



January 3, 2017

Mr. Michael Magnant, Town Administrator  
Town of Rye  
10 Central Road  
Rye, NH 03870

**Re: Surface Water Quality Sampling Results**

Dear Mr. Magnant:

The purpose of this letter is to report on the analytical results for the surface water samples gathered from six sampling locations in Rye on November 20, 2017. Earlier in 2017, a state senator and a state representative made comments at public meetings in Rye that there was surface water quality contamination in Rye pertaining to perfluorinated compounds. There were, however, no specifics and no data was found in the public archives on the NHDES website. You authorized the sampling of various watersheds in Rye to provide information to be available to the public.

The sampling locations were as follows, and as indicated on the attached map:

<u>Location of Sampling Station</u>	<u>Description</u>
1. Berry's Brook at Lang Road	Upstream watershed in Rye, Portsmouth and Greenland, including residential and commercial development both sewered and on septic systems, and including the northern perimeter of the Coakley Landfill site.
2. Berry's Brook at Sagamore Road	Downstream of Sampling Station #1
3. Cedar Swamp Run at West Road	Watershed includes residential development in Rye and North Hampton on septic systems, and the eastern perimeter of the Coakley Landfill
4. Witch Creek at Sagamore Road	Watershed mostly undeveloped woods and wetlands, with some residences on septic systems.
5. Unnamed Brook at Bracket and Clark Rds.	Watershed mostly undeveloped woods and wetlands with some residences on septic systems.
6. "Long John Marsh" at Bracket Road	Watershed includes extensive wetlands, and residences, some commercial uses and a school on septic systems.

The purpose of the sampling was to determine whether any of these locations indicate concentrations of perfluorinated compounds that may pose a threat to public health and safety. Perfluorinated compounds are known to be present from atmospheric sources in downwind locations from an industrial air emission source, in locations where certain firefighting foams have been used, downstream of municipal wastewater treatment plant discharges, downgradient of residential or commercial wastewater leachfields, and downgradient of certain types of landfills. Pertinent to Rye, elevated levels of perfluorinated compounds have been reported to be detected in surface waters of Berry's Brook in Greenland, upstream of sampling station #1.

Perfluorinated compounds are ubiquitous chemicals that have been used for decades for the manufacture of consumer and other products to create "slippery" surfaces.

New Hampshire has established a primary drinking water standard for PFOA and PFOS, two perfluorinated compounds, at 70 parts per trillion (ppt) for either or both combined. Surface water is not used for drinking water purposes, so these regulatory levels do not apply. There are no surface water quality criteria applicable to perfluorinated compounds.

## RESULTS

The laboratory results from Eastern Analytical, Inc. and from Vista Analytical Laboratory are attached, and are summarized in the table below.

Sampling Station	Concentration (ng/l)					
1. Berry's Brook at Lang Road	4.75	BDL	4.85	7.64	12.5	BDL
2. Berry's Brook at Sagamore Road	5.18	4.74	4.73	5.72	10.2	BDL
3. Cedar Swamp Run at West Rd	4.99	BDL	BDL	BDL	BDL	BDL
4. Witch Creek at Sagamore Road	BDL	BDL	BDL	BDL	BDL	BDL
5. Unnamed at Bracket/Clark	BDL	BDL	BDL	BDL	BDL	BDL
6. Long John Marsh at Bracket	BDL	BDL	BDL	BDL	BDL	BDL

BDL: Below Detection Level of 4.32-5.31 ng/l, parts per trillion.

The three sampling stations at watersheds with limited development and with varying low densities of residential septic systems (#4, 5 and 6) all indicated results below detection levels. From this one limited set of data, we would conclude that there is not an indication of a widespread atmospheric source of these contaminants impacting Rye.

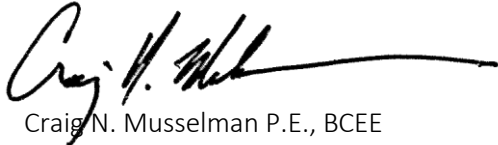
The sample at West Road indicated one compound at only a few parts per quadrillion above the detection level. This data does not point to a significant source of perfluorinated compounds in this watershed.

The results from the two samples from Berry's Brook, taken about a mile apart, are very similar in terms of compounds and concentrations. This may be indicative of a specific and continuing source of perfluorinated compounds, perhaps from the northern perimeter of the Coakley Landfill. However, the concentrations are well below the established drinking water standards, which do not apply to surface waters. And there are currently no applicable surface water quality standards.

Based on this information, there is no indication of a threat to public health and safety from these concentration levels in Rye. We do not recommend that the Town consider additional sampling and analysis.

If you or the Board of Selectmen have any questions regarding the above, please don't hesitate to contact us.

Very truly yours,  
CMA ENGINEERS, INC.

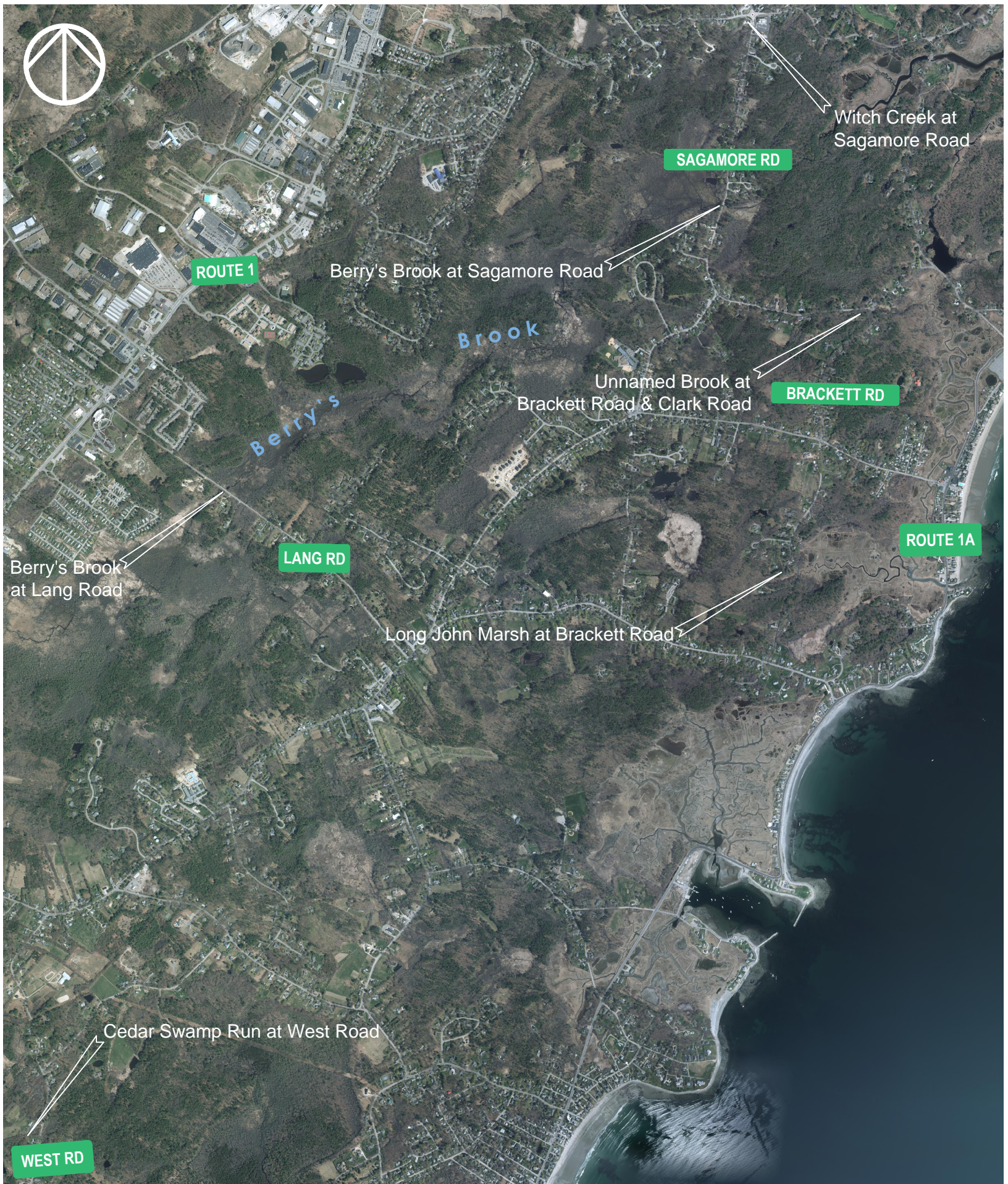
A handwritten signature in black ink, appearing to read "Craig N. Musselman", with a long horizontal flourish extending to the right.

Craig N. Musselman P.E., BCEE  
President

CNM/kao

Enclosures





**RYE, NH**  
**SURFACE WATER SAMPLING LOCATIONS**





## **Eastern Analytical, Inc.**

*professional laboratory and drilling services*

### **PRELIMINARY ANALYTICAL RESULTS ATTACHED**

*The attached .pdf file contains results that have not been subjected to a final QA/QC review. If you have any questions, please contact us at [customerservice@eailabs.com](mailto:customerservice@eailabs.com) or call 1-800-287-0525.*

*We wish you a happy and safe holiday season!*

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#### **EAI will be closed on the following holidays**

- **Monday, December 25<sup>th</sup>**
- **Tuesday, December 26<sup>th</sup>**
- **Monday, January 1<sup>st</sup>**

Please keep these dates in mind when planning your sample collection schedule especially when parameters with immediate or short hold times are needed. Call us at 1-800-287-0525 or email [customerservice@easternanalytical.com](mailto:customerservice@easternanalytical.com) if you have any questions or need to make special arrangements. Thank you!

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#### **Granite State Rural Water Association (GSRWA) Training Opportunity – Proper Sample Collection Techniques**

***Taught by: Jeff Gagne, Eastern Analytical, Inc.***

**Date:** December 12<sup>th</sup>

**Time:** 8:00 am – 3:00 pm

**Location:** Lake Sunapee Protective Association, Sunapee NH

**Cost:** \$95.00 Members / \$125 Non Members

**Credit:** Earn 6 TCH's. NHDES drinking water and wastewater credit approved

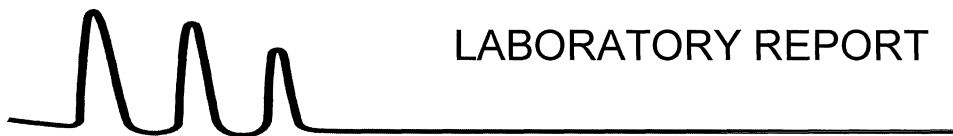
**To Register:** Visit the GSRWA website <http://www.granitestatewater.org/Training.asp>

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Please keep Eastern Analytical, Inc. laboratory testing and drilling services in mind when planning your 2018 budgets and end of the year projects such as...

- *Routine groundwater monitoring*
- *PWS and Waste Water monitoring*
- *Environmental site assessments*
- *SQC Sludge testing*
- *Industrial monitoring*
- *PFAS/PFOS testing*
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# LABORATORY REPORT

EAI ID#: 176219

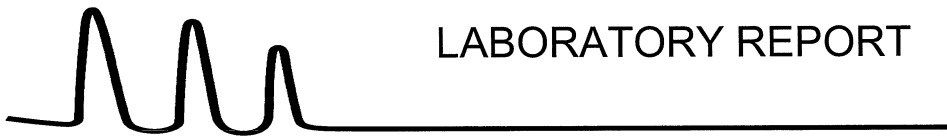
Client: **CMA Engineers, Inc. (Portsmouth)**

Client Designation: **Rye Surface Water Sampling**

Sample ID:	Cedar Swamp Run @ West	Unnamed Brook @ B&C	Long John Marsh @ Brackett	Berry's Brook @ Lang					
Lab Sample ID:	176219.01	176219.02	176219.03	176219.04					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/20/17	11/20/17	11/20/17	11/20/17					
Date Received:	11/20/17	11/20/17	11/20/17	11/20/17					
					Units	Analysis			
						Date	Time	Method	Analyst
Chloride	130	89	170	81	mg/L	11/22/17	11:25	4500CIE-97	KD
Nitrate-N	< 0.5	< 0.5	< 0.5	< 0.5	mg/L	11/22/17	8:58	353.2	KD
TKN	< 0.5	0.5	0.5	0.6	mg/L	12/04/17	12:01	4500N <sub>org</sub> C/N	SEL

Sample ID:	Berry's Brook @ Sagamore	Witch Creek @ Sagamore							
Lab Sample ID:	176219.05	176219.06							
Matrix:	aqueous	aqueous							
Date Sampled:	11/20/17	11/20/17							
Date Received:	11/20/17	11/20/17							
					Units	Analysis			
						Date	Time	Method	Analyst
Chloride	88	85			mg/L	11/22/17	10:44	4500CIE-97	KD
Nitrate-N	< 0.5	< 0.5			mg/L	11/22/17	10:44	353.2	KD
TKN	0.7	0.8			mg/L	12/04/17	12:11	4500N <sub>org</sub> C/N	SEL

Witch Creek @ Sagamore: The MS/MSD for Chloride associated with this sample exhibited recovery outside the acceptance criteria. All other batch QC was in control.



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<b>Sample ID:</b>	Cedar Swamp Run @ West	Unnamed Brook @ B&C	Long John Marsh @ Brackett	Berry's Brook @ Lang					
<b>Lab Sample ID:</b>	176219.01	176219.02	176219.03	176219.04					
<b>Matrix:</b>	aqueous	aqueous	aqueous	aqueous					
<b>Date Sampled:</b>	11/20/17	11/20/17	11/20/17	11/20/17					
<b>Date Received:</b>	11/20/17	11/20/17	11/20/17	11/20/17					
					<b>Units</b>	<b>Date of Analysis</b>	<b>Method</b>	<b>Analyst</b>	
Field pH	<b>6.3</b>	<b>6.1</b>	<b>5.8</b>	<b>5.9</b>	SU	11/20/17	SM4500H	JG	
Field Conductivity	<b>550</b>	<b>410</b>	<b>650</b>	<b>370</b>	uS/cm	11/20/17	SM2510B	JG	

<b>Sample ID:</b>	Berry's Brook @ Sagamore	Witch Creek @ Sagamore							
<b>Lab Sample ID:</b>	176219.05	176219.06							
<b>Matrix:</b>	aqueous	aqueous							
<b>Date Sampled:</b>	11/20/17	11/20/17							
<b>Date Received:</b>	11/20/17	11/20/17							
					<b>Units</b>	<b>Date of Analysis</b>	<b>Method</b>	<b>Analyst</b>	
Field pH	<b>5.8</b>	<b>5.8</b>			SU	11/20/17	SM4500H	JG	
Field Conductivity	<b>370</b>	<b>380</b>			uS/cm	11/20/17	SM2510B	JG	



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*professional laboratory and drilling services*

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Sample ID: Method Blank					Modified EPA Method 537				
<b>Client Data</b> Name: Eastern Analytical, Inc.      Matrix: Aqueous Project: 176219 NH					<b>Laboratory Data</b> Lab Sample: B7K0194-BLK1      Column: BEH C18				
Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFBA	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFPeA	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFBS	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFHxA	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFHpA	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFHxS	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFOA	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFOS	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
PFNA	ND	4.00		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	94.5	60 - 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C3-PFPeA	IS	93.5	60 - 150		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C3-PFBS	IS	85.3	60 - 150		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C2-PFHxA	IS	90.3	70 - 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C4-PFHpA	IS	86.5	60 - 150		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
18O2-PFHxS	IS	79.4	60 - 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C2-PFOA	IS	75.0	60 - 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C8-PFOS	IS	80.8	60 - 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1
13C5-PFNA	IS	78.5	50 - 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 17:37	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit  
Results reported to RL.

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

Sample ID: OPR					Modified EPA Method 537					
<b>Client Data</b> Name: Eastern Analytical, Inc. Project: 176219 NH					<b>Laboratory Data</b> Lab Sample: B7K0194-BS1      Column: BEH C18					
Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	86.9	80.0	109	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFPeA	93.3	80.0	117	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFBS	85.5	80.0	107	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFHxA	89.2	80.0	112	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFHpA	75.9	80.0	94.9	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFHxS	96.8	80.0	121	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFOA	75.6	80.0	94.5	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFOS	83.7	80.0	105	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
PFNA	84.0	80.0	105	70-130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
Labeled Standards	Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS		94.6	60- 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C3-PFPeA	IS		83.3	60- 150		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C3-PFBS	IS		89.4	60- 150		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C2-PFHxA	IS		89.0	70- 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C4-PFHpA	IS		82.5	60- 150		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
18O2-PFHxS	IS		87.2	60- 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C2-PFOA	IS		87.1	60- 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C8-PFOS	IS		75.4	60- 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1
13C5-PFNA	IS		72.6	50- 130		B7K0194	30-Nov-17	0.125 L	05-Dec-17 16:47	1

Sample ID: Cedar Swamp Run @ West					Modified EPA Method 537				
Client Data					Laboratory Data				
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	1701774-01	Column:	BEH C18		
Project:	176219 NH	Date Collected:	20-Nov-17 12:44	Date Received:	22-Nov-17 10:10				
Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFBA	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFPeA	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFBS	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFHxA	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFHpA	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFHxS	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFOA	4.99	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFOS	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
PFNA	ND	4.81		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	94.7	60 - 130		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C3-PFPeA	IS	74.9	60 - 150		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C3-PFBS	IS	90.5	60 - 150		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C2-PFHxA	IS	85.1	70 - 130		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C4-PFHpA	IS	81.9	60 - 150		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
18O2-PFHxS	IS	71.0	60 - 130		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C2-PFOA	IS	92.2	60 - 130		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C8-PFOS	IS	88.3	60 - 130		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1
13C5-PFNA	IS	89.7	50 - 130		B7K0194	30-Nov-17	0.104 L	05-Dec-17 22:26	1

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Sample ID: Unnamed Brook @ B&C					Modified EPA Method 537				
<b>Client Data</b> Name: Eastern Analytical, Inc. Project: 176219 NH					<b>Laboratory Data</b> Lab Sample: 1701774-02 Date Received: 22-Nov-17 10:10 Column: BEH C18				
Matrix: Aqueous Date Collected: 20-Nov-17 13:40									
Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFBA	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFPeA	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFBS	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFHxA	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFHpA	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFHxS	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFOA	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFOS	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
PFNA	ND	4.75		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	99.0	60 - 130		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C3-PFPeA	IS	89.2	60 - 150		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C3-PFBS	IS	94.1	60 - 150		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C2-PFHxA	IS	92.2	70 - 130		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C4-PFHpA	IS	88.0	60 - 150		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
18O2-PFHxS	IS	96.8	60 - 130		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C2-PFOA	IS	92.3	60 - 130		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C8-PFOS	IS	95.0	60 - 130		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1
13C5-PFNA	IS	80.0	50 - 130		B7K0194	30-Nov-17	0.105 L	05-Dec-17 22:39	1

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**Sample ID: Long John Marsh @ Brackett**

**Modified EPA Method 537**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	1701774-03	Column:	BEH C18
Project:	176219 NH	Date Collected:	20-Nov-17 13:20	Date Received:	22-Nov-17 10:10		

Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	4.68	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFPeA	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFBS	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFHxA	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFHpA	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFHxS	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFOA	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFOS	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
PFNA	ND	4.32		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	97.7	60 - 130		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C3-PFPeA	IS	81.6	60 - 150		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C3-PFBS	IS	83.5	60 - 150		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C2-PFHxA	IS	84.1	70 - 130		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C4-PFHpA	IS	82.6	60 - 150		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
18O2-PFHxS	IS	83.0	60 - 130		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C2-PFOA	IS	90.9	60 - 130		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C8-PFOS	IS	81.0	60 - 130		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1
13C5-PFNA	IS	82.4	50 - 130		B7K0194	30-Nov-17	0.116 L	05-Dec-17 22:51	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit  
Results reported to RL.

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

Sample ID: Berry's Brook @ Lang					Modified EPA Method 537				
Client Data					Laboratory Data				
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	1701774-04	Column:	BEH C18		
Project:	176219 NH	Date Collected:	20-Nov-17 15:01	Date Received:	22-Nov-17 10:10				
Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFBA	4.75	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFPeA	ND	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFBS	ND	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFHxA	4.85	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFHpA	7.64	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFHxS	ND	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFOA	12.5	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFOS	ND	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
PFNA	ND	4.66		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	98.4	60 - 130		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C3-PFPeA	IS	75.5	60 - 150		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C3-PFBS	IS	93.3	60 - 150		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C2-PFHxA	IS	88.7	70 - 130		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C4-PFHpA	IS	83.2	60 - 150		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
18O2-PFHxS	IS	79.7	60 - 130		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C2-PFOA	IS	101	60 - 130		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C8-PFOS	IS	85.7	60 - 130		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1
13C5-PFNA	IS	85.4	50 - 130		B7K0194	30-Nov-17	0.107 L	05-Dec-17 23:41	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit  
Results reported to RL.

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

**Sample ID: Berry's Brook @ Sagamore**

**Modified EPA Method 537**

Client Data				Laboratory Data			
Name:	Eastern Analytical, Inc.	Matrix:	Aqueous	Lab Sample:	1701774-05	Column:	BEH C18
Project:	176219 NH	Date Collected:	20-Nov-17 14:02	Date Received:	22-Nov-17 10:10		

Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	5.18	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFPeA	4.74	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFBS	ND	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFHxA	4.73	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFHpA	5.72	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFHxS	ND	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFOA	10.2	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFOS	ND	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
PFNA	ND	4.52		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	94.2	60 - 130		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C3-PFPeA	IS	74.7	60 - 150		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C3-PFBS	IS	80.3	60 - 150		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C2-PFHxA	IS	76.4	70 - 130		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C4-PFHpA	IS	77.4	60 - 150		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
18O2-PFHxS	IS	89.2	60 - 130		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C2-PFOA	IS	84.8	60 - 130		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C8-PFOS	IS	70.7	60 - 130		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1
13C5-PFNA	IS	77.6	50 - 130		B7K0194	30-Nov-17	0.111 L	05-Dec-17 23:54	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit  
Results reported to RL.

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

Sample ID: Witch Creek @ Sagamore					Modified EPA Method 537				
<b>Client Data</b> Name: Eastern Analytical, Inc. Project: 176219 NH					<b>Laboratory Data</b> Lab Sample: 1701774-06 Date Received: 22-Nov-17 10:10 Column: BEH C18				
Matrix: Aqueous Date Collected: 20-Nov-17 14:29									
Analyte	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
PFBA	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFPeA	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFBS	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFHxA	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFHpA	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFHxS	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFOA	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFOS	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
PFNA	ND	5.31		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	98.2	60 - 130		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C3-PFPeA	IS	76.1	60 - 150		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C3-PFBS	IS	66.3	60 - 150		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C2-PFHxA	IS	86.8	70 - 130		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C4-PFHpA	IS	82.2	60 - 150		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
18O2-PFHxS	IS	77.8	60 - 130		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C2-PFOA	IS	90.2	60 - 130		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C8-PFOS	IS	87.2	60 - 130		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1
13C5-PFNA	IS	76.2	50 - 130		B7K0194	30-Nov-17	0.0941 L	06-Dec-17 00:06	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit  
Results reported to RL.

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



Sample ID: Field Blank					Modified EPA Method 537					
Client Data					Laboratory Data					
Name:	Eastern Analytical, Inc.		Matrix:	Aqueous	Lab Sample:	1701774-07		Column:	BEH C18	
Project:	176219 NH		Date Collected:	20-Nov-17 15:15	Date Received:	22-Nov-17 10:10				
Analyte	Conc. (ng/L)			RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFPeA	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFBS	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFHxA	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFHpA	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFHxS	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFOA	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFOS	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
PFNA	ND			4.63		B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	103	60 - 130			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C3-PFPeA	IS	83.3	60 - 150			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C3-PFBS	IS	85.2	60 - 150			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C2-PFHxA	IS	94.0	70 - 130			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C4-PFHpA	IS	84.0	60 - 150			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
18O2-PFHxS	IS	94.8	60 - 130			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C2-PFOA	IS	82.2	60 - 130			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C8-PFOS	IS	103	60 - 130			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1
13C5-PFNA	IS	81.4	50 - 130			B7K0194	30-Nov-17	0.108 L	06-Dec-17 00:19	1

RL - Reporting limit

LCL-UCL- Lower control limit - upper control limit  
Results reported to RL.

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

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