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 1701750

Marine Corps Outlying Landing Field Atlantic
MCAS Cherry Point NC

February 2019

December 02, 2017

Vista Work Order No. 1701750

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 November 21, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'CTO-08, MCOLF Atlantic / PFAS DW Investigation'.

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. 1701750
Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

EPA Method 537

The following samples contained particulate and were centrifuged prior to extraction:

Laboratory ID	Sample Name
1701750-03	CH-AT-1RW49-1117
1701750-11	CH-AT-1RW53-1117
1701750-17	CH-AT-1RW56-1117
1701750-20	CH-AT-1RW57-1117

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.

Two Laboratory Fortified Blanks (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.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1701750-01	CH-AT-1RW48-1117	17-Nov-17 11:29	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-02	CH-AT-1FB48-1117	17-Nov-17 11:30	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-03	CH-AT-1RW49-1117	17-Nov-17 11:39	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-04	CH-AT-1FB49-1117	17-Nov-17 11:40	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-05	CH-AT-1RW50-1117	17-Nov-17 11:48	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-06	CH-AT-1FB50-1117	17-Nov-17 11:49	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-07	CH-AT-1RW51-1117	17-Nov-17 12:03	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-08	CH-AT-1FB51-1117	17-Nov-17 12:04	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-09	CH-AT-1RW52-1117	17-Nov-17 12:15	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-10	CH-AT-1FB52-1117	17-Nov-17 12:16	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-11	CH-AT-1RW53-1117	17-Nov-17 13:55	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-12	CH-AT-1FB53-1117	17-Nov-17 13:56	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-13	CH-AT-1RW54-1117	17-Nov-17 14:12	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-14	CH-AT-1FB54-1117	17-Nov-17 14:13	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-15	CH-AT-1RW55-1117	17-Nov-17 15:08	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-16	CH-AT-1FB55-1117	17-Nov-17 15:09	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-17	CH-AT-1RW56-1117	17-Nov-17 16:05	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-18	CH-AT-1FB56-1117	17-Nov-17 16:06	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-19	CH-AT-1FB57-1117	17-Nov-17 16:57	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-20	CH-AT-1RW57-1117	17-Nov-17 16:56	21-Nov-17 10:13	HDPE Bottle, 250 mL

Vista Project: 1701750

Client Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1701750-20	CH-AT-1RW57-1117	17-Nov-17 16:56	21-Nov-17 10:13	HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water

Laboratory Data

Lab Sample: B7K0172-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		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	1
PFOA	ND	1.08	5.00	10.0		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	1
PFOS	ND	1.04	5.00	10.0		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	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: LFBD **EPA Method 537**

Name:	CH2M Hill	Lab Sample:	B7K0172-BS1/B7K0172-BSD1		
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigatio	QC Batch:	B7K0172	Date Extracted:	28-Nov-17
Matrix:	Drinking Water	Samp Size:	0.250/0.250 L	Column:	BEH C18

Analyte	LCS (ng/L)	LCS Spike Amt	LCS % Rec	LCS Quals	LCSD (ng/L)	LCSD Spike Amt	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	37.0	35.4	105		36.3	35.4	103	1.87		70-130	30	30-Nov-17 21:00	1	30-Nov-17 21:12	1
PFOA	41.1	40.0	103		42.5	40.0	106	3.46		70-130	30	30-Nov-17 21:00	1	30-Nov-17 21:12	1
PFOS	35.3	37.0	95.4		34.8	37.0	93.9	1.53		70-130	30	30-Nov-17 21:00	1	30-Nov-17 21:12	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C2-PFHxA	SURR	98.4		107		70-130	30-Nov-17 21:00	1	30-Nov-17 21:12	1

Sample ID: CH-AT-1RW48-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:29

Laboratory Data

Lab Sample: 1701750-01
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.437	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1
PFOA	ND	1.07	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1
PFOS	ND	1.03	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	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-1FB48-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:30

Laboratory Data

Lab Sample: 1701750-02
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.412	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1
PFOA	ND	1.00	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1
PFOS	ND	0.967	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	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-1RW49-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:39

Laboratory Data

Lab Sample: 1701750-03
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.438	4.95	9.89		B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1
PFOA	4.15	1.07	4.95	9.89	J	B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1
PFOS	1.23	1.03	4.95	9.89	J	B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	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-1FB49-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:40

Laboratory Data

Lab Sample: 1701750-04
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.422	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1
PFOA	ND	1.03	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1
PFOS	ND	0.992	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	92.5	70 - 130		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	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-1RW50-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:48

Laboratory Data

Lab Sample: 1701750-05
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.415	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1
PFOA	ND	1.01	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1
PFOS	ND	0.974	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	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-1FB50-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:49

Laboratory Data

Lab Sample: 1701750-06
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.410	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1
PFOA	ND	0.998	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1
PFOS	ND	0.961	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	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-1RW51-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:03

Laboratory Data

Lab Sample: 1701750-07
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1
PFOA	ND	1.04	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1
PFOS	ND	1.01	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	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-1FB51-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:04

Laboratory Data

Lab Sample: 1701750-08
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.409	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1
PFOA	ND	0.997	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1
PFOS	ND	0.960	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.7	70 - 130		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	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-1RW52-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:15

Laboratory Data

Lab Sample: 1701750-09
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.431	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1
PFOA	ND	1.05	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1
PFOS	ND	1.01	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.0	70 - 130		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	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-1FB52-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:16

Laboratory Data

Lab Sample: 1701750-10
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.417	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1
PFOA	ND	1.02	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1
PFOS	ND	0.980	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	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-1RW53-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 13:55

Laboratory Data

Lab Sample: 1701750-11
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.415	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1
PFOA	ND	1.01	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1
PFOS	ND	0.975	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	95.8	70 - 130		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	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-1FB53-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 13:56

Laboratory Data

Lab Sample: 1701750-12
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.411	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1
PFOA	ND	1.00	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1
PFOS	ND	0.964	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	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-1RW54-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 14:12

Laboratory Data

Lab Sample: 1701750-13
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.421	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1
PFOA	ND	1.03	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1
PFOS	ND	0.989	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	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-1FB54-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 14:13

Laboratory Data

Lab Sample: 1701750-14
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.420	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1
PFOA	ND	1.02	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1
PFOS	ND	0.986	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	109	70 - 130		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	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-1RW55-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 15:08

Laboratory Data

Lab Sample: 1701750-15
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1
PFOA	ND	1.04	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1
PFOS	ND	1.01	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	89.7	70 - 130		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	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-1FB55-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 15:09

Laboratory Data

Lab Sample: 1701750-16
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.427	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1
PFOA	ND	1.04	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1
PFOS	ND	1.00	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	99.5	70 - 130		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	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-1RW56-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:05

Laboratory Data

Lab Sample: 1701750-17
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.421	4.75	9.50		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1
PFOA	1.57	1.03	4.75	9.50	J	B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1
PFOS	ND	0.988	4.75	9.50		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	109	70 - 130		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	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-1FB56-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:06

Laboratory Data

Lab Sample: 1701750-18
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.418	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1
PFOA	ND	1.02	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1
PFOS	ND	0.982	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.4	70 - 130		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	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-1FB57-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:57

Laboratory Data

Lab Sample: 1701750-19
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.432	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1
PFOA	ND	1.05	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1
PFOS	ND	1.01	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.8	70 - 130		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	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-1RW57-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:56

Laboratory Data

Lab Sample: 1701750-20
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.416	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1
PFOA	ND	1.01	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1
PFOS	ND	0.977	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	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.

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

Rev. No.: 0
Rev. Date: 05/27/2017

Cooler 2 - 1 of 2 pages

CTO-08 679580.15.FI.FS

ID: LR - 537COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1701750 Temp 0.2 °C
Storage ID: WR-2 Storage Secured: Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation PO#: 10006-7-106051 Sampler: J. Towns / A. Ewalt / K.Smith (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	11/20/17	15:30	B. Benedict	11/21/17	1021
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/PFOS	UCMR3 PFAS List 6	537 List: 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List 6	PFAS List: 14	Comments
CH-AT-1RW48-1117	11/17/17	11:29		2	P	DW						X			TZ preservative
CH-AT1FB48-1117	11/17/17	11:30		2	P	DW						X			TZ preservative
CH-AT-1RW49-1117	11/17/17	11:39		2	P	DW						X			TZ preservative
CH-AT-1FB49-1117	11/17/17	11:40		2	P	DW						X			TZ preservative
CH-AT-1RW50-1117	11/17/17	11:48		2	P	DW						X			TZ preservative
CH-AT-1FB50-1117	11/17/17	11:49		2	P	DW						X			TZ preservative
CH-AT-1RW51-1117	11/17/17	12:03		2	P	DW						X			TZ preservative
CH-AT-1FB51-1117	11/17/17	12:04		2	P	DW						X			TZ preservative
CH-AT-1RW52-1117	11/17/17	12:15		2	P	DW						X			TZ preservative
CH-AT-1FB52-1117	11/17/17	12:16		2	P	DW						X			TZ preservative

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
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: P= HDPE, PJ= HDPE Jar, O = Other

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

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

Page: 1 of 1

Rev. No.: 0
Rev. Date: 05/27/2017

Cooler 2 - 2 of 2 pgs

CTO-08 679580.15.FI.FS

ID: LR - 537COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1701750 Temp 0.2 °C
Storage ID WR-2 Storage Secured Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation PO#: 10006-7-106051 Sampler: J. Towns/ A. Ewalt/ K.Smith (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	11/20/17	15:30	B. Benedict	11/21/17	1021
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod EPA Method 537: PFOA/PFOS	UCMR3 PFAS List 6	537 List 14	Full List of 26	Other Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List 6	PFAS List 14	Comments
CH-AT-1RW53-1117	11/17/17	13:55		2	P	DW						X			TZ preservative
CH-AT-1FB53-1117	11/17/17	13:56		2	P	DW						X			TZ preservative
CH-AT-1RW54-1117	11/17/17	14:12		2	P	DW						X			TZ preservative
CH-AT-1FB54-1117	11/17/17	14:13		2	P	DW						X			TZ preservative
CH-AT-1RW55-1117	11/17/17	15:08		2	P	DW						X			TZ preservative
CH-AT-1FB55-1117	11/17/17	15:09		2	P	DW						X			TZ preservative
CH-AT-1RW56-1117	11/17/17	16:05		2	P	DW						X			TZ preservative
CH-AT-1FB56-1117	11/17/17	16:06		2	P	DW						X			TZ preservative
CH-AT-1RW57-1117	11/17/17	16:56		2	P	DW						X			TZ preservative ; potential high concentration
CH-AT-1FB57-1117	11/17/17	16:57		2	P	DW						X			TZ preservative

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
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: P= HDPE, PJ= HDPE Jar, O = Other

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

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

Page: 1 of 1

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1701750 **TAT** 7

Samples Arrival:	**Date/Time** 11/21/17 1013	**Initials:** [illegible]	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 11/21/17 1533	**Initials:** SR [illegible]	**Location:** WR 2 **Shelf/Rack:** F7

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

Temp °C: 0.1 (uncorrected)	**Time:** 1022	**Thermometer ID:** IR-1
Temp °C: 0.2 (corrected)	**Probe used:** Yes☐ No☑	

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill 1 of 4 Trk # 770793751035	✓		
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:

December 02, 2017

Vista Work Order No. 1701750

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 November 21, 2017. This sample set was analyzed on a rush turn-around time, under your Project Name 'CTO-08, MCOLF Atlantic / PFAS DW Investigation'.

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. Vorpenstein 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. 1701750
Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

EPA Method 537

The following samples contained particulate and were centrifuged prior to extraction:

Laboratory ID	Sample Name
1701750-03	CH-AT-1RW49-1117
1701750-11	CH-AT-1RW53-1117
1701750-17	CH-AT-1RW56-1117
1701750-20	CH-AT-1RW57-1117

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.

Two Laboratory Fortified Blanks (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.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1701750-01	CH-AT-1RW48-1117	17-Nov-17 11:29	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-02	CH-AT-1FB48-1117	17-Nov-17 11:30	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-03	CH-AT-1RW49-1117	17-Nov-17 11:39	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-04	CH-AT-1FB49-1117	17-Nov-17 11:40	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-05	CH-AT-1RW50-1117	17-Nov-17 11:48	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-06	CH-AT-1FB50-1117	17-Nov-17 11:49	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-07	CH-AT-1RW51-1117	17-Nov-17 12:03	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-08	CH-AT-1FB51-1117	17-Nov-17 12:04	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-09	CH-AT-1RW52-1117	17-Nov-17 12:15	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-10	CH-AT-1FB52-1117	17-Nov-17 12:16	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-11	CH-AT-1RW53-1117	17-Nov-17 13:55	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-12	CH-AT-1FB53-1117	17-Nov-17 13:56	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-13	CH-AT-1RW54-1117	17-Nov-17 14:12	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-14	CH-AT-1FB54-1117	17-Nov-17 14:13	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-15	CH-AT-1RW55-1117	17-Nov-17 15:08	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-16	CH-AT-1FB55-1117	17-Nov-17 15:09	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-17	CH-AT-1RW56-1117	17-Nov-17 16:05	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-18	CH-AT-1FB56-1117	17-Nov-17 16:06	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-19	CH-AT-1FB57-1117	17-Nov-17 16:57	21-Nov-17 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1701750-20	CH-AT-1RW57-1117	17-Nov-17 16:56	21-Nov-17 10:13	HDPE Bottle, 250 mL

Vista Project: 1701750

Client Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1701750-20	CH-AT-1RW57-1117	17-Nov-17 16:56	21-Nov-17 10:13	HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water

Laboratory Data

Lab Sample: B7K0172-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		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	1
PFOA	ND	1.08	5.00	10.0		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	1
PFOS	ND	1.04	5.00	10.0		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.250 L	30-Nov-17 21:24	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: LFBD **EPA Method 537**

Name:	CH2M Hill	Lab Sample:	B7K0172-BS1/B7K0172-BSD1		
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigatio	QC Batch:	B7K0172	Date Extracted:	28-Nov-17
Matrix:	Drinking Water	Samp Size:	0.250/0.250 L	Column:	BEH C18

Analyte	LCS (ng/L)	LCS Spike Amt	LCS % Rec	LCS Quals	LCSD (ng/L)	LCSD Spike Amt	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	37.0	35.4	105		36.3	35.4	103	1.87		70-130	30	30-Nov-17 21:00	1	30-Nov-17 21:12	1
PFOA	41.1	40.0	103		42.5	40.0	106	3.46		70-130	30	30-Nov-17 21:00	1	30-Nov-17 21:12	1
PFOS	35.3	37.0	95.4		34.8	37.0	93.9	1.53		70-130	30	30-Nov-17 21:00	1	30-Nov-17 21:12	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C2-PFHxA	SURR	98.4		107		70-130	30-Nov-17 21:00	1	30-Nov-17 21:12	1

Sample ID: CH-AT-1RW48-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:29

Laboratory Data

Lab Sample: 1701750-01
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.437	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1
PFOA	ND	1.07	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1
PFOS	ND	1.03	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	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-1FB48-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:30

Laboratory Data

Lab Sample: 1701750-02
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.412	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1
PFOA	ND	1.00	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1
PFOS	ND	0.967	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	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-1RW49-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:39

Laboratory Data

Lab Sample: 1701750-03
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.438	4.95	9.89		B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1
PFOA	4.15	1.07	4.95	9.89	J	B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1
PFOS	1.23	1.03	4.95	9.89	J	B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	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-1FB49-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:40

Laboratory Data

Lab Sample: 1701750-04
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.422	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1
PFOA	ND	1.03	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1
PFOS	ND	0.992	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	92.5	70 - 130		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	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-1RW50-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:48

Laboratory Data

Lab Sample: 1701750-05
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.415	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1
PFOA	ND	1.01	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1
PFOS	ND	0.974	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	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-1FB50-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:49

Laboratory Data

Lab Sample: 1701750-06
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.410	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1
PFOA	ND	0.998	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1
PFOS	ND	0.961	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	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-1RW51-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:03

Laboratory Data

Lab Sample: 1701750-07
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1
PFOA	ND	1.04	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1
PFOS	ND	1.01	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	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-1FB51-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:04

Laboratory Data

Lab Sample: 1701750-08
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.409	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1
PFOA	ND	0.997	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1
PFOS	ND	0.960	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.7	70 - 130		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	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-1RW52-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:15

Laboratory Data

Lab Sample: 1701750-09
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.431	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1
PFOA	ND	1.05	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1
PFOS	ND	1.01	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.0	70 - 130		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	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-1FB52-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:16

Laboratory Data

Lab Sample: 1701750-10
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.417	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1
PFOA	ND	1.02	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1
PFOS	ND	0.980	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	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-1RW53-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 13:55

Laboratory Data

Lab Sample: 1701750-11
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.415	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1
PFOA	ND	1.01	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1
PFOS	ND	0.975	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	95.8	70 - 130		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	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-1FB53-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 13:56

Laboratory Data

Lab Sample: 1701750-12
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.411	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1
PFOA	ND	1.00	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1
PFOS	ND	0.964	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	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-1RW54-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 14:12

Laboratory Data

Lab Sample: 1701750-13
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.421	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1
PFOA	ND	1.03	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1
PFOS	ND	0.989	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	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-1FB54-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 14:13

Laboratory Data

Lab Sample: 1701750-14
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.420	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1
PFOA	ND	1.02	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1
PFOS	ND	0.986	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	109	70 - 130		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	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-1RW55-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 15:08

Laboratory Data

Lab Sample: 1701750-15
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1
PFOA	ND	1.04	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1
PFOS	ND	1.01	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	89.7	70 - 130		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	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-1FB55-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 15:09

Laboratory Data

Lab Sample: 1701750-16
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.427	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1
PFOA	ND	1.04	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1
PFOS	ND	1.00	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	99.5	70 - 130		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	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-1RW56-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:05

Laboratory Data

Lab Sample: 1701750-17
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.421	4.75	9.50		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1
PFOA	1.57	1.03	4.75	9.50	J	B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1
PFOS	ND	0.988	4.75	9.50		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	109	70 - 130		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	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-1FB56-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:06

Laboratory Data

Lab Sample: 1701750-18
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.418	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1
PFOA	ND	1.02	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1
PFOS	ND	0.982	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.4	70 - 130		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	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-1FB57-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:57

Laboratory Data

Lab Sample: 1701750-19
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.432	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1
PFOA	ND	1.05	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1
PFOS	ND	1.01	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.8	70 - 130		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	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-1RW57-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:56

Laboratory Data

Lab Sample: 1701750-20
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.416	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1
PFOA	ND	1.01	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1
PFOS	ND	0.977	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	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.

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

Rev. No.: 0
Rev. Date: 05/27/2017

Cooler 2 - 1 of 2 pages

CTO-08 679580.15.FI.FS

ID: LR - 537COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1701750 Temp 0.2 °C
Storage ID: WR-2 Storage Secured: Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation PO#: 10006-7-106051 Sampler: J. Towns / A. Ewalt / K.Smith (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	11/20/17	15:30	B. Benedict	11/21/17	1021
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/PFOS	UCMR3 PFAS List 6	537 List: 14	Full List of 26	Other: Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List 6	PFAS List: 14	Comments
CH-AT-1RW48-1117	11/17/17	11:29		2	P	DW						X			TZ preservative
CH-AT1FB48-1117	11/17/17	11:30		2	P	DW						X			TZ preservative
CH-AT-1RW49-1117	11/17/17	11:39		2	P	DW						X			TZ preservative
CH-AT-1FB49-1117	11/17/17	11:40		2	P	DW						X			TZ preservative
CH-AT-1RW50-1117	11/17/17	11:48		2	P	DW						X			TZ preservative
CH-AT-1FB50-1117	11/17/17	11:49		2	P	DW						X			TZ preservative
CH-AT-1RW51-1117	11/17/17	12:03		2	P	DW						X			TZ preservative
CH-AT-1FB51-1117	11/17/17	12:04		2	P	DW						X			TZ preservative
CH-AT-1RW52-1117	11/17/17	12:15		2	P	DW						X			TZ preservative
CH-AT-1FB52-1117	11/17/17	12:16		2	P	DW						X			TZ preservative

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
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: P= HDPE, PJ= HDPE Jar, O = Other

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

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

Page: 1 of 1

Cooler 2 - 2 of 2 pgs

CTO-08 679580.15.FI.FS

ID: LR - 537COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1701750 Temp 0.2 °C
Storage ID WR-2 Storage Secured Yes [X] No [ ]

Project ID: CTO-08, MCOLF Atlantic PFAS DW Investigation PO#: 10006-7-106051 Sampler: J. Towns/ A. Ewalt/ K.Smith (name)

TAT (check one): Standard [ ] 21 days; Rush (surcharge may apply) [ ] 14 days [X] 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tiffany Hill	CH2M	1100 NE Circle Blvd Suite #300	Corvallis	Oregon	541-768-3109	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Kathryn Smith	11/20/17	15:30	B. Benedict	11/21/17	1021
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

ATTN: Martha Maier

Method of Shipment: FEDEX

Tracking No:

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod EPA Method 537: PFOA/PFOS	UCMR3 PFAS List 6	537 List 14	Full List of 26	Other Please List Below	EPA Method 537(DW only): PFOA/PFOS/PFBS	UCMR3 PFAS List 6	PFAS List 14	Comments
CH-AT-1RW53-1117	11/17/17	13:55		2	P	DW						X			TZ preservative
CH-AT-1FB53-1117	11/17/17	13:56		2	P	DW						X			TZ preservative
CH-AT-1RW54-1117	11/17/17	14:12		2	P	DW						X			TZ preservative
CH-AT-1FB54-1117	11/17/17	14:13		2	P	DW						X			TZ preservative
CH-AT-1RW55-1117	11/17/17	15:08		2	P	DW						X			TZ preservative
CH-AT-1FB55-1117	11/17/17	15:09		2	P	DW						X			TZ preservative
CH-AT-1RW56-1117	11/17/17	16:05		2	P	DW						X			TZ preservative
CH-AT-1FB56-1117	11/17/17	16:06		2	P	DW						X			TZ preservative
CH-AT-1RW57-1117	11/17/17	16:56		2	P	DW						X			TZ preservative ; potential high concentration
CH-AT-1FB57-1117	11/17/17	16:57		2	P	DW						X			TZ preservative

Special Instructions/Comments: 7 DAY TAT
Analysis of Drinking Water samples for PFOA/PFOS/PFBS

SEND DOCUMENTATION AND RESULTS TO:

Name: Tiffany Hill
Company: CH2M HILL Inc.
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: P= HDPE, PJ= HDPE Jar, O = Other

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

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

Page: 1 of 1

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1701750 **TAT** 7

Samples Arrival:	**Date/Time** 11/21/17 1013	**Initials:** YBB	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 11/21/17 1533	**Initials:** SR YBB	**Location:** WR2 **Shelf/Rack:** F7

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

Temp °C: 0.1 (uncorrected)	**Time:** 1022	**Thermometer ID:** IR-1
Temp °C: 0.2 (corrected)	**Probe used:** Yes☐ No☑	

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill 1 of 4 Trk # 770793751035	✓		
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:

EXTRACTION INFORMATION

RUSH

Process Sheet

Workorder: 1701750

Prep Expiration: 2017-Dec-01
Client: CH2M Hill

Workorder Due: 30-Nov-17 00:00

TAT: 9

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

Prep Batch: B7K0172

Prep Data Entered: KC 11/29/17
Date and Initials

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

Initial Sequence: _____

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1701750-01	☑	CH-AT-1RW48-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-02	☑	CH-AT-1FB48-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-03	☑	CH-AT-1RW49-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-04	☑	CH-AT-1FB49-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-05	☑	CH-AT-1RW50-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-06	☑	CH-AT-1FB50-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-07	☑	CH-AT-1RW51-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-08	☑	CH-AT-1FB51-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-09	☑	CH-AT-1RW52-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-10	☑	CH-AT-1FB52-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-11	☑	CH-AT-1RW53-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-12	☑	CH-AT-1FB53-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-13	☑	CH-AT-1RW54-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-14	☑	CH-AT-1FB54-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-15	☑	CH-AT-1RW55-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-16	☑	CH-AT-1FB55-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-17	☑	CH-AT-1RW56-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-18	☑	CH-AT-1FB56-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-19	☑	CH-AT-1FB57-1117	21-Nov-17 10:13	WR-2 F-7	
1701750-20	☑	CH-AT-1RW57-1117	21-Nov-17 10:13	WR-2 F-7	

LCS/LCSD

Vista PM: Martha Maier

Vial Box ID: PAM

Sample Reconciled By: _____ 11.28.17

Page 1 of 1

Matrix: Drinking Water

Method: 537 PFAS DW DoD Unmodified

PREPARATION BENCH SHEET

B7K0172

Chemist: HC

Prep Date/Time: 28-Nov-17 07:55

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
☐	B7K0172-BLK1 (A)	NA	NA	(0.250)	HC KBF 11.28.17	HC 11.28.17	HC HN 11.28.17
☐	B7K0172-BS1	↓	↓	(0.250)	↓	↓	↓
☐	B7K0172-BSD1	↓	↓	(0.250)			
☐	1701750-01	281.60	28.28	0.25332 ✓			
☐	1701750-02	295.73	26.84	0.26889 ✓			
☒	1701750-03	~~289.94~~ HC 11.28.17 281.03	28.32	0.25271 ✓			
☐	1701750-04	289.94	27.79	0.26215 ✓			
☐	1701750-05	294.61	27.61	0.26700 ✓			
☐	1701750-06	297.54	27.09	0.27045 ✓			
☐	1701750-07	287.22	28.56	0.25866 ✓			
☐	1701750-08	298.47	27.64	0.27083 ✓			
☐	1701750-09	284.45	27.78	0.25667 ✓			
☐	1701750-10	292.93	27.60	0.26533 ✓			
☒	1701750-11	294.55	27.81	0.26674 ✓			
☐	1701750-12	297.38	27.78	0.26960 ✓			
☐	1701750-13	290.92	28.15	0.26277 ✓			

SS/IS: 17J3101, 50µL (V1)

NS: 17I2601, 10µL (V2)

IS/RS: ~~17J3102~~, 50µL (V1)

SPE Chem: Strata X 33µm 500mg/6mL

Lot#: S17-001946

Ele SOLV: MeOH

Lot#: I089046972O (EMSURE)

Final Volume(s) 1mL

Notes: (A) 1.25g trizma added HC 11.28.17

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

PREPARATION BENCH SHEET

Matrix: Drinking Water

Method: 537 PFAS DW DoD Unmodified

B7K0172

Chemist: HC

Prep Date/Time: 28-Nov-17 07:55

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HBM5-8

Cen	VISTA Sample ID	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☐	1701750-14	290.81	27.08	0.26373	HC KBF 11.28.17	HC 11.28.17	HC HN 11.28.17
☐	1701750-15	286.65	28.08	0.25857			
☐	1701750-16	286.72	27.60	0.25912 ✓			
☒	1701750-17	291.32	28.41	0.20311 ✓			
☐	1701750-18	292.38	27.55	0.26483 ✓			
☐	1701750-19	284.02	27.86	0.25616 ✓			
☒	1701750-20	294.68	28.48	0.26620 ✓			

SS/IS: 17J3101, 50µL (V1)

NS: 17I2601, 10µL (V2)

IS/RS: 17J3102, 50µL (V3)

SPE Chem: Strata X-33µm 500mg 6mL

Lot#: S17-001946

Ele SOLV: MeOH

Lot#: I0890409720 (ENSURE)

Final Volume(s) 1mL

Notes:

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

Batch: B7K0172

Matrix: Drinking Water

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1701750-01	0.25332 ✓	NA	NA	1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-02	0.26889 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-03	0.25271 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-04	0.26215 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-05	0.267 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-06	0.27045 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-07	0.25866 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-08	0.27083 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-09	0.25667 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-10	0.26533 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-11	0.26674 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-12	0.2696 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-13	0.26277 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-14	0.26373 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-15	0.25857 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-16	0.25912 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-17	0.26311 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-18	0.26483 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-19	0.25616 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
1701750-20	0.2662 ✓			1000	28-Nov-17 07:55	HAC			Drinking Water	537 PFAS DW DoD Unmo
B7K0172-BLK1	0.25 ✓			1000	28-Nov-17 07:55	HAC				QC
B7K0172-BS1	0.25 ✓			1000	28-Nov-17 07:55	HAC	17I2601 ✓	10 ✓		QC
B7K0172-BSD1	0.25 ✓			1000	28-Nov-17 07:55	HAC	17I2601 ✓	10 ✓		QC

KC 11/29/17

SAMPLE DATA –EPA METHOD 537

Vista Analytical Laboratory

Rev'd: MM 12/2/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-16.qld

Last Altered: Friday, December 01, 2017 10:56:49 Pacific Standard Time
Printed: Friday, December 01, 2017 10:58:20 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_16, Date: 30-Nov-2017, Time: 21:24:59, ID: B7K0172-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	2.78e0	1.16e4		0.2500	3.08	3.08	0.00688	0.0341	
2	2	PFOA	413 > 368.7	5.67e1	1.01e4		0.2500	4.37	4.37	0.0560	0.274	
3	3	PFOS	499 >79.9		1.16e4		0.2500	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.56e3	1.01e4	0.429	0.2500	3.43	3.44	4.51	42.1	105.1
5	5	13C2-PFDA	515.1 > 469.9	5.49e3	1.01e4	0.548	0.2500	5.00	5.01	5.42	39.6	98.9
6	6	13C2-PFOA	414.9 > 369.7	1.01e4	1.01e4	1.000	0.2500	4.41	4.37	10.0	40.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.16e4	1.16e4	1.000	0.2500	4.81	4.78	28.7	115	100.0

Vista Analytical Laboratory

Rev'd: MM 12/2/17

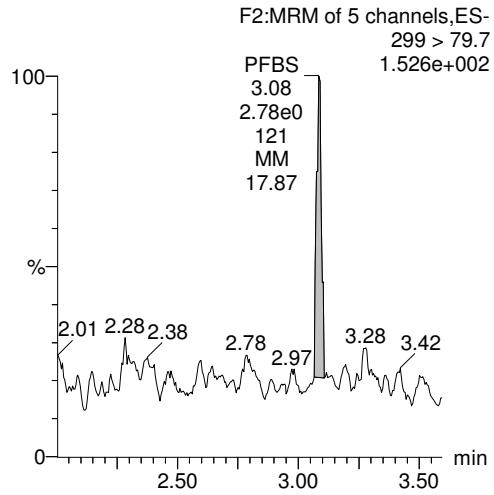
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-16.qld

Last Altered: Friday, December 01, 2017 10:56:49 Pacific Standard Time
Printed: Friday, December 01, 2017 10:58:20 Pacific Standard Time

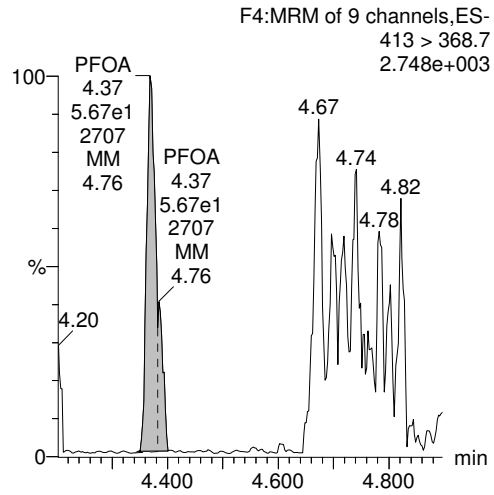
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_16, Date: 30-Nov-2017, Time: 21:24:59, ID: B7K0172-BLK1 LRB 0.25, Description: LRB

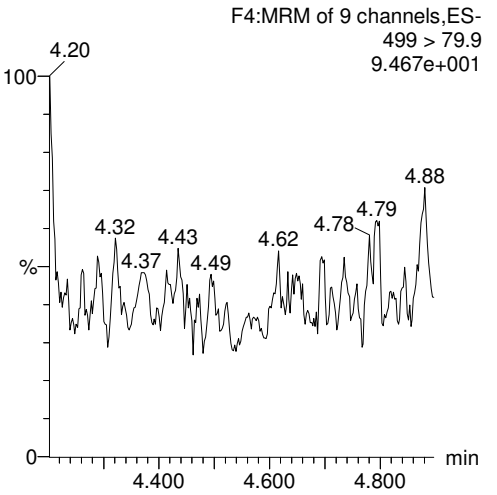
PFBS



PFOA



PFOS



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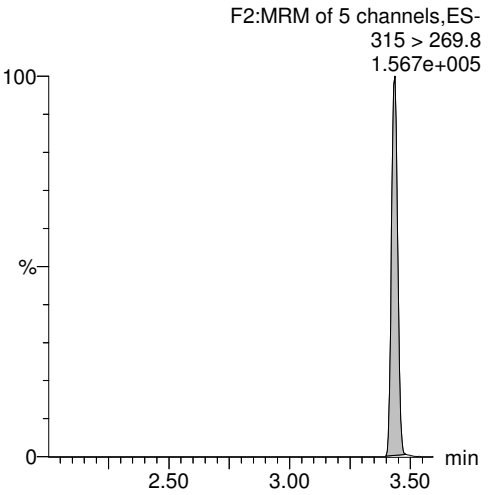

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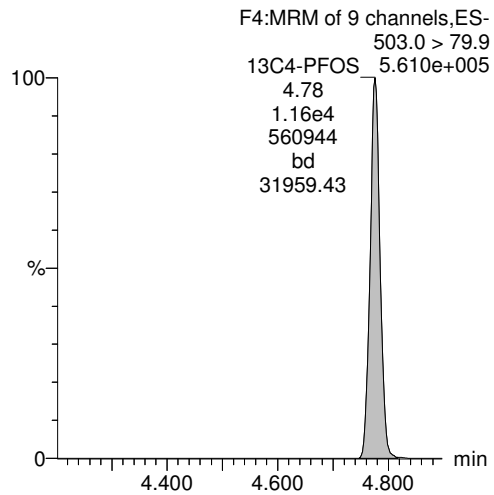

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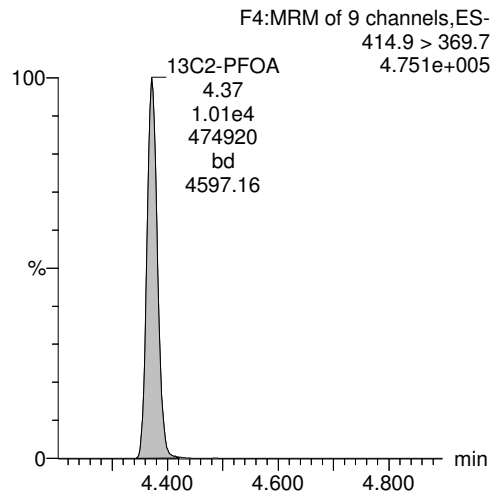

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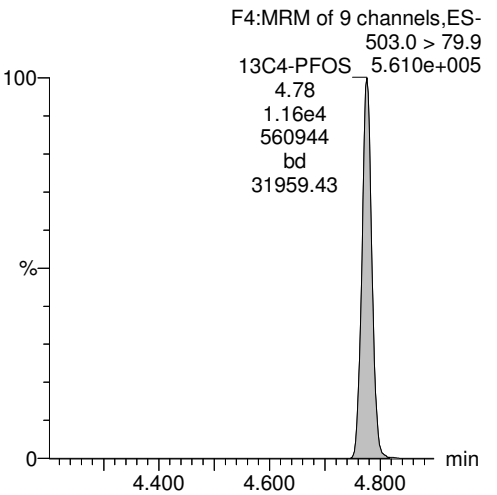

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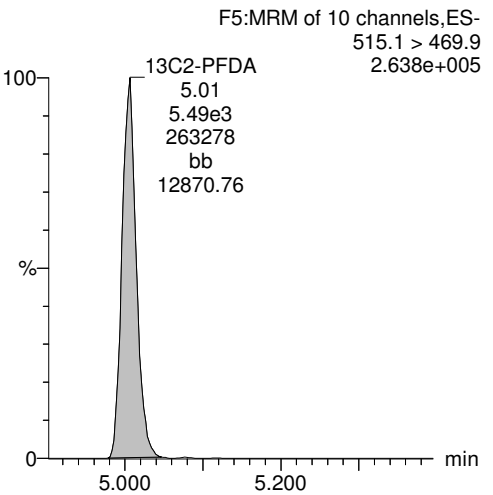

Vista Analytical Laboratory

Rev'd: MM 12/2/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-14.qld

Last Altered: Friday, December 01, 2017 10:46:48 Pacific Standard Time
Printed: Friday, December 01, 2017 10:47:40 Pacific Standard Time

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Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_14, Date: 30-Nov-2017, Time: 21:00:09, ID: B7K0172-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	3.03e3	1.16e4		0.2500	3.08	3.07	7.48	37.0	104.6
2	2	PFOA	413 > 368.7	9.14e3	1.09e4		0.2500	4.37	4.37	8.40	41.1	102.7
3	3	PFOS	499 >79.9	4.23e3	1.16e4		0.2500	4.78	4.78	10.4	35.3	95.4
4	4	13C2-PFHxA	315 > 269.8	4.59e3	1.09e4	0.429	0.2500	3.43	3.43	4.22	39.4	98.4
5	5	13C2-PFDA	515.1 > 469.9	5.83e3	1.09e4	0.548	0.2500	5.00	5.01	5.36	39.1	97.8
6	6	13C2-PFOA	414.9 > 369.7	1.09e4	1.09e4	1.000	0.2500	4.41	4.37	10.0	40.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.16e4	1.16e4	1.000	0.2500	4.81	4.78	28.7	115	100.0

GM 12/1/17

Vista Analytical Laboratory

Rev'd: MM 12/2/17

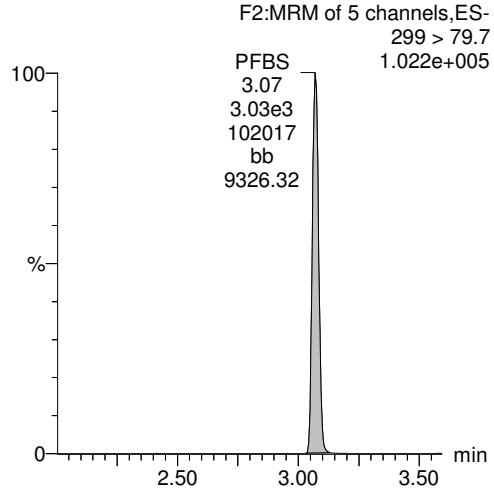
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-14.qld

Last Altered: Friday, December 01, 2017 10:46:48 Pacific Standard Time
Printed: Friday, December 01, 2017 10:47:40 Pacific Standard Time

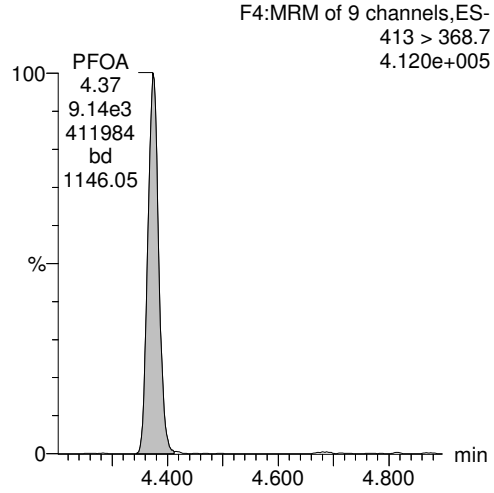
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_14, Date: 30-Nov-2017, Time: 21:00:09, ID: B7K0172-BS1 LFB 0.25, Description: LFB

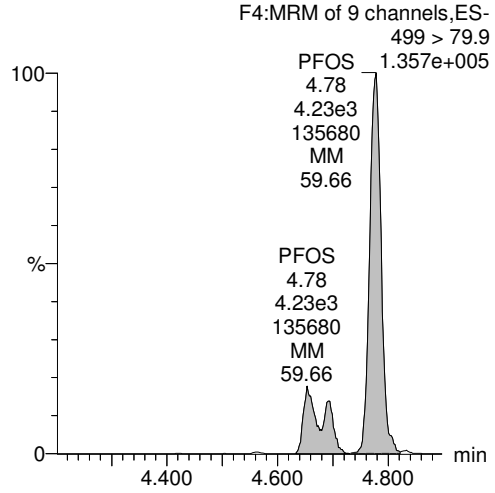
PFBS



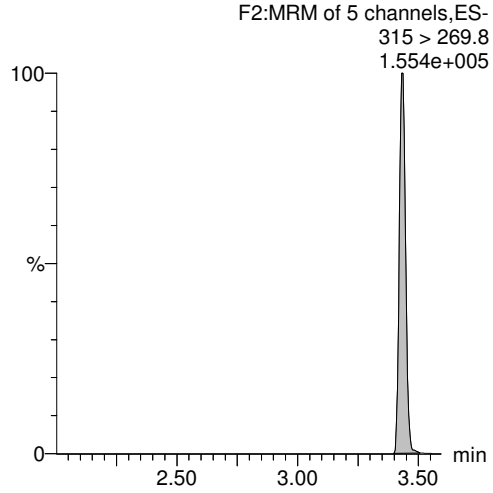
PFOA



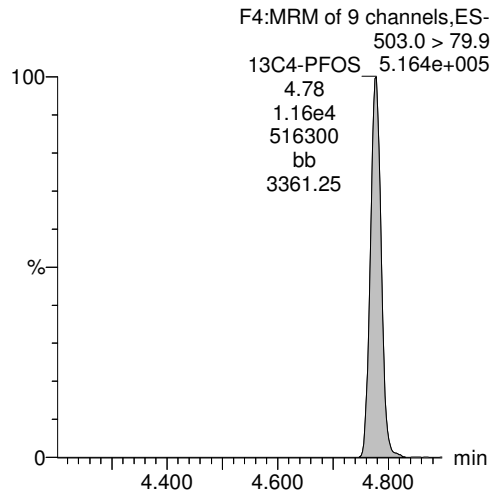
PFOS



13C2-PFHxA



13C4-PFOS



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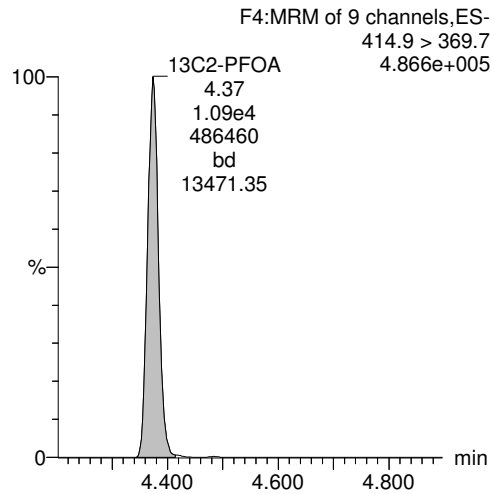

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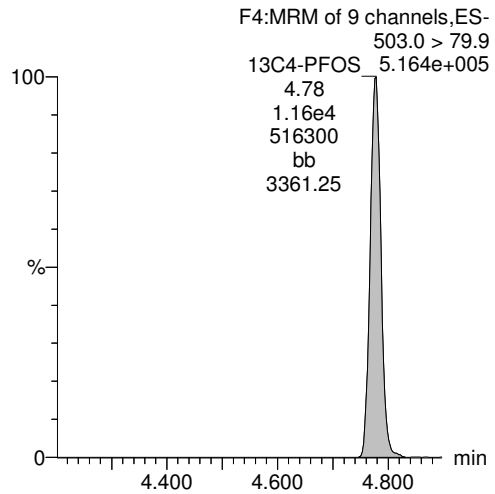

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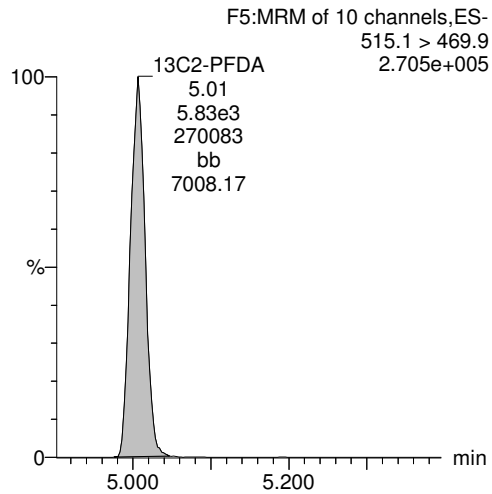


GM 12/1/17

Vista Analytical Laboratory

Rev'd: MM 12/2/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-15.qld

Last Altered: Friday, December 01, 2017 10:51:11 Pacific Standard Time
Printed: Friday, December 01, 2017 10:51:36 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_15, Date: 30-Nov-2017, Time: 21:12:34, ID: B7K0172-BSD1 LFBD 0.25, Description: LFBD

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	2.86e3	1.12e4		0.2500	3.08	3.07	7.34	36.3	102.7
2	2	PFOA	413 > 368.7	8.59e3	9.89e3		0.2500	4.37	4.37	8.69	42.5	106.3
3	3	PFOS	499 >79.9	4.02e3	1.12e4		0.2500	4.78	4.78	10.3	34.8	93.9
4	4	13C2-PFHxA	315 > 269.8	4.53e3	9.89e3	0.429	0.2500	3.43	3.43	4.58	42.8	106.9
5	5	13C2-PFDA	515.1 > 469.9	5.33e3	9.89e3	0.548	0.2500	5.00	5.00	5.40	39.4	98.5
6	6	13C2-PFOA	414.9 > 369.7	9.89e3	9.89e3	1.000	0.2500	4.41	4.37	10.0	40.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.12e4	1.12e4	1.000	0.2500	4.81	4.78	28.7	115	100.0

GM 12/1/17

Vista Analytical Laboratory

Rev'd: MM 12/2/17

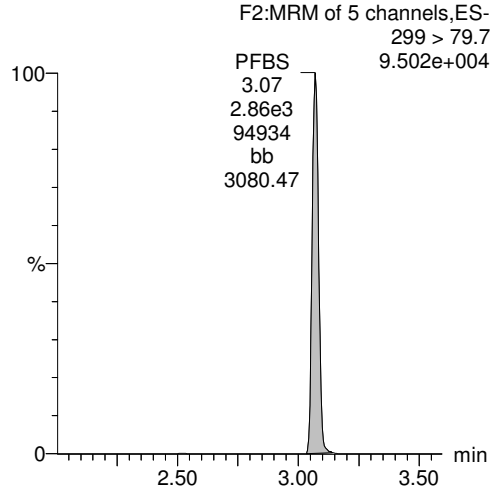
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-15.qld

Last Altered: Friday, December 01, 2017 10:51:11 Pacific Standard Time
Printed: Friday, December 01, 2017 10:51:36 Pacific Standard Time

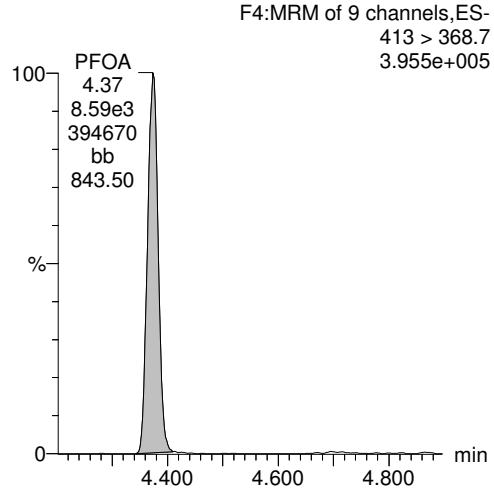
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_15, Date: 30-Nov-2017, Time: 21:12:34, ID: B7K0172-BSD1 LFBD 0.25, Description: LFBD

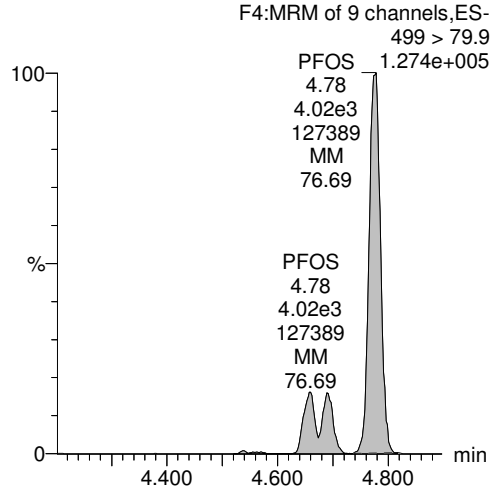
PFBS



PFOA



PFOS



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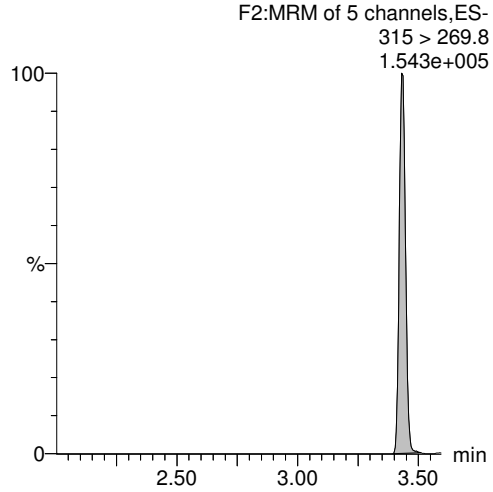

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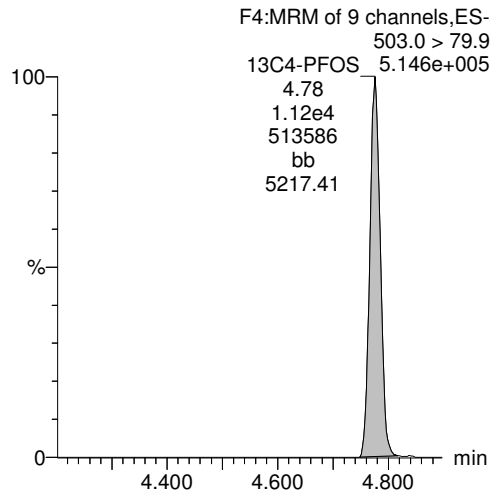

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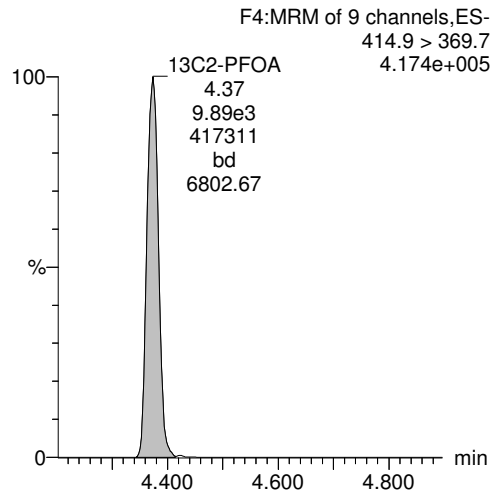
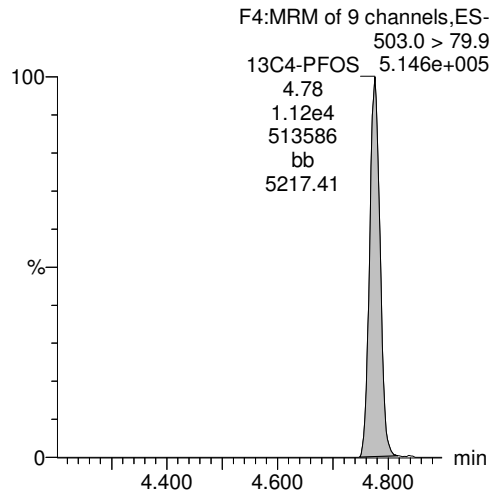
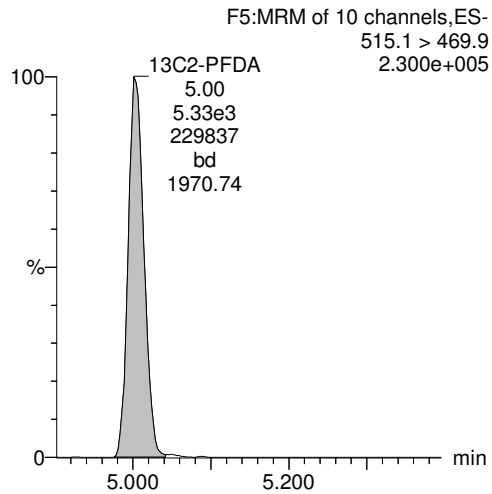


13C4-PFOS



13C2-PFDA



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Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-17.qld

Last Altered: Friday, December 01, 2017 12:04:14 Pacific Standard Time
Printed: Friday, December 01, 2017 12:04:43 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_17, Date: 30-Nov-2017, Time: 21:37:26, ID: 1701750-01 CH-AT-1RW48-1117 0.25, Description: CH-AT-1RW48-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.13e4		0.2533	3.07				
2	2	PFOA	413 > 368.7	5.33e1	1.03e4		0.2533	4.38	4.37	0.0518	0.250	
3	3	PFOS	499 >79.9	1.19e0	1.13e4		0.2533	4.77	4.77	0.00303	0.0101	
4	4	13C2-PFHxA	315 > 269.8	4.50e3	1.03e4	0.429	0.2533	3.44	3.43	4.37	40.2	101.9
5	5	13C2-PFDA	515.1 > 469.9	5.23e3	1.03e4	0.548	0.2533	5.01	5.00	5.09	36.6	92.8
6	6	13C2-PFOA	414.9 > 369.7	1.03e4	1.03e4	1.000	0.2533	4.41	4.38	10.0	39.5	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.13e4	1.13e4	1.000	0.2533	4.81	4.77	28.7	113	100.0

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Vista Analytical Laboratory

Rev'd: MM 12/1/17

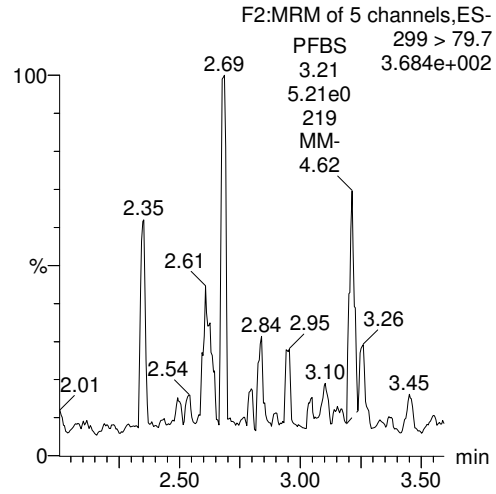
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-17.qld

Last Altered: Friday, December 01, 2017 12:04:14 Pacific Standard Time
Printed: Friday, December 01, 2017 12:04:43 Pacific Standard Time

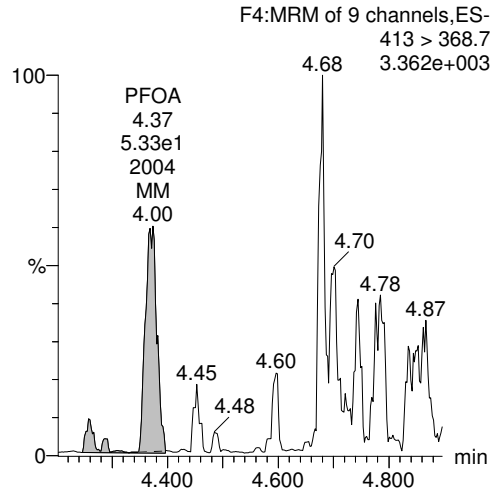
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_17, Date: 30-Nov-2017, Time: 21:37:26, ID: 1701750-01 CH-AT-1RW48-1117 0.25, Description: CH-AT-1RW48-1117

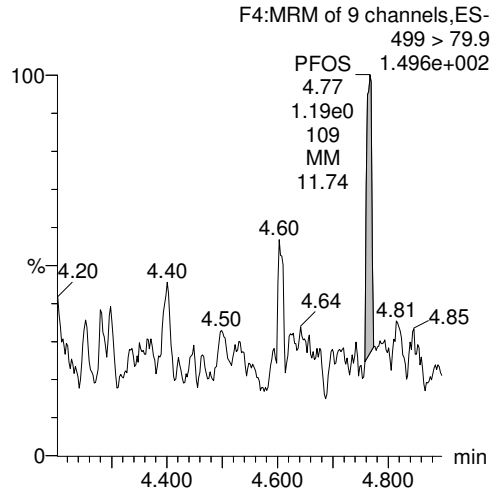
PFBS



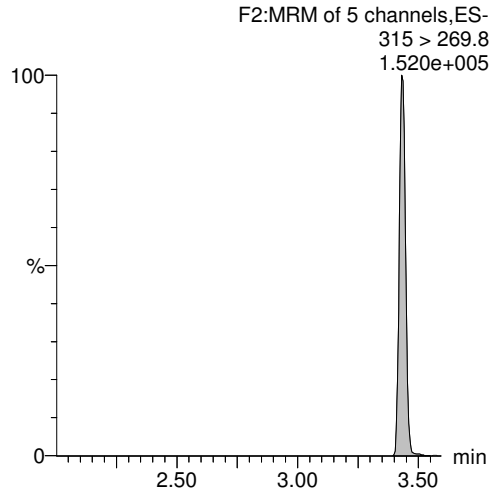
PFOA



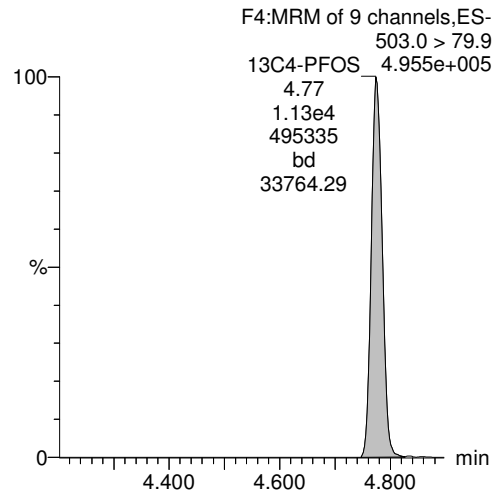
PFOS



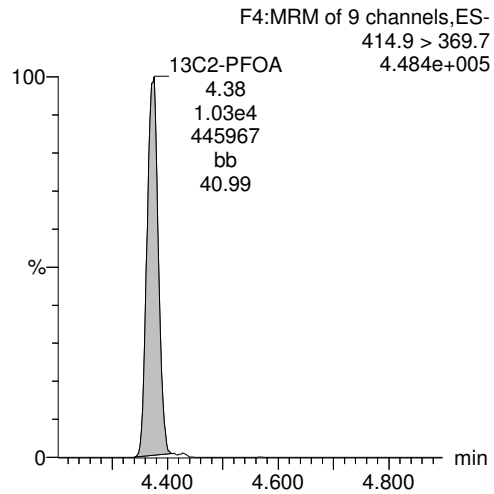
13C2-PFHxA



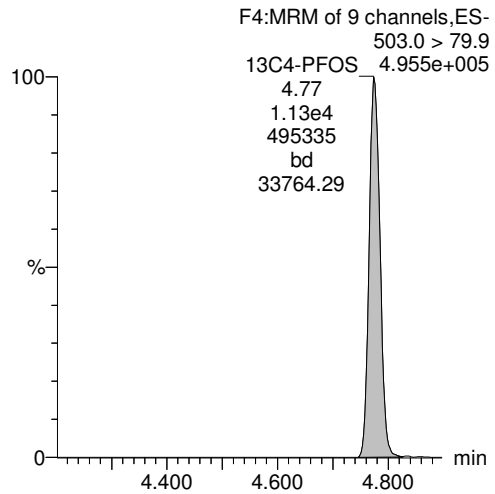
13C4-PFOS



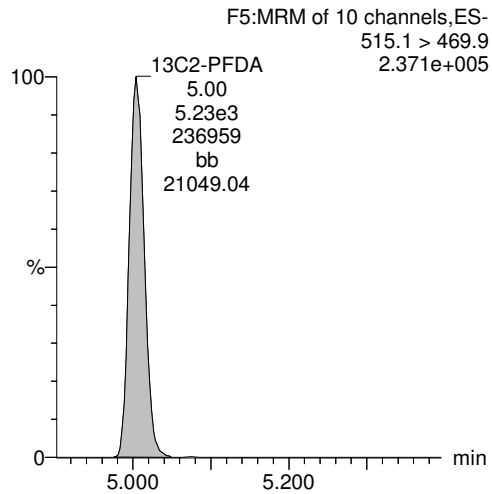
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-18.qld

Last Altered: Friday, December 01, 2017 11:29:19 Pacific Standard Time
Printed: Friday, December 01, 2017 11:29:43 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_18, Date: 30-Nov-2017, Time: 21:49:52, ID: 1701750-02 CH-AT-1FB48-1117 0.25, Description: CH-AT-1FB48-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.89e3		0.2689	3.08				
2	2	PFOA	413 > 368.7	4.19e1	1.01e4		0.2689	4.37	4.38	0.0416	0.189	
3	3	PFOS	499 >79.9		9.89e3		0.2689	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.53e3	1.01e4	0.429	0.2689	3.43	3.44	4.50	39.0	105.0
5	5	13C2-PFDA	515.1 > 469.9	5.09e3	1.01e4	0.548	0.2689	5.00	5.01	5.05	34.3	92.2
6	6	13C2-PFOA	414.9 > 369.7	1.01e4	1.01e4	1.000	0.2689	4.41	4.37	10.0	37.2	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.89e3	9.89e3	1.000	0.2689	4.81	4.78	28.7	107	100.0

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Rev'd: MM 12/1/17

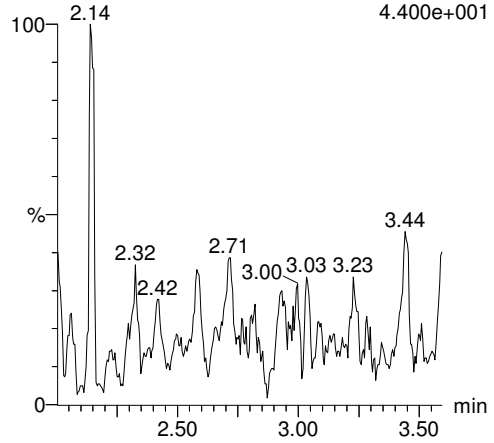
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-18.qld

Last Altered: Friday, December 01, 2017 11:29:19 Pacific Standard Time
Printed: Friday, December 01, 2017 11:29:43 Pacific Standard Time

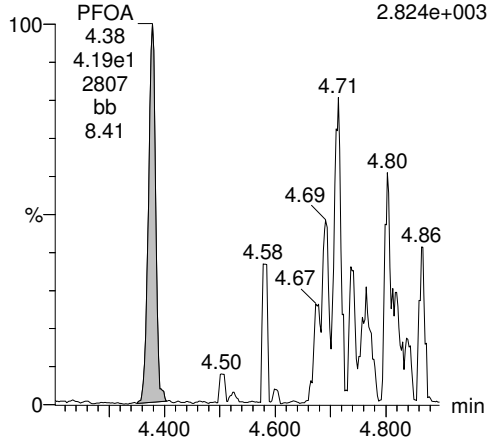
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_18, Date: 30-Nov-2017, Time: 21:49:52, ID: 1701750-02 CH-AT-1FB48-1117 0.25, Description: CH-AT-1FB48-1117

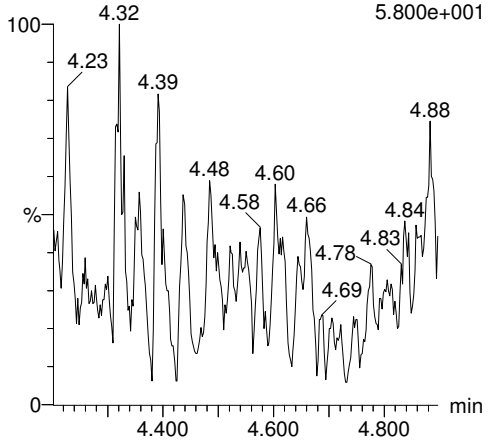
PFBS



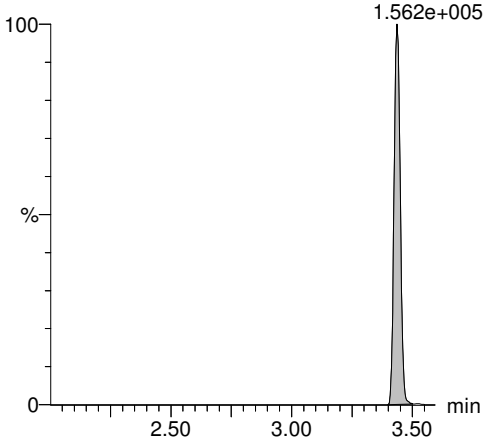
PFOA



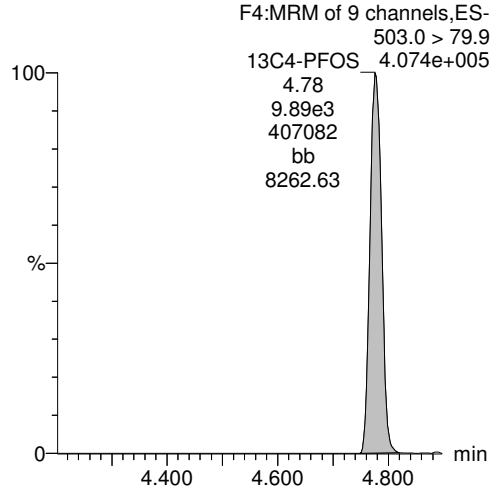
PFOS



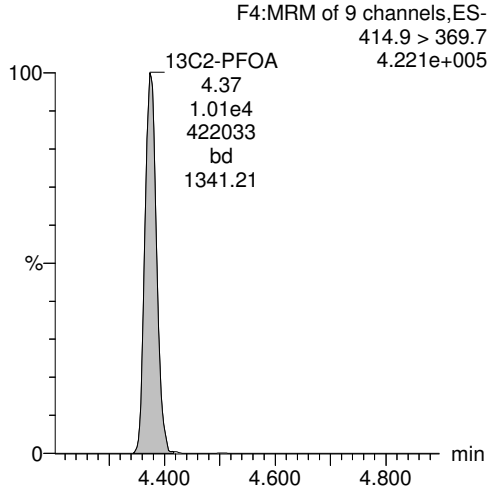
13C2-PFHxA



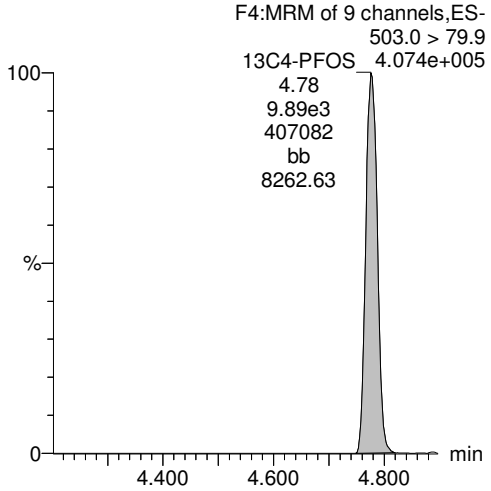
13C4-PFOS



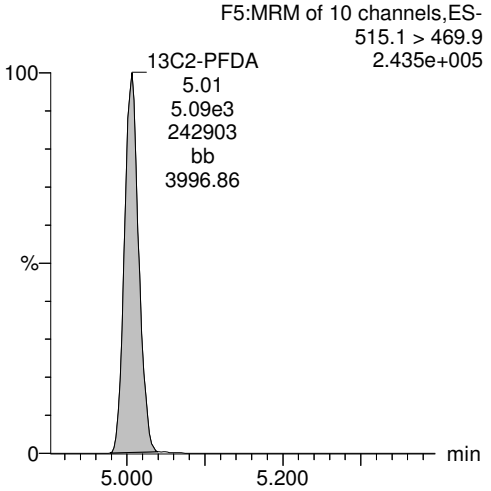
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-19.qld

Last Altered: Friday, December 01, 2017 11:30:18 Pacific Standard Time
Printed: Friday, December 01, 2017 11:30:37 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_19, Date: 30-Nov-2017, Time: 22:02:20, ID: 1701750-03 CH-AT-1RW49-1117 0.25, Description: CH-AT-1RW49-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.21e4		0.2527	3.07				
2	2	PFOA	413 > 368.7	8.77e2	1.02e4		0.2527	4.38	4.37	0.857	4.15	
3	3	PFOS	499 >79.9	1.55e2	1.21e4		0.2527	4.77	4.66	0.367	1.23	
4	4	13C2-PFHxA	315 > 269.8	4.39e3	1.02e4	0.429	0.2527	3.44	3.44	4.29	39.6	100.1
5	5	13C2-PFDA	515.1 > 469.9	5.05e3	1.02e4	0.548	0.2527	5.01	5.00	4.94	35.7	90.1
6	6	13C2-PFOA	414.9 > 369.7	1.02e4	1.02e4	1.000	0.2527	4.41	4.38	10.0	39.6	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.21e4	1.21e4	1.000	0.2527	4.81	4.77	28.7	114	100.0

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Rev'd: MM 12/1/17

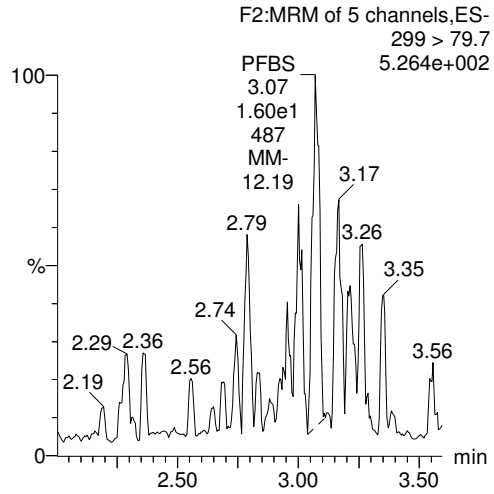
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-19.qld

Last Altered: Friday, December 01, 2017 11:30:18 Pacific Standard Time
Printed: Friday, December 01, 2017 11:30:37 Pacific Standard Time

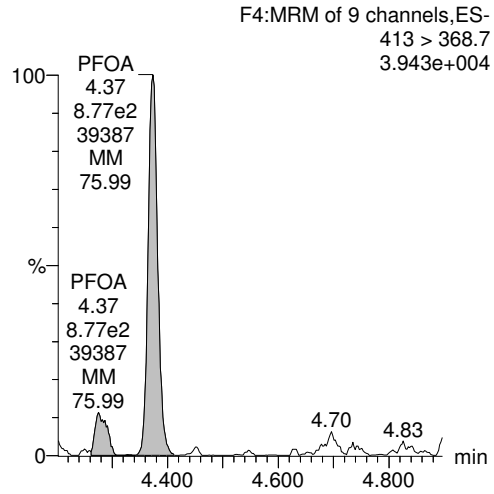
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_19, Date: 30-Nov-2017, Time: 22:02:20, ID: 1701750-03 CH-AT-1RW49-1117 0.25, Description: CH-AT-1RW49-1117

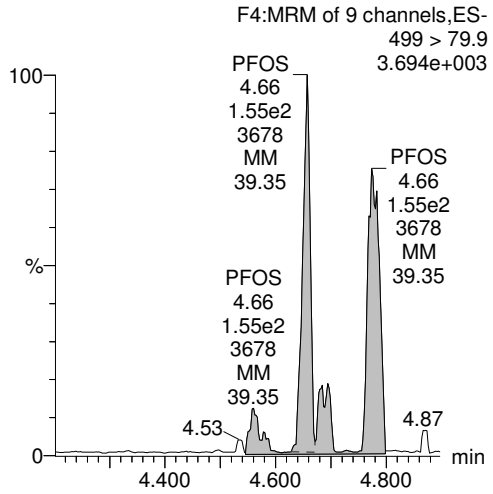
PFBS



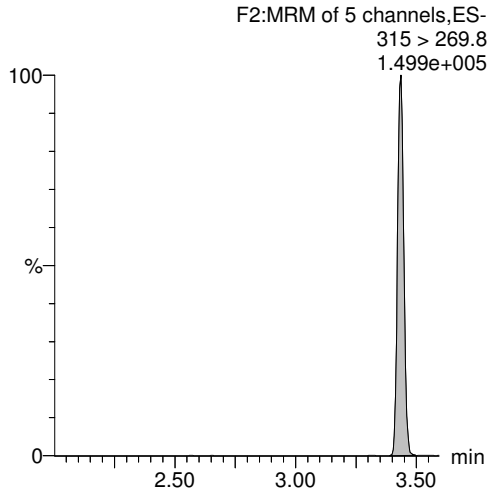
PFOA



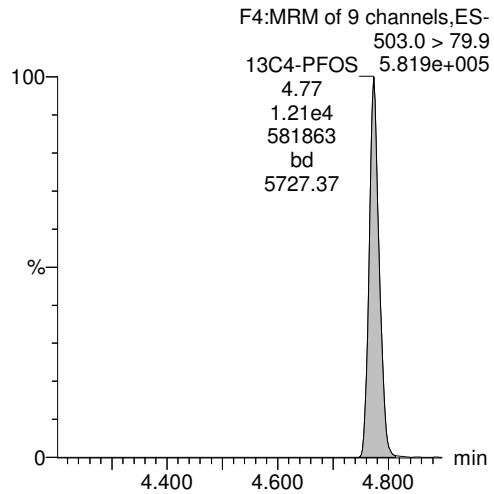
PFOS



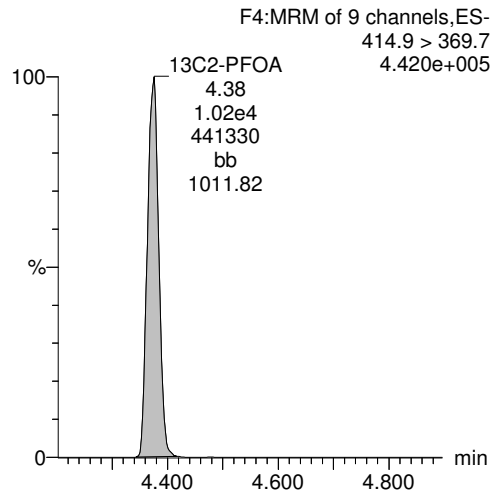
13C2-PFHxA



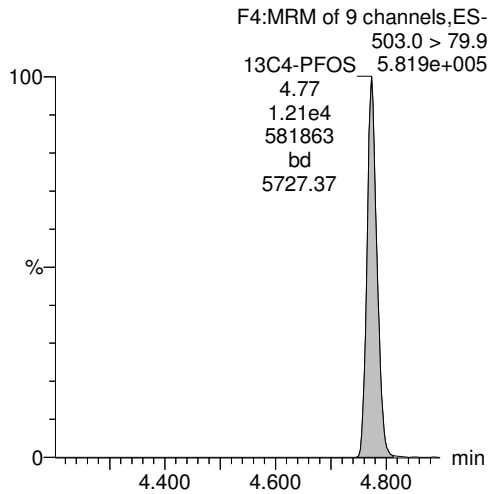
13C4-PFOS



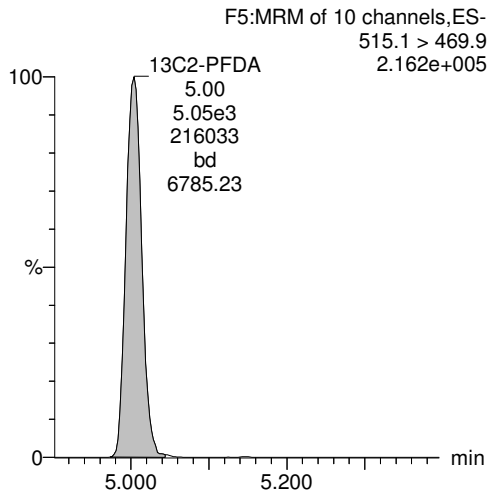
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-20.qld

Last Altered: Friday, December 01, 2017 11:30:56 Pacific Standard Time
Printed: Friday, December 01, 2017 11:31:13 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_20, Date: 30-Nov-2017, Time: 22:14:47, ID: 1701750-04 CH-AT-1FB49-1117 0.25, Description: CH-AT-1FB49-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.06e4		0.2621	3.08				
2	2	PFOA	413 > 368.7	7.54e1	1.02e4		0.2621	4.37	4.37	0.0738	0.344	
3	3	PFOS	499 >79.9	3.30e0	1.06e4		0.2621	4.78	4.78	0.00895	0.0288	
4	4	13C2-PFHxA	315 > 269.8	4.05e3	1.02e4	0.429	0.2621	3.43	3.44	3.96	35.3	92.5
5	5	13C2-PFDA	515.1 > 469.9	4.40e3	1.02e4	0.548	0.2621	5.00	5.01	4.31	30.0	78.6
6	6	13C2-PFOA	414.9 > 369.7	1.02e4	1.02e4	1.000	0.2621	4.41	4.37	10.0	38.1	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.06e4	1.06e4	1.000	0.2621	4.81	4.78	28.7	109	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

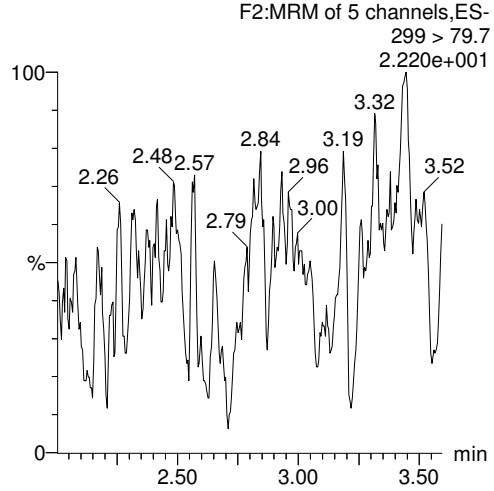
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-20.qld

Last Altered: Friday, December 01, 2017 11:30:56 Pacific Standard Time
Printed: Friday, December 01, 2017 11:31:13 Pacific Standard Time

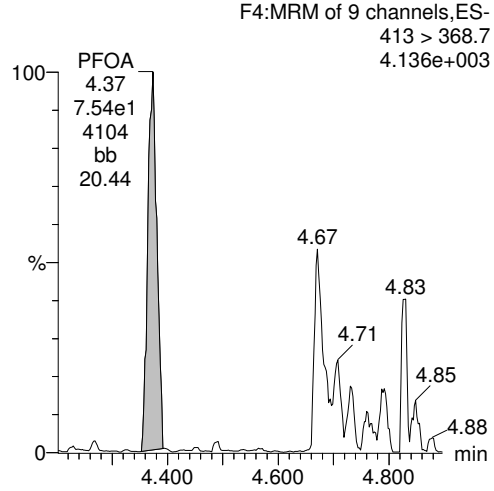
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_20, Date: 30-Nov-2017, Time: 22:14:47, ID: 1701750-04 CH-AT-1FB49-1117 0.25, Description: CH-AT-1FB49-1117

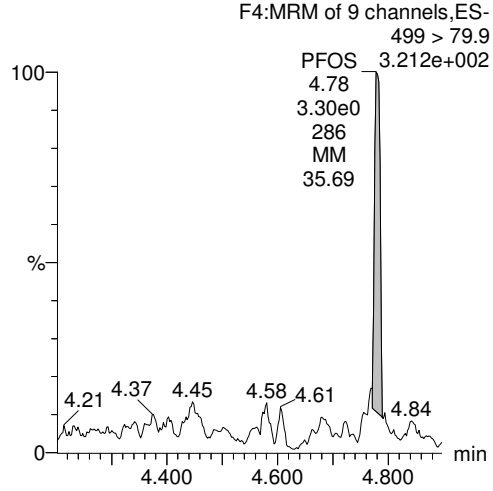
PFBS



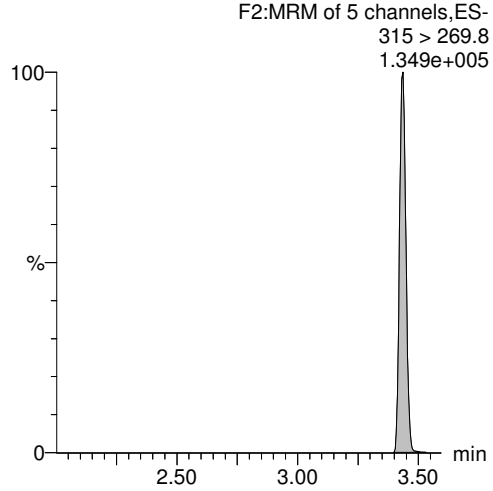
PFOA



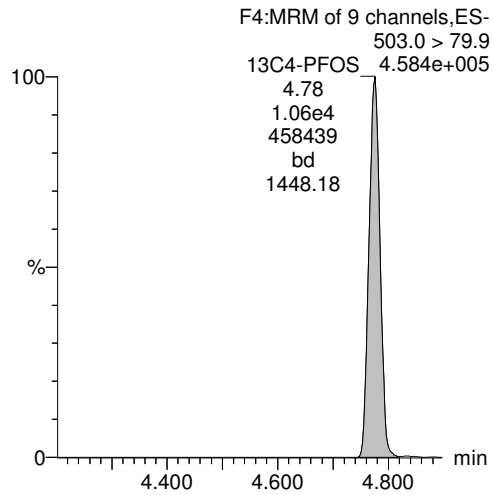
PFOS



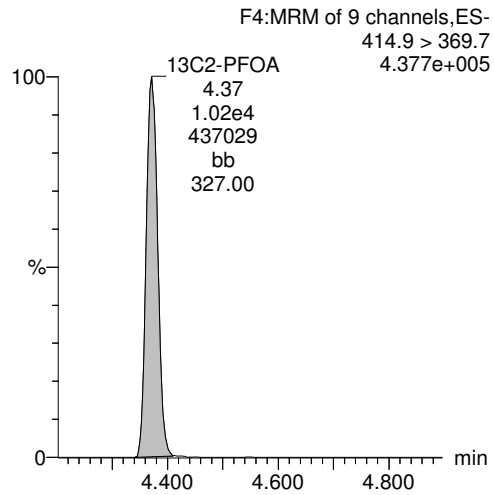
13C2-PFHxA



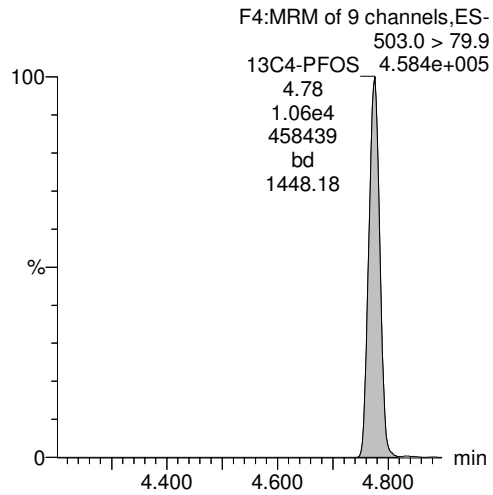
13C4-PFOS



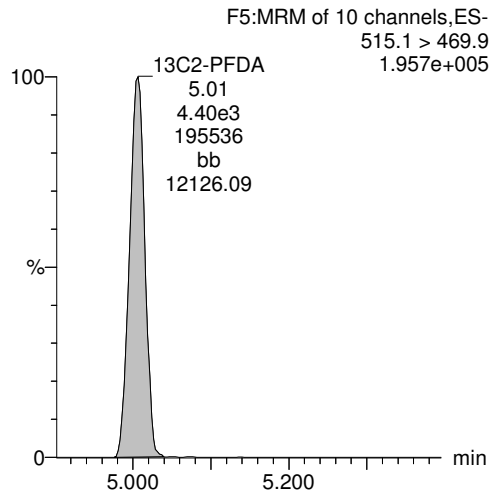
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-21.qld

Last Altered: Friday, December 01, 2017 11:31:30 Pacific Standard Time
Printed: Friday, December 01, 2017 11:32:01 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_21, Date: 30-Nov-2017, Time: 22:27:11, ID: 1701750-05 CH-AT-1RW50-1117 0.25, Description: CH-AT-1RW50-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.14e4		0.2670	3.07				
2	2	PFOA	413 > 368.7	8.41e1	1.07e4		0.2670	4.37	4.37	0.0783	0.359	
3	3	PFOS	499 >79.9		1.14e4		0.2670	4.77				
4	4	13C2-PFHxA	315 > 269.8	4.73e3	1.07e4	0.429	0.2670	3.43	3.44	4.41	38.5	102.9
5	5	13C2-PFDA	515.1 > 469.9	5.31e3	1.07e4	0.548	0.2670	5.00	5.01	4.95	33.8	90.3
6	6	13C2-PFOA	414.9 > 369.7	1.07e4	1.07e4	1.000	0.2670	4.41	4.37	10.0	37.5	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.14e4	1.14e4	1.000	0.2670	4.81	4.77	28.7	107	100.0

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Rev'd: MM 12/1/17

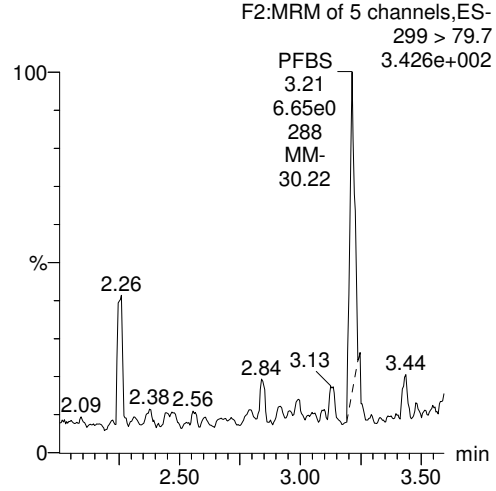
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-21.qld

Last Altered: Friday, December 01, 2017 11:31:30 Pacific Standard Time
Printed: Friday, December 01, 2017 11:32:01 Pacific Standard Time

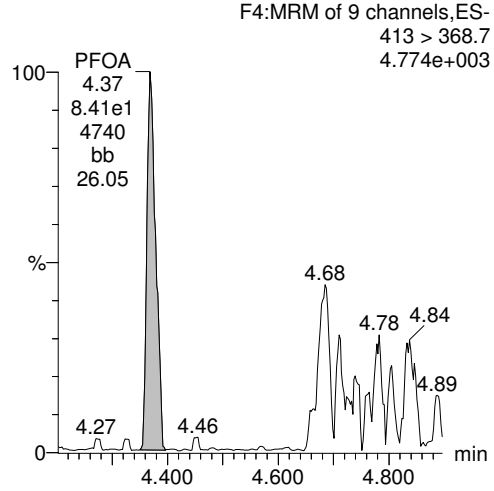
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_21, Date: 30-Nov-2017, Time: 22:27:11, ID: 1701750-05 CH-AT-1RW50-1117 0.25, Description: CH-AT-1RW50-1117

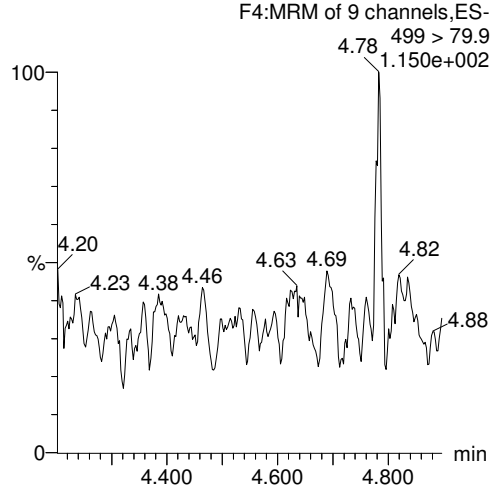
PFBS



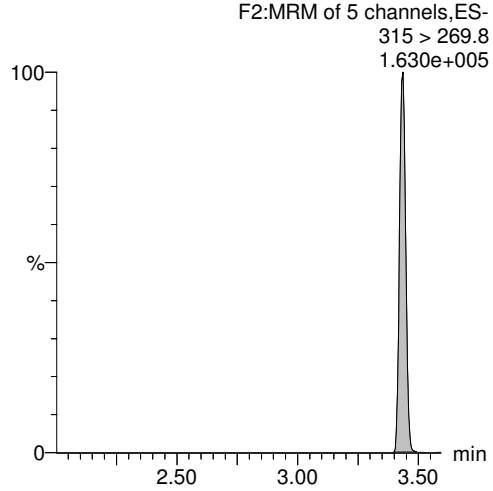
PFOA



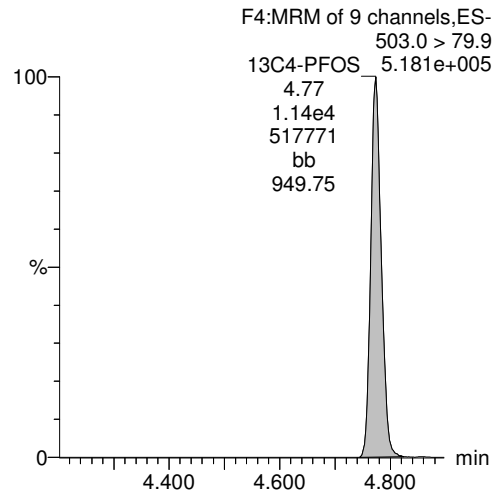
PFOS



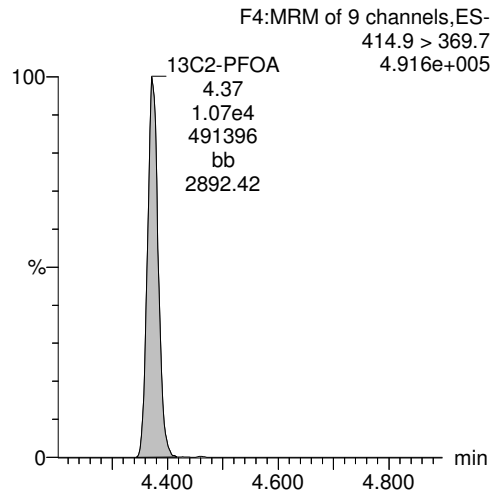
13C2-PFHxA



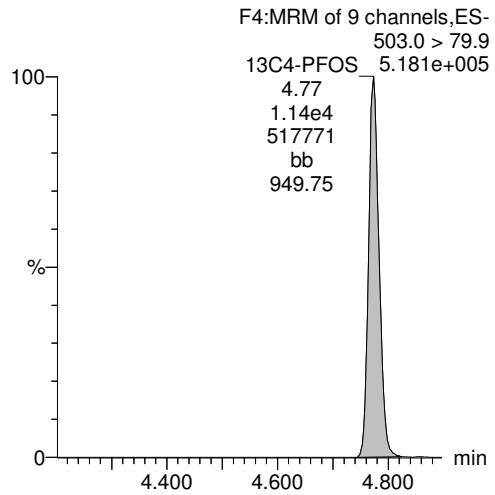
13C4-PFOS



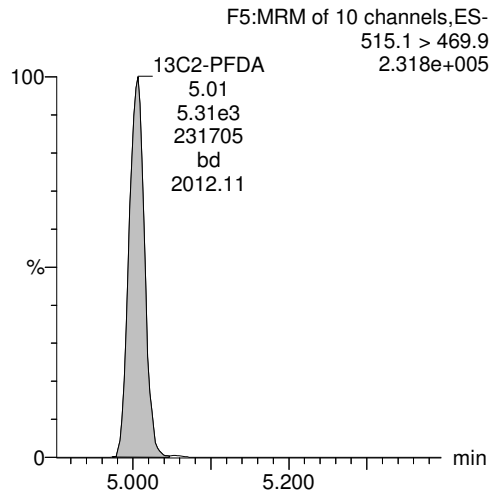
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-22.qld

Last Altered: Friday, December 01, 2017 11:32:24 Pacific Standard Time
Printed: Friday, December 01, 2017 11:32:39 Pacific Standard Time

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Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_22, Date: 30-Nov-2017, Time: 22:39:35, ID: 1701750-06 CH-AT-1FB50-1117 0.25, Description: CH-AT-1FB50-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.10e4		0.2705	3.08				
2	2	PFOA	413 > 368.7	4.62e1	9.96e3		0.2705	4.37	4.37	0.0464	0.210	
3	3	PFOS	499 >79.9		1.10e4		0.2705	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.49e3	9.96e3	0.429	0.2705	3.43	3.44	4.51	38.9	105.3
5	5	13C2-PFDA	515.1 > 469.9	5.25e3	9.96e3	0.548	0.2705	5.00	5.01	5.27	35.6	96.2
6	6	13C2-PFOA	414.9 > 369.7	9.96e3	9.96e3	1.000	0.2705	4.41	4.37	10.0	37.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.10e4	1.10e4	1.000	0.2705	4.81	4.78	28.7	106	100.0

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Rev'd: MM 12/1/17

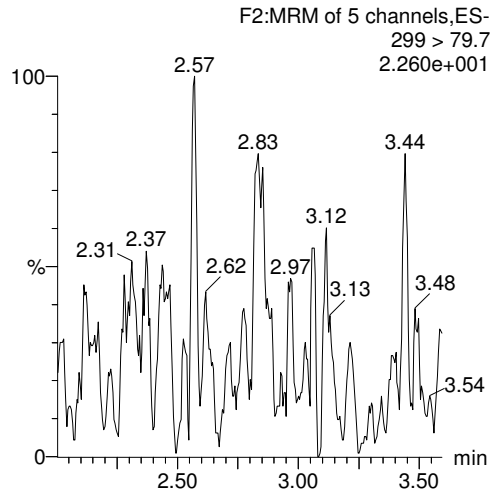
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-22.qld

Last Altered: Friday, December 01, 2017 11:32:24 Pacific Standard Time
Printed: Friday, December 01, 2017 11:32:39 Pacific Standard Time

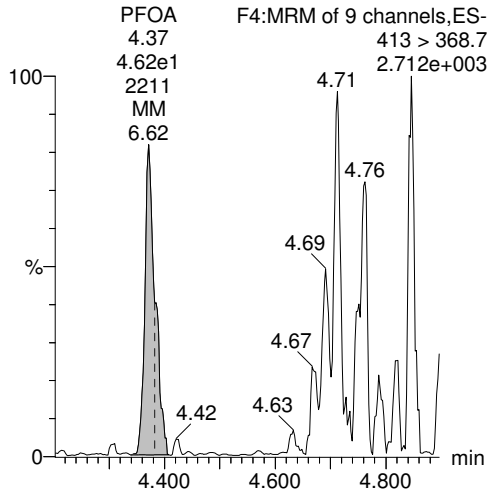
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_22, Date: 30-Nov-2017, Time: 22:39:35, ID: 1701750-06 CH-AT-1FB50-1117 0.25, Description: CH-AT-1FB50-1117

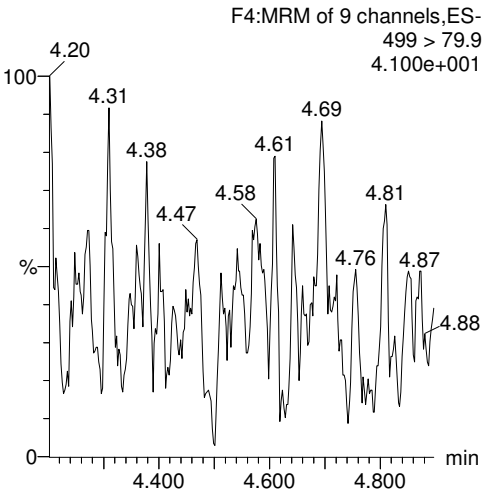
PFBS



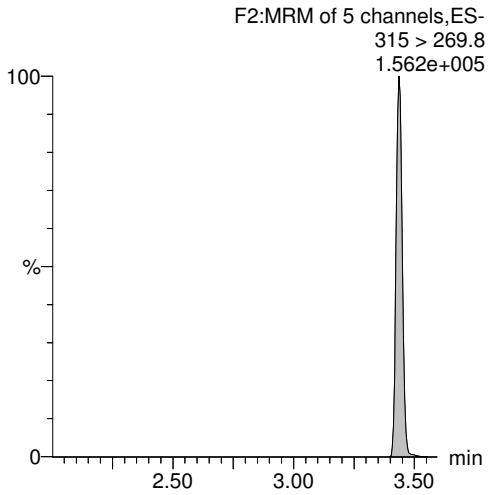
PFOA



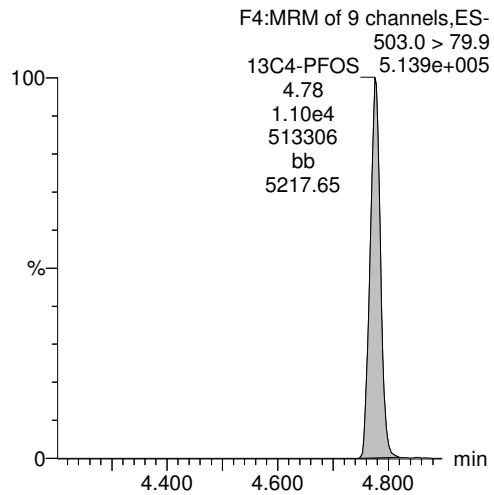
PFOS



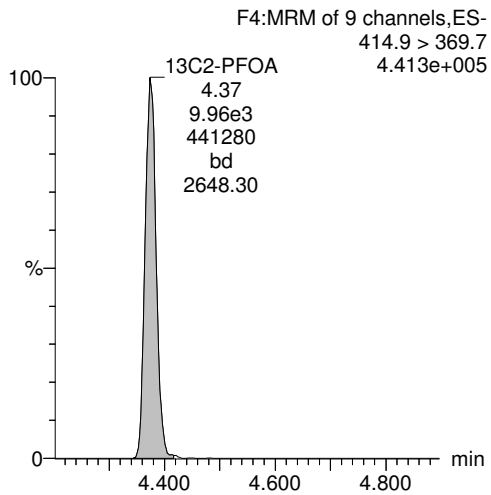
13C2-PFHxA



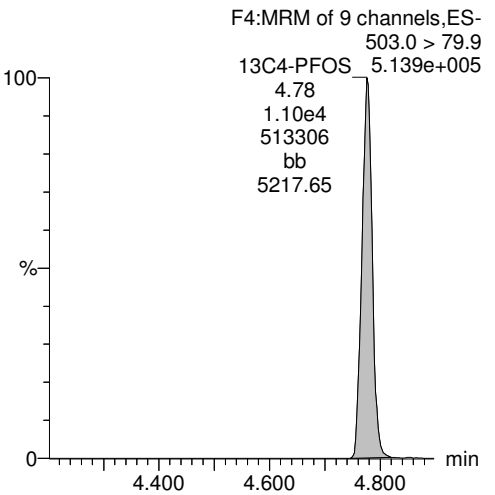
13C4-PFOS



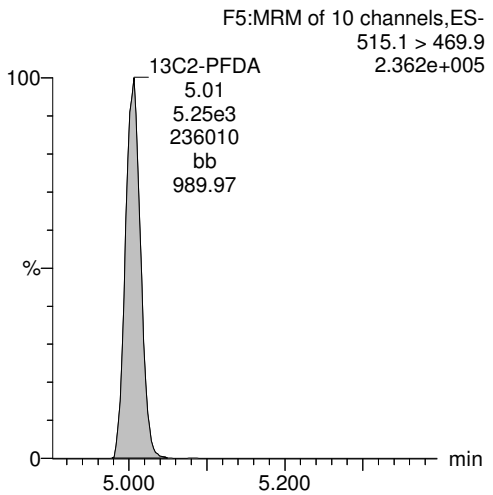
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-23.qld

Last Altered: Friday, December 01, 2017 12:05:24 Pacific Standard Time
Printed: Friday, December 01, 2017 12:05:45 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_23, Date: 30-Nov-2017, Time: 22:51:59, ID: 1701750-07 CH-AT-1RW51-1117 0.25, Description: CH-AT-1RW51-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.02e4		0.2587	3.08				
2	2	PFOA	413 > 368.7	1.11e2	9.61e3		0.2587	4.37	4.37	0.116	0.548	
3	3	PFOS	499 >79.9		1.02e4		0.2587	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.22e3	9.61e3	0.429	0.2587	3.43	3.44	4.39	39.6	102.5
5	5	13C2-PFDA	515.1 > 469.9	4.79e3	9.61e3	0.548	0.2587	5.00	5.01	4.99	35.2	91.0
6	6	13C2-PFOA	414.9 > 369.7	9.61e3	9.61e3	1.000	0.2587	4.41	4.37	10.0	38.7	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.02e4	1.02e4	1.000	0.2587	4.81	4.78	28.7	111	100.0

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Rev'd: MM 12/1/17

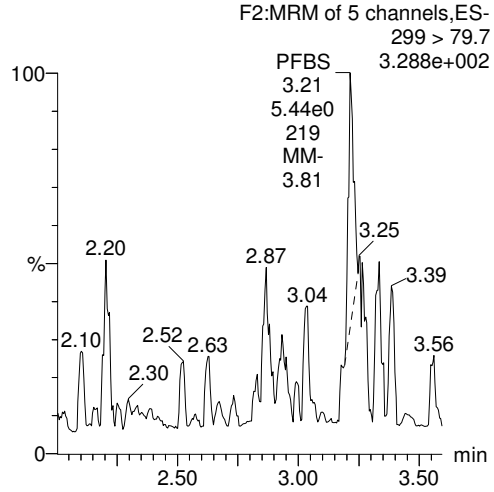
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-23.qld

Last Altered: Friday, December 01, 2017 12:05:24 Pacific Standard Time
Printed: Friday, December 01, 2017 12:05:45 Pacific Standard Time

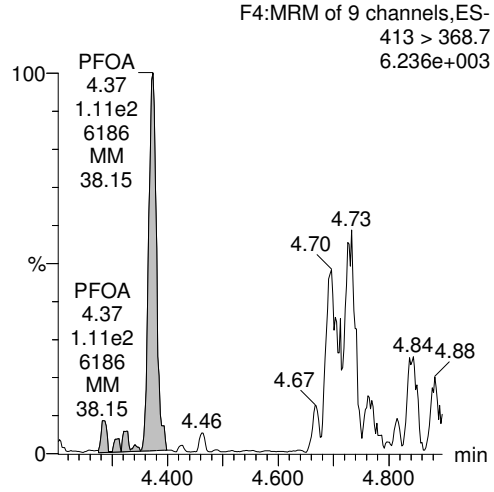
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_23, Date: 30-Nov-2017, Time: 22:51:59, ID: 1701750-07 CH-AT-1RW51-1117 0.25, Description: CH-AT-1RW51-1117

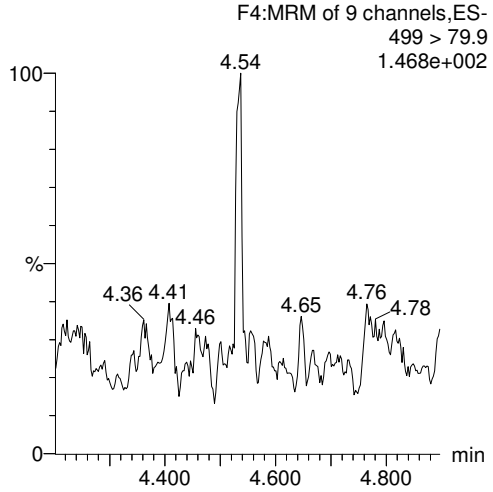
PFBS



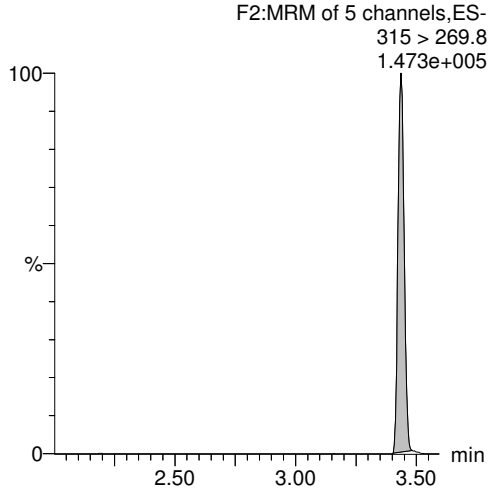
PFOA



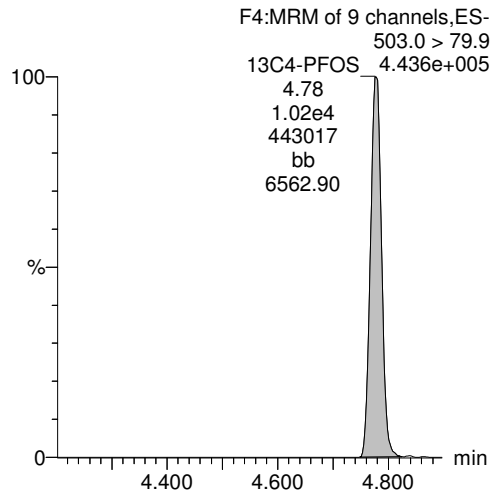
PFOS



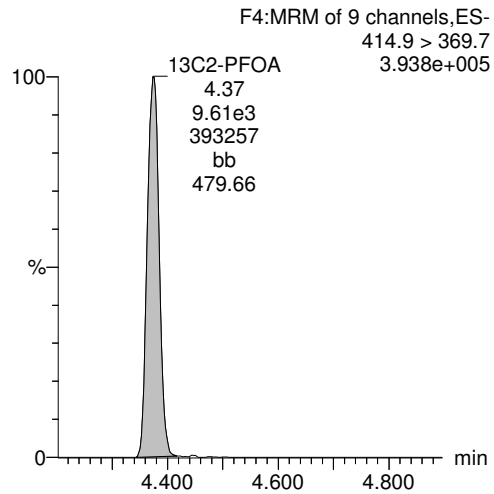
13C2-PFHxA



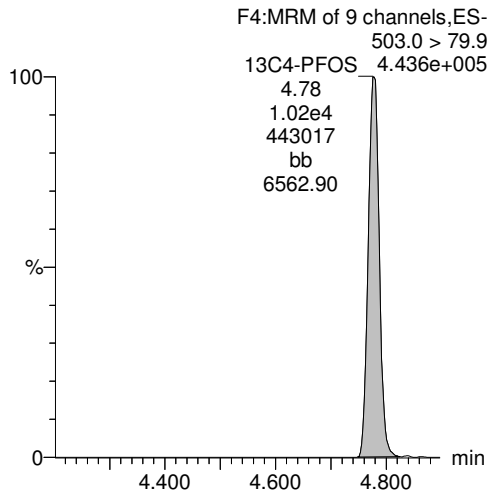
13C4-PFOS



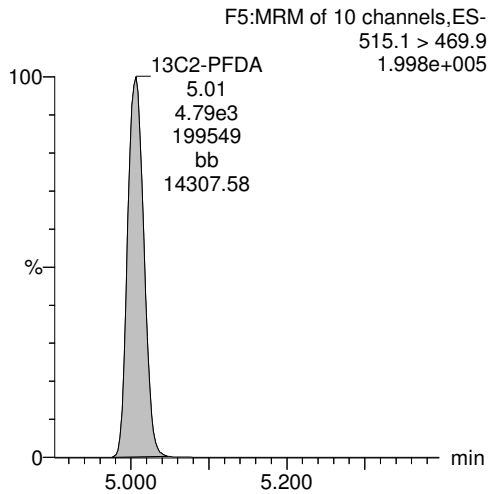
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-24.qld

Last Altered: Friday, December 01, 2017 11:34:09 Pacific Standard Time
Printed: Friday, December 01, 2017 11:34:28 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_24, Date: 30-Nov-2017, Time: 23:04:25, ID: 1701750-08 CH-AT-1FB51-1117 0.25, Description: CH-AT-1FB51-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.10e4		0.2708	3.08				
2	2	PFOA	413 > 368.7	5.44e1	1.01e4		0.2708	4.38	4.38	0.0541	0.244	
3	3	PFOS	499 >79.9		1.10e4		0.2708	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.08e3	1.01e4	0.429	0.2708	3.44	3.44	4.06	35.0	94.7
5	5	13C2-PFDA	515.1 > 469.9	5.05e3	1.01e4	0.548	0.2708	5.01	5.01	5.02	33.8	91.6
6	6	13C2-PFOA	414.9 > 369.7	1.01e4	1.01e4	1.000	0.2708	4.41	4.38	10.0	36.9	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.10e4	1.10e4	1.000	0.2708	4.81	4.78	28.7	106	100.0

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Rev'd: MM 12/1/17

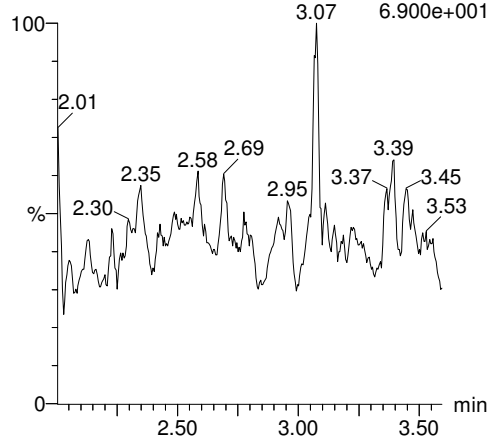
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-24.qld

Last Altered: Friday, December 01, 2017 11:34:09 Pacific Standard Time
Printed: Friday, December 01, 2017 11:34:28 Pacific Standard Time

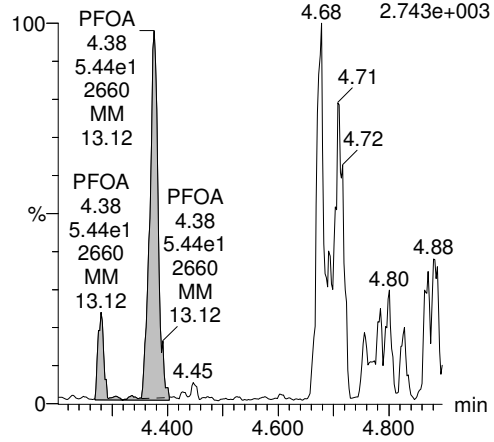
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_24, Date: 30-Nov-2017, Time: 23:04:25, ID: 1701750-08 CH-AT-1FB51-1117 0.25, Description: CH-AT-1FB51-1117

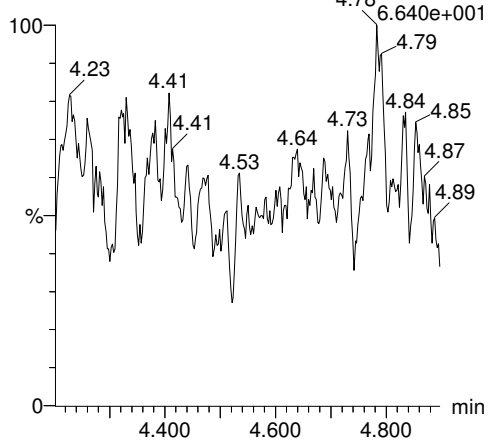
PFBS



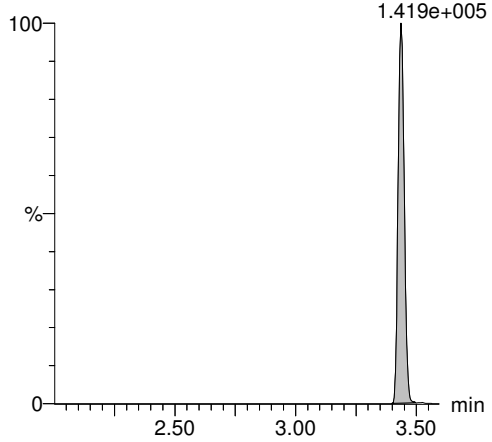
PFOA



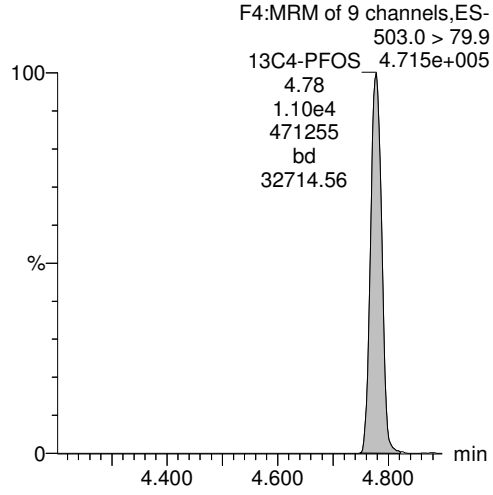
PFOS



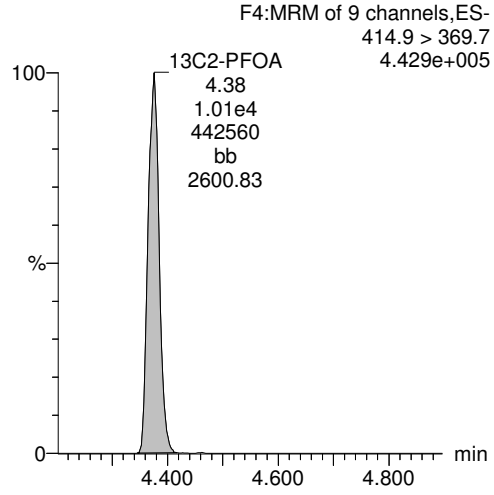
13C2-PFHxA



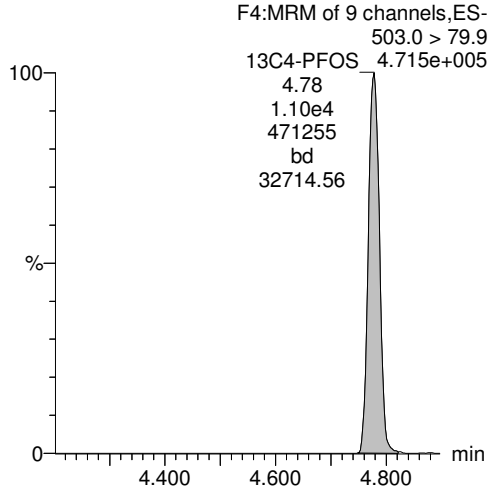
13C4-PFOS



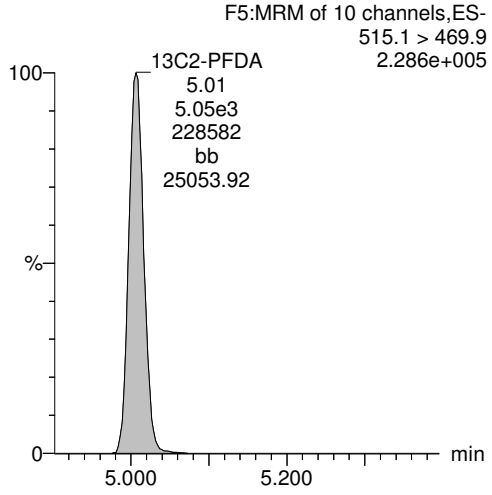
13C2-PFOA



13C4-PFOS



13C2-PFDA



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Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-25.qld

Last Altered: Friday, December 01, 2017 11:34:58 Pacific Standard Time
Printed: Friday, December 01, 2017 11:35:13 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_25, Date: 30-Nov-2017, Time: 23:16:50, ID: 1701750-09 CH-AT-1RW52-1117 0.25, Description: CH-AT-1RW52-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.16e4		0.2567	3.07				
2	2	PFOA	413 > 368.7	8.18e1	1.04e4		0.2567	4.37	4.37	0.0786	0.375	
3	3	PFOS	499 >79.9	4.50e0	1.16e4		0.2567	4.77	4.69	0.0111	0.0367	
4	4	13C2-PFHxA	315 > 269.8	4.33e3	1.04e4	0.429	0.2567	3.43	3.44	4.16	37.8	97.0
5	5	13C2-PFDA	515.1 > 469.9	4.97e3	1.04e4	0.548	0.2567	5.00	5.00	4.78	34.0	87.2
6	6	13C2-PFOA	414.9 > 369.7	1.04e4	1.04e4	1.000	0.2567	4.41	4.37	10.0	39.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.16e4	1.16e4	1.000	0.2567	4.81	4.77	28.7	112	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

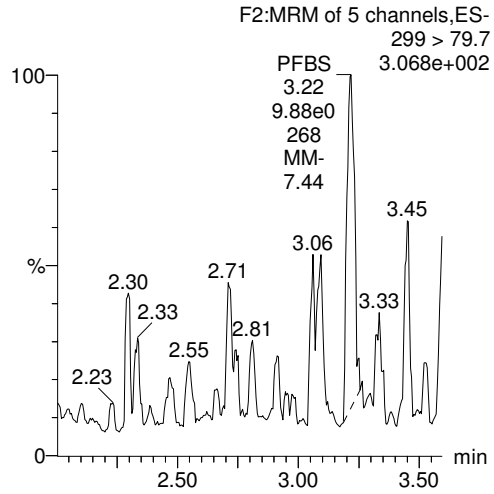
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-25.qld

Last Altered: Friday, December 01, 2017 11:34:58 Pacific Standard Time
Printed: Friday, December 01, 2017 11:35:13 Pacific Standard Time

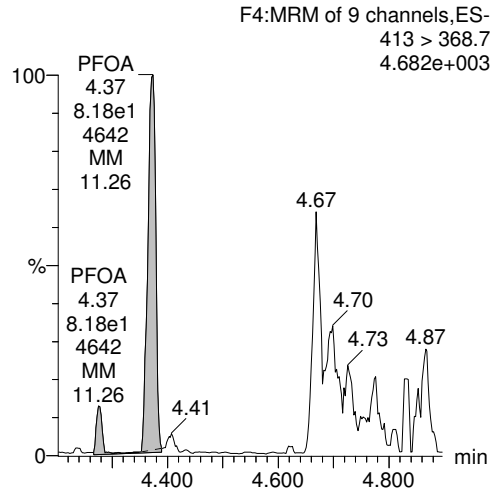
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_25, Date: 30-Nov-2017, Time: 23:16:50, ID: 1701750-09 CH-AT-1RW52-1117 0.25, Description: CH-AT-1RW52-1117

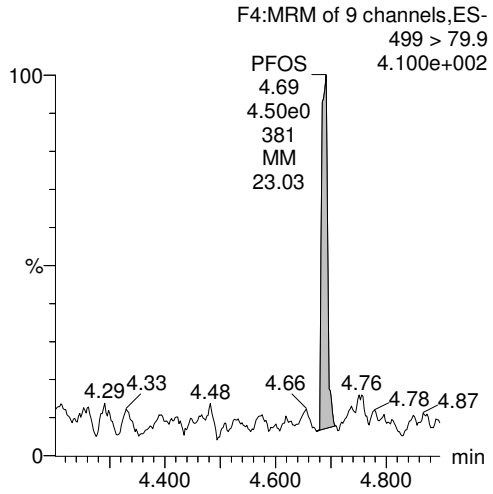
PFBS



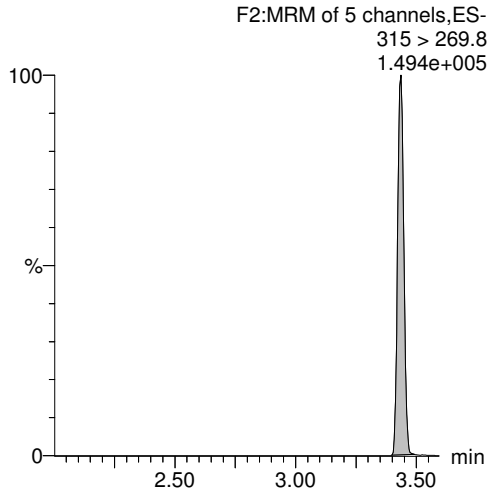
PFOA



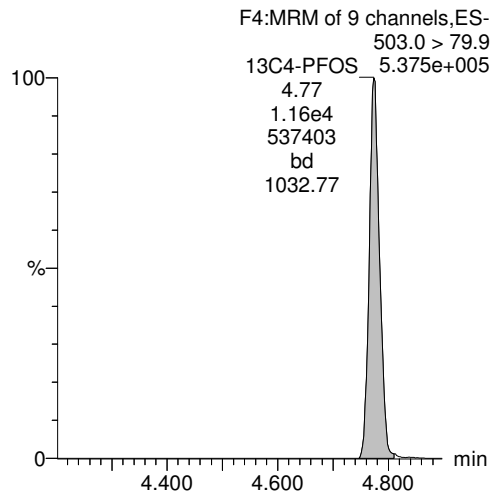
PFOS



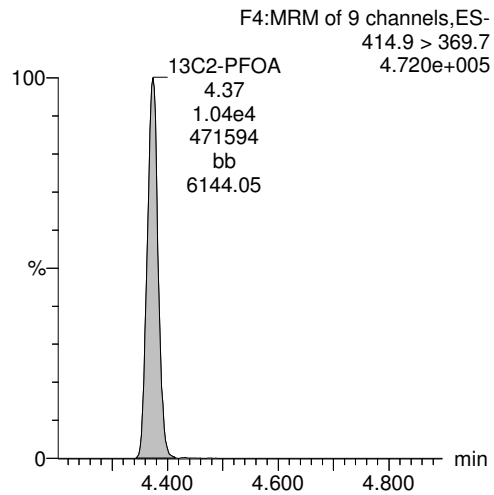
13C2-PFHxA



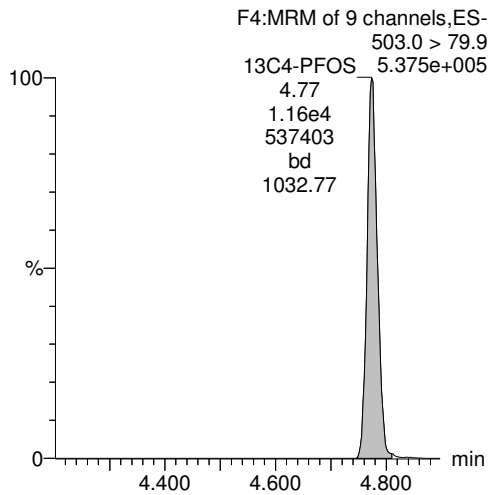
13C4-PFOS



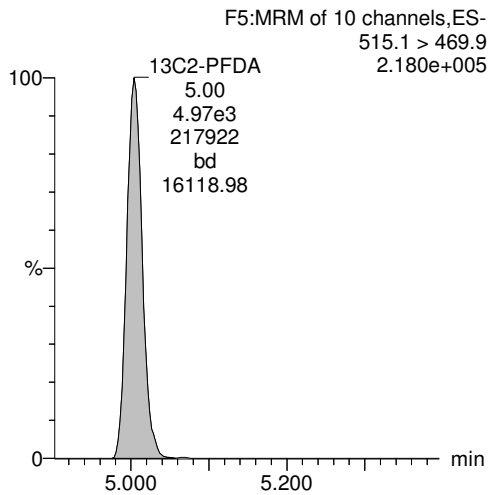
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-26.qld

Last Altered: Friday, December 01, 2017 11:35:53 Pacific Standard Time
Printed: Friday, December 01, 2017 11:36:16 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_26, Date: 30-Nov-2017, Time: 23:29:17, ID: 1701750-10 CH-AT-1FB52-1117 0.25, Description: CH-AT-1FB52-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.09e4		0.2653	3.08				
2	2	PFOA	413 > 368.7	6.21e1	1.01e4		0.2653	4.38	4.38	0.0614	0.283	
3	3	PFOS	499 >79.9		1.09e4		0.2653	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.37e3	1.01e4	0.429	0.2653	3.44	3.44	4.32	38.0	100.8
5	5	13C2-PFDA	515.1 > 469.9	4.54e3	1.01e4	0.548	0.2653	5.01	5.01	4.49	30.9	81.9
6	6	13C2-PFOA	414.9 > 369.7	1.01e4	1.01e4	1.000	0.2653	4.41	4.38	10.0	37.7	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.09e4	1.09e4	1.000	0.2653	4.81	4.78	28.7	108	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

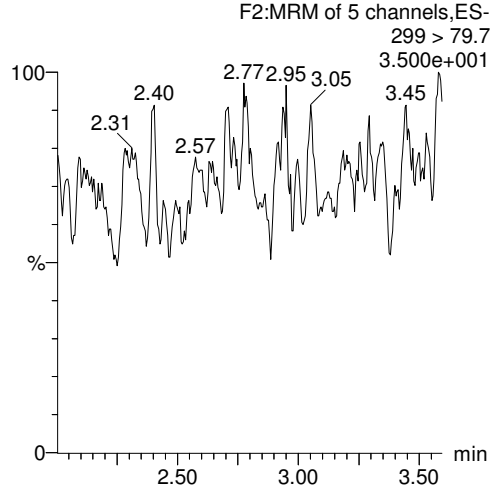
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-26.qld

Last Altered: Friday, December 01, 2017 11:35:53 Pacific Standard Time
Printed: Friday, December 01, 2017 11:36:16 Pacific Standard Time

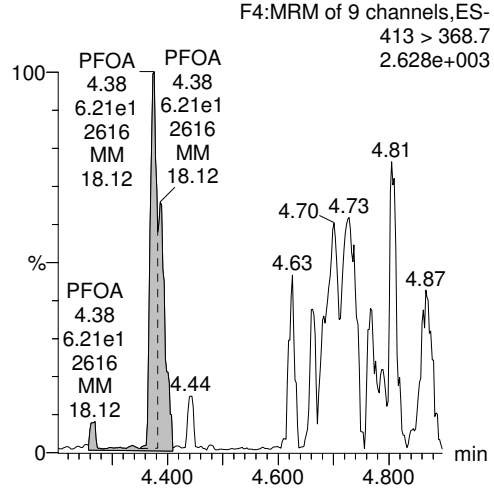
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_26, Date: 30-Nov-2017, Time: 23:29:17, ID: 1701750-10 CH-AT-1FB52-1117 0.25, Description: CH-AT-1FB52-1117

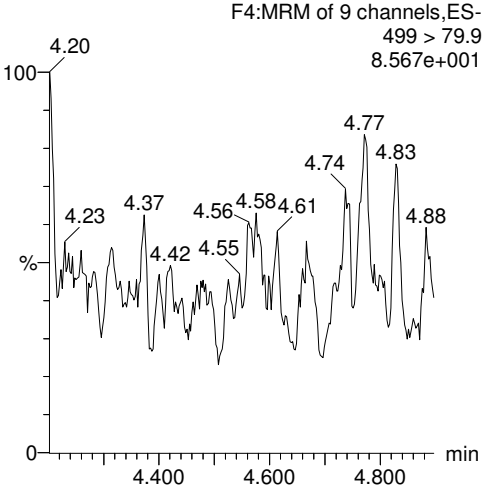
PFBS



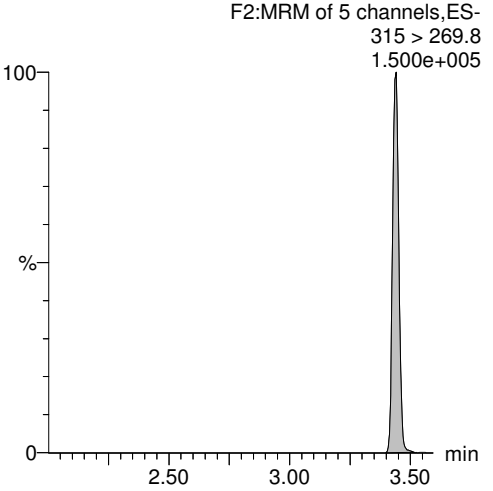
PFOA



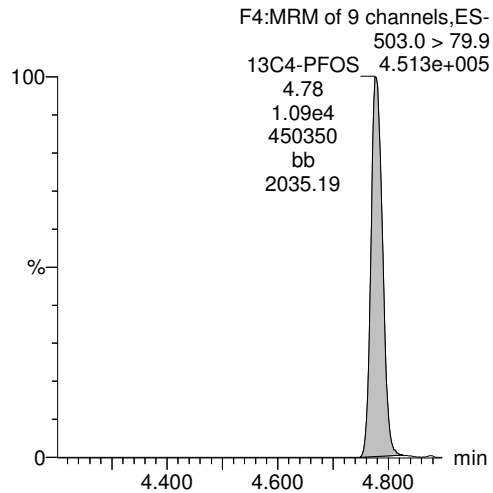
PFOS



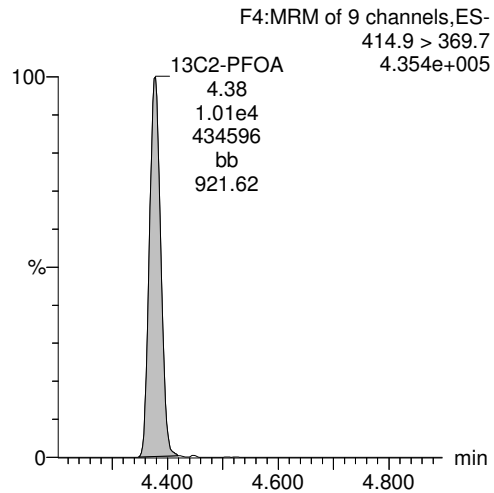
13C2-PFHxA



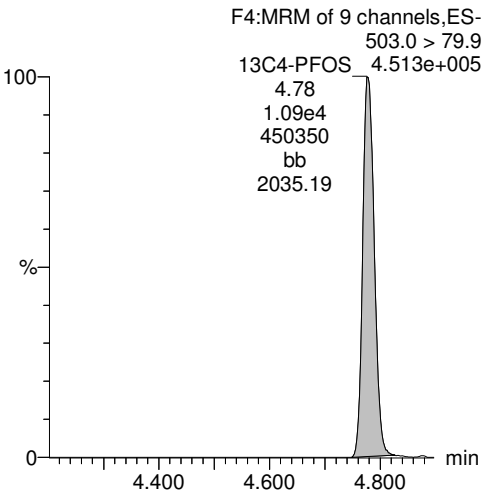
13C4-PFOS



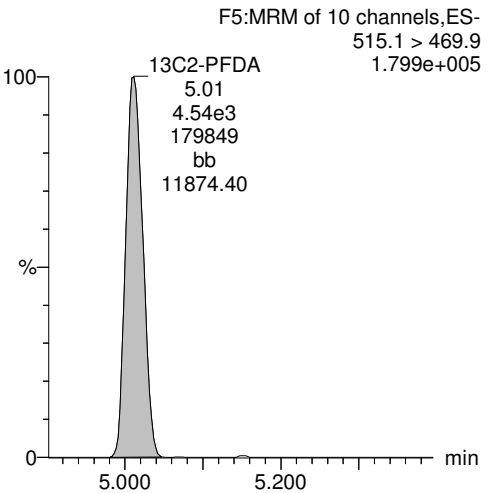
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-27.qld

Last Altered: Friday, December 01, 2017 11:36:52 Pacific Standard Time
Printed: Friday, December 01, 2017 11:37:09 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_27, Date: 30-Nov-2017, Time: 23:41:45, ID: 1701750-11 CH-AT-1RW53-1117 0.25, Description: CH-AT-1RW53-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.03e4		0.2667	3.08				
2	2	PFOA	413 > 368.7	5.57e1	1.07e4		0.2667	4.37	4.37	0.0522	0.239	
3	3	PFOS	499 >79.9		1.03e4		0.2667	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.39e3	1.07e4	0.429	0.2667	3.43	3.44	4.11	35.9	95.8
5	5	13C2-PFDA	515.1 > 469.9	5.09e3	1.07e4	0.548	0.2667	5.00	5.01	4.77	32.6	87.0
6	6	13C2-PFOA	414.9 > 369.7	1.07e4	1.07e4	1.000	0.2667	4.41	4.37	10.0	37.5	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.03e4	1.03e4	1.000	0.2667	4.81	4.78	28.7	108	100.0

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Rev'd: MM 12/1/17

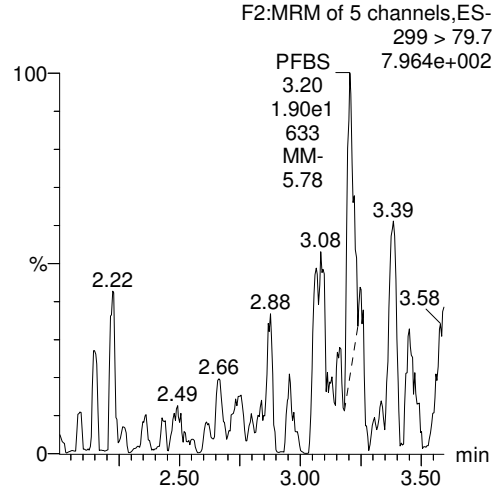
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-27.qld

Last Altered: Friday, December 01, 2017 11:36:52 Pacific Standard Time
Printed: Friday, December 01, 2017 11:37:09 Pacific Standard Time

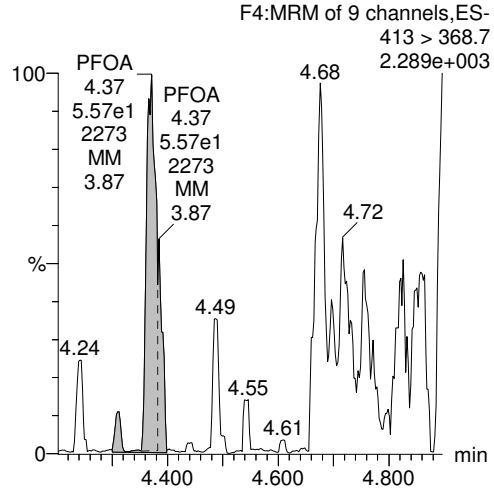
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_27, Date: 30-Nov-2017, Time: 23:41:45, ID: 1701750-11 CH-AT-1RW53-1117 0.25, Description: CH-AT-1RW53-1117

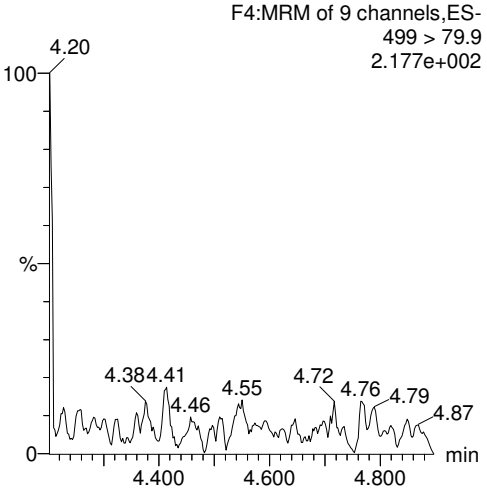
PFBS



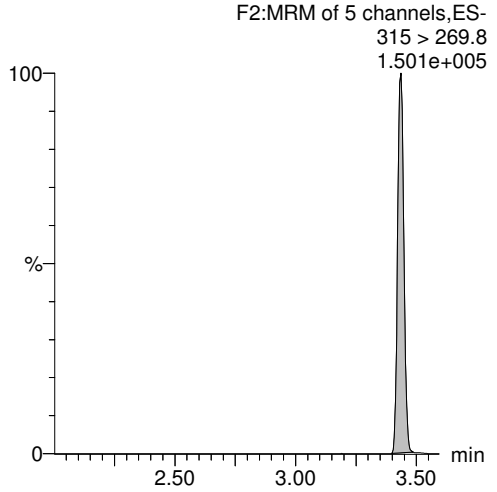
PFOA



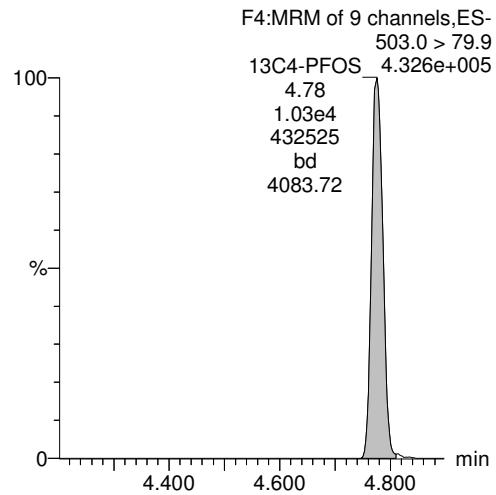
PFOS



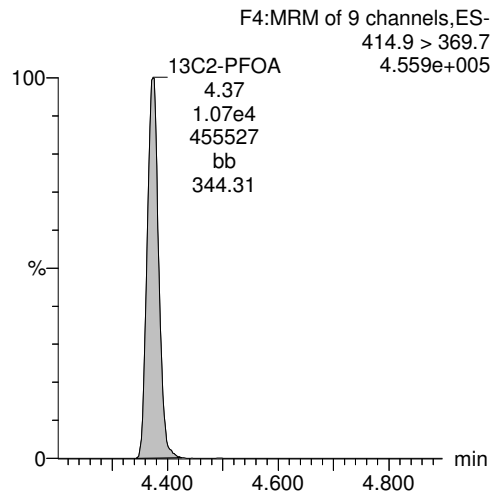
13C2-PFHxA



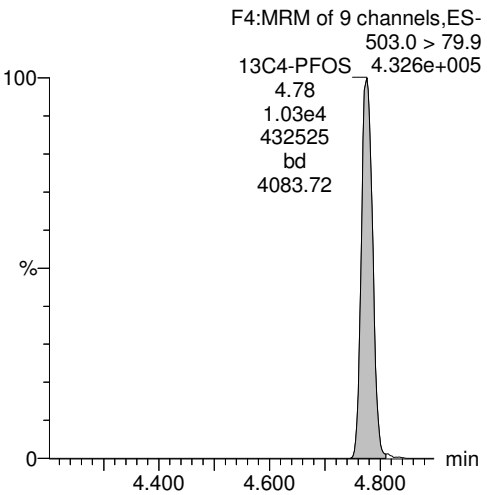
13C4-PFOS



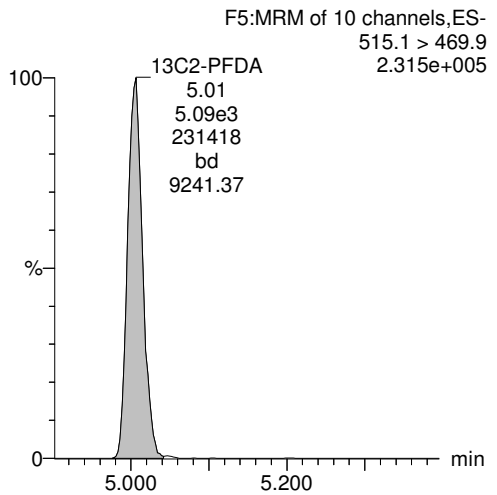
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-28.qld

Last Altered: Friday, December 01, 2017 11:37:38 Pacific Standard Time
Printed: Friday, December 01, 2017 11:37:53 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_28, Date: 30-Nov-2017, Time: 23:54:12, ID: 1701750-12 CH-AT-1FB53-1117 0.25, Description: CH-AT-1FB53-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.06e4		0.2696	3.08				
2	2	PFOA	413 > 368.7	6.99e1	1.06e4		0.2696	4.38	4.38	0.0660	0.300	
3	3	PFOS	499 >79.9	3.26e0	1.06e4		0.2696	4.78	4.78	0.00878	0.0275	
4	4	13C2-PFHxA	315 > 269.8	4.59e3	1.06e4	0.429	0.2696	3.44	3.44	4.34	37.5	101.2
5	5	13C2-PFDA	515.1 > 469.9	4.88e3	1.06e4	0.548	0.2696	5.01	5.01	4.60	31.2	84.0
6	6	13C2-PFOA	414.9 > 369.7	1.06e4	1.06e4	1.000	0.2696	4.41	4.38	10.0	37.1	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.06e4	1.06e4	1.000	0.2696	4.81	4.78	28.7	106	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

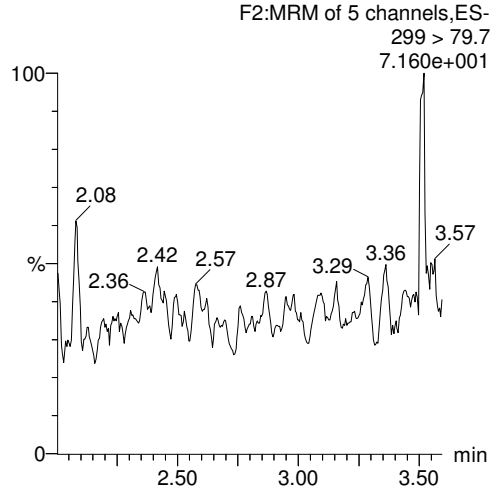
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-28.qld

Last Altered: Friday, December 01, 2017 11:37:38 Pacific Standard Time
Printed: Friday, December 01, 2017 11:37:53 Pacific Standard Time

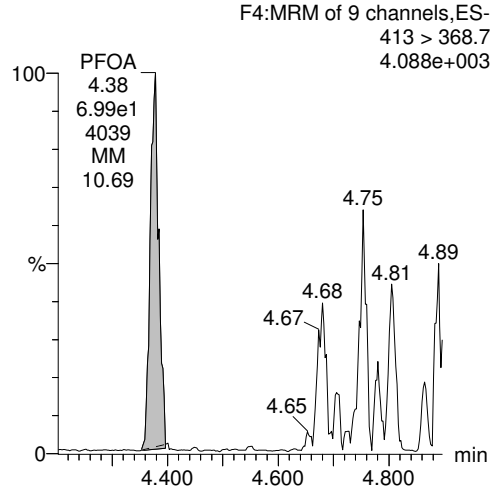
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_28, Date: 30-Nov-2017, Time: 23:54:12, ID: 1701750-12 CH-AT-1FB53-1117 0.25, Description: CH-AT-1FB53-1117

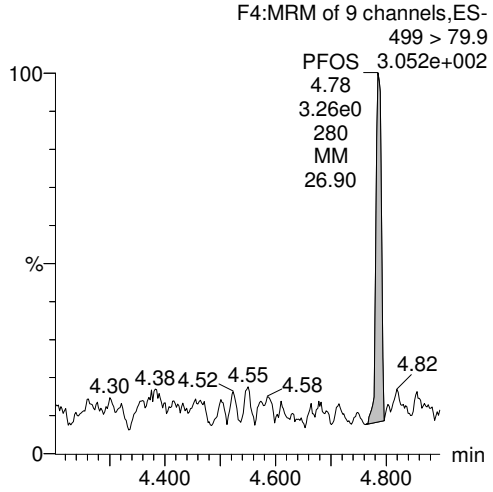
PFBS



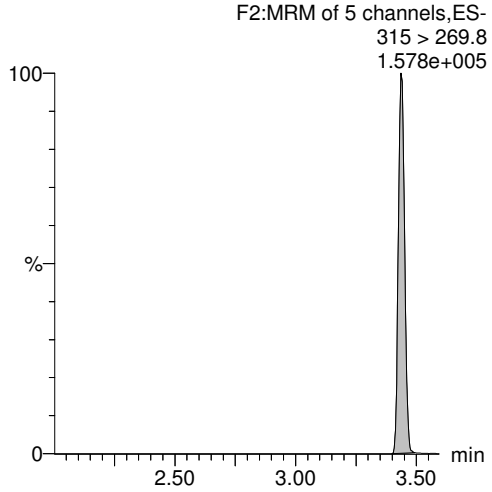
PFOA



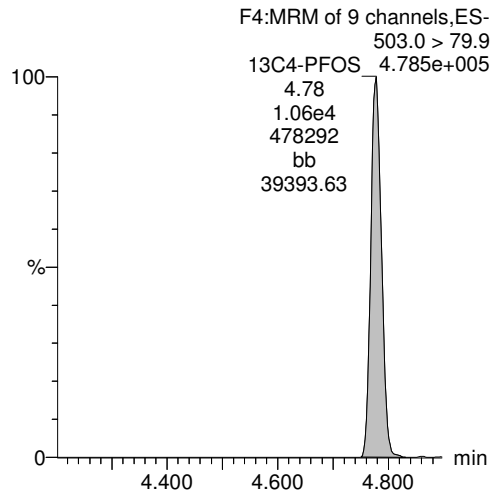
PFOS



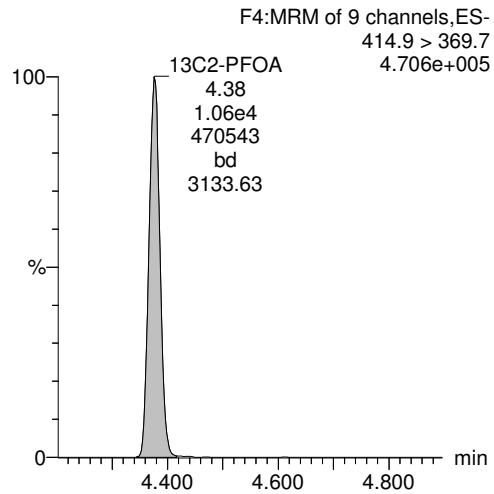
13C2-PFHxA



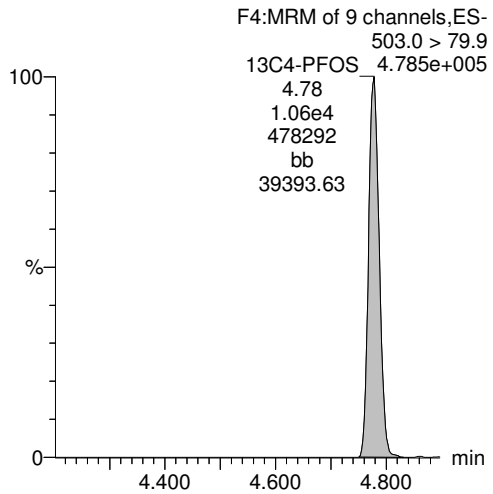
13C4-PFOS



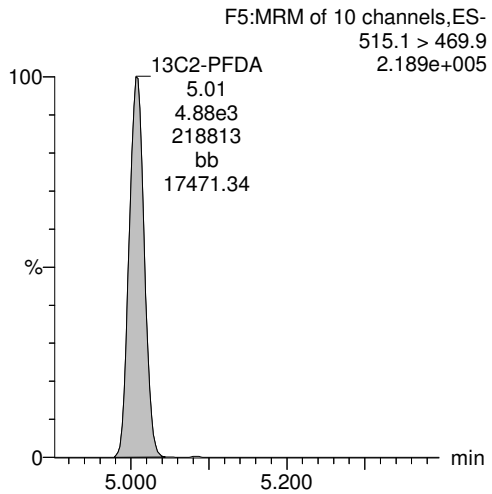
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-29.qld

Last Altered: Friday, December 01, 2017 11:38:30 Pacific Standard Time
Printed: Friday, December 01, 2017 11:38:43 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_29, Date: 01-Dec-2017, Time: 00:06:36, ID: 1701750-13 CH-AT-1RW54-1117 0.25, Description: CH-AT-1RW54-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.11e4		0.2628	3.08				
2	2	PFOA	413 > 368.7	6.07e1	9.63e3		0.2628	4.38	4.38	0.0630	0.293	
3	3	PFOS	499 >79.9	6.03e0	1.11e4		0.2628	4.78	4.77	0.0156	0.0500	
4	4	13C2-PFHxA	315 > 269.8	4.36e3	9.63e3	0.429	0.2628	3.44	3.44	4.53	40.2	105.6
5	5	13C2-PFDA	515.1 > 469.9	4.50e3	9.63e3	0.548	0.2628	5.01	5.01	4.68	32.5	85.3
6	6	13C2-PFOA	414.9 > 369.7	9.63e3	9.63e3	1.000	0.2628	4.41	4.38	10.0	38.1	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.11e4	1.11e4	1.000	0.2628	4.81	4.78	28.7	109	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

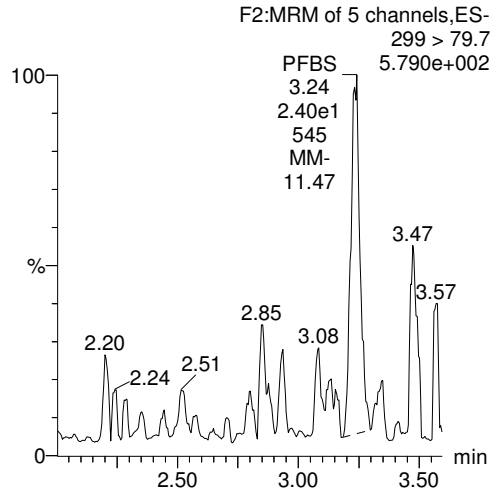
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-29.qld

Last Altered: Friday, December 01, 2017 11:38:30 Pacific Standard Time
Printed: Friday, December 01, 2017 11:38:43 Pacific Standard Time

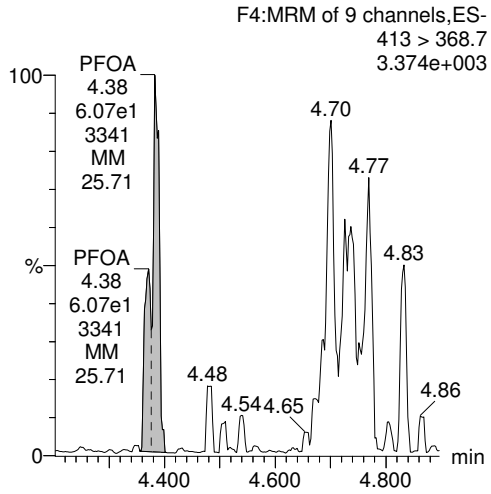
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_29, Date: 01-Dec-2017, Time: 00:06:36, ID: 1701750-13 CH-AT-1RW54-1117 0.25, Description: CH-AT-1RW54-1117

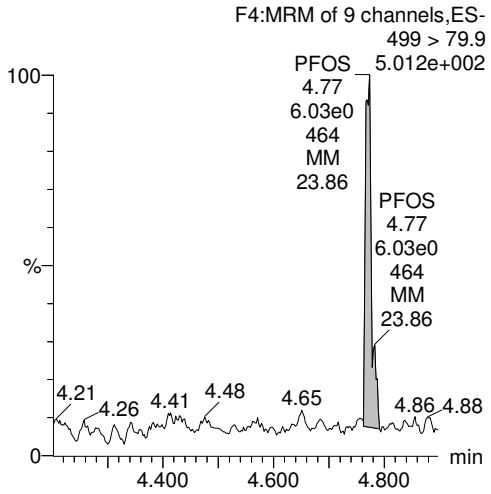
PFBS



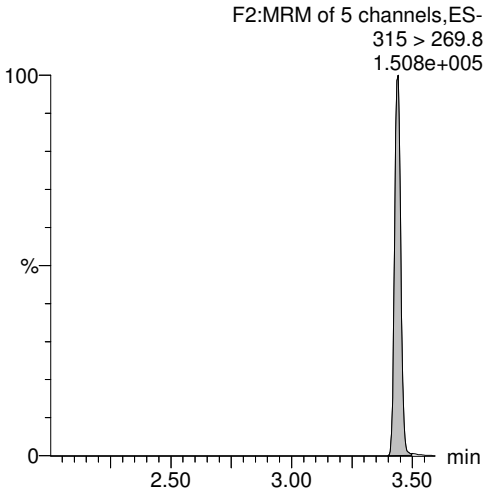
PFOA



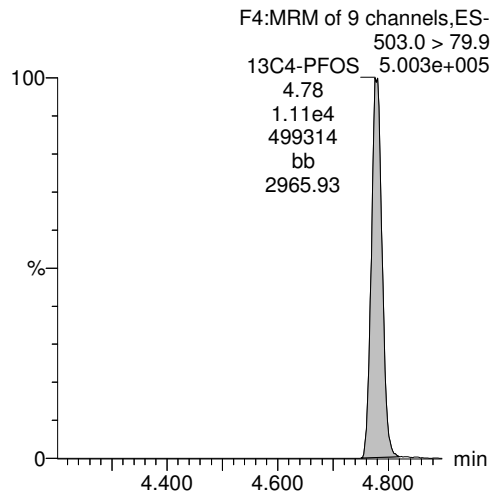
PFOS



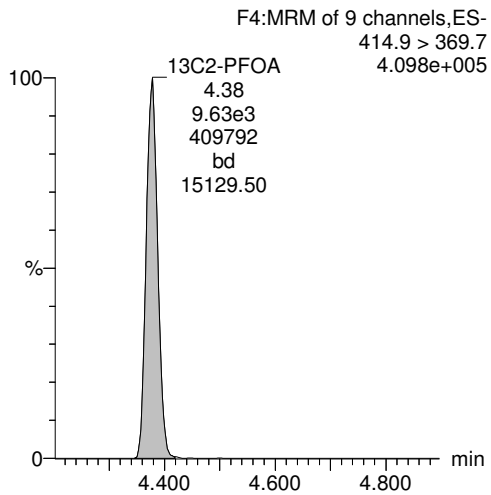
13C2-PFHxA



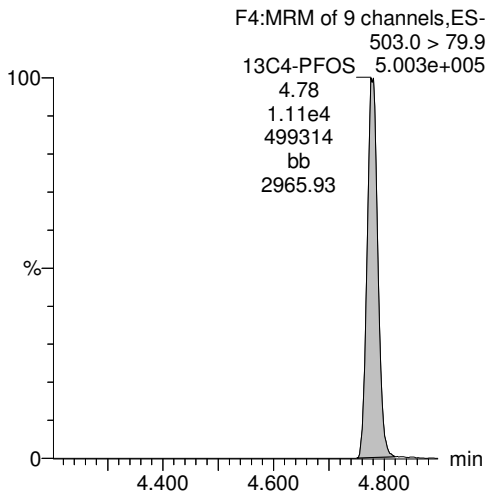
13C4-PFOS



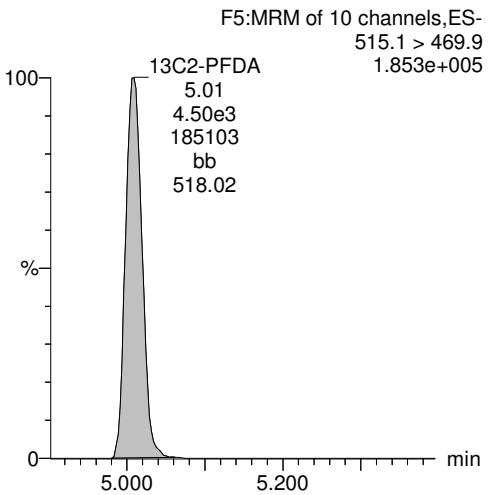
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/2/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-30.qld

Last Altered: Friday, December 01, 2017 11:39:09 Pacific Standard Time
Printed: Friday, December 01, 2017 11:39:29 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_30, Date: 01-Dec-2017, Time: 00:19:01, ID: 1701750-14 CH-AT-1FB54-1117 0.25, Description: CH-AT-1FB54-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.05e4		0.2637	3.08				
2	2	PFOA	413 > 368.7	5.69e1	9.47e3		0.2637	4.37	4.38	0.0600	0.278	
3	3	PFOS	499 >79.9		1.05e4		0.2637	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.43e3	9.47e3	0.429	0.2637	3.43	3.44	4.68	41.4	109.2
5	5	13C2-PFDA	515.1 > 469.9	4.49e3	9.47e3	0.548	0.2637	5.00	5.01	4.74	32.8	86.5
6	6	13C2-PFOA	414.9 > 369.7	9.47e3	9.47e3	1.000	0.2637	4.41	4.37	10.0	37.9	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.05e4	1.05e4	1.000	0.2637	4.81	4.78	28.7	109	100.0

Vista Analytical Laboratory

Rev'd: MM 12/2/17

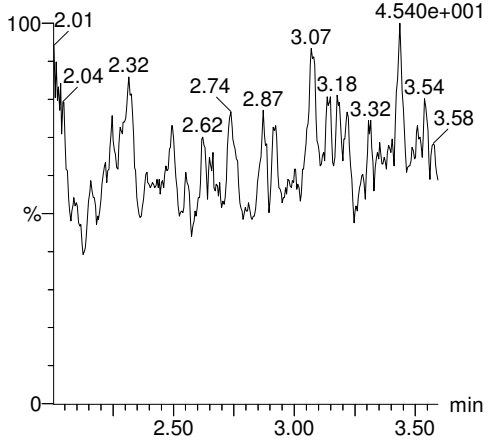
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-30.qld

Last Altered: Friday, December 01, 2017 11:39:09 Pacific Standard Time
Printed: Friday, December 01, 2017 11:39:29 Pacific Standard Time

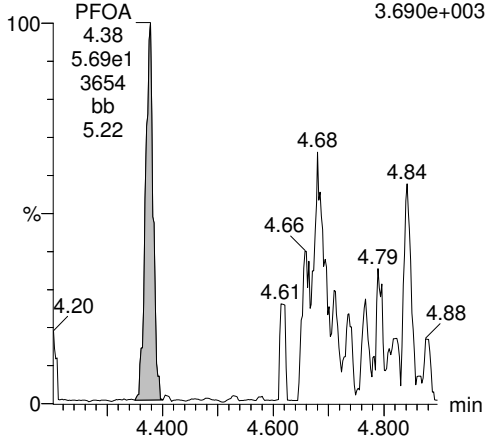
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_30, Date: 01-Dec-2017, Time: 00:19:01, ID: 1701750-14 CH-AT-1FB54-1117 0.25, Description: CH-AT-1FB54-1117

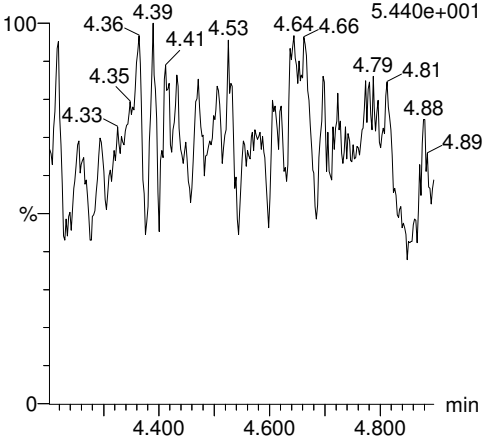
PFBS



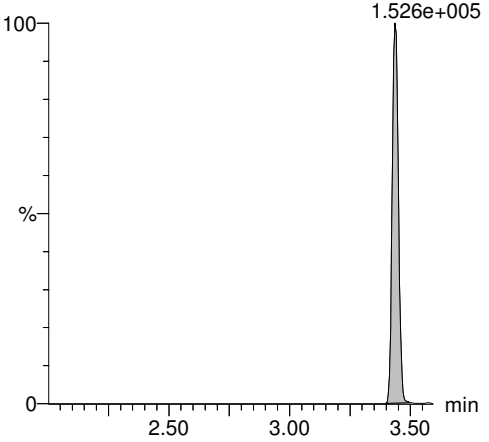
PFOA



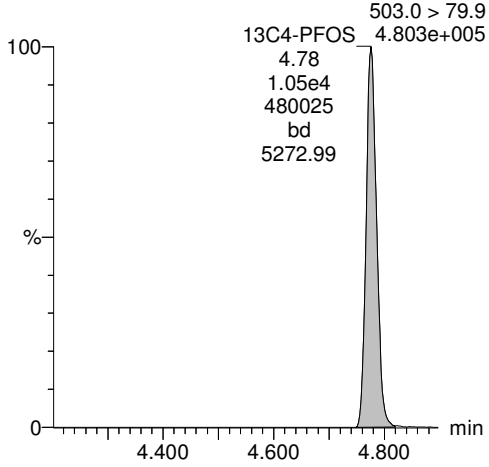
PFOS



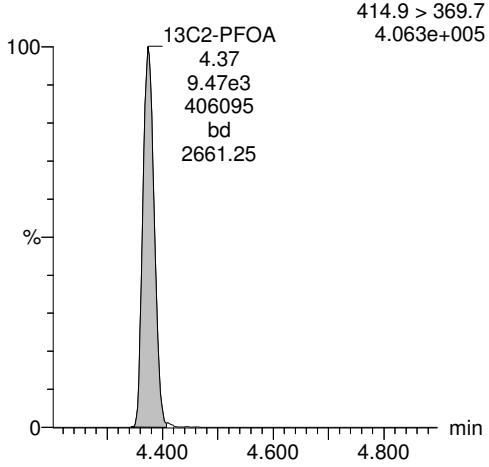
13C2-PFHxA



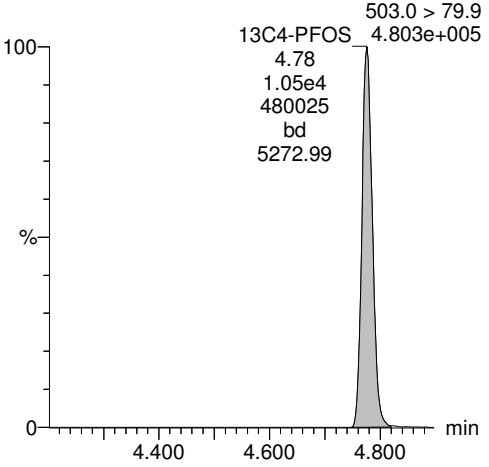
13C4-PFOS



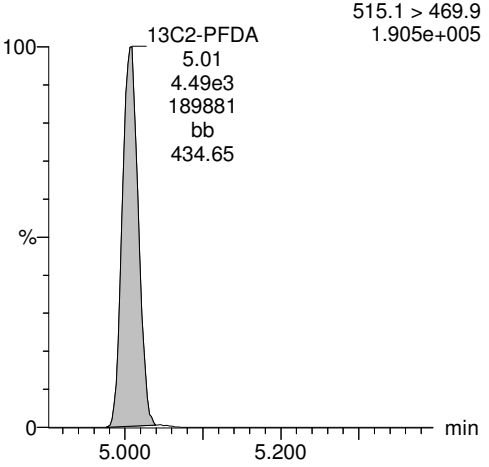
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/2/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-31.qld

Last Altered: Friday, December 01, 2017 11:39:55 Pacific Standard Time
Printed: Friday, December 01, 2017 11:40:14 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_31, Date: 01-Dec-2017, Time: 00:31:25, ID: 1701750-15 CH-AT-1RW55-1117 0.25, Description: CH-AT-1RW55-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.94e3		0.2586	3.08				
2	2	PFOA	413 > 368.7	7.65e1	9.51e3		0.2586	4.38	4.38	0.0805	0.381	
3	3	PFOS	499 >79.9		9.94e3		0.2586	4.78				
4	4	13C2-PFHxA	315 > 269.8	3.66e3	9.51e3	0.429	0.2586	3.44	3.44	3.85	34.7	89.7
5	5	13C2-PFDA	515.1 > 469.9	4.63e3	9.51e3	0.548	0.2586	5.01	5.01	4.87	34.4	88.8
6	6	13C2-PFOA	414.9 > 369.7	9.51e3	9.51e3	1.000	0.2586	4.41	4.38	10.0	38.7	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.94e3	9.94e3	1.000	0.2586	4.81	4.78	28.7	111	100.0

Vista Analytical Laboratory

Rev'd: MM 12/2/17

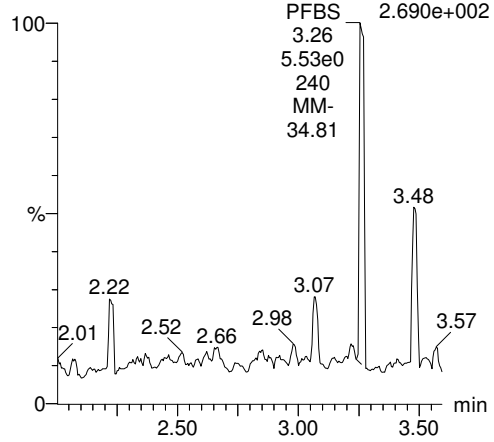
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-31.qld

Last Altered: Friday, December 01, 2017 11:39:55 Pacific Standard Time
Printed: Friday, December 01, 2017 11:40:14 Pacific Standard Time

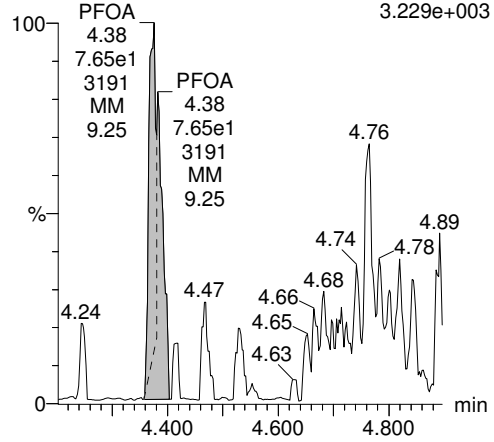
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_31, Date: 01-Dec-2017, Time: 00:31:25, ID: 1701750-15 CH-AT-1RW55-1117 0.25, Description: CH-AT-1RW55-1117

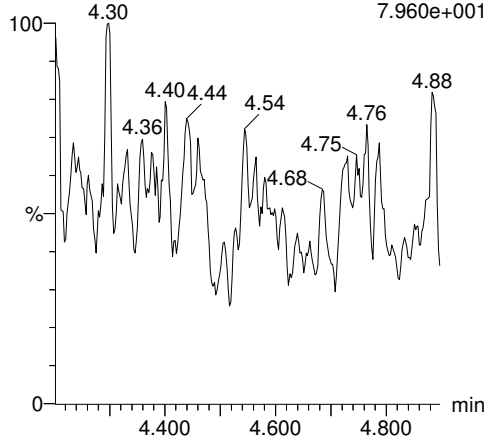
PFBS



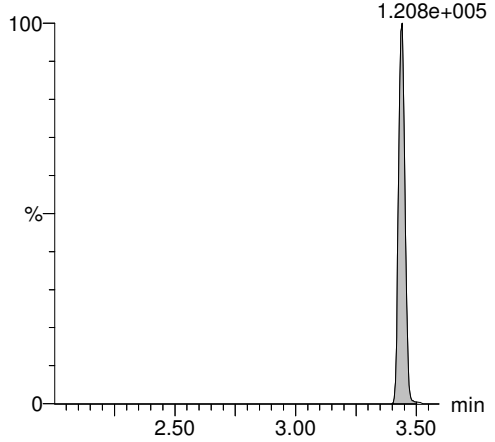
PFOA



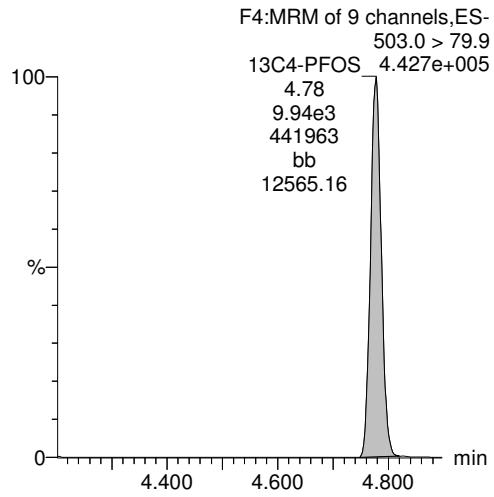
PFOS



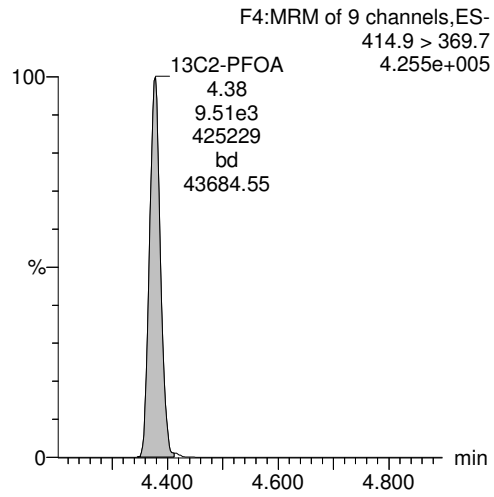
13C2-PFHxA



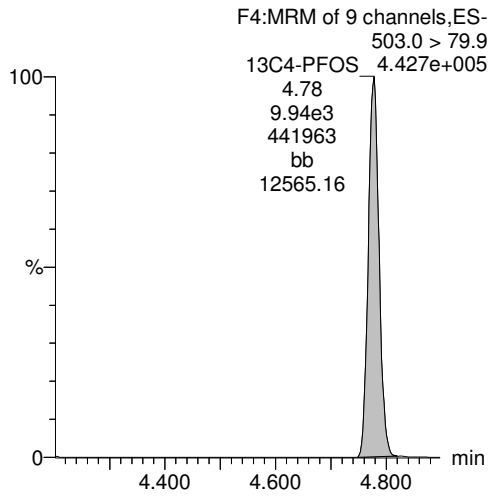
13C4-PFOS



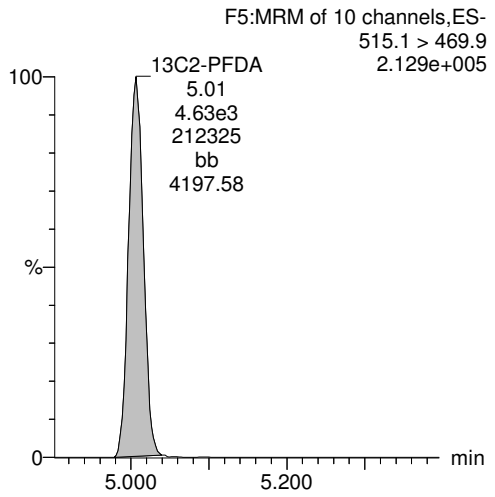
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-32.qld

Last Altered: Friday, December 01, 2017 11:41:09 Pacific Standard Time
Printed: Friday, December 01, 2017 11:41:27 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_32, Date: 01-Dec-2017, Time: 00:43:49, ID: 1701750-16 CH-AT-1FB55-1117 0.25, Description: CH-AT-1FB55-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.97e3		0.2591	3.08				
2	2	PFOA	413 > 368.7	4.22e1	9.69e3		0.2591	4.38	4.37	0.0435	0.205	
3	3	PFOS	499 >79.9		9.97e3		0.2591	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.13e3	9.69e3	0.429	0.2591	3.44	3.44	4.26	38.4	99.5
5	5	13C2-PFDA	515.1 > 469.9	5.12e3	9.69e3	0.548	0.2591	5.01	5.00	5.28	37.2	96.4
6	6	13C2-PFOA	414.9 > 369.7	9.69e3	9.69e3	1.000	0.2591	4.41	4.38	10.0	38.6	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.97e3	9.97e3	1.000	0.2591	4.81	4.78	28.7	111	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

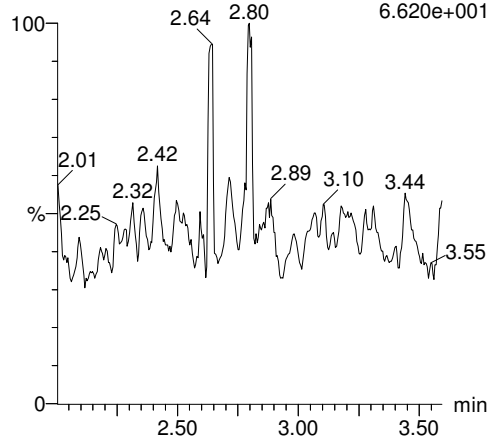
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-32.qld

Last Altered: Friday, December 01, 2017 11:41:09 Pacific Standard Time
Printed: Friday, December 01, 2017 11:41:27 Pacific Standard Time

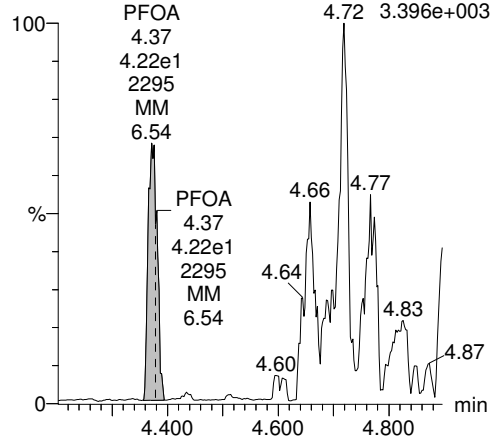
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_32, Date: 01-Dec-2017, Time: 00:43:49, ID: 1701750-16 CH-AT-1FB55-1117 0.25, Description: CH-AT-1FB55-1117

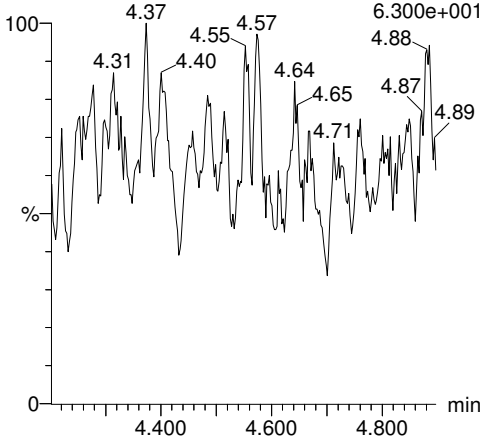
PFBS



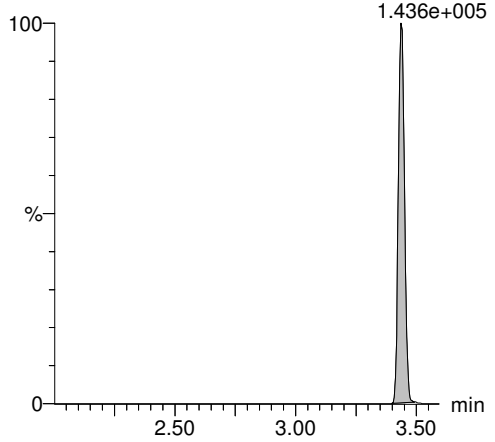
PFOA



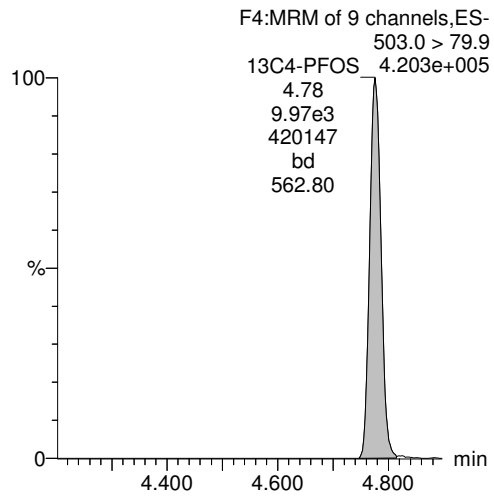
PFOS



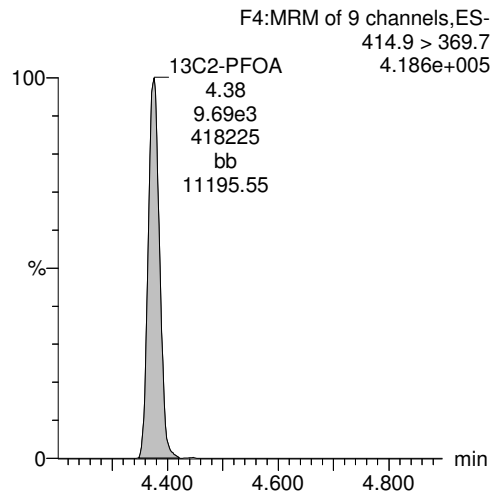
13C2-PFHxA



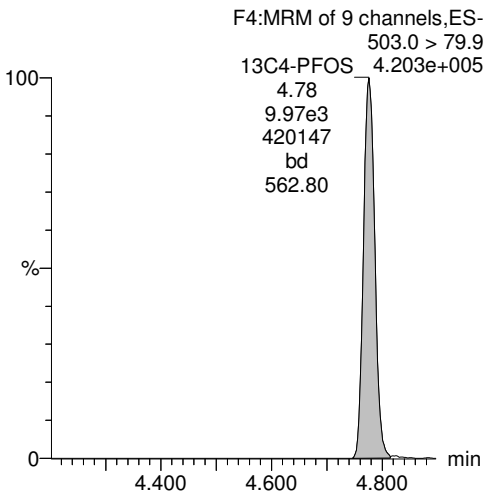
13C4-PFOS



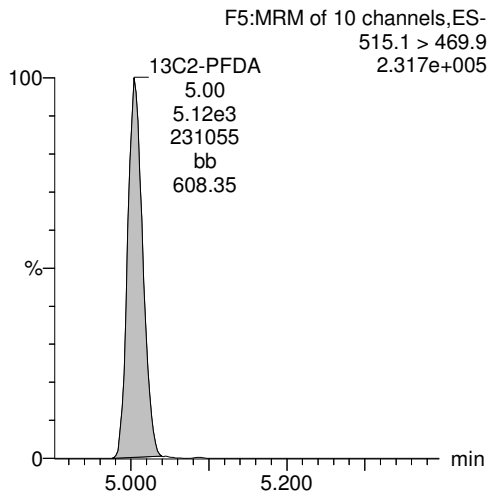
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-33.qld

Last Altered: Friday, December 01, 2017 11:42:20 Pacific Standard Time
Printed: Friday, December 01, 2017 11:42:29 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_33, Date: 01-Dec-2017, Time: 00:56:15, ID: 1701750-17 CH-AT-1RW56-1117 0.25, Description: CH-AT-1RW56-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	1.63e1	1.12e4		0.2631	3.08	3.08	0.0418	0.197	
2	2	PFOA	413 > 368.7	2.81e2	8.30e3		0.2631	4.38	4.38	0.338	1.57	
3	3	PFOS	499 >79.9	7.54e1	1.12e4		0.2631	4.78	4.66	0.193	0.620	
4	4	13C2-PFHxA	315 > 269.8	3.87e3	8.30e3	0.429	0.2631	3.44	3.44	4.66	41.4	108.8
5	5	13C2-PFDA	515.1 > 469.9	4.35e3	8.30e3	0.548	0.2631	5.01	5.01	5.24	36.4	95.7
6	6	13C2-PFOA	414.9 > 369.7	8.30e3	8.30e3	1.000	0.2631	4.41	4.38	10.0	38.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.12e4	1.12e4	1.000	0.2631	4.81	4.78	28.7	109	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

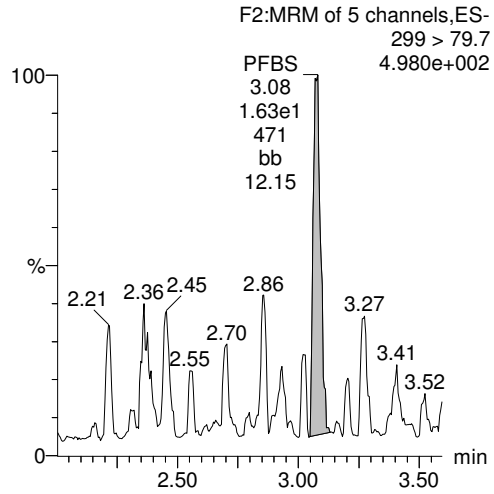
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-33.qld

Last Altered: Friday, December 01, 2017 11:42:20 Pacific Standard Time
Printed: Friday, December 01, 2017 11:42:29 Pacific Standard Time

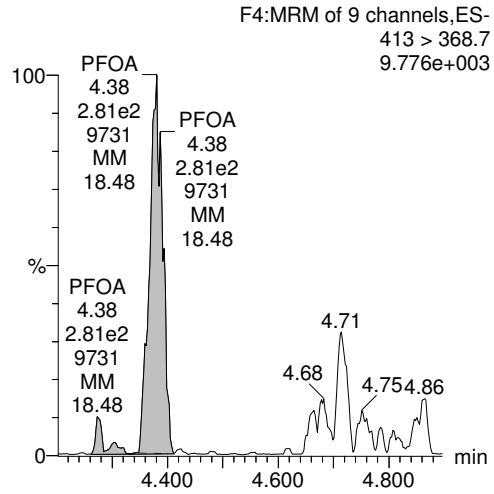
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_33, Date: 01-Dec-2017, Time: 00:56:15, ID: 1701750-17 CH-AT-1RW56-1117 0.25, Description: CH-AT-1RW56-1117

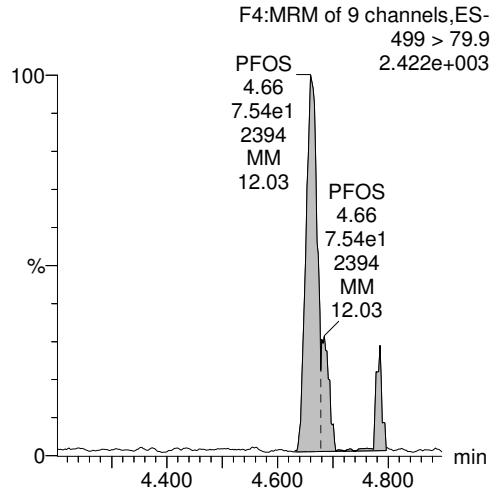
PFBS



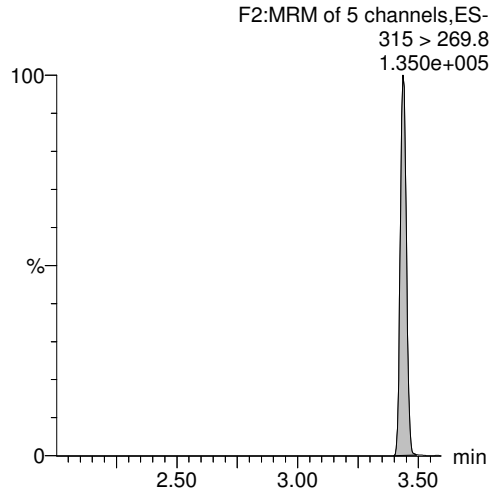
PFOA



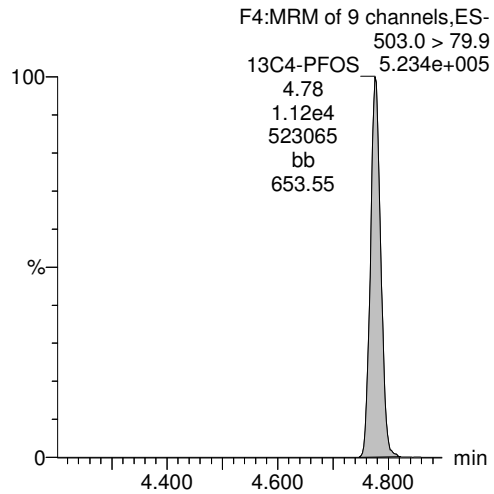
PFOS



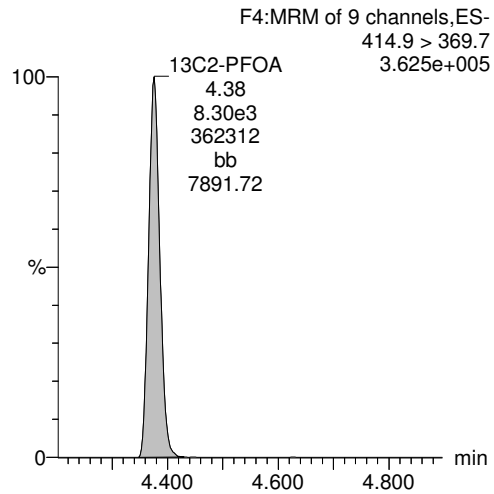
13C2-PFHxA



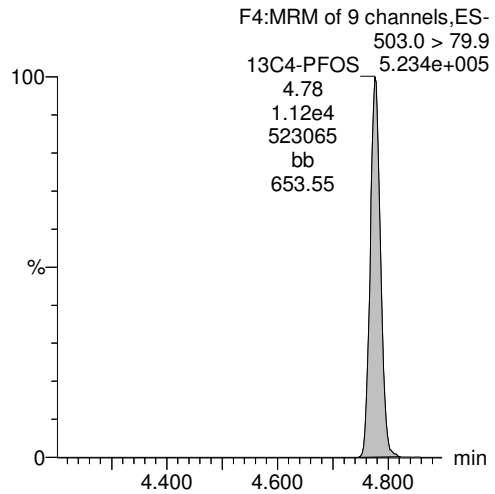
13C4-PFOS



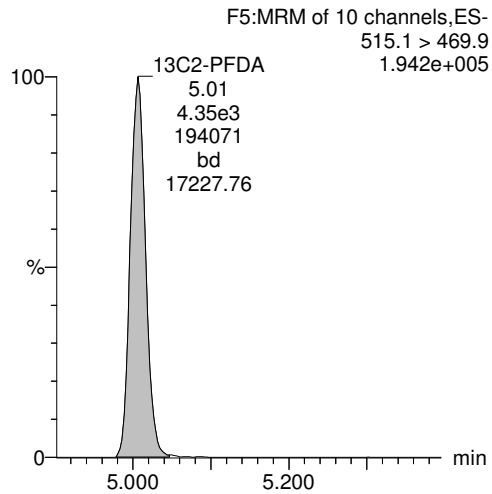
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-34.qld

Last Altered: Friday, December 01, 2017 11:43:14 Pacific Standard Time
Printed: Friday, December 01, 2017 11:43:32 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_34, Date: 01-Dec-2017, Time: 01:08:41, ID: 1701750-18 CH-AT-1FB56-1117 0.25, Description: CH-AT-1FB56-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.01e4		0.2648	3.08				
2	2	PFOA	413 > 368.7	6.16e1	1.04e4		0.2648	4.38	4.38	0.0590	0.272	
3	3	PFOS	499 >79.9		1.01e4		0.2648	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.23e3	1.04e4	0.429	0.2648	3.44	3.44	4.05	35.7	94.4
5	5	13C2-PFDA	515.1 > 469.9	4.80e3	1.04e4	0.548	0.2648	5.01	5.01	4.60	31.7	83.9
6	6	13C2-PFOA	414.9 > 369.7	1.04e4	1.04e4	1.000	0.2648	4.41	4.38	10.0	37.8	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.01e4	1.01e4	1.000	0.2648	4.81	4.78	28.7	108	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

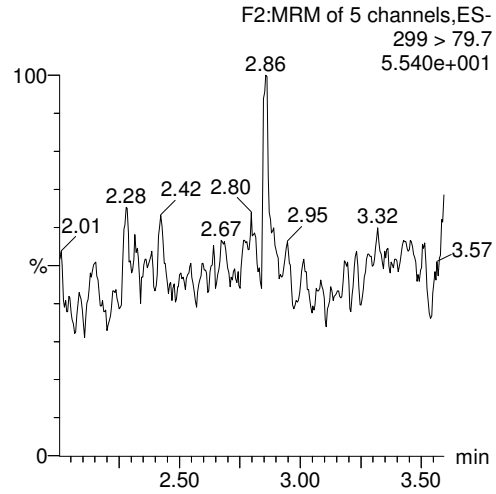
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-34.qld

Last Altered: Friday, December 01, 2017 11:43:14 Pacific Standard Time
Printed: Friday, December 01, 2017 11:43:32 Pacific Standard Time

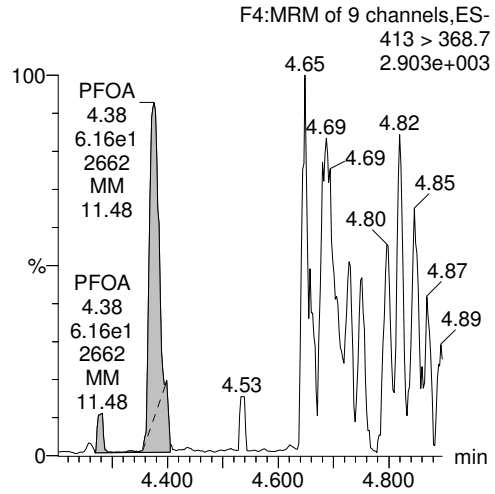
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_34, Date: 01-Dec-2017, Time: 01:08:41, ID: 1701750-18 CH-AT-1FB56-1117 0.25, Description: CH-AT-1FB56-1117

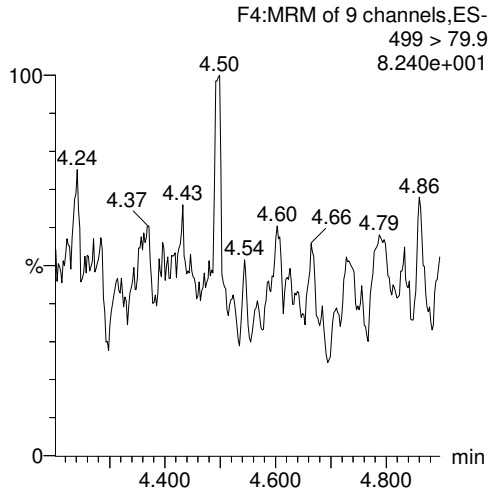
PFBS



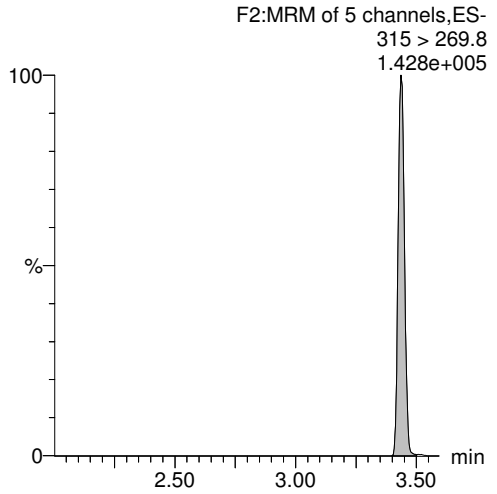
PFOA



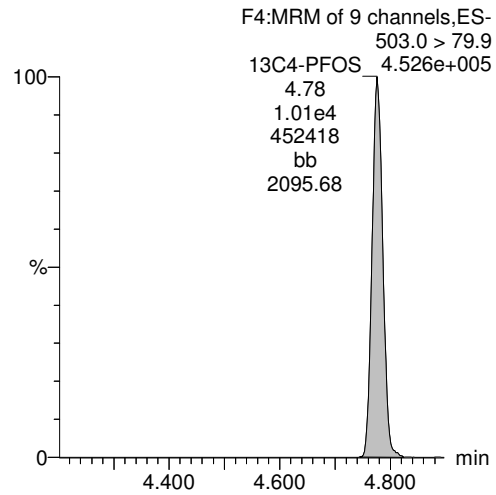
PFOS



13C2-PFHxA



13C4-PFOS



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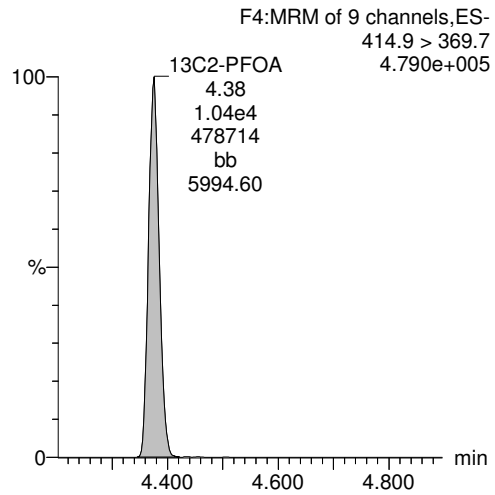
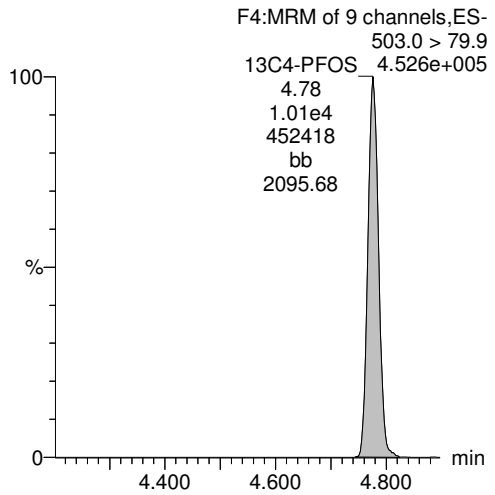
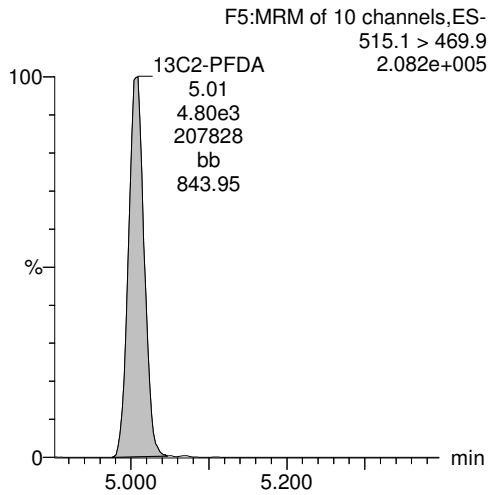


13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-35.qld

Last Altered: Friday, December 01, 2017 11:43:56 Pacific Standard Time
Printed: Friday, December 01, 2017 11:44:18 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_35, Date: 01-Dec-2017, Time: 01:21:08, ID: 1701750-19 CH-AT-1FB57-1117 0.25, Description: CH-AT-1FB57-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		9.22e3		0.2562	3.08				
2	2	PFOA	413 > 368.7	5.09e1	1.00e4		0.2562	4.38	4.38	0.0508	0.243	
3	3	PFOS	499 >79.9		9.22e3		0.2562	4.78				
4	4	13C2-PFHxA	315 > 269.8	4.07e3	1.00e4	0.429	0.2562	3.44	3.44	4.06	37.0	94.8
5	5	13C2-PFDA	515.1 > 469.9	4.78e3	1.00e4	0.548	0.2562	5.01	5.01	4.77	34.0	87.1
6	6	13C2-PFOA	414.9 > 369.7	1.00e4	1.00e4	1.000	0.2562	4.41	4.38	10.0	39.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.22e3	9.22e3	1.000	0.2562	4.81	4.78	28.7	112	100.0

Vista Analytical Laboratory

Rev'd: MM 12/1/17

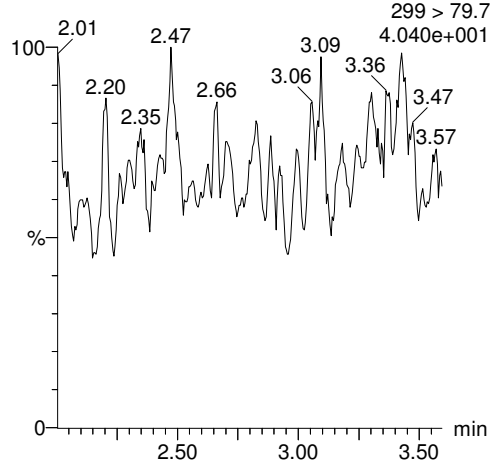
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-35.qld

Last Altered: Friday, December 01, 2017 11:43:56 Pacific Standard Time
Printed: Friday, December 01, 2017 11:44:18 Pacific Standard Time

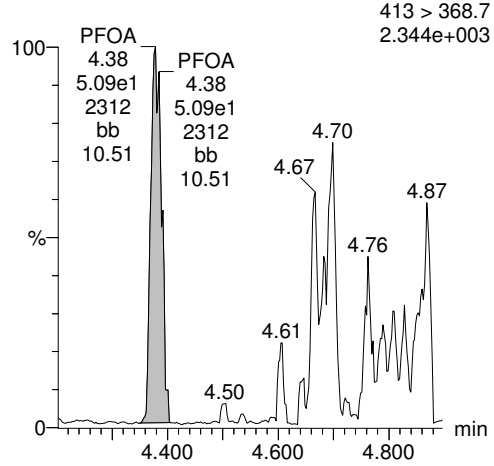
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_35, Date: 01-Dec-2017, Time: 01:21:08, ID: 1701750-19 CH-AT-1FB57-1117 0.25, Description: CH-AT-1FB57-1117

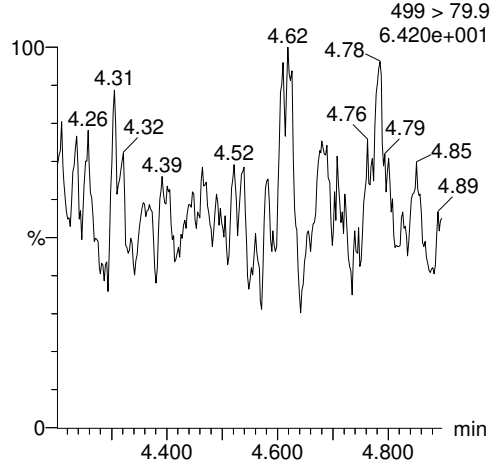
PFBS



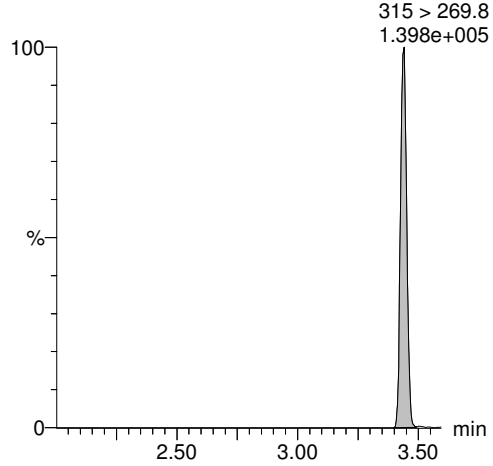
PFOA



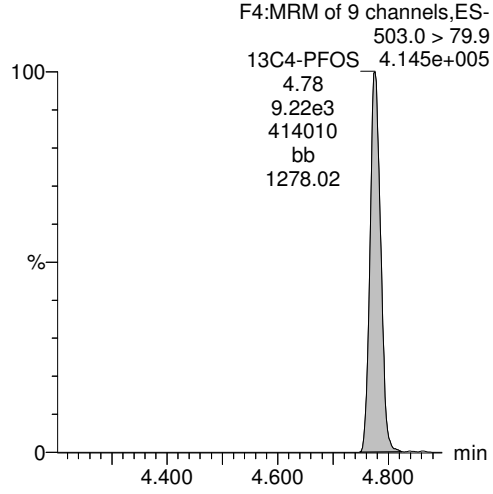
PFOS



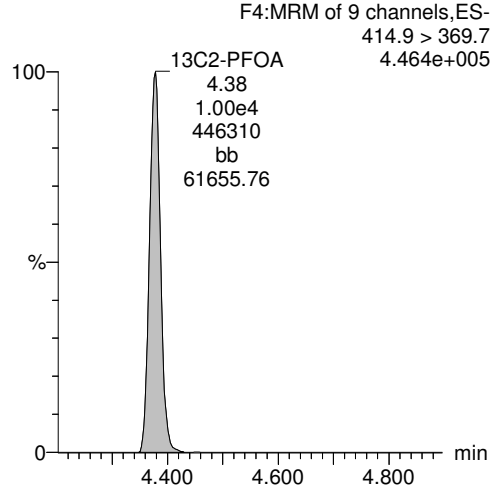
13C2-PFHxA



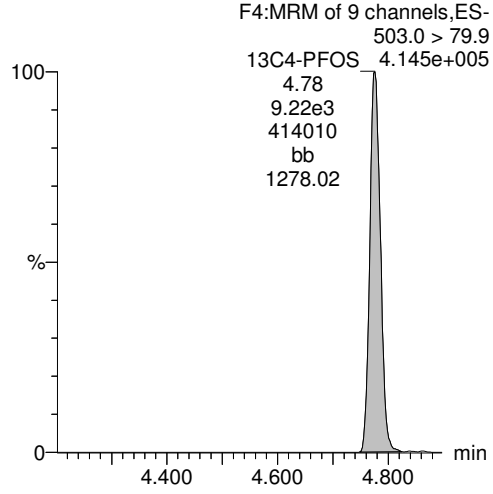
13C4-PFOS



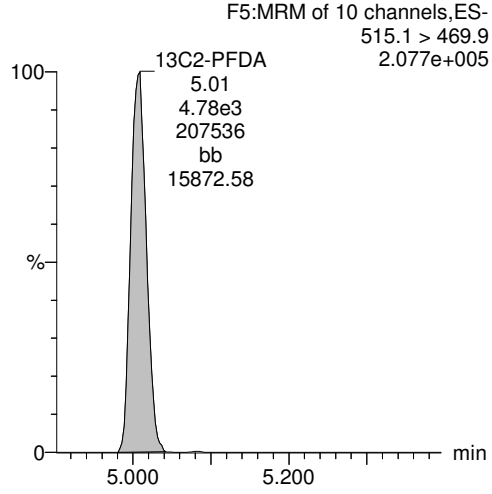
13C2-PFOA



13C4-PFOS



13C2-PFDA



Vista Analytical Laboratory

Rev'd: MM 12/1/17

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-36.qld

Last Altered: Friday, December 01, 2017 12:06:41 Pacific Standard Time
Printed: Friday, December 01, 2017 12:07:02 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_36, Date: 01-Dec-2017, Time: 01:33:35, ID: 1701750-20 CH-AT-1RW57-1117 0.25, Description: CH-AT-1RW57-1117

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		1.03e4		0.2662	3.08				
2	2	PFOA	413 > 368.7	8.21e1	9.71e3		0.2662	4.38	4.38	0.0845	0.388	
3	3	PFOS	499 >79.9	2.58e0	1.03e4		0.2662	4.78	4.78	0.00716	0.0227	
4	4	13C2-PFHxA	315 > 269.8	4.42e3	9.71e3	0.429	0.2662	3.44	3.44	4.55	39.9	106.2
5	5	13C2-PFDA	515.1 > 469.9	4.76e3	9.71e3	0.548	0.2662	5.01	5.00	4.90	33.6	89.4
6	6	13C2-PFOA	414.9 > 369.7	9.71e3	9.71e3	1.000	0.2662	4.41	4.38	10.0	37.6	100.0
7	7	13C4-PFOS	503.0 > 79.9	1.03e4	1.03e4	1.000	0.2662	4.81	4.78	28.7	108	100.0

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Vista Analytical Laboratory

Rev'd: MM 12/1/17

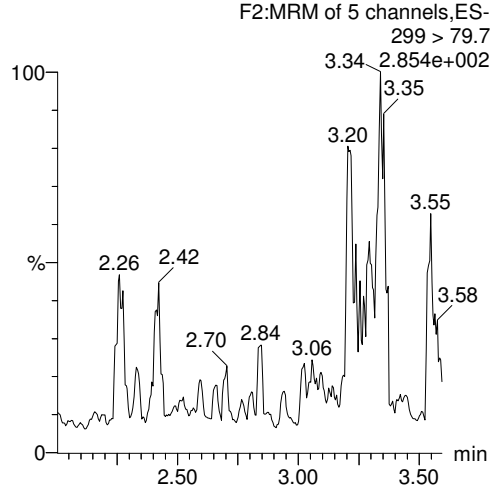
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-36.qld

Last Altered: Friday, December 01, 2017 12:06:41 Pacific Standard Time
Printed: Friday, December 01, 2017 12:07:02 Pacific Standard Time

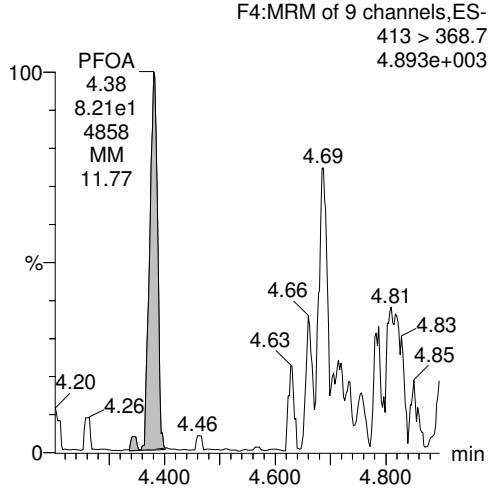
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_36, Date: 01-Dec-2017, Time: 01:33:35, ID: 1701750-20 CH-AT-1RW57-1117 0.25, Description: CH-AT-1RW57-1117

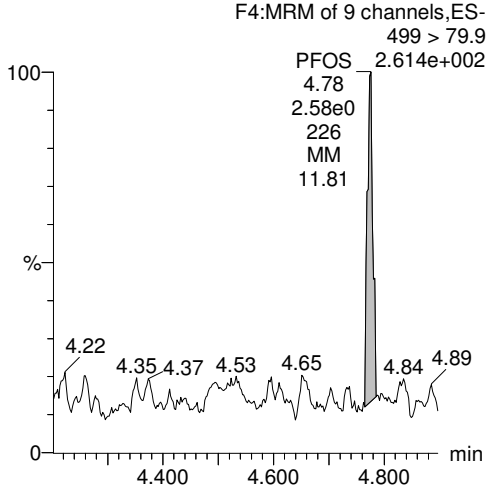
PFBS



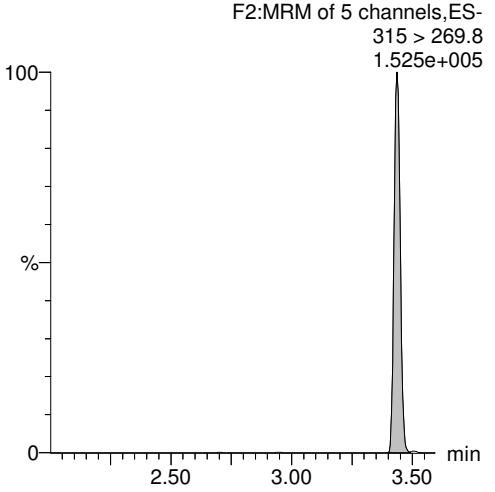
PFOA



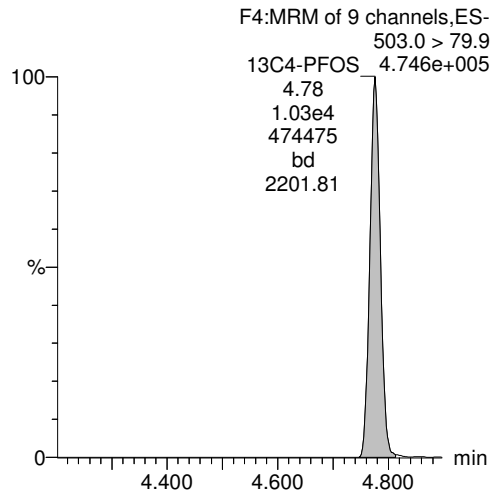
PFOS



13C2-PFHxA



13C4-PFOS



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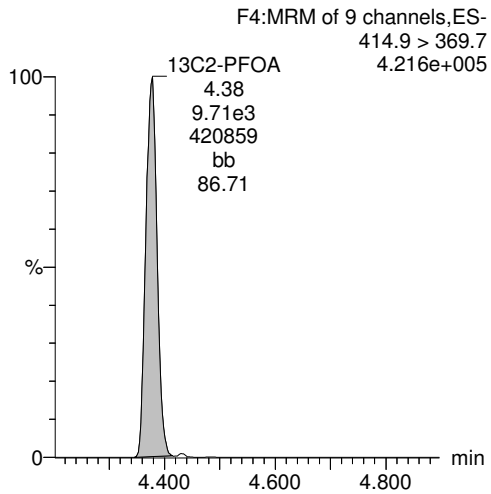
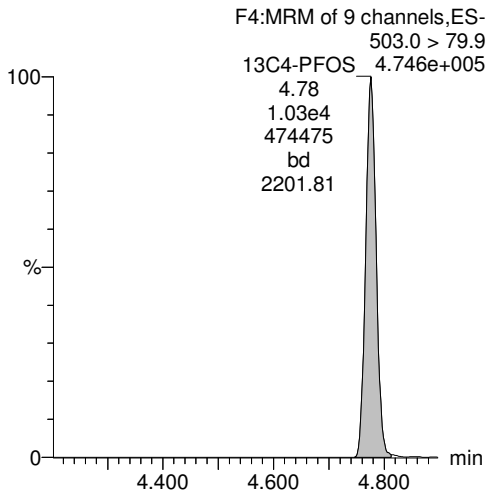
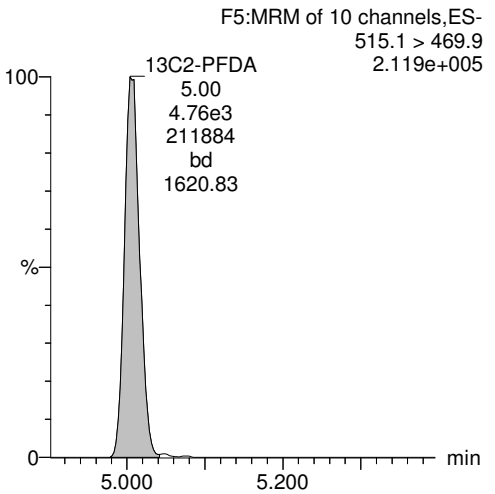


13C4-PFOS



13C2-PFDA



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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	B7K0172-BS1 LFB 0.25	171130G1_	Analyte	10	4.37	10884.1	10884.1	10177.82	106.9394
2	B7K0172-BSD1 LFBD 0.25	171130G1_	Analyte	10	4.37	9886.447	9886.447	10177.82	97.13716
3	B7K0172-BLK1 LRB 0.25	171130G1_	Analyte	10	4.37	10128.43	10128.43	10177.82	99.5147
4	1701750-01 CH-AT-1RW48-1117 0.25	171130G1_	Analyte	10	4.38	10289.85	10289.85	10177.82	101.1007
5	1701750-02 CH-AT-1FB48-1117 0.25	171130G1_	Analyte	10	4.37	10078.04	10078.04	10177.82	99.01958
6	1701750-03 CH-AT-1RW49-1117 0.25	171130G1_	Analyte	10	4.38	10230.13	10230.13	10177.82	100.514
7	1701750-04 CH-AT-1FB49-1117 0.25	171130G1_	Analyte	10	4.37	10224.93	10224.93	10177.82	100.4629
8	1701750-05 CH-AT-1RW50-1117 0.25	171130G1_	Analyte	10	4.37	10739.43	10739.43	10177.82	105.5179
9	1701750-06 CH-AT-1FB50-1117 0.25	171130G1_	Analyte	10	4.37	9958.209	9958.209	10177.82	97.84225
10	1701750-07 CH-AT-1RW51-1117 0.25	171130G1_	Analyte	10	4.37	9607.267	9607.267	10177.82	94.39414
11	1701750-08 CH-AT-1FB51-1117 0.25	171130G1_	Analyte	10	4.38	10051.58	10051.58	10177.82	98.75964
12	1701750-09 CH-AT-1RW52-1117 0.25	171130G1_	Analyte	10	4.37	10405.02	10405.02	10177.82	102.2323
13	1701750-10 CH-AT-1FB52-1117 0.25	171130G1_	Analyte	10	4.38	10108.76	10108.76	10177.82	99.32144
14	1701750-11 CH-AT-1RW53-1117 0.25	171130G1_	Analyte	10	4.37	10676.19	10676.19	10177.82	104.8966
15	1701750-12 CH-AT-1FB53-1117 0.25	171130G1_	Analyte	10	4.38	10589.78	10589.78	10177.82	104.0476
16	1701750-13 CH-AT-1RW54-1117 0.25	171130G1_	Analyte	10	4.38	9633.482	9633.482	10177.82	94.65171
17	1701750-14 CH-AT-1FB54-1117 0.25	171130G1_	Analyte	10	4.37	9468.073	9468.073	10177.82	93.02652
18	1701750-15 CH-AT-1RW55-1117 0.25	171130G1_	Analyte	10	4.38	9507.149	9507.149	10177.82	93.41045
19	1701750-16 CH-AT-1FB55-1117 0.25	171130G1_	Analyte	10	4.38	9689.038	9689.038	10177.82	95.19756
20	1701750-17 CH-AT-1RW56-1117 0.25	171130G1_	Analyte	10	4.38	8302.079	8302.079	10177.82	81.5703
21	1701750-18 CH-AT-1FB56-1117 0.25	171130G1_	Analyte	10	4.38	10440.16	10440.16	10177.82	102.5775
22	1701750-19 CH-AT-1FB57-1117 0.25	171130G1_	Analyte	10	4.38	10011.94	10011.94	10177.82	98.37015
23	1701750-20 CH-AT-1RW57-1117 0.25	171130G1_	Analyte	10	4.38	9713.852	9713.852	10177.82	95.44137
24	IPA	171130G1_	Analyte	10				10177.82	0
25	ST171130G1-10 PFC CS3 17K3027	171130G1_	Analyte	10	4.38	14752.8	14752.8	10177.82	144.9505
26	IPA	171130G1_	Analyte	10				10177.82	0
27	B7K0177-BS1 LFB 0.25	171130G1_	Analyte	10	4.38	9162.974	9162.974	10177.82	90.02883
28	B7K0177-BSD1 LFBD 0.25	171130G1_	Analyte	10	4.38	10041.11	10041.11	10177.82	98.65675

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29	B7K0177-BLK1 LRB 0.25	171130G1_	Analyte	10	4.38	9539.413	9539.413	10177.82	93.72746
30	1701751-01 CH-AT-1RW58-1117 0.25	171130G1_	Analyte	10	4.38	10139.91	10139.91	10177.82	99.62752
31	1701751-02 CH-AT-1FB58-1117 0.25	171130G1_	Analyte	10	4.38	10102.47	10102.47	10177.82	99.25968
32	1701751-03 CH-AT-1EB01-111717 0.25	171130G1_	Analyte	10	4.38	10062.9	10062.9	10177.82	98.87086
33	1701751-04 CH-AT-1RW59-1117 0.25	171130G1_	Analyte	10	4.38	9489.777	9489.777	10177.82	93.23977
34	1701751-05 CH-AT-1FB59-1117 0.25	171130G1_	Analyte	10	4.38	10036.1	10036.1	10177.82	98.60757
35	1701751-06 CH-AT-1RW60-1117 0.25	171130G1_	Analyte	10	4.38	10513.49	10513.49	10177.82	103.298
36	1701751-07 CH-AT-1FB60-1117 0.25	171130G1_	Analyte	10	4.38	9802.494	9802.494	10177.82	96.3123
37	1701751-08 CH-AT-1RW61-1117 0.25	171130G1_	Analyte	10	4.38	9154.165	9154.165	10177.82	89.94228
38	1701751-09 CH-AT-1FB61-1117 0.25	171130G1_	Analyte	10	4.38	9689.5	9689.5	10177.82	95.2021
39	1701751-10 CH-AT-1RW62-1117 0.25	171130G1_	Analyte	10	4.38	10054.72	10054.72	10177.82	98.79049
40	1701751-11 CH-AT-1FB62-1117 0.25	171130G1_	Analyte	10	4.38	10142.54	10142.54	10177.82	99.65338
41	IPA	171130G1_	Analyte	10				10177.82	0
42	ST171130G1-11 PFC CS5 537 17K3029	171130G1_	Analyte	10	4.38	13996.81	13996.81	10177.82	137.5226

Compound 7: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ical Area	Area %
1	B7K0172-BS1 LFB 0.25	171130G1_	Analyte	28.7	4.78	11633.96	11633.96	10632.15	109.4224
2	B7K0172-BSD1 LFBD 0.25	171130G1_	Analyte	28.7	4.78	11207.18	11207.18	10632.15	105.4084
3	B7K0172-BLK1 LRB 0.25	171130G1_	Analyte	28.7	4.78	11586.79	11586.79	10632.15	108.9787
4	1701750-01 CH-AT-1RW48-1117 0.25	171130G1_	Analyte	28.7	4.77	11284.4	11284.4	10632.15	106.1346
5	1701750-02 CH-AT-1FB48-1117 0.25	171130G1_	Analyte	28.7	4.78	9892.63	9892.63	10632.15	93.04445
6	1701750-03 CH-AT-1RW49-1117 0.25	171130G1_	Analyte	28.7	4.77	12116.88	12116.88	10632.15	113.9644
7	1701750-04 CH-AT-1FB49-1117 0.25	171130G1_	Analyte	28.7	4.78	10586.79	10586.79	10632.15	99.57328
8	1701750-05 CH-AT-1RW50-1117 0.25	171130G1_	Analyte	28.7	4.77	11368.51	11368.51	10632.15	106.9257
9	1701750-06 CH-AT-1FB50-1117 0.25	171130G1_	Analyte	28.7	4.78	11020.09	11020.09	10632.15	103.6487
10	1701750-07 CH-AT-1RW51-1117 0.25	171130G1_	Analyte	28.7	4.78	10243.2	10243.2	10632.15	96.34174
11	1701750-08 CH-AT-1FB51-1117 0.25	171130G1_	Analyte	28.7	4.78	10982.29	10982.29	10632.15	103.2931
12	1701750-09 CH-AT-1RW52-1117 0.25	171130G1_	Analyte	28.7	4.77	11591.13	11591.13	10632.15	109.0196
13	1701750-10 CH-AT-1FB52-1117 0.25	171130G1_	Analyte	28.7	4.78	10897.19	10897.19	10632.15	102.4928
14	1701750-11 CH-AT-1RW53-1117 0.25	171130G1_	Analyte	28.7	4.78	10256.69	10256.69	10632.15	96.46857
15	1701750-12 CH-AT-1FB53-1117 0.25	171130G1_	Analyte	28.7	4.78	10648.94	10648.94	10632.15	100.1579

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16	1701750-13 CH-AT-1RW54-1117 0.25	171130G1_	Analyte	28.7	4.78	11124.39	11124.39	10632.15	104.6297
17	1701750-14 CH-AT-1FB54-1117 0.25	171130G1_	Analyte	28.7	4.78	10492.58	10492.58	10632.15	98.68724
18	1701750-15 CH-AT-1RW55-1117 0.25	171130G1_	Analyte	28.7	4.78	9936.595	9936.595	10632.15	93.45796
19	1701750-16 CH-AT-1FB55-1117 0.25	171130G1_	Analyte	28.7	4.78	9972.192	9972.192	10632.15	93.79276
20	1701750-17 CH-AT-1RW56-1117 0.25	171130G1_	Analyte	28.7	4.78	11208.33	11208.33	10632.15	105.4192
21	1701750-18 CH-AT-1FB56-1117 0.25	171130G1_	Analyte	28.7	4.78	10103.88	10103.88	10632.15	95.03135
22	1701750-19 CH-AT-1FB57-1117 0.25	171130G1_	Analyte	28.7	4.78	9217.348	9217.348	10632.15	86.69313
23	1701750-20 CH-AT-1RW57-1117 0.25	171130G1_	Analyte	28.7	4.78	10343.89	10343.89	10632.15	97.28876
24	IPA	171130G1_	Analyte	28.7				10632.15	0
25	ST171130G1-10 PFC CS3 17K3027	171130G1_	Analyte	28.7	4.78	15689.35	15689.35	10632.15	147.5651
26	IPA	171130G1_	Analyte	28.7				10632.15	0
27	B7K0177-BS1 LFB 0.25	171130G1_	Analyte	28.7	4.78	9979.289	9979.289	10632.15	93.85952
28	B7K0177-BSD1 LFBD 0.25	171130G1_	Analyte	28.7	4.78	9799.573	9799.573	10632.15	92.16921
29	B7K0177-BLK1 LRB 0.25	171130G1_	Analyte	28.7	4.78	10066.06	10066.06	10632.15	94.67562
30	1701751-01 CH-AT-1RW58-1117 0.25	171130G1_	Analyte	28.7	4.78	10549.27	10549.27	10632.15	99.22045
31	1701751-02 CH-AT-1FB58-1117 0.25	171130G1_	Analyte	28.7	4.77	11070.11	11070.11	10632.15	104.1192
32	1701751-03 CH-AT-1EB01-111717 0.25	171130G1_	Analyte	28.7	4.78	10438.17	10438.17	10632.15	98.17548
33	1701751-04 CH-AT-1RW59-1117 0.25	171130G1_	Analyte	28.7	4.78	10808.08	10808.08	10632.15	101.6547
34	1701751-05 CH-AT-1FB59-1117 0.25	171130G1_	Analyte	28.7	4.78	10611.29	10611.29	10632.15	99.80379
35	1701751-06 CH-AT-1RW60-1117 0.25	171130G1_	Analyte	28.7	4.78	11343.5	11343.5	10632.15	106.6905
36	1701751-07 CH-AT-1FB60-1117 0.25	171130G1_	Analyte	28.7	4.78	10190.04	10190.04	10632.15	95.84167
37	1701751-08 CH-AT-1RW61-1117 0.25	171130G1_	Analyte	28.7	4.78	9846.619	9846.619	10632.15	92.6117
38	1701751-09 CH-AT-1FB61-1117 0.25	171130G1_	Analyte	28.7	4.78	9750.364	9750.364	10632.15	91.70638
39	1701751-10 CH-AT-1RW62-1117 0.25	171130G1_	Analyte	28.7	4.78	11253.6	11253.6	10632.15	105.8449
40	1701751-11 CH-AT-1FB62-1117 0.25	171130G1_	Analyte	28.7	4.78	10218.28	10218.28	10632.15	96.10736
41	IPA	171130G1_	Analyte	28.7				10632.15	0
42	ST171130G1-11 PFC CS5 537 17K3029	171130G1_	Analyte	28.7	4.78	13729.75	13729.75	10632.15	129.1342

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Compound 6: 13C2-PFOA ST171130G1-10 PFC CS3 17K3027

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area %
25	ST171130G1-10 PFC CS3 17K3027	171130G1_	Analyte	10	4.38	14752.8	14752.8	14752.8	100
26	IPA	171130G1_	Analyte	10				14752.8	0

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27	B7K0177-BS1 LFB 0.25	171130G1_	Analyte	10	4.38	9162.974	9162.974	14752.8	62.11008
28	B7K0177-BSD1 LFBD 0.25	171130G1_	Analyte	10	4.38	10041.11	10041.11	14752.8	68.0624
29	B7K0177-BLK1 LRB 0.25	171130G1_	Analyte	10	4.38	9539.413	9539.413	14752.8	64.66172
30	1701751-01 CH-AT-1RW58-1117 0.25	171130G1_	Analyte	10	4.38	10139.91	10139.91	14752.8	68.73212
31	1701751-02 CH-AT-1FB58-1117 0.25	171130G1_	Analyte	10	4.38	10102.47	10102.47	14752.8	68.47835
32	1701751-03 CH-AT-1EB01-111717 0.25	171130G1_	Analyte	10	4.38	10062.9	10062.9	14752.8	68.21011
33	1701751-04 CH-AT-1RW59-1117 0.25	171130G1_	Analyte	10	4.38	9489.777	9489.777	14752.8	64.32527
34	1701751-05 CH-AT-1FB59-1117 0.25	171130G1_	Analyte	10	4.38	10036.1	10036.1	14752.8	68.02846
35	1701751-06 CH-AT-1RW60-1117 0.25	171130G1_	Analyte	10	4.38	10513.49	10513.49	14752.8	71.26435
36	1701751-07 CH-AT-1FB60-1117 0.25	171130G1_	Analyte	10	4.38	9802.494	9802.494	14752.8	66.44498
37	1701751-08 CH-AT-1RW61-1117 0.25	171130G1_	Analyte	10	4.38	9154.165	9154.165	14752.8	62.05036
38	1701751-09 CH-AT-1FB61-1117 0.25	171130G1_	Analyte	10	4.38	9689.5	9689.5	14752.8	65.67907
39	1701751-10 CH-AT-1RW62-1117 0.25	171130G1_	Analyte	10	4.38	10054.72	10054.72	14752.8	68.15466
40	1701751-11 CH-AT-1FB62-1117 0.25	171130G1_	Analyte	10	4.38	10142.54	10142.54	14752.8	68.74996
41	IPA	171130G1_	Analyte	10				14752.8	0
42	ST171130G1-11 PFC CS5 537 17K3029	171130G1_	Analyte	10	4.38	13996.81	13996.81	14752.8	94.87562

Compound 7: 13C4-PFOS ST171130G1-10 PFC CS3 17K3027

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Ccal Area	Area %
25	ST171130G1-10 PFC CS3 17K3027	171130G1_	Analyte	28.7	4.78	15689.35	15689.35	15689.35	100
26	IPA	171130G1_	Analyte	28.7				15689.35	0
27	B7K0177-BS1 LFB 0.25	171130G1_	Analyte	28.7	4.78	9979.289	9979.289	15689.35	63.6055
28	B7K0177-BSD1 LFBD 0.25	171130G1_	Analyte	28.7	4.78	9799.573	9799.573	15689.35	62.46004
29	B7K0177-BLK1 LRB 0.25	171130G1_	Analyte	28.7	4.78	10066.06	10066.06	15689.35	64.15855
30	1701751-01 CH-AT-1RW58-1117 0.25	171130G1_	Analyte	28.7	4.78	10549.27	10549.27	15689.35	67.23843
31	1701751-02 CH-AT-1FB58-1117 0.25	171130G1_	Analyte	28.7	4.77	11070.11	11070.11	15689.35	70.55812
32	1701751-03 CH-AT-1EB01-111717 0.25	171130G1_	Analyte	28.7	4.78	10438.17	10438.17	15689.35	66.53029
33	1701751-04 CH-AT-1RW59-1117 0.25	171130G1_	Analyte	28.7	4.78	10808.08	10808.08	15689.35	68.88803
34	1701751-05 CH-AT-1FB59-1117 0.25	171130G1_	Analyte	28.7	4.78	10611.29	10611.29	15689.35	67.63374
35	1701751-06 CH-AT-1RW60-1117 0.25	171130G1_	Analyte	28.7	4.78	11343.5	11343.5	15689.35	72.30062
36	1701751-07 CH-AT-1FB60-1117 0.25	171130G1_	Analyte	28.7	4.78	10190.04	10190.04	15689.35	64.94874
37	1701751-08 CH-AT-1RW61-1117 0.25	171130G1_	Analyte	28.7	4.78	9846.619	9846.619	15689.35	62.7599
38	1701751-09 CH-AT-1FB61-1117 0.25	171130G1_	Analyte	28.7	4.78	9750.364	9750.364	15689.35	62.14639

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39	1701751-10 CH-AT-1RW62-1117 0.25	171130G1_	Analyte	28.7	4.78	11253.6	11253.6	15689.35	71.72761
40	1701751-11 CH-AT-1FB62-1117 0.25	171130G1_	Analyte	28.7	4.78	10218.28	10218.28	15689.35	65.12879
41	IPA	171130G1_	Analyte	28.7				15689.35	0
42	ST171130G1-11 PFC CS5 537 17K3029	171130G1_	Analyte	28.7	4.78	13729.75	13729.75	15689.35	87.51

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Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-38.qld

Last Altered: Friday, December 01, 2017 09:47:50 Pacific Standard Time
Printed: Friday, December 01, 2017 09:48:04 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_38, Date: 01-Dec-2017, Time: 01:58:26, ID: ST171130G1-10 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	2.06e4	1.57e4		1.0000	3.08	3.07	37.6	46.6	105.4
2	2 PFOA	413 > 368.7	6.14e4	1.48e4		1.0000	4.38	4.38	41.6	50.9	101.8
3	3 PFOS	499 >79.9	2.79e4	1.57e4		1.0000	4.78	4.78	51.1	43.2	93.5
4	4 13C2-PFHxA	315 > 269.8	6.88e3	1.48e4	0.429	1.0000	3.44	3.44	4.66	10.9	108.7
5	5 13C2-PFDA	515.1 > 469.9	7.52e3	1.48e4	0.548	1.0000	5.01	5.01	5.10	9.30	93.0
6	6 13C2-PFOA	414.9 > 369.7	1.48e4	1.48e4	1.000	1.0000	4.41	4.38	10.0	10.0	100.0
7	7 13C4-PFOS	503.0 > 79.9	1.57e4	1.57e4	1.000	1.0000	4.81	4.78	28.7	28.7	100.0

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rjA. 12/01/2017

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Dataset: Untitled

Last Altered: Friday, December 01, 2017 09:51:01 Pacific Standard Time
Printed: Friday, December 01, 2017 09:54:28 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	171130G1_1	IPA	30-Nov-17	18:18:31
2	171130G1_2	ST171130G1-1 PFC CS-3 537 17K3022	30-Nov-17	18:30:58
3	171130G1_3	ST171130G1-2 PFC CS-2 537 17K3023	30-Nov-17	18:43:22
4	171130G1_4	ST171130G1-3 PFC CS-1 537 17K3024	30-Nov-17	18:55:46
5	171130G1_5	ST171130G1-4 PFC CS0 537 17K3025	30-Nov-17	19:08:12
6	171130G1_6	ST171130G1-5 PFC CS1 537 17K3026	30-Nov-17	19:20:37
7	171130G1_7	ST171130G1-6 PFC CS2 537 17K3033	30-Nov-17	19:33:04
8	171130G1_8	ST171130G1-7 PFC CS3 537 17K3027	30-Nov-17	19:45:30
9	171130G1_9	ST171130G1-8 PFC CS4 537 17K3028	30-Nov-17	19:57:58
10	171130G1_10	ST171130G1-9 PFC CS5 537 17K3029	30-Nov-17	20:10:26
11	171130G1_11	IPA	30-Nov-17	20:22:49
12	171130G1_12	ICV171130G1-1 PFC ICV 537 17K3030	30-Nov-17	20:35:17
13	171130G1_13	IPA	30-Nov-17	20:47:42
14	171130G1_14	B7K0172-BS1 LFB 0.25	30-Nov-17	21:00:09
15	171130G1_15	B7K0172-BSD1 LFBD 0.25	30-Nov-17	21:12:34
16	171130G1_16	B7K0172-BLK1 LRB 0.25	30-Nov-17	21:24:59
17	171130G1_17	1701750-01 CH-AT-1RW48-1117 0.25	30-Nov-17	21:37:26
18	171130G1_18	1701750-02 CH-AT-1FB48-1117 0.25	30-Nov-17	21:49:52
19	171130G1_19	1701750-03 CH-AT-1RW49-1117 0.25	30-Nov-17	22:02:20
20	171130G1_20	1701750-04 CH-AT-1FB49-1117 0.25	30-Nov-17	22:14:47
21	171130G1_21	1701750-05 CH-AT-1RW50-1117 0.25	30-Nov-17	22:27:11
22	171130G1_22	1701750-06 CH-AT-1FB50-1117 0.25	30-Nov-17	22:39:35
23	171130G1_23	1701750-07 CH-AT-1RW51-1117 0.25	30-Nov-17	22:51:59
24	171130G1_24	1701750-08 CH-AT-1FB51-1117 0.25	30-Nov-17	23:04:25
25	171130G1_25	1701750-09 CH-AT-1RW52-1117 0.25	30-Nov-17	23:16:50
26	171130G1_26	1701750-10 CH-AT-1FB52-1117 0.25	30-Nov-17	23:29:17
27	171130G1_27	1701750-11 CH-AT-1RW53-1117 0.25	30-Nov-17	23:41:45
28	171130G1_28	1701750-12 CH-AT-1FB53-1117 0.25	30-Nov-17	23:54:12
29	171130G1_29	1701750-13 CH-AT-1RW54-1117 0.25	01-Dec-17	00:06:36
30	171130G1_30	1701750-14 CH-AT-1FB54-1117 0.25	01-Dec-17	00:19:01
31	171130G1_31	1701750-15 CH-AT-1RW55-1117 0.25	01-Dec-17	00:31:25

Dataset: Untitled

Last Altered: Friday, December 01, 2017 09:51:01 Pacific Standard Time
Printed: Friday, December 01, 2017 09:54:28 Pacific Standard Time

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
32	171130G1_32	1701750-16 CH-AT-1FB55-1117 0.25	01-Dec-17	00:43:49
33	171130G1_33	1701750-17 CH-AT-1RW56-1117 0.25	01-Dec-17	00:56:15
34	171130G1_34	1701750-18 CH-AT-1FB56-1117 0.25	01-Dec-17	01:08:41
35	171130G1_35	1701750-19 CH-AT-1FB57-1117 0.25	01-Dec-17	01:21:08
36	171130G1_36	1701750-20 CH-AT-1RW57-1117 0.25	01-Dec-17	01:33:35
37	171130G1_37	IPA	01-Dec-17	01:45:59
38	171130G1_38	ST171130G1-10 PFC CS3 17K3027	01-Dec-17	01:58:26
39	171130G1_39	IPA	01-Dec-17	02:10:53
40	171130G1_40	B7K0177-BS1 LFB 0.25	01-Dec-17	02:23:21
41	171130G1_41	B7K0177-BSD1 LFBD 0.25	01-Dec-17	02:35:46
42	171130G1_42	B7K0177-BLK1 LRB 0.25	01-Dec-17	02:48:11
43	171130G1_43	1701751-01 CH-AT-1RW58-1117 0.25	01-Dec-17	03:00:35
44	171130G1_44	1701751-02 CH-AT-1FB58-1117 0.25	01-Dec-17	03:13:01
45	171130G1_45	1701751-03 CH-AT-1EB01-111717 0.25	01-Dec-17	03:25:27
46	171130G1_46	1701751-04 CH-AT-1RW59-1117 0.25	01-Dec-17	03:37:53
47	171130G1_47	1701751-05 CH-AT-1FB59-1117 0.25	01-Dec-17	03:50:21
48	171130G1_48	1701751-06 CH-AT-1RW60-1117 0.25	01-Dec-17	04:02:44
49	171130G1_49	1701751-07 CH-AT-1FB60-1117 0.25	01-Dec-17	04:15:09
50	171130G1_50	1701751-08 CH-AT-1RW61-1117 0.25	01-Dec-17	04:27:33
51	171130G1_51	1701751-09 CH-AT-1FB61-1117 0.25	01-Dec-17	04:39:57
52	171130G1_52	1701751-10 CH-AT-1RW62-1117 0.25	01-Dec-17	04:52:23
53	171130G1_53	1701751-11 CH-AT-1FB62-1117 0.25	01-Dec-17	05:04:50
54	171130G1_54	IPA	01-Dec-17	05:17:17
55	171130G1_55	ST171130G1-11 PFC CS5 537 17K3029	01-Dec-17	05:29:45
56	171130G1_56	IPA	01-Dec-17	05:42:09

LC Calibration Standards Review Checklist Q1

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	ST171130G1-10	L [✓ M] H	NA ☐	☑	☑	☑	☑	☑	☐
Calibration ID:	-11	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: YA 12/01/2017
Initials/Date

Comments: DU_L3

Vista Analytical Laboratory

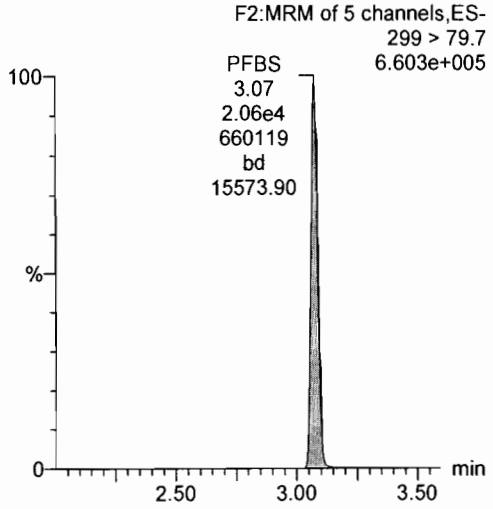
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-38.qld

Last Altered: Friday, December 01, 2017 09:47:50 Pacific Standard Time
Printed: Friday, December 01, 2017 09:48:04 Pacific Standard Time

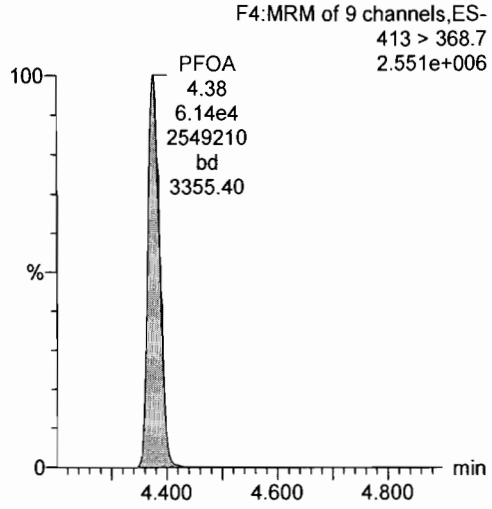
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: U:\G1.PRO\CurveDB\C18_537_Q1_11-30-17_L3.cdb 01 Dec 2017 09:09:28

Name: 171130G1_38, Date: 01-Dec-2017, Time: 01:58:26, ID: ST171130G1-10 PFC CS3 17K3027, Description: PFC CS3 17K3027

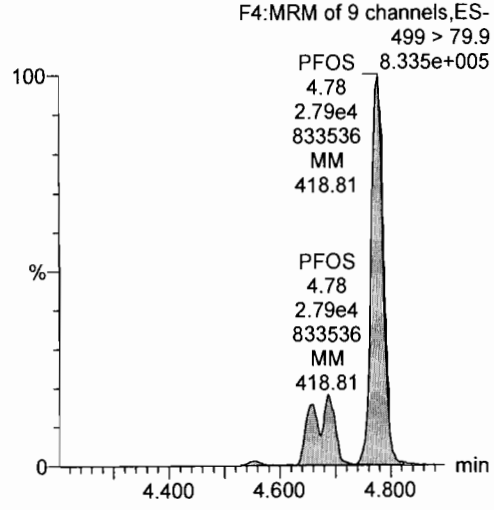
PFBS



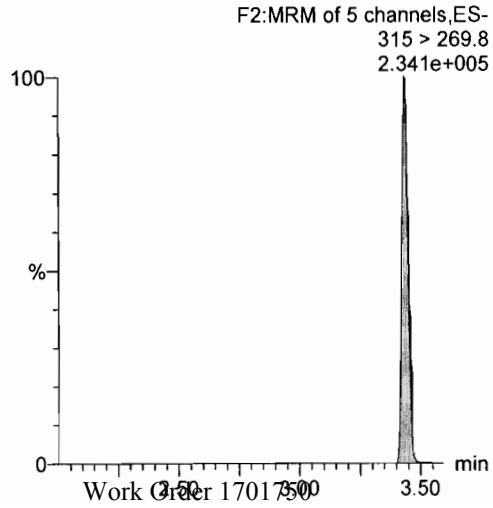
PFOA



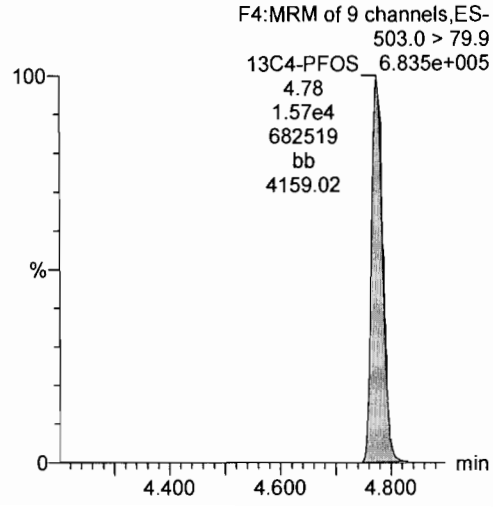
PFOS



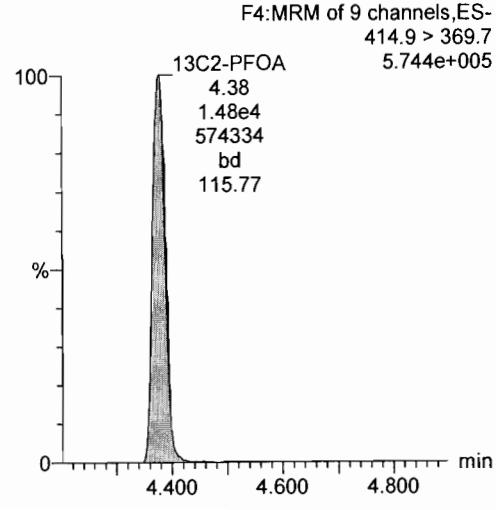
13C2-PFHxA



13C4-PFOS



13C2-PFOA

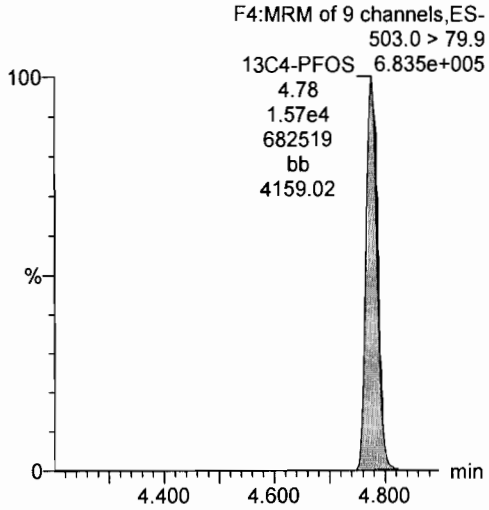


Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-38.qld

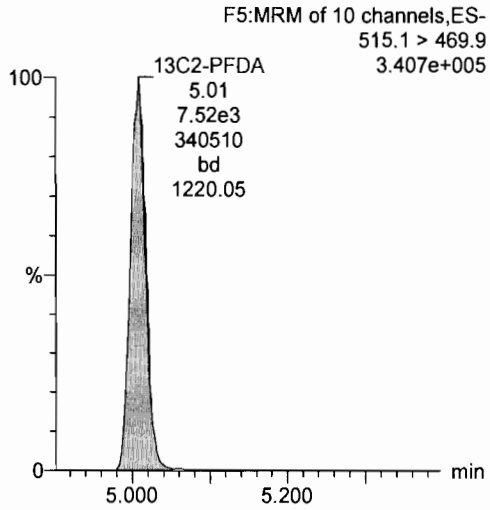
Last Altered: Friday, December 01, 2017 09:47:50 Pacific Standard Time
Printed: Friday, December 01, 2017 09:48:04 Pacific Standard Time

Name: 171130G1_38, Date: 01-Dec-2017, Time: 01:58:26, ID: ST171130G1-10 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\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 09:09:28 Pacific Standard Time
Printed: Friday, December 01, 2017 09:44:51 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

12/1/17 12/01/2017

Compound name: PFBS
Coefficient of Determination: R^2 = 0.995316
Calibration curve: 0.807573 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	0.443	3.06	148.378	11909.380	0.358	0.4	0.1	NO	0.995	NO	bbX
2	2	171130G1_3	Standard	0.885	3.06	254.168	11442.778	0.637	0.8	-10.8	NO	0.995	NO	bb
3	3	171130G1_4	Standard	1.770	3.06	521.902	11478.244	1.305	1.6	-8.7	NO	0.995	NO	bb
4	4	171130G1_5	Standard	4.420	3.07	1438.862	10553.214	3.913	4.8	9.6	NO	0.995	NO	bb
5	5	171130G1_6	Standard	8.850	3.07	2910.137	11620.608	7.187	8.9	0.6	NO	0.995	NO	bb
6	6	171130G1_7	Standard	22.100	3.07	6509.534	10482.663	17.822	22.1	-0.1	NO	0.995	NO	bd
7	7	171130G1_8	Standard	44.200	3.07	12419.074	10138.133	35.157	43.5	-1.5	NO	0.995	NO	bd
8	8	171130G1_9	Standard	66.300	3.07	19601.131	9629.363	58.421	72.3	9.1	NO	0.995	NO	bb
9	9	171130G1_10	Standard	88.400	3.07	22636.490	9712.236	66.892	82.8	-6.3	NO	0.995	NO	bd

Compound name: PFOA
Coefficient of Determination: R^2 = 0.998609
Calibration curve: 0.81771 * x
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	0.500	4.36	543.490	9926.858	0.547	0.7	33.9	NO	0.999	NO	bb
2	2	171130G1_3	Standard	1.000	4.36	868.204	10558.032	0.822	1.0	0.6	NO	0.999	NO	bd
3	3	171130G1_4	Standard	2.000	4.37	1652.044	10699.872	1.544	1.9	-5.6	NO	0.999	NO	bb
4	4	171130G1_5	Standard	5.000	4.37	4369.930	10771.267	4.057	5.0	-0.8	NO	0.999	NO	bb
5	5	171130G1_6	Standard	10.000	4.37	8525.979	10417.228	8.184	10.0	0.1	NO	0.999	NO	bb
6	6	171130G1_7	Standard	25.000	4.37	20170.291	9735.661	20.718	25.3	1.3	NO	0.999	NO	bd
7	7	171130G1_8	Standard	50.000	4.37	40959.543	10479.243	39.086	47.8	-4.4	NO	0.999	NO	bb
8	8	171130G1_9	Standard	75.000	4.37	55501.742	8834.410	62.825	76.8	2.4	NO	0.999	NO	bb
9	9	171130G1_10	Standard	100.000	4.37	69701.703	8214.188	84.855	103.8	3.8	NO	0.999	NO	bbX

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 09:09:28 Pacific Standard Time
Printed: Friday, December 01, 2017 09:09:46 Pacific Standard Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.997655
Calibration curve: 1.18337 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	0.464	4.76	157.341	11909.380	0.379	0.3	-30.9	NO	0.998	NO	MMX
2	2	171130G1_3	Standard	0.925	4.77	426.020	11442.778	1.069	0.9	-2.4	NO	0.998	NO	MM
3	3	171130G1_4	Standard	1.850	4.77	827.162	11478.244	2.068	1.7	-5.5	NO	0.998	NO	MM
4	4	171130G1_5	Standard	4.625	4.77	2076.757	10553.214	5.648	4.8	3.2	NO	0.998	NO	MM
5	5	171130G1_6	Standard	9.250	4.77	4280.277	11620.608	10.571	8.9	-3.4	NO	0.998	NO	MM
6	6	171130G1_7	Standard	23.100	4.77	10074.306	10482.663	27.582	23.3	0.9	NO	0.998	NO	MM
7	7	171130G1_8	Standard	46.200	4.77	19838.158	10138.133	56.160	47.5	2.7	NO	0.998	NO	MM
8	8	171130G1_9	Standard	69.300	4.78	28978.148	9629.363	86.368	73.0	5.3	NO	0.998	NO	MM
9	9	171130G1_10	Standard	92.400	4.78	35057.734	9712.236	103.597	87.5	-5.3	NO	0.998	NO	MM

Compound name: 13C2-PFHxA
Response Factor: 0.428591
RRF SD: 0.0172725, Relative SD: 4.03006
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	10.000	3.43	4281.697	9926.858	4.313	10.1	0.6	NO		NO	bd
2	2	171130G1_3	Standard	10.000	3.43	4315.057	10558.032	4.087	9.5	-4.6	NO		NO	bb
3	3	171130G1_4	Standard	10.000	3.43	4559.187	10699.872	4.261	9.9	-0.6	NO		NO	bb
4	4	171130G1_5	Standard	10.000	3.43	4496.875	10771.267	4.175	9.7	-2.6	NO		NO	bd
5	5	171130G1_6	Standard	10.000	3.43	4532.288	10417.228	4.351	10.2	1.5	NO		NO	bb
6	6	171130G1_7	Standard	10.000	3.43	4368.974	9735.661	4.488	10.5	4.7	NO		NO	bb
7	7	171130G1_8	Standard	10.000	3.43	4267.189	10479.243	4.072	9.5	-5.0	NO		NO	bb
8	8	171130G1_9	Standard	10.000	3.44	4011.489	8834.410	4.541	10.6	5.9	NO		NO	bb
9	9	171130G1_10	Standard	10.000	3.43	3798.677	8214.188	4.625	10.8	7.9	NO		NO	bdX

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 09:09:28 Pacific Standard Time
Printed: Friday, December 01, 2017 09:09:46 Pacific Standard Time

Compound name: 13C2-PFDA
Response Factor: 0.547878
RRF SD: 0.0413645, Relative SD: 7.54995
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	10.000	5.00	6370.964	9926.858	6.418	11.7	17.1	NO		NO	bb
2	2	171130G1_3	Standard	10.000	5.00	5724.157	10558.032	5.422	9.9	-1.0	NO		NO	bd
3	3	171130G1_4	Standard	10.000	5.00	5798.319	10699.872	5.419	9.9	-1.1	NO		NO	bb
4	4	171130G1_5	Standard	10.000	5.00	5604.895	10771.267	5.204	9.5	-5.0	NO		NO	bb
5	5	171130G1_6	Standard	10.000	5.00	5772.324	10417.228	5.541	10.1	1.1	NO		NO	bb
6	6	171130G1_7	Standard	10.000	5.00	4955.320	9735.661	5.090	9.3	-7.1	NO		NO	bd
7	7	171130G1_8	Standard	10.000	5.00	5454.072	10479.243	5.205	9.5	-5.0	NO		NO	bb
8	8	171130G1_9	Standard	10.000	5.01	4887.635	8834.410	5.532	10.1	1.0	NO		NO	bb
9	9	171130G1_10	Standard	10.000	5.01	4363.032	8214.188	5.312	9.7	-3.1	NO		NO	bbX

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	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	10.000	4.36	9926.858	9926.858	10.000	10.0	0.0	NO		NO	bb
2	2	171130G1_3	Standard	10.000	4.37	10558.032	10558.032	10.000	10.0	0.0	NO		NO	bb
3	3	171130G1_4	Standard	10.000	4.37	10699.872	10699.872	10.000	10.0	0.0	NO		NO	bb
4	4	171130G1_5	Standard	10.000	4.37	10771.267	10771.267	10.000	10.0	0.0	NO		NO	bd
5	5	171130G1_6	Standard	10.000	4.37	10417.228	10417.228	10.000	10.0	0.0	NO		NO	bd
6	6	171130G1_7	Standard	10.000	4.37	9735.661	9735.661	10.000	10.0	0.0	NO		NO	bd
7	7	171130G1_8	Standard	10.000	4.37	10479.243	10479.243	10.000	10.0	0.0	NO		NO	bd
8	8	171130G1_9	Standard	10.000	4.37	8834.410	8834.410	10.000	10.0	0.0	NO		NO	bb
9	9	171130G1_10	Standard	10.000	4.37	8214.188	8214.188	10.000	10.0	0.0	NO		NO	bbX

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 09:09:28 Pacific Standard Time
Printed: Friday, December 01, 2017 09:09:46 Pacific Standard Time

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 8.3925e-017, Relative SD: 8.3925e-015
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	171130G1_2	Standard	28.700	4.76	11909.380	11909.380	28.700	28.7	0.0	NO		NO	bbX
2	2	171130G1_3	Standard	28.700	4.77	11442.778	11442.778	28.700	28.7	0.0	NO		NO	bd
3	3	171130G1_4	Standard	28.700	4.77	11478.244	11478.244	28.700	28.7	0.0	NO		NO	bb
4	4	171130G1_5	Standard	28.700	4.77	10553.214	10553.214	28.700	28.7	0.0	NO		NO	bd
5	5	171130G1_6	Standard	28.700	4.77	11620.608	11620.608	28.700	28.7	0.0	NO		NO	bb
6	6	171130G1_7	Standard	28.700	4.77	10482.663	10482.663	28.700	28.7	0.0	NO		NO	bd
7	7	171130G1_8	Standard	28.700	4.77	10138.133	10138.133	28.700	28.7	0.0	NO		NO	bd
8	8	171130G1_9	Standard	28.700	4.77	9629.363	9629.363	28.700	28.7	0.0	NO		NO	bd
9	9	171130G1_10	Standard	28.700	4.78	9712.236	9712.236	28.700	28.7	0.0	NO		NO	bd

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, December 01, 2017 09:16:30 Pacific Standard Time
Printed: Friday, December 01, 2017 09:16:48 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_12-01-17_L3.cdb 01 Dec 2017 09:09:28

11 30
dm 12/1/17

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	171130G1_1	IPA	30-Nov-17	18:18:31
2	171130G1_2	ST171130G1-1 PFC CS-3 537 17K3022	30-Nov-17	18:30:58
3	171130G1_3	ST171130G1-2 PFC CS-2 537 17K3023	30-Nov-17	18:43:22
4	171130G1_4	ST171130G1-3 PFC CS-1 537 17K3024	30-Nov-17	18:55:46
5	171130G1_5	ST171130G1-4 PFC CS0 537 17K3025	30-Nov-17	19:08:12
6	171130G1_6	ST171130G1-5 PFC CS1 537 17K3026	30-Nov-17	19:20:37
7	171130G1_7	ST171130G1-6 PFC CS2 537 17K3033	30-Nov-17	19:33:04
8	171130G1_8	ST171130G1-7 PFC CS3 537 17K3027	30-Nov-17	19:45:30
9	171130G1_9	ST171130G1-8 PFC CS4 537 17K3028	30-Nov-17	19:57:58
10	171130G1_10	ST171130G1-9 PFC CS5 537 17K3029	30-Nov-17	20:10:26
11	171130G1_11	IPA	30-Nov-17	20:22:49
12	171130G1_12	ICV171130G1-1 PFC ICV 537 17K3030	30-Nov-17	20:35:17
13	171130G1_13	IPA	30-Nov-17	20:47:42
14	171130G1_14	B7K0172-BS1 LFB 0.25	30-Nov-17	21:00:09
15	171130G1_15	B7K0172-BSD1 LFBD 0.25	30-Nov-17	21:12:34
16	171130G1_16	B7K0172-BLK1 LRB 0.25	30-Nov-17	21:24:59
17	171130G1_17	1701750-01 CH-AT-1RW48-1117 0.25	30-Nov-17	21:37:26
18	171130G1_18	1701750-02 CH-AT-1FB48-1117 0.25	30-Nov-17	21:49:52
19	171130G1_19	1701750-03 CH-AT-1RW49-1117 0.25	30-Nov-17	22:02:20
20	171130G1_20	1701750-04 CH-AT-1FB49-1117 0.25	30-Nov-17	22:14:47
21	171130G1_21	1701750-05 CH-AT-1RW50-1117 0.25	30-Nov-17	22:27:11
22	171130G1_22	1701750-06 CH-AT-1FB50-1117 0.25	30-Nov-17	22:39:35
23	171130G1_23	1701750-07 CH-AT-1RW51-1117 0.25	30-Nov-17	22:51:59
24	171130G1_24	1701750-08 CH-AT-1FB51-1117 0.25	30-Nov-17	23:04:25
25	171130G1_25	1701750-09 CH-AT-1RW52-1117 0.25	30-Nov-17	23:16:50
26	171130G1_26	1701750-10 CH-AT-1FB52-1117 0.25	30-Nov-17	23:29:17
27	171130G1_27	1701750-11 CH-AT-1RW53-1117 0.25	30-Nov-17	23:41:45
28	171130G1_28	1701750-12 CH-AT-1FB53-1117 0.25	30-Nov-17	23:54:12
29	171130G1_29	1701750-13 CH-AT-1RW54-1117 0.25	01-Dec-17	00:06:36
30	171130G1_30	1701750-14 CH-AT-1FB54-1117 0.25	01-Dec-17	00:19:01
31	171130G1_31	1701750-15 CH-AT-1RW55-1117 0.25	01-Dec-17	00:31:25

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Dataset: Untitled

Last Altered: Friday, December 01, 2017 09:16:30 Pacific Standard Time
Printed: Friday, December 01, 2017 09:16:48 Pacific Standard Time

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
32	171130G1_32	1701750-16 CH-AT-1FB55-1117 0.25	01-Dec-17	00:43:49
33	171130G1_33	1701750-17 CH-AT-1RW56-1117 0.25	01-Dec-17	00:56:15
34	171130G1_34	1701750-18 CH-AT-1FB56-1117 0.25	01-Dec-17	01:08:41
35	171130G1_35	1701750-19 CH-AT-1FB57-1117 0.25	01-Dec-17	01:21:08
36	171130G1_36	1701750-20 CH-AT-1RW57-1117 0.25	01-Dec-17	01:33:35
37	171130G1_37	IPA	01-Dec-17	01:45:59
38	171130G1_38	ST171130G1-10 PFC CS3 17K3027	01-Dec-17	01:58:26
39	171130G1_39	IPA	01-Dec-17	02:10:53
40	171130G1_40	B7K0177-BS1 LFB 0.25	01-Dec-17	02:23:21
41	171130G1_41	B7K0177-BSD1 LFBD 0.25	01-Dec-17	02:35:46
42	171130G1_42	B7K0177-BLK1 LRB 0.25	01-Dec-17	02:48:11
43	171130G1_43	1701751-01 CH-AT-1RW58-1117 0.25	01-Dec-17	03:00:35
44	171130G1_44	1701751-02 CH-AT-1FB58-1117 0.25	01-Dec-17	03:13:01
45	171130G1_45	1701751-03 CH-AT-1EB01-111717 0.25	01-Dec-17	03:25:27
46	171130G1_46	1701751-04 CH-AT-1RW59-1117 0.25	01-Dec-17	03:37:53
47	171130G1_47	1701751-05 CH-AT-1FB59-1117 0.25	01-Dec-17	03:50:21
48	171130G1_48	1701751-06 CH-AT-1RW60-1117 0.25	01-Dec-17	04:02:44
49	171130G1_49	1701751-07 CH-AT-1FB60-1117 0.25	01-Dec-17	04:15:09
50	171130G1_50	1701751-08 CH-AT-1RW61-1117 0.25	01-Dec-17	04:27:33
51	171130G1_51	1701751-09 CH-AT-1FB61-1117 0.25	01-Dec-17	04:39:57
52	171130G1_52	1701751-10 CH-AT-1RW62-1117 0.25	01-Dec-17	04:52:23
53	171130G1_53	1701751-11 CH-AT-1FB62-1117 0.25	01-Dec-17	05:04:50
54	171130G1_54	IPA	01-Dec-17	05:17:17
55	171130G1_55	ST171130G1-11 PFC CS5 537 17K3029	01-Dec-17	05:29:45
56	171130G1_56	IPA	01-Dec-17	05:42:09

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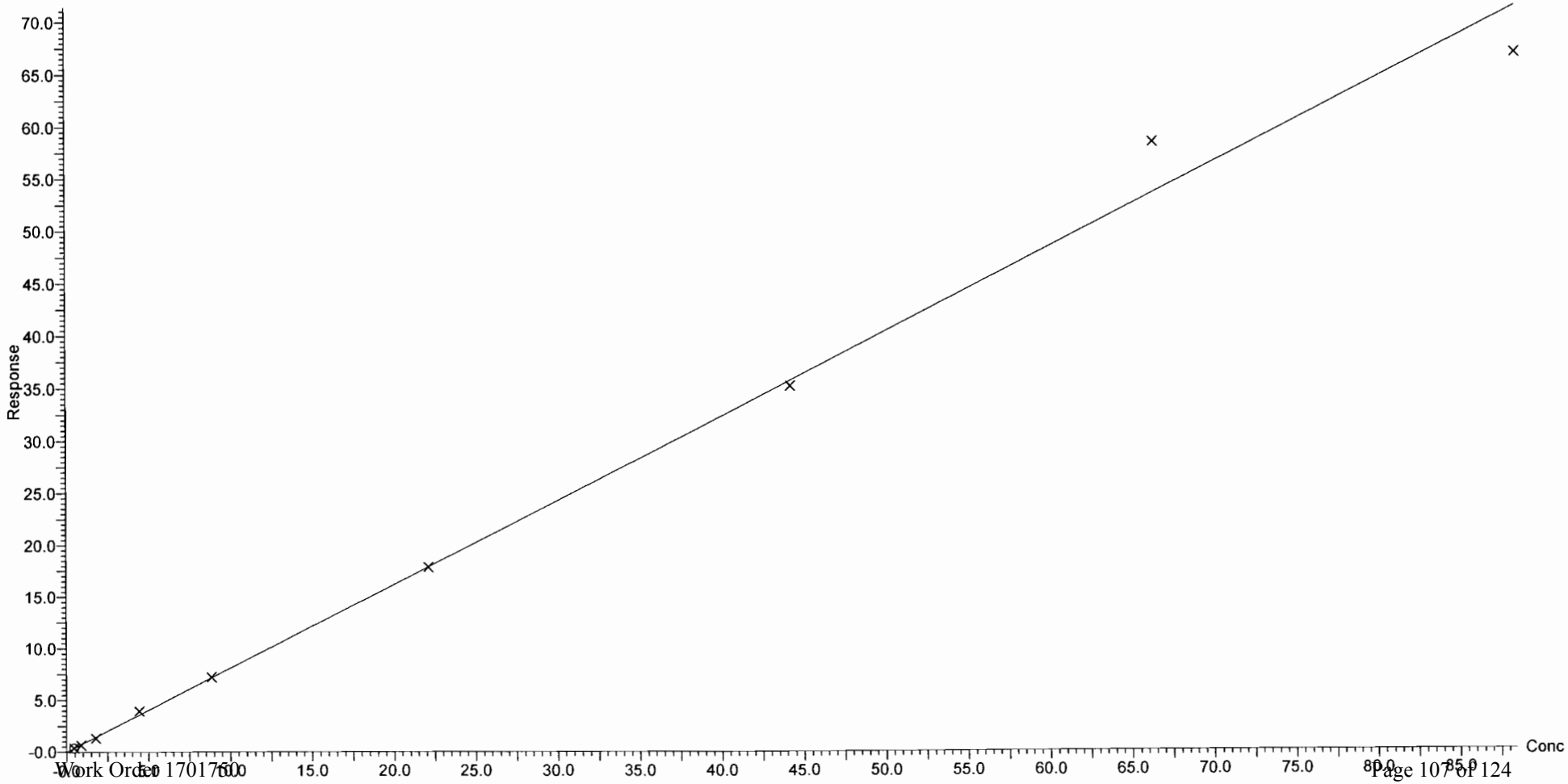
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 09:09:28 Pacific Standard Time
Printed: Friday, December 01, 2017 09:44:07 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_11-30-17_L3.cdb 01 Dec 2017 09:09:28

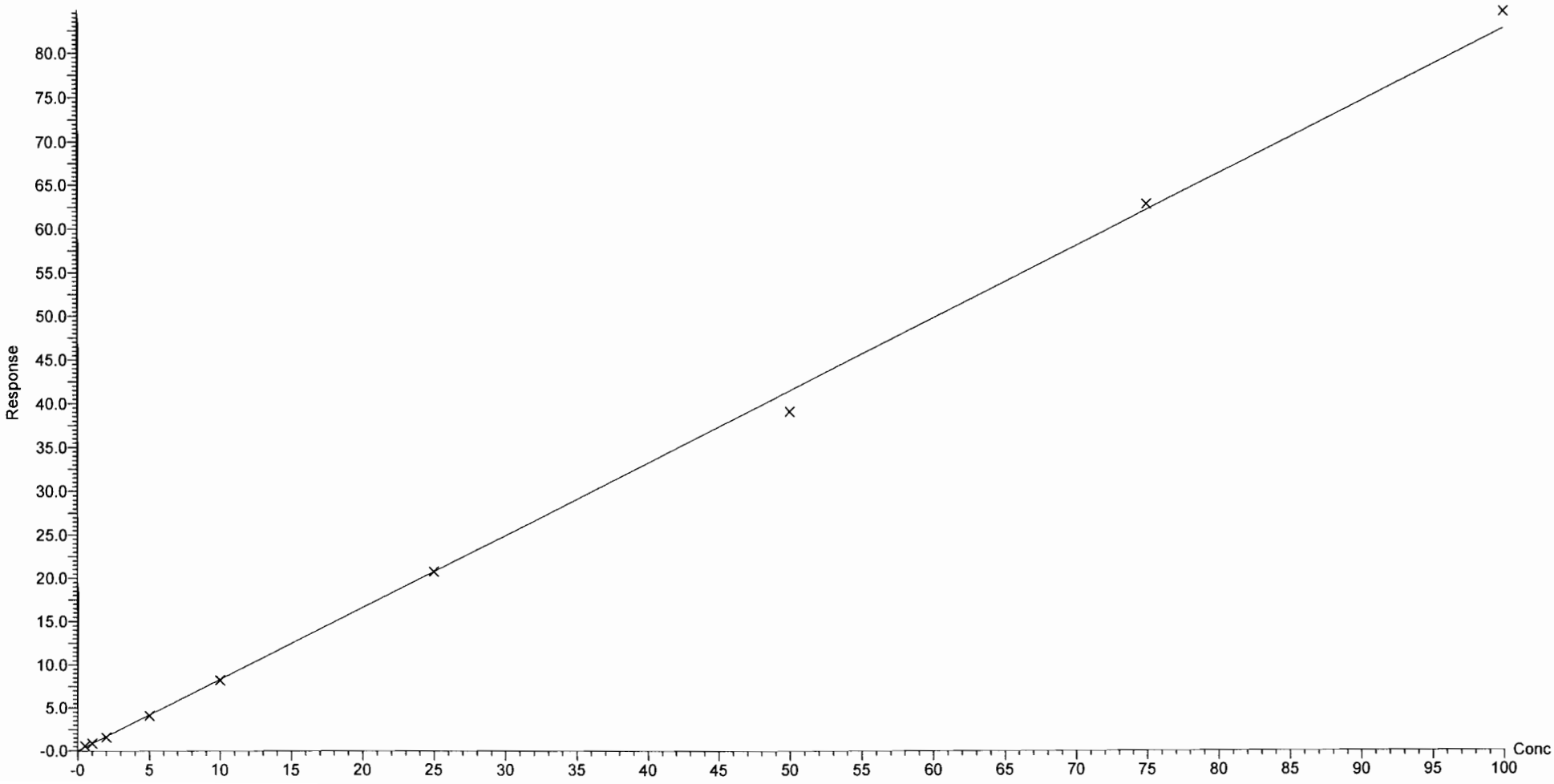
Compound name: PFBS
Coefficient of Determination: R^2 = 0.995316
Calibration curve: 0.807573 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 08:53:53 Pacific Standard Time
Printed: Friday, December 01, 2017 09:06:38 Pacific Standard Time

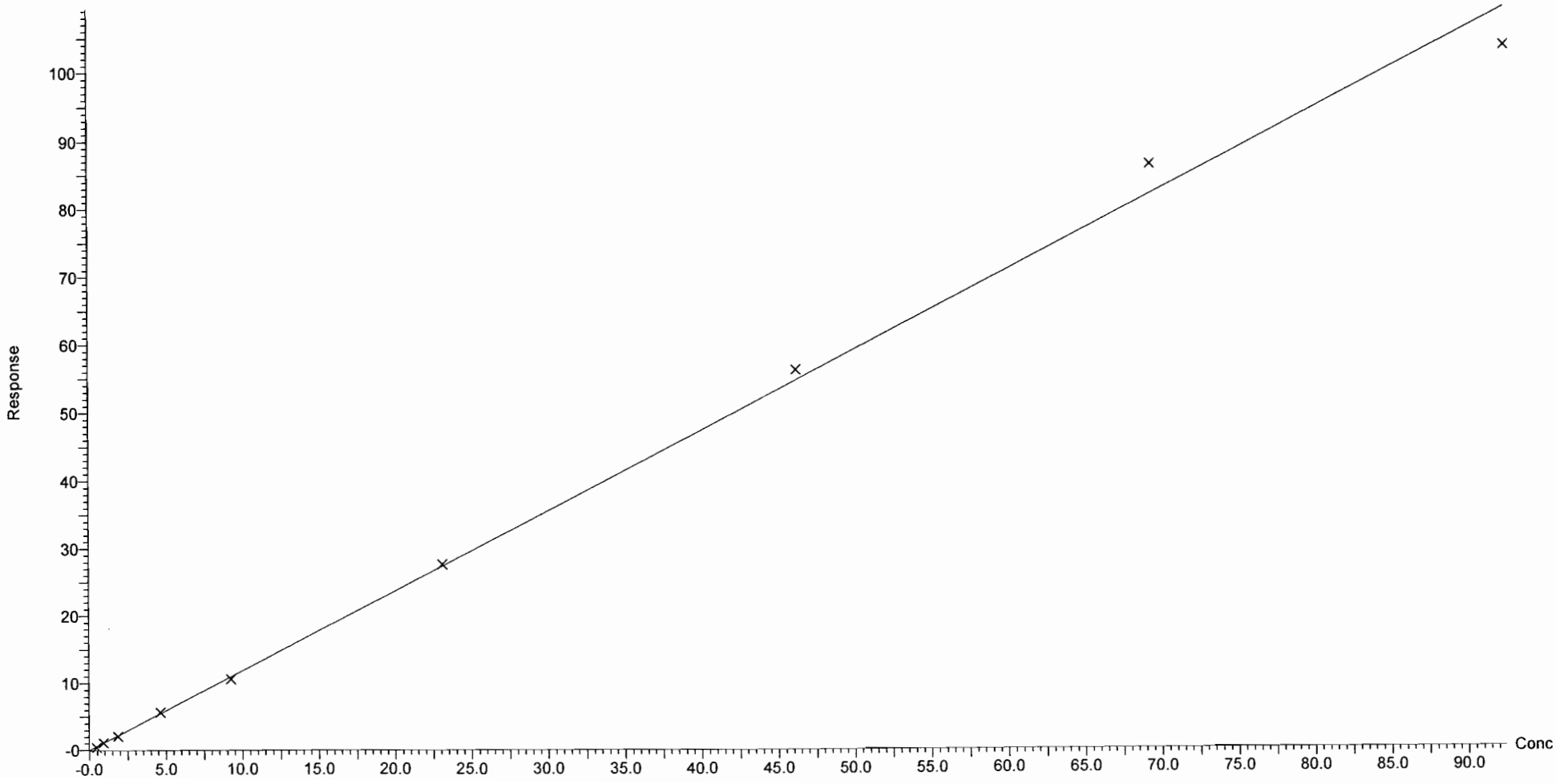
Compound name: PFOA
Coefficient of Determination: R^2 = 0.998822
Calibration curve: 0.829197 * x
Response type: Internal Std (Ref 6), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None

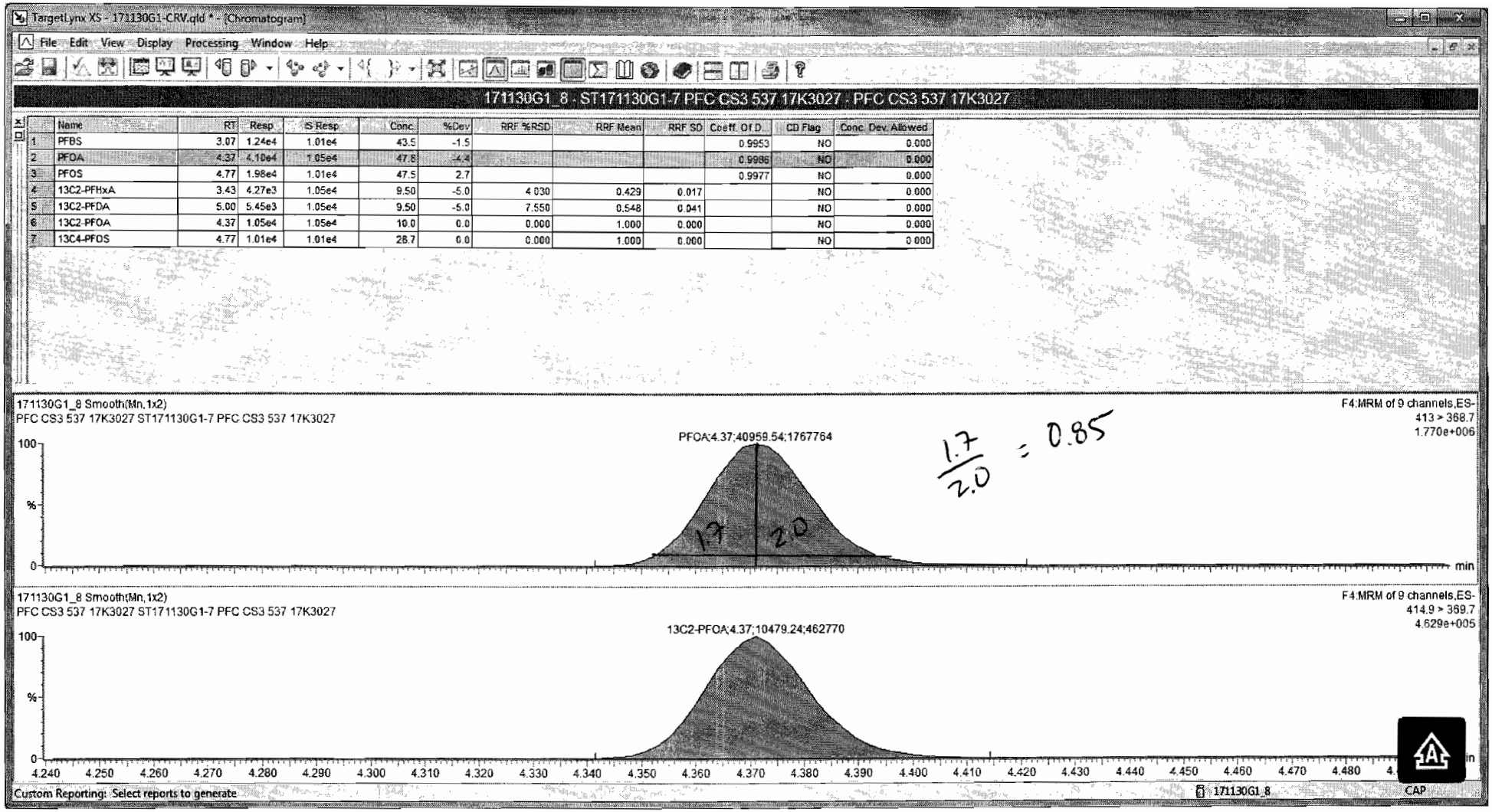


Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

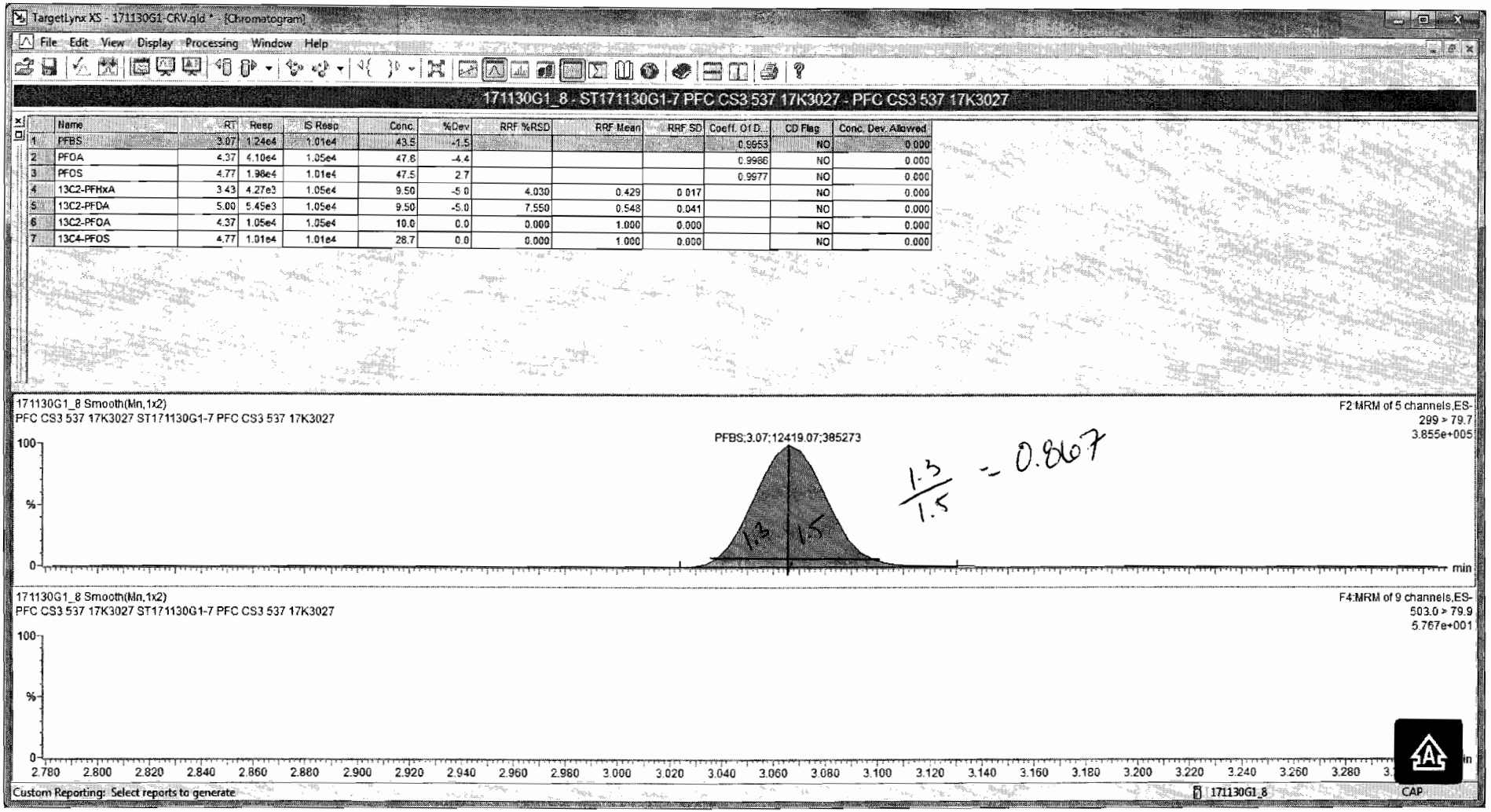
Last Altered: Friday, December 01, 2017 08:53:53 Pacific Standard Time
Printed: Friday, December 01, 2017 09:06:38 Pacific Standard Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.997600
Calibration curve: 1.18269 * x
Response type: Internal Std (Ref 7), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None





	Name	RT	Resp	IS Resp	Conc	%Dev	RRF %RSD	RRF Mean	RRF SD	Coeff. Of D...	CD Flag	Conc. Dev. Allowed
1	PFBS	3.07	1.24e4	1.01e4	43.5	-1.5				0.9953	NO	0.000
2	PFOA	4.37	4.10e4	1.05e4	47.8	-4.4				0.9986	NO	0.000
3	PFOS	4.77	1.98e4	1.01e4	47.5	2.7				0.9977	NO	0.000
4	13C2-PFHxA	3.43	4.27e3	1.05e4	9.50	-5.0	4.030	0.429	0.017		NO	0.000
5	13C2-PFDA	5.00	5.45e3	1.05e4	9.50	-5.0	7.550	0.548	0.041		NO	0.000
6	13C2-PFOA	4.37	1.05e4	1.05e4	10.0	0.0	0.000	1.000	0.000		NO	0.000
7	13C4-PFOS	4.77	1.01e4	1.01e4	28.7	0.0	0.000	1.000	0.000		NO	0.000



	Name	RT	Resp	IS Resp	Conc.	%Dev	RRF %RSD	RRF Mean	RRF SD	Coeff. Of D...	CD Flag	Conc. Dev. Allowed
1	PFBS	3.07	1.24e4	1.01e4	43.5	-1.5				0.9953	NO	0.000
2	PFOA	4.37	4.10e4	1.05e4	47.8	-4.4				0.9986	NO	0.000
3	PFOS	4.77	1.98e4	1.01e4	47.5	2.7				0.9977	NO	0.000
4	13C2-PFHxA	3.43	4.27e3	1.05e4	9.50	-5.0	4.030	0.429	0.017		NO	0.000
5	13C2-PFDA	5.00	5.45e3	1.05e4	9.50	-5.0	7.550	0.548	0.041		NO	0.000
6	13C2-PFOA	4.37	1.05e4	1.05e4	10.0	0.0	0.000	1.000	0.000		NO	0.000
7	13C4-PFOS	4.77	1.01e4	1.01e4	28.7	0.0	0.000	1.000	0.000		NO	0.000

Compound 6: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags
1	ST171130G1-1 PFC CS-3 537 17K3022	171130G1_	Standard	10	4.36	9926.858	9926.858	bb
2	ST171130G1-2 PFC CS-2 537 17K3023	171130G1_	Standard	10	4.37	10558.03	10558.03	bb
3	ST171130G1-3 PFC CS-1 537 17K3024	171130G1_	Standard	10	4.37	10699.87	10699.87	bb
4	ST171130G1-4 PFC CS0 537 17K3025	171130G1_	Standard	10	4.37	10771.27	10771.27	bd
5	ST171130G1-5 PFC CS1 537 17K3026	171130G1_	Standard	10	4.37	10417.23	10417.23	bd
6	ST171130G1-6 PFC CS2 537 17K3033	171130G1_	Standard	10	4.37	9735.661	9735.661	bd
7	ST171130G1-7 PFC CS3 537 17K3027	171130G1_	Standard	10	4.37	10479.24	10479.24	bd
8	ST171130G1-8 PFC CS4 537 17K3028	171130G1_	Standard	10	4.37	8834.41	8834.41	bb
9	ST171130G1-9 PFC CS5 537 17K3029	171130G1_	Standard	10	4.37	8214.188	8214.188	bbX
						AVERAGE		RPD
						10177.82		19.75812414

Compound 7: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Primary Flags
1	ST171130G1-1 PFC CS-3 537 17K3022	171130G1_	Standard	28.7	4.76	11909.38	11909.38	bbX
2	ST171130G1-2 PFC CS-2 537 17K3023	171130G1_	Standard	28.7	4.77	11442.78	11442.78	bd
3	ST171130G1-3 PFC CS-1 537 17K3024	171130G1_	Standard	28.7	4.77	11478.24	11478.24	bb
4	ST171130G1-4 PFC CS0 537 17K3025	171130G1_	Standard	28.7	4.77	10553.21	10553.21	bd
5	ST171130G1-5 PFC CS1 537 17K3026	171130G1_	Standard	28.7	4.77	11620.61	11620.61	bb
6	ST171130G1-6 PFC CS2 537 17K3033	171130G1_	Standard	28.7	4.77	10482.66	10482.66	bd
7	ST171130G1-7 PFC CS3 537 17K3027	171130G1_	Standard	28.7	4.77	10138.13	10138.13	bd
8	ST171130G1-8 PFC CS4 537 17K3028	171130G1_	Standard	28.7	4.77	9629.363	9629.363	bd
9	ST171130G1-9 PFC CS5 537 17K3029	171130G1_	Standard	28.7	4.78	9712.236	9712.236	bd
						AVERAGE		RPD
						10632.15		18.74115499

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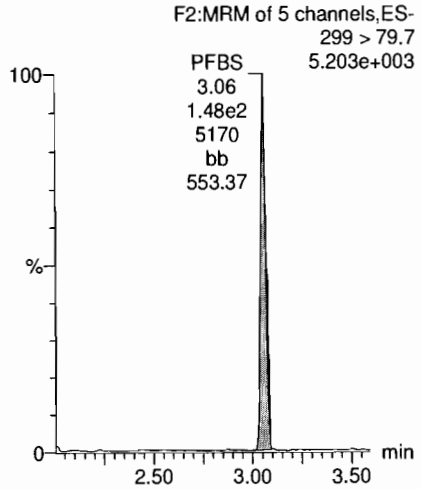
Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

Last Altered: Friday, December 01, 2017 08:53:53 Pacific Standard Time
Printed: Friday, December 01, 2017 08:58:21 Pacific Standard Time

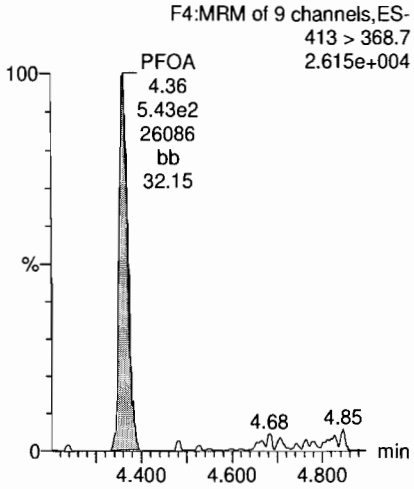
Method: U:\G1.PRO\MethDB\PFAS_DW_L3_1126.mdb 27 Nov 2017 14:32:15
Calibration: 01 Dec 2017 08:53:53

Name: 171130G1_2, Date: 30-Nov-2017, Time: 18:30:58, ID: ST171130G1-1 PFC CS-3 537 17K3022, Description: PFC CS-3 537 17K3022

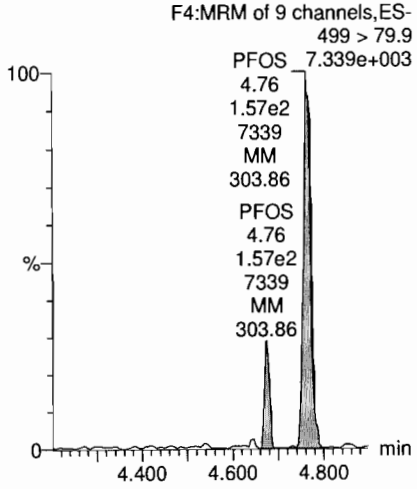
PFBS



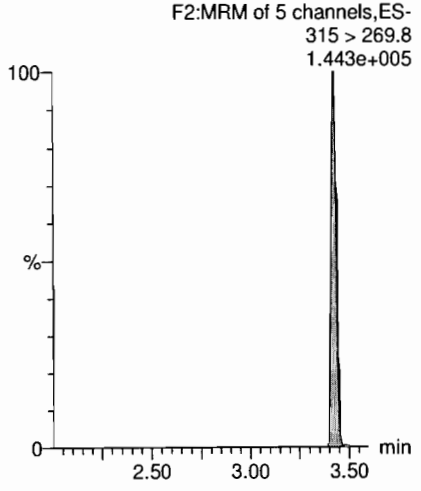
PFOA



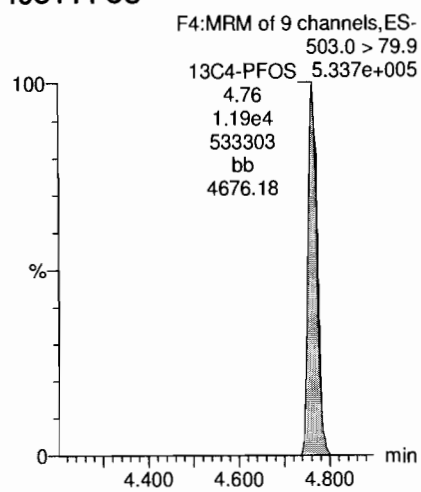
PFOS



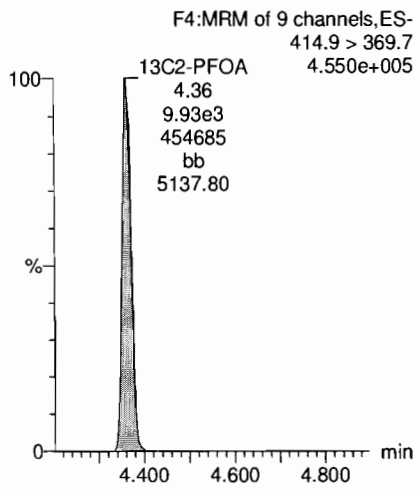
13C2-PFHxA



13C4-PFOS



13C2-PFOA



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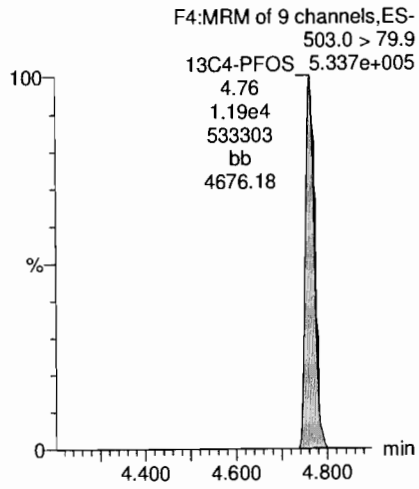
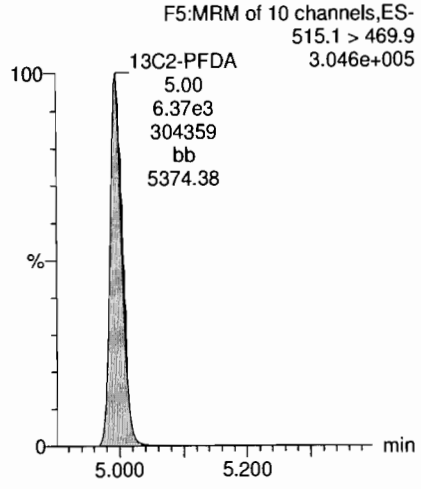


13C2-PFDA

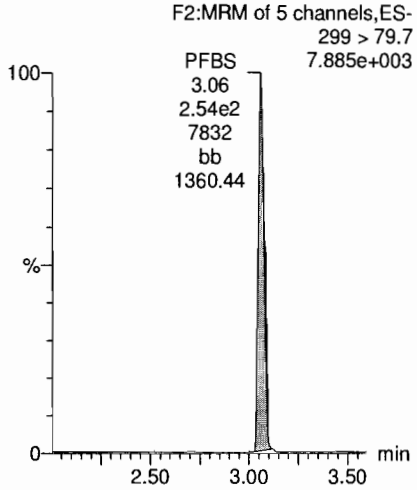


Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

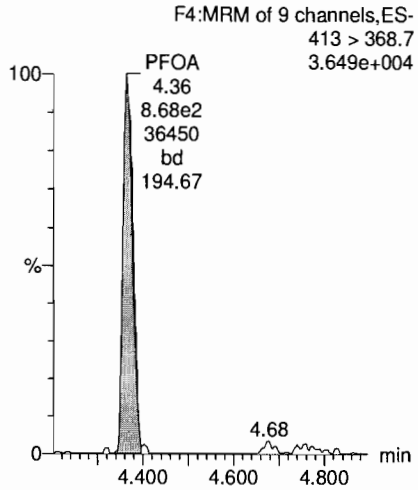
Last Altered: Friday, December 01, 2017 08:53:53 Pacific Standard Time
Printed: Friday, December 01, 2017 08:58:21 Pacific Standard Time

Name: 171130G1_3, Date: 30-Nov-2017, Time: 18:43:22, ID: ST171130G1-2 PFC CS-2 537 17K3023, Description: PFC CS-2 537 17K3023

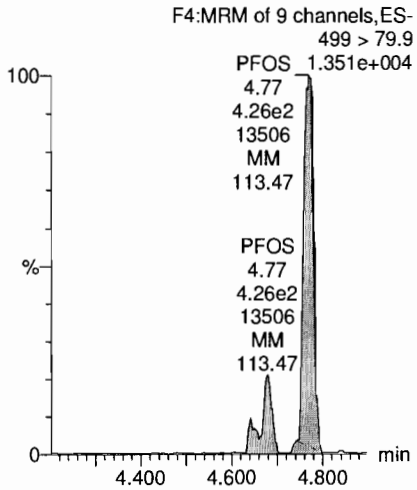
PFBS



PFOA



PFOS



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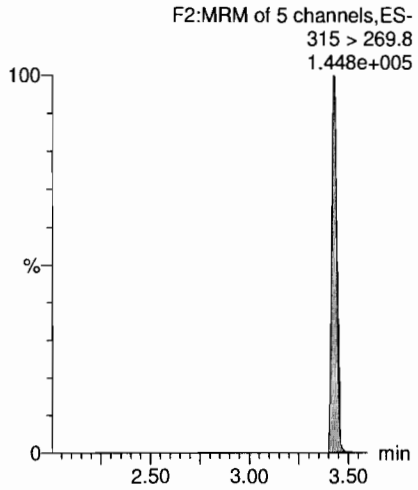

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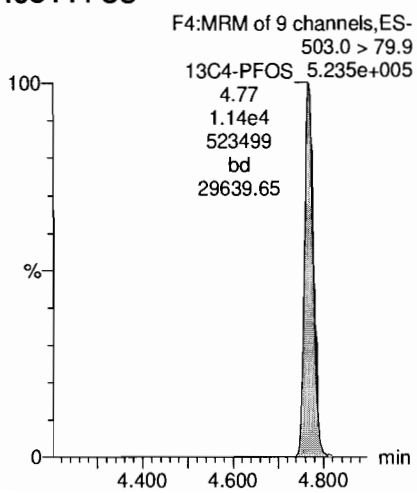
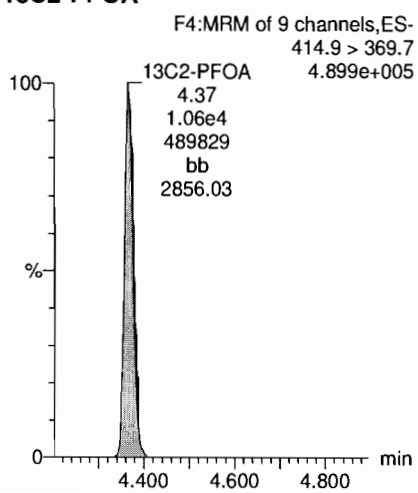
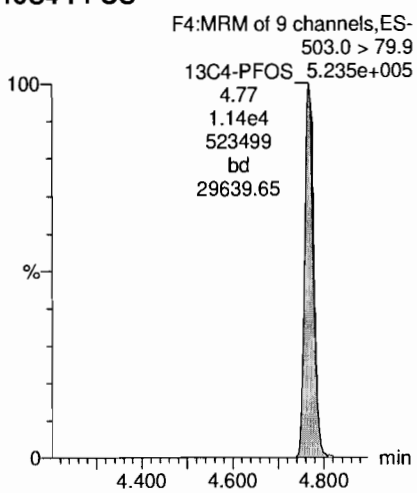


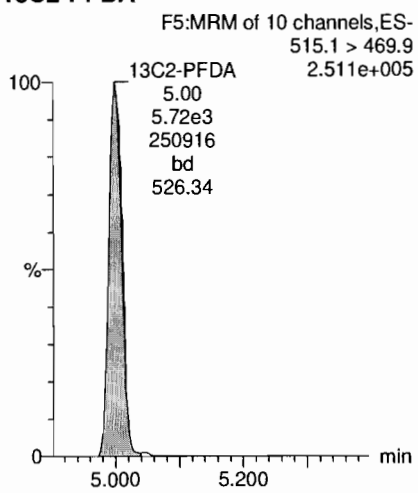
13C2-PFOA



13C4-PFOS



13C2-PFDA

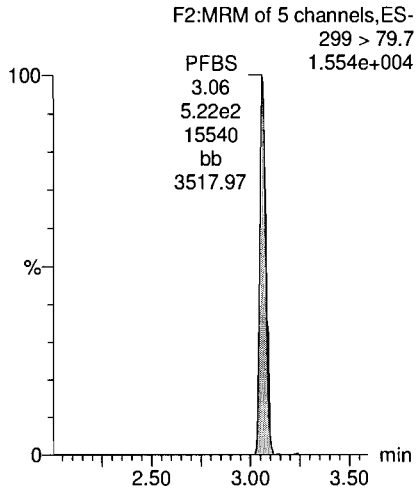


Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-CRV.qld

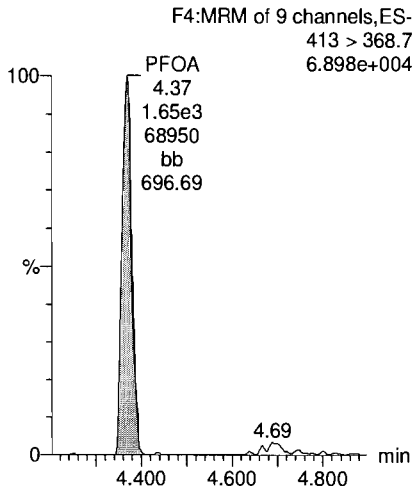
Last Altered: Friday, December 01, 2017 08:53:53 Pacific Standard Time
Printed: Friday, December 01, 2017 08:58:21 Pacific Standard Time

Name: 171130G1_4, Date: 30-Nov-2017, Time: 18:55:46, ID: ST171130G1-3 PFC CS-1 537 17K3024, Description: PFC CS-1 537 17K3024

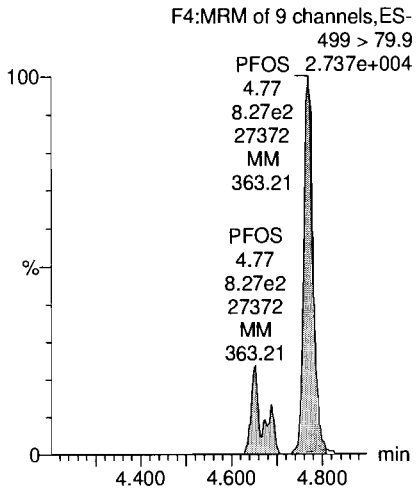
PFBS



PFOA



PFOS



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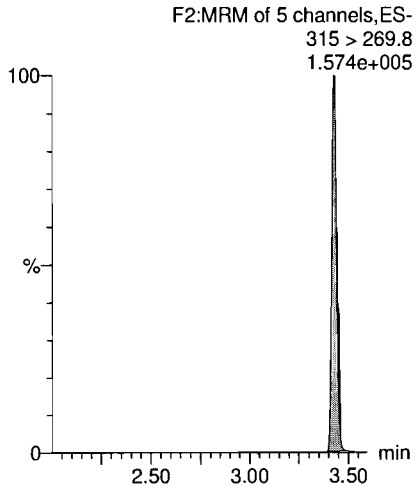
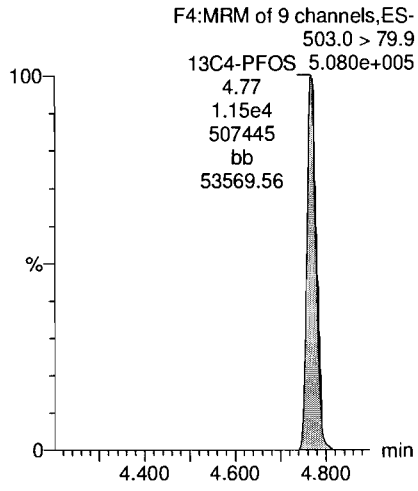
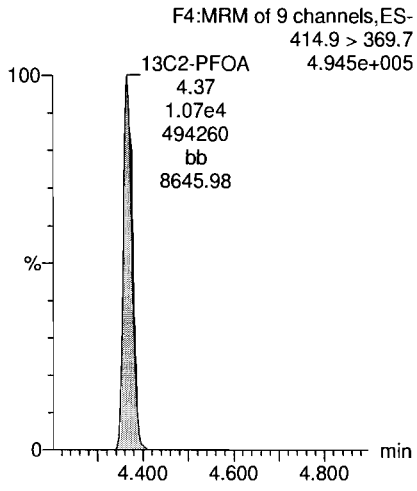


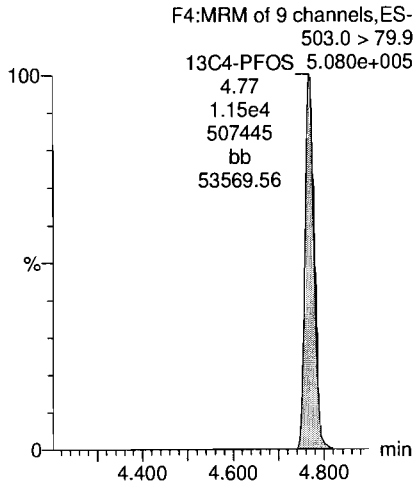
13C4-PFOS



13C2-PFOA



13C4-PFOS



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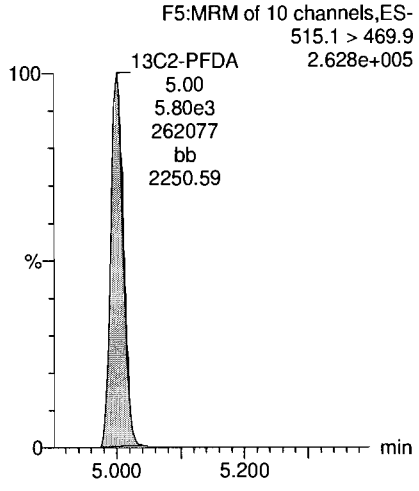

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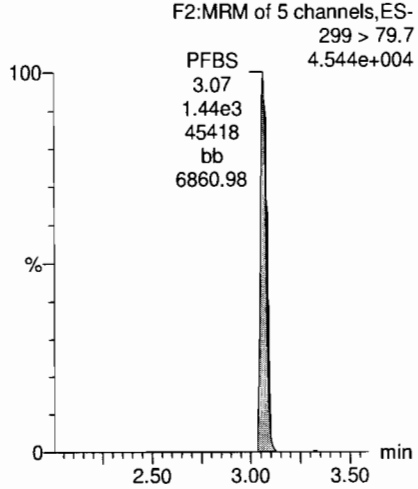
Name: 171130G1_5, Date: 30-Nov-2017, Time: 19:08:12, ID: ST171130G1-4 PFC CS0 537 17K3025, Description: PFC CS0 537 17K3025

PFBS



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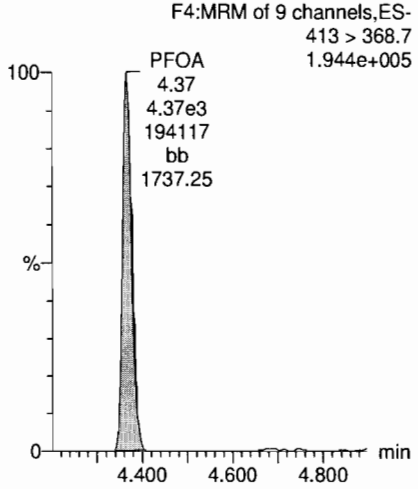

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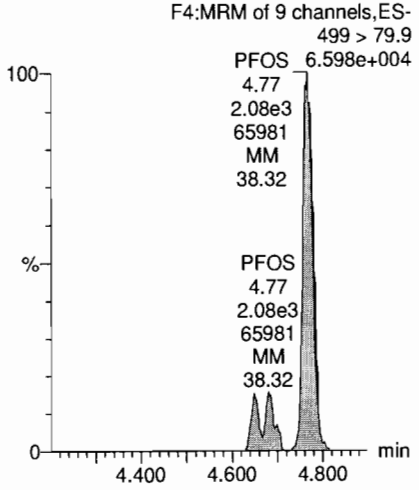

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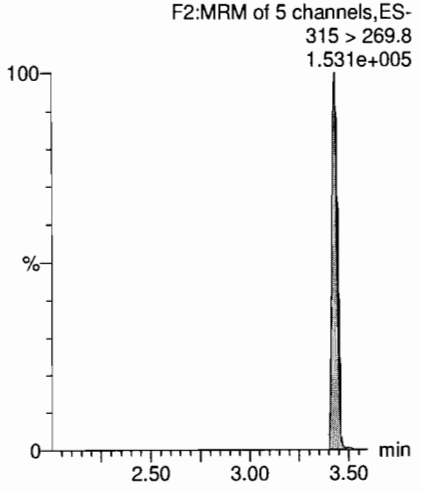

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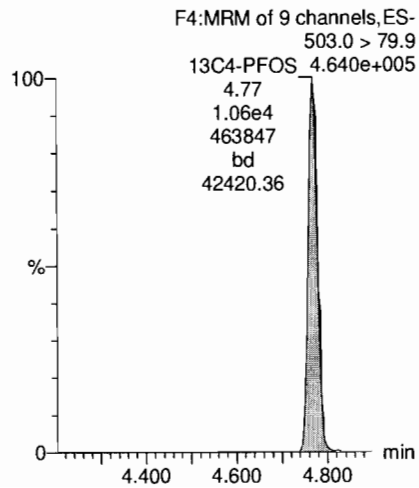

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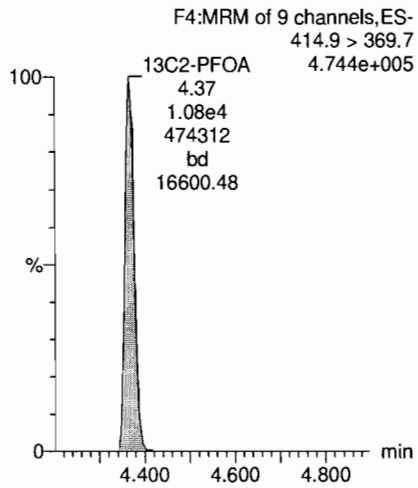

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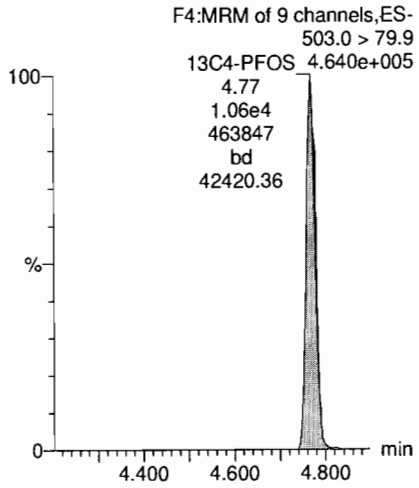

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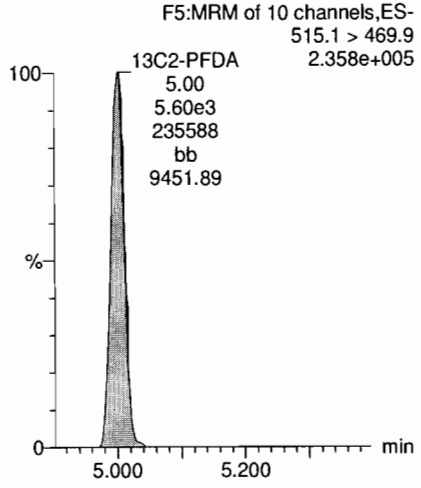

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Name: 171130G1_6, Date: 30-Nov-2017, Time: 19:20:37, ID: ST171130G1-5 PFC CS1 537 17K3026, Description: PFC CS1 537 17K3026

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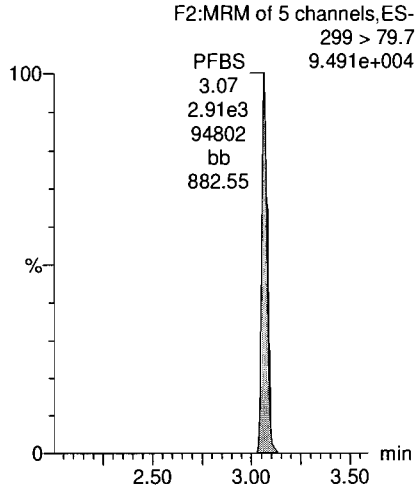

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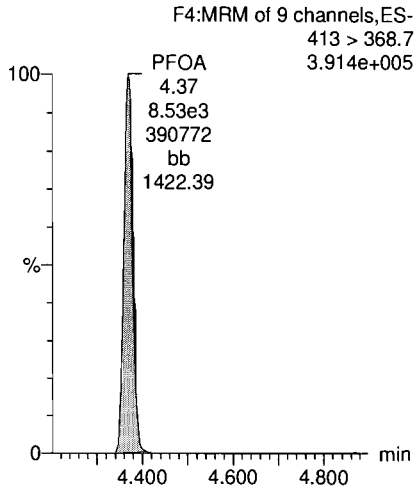

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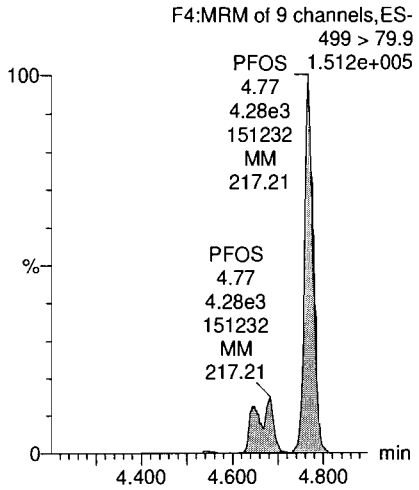

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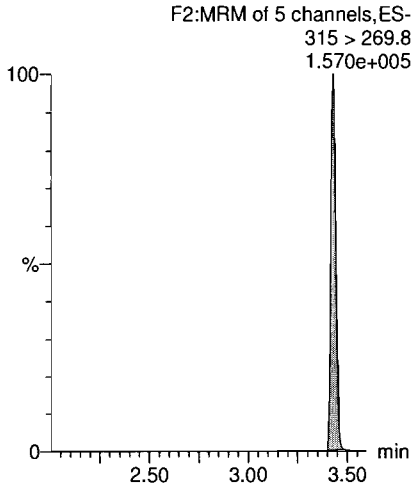

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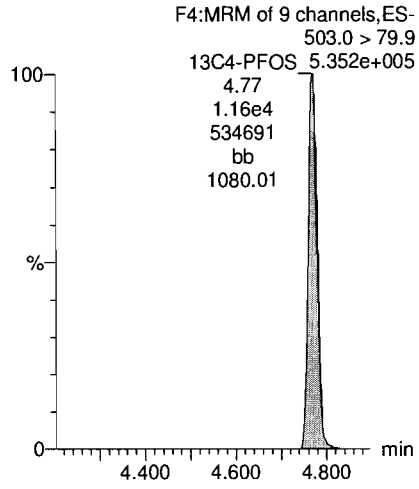

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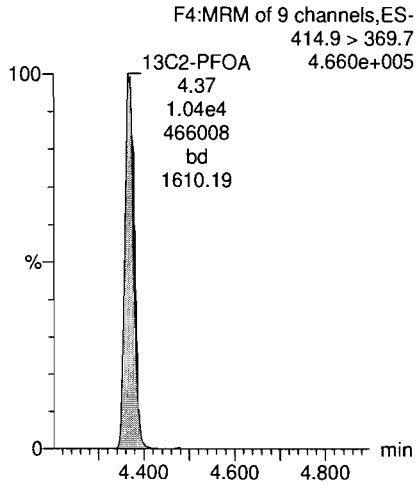

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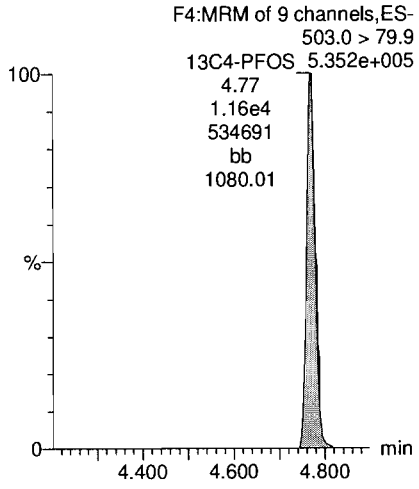

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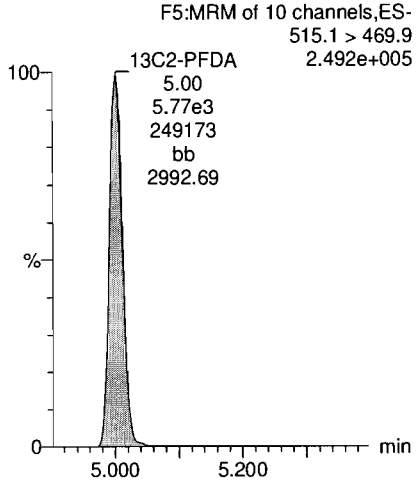

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Name: 171130G1_7, Date: 30-Nov-2017, Time: 19:33:04, ID: ST171130G1-6 PFC CS2 537 17K3033, Description: PFC CS2 537 17K3033

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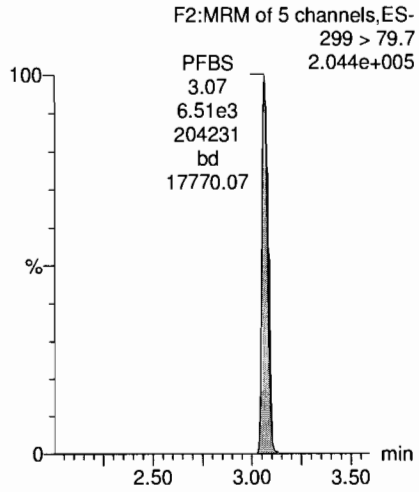

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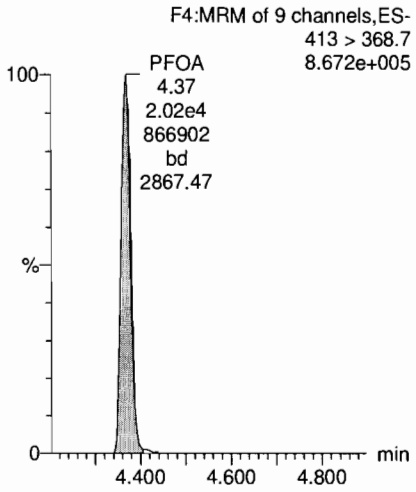

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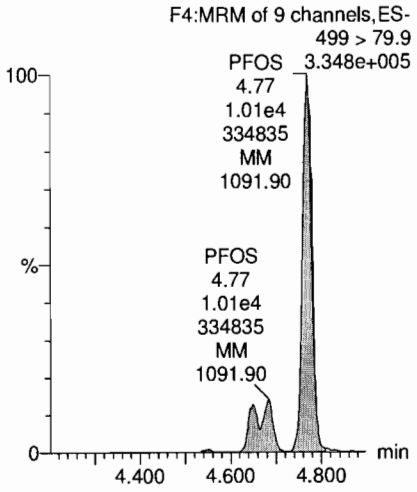

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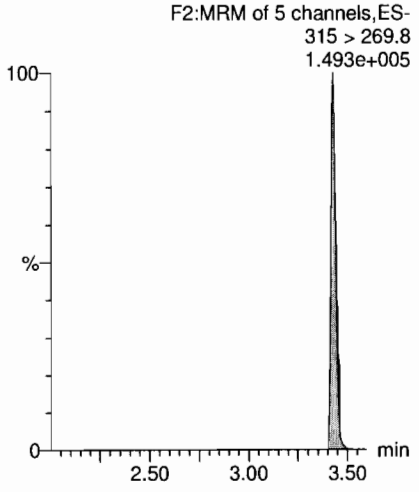

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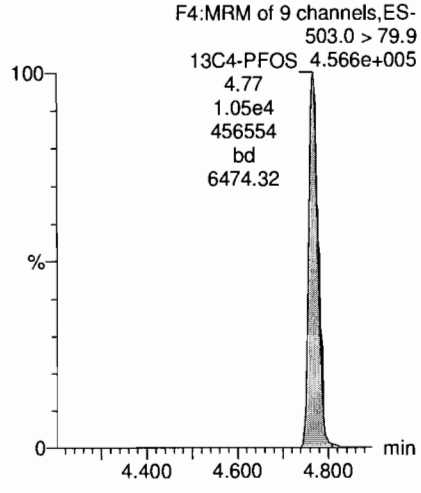

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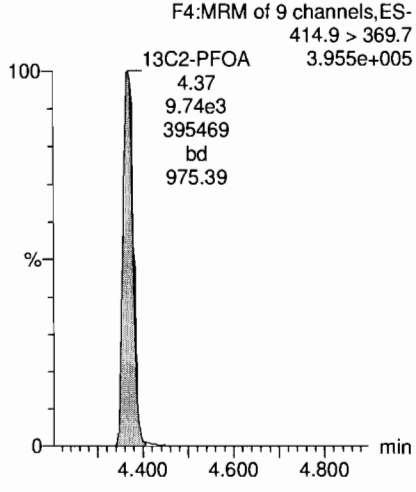

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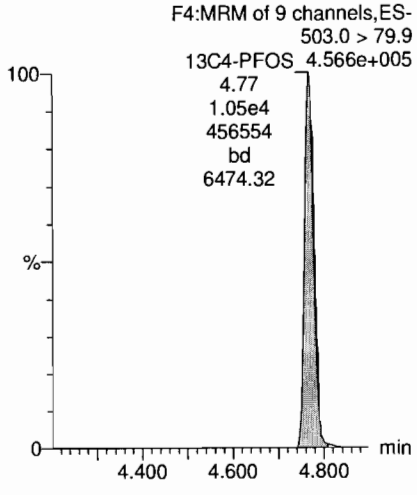

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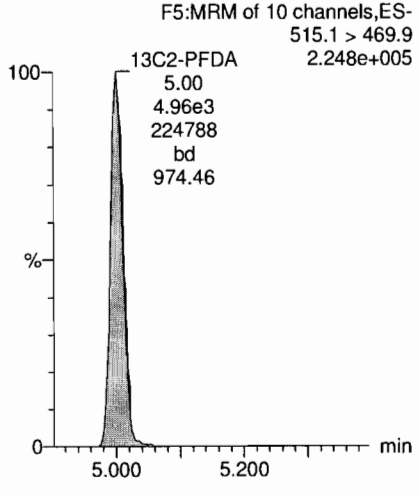

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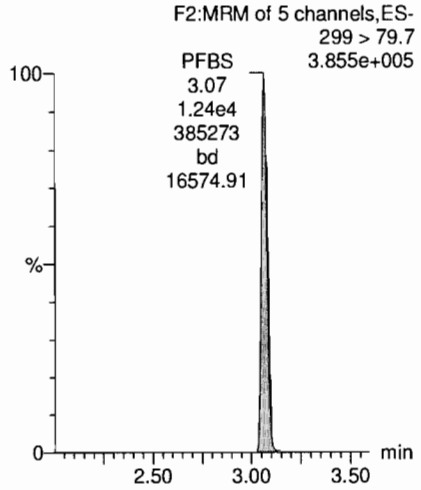

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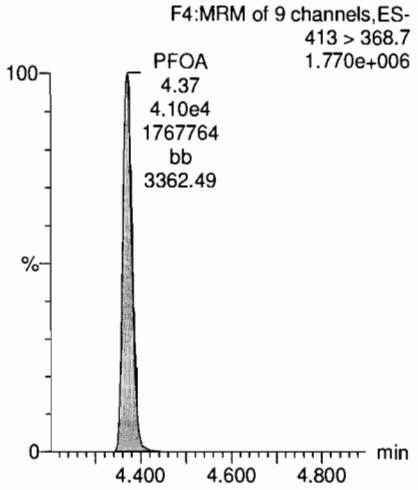

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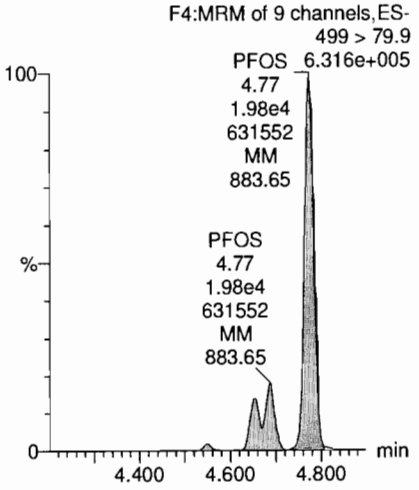

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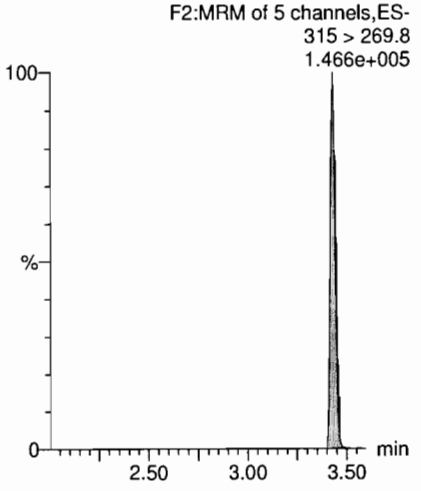

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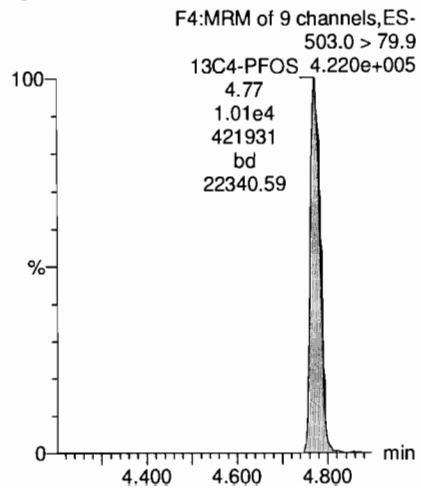

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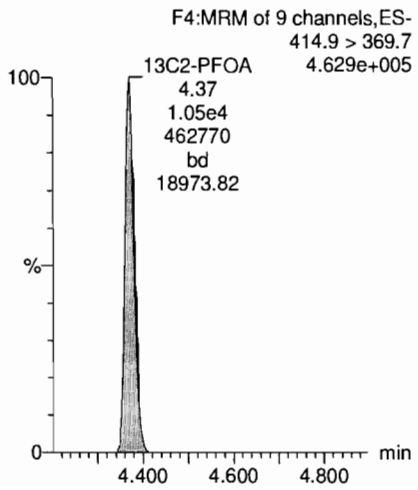

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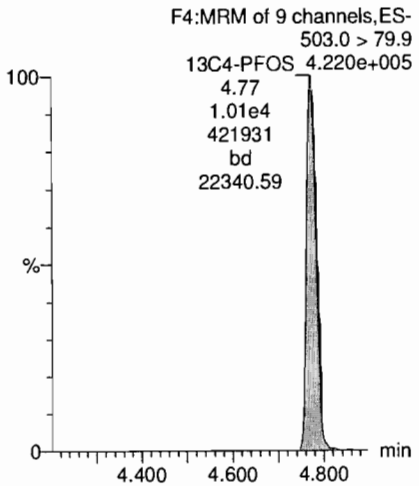

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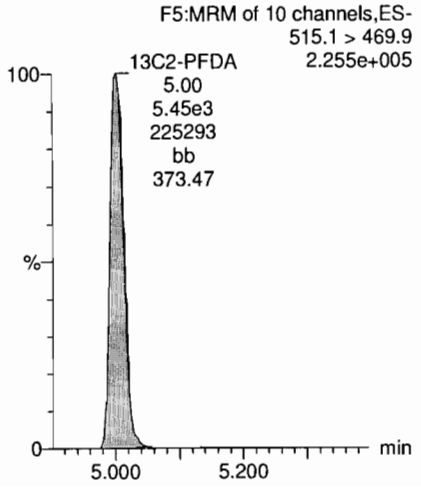

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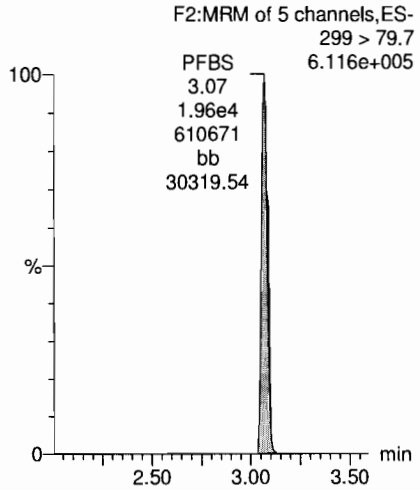

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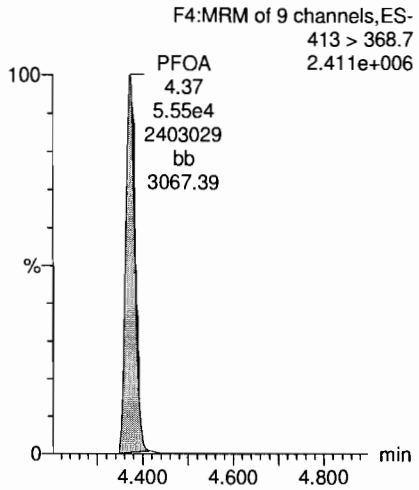

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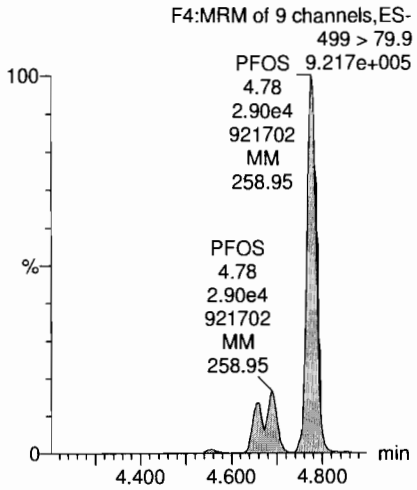

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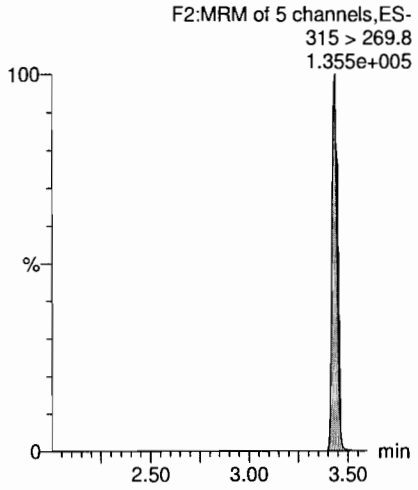

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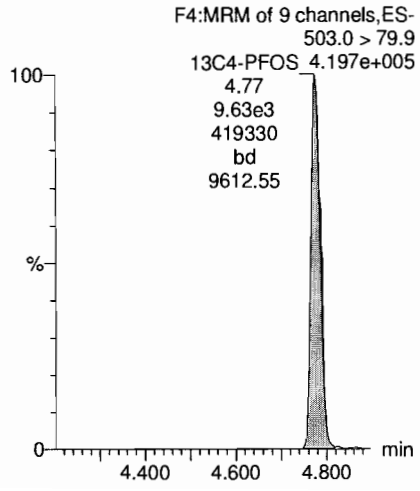

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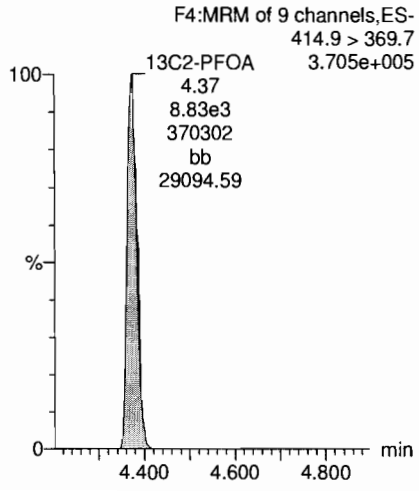

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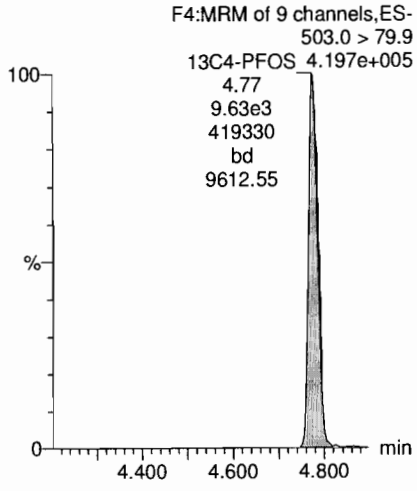

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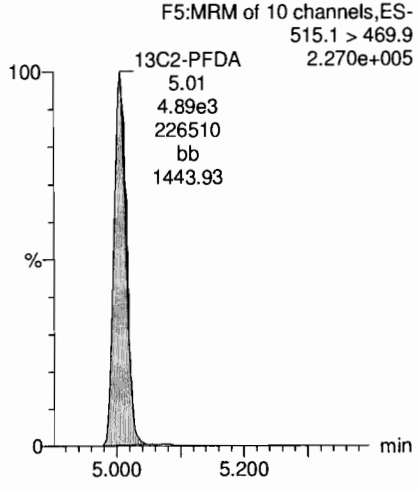

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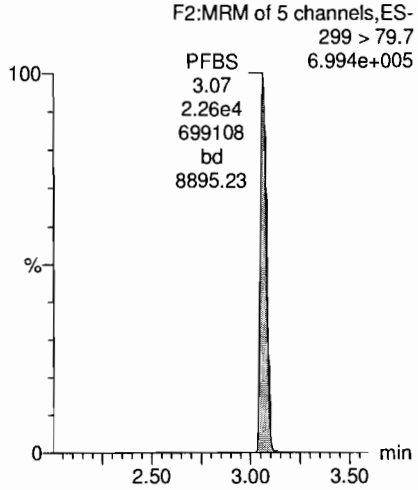

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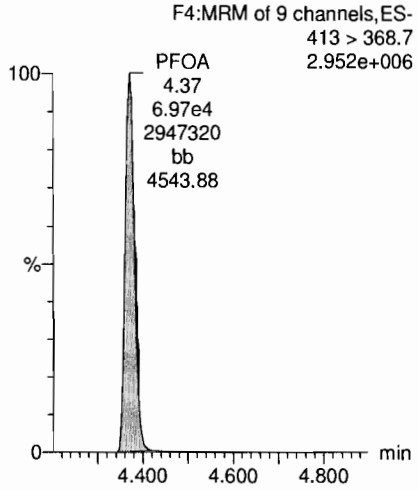

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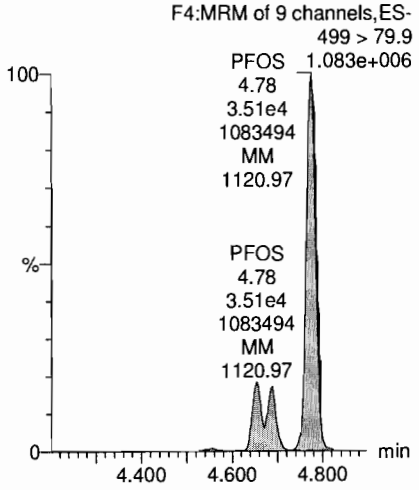

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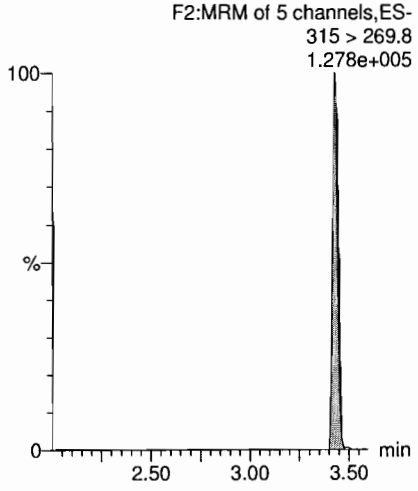

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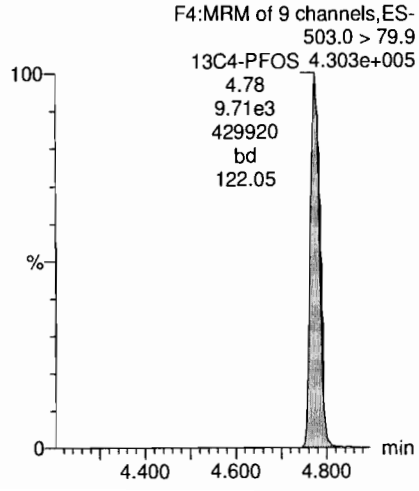

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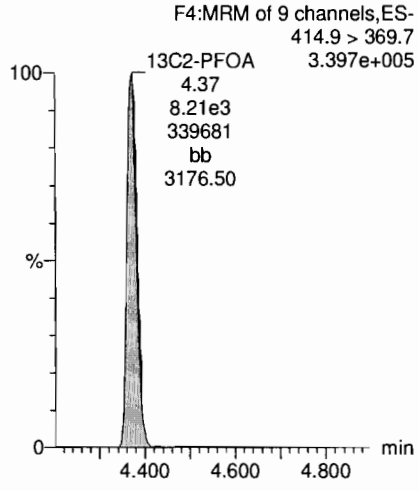

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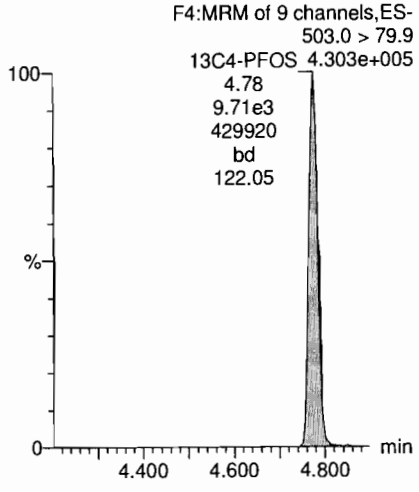

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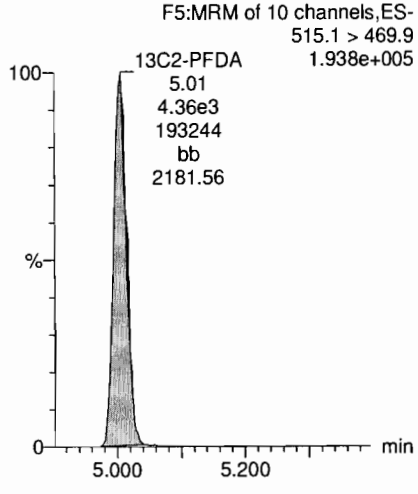

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Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-12.qld

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Printed: Friday, December 01, 2017 09:18:13 Pacific Standard Time

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11 30 QM 12/1/17

Name: 171130G1_12, Date: 30-Nov-2017, Time: 20:35:17, ID: ICV171130G1-1 PFC ICV 537 17K3030, Description: PFC ICV 537 17K3030

	#	Name	Trace	Area	IS Area	RRF	wt/vol	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	3.14e3	9.84e3		1.0000	3.07	3.07	9.15	11.3	113.4
2	2	PFOA	413 > 368.7	8.01e3	9.10e3		1.0000	4.37	4.37	8.80	10.8	107.6
3	3	PFOS	499 >79.9	4.73e3	9.84e3		1.0000	4.77	4.77	13.8	11.7	116.6
4	4	13C2-PFHxA	315 > 269.8	3.94e3	9.10e3	0.429	1.0000	3.43	3.43	4.33	10.1	101.0
5	5	13C2-PFDA	515.1 > 469.9	5.31e3	9.10e3	0.548	1.0000	5.00	5.00	5.83	10.6	106.5
6	6	13C2-PFOA	414.9 > 369.7	9.10e3	9.10e3	1.000	1.0000	4.41	4.37	10.0	10.0	100.0
7	7	13C4-PFOS	503.0 > 79.9	9.84e3	9.84e3	1.000	1.0000	4.81	4.77	28.7	28.7	100.0

70-130

QM 12/1/17

JHA 12/01/2017

Vista Analytical Laboratory

Dataset: U:\G1.PRO\Results\2017\171130G1\171130G1-12.qld

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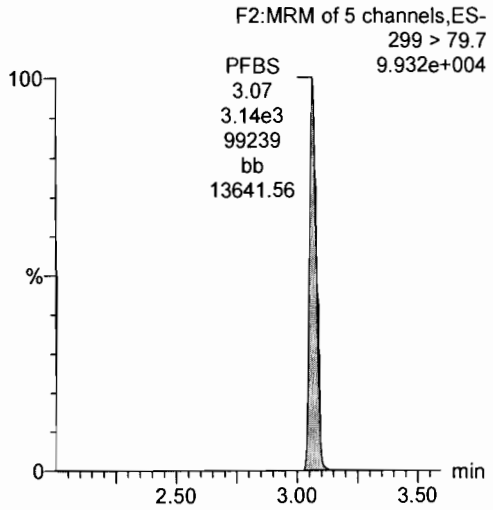
PFBS



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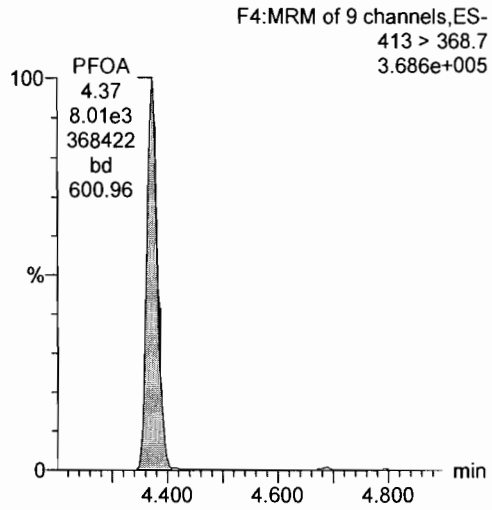

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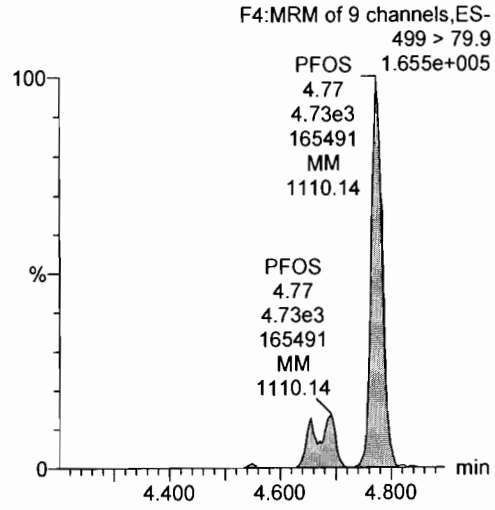

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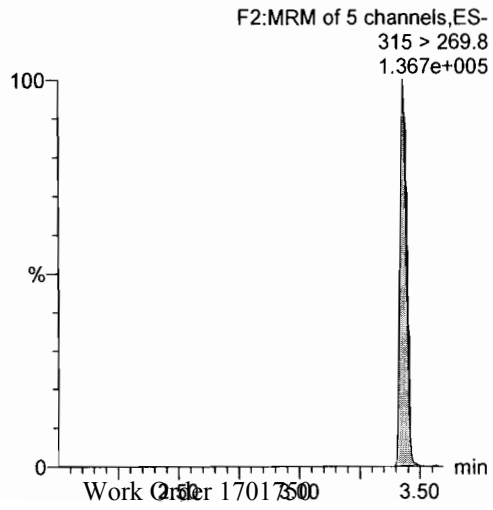

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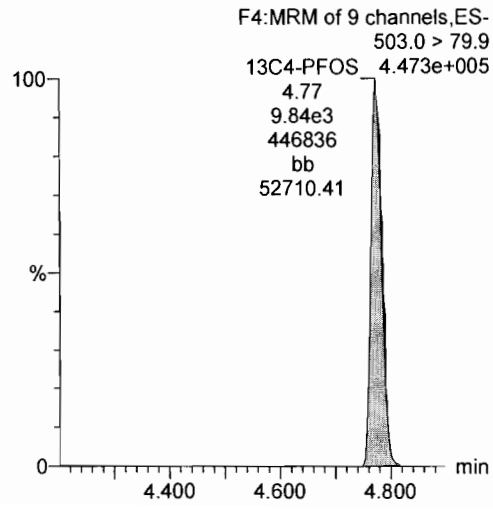

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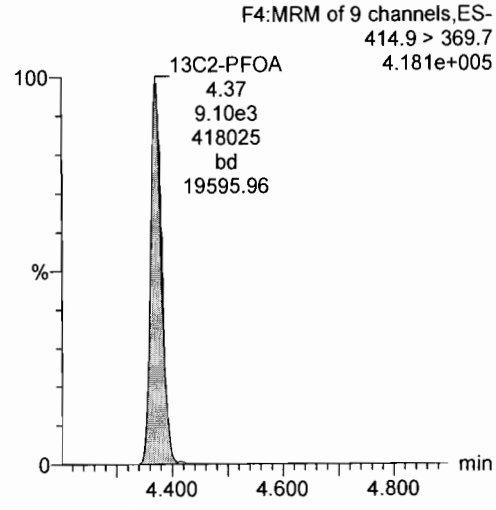

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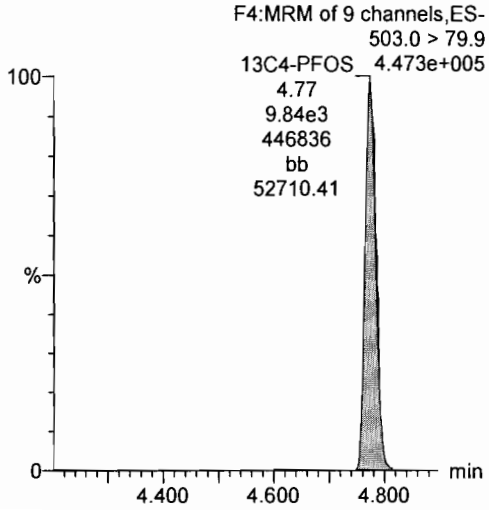

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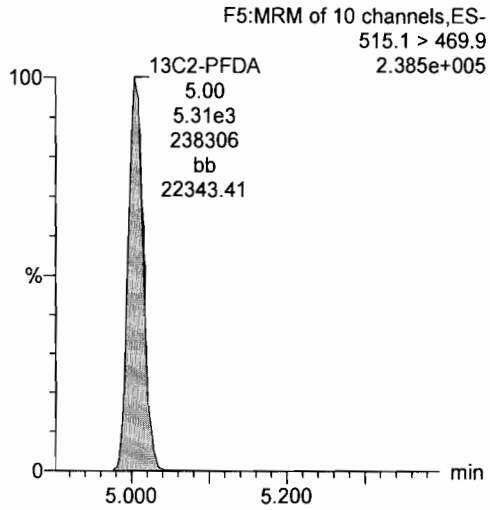

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N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:55	11/21/2017			20171128	07:55:00	20171130	23:41:00	1701750-11	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:55	11/21/2017			20171128	07:55:00	20171130	23:41:00	1701750-11	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:55	11/21/2017			20171128	07:55:00	20171130	23:41:00	1701750-11	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:55	11/21/2017			20171128	07:55:00	20171130	23:41:00	1701750-11	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:56	11/21/2017			20171128	07:55:00	20171130	23:54:00	1701750-12	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:56	11/21/2017			20171128	07:55:00	20171130	23:54:00	1701750-12	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:56	11/21/2017			20171128	07:55:00	20171130	23:54:00	1701750-12	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB53-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 13:56	11/21/2017			20171128	07:55:00	20171130	23:54:00	1701750-12	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:12	11/21/2017			20171128	07:55:00	20171201	00:06:00	1701750-13	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:12	11/21/2017			20171128	07:55:00	20171201	00:06:00	1701750-13	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:12	11/21/2017			20171128	07:55:00	20171201	00:06:00	1701750-13	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:12	11/21/2017			20171128	07:55:00	20171201	00:06:00	1701750-13	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:13	11/21/2017			20171128	07:55:00	20171201	00:19:00	1701750-14	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:13	11/21/2017			20171128	07:55:00	20171201	00:19:00	1701750-14	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:13	11/21/2017			20171128	07:55:00	20171201	00:19:00	1701750-14	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB54-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 14:13	11/21/2017			20171128	07:55:00	20171201	00:19:00	1701750-14	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:08	11/21/2017			20171128	07:55:00	20171201	00:31:00	1701750-15	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:08	11/21/2017			20171128	07:55:00	20171201	00:31:00	1701750-15	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:08	11/21/2017			20171128	07:55:00	20171201	00:31:00	1701750-15	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:08	11/21/2017			20171128	07:55:00	20171201	00:31:00	1701750-15	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:09	11/21/2017			20171128	07:55:00	20171201	00:43:00	1701750-16	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:09	11/21/2017			20171128	07:55:00	20171201	00:43:00	1701750-16	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:09	11/21/2017			20171128	07:55:00	20171201	00:43:00	1701750-16	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB55-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 15:09	11/21/2017			20171128	07:55:00	20171201	00:43:00	1701750-16	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:05	11/21/2017			20171128	07:55:00	20171201	00:56:00	1701750-17	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:05	11/21/2017			20171128	07:55:00	20171201	00:56:00	1701750-17	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:05	11/21/2017			20171128	07:55:00	20171201	00:56:00	1701750-17	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:05	11/21/2017			20171128	07:55:00	20171201	00:56:00	1701750-17	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:06	11/21/2017			20171128	07:55:00	20171201	01:08:00	1701750-18	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:06	11/21/2017			20171128	07:55:00	20171201	01:08:00	1701750-18	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:06	11/21/2017			20171128	07:55:00	20171201	01:08:00	1701750-18	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB56-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:06	11/21/2017			20171128	07:55:00	20171201	01:08:00	1701750-18	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:57	11/21/2017			20171128	07:55:00	20171201	01:21:00	1701750-19	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:57	11/21/2017			20171128	07:55:00	20171201	01:21:00	1701750-19	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:57	11/21/2017			20171128	07:55:00	20171201	01:21:00	1701750-19	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1FB57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:57	11/21/2017			20171128	07:55:00	20171201	01:21:00	1701750-19	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:56	11/21/2017			20171128	07:55:00	20171201	01:33:00	1701750-20	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:56	11/21/2017			20171128	07:55:00	20171201	01:33:00	1701750-20	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:56	11/21/2017			20171128	07:55:00	20171201	01:33:00	1701750-20	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	CH-AT-1RW57-1117	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	REG	W	4	11/17/2017 16:56	11/21/2017			20171128	07:55:00	20171201	01:33:00	1701750-20	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:24:00	B7K0172-BLK1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:24:00	B7K0172-BLK1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:24:00	B7K0172-BLK1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	Blank	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BLK	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:24:00	B7K0172-BLK1	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:00:00	B7K0172-BS1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:00:00	B7K0172-BS1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:00:00	B7K0172-BS1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:00:00	B7K0172-BS1	1	-999			13C2-PFHxA	13C2-PFHxA	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:12:00	B7K0172-BSD1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:12:00	B7K0172-BSD1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:12:00	B7K0172-BSD1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	
N6247016D9000	0008		CHERRY_POINT_MCAS	LCS Dup	NONS	SVOA	537	ORG	VISTA	VISTA ANALYTICAL LABORATORY, INC.	NONE	WET	METHOD	000	BS	W	4	11/28/2017 07:55	11/28/2017			20171128	07:55:00	20171130	21:12:00	B7K0172-BSD1	1	-999			13C2-PFHxA	13C2-PFHxA	

Contract_ID	DO_CTO _Number	Phase	Installation_ID	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_L imit_ Date	QC_ Narrative	MDL	Detection_ Limit	QSM_ Version	DL	LOD	LOQ	SDG	Analysis_ Batch
N6247016D9000	0008		CHERRY_POINT_MCAS	4.93	NG_L	U		PR	TRG									5.1	0.437	4.93	9.87	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.93	NG_L	U		PR	TRG									5.1	1.07	4.93	9.87	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.93	NG_L	U		PR	TRG									5.1	1.03	4.93	9.87	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	102	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.65	NG_L	U		PR	TRG									5.1	0.412	4.65	9.30	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.65	NG_L	U		PR	TRG									5.1	1.00	4.65	9.30	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.65	NG_L	U		PR	TRG									5.1	0.967	4.65	9.30	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	105	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.95	NG_L	U		PR	TRG									5.1	0.438	4.95	9.89	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.15	NG_L	J		PR	TRG									5.1	1.07	4.95	9.89	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	1.23	NG_L	J		PR	TRG									5.1	1.03	4.95	9.89	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	100	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.77	NG_L	U		PR	TRG									5.1	0.422	4.77	9.54	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.77	NG_L	U		PR	TRG									5.1	1.03	4.77	9.54	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.77	NG_L	U		PR	TRG									5.1	0.992	4.77	9.54	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	92.5	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.68	NG_L	U		PR	TRG									5.1	0.415	4.68	9.36	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.68	NG_L	U		PR	TRG									5.1	1.01	4.68	9.36	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.68	NG_L	U		PR	TRG									5.1	0.974	4.68	9.36	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	103	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.62	NG_L	U		PR	TRG									5.1	0.410	4.62	9.24	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.62	NG_L	U		PR	TRG									5.1	0.998	4.62	9.24	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.62	NG_L	U		PR	TRG									5.1	0.961	4.62	9.24	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	105	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.83	NG_L	U		PR	TRG									5.1	0.428	4.83	9.67	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.83	NG_L	U		PR	TRG									5.1	1.04	4.83	9.67	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.83	NG_L	U		PR	TRG									5.1	1.01	4.83	9.67	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	103	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.62	NG_L	U		PR	TRG									5.1	0.409	4.62	9.23	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.62	NG_L	U		PR	TRG									5.1	0.997	4.62	9.23	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.62	NG_L	U		PR	TRG									5.1	0.960	4.62	9.23	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	94.7	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.87	NG_L	U		PR	TRG									5.1	0.431	4.87	9.74	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.87	NG_L	U		PR	TRG									5.1	1.05	4.87	9.74	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.87	NG_L	U		PR	TRG									5.1	1.01	4.87	9.74	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	97.0	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.71	NG_L	U		PR	TRG									5.1	0.417	4.71	9.42	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.71	NG_L	U		PR	TRG									5.1	1.02	4.71	9.42	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.71	NG_L	U		PR	TRG									5.1	0.980	4.71	9.42	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	101	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.69	NG_L	U		PR	TRG									5.1	0.415	4.69	9.37	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.69	NG_L	U		PR	TRG									5.1	1.01	4.69	9.37	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.69	NG_L	U		PR	TRG									5.1	0.975	4.69	9.37	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	95.8	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.64	NG_L	U		PR	TRG									5.1	0.411	4.64	9.27	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.64	NG_L	U		PR	TRG									5.1	1.00	4.64	9.27	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.64	NG_L	U		PR	TRG									5.1	0.964	4.64	9.27	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	101	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.76	NG_L	U		PR	TRG									5.1	0.421	4.76	9.51	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.76	NG_L	U		PR	TRG									5.1	1.03	4.76	9.51	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.76	NG_L	U		PR	TRG									5.1	0.989	4.76	9.51	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	106	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.74	NG_L	U		PR	TRG									5.1	0.420	4.74	9.48	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.74	NG_L	U		PR	TRG									5.1	1.02	4.74	9.48	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.74	NG_L	U		PR	TRG									5.1	0.986	4.74	9.48	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	109	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.83	NG_L	U		PR	TRG									5.1	0.428	4.83	9.67	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.83	NG_L	U		PR	TRG									5.1	1.04	4.83	9.67	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.83	NG_L	U		PR	TRG									5.1	1.01	4.83	9.67	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	89.7	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.82	NG_L	U		PR	TRG									5.1	0.427	4.82	9.65	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.82	NG_L	U		PR	TRG									5.1	1.04	4.82	9.65	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.82	NG_L	U		PR	TRG									5.1	1.00	4.82	9.65	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	99.5	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.75	NG_L	U		PR	TRG									5.1	0.421	4.75	9.50	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	1.57	NG_L	J		PR	TRG									5.1	1.03	4.75	9.50	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.75	NG_L	U		PR	TRG									5.1	0.988	4.75	9.50	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	109	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.72	NG_L	U		PR	TRG									5.1	0.418	4.72	9.44	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.72	NG_L	U		PR	TRG									5.1	1.02	4.72	9.44	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.72	NG_L	U		PR	TRG									5.1	0.982	4.72	9.44	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	94.4	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.88	NG_L	U		PR	TRG									5.1	0.432	4.88	9.76	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.88	NG_L	U		PR	TRG									5.1	1.05	4.88	9.76	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.88	NG_L	U		PR	TRG									5.1	1.01	4.88	9.76	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	94.8	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.70	NG_L	U		PR	TRG									5.1	0.416	4.70	9.39	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.70	NG_L	U		PR	TRG									5.1	1.01	4.70	9.39	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	4.70	NG_L	U		PR	TRG									5.1	0.977	4.70	9.39	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	106	PCT_REC			PR			SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	5.00	NG_L	U		PR	TRG									5.1	0.443	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	5.00	NG_L	U		PR	TRG									5.1	1.08	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	5.00	NG_L	U		PR	TRG									5.1	1.04	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	105	PCT_REC			PR	SUR		SLSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	37.0	NG_L			PR	TRG		LSA	130	70					5.1	0.443	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	41.1	NG_L			PR	TRG		LSA	130	70					5.1	1.08	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	35.3	NG_L			PR	TRG		LSA	130	70					5.1	1.04	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	98.4	PCT_REC			PR	SUR		LSA	130	70					5.1				1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	36.3	NG_L			PR	TRG		LSA	130	70					5.1	0.443	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	42.5	NG_L			PR	TRG		LSA	130	70					5.1	1.08	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	34.8	NG_L			PR	TRG		LSA	130	70					5.1	1.04	5.00	10.0	1701750	S7K0086
N6247016D9000	0008		CHERRY_POINT_MCAS	107	PCT_REC			PR	SUR		LSA	130	70					5.1				1701750	S7K0086

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
MCOLF ATLANTC, NORTH CAROLINA

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 1701750
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-1RW48-1117	1701750-01	Water
2	CH-AT-1FB48-1117	1701750-02	Water
3	CH-AT-1RW49-1117	1701750-03	Water
4	CH-AT-1FB49-1117	1701750-04	Water
5	CH-AT-1RW50-1117	1701750-05	Water
6	CH-AT-1FB50-1117	1701750-06	Water
7	CH-AT-1RW51-1117	1701750-07	Water
8	CH-AT-1FB51-1117	1701750-08	Water
9	CH-AT-1RW52-1117	1701750-09	Water
10	CH-AT-1FB52-1117	1701750-10	Water
11	CH-AT-1RW53-1117	1701750-11	Water
12	CH-AT-1FB53-1117	1701750-12	Water
13	CH-AT-1RW54-1117	1701750-13	Water
14	CH-AT-1FB54-1117	1701750-14	Water
15	CH-AT-1RW55-1117	1701750-15	Water
16	CH-AT-1FB55-1117	1701750-16	Water
17	CH-AT-1RW56-1117	1701750-17	Water
18	CH-AT-1FB56-1117	1701750-18	Water
19	CH-AT-1RW57-1117	1701750-19	Water
20	CH-AT-1FB57-1117	1701750-20	Water

A full data validation was performed on the analytical data for ten water samples and ten aqueous field blank samples collected on November 17, 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-1FB48-1117	None - ND	-	-	-
CH-AT-1FB49-1117	None - ND	-	-	-
CH-AT-1FB50-1117	None - ND	-	-	-
CH-AT-1FB51-1117	None - ND	-	-	-
CH-AT-1FB52-1117	None - ND	-	-	-
CH-AT-1FB53-1117	None - ND	-	-	-
CH-AT-1FB54-1117	None - ND	-	-	-
CH-AT-1FB55-1117	None - ND	-	-	-
CH-AT-1FB56-1117	None - ND	-	-	-
CH-AT-1FB57-1117	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-1RW48-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:29

Laboratory Data

Lab Sample: 1701750-01
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.437	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1
PFOA	ND	1.07	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1
PFOS	ND	1.03	4.93	9.87		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	102	70 - 130		B7K0172	28-Nov-17	0.253 L	30-Nov-17 21:37	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 11/3/18

Vista Analytical Laboratory

Sample ID: CH-AT-1FB48-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:30

Laboratory Data

Lab Sample: 1701750-02
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.412	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1
PFOA	ND	1.00	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1
PFOS	ND	0.967	4.65	9.30		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.269 L	30-Nov-17 21:49	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-1RW49-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 11:39

Laboratory Data

Lab Sample: 1701750-03
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.438	4.95	9.89		B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1
PFOA	4.15	1.07	4.95	9.89	J	B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1
PFOS	1.23	1.03	4.95	9.89	J	B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	100	70 - 130		B7K0172	28-Nov-17	0.253 L	30-Nov-17 22:02	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

4

Sample ID: CH-AT-1FB49-1117 — **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-04	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 11:40	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.422	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1
PFOA	ND	1.03	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1
PFOS	ND	0.992	4.77	9.54		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	92.5	70 - 130		B7K0172	28-Nov-17	0.262 L	30-Nov-17 22:14	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 1/3/18

Vista Analytical Laboratory 5

Sample ID: CH-AT-1RW50-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-05	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 11:48	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.415	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1
PFOA	ND	1.01	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1
PFOS	ND	0.974	4.68	9.36		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7K0172	28-Nov-17	0.267 L	30-Nov-17 22:27	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

MW 13/18

Vista Analytical Laboratory

6

Sample ID: CH-AT-1FB50-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-06	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 11:49	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.410	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1
PFOA	ND	0.998	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1
PFOS	ND	0.961	4.62	9.24		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	105	70 - 130		B7K0172	28-Nov-17	0.270 L	30-Nov-17 22:39	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

7

Sample ID: CH-AT-1RW51-1117 — **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-07	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 12:03	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	**ND**	0.428	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1
PFOA	ND	1.04	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1
PFOS	**ND**	1.01	4.83	9.67		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B7K0172	28-Nov-17	0.259 L	30-Nov-17 22:51	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

8

Sample ID: CH-AT-1FB51-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-08	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 12:04	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.409	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1
PFOA	ND	0.997	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1
PFOS	ND	0.960	4.62	9.23		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.7	70 - 130		B7K0172	28-Nov-17	0.271 L	30-Nov-17 23:04	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.

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Vista Analytical Laboratory

9

Sample ID: CH-AT-1RW52-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-09	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 12:15	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.431	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1
PFOA	ND	1.05	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1
PFOS	ND	1.01	4.87	9.74		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97.0	70 - 130		B7K0172	28-Nov-17	0.257 L	30-Nov-17 23:16	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.

nwi3/18

Vista Analytical Laboratory 10

Sample ID: CH-AT-1FB52-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 12:16

Laboratory Data

Lab Sample: 1701750-10
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.417	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1
PFOA	ND	1.02	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1
PFOS	ND	0.980	4.71	9.42		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B7K0172	28-Nov-17	0.265 L	30-Nov-17 23:29	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 11 3 18

Vista Analytical Laboratory

Sample ID: CH-AT-1RW53-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 13:55

Laboratory Data

Lab Sample: 1701750-11
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.415	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1
PFOA	ND	1.01	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1
PFOS	ND	0.975	4.69	9.37		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	95.8	70 - 130		B7K0172	28-Nov-17	0.267 L	30-Nov-17 23:41	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

Sample ID: CH-AT-1FB53-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 13:56

Laboratory Data

Lab Sample: 1701750-12
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.411	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1
PFOA	ND	1.00	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1
PFOS	ND	0.964	4.64	9.27		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	101	70 - 130		B7K0172	28-Nov-17	0.270 L	30-Nov-17 23:54	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 13

Sample ID: CH-AT-1RW54-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-13	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 14:12	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.421	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1
PFOA	ND	1.03	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1
PFOS	ND	0.989	4.76	9.51		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:06	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.

MW13.8

Vista Analytical Laboratory 14

Sample ID: CH-AT-1FB54-1117 **EPA Method 537**

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 14:13

Laboratory Data

Lab Sample: 1701750-14
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.420	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1
PFOA	ND	1.02	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1
PFOS	ND	0.986	4.74	9.48		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	109	70 - 130		B7K0172	28-Nov-17	0.264 L	01-Dec-17 00:19	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

11/13/18

Sample ID: CH-AT-1RW55-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-15	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 15:08	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.428	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1
PFOA	ND	1.04	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1
PFOS	ND	1.01	4.83	9.67		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	89.7	70 - 130		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:31	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 16

Sample ID: CH-AT-1FB55-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 15:09

Laboratory Data

Lab Sample: 1701750-16
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.427	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1
PFOA	ND	1.04	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1
PFOS	ND	1.00	4.82	9.65		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	99.5	70 - 130		B7K0172	28-Nov-17	0.259 L	01-Dec-17 00:43	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 11/31.8

Vista Analytical Laboratory 17

Sample ID: CH-AT-1RW56-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-17	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 16:05	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.421	4.75	9.50		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1
PFOA	1.57	1.03	4.75	9.50	J	B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1
PFOS	ND	0.988	4.75	9.50		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	109	70 - 130		B7K0172	28-Nov-17	0.263 L	01-Dec-17 00:56	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.

Vista Analytical Laboratory 18

Sample ID: CH-AT-1FB56-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:06

Laboratory Data

Lab Sample: 1701750-18
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.418	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1
PFOA	ND	1.02	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1
PFOS	ND	0.982	4.72	9.44		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.4	70 - 130		B7K0172	28-Nov-17	0.265 L	01-Dec-17 01:08	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

12/13/18

Vista Analytical Laboratory 19

Sample ID: CH-AT-1FB57-1117 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1701750-19	Column:	BEH C18
Project:	CTO-08, MCOLF Atlantic / PFAS DW Investigation	Date Collected:	17-Nov-17 16:57	Date Received:	21-Nov-17 10:13		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.432	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1
PFOA	ND	1.05	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1
PFOS	ND	1.01	4.88	9.76		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.8	70 - 130		B7K0172	28-Nov-17	0.256 L	01-Dec-17 01:21	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.

11/30/18

Sample ID: CH-AT-1RW57-1117

EPA Method 537

Client Data

Name: CH2M Hill
Project: CTO-08, MCOLF Atlantic / PFAS DW Investigation
Matrix: Drinking Water
Date Collected: 17-Nov-17 16:56

Laboratory Data

Lab Sample: 1701750-20
Date Received: 21-Nov-17 10:13
Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.416	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1
PFOA	ND	1.01	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1
PFOS	ND	0.977	4.70	9.39		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	106	70 - 130		B7K0172	28-Nov-17	0.266 L	01-Dec-17 01:33	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

11/3/18

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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