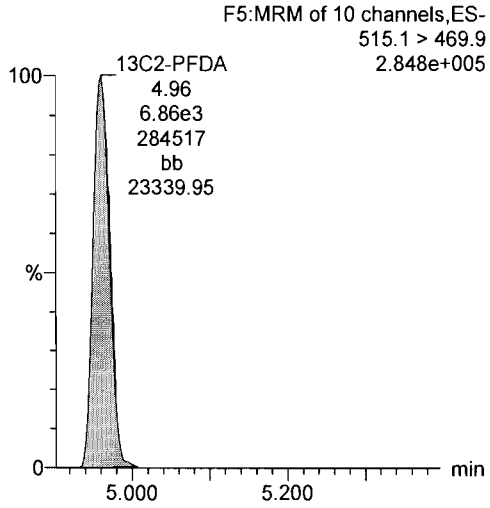
Last Altered: Sunday, December 10, 2017 08:43:38 Pacific Standard Time
Printed: Monday, December 11, 2017 09:30:58 Pacific Standard Time

Name: 171208G1_2, Date: 08-Dec-2017, Time: 09:52:47, ID: ST171208G1-1 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-29.qld

Last Altered: Sunday, December 10, 2017 08:55:24 Pacific Standard Time
Printed: Monday, December 11, 2017 09:31:07 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_29, Date: 08-Dec-2017, Time: 15:28:31, ID: ST171208G1-2 PFC CS3 17K3027, Description: PFC CS3 17K3027

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp	Conc.	%Rec
1	1	PFBS	299 > 79.7	1.38e4	1.18e4		1.0000	3.03	3.02	33.7	39.3	88.9
2	2	PFOA	413 > 368.7	4.32e4	1.09e4		1.0000	4.32	4.32	39.8	51.6	103.3
3	3	PFOS	499 >79.9	2.20e4	1.18e4		1.0000	4.73	4.73	53.5	44.9	97.2
4	4	13C2-PFHxA	315 > 269.8	4.53e3	1.09e4	0.424	1.0000	3.38	3.38	4.17	9.84	98.4
5	5	13C2-PFDA	515.1 > 469.9	5.34e3	1.09e4	0.478	1.0000	4.95	4.97	4.91	10.3	102.8
6	6	13C2-PFOA	414.9 > 369.7	1.09e4	1.09e4	1.000	1.0000	4.41	4.32	10.0	10.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.18e4	1.18e4	1.000	1.0000	4.81	4.73	28.7	28.7	100.0

70-130

dlm 12/11/17

VJA. 12/11/2017

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, December 11, 2017 09:32:18 Pacific Standard Time
Printed: Monday, December 11, 2017 09:33:00 Pacific Standard Time

Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	171208G1_1	IPA	08-Dec-17	09:40:19
2	171208G1_2	ST171208G1-1 PFC CS-1 537 17K3024	08-Dec-17	09:52:47
3	171208G1_3	IPA	08-Dec-17	10:05:10
4	171208G1_4	B7L0015-BLK1 LRB 0.25	08-Dec-17	10:17:38
5	171208G1_5	B7L0015-MSD1 LFSMD 0.25064	08-Dec-17	10:30:04
6	171208G1_6	1701807-02 CH-AT-1FB94-1117 0.24508	08-Dec-17	10:42:32
7	171208G1_7	1701807-04 CH-AT-1FB95-1117 0.25155	08-Dec-17	10:54:59
8	171208G1_8	1701807-05 CH-AT-1RW96-1117 0.24236	08-Dec-17	11:07:27
9	171208G1_9	1701807-08 CH-AT-1FB97-1117 0.24757	08-Dec-17	11:19:55
10	171208G1_10	1701826-02 CH-AT-2FB40-1217 0.24836	08-Dec-17	11:32:19
11	171208G1_11	1701826-03 CH-AT-1RW115-1217 0.23578	08-Dec-17	11:44:44
12	171208G1_12	1701826-06 CH-AT-2FB41-1217 0.23928	08-Dec-17	11:57:09
13	171208G1_13	1701826-09 CH-AT-1RW114-1217 0.23828	08-Dec-17	12:09:35
14	171208G1_14	1701826-10 CH-AT-1FB114-1217 0.25812	08-Dec-17	12:22:03
15	171208G1_15	1701826-12 CH-AT-1FB113-1217 0.252	08-Dec-17	12:34:30
16	171208G1_16	1701813-09 CH-AT-2RW24-1117 0.25492	08-Dec-17	12:46:57
17	171208G1_17	1701813-10 CH-AT-2FB24-1117 0.26256	08-Dec-17	12:59:25
18	171208G1_18	1701813-11 CH-AT-2RW25-1117 0.25755	08-Dec-17	13:11:49
19	171208G1_19	1701813-12 CH-AT-2FB25-1117 0.25959	08-Dec-17	13:24:14
20	171208G1_20	1701813-13 CH-AT-2RW26-1117 0.25763	08-Dec-17	13:36:38
21	171208G1_21	1701813-14 CH-AT-2FB26-1117 0.25837	08-Dec-17	13:49:03
22	171208G1_22	1701813-15 CH-AT-2RW27-1117 0.25746	08-Dec-17	14:01:29
23	171208G1_23	1701813-16 CH-AT-2FB27-1117 0.25485	08-Dec-17	14:13:55
24	171208G1_24	1701813-17 CH-AT-2RW28-1117 0.25423	08-Dec-17	14:26:23
25	171208G1_25	1701813-18 CH-AT-2FB28-1117 0.26414	08-Dec-17	14:38:52
26	171208G1_26	1701813-19 CH-AT-2RW29-1117 0.23697	08-Dec-17	14:51:15
27	171208G1_27	1701813-20 CH-AT-2FB29-1117 0.26487	08-Dec-17	15:03:39
28	171208G1_28	IPA	08-Dec-17	15:16:04
29	171208G1_29	ST171208G1-2 PFC CS3 17K3027	08-Dec-17	15:28:31
30	171208G1_30	IPA	08-Dec-17	15:40:56

Vista Analytical Laboratory

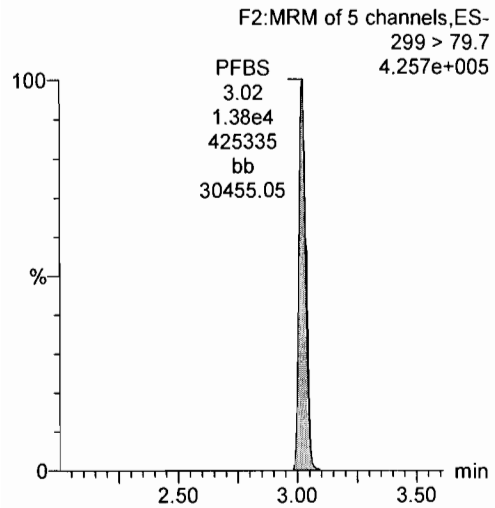
Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-29.qld

Last Altered: Sunday, December 10, 2017 08:55:24 Pacific Standard Time
Printed: Monday, December 11, 2017 09:31:07 Pacific Standard Time

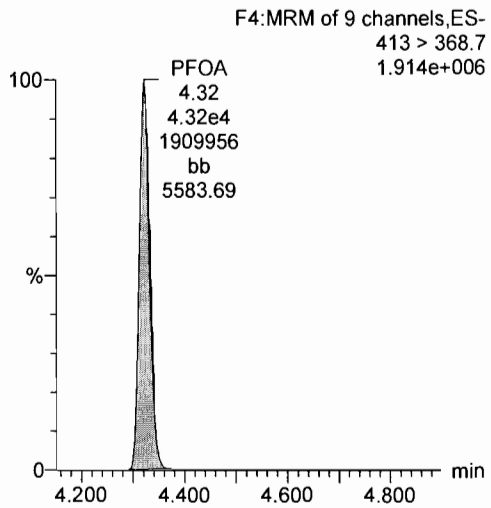
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Name: 171208G1_29, Date: 08-Dec-2017, Time: 15:28:31, ID: ST171208G1-2 PFC CS3 17K3027, Description: PFC CS3 17K3027

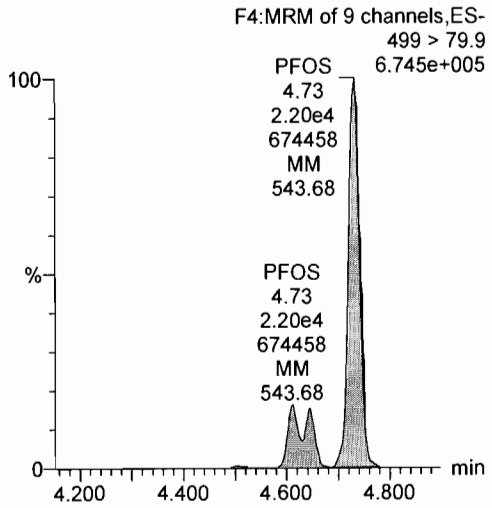
PFBS



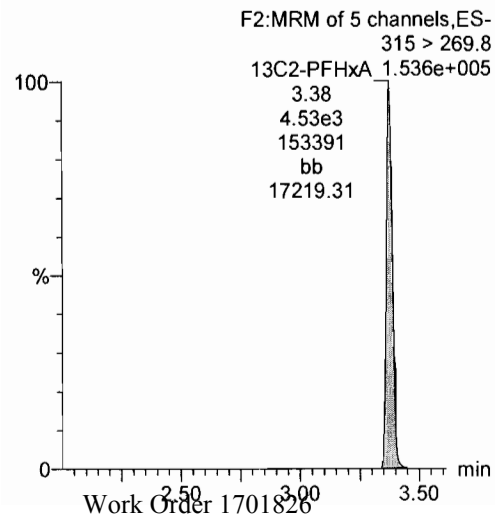
PFOA



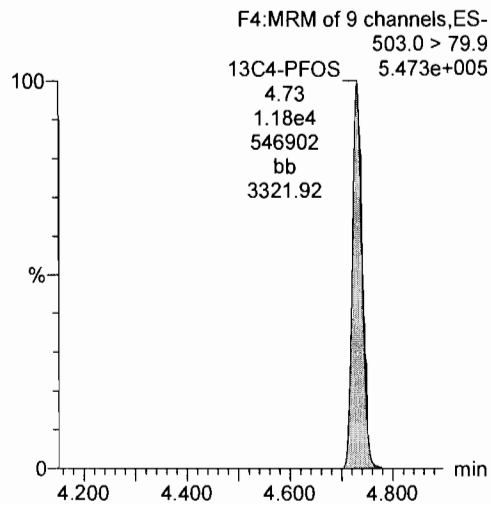
PFOS



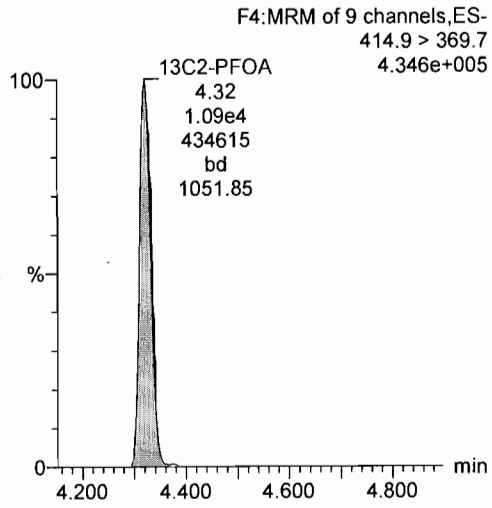
13C2-PFHxA



13C4-PFOS



13C2-PFOA

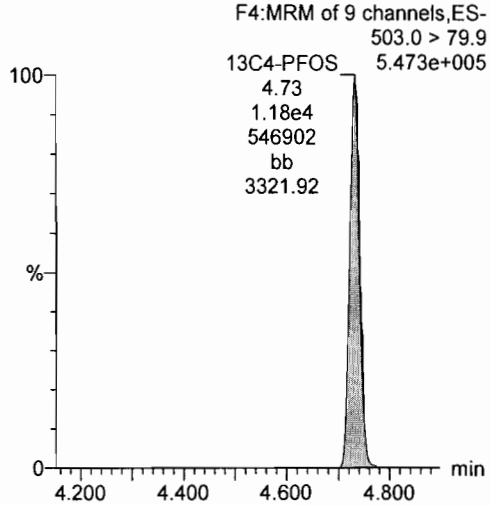


Dataset: U:\G1.PRO\Results\2017\171208G1\171208G1-29.qld

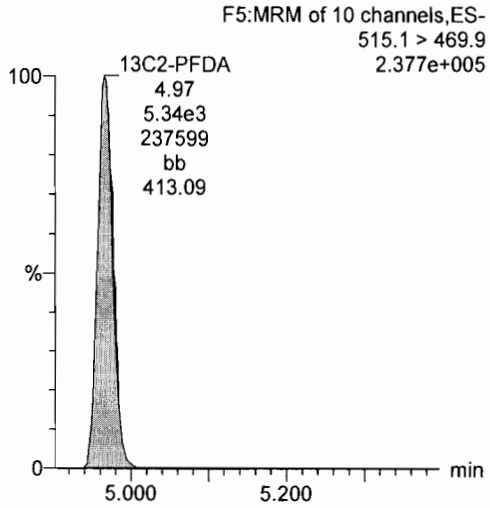
Last Altered: Sunday, December 10, 2017 08:55:24 Pacific Standard Time
Printed: Monday, December 11, 2017 09:31:07 Pacific Standard Time

Name: 171208G1_29, Date: 08-Dec-2017, Time: 15:28:31, ID: ST171208G1-2 PFC CS3 17K3027, Description: PFC CS3 17K3027

13C4-PFOS



13C2-PFDA



INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV)

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 15:37:11 Pacific Standard Time
Printed: Wednesday, December 06, 2017 15:38:06 Pacific Standard Time

Method: C:\Projects\Q1.PRO\MethDB\PFAS_L3_DW_1206.mdb 06 Dec 2017 11:11:24
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

Compound name: PFBS
Coefficient of Determination: R^2 = 0.996569
Calibration curve: -0.00290792 * x^2 + 0.97246 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	3.04	142.813	1.43e2	0.443	0.359	-18.9	0.997	NO	bb
2	2 171206G1_3	3.02	324.776	3.25e2	0.885	0.771	-12.8	0.997	NO	bb
3	3 171206G1_4	3.02	668.558	6.69e2	1.77	1.61	-8.8	0.997	NO	bb
4	4 171206G1_5	3.02	1556.381	1.56e3	4.42	3.93	-11.2	0.997	NO	bb
5	5 171206G1_6	3.02	2968.026	2.97e3	8.85	8.28	-6.5	0.997	NO	bb
6	6 171206G1_7	3.02	7805.369	7.81e3	22.1	21.9	-1.0	0.997	NO	bb
7	7 171206G1_8	3.02	14630.842	1.46e4	44.2	45.5	2.9	0.997	NO	bb
8	8 171206G1_9	3.02	20594.424	2.06e4	66.3	73.0	10.1	0.997	NO	bb
9	9 171206G1_10	3.02	21594.979	2.16e4	88.4	81.8	-7.5	0.997	NO	bb

Compound name: PFOA
Coefficient of Determination: R^2 = 0.999044
Calibration curve: -6.4601e-005 * x^2 + 0.773822 * x
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	4.34	510.113	5.10e2	0.500	0.593	18.7	0.999	NO	bb
2	2 171206G1_3	4.34	1012.627	1.01e3	1.00	1.15	14.6	0.999	NO	bb
3	3 171206G1_4	4.33	1899.585	1.90e3	2.00	2.02	1.1	0.999	NO	bb
4	4 171206G1_5	4.32	4658.164	4.66e3	5.00	5.18	3.6	0.999	NO	bb
5	5 171206G1_6	4.32	8324.391	8.32e3	10.0	9.32	-6.8	0.999	NO	bb
6	6 171206G1_7	4.32	22925.570	2.29e4	25.0	25.8	3.1	0.999	NO	bb
7	7 171206G1_8	4.32	42348.156	4.23e4	50.0	48.9	-2.2	0.999	NO	bb
8	8 171206G1_9	4.32	60818.074	6.08e4	75.0	75.5	0.7	0.999	NO	MM
9	9 171206G1_10	4.33	59990.504	6.00e4	100	71.7	-28.3	0.999	NO	MMX

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:34:55 Pacific Standard Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.993252
Calibration curve: -0.00340189 * x^2 + 1.34312 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	4.75	185.864	1.86e2	0.464	0.338	-27.2	0.993	NO	MM
2	2 171206G1_3	4.74	493.782	4.94e2	0.925	0.849	-8.2	0.993	NO	MM
3	3 171206G1_4	4.73	902.641	9.03e2	1.85	1.58	-14.7	0.993	NO	MM
4	4 171206G1_5	4.74	2129.515	2.13e3	4.63	3.88	-16.1	0.993	NO	MM
5	5 171206G1_6	4.73	4523.055	4.52e3	9.25	9.12	-1.5	0.993	NO	MM
6	6 171206G1_7	4.73	10605.408	1.06e4	23.1	21.3	-8.0	0.993	NO	MM
7	7 171206G1_8	4.73	22162.412	2.22e4	46.2	49.2	6.6	0.993	NO	MM
8	8 171206G1_9	4.74	31177.727	3.12e4	69.3	77.9	12.4	0.993	NO	MM
9	9 171206G1_10	4.74	31885.908	3.19e4	92.4	83.9	-9.2	0.993	NO	MM

Compound name: 13C2-PFHxA
Response Factor: 0.423896
RRF SD: 0.0162686, Relative SD: 3.83787
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: RF

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	3.39	5073.848	5.07e3	10.0	10.8	7.8		NO	bb
2	2 171206G1_3	3.38	4944.671	4.94e3	10.0	10.2	2.2		NO	bb
3	3 171206G1_4	3.38	5235.920	5.24e3	10.0	10.2	1.7		NO	bb
4	4 171206G1_5	3.38	4811.964	4.81e3	10.0	9.76	-2.4		NO	bb
5	5 171206G1_6	3.38	4790.378	4.79e3	10.0	9.78	-2.2		NO	bb
6	6 171206G1_7	3.38	4649.628	4.65e3	10.0	9.53	-4.7		NO	bb
7	7 171206G1_8	3.38	4648.559	4.65e3	10.0	9.76	-2.4		NO	bb
8	8 171206G1_9	3.38	4333.126	4.33e3	10.0	9.76	-2.4		NO	bb
9	9 171206G1_10	3.38	4725.684	4.73e3	10.0	10.2	2.4		NO	bb

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:34:55 Pacific Standard Time

Compound name: 13C2-PFDA
Response Factor: 0.478193
RRF SD: 0.0266017, Relative SD: 5.56297
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: RF

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	4.98	5062.541	5.06e3	10.0	9.53	-4.7		NO	bb
2	2 171206G1_3	4.98	5099.221	5.10e3	10.0	9.34	-6.6		NO	bb
3	3 171206G1_4	4.97	5576.278	5.58e3	10.0	9.60	-4.0		NO	bb
4	4 171206G1_5	4.97	5965.891	5.97e3	10.0	10.7	7.3		NO	bb
5	5 171206G1_6	4.97	5899.666	5.90e3	10.0	10.7	6.8		NO	bb
6	6 171206G1_7	4.97	5690.050	5.69e3	10.0	10.3	3.3		NO	bb
7	7 171206G1_8	4.97	5207.786	5.21e3	10.0	9.70	-3.0		NO	bb
8	8 171206G1_9	4.97	5270.729	5.27e3	10.0	10.5	5.3		NO	bb
9	9 171206G1_10	4.97	4978.183	4.98e3	10.0	9.56	-4.4		NO	bb

Compound name: 13C2-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: RF

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	4.34	11108.171	1.11e4	10.0	10.0	0.0		NO	bb
2	2 171206G1_3	4.33	11418.653	1.14e4	10.0	10.0	0.0		NO	bb
3	3 171206G1_4	4.33	12142.067	1.21e4	10.0	10.0	0.0		NO	bb
4	4 171206G1_5	4.32	11630.019	1.16e4	10.0	10.0	0.0		NO	bb
5	5 171206G1_6	4.32	11552.979	1.16e4	10.0	10.0	0.0		NO	bb
6	6 171206G1_7	4.33	11514.271	1.15e4	10.0	10.0	0.0		NO	bb
7	7 171206G1_8	4.32	11232.531	1.12e4	10.0	10.0	0.0		NO	bb
8	8 171206G1_9	4.32	10471.047	1.05e4	10.0	10.0	0.0		NO	bb
9	9 171206G1_10	4.32	10884.580	1.09e4	10.0	10.0	0.0		NO	bb

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:34:55 Pacific Standard Time

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 7.85046e-017, Relative SD: 7.85046e-015
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: RF

	#-Name	RT	Area	Resp	Std. Conc	Conc.	%Dev	Coeff. Of Deter...	CD Flag	Primary Fl...
1	1 171206G1_2	4.74	11759.643	1.18e4	28.7	28.7	0.0		NO	bb
2	2 171206G1_3	4.74	12454.042	1.25e4	28.7	28.7	0.0		NO	bb
3	3 171206G1_4	4.74	12278.325	1.23e4	28.7	28.7	0.0		NO	bb
4	4 171206G1_5	4.73	11838.263	1.18e4	28.7	28.7	0.0		NO	bb
5	5 171206G1_6	4.73	10853.454	1.09e4	28.7	28.7	0.0		NO	bb
6	6 171206G1_7	4.73	11267.227	1.13e4	28.7	28.7	0.0		NO	bb
7	7 171206G1_8	4.74	10990.055	1.10e4	28.7	28.7	0.0		NO	bb
8	8 171206G1_9	4.74	10653.778	1.07e4	28.7	28.7	0.0		NO	bb
9	9 171206G1_10	4.74	10316.487	1.03e4	28.7	28.7	0.0		NO	bb

Vista Analytical Laboratory Q1

Dataset: Untitled

Last Altered: Wednesday, December 06, 2017 13:44:16 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:44:59 Pacific Standard Time

Method: C:\Projects\Q1.PRO\MethDB\PFAS_L3_DW_1206.mdb 06 Dec 2017 11:11:24
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 13:27:38

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	171206G1_1	IPA	06-Dec-17	10:54:31
2	171206G1_2	ST171206G1-1 PFC CS-3 537 17K3022	06-Dec-17	11:07:34
3	171206G1_3	ST171206G1-2 PFC CS-2 537 17K3023	06-Dec-17	11:28:57
4	171206G1_4	ST171206G1-3 PFC CS-1 537 17K3024	06-Dec-17	11:41:21
5	171206G1_5	ST171206G1-4 PFC CS0 537 17K3025	06-Dec-17	11:53:46
6	171206G1_6	ST171206G1-5 PFC CS1 537 17K3026	06-Dec-17	12:06:11
7	171206G1_7	ST171206G1-6 PFC CS2 537 17K3033	06-Dec-17	12:18:38
8	171206G1_8	ST171206G1-7 PFC CS3 537 17K3027	06-Dec-17	12:31:04
9	171206G1_9	ST171206G1-8 PFC CS4 537 17K3028	06-Dec-17	12:43:31
10	171206G1_10	ST171206G1-9 PFC CS5 537 17K3029	06-Dec-17	12:55:59
11	171206G1_11	IPA	06-Dec-17	13:08:23
12	171206G1_12	ICV171206G1-1 PFC ICV 537 17K3030	06-Dec-17	13:20:50

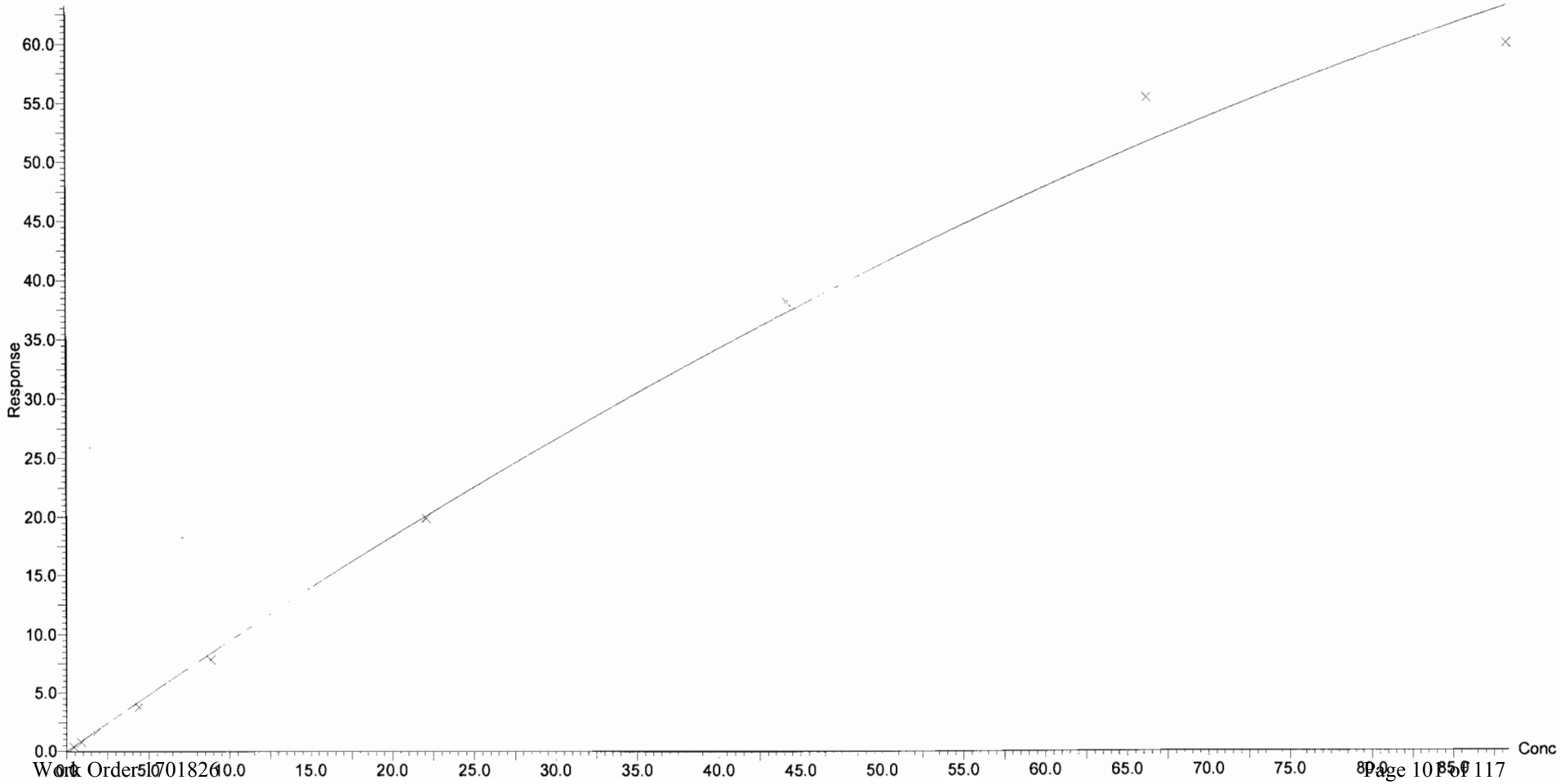
Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 15:37:11 Pacific Standard Time
Printed: Wednesday, December 06, 2017 15:37:35 Pacific Standard Time

Method: C:\Projects\Q1.PRO\MethDB\PFAS_L3_DW_1206.mdb 06 Dec 2017 11:11:24
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

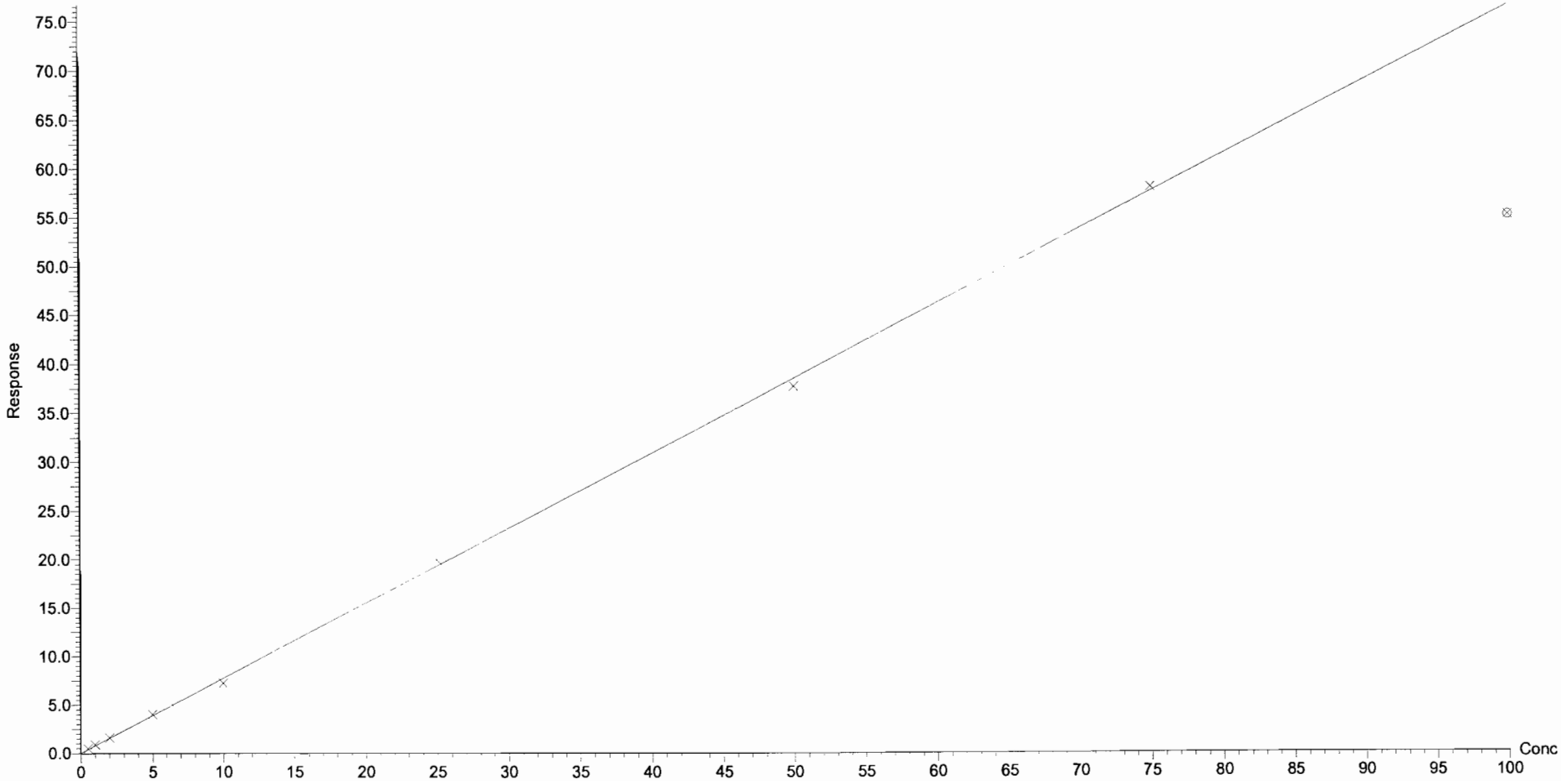
Compound name: PFBS
Coefficient of Determination: R^2 = 0.996569
Calibration curve: -0.00290792 * x^2 + 0.97246 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:35:49 Pacific Standard Time

Compound name: PFOA
Coefficient of Determination: R^2 = 0.999044
Calibration curve: -6.4601e-005 * x^2 + 0.773822 * x
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

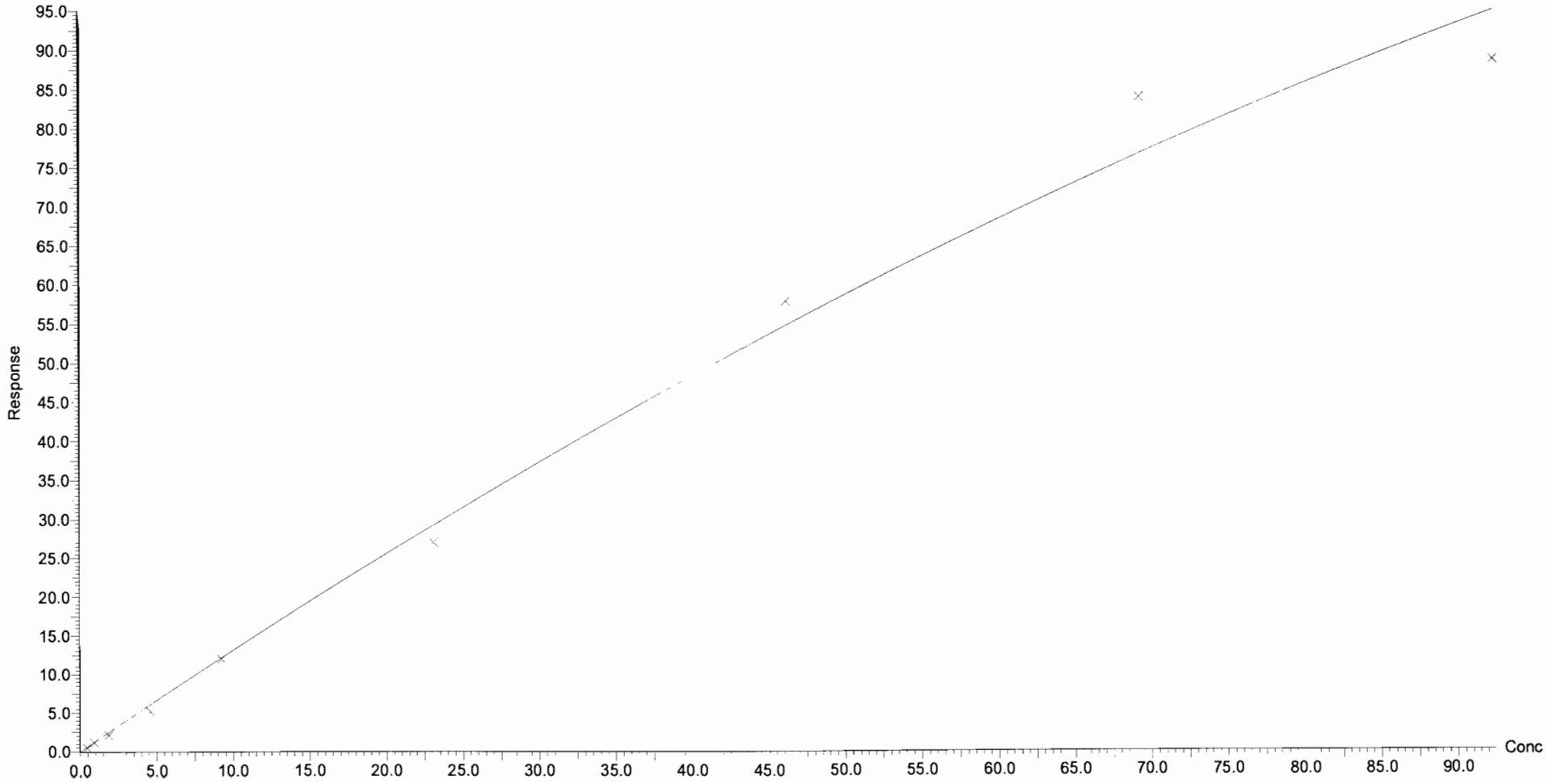


Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:35:49 Pacific Standard Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.993252
Calibration curve: -0.00340189 * x^2 + 1.34312 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None

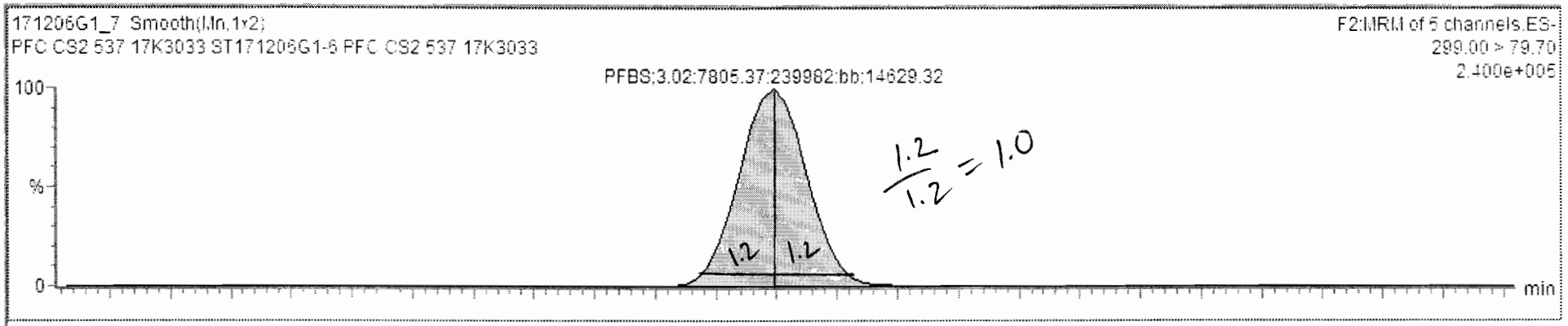


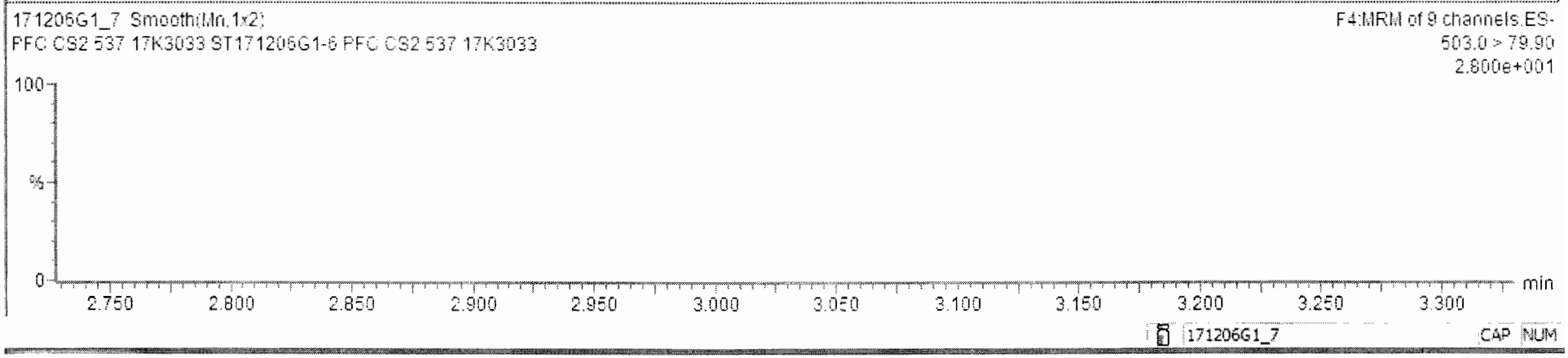
TargetLynx - 171206G1-CRV.qld * - [Chromatogram]

File Edit View Display Processing Window Help

171206G1_7 - ST171206G1-6 PFC CS2 537 17K3033 - PFC CS2 537 17K3033

	Name	Trace	Area	RRF	Wt/VoL	RT	RRT	Conc.	%Rec	DL	%RSD	Coeff. Of D...
1	PFBS	299.00 > 79...	7.61e3		1.0000	3.02	0.00	25.1	113.6	0.0000000		0.9866
2	PFOA	413 > 368.70	2.29e4		1.0000	4.32	0.00	25.8	103.1	0.0000000		0.9990
3	PFOS	499.00 > 79...	1.06e4		1.0000	4.73	0.00	21.3	92.0	0.0000000		0.9933
4	13C2-PFH...	315.0 > 269...	4.65e3	0.424	1.0000	3.38	0.00	9.53	95.3	0.0000000	3.84	
5	13C2-PFDA	515.10 > 46...	5.69e3	0.478	1.0000	4.97	0.00	10.3	103.3	0.0000000	5.56	
6	13C2-PFOA	414.90 > 36...	1.15e4	1.00	1.0000	4.33	0.00	10.0	100.0	0.0000000	0.000	
7	13C4-PFOS	503.0 > 79.90	1.13e4	1.00	1.0000	4.73	0.00	28.7	100.0	0.0000000	0.00000000000000...	





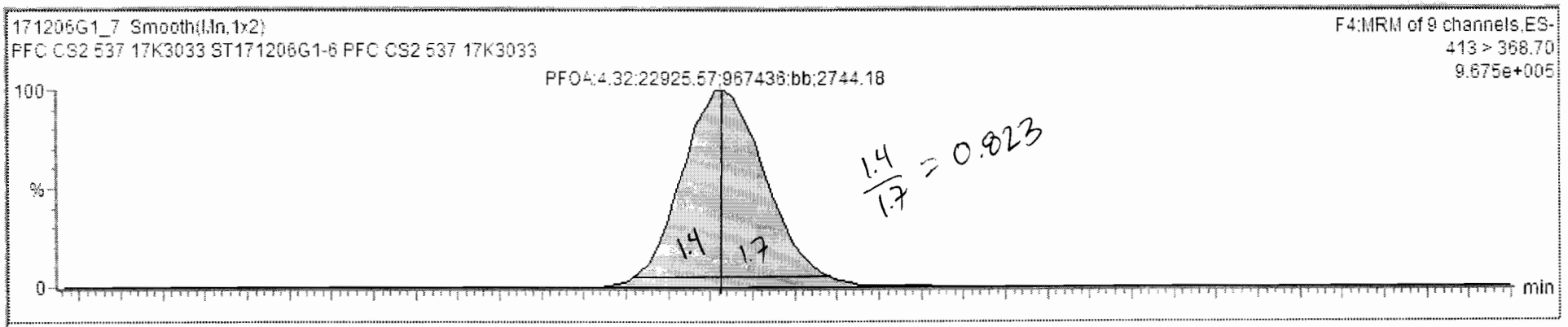
171206G1_7 CAP NUM

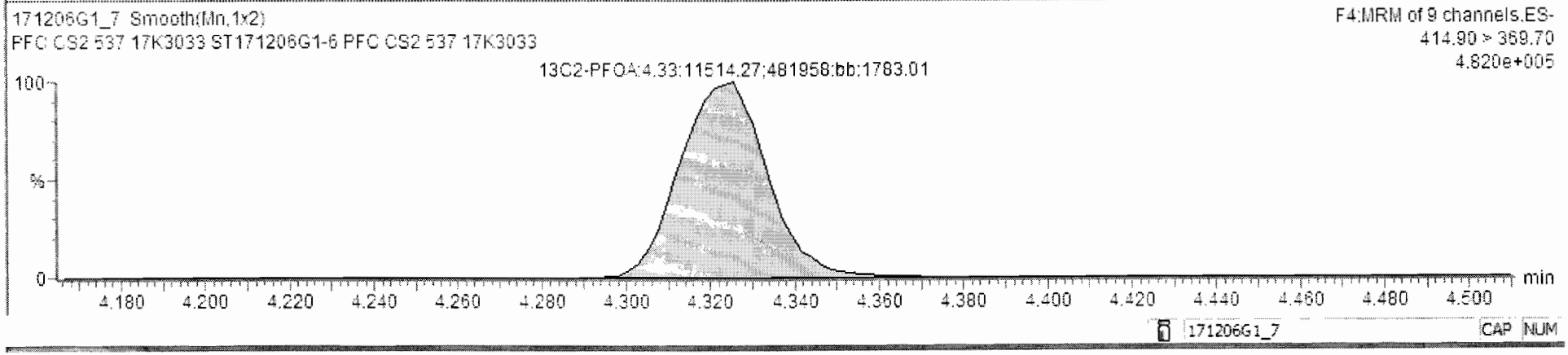
TargetLynx - 171206G1-CRV.qld * - [Chromatogram]

File Edit View Display Processing Window Help

171206G1_7 - ST171206G1-6 PFC CS2 537 17K3033 - PFC CS2 537 17K3033

	Name	Trace	Area	RRF	Wt/VoL	RT	RRT	Conc.	%Rec	DL	%RSD	Coeff. Of D...
1	PFBS	299.00 > 79...	7.81e3		1.0000	3.02	0.00	25.1	113.6	0.0000000		0.9866
2	PFOA	413 > 368.70	2.29e4		1.0000	4.32	0.00	25.8	103.3	0.0000000		0.9990
3	PFOS	499.00 > 79...	1.06e4		1.0000	4.73	0.00	21.3	92.0	0.0000000		0.9933
4	13C2-PFH...	315.0 > 269...	4.65e3	0.424	1.0000	3.36	0.00	9.53	95.3	0.0000000	3.84	
5	13C2-PFDA	515.10 > 46...	5.69e3	0.478	1.0000	4.97	0.00	10.3	103.3	0.0000000	5.56	
6	13C2-PFOA	414.90 > 36...	1.15e4	1.00	1.0000	4.33	0.00	10.0	100.0	0.0000000	0.000	
7	13C4-PFOS	503.0 > 79.90	1.13e4	1.00	1.0000	4.73	0.00	28.7	100.0	0.0000000	0.000000000000007...	





Compound 6: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags
1	ST171206G1-1 PFC CS-3 537 17K3022	171206G1_	Standard	10	4.34	11108.17	11108.17	bb
2	ST171206G1-2 PFC CS-2 537 17K3023	171206G1_	Standard	10	4.33	11418.65	11418.65	bb
3	ST171206G1-3 PFC CS-1 537 17K3024	171206G1_	Standard	10	4.33	12142.07	12142.07	bb
4	ST171206G1-4 PFC CS0 537 17K3025	171206G1_	Standard	10	4.32	11630.02	11630.02	bb
5	ST171206G1-5 PFC CS1 537 17K3026	171206G1_	Standard	10	4.32	11552.98	11552.98	bb
6	ST171206G1-6 PFC CS2 537 17K3033	171206G1_	Standard	10	4.33	11514.27	11514.27	bb
7	ST171206G1-7 PFC CS3 537 17K3027	171206G1_	Standard	10	4.32	11232.53	11232.53	bb
8	ST171206G1-8 PFC CS4 537 17K3028	171206G1_	Standard	10	4.32	10471.05	10471.05	bb
9	ST171206G1-9 PFC CS5 537 17K3029	171206G1_	Standard	10	4.32	10884.58	10884.58	bb
						AVERAGE		RPD
						11328.26		14.77921174

Compound 7: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags
1	ST171206G1-1 PFC CS-3 537 17K3022	171206G1_	Standard	28.7	4.74	11759.64	11759.64	bb
2	ST171206G1-2 PFC CS-2 537 17K3023	171206G1_	Standard	28.7	4.74	12454.04	12454.04	bb
3	ST171206G1-3 PFC CS-1 537 17K3024	171206G1_	Standard	28.7	4.74	12278.33	12278.33	bb
4	ST171206G1-4 PFC CS0 537 17K3025	171206G1_	Standard	28.7	4.73	11838.26	11838.26	bb
5	ST171206G1-5 PFC CS1 537 17K3026	171206G1_	Standard	28.7	4.73	10853.45	10853.45	bb
6	ST171206G1-6 PFC CS2 537 17K3033	171206G1_	Standard	28.7	4.73	11267.23	11267.23	bb
7	ST171206G1-7 PFC CS3 537 17K3027	171206G1_	Standard	28.7	4.74	10990.06	10990.06	bb
8	ST171206G1-8 PFC CS4 537 17K3028	171206G1_	Standard	28.7	4.74	10653.78	10653.78	bb
9	ST171206G1-9 PFC CS5 537 17K3029	171206G1_	Standard	28.7	4.74	10316.49	10316.49	bb
						AVERAGE		RPD
						11379.03		18.77475047

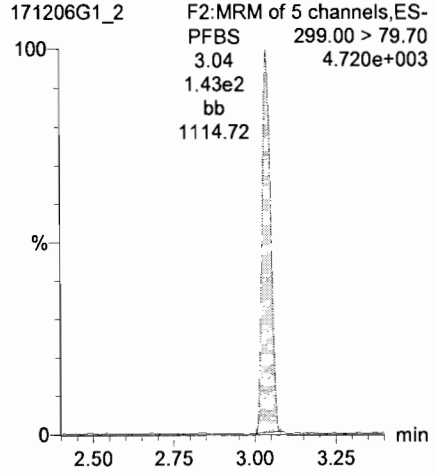
Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

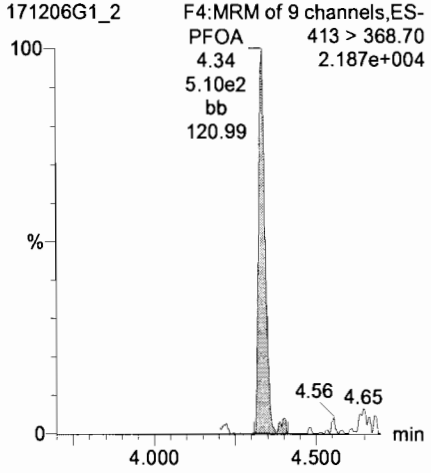
Method: C:\Projects\Q1.PRO\MethDB\PFAS_L3_DW_1206.mdb 06 Dec 2017 11:11:24
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 13:27:38

ID: ST171206G1-1 PFC CS-3 537 17K3022, Description: PFC CS-3 537 17K3022, Name: 171206G1_2, Date: 06-Dec-2017, Time: 11:07:34, Instrument: , Lab: , User:

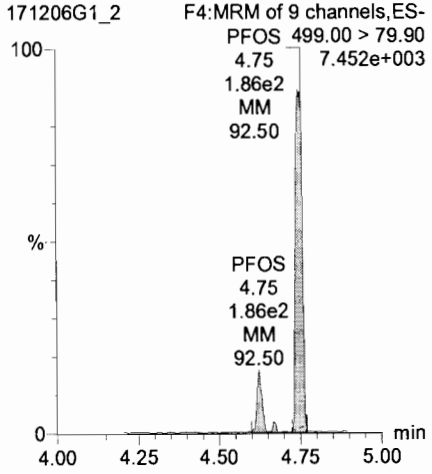
PFBS



PFOA



PFOS



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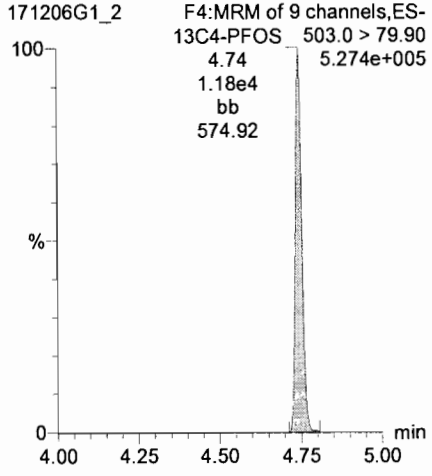

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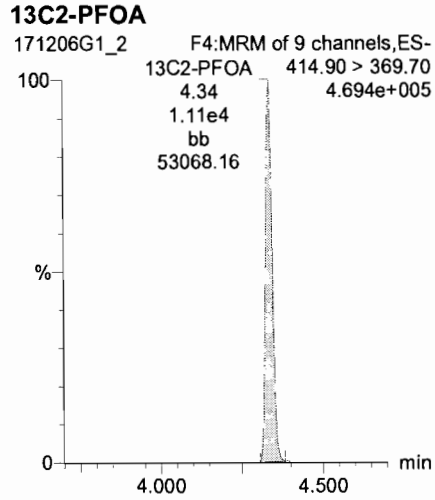

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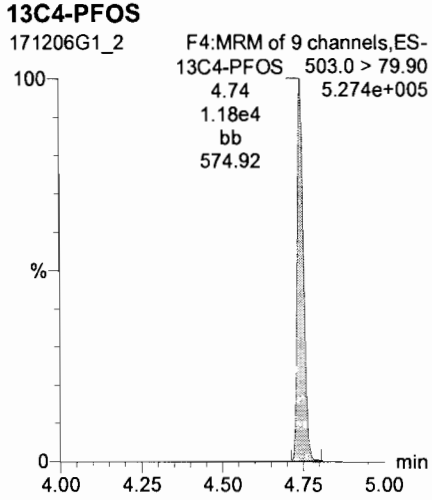

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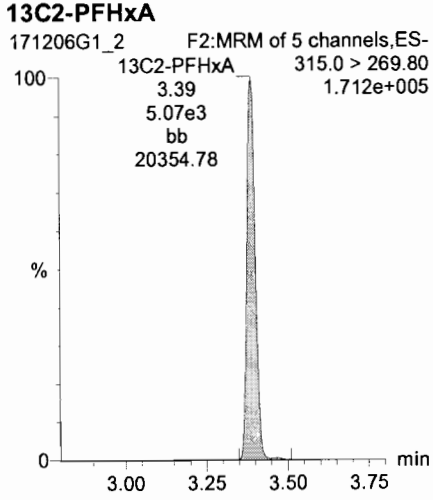

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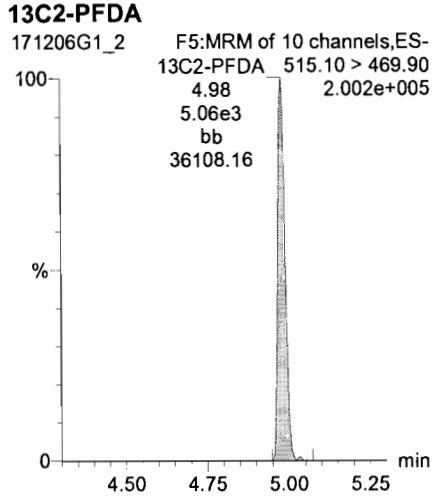
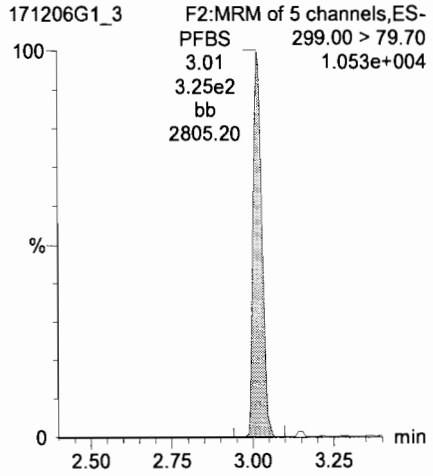


Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-2 PFC CS-2 537 17K3023, Description: PFC CS-2 537 17K3023, Name: 171206G1_3, Date: 06-Dec-2017, Time: 11:28:57, Instrument: , Lab: , User:

PFBS



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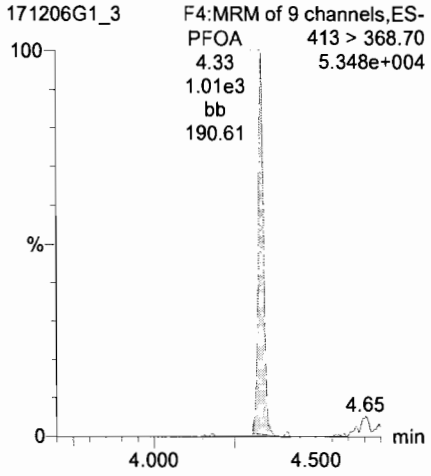

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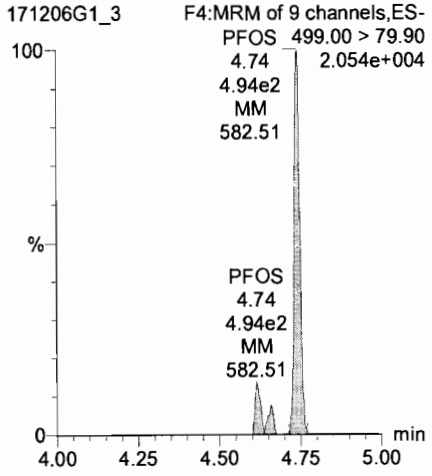

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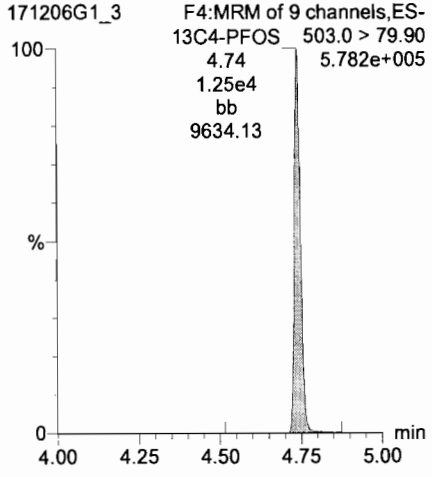

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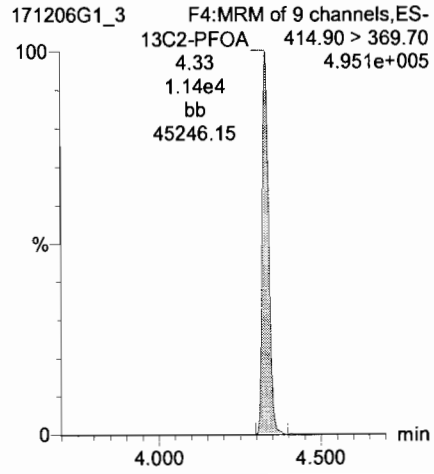

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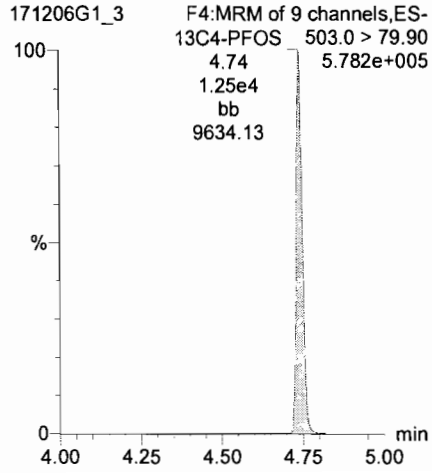

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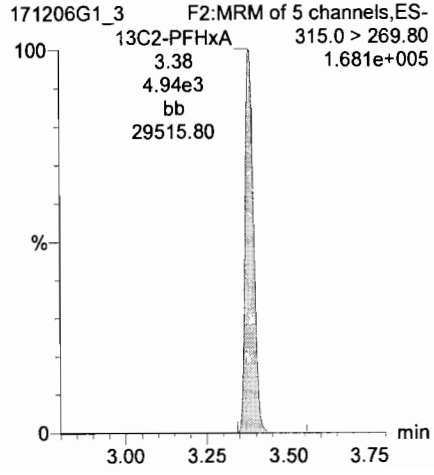

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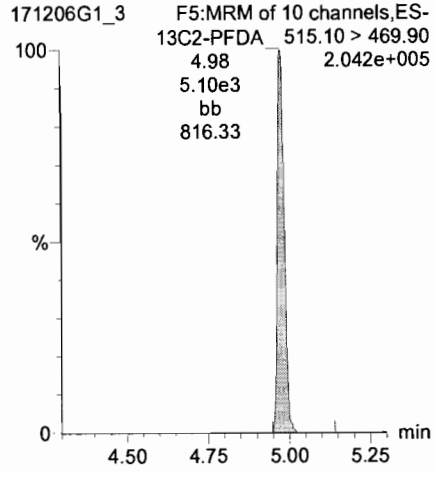

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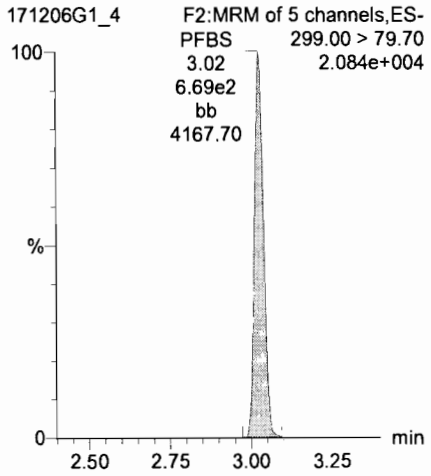
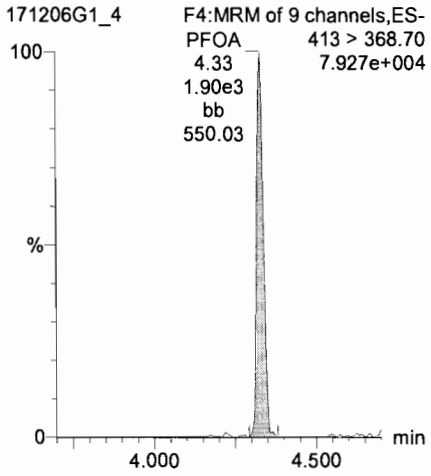
Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-3 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024, Name: 171206G1_4, Date: 06-Dec-2017, Time: 11:41:21, Instrument: , Lab: , User:

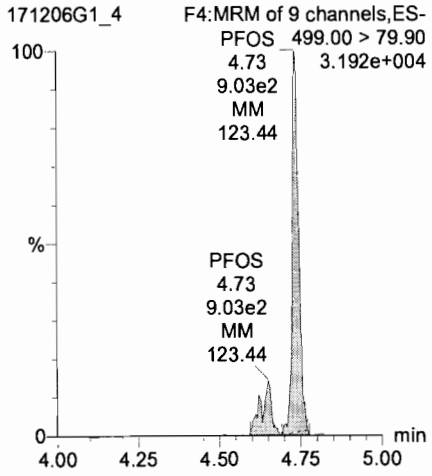
PFBS



PFOA



PFOS



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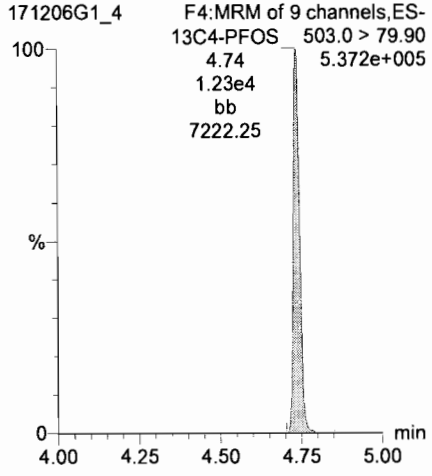

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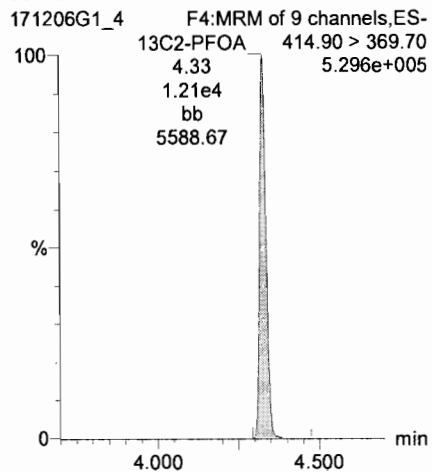

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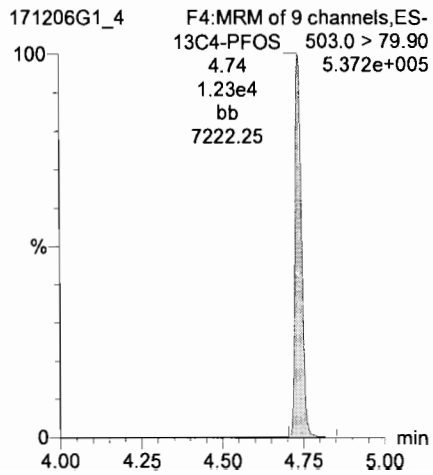

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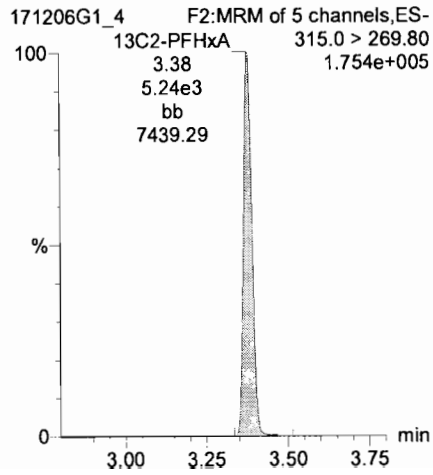
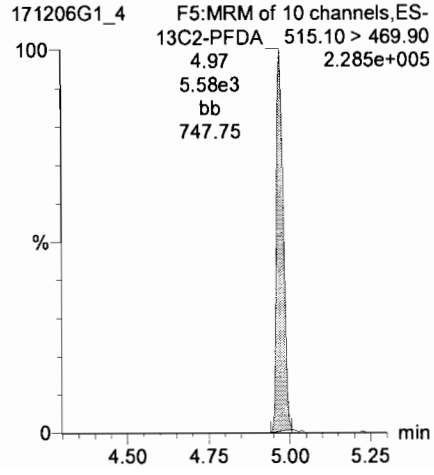


13C2-PFDA



Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-CRV.qld

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Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

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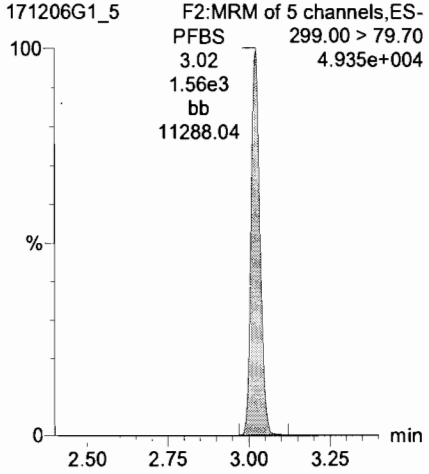
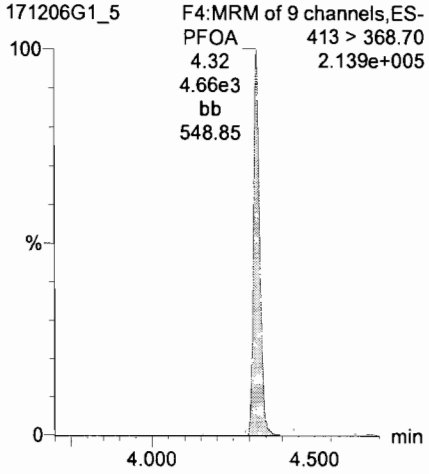
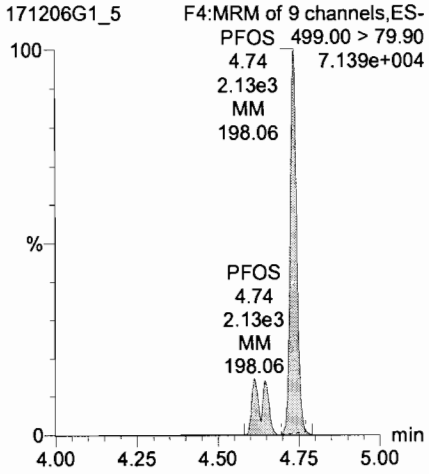
PFBS



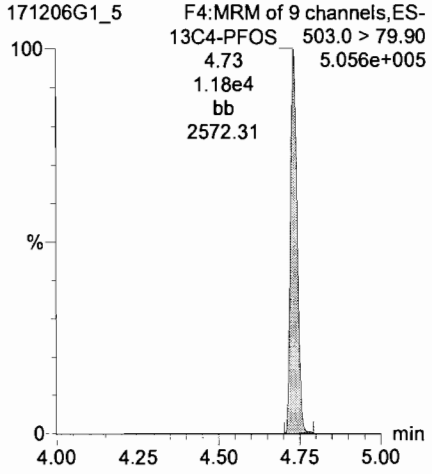
PFOA



PFOS



13C4-PFOS



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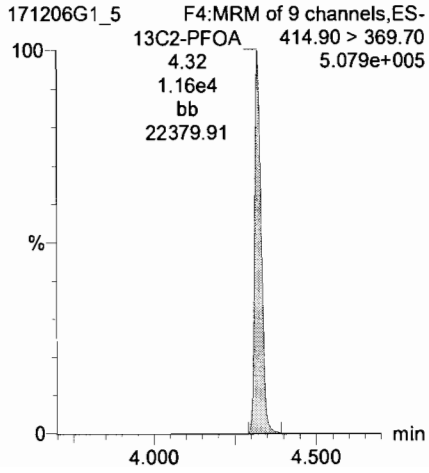

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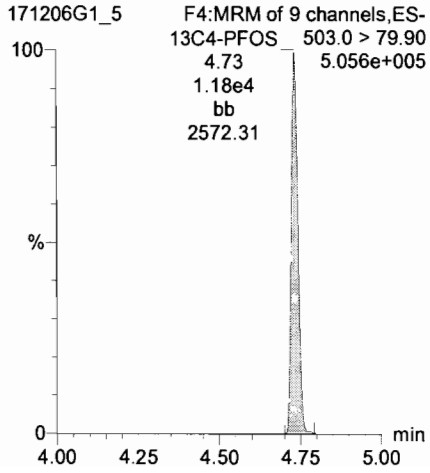

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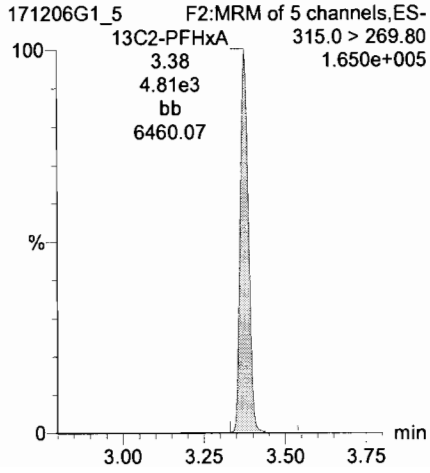
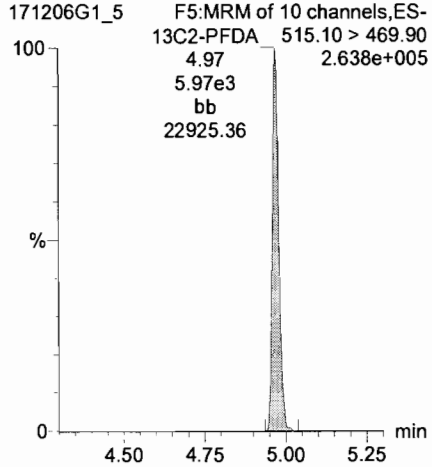


13C2-PFDA



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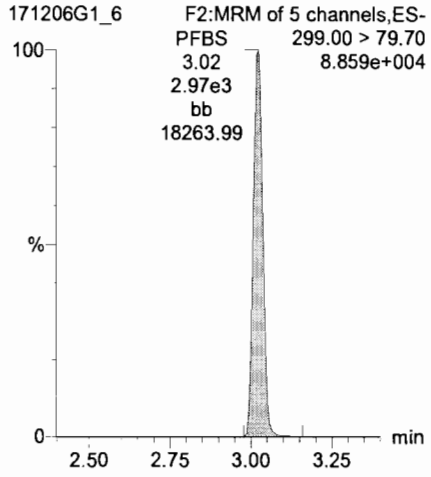
Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-5 PFC CS1 537 17K3026, Description: PFC CS1 537 17K3026, Name: 171206G1_6, Date: 06-Dec-2017, Time: 12:06:11, Instrument: , Lab: , User:

PFBS



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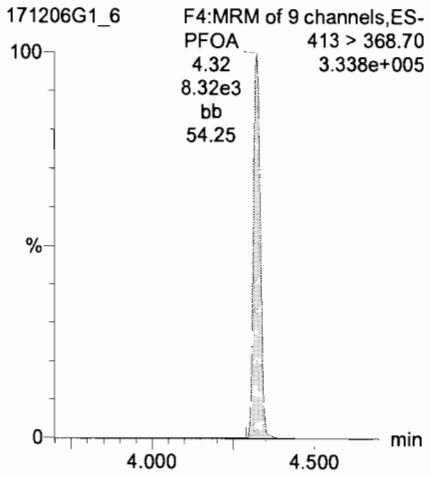
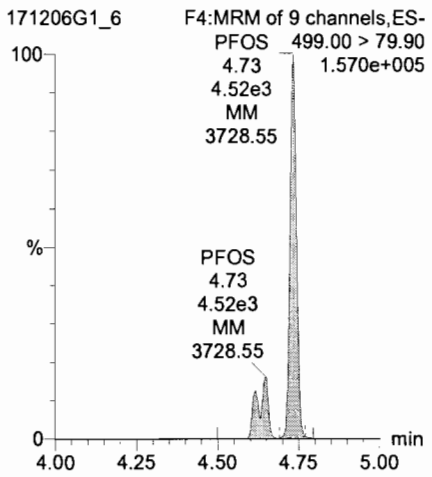


PFOS



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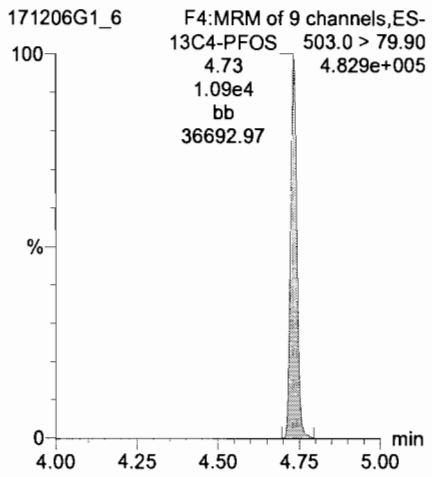

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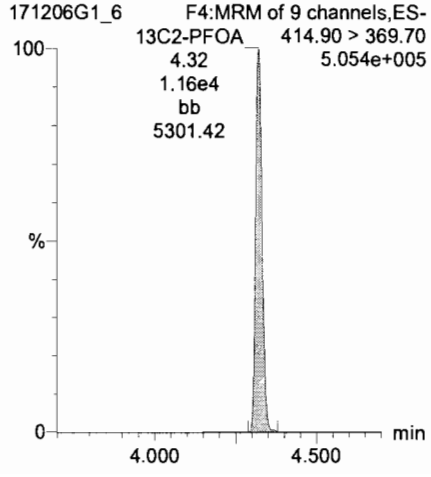

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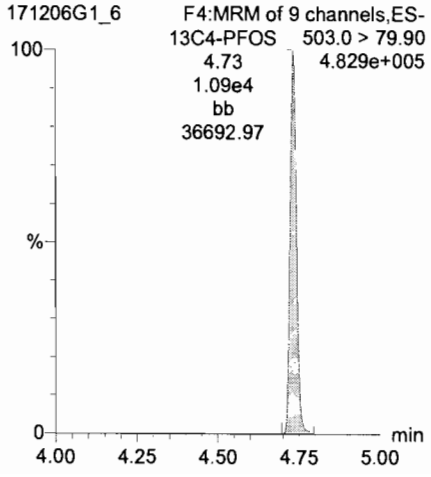

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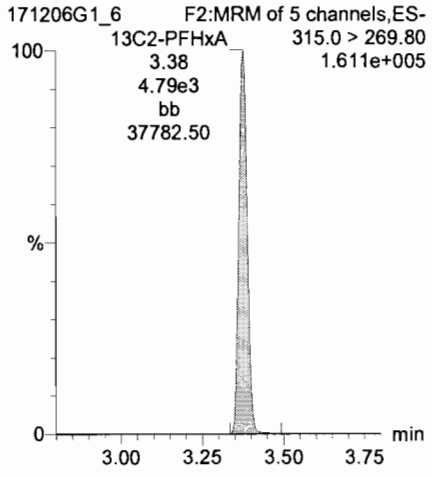

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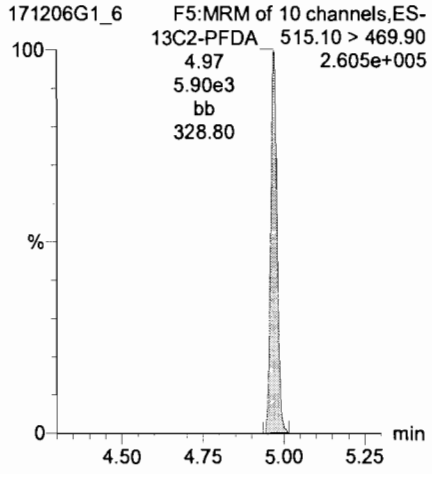

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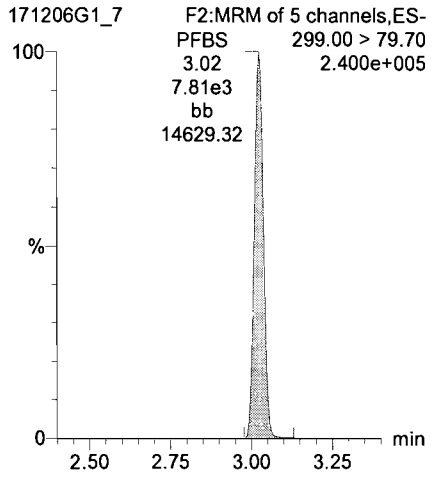
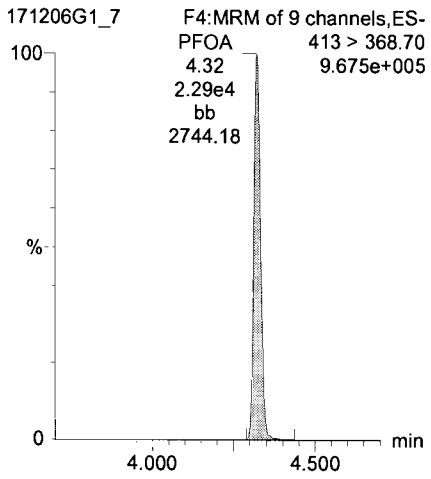
Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-6 PFC CS2 537 17K3033, Description: PFC CS2 537 17K3033, Name: 171206G1_7, Date: 06-Dec-2017, Time: 12:18:38, Instrument: , Lab: , User:

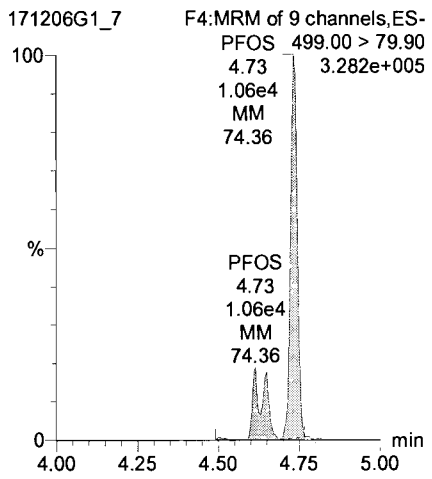
PFBS



PFOA



PFOS



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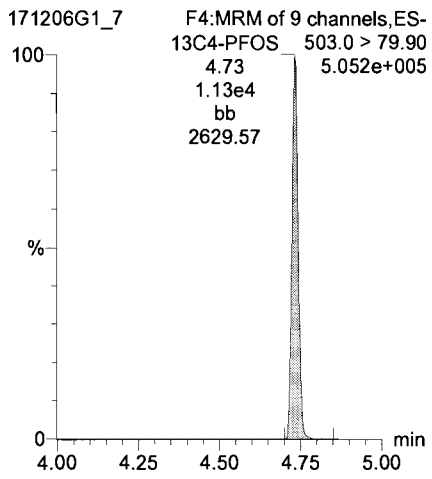

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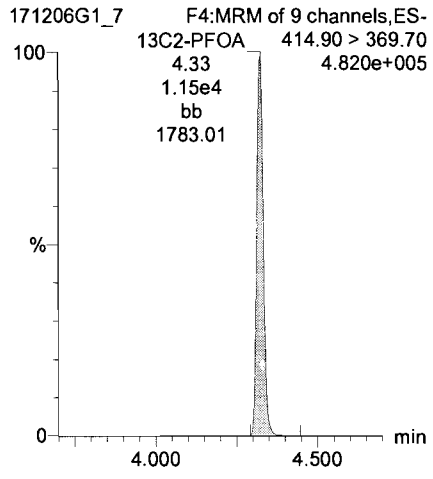

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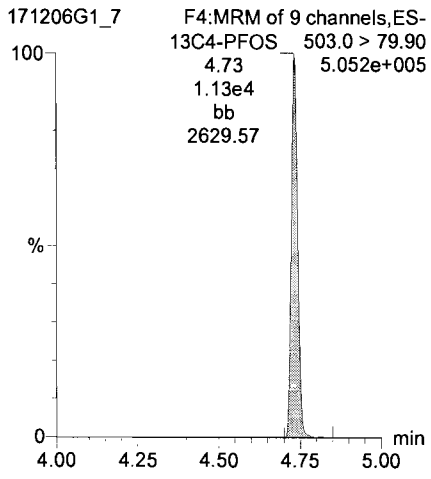

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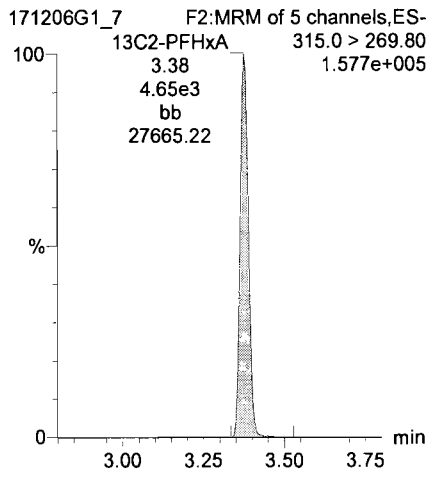

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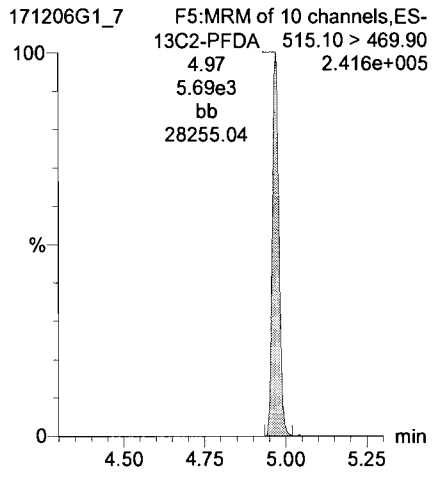

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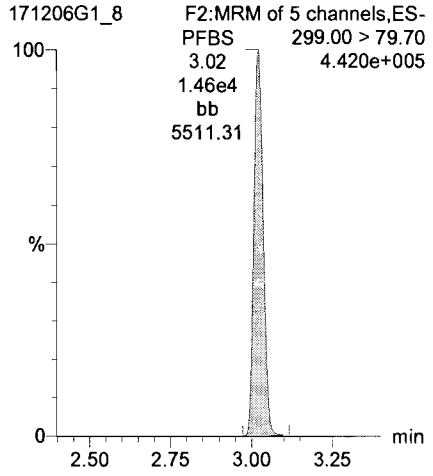
Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-7 PFC CS3 537 17K3027, Description: PFC CS3 537 17K3027, Name: 171206G1_8, Date: 06-Dec-2017, Time: 12:31:04, Instrument: , Lab: , User:

PFBS



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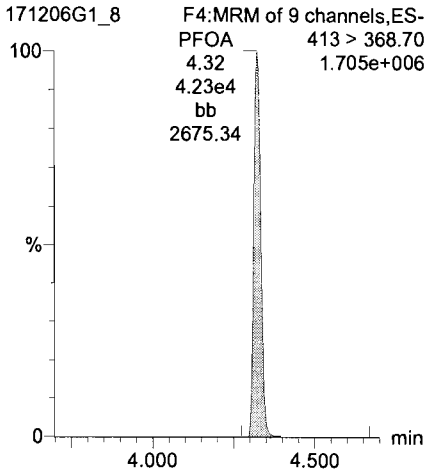

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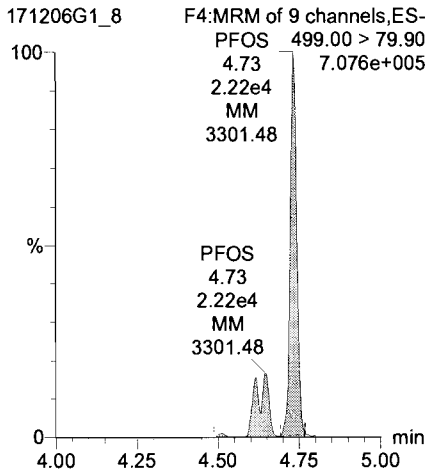

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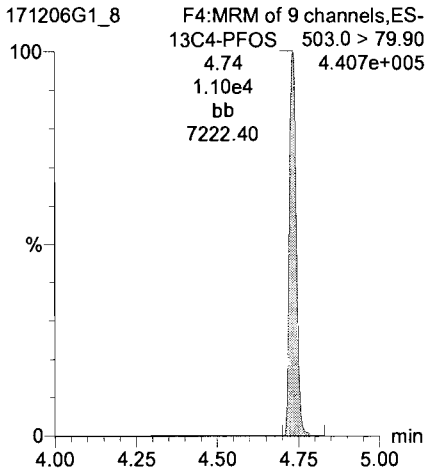

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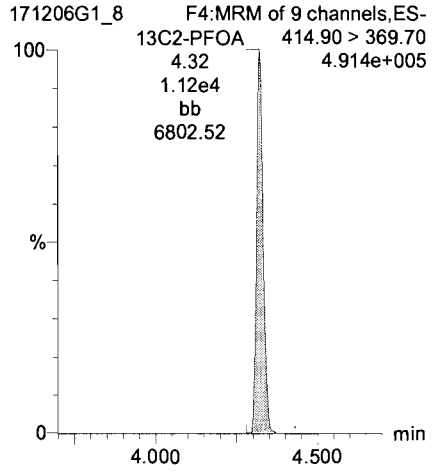

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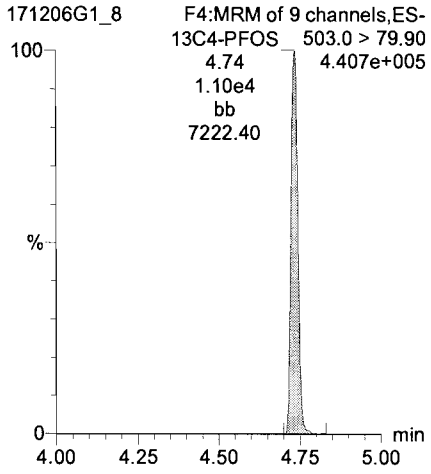

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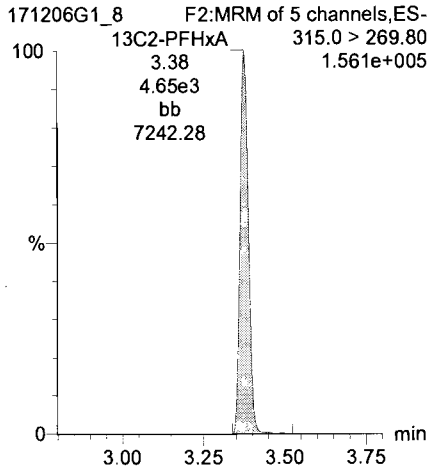

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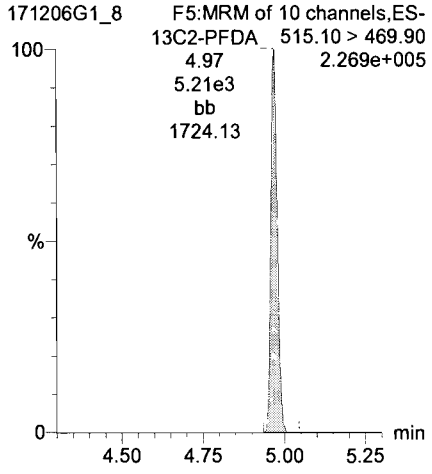

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Last Altered: Wednesday, December 06, 2017 13:27:38 Pacific Standard Time
Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-8 PFC CS4 537 17K3028, Description: PFC CS4 537 17K3028, Name: 171206G1_9, Date: 06-Dec-2017, Time: 12:43:31, Instrument: , Lab: , User:

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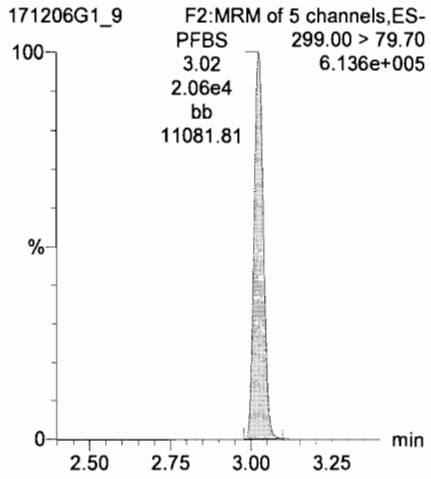

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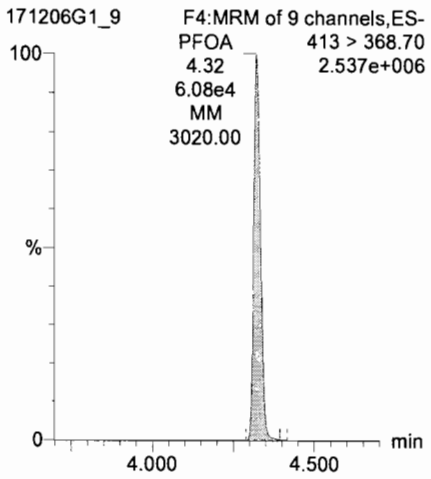

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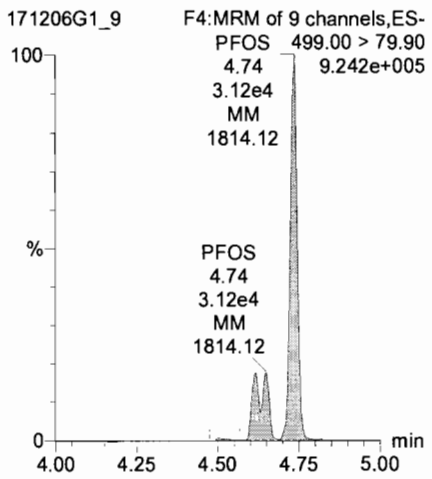

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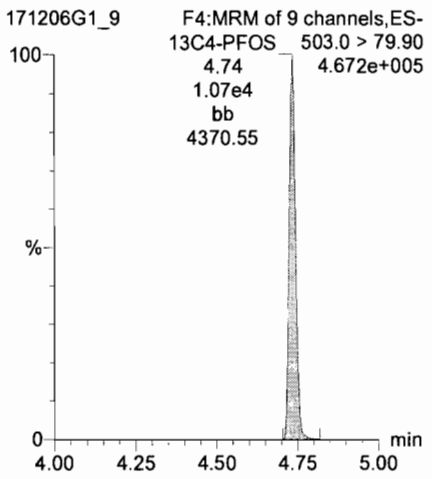

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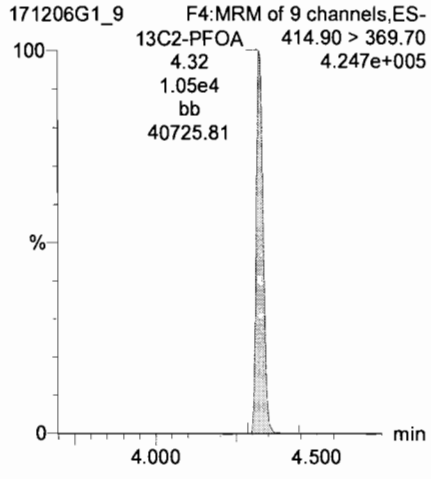

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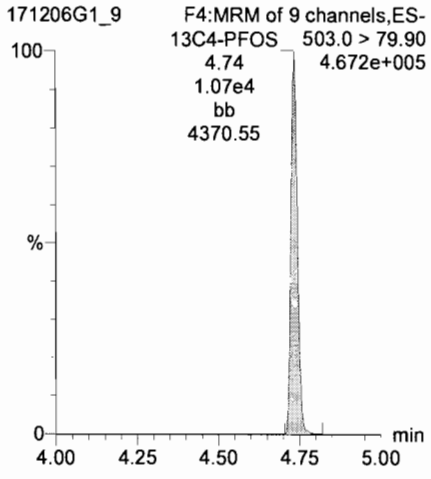

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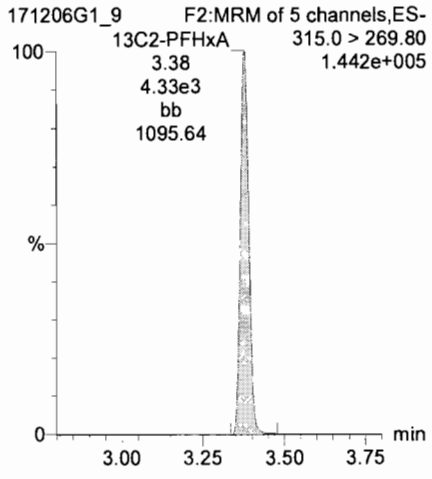

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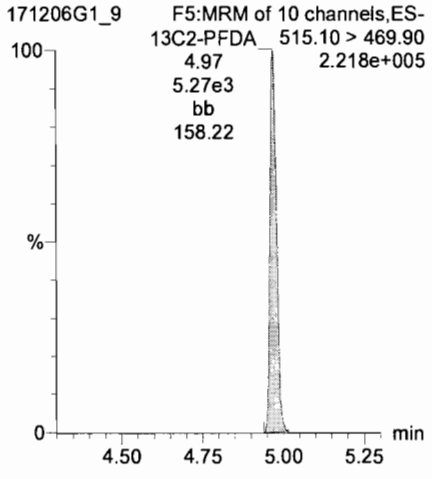

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Printed: Wednesday, December 06, 2017 13:31:13 Pacific Standard Time

ID: ST171206G1-9 PFC CS5 537 17K3029, Description: PFC CS5 537 17K3029, Name: 171206G1_10, Date: 06-Dec-2017, Time: 12:55:59, Instrument: , Lab: , User:

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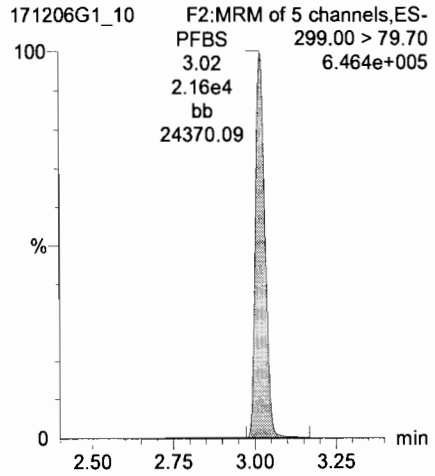

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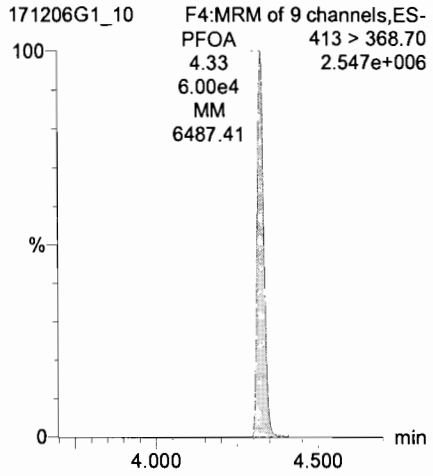

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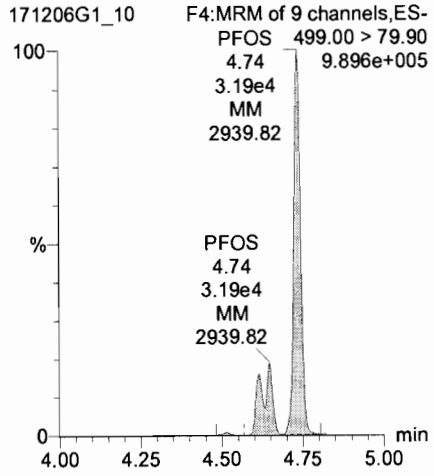

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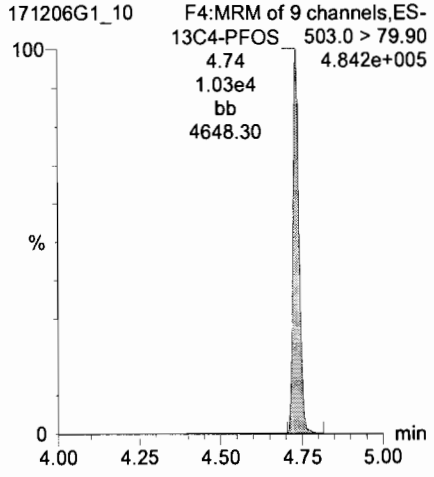

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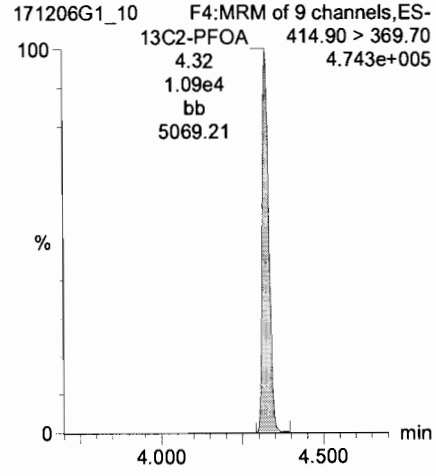

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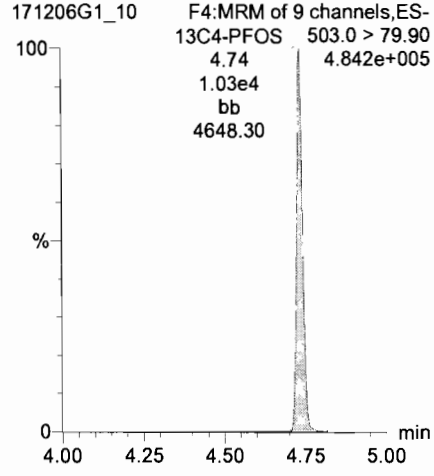

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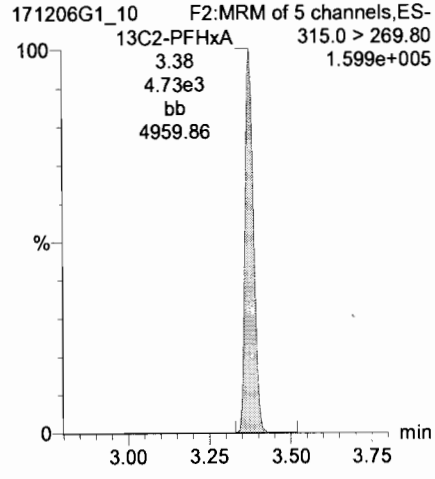

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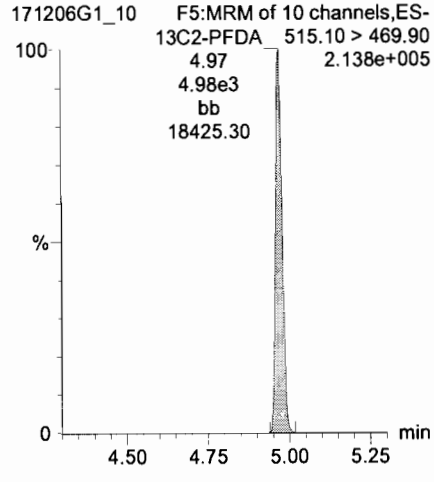


Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-12.qld

Last Altered: Wednesday, December 06, 2017 15:38:46 Pacific Standard Time
Printed: Wednesday, December 06, 2017 15:38:59 Pacific Standard Time

Method: C:\Projects\Q1.PRO\MethDB\PFAS_L3_DW_1206.mdb 06 Dec 2017 11:11:24
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

ID: ICV171206G1-1 PFC ICV 537 17K3030, Description: PFC ICV 537 17K3030, Name: 171206G1_12, Date: 06-Dec-2017, Time: 13:20:50

	#-Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	1 PFBS	299.00 > 79.70	3.252e3	1.050e4		1.00	3.02	9.41	94.1
2	2 PFOA	413 > 368.70	8.480e3	1.042e4		1.00	4.33	10.5	105
3	3 PFOS	499.00 > 79.90	4.681e3	1.050e4		1.00	4.74	9.77	97.7
4	4 13C2-PFHxA	315.0 > 269.80	4.418e3	1.042e4	0.424	1.00	3.38	10.0	100
5	5 13C2-PFDA	515.10 > 469.90	5.224e3	1.042e4	0.478	1.00	4.97	10.5	105
6	6 13C2-PFOA	414.90 > 369.70	1.042e4	1.042e4	1.000	1.00	4.33	10.0	100
7	7 13C4-PFOS	503.0 > 79.90	1.050e4	1.050e4	1.000	1.00	4.74	28.7	100

70-130

12/6/17

VJA. 12/06/2017

Vista Analytical Laboratory Q1

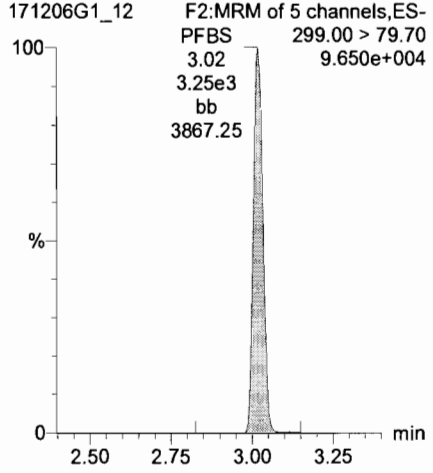
Dataset: U:\G1.PRO\Results\2017\171206G1\171206G1-12.qld

Last Altered: Wednesday, December 06, 2017 15:38:46 Pacific Standard Time
Printed: Wednesday, December 06, 2017 15:38:59 Pacific Standard Time

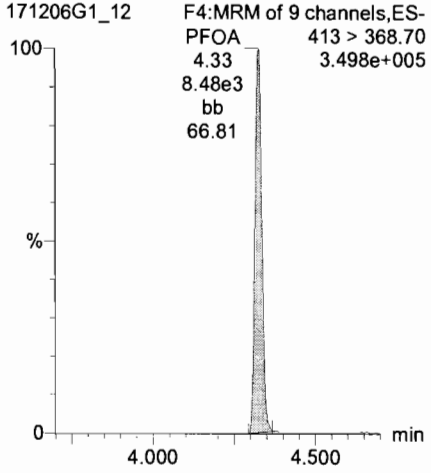
Method: C:\Projects\Q1.PRO\MethDB\PFAS_L3_DW_1206.mdb 06 Dec 2017 11:11:24
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_12-06-17_L3.cdb 06 Dec 2017 15:37:11

ID: ICV171206G1-1 PFC ICV 537 17K3030, Description: PFC ICV 537 17K3030, Name: 171206G1_12, Date: 06-Dec-2017, Time: 13:20:50, Instrument: , Lab: , User:

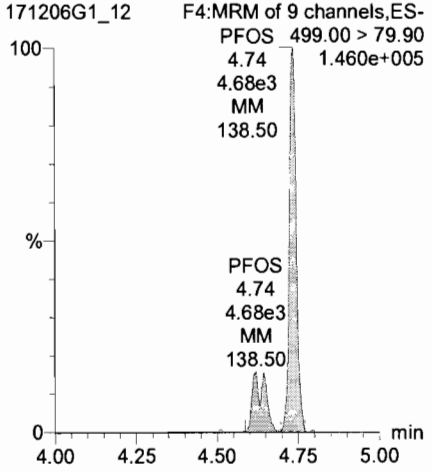
PFBS



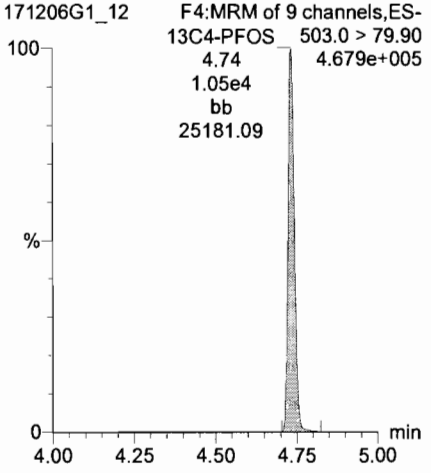
PFOA



PFOS



13C4-PFOS



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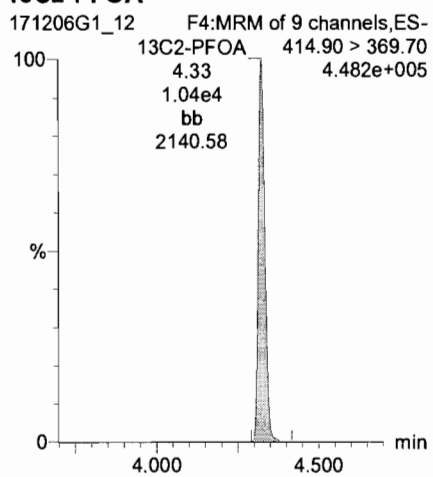

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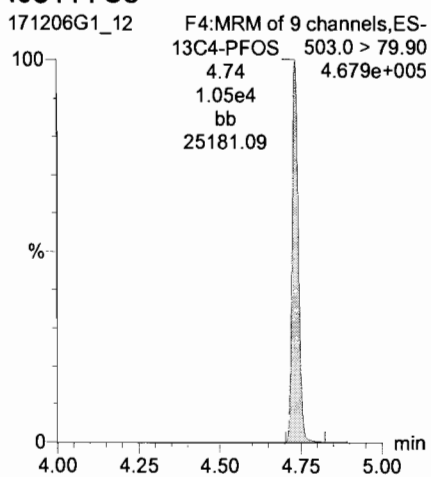

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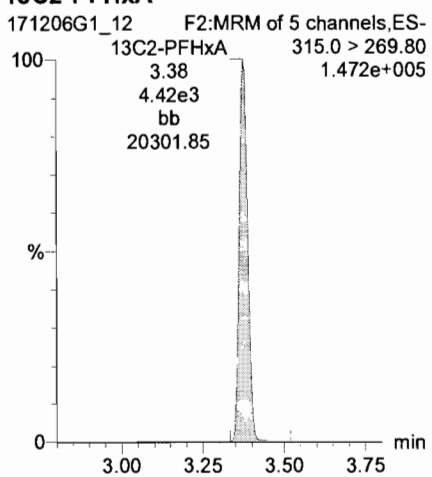

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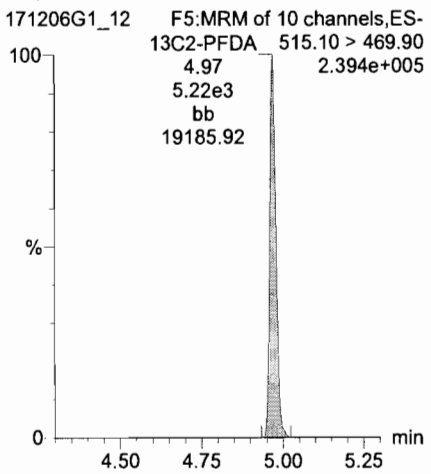

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N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-2FB40-1217	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	12/01/2017 09:57	12/02/2017			20171205	18:45:00	20171208	11:32:00	1701826-02	1
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW115-1217	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	12/01/2017 11:11	12/02/2017			20171205	18:45:00	20171208	11:44:00	1701826-03	1
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Contract_ID	DO_CTO_Number	Phase	Installation_ID	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch
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N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.14	NG_L	U		PR	TRG									5.1	1.11	5.14	10.3	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.14	NG_L	U		PR	TRG									5.1	1.07	5.14	10.3	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		107	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.03	NG_L	U		PR	TRG									5.1	0.446	5.03	10.1	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.03	NG_L	U		PR	TRG									5.1	1.09	5.03	10.1	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.03	NG_L	U		PR	TRG									5.1	1.05	5.03	10.1	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		107	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.30	NG_L	U		PR	TRG									5.1	0.470	5.30	10.6	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.30	NG_L	U		PR	TRG									5.1	1.15	5.30	10.6	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.30	NG_L	U		PR	TRG									5.1	1.10	5.30	10.6	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		97.1	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.99	NG_L	U		PR	TRG									5.1	0.442	4.99	9.98	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		4.99	NG_L	U		PR	TRG									5.1	1.08	4.99	9.98	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.99	NG_L	U		PR	TRG									5.1	1.04	4.99	9.98	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		107	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.14	NG_L	U		PR	TRG									5.1	0.455	5.14	10.3	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.14	NG_L	U		PR	TRG									5.1	1.11	5.14	10.3	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.14	NG_L	U		PR	TRG									5.1	1.07	5.14	10.3	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		102	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.22	NG_L	U		PR	TRG									5.1	0.463	5.22	10.4	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.22	NG_L	U		PR	TRG									5.1	1.13	5.22	10.4	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.22	NG_L	U		PR	TRG									5.1	1.09	5.22	10.4	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		103	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.06	NG_L	U		PR	TRG									5.1	0.448	5.06	10.1	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.06	NG_L	U		PR	TRG									5.1	1.09	5.06	10.1	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.06	NG_L	U		PR	TRG									5.1	1.05	5.06	10.1	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		102	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.94	NG_L	U		PR	TRG									5.1	0.437	4.94	9.87	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		4.94	NG_L	U		PR	TRG									5.1	1.07	4.94	9.87	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.94	NG_L	U		PR	TRG									5.1	1.03	4.94	9.87	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		110	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.25	NG_L	U		PR	TRG									5.1	0.465	5.25	10.5	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.25	NG_L	U		PR	TRG									5.1	1.13	5.25	10.5	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.25	NG_L	U		PR	TRG									5.1	1.09	5.25	10.5	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		107	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.84	NG_L	U		PR	TRG									5.1	0.429	4.84	9.69	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		4.84	NG_L	U		PR	TRG									5.1	1.05	4.84	9.69	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.84	NG_L	U		PR	TRG									5.1	1.01	4.84	9.69	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		106	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.96	NG_L	U		PR	TRG									5.1	0.440	4.96	9.93	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		4.96	NG_L	U		PR	TRG									5.1	1.07	4.96	9.93	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.96	NG_L	U		PR	TRG									5.1	1.03	4.96	9.93	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		100	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		4.96	NG_L	U		PR	TRG									5.1	0.439	4.96	9.92	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		4.96	NG_L	U		PR	TRG									5.1	1.07	4.96	9.92	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		4.96	NG_L	U		PR	TRG									5.1	1.03	4.96	9.92	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		104	PCT_REC			PR			SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.00	NG_L	U		PR	TRG									5.1	0.443	5.00	10.0	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.00	NG_L	U		PR	TRG									5.1	1.08	5.00	10.0	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.00	NG_L	U		PR	TRG									5.1	1.04	5.00	10.0	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		100	PCT_REC			PR	SUR		SLSA	130	70					5.1				1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		18.7	NG_L			PR	TRG		LSA	130	70					5.1	0.443	5.00	10.0	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctanoic acid (PFOA)	335-67-1		23.1	NG_L			PR	TRG		LSA	130	70					5.1	1.08	5.00	10.0	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		16.8	NG_L			PR	TRG		LSA	130	70					5.1	1.04	5.00	10.0	1701826	S7L0022
N6247016D9000	0008		CHERRY_POINT_MCAS	-999			13C2-PFHxA	13C2-PFHxA		96.0	PCT_REC			PR	SUR		LSA	130	70					5.1				1701826	S7L0022

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
MCOLF ATLANTC, NORTH CAROLINA

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 1701826
Laboratory: Vista Analytical Laboratory, El Dorado Hills, California
Site: MCOLF Atlantic, North Carolina
Date: January 3, 2018

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	CH-AT-2RW40-1217	1701826-01	Water
2	CH-AT-2FB40-1217	1701826-02	Water
3	CH-AT-1RW115-1217	1701826-03	Water
4	CH-AT-1FB115-1217	1701826-04	Water
5	CH-AT-2RW41-1217	1701826-05	Water
6	CH-AT-2FB41-1217	1701826-06	Water
7	CH-AT-2RW39-1217	1701826-07	Water
8	CH-AT-2FB39-1217	1701826-08	Water
9	CH-AT-1RW114-1217	1701826-09	Water
10	CH-AT-1FB114-1217	1701826-10	Water
11	CH-AT-1RW113-1217	1701826-11	Water
12	CH-AT-1FB113-1217	1701826-12	Water

A full data validation was performed on the analytical data for six water samples and six aqueous field blank samples collected on December 2, 2017 by CH2M HILL at the MCOLF Atlantic site in Atlantic, North Carolina. The samples were analyzed under the EPA Method "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)".

Specific method references are as follows:

Analysis	*Method References*
PFCs	USEPA Method 537

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (July 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Organic Superfund Methods Data Review," January 2017;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation
- Holding times
- Liquid Chromatography/Mass Spectrometry (LC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

LC/MS Tuning

- All criteria were met.

Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- Field QC samples were free of contamination.

Blank ID	Compound	Conc. ng/L	Qualifier	Affected Samples
CH-AT-2FB40-1217	None - ND	-	-	-
CH-AT-1FB115-1217	None - ND	-	-	-
CH-AT-2FB41-1217	None - ND	-	-	-
CH-AT-2FB39-1217	None - ND	-	-	-
CH-AT-1FB114-1217	None - ND	-	-	-
CH-AT-1FB113-1217	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- MS/MSD samples were not analyzed.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 1/5/18

Nancy Weaver
Senior Chemist

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

Vista Analytical Laboratory

Sample ID: CH-AT-2RW40-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:57

Laboratory Data

Lab Sample: 1701826-01
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.455	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1
PFOA	ND	1.11	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1
PFOS	ND	1.07	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.243 L	07-Dec-17 17:18	1

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

NW 13.18

Vista Analytical Laboratory

Sample ID: CH-AT-2FB40-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:57

Laboratory Data

Lab Sample: 1701826-02
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.446	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1
PFOA	ND	1.09	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1
PFOS	ND	1.05	5.03	10.1		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.248 L	08-Dec-17 11:32	1

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

Vista Analytical Laboratory 3

Sample ID: CH-AT-1RW115-1217 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701826-03	Column:	BEH C18
Project:	CTO-08/MCOLF ATLANTIC PFAS INV.	Date Collected:	01-Dec-17 11:11	Date Received:	02-Dec-17 09:37		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.470	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1
PFOA	ND	1.15	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1
PFOS	ND	1.10	5.30	10.6		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.1	70 - 130		B7L0015	05-Dec-17	0.236 L	08-Dec-17 11:44	1

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

NW 1/31/18

Vista Analytical Laboratory

4

Sample ID: CH-AT-1FB115-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 11:12

Laboratory Data

Lab Sample: 1701826-04
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.442	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1
PFOA	ND	1.08	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1
PFOS	ND	1.04	4.99	9.98		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.251 L	07-Dec-17 17:56	1

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

12/13/18

Vista Analytical Laboratory

5

Sample ID: CH-AT-2RW41-1217 **EPA Method 537**

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:36

Laboratory Data

Lab Sample: 1701826-05
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.455	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1
PFOA	ND	1.11	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1
PFOS	ND	1.07	5.14	10.3		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7L0015	05-Dec-17	0.243 L	07-Dec-17 18:08	1

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

nw13.8

Sample ID: CH-AT-2FB41-1217 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701826-06	Column:	BEH C18
Project:	CTO-08/MCOLF ATLANTIC PFAS INV.	Date Collected:	01-Dec-17 10:36	Date Received:	02-Dec-17 09:37		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.463	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1
PFOA	ND	1.13	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1
PFOS	ND	1.09	5.22	10.4		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7L0015	05-Dec-17	0.239 L	08-Dec-17 11:57	1

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

Vista Analytical Laboratory

Sample ID: CH-AT-2RW39-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:36

Laboratory Data

Lab Sample: 1701826-07
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.448	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1
PFOA	ND	1.09	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1
PFOS	ND	1.05	5.06	10.1		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7L0015	05-Dec-17	0.247 L	07-Dec-17 18:33	1

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

JW 1/31/18

Sample ID: CH-AT-2FB39-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:36

Laboratory Data

Lab Sample: 1701826-08
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.437	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1
PFOA	ND	1.07	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1
PFOS	ND	1.03	4.94	9.87		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	110	70 - 130		B7L0015	05-Dec-17	0.253 L	07-Dec-17 18:45	1

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

Vista 9 Analytical Laboratory

Sample ID: CH-AT-1RW114-1217 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701826-09	Column:	BEH C18
Project:	CTO-08/MCOLF ATLANTIC PFAS INV.	Date Collected:	01-Dec-17 10:22	Date Received:	02-Dec-17 09:37		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.465	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1
PFOA	ND	1.13	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1
PFOS	ND	1.09	5.25	10.5		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	107	70 - 130		B7L0015	05-Dec-17	0.238 L	08-Dec-17 12:09	1

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

12/13/18

Vista Analytical Laboratory 10

Sample ID: CH-AT-1FB114-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 10:23

Laboratory Data

Lab Sample: 1701826-10
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.429	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1
PFOA	ND	1.05	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1
PFOS	ND	1.01	4.84	9.69		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7L0015	05-Dec-17	0.258 L	08-Dec-17 12:22	1

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

12/13/18

Vista II
Analytical Laboratory

Sample ID: CH-AT-1RW113-1217 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701826-11	Column:	BEH C18
Project:	CTO-08/MCOLF ATLANTIC PFAS INV.	Date Collected:	01-Dec-17 09:25	Date Received:	02-Dec-17 09:37		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.440	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1
PFOA	ND	1.07	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1
PFOS	ND	1.03	4.96	9.93		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7L0015	05-Dec-17	0.252 L	07-Dec-17 19:23	1

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

xev 1/3/18

Vista Analytical Laboratory 12

Sample ID: CH-AT-1FB113-1217

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08/MCOLF ATLANTIC PFAS INV.
Matrix: Drinking Water
Date Collected: 01-Dec-17 09:26

Laboratory Data

Lab Sample: 1701826-12
Date Received: 02-Dec-17 09:37
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.439	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1
PFOA	ND	1.07	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1
PFOS	ND	1.03	4.96	9.92		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B7L0015	05-Dec-17	0.252 L	08-Dec-17 12:34	1

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

NWI 3/18

R:\N\Navy\CLEAN\MULTI_REGION\PFC_679580\MapFiles\ML\CherryPoint_MCAS\OLF Atlantic Working - 2.mxd4/25/2017bmailhes

MARINE CORPS OUTLYING LANDING FIELD ATLANTIC

Atlantic, NC

ATLANTIC ELEMENTARY

CRUISE MART II

CORE SOUND

Legend

- Proposed Sample Location
- Public Water Supply Well
- Direction of Groundwater Flow
- MCOLF Atlantic - 1-mile zone
- Base Boundary
- Site Boundary (suspected source)
- Parcels

N

0 0.2 0.4 Miles

1 inch = 0.4 mile

Imagery: Esri, 2016

Figure 3
Proposed Sampling Locations
Marine Corps Outlying Landing Field Atlantic
Atlantic Beach, North Carolina