



**Off-Base Drinking Water Sample Results,  
Electronic Data Deliverable, Data Validation Report,  
and the Sample Location Figure, SDG 320-43361-1**

*Naval Air Warfare Center Warminster  
Warminster, Pennsylvania*

August 2019

"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","12","ng/L","",0.83,"DL","",,"TRG","",,"4.4","LOQ","YES",-99,"",286.9,"10.00","1.7",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","24","ng/L","M",2.4,"DL","",,"TRG","",,"6.1","LOQ","YES",-99,"",286.9,"10.00","5.2",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.7","ng/L","",0.56,"DL","",,"TRG","",,"4.4","LOQ","YES",-99,"",286.9,"10.00","1.7",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","19","ng/L","",0.70,"DL","",,"TRG","",,"4.4","LOQ","YES",-99,"",286.9,"10.00","1.7",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.5","ng/L","",1.1,"DL","",,"TRG","",,"4.4","LOQ","YES",-99,"",286.9,"10.00","2.6",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","1.4","ng/L","J",0.41,"DL","",,"TRG","",,"4.4","LOQ","YES",-99,"",286.9,"10.00","0.87",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","STL00993","13C2  
PFHxA","34","ng/L","",-99,"DL","",,"SURR","99","",-99,"LOQ","YES",34.9,"",286.9,"10.00","0",""  
"NAWC-091918-RW-316","537","RES","320-43361-1","TALSAC","STL00996","13C2  
PFDA","35","ng/L","",-99,"DL","",,"SURR","101","",-99,"LOQ","YES",34.9,"",286.9,"10.00","0",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","1.7","ng/L","U",0.82,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",289.2,"10.00","1.7",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","5.2","ng/L","U",2.3,"DL","",,"TRG","",,"6.1","LOQ","YES",-99,"",289.2,"10.00","5.2",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","1.7","ng/L","U",0.55,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",289.2,"10.00","1.7",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.7","ng/L","U",0.69,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",289.2,"10.00","1.7",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.6","ng/L","U",1.1,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",289.2,"10.00","2.6",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","0.86","ng/L","U",0.41,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",289.2,"10.00","0.86",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","STL00993","13C2  
PFHxA","31","ng/L","",-99,"DL","",,"SURR","89","",-99,"LOQ","YES",34.6,"",289.2,"10.00","0",""  
"NAWC-091918-FRB-316","537","RES","320-43361-2","TALSAC","STL00996","13C2  
PFDA","34","ng/L","",-99,"DL","",,"SURR","98","",-99,"LOQ","YES",34.6,"",289.2,"10.00","0",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","12","ng/L","",0.82,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",288.2,"10.00","1.7",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","22","ng/L","M",2.3,"DL","",,"TRG","",,"6.1","LOQ","YES",-99,"",288.2,"10.00","5.2",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","7.9","ng/L","",0.56,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",288.2,"10.00","1.7",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","18","ng/L","",0.69,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",288.2,"10.00","1.7",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.1","ng/L","M",1.1,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",288.2,"10.00","2.6",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","1.4","ng/L","J",0.41,"DL","",,"TRG","",,"4.3","LOQ","YES",-99,"",288.2,"10.00","0.87",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","STL00993","13C2  
PFHxA","32","ng/L","",-99,"DL","",,"SURR","91","",-99,"LOQ","YES",34.7,"",288.2,"10.00","0",""  
"WGNA-091918-DUP-47","537","RES","320-43361-3","TALSAC","STL00996","13C2  
PFDA","36","ng/L","",-99,"DL","",,"SURR","105","",-99,"LOQ","YES",34.7,"",288.2,"10.00","0",""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","3.32","ng/L","J",0.95,"DL","",,"SPK","89","",5.0,"LOQ","YES",3.71,"",250,"10.00","2.0",""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","4.28","ng/L","J",2.7,"DL","",,"SPK","107","",7.0,"LOQ","YES",4.00,"",250,"10.00","6.0",""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS),"3.27","ng/L","J","0.64","DL",,"","SPK","90",,"","5.0","LOQ","YES","3.64",,"","250","10.00","2.0",,""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"3.19","ng/L","J","0.80","DL",,"","SPK","90",,"","5.0","LOQ","YES","3.54",,"","250","10.00","2.0",,""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"4.08","ng/L","J","1.3","DL",,"","SPK","102",,"","5.0","LOQ","YES","4.00",,"","250","10.00","3.0",,""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"3.69","ng/L","J","0.47","DL",,"","SPK","92",,"","5.0","LOQ","YES","4.00",,"","250","10.00","1.0",,""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","STL00993","13C2  
PFHxA","40.3","ng/L",,"","-99","DL",,"","SURR","101",,"","-99","LOQ","YES","40.0",,"","250","10.00","0",,""  
"LLCS 320-249159/2-A","537","RES","LLCS 320-249159/2-A","TALSAC","STL00996","13C2  
PFDA","42.8","ng/L",,"","-99","DL",,"","SURR","107",,"","-99","LOQ","YES","40.0",,"","250","10.00","0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic  
acid (PFOS),"3.81","ng/L","J","0.95","DL",,"","SPK","103","14","5.0","LOQ","YES","3.71","LLCS 320-249159/2-  
A","250","10.00","2.0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"3.94","ng/L","J","2.7","DL",,"","SPK","98","8","7.0","LOQ","YES","4.00","LLCS 320-249159/2-  
A","250","10.00","6.0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic  
acid (PFHxS),"3.07","ng/L","J","0.64","DL",,"","SPK","84","6","5.0","LOQ","YES","3.64","LLCS 320-249159/2-  
A","250","10.00","2.0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic  
acid (PFBS),"2.97","ng/L","J","0.80","DL",,"","SPK","84","7","5.0","LOQ","YES","3.54","LLCS 320-249159/2-  
A","250","10.00","2.0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"3.85","ng/L","J","1.3","DL",,"","SPK","96","6","5.0","LOQ","YES","4.00","LLCS 320-249159/2-  
A","250","10.00","3.0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"3.68","ng/L","J","0.47","DL",,"","SPK","92","0.3","5.0","LOQ","YES","4.00","LLCS 320-249159/2-  
A","250","10.00","1.0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","STL00993","13C2  
PFHxA","37.3","ng/L",,"","-99","DL",,"","SURR","93","8","-99","LOQ","YES","40.0","LLCS 320-249159/2-  
A","250","10.00","0",,""  
"LLCSD 320-249159/3-A","537","RES","LLCSD 320-249159/3-A","TALSAC","STL00996","13C2  
PFDA","38.9","ng/L",,"","-99","DL",,"","SURR","97","9","-99","LOQ","YES","40.0","LLCS 320-249159/2-  
A","250","10.00","0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"2.0","ng/L","U","0.95","DL",,"","TRG",,"","5.0","LOQ","YES","-99",,"","250","10.00","2.0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"6.0","ng/L","U","2.7","DL",,"","TRG",,"","7.0","LOQ","YES","-99",,"","250","10.00","6.0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"2.0","ng/L","U","0.64","DL",,"","TRG",,"","5.0","LOQ","YES","-99",,"","250","10.00","2.0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"2.0","ng/L","U","0.80","DL",,"","TRG",,"","5.0","LOQ","YES","-99",,"","250","10.00","2.0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"3.0","ng/L","U","1.3","DL",,"","TRG",,"","5.0","LOQ","YES","-99",,"","250","10.00","3.0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"1.0","ng/L","U","0.47","DL",,"","TRG",,"","5.0","LOQ","YES","-99",,"","250","10.00","1.0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","STL00993","13C2  
PFHxA","37.9","ng/L",,"","-99","DL",,"","SURR","95",,"","-99","LOQ","YES","40.0",,"","250","10.00","0",,""  
"MB 320-249159/1-A","537","RES","MB 320-249159/1-A","TALSAC","STL00996","13C2  
PFDA","42.0","ng/L",,"","-99","DL",,"","SURR","105",,"","-99","LOQ","YES","40.0",,"","250","10.00","0",,""  
"Unknown","Unknown","NAWC-091918-RW-316","09/19/2018 09:10","AQ","320-43361-  
1","NM",,"","5.00","537","METHOD","RES","10/02/2018 14:58","10/04/2018  
00:05","TALSAC","COA","WET","NA","1","NA","NA",,"","100","320-249159","320-249159","NA","320-

249690","320-43361-1","09/20/2018 09:30","10/11/2018 16:28",""  
"Unknown","Unknown","NAWC-091918-FRB-316","09/19/2018 09:05","AQ","320-43361-  
2","FB","","5.00","537","METHOD","RES","10/02/2018 14:58","10/04/2018  
00:12","TALSAC","COA","WET","NA","1","NA","NA","","100","320-249159","320-249159","NA","320-  
249690","320-43361-1","09/20/2018 09:30","10/11/2018 16:28",""  
"Unknown","Unknown","WGNA-091918-DUP-47","09/19/2018 07:00","AQ","320-43361-  
3","FD","","5.00","537","METHOD","RES","10/02/2018 14:58","10/04/2018  
00:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-249159","320-249159","NA","320-  
249690","320-43361-1","09/20/2018 09:30","10/11/2018 16:28",""  
"Unknown","Unknown","LLCS 320-249159/2-A","","AQ","LLCS 320-249159/2-  
A","LCS","","-99","537","METHOD","RES","10/02/2018 14:58","10/03/2018  
23:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-249159","320-249159","NA","320-  
249690","320-43361-1","10/02/2018 14:58","10/11/2018 16:28",""  
"Unknown","Unknown","LLCSD 320-249159/3-A","","AQ","LLCSD 320-249159/3-  
A","LCS","","-99","537","METHOD","RES","10/02/2018 14:58","10/03/2018  
23:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-249159","320-249159","NA","320-  
249690","320-43361-1","10/02/2018 14:58","10/11/2018 16:28",""  
"Unknown","Unknown","MB 320-249159/1-A","","AQ","MB 320-249159/1-  
A","MB","","-99","537","METHOD","RES","10/02/2018 14:58","10/05/2018  
15:43","TALSAC","COA","WET","NA","1","NA","NA","","100","320-249159","320-249159","NA","320-  
250053","320-43361-1","10/02/2018 14:58","10/11/2018 16:28",""



TO: A. FREBOWITZ  
SDG: 320-43361-1

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Non-detected results were reported to the Limit of Detection (LOD).

A Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample was not included in this SDG.

The buffering agent Trizma was added to all drinking water samples.

### **Executive Summary**

**Laboratory Performance:** None.

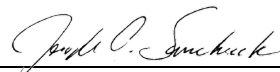
**Other Factors Affecting Data Quality:** Results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



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Tetra Tech, Inc.  
Michelle L. Woeber  
Chemist/Data Validator



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Tetra Tech, Inc.  
Joseph A. Samchuck  
Data Validation Manager

#### Attachments:

Appendix A – Qualified Analytical Results  
Appendix B – Results as Reported by the Laboratory  
Appendix C – Support Documentation

### Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

<b>U</b>	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
<b>J</b>	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
<b>J+</b>	The result is an estimated quantity, but the result may be biased high.
<b>J-</b>	The result is an estimated quantity, but the result may be biased low.
<b>UJ</b>	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
<b>NJ</b>	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
<b>R</b>	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
<b>UR</b>	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
<b>X</b>	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

**Appendix A**

Qualified Analytical Results



**Qualifier Codes:**

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's  $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ( $< 2 \times$  IDL for inorganics and  $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors  $>40\%$  for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient  $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids  $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

<b>PROJ_NO: 08005-WE04</b> <b>SDG: 320-43361-1</b> <b>FRACTION: PFAS</b> <b>MEDIA: WATER</b>	NSAMPLE	NAWC-091918-FRB-316			NAWC-091918-RW-316			WGNA-091918-DUP-47		
	LAB_ID	320-43361-2			320-43361-1			320-43361-3		
	SAMP_DATE	9/19/2018			9/19/2018			9/19/2018		
	QC_TYPE	FB			NM			FD		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							NAWC-091918-RW-316		
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	5.2	U		24			22			
PERFLUOROBUTANESULFONIC ACID (PFBS)	1.7	U		19			18			
PERFLUOROHEPTANOIC ACID (PFHPA)	2.6	U		7.5			7.1			
PERFLUOROHEXANESULFONIC ACID (PFHXS)	1.7	U		7.7			7.9			
PERFLUORONONANOIC ACID (PFNA)	0.86	U		1.4	J	P	1.4	J	P	
PERFLUOROOCTANESULFONIC ACID (PFOS)	1.7	U		12			12			

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-091918-RW-316 Lab Sample ID: 320-43361-1  
 Matrix: Water Lab File ID: 2018.10.03\_537A\_035.d  
 Analysis Method: 537 Date Collected: 09/19/2018 09:10  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 286.9(mL) Date Analyzed: 10/04/2018 00:05  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 249690 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12		4.4	1.7	0.83
335-67-1	Perfluorooctanoic acid (PFOA)	24	M	6.1	5.2	2.4
375-95-1	Perfluorononanoic acid (PFNA)	1.4	J	4.4	0.87	0.41
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.7		4.4	1.7	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5		4.4	2.6	1.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	19		4.4	1.7	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	101		70-130

*Michelle Fr. Waaber*  
10/30/2018

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-091918-FRB-316 Lab Sample ID: 320-43361-2  
 Matrix: Water Lab File ID: 2018.10.03\_537A\_036.d  
 Analysis Method: 537 Date Collected: 09/19/2018 09:05  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 289.2 (mL) Date Analyzed: 10/04/2018 00:12  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 249690 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.7	U	4.3	1.7	0.82
335-67-1	Perfluorooctanoic acid (PFOA)	5.2	U	6.1	5.2	2.3
375-95-1	Perfluorononanoic acid (PFNA)	0.86	U	4.3	0.86	0.41
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7	U	4.3	1.7	0.55
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.6	U	4.3	2.6	1.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.7	U	4.3	1.7	0.69

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	98		70-130

*Michelle J. Weber*  
**10/30/2018**

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-091918-DUP-47 Lab Sample ID: 320-43361-3  
 Matrix: Water Lab File ID: 2018.10.03\_537A\_037.d  
 Analysis Method: 537 Date Collected: 09/19/2018 07:00  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 288.2 (mL) Date Analyzed: 10/04/2018 00:19  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 249690 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12		4.3	1.7	0.82
335-67-1	Perfluorooctanoic acid (PFOA)	22	M	6.1	5.2	2.3
375-95-1	Perfluorononanoic acid (PFNA)	1.4	J	4.3	0.87	0.41
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9		4.3	1.7	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.1	M	4.3	2.6	1.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	18		4.3	1.7	0.69

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	105		70-130

*Michelle J. Weber*  
10/30/2018

**Appendix B**

Results as Reported by the Laboratory

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-091918-RW-316 Lab Sample ID: 320-43361-1  
 Matrix: Water Lab File ID: 2018.10.03\_537A\_035.d  
 Analysis Method: 537 Date Collected: 09/19/2018 09:10  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 286.9(mL) Date Analyzed: 10/04/2018 00:05  
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 249690 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12		4.4	1.7	0.83
335-67-1	Perfluorooctanoic acid (PFOA)	24	M	6.1	5.2	2.4
375-95-1	Perfluorononanoic acid (PFNA)	1.4	J	4.4	0.87	0.41
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.7		4.4	1.7	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.5		4.4	2.6	1.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	19		4.4	1.7	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	101		70-130

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: NAWC-091918-FRB-316 Lab Sample ID: 320-43361-2  
 Matrix: Water Lab File ID: 2018.10.03\_537A\_036.d  
 Analysis Method: 537 Date Collected: 09/19/2018 09:05  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 289.2 (mL) Date Analyzed: 10/04/2018 00:12  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 249690 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.7	U	4.3	1.7	0.82
335-67-1	Perfluorooctanoic acid (PFOA)	5.2	U	6.1	5.2	2.3
375-95-1	Perfluorononanoic acid (PFNA)	0.86	U	4.3	0.86	0.41
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7	U	4.3	1.7	0.55
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.6	U	4.3	2.6	1.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.7	U	4.3	1.7	0.69

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	98		70-130



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-091918-DUP-47 Lab Sample ID: 320-43361-3  
 Matrix: Water Lab File ID: 2018.10.03\_537A\_037.d  
 Analysis Method: 537 Date Collected: 09/19/2018 07:00  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 288.2 (mL) Date Analyzed: 10/04/2018 00:19  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 249690 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	12		4.3	1.7	0.82
335-67-1	Perfluorooctanoic acid (PFOA)	22	M	6.1	5.2	2.3
375-95-1	Perfluorononanoic acid (PFNA)	1.4	J	4.3	0.87	0.41
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.9		4.3	1.7	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	7.1	M	4.3	2.6	1.1
375-73-5	Perfluorobutanesulfonic acid (PFBS)	18		4.3	1.7	0.69

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	105		70-130

**Appendix C**

Support Documentation

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 30%
PENTADEC AFLUORO OCTANOIC ACID	24	22	6.1	8.70	FALSE
PERFLUOROBUTANE SULFONATE	19	18	4.4	5.41	FALSE
PERFLUOROHEPTANOIC ACID	7.5	7.1	4.4	5.48	FALSE
PERFLUOROHEXANESULFONIC ACID	7.7	7.9	4.4	2.56	FALSE
PERFLUORONONANOIC ACID	1.4	1.4	4.4	0.00	FALSE
PERFLUORO OCTANE SULFONIC ACID	12	12	4.4	0.00	FALSE

ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2xRL
TRUE	TRUE	FALSE
TRUE	TRUE	FALSE
FALSE	FALSE	FALSE
FALSE	FALSE	FALSE
FALSE	FALSE	FALSE
TRUE	TRUE	FALSE

**SDG 320-43361-1**

**NAWC-091918-RW-316/WGNA-091918-DUP-47**

NASJRB WILLOW GROVE  
SDG 320-43361-1

**Initial Calibration**  
Instrument A8\_N

10/3/2018

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF/RSD
0.025	16978	649738	1	1.04522	1.0442
0.0501	31770	614675	1	1.03165	1.0327
0.25	146145	610913	1	0.95690	0.9559
1	603584	560805	1	1.07628	1.0752
2.5	1647858	583307	1	1.13001	1.1289
5.01	3200746	601255	1	1.06256	1.0636
10	6001345	558562	1	1.07443	1.0734
Average				1.05386	1.0534
Standard Deviation				0.0529	
RSD				0.0502	
%RSD				5.01660	5

**Continuing Calibration**

10/03/2018 @ 22:58

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
2.5	1471112	521026	1	1.1294	7.2143753	1.128	7.1

**Sample Identification**

NAWC-091918-RW-316

Compound

PFOA

Compound Area	459155	Average RRF	1.0534
Internal Standard Amount (ng)	1	Sample Volume(ml)	286.9
Dilution Factor	1	Volume Extract (ml)	10
Internal Standard Area	621555		
Concentration	24.4431 ng/L		
Reported Result	24 ng/L		

NASJRB WILLOW GROVE  
SDG 320-43361-1

**Surrogate 13C2-PFHxA**

Compound Area	612687		
Internal Standard Amount (ng)	1		
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	621555		
Average RRF	0.9971		
Concentration	0.9886		
Surrogate %R	98.86	Spike amount	1
Reported Surrogate %R	99		

**LCS %R**

320-249159/2-A			
PFOS	Spike amount	LCS concentration	
Calculated LCS %R	89.49	3.71	3.32
Reported LCS %R	89		

**LCSD %R**

320-249159/3-A			
PFOS	Spike amount	LCS concentration	
Calculated LCSD %R	102.70	3.71	3.81
Reported LCSD %R	103		

RPD (%)	13.7447
Reported RPD (%)	14

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_003.d  
 Lims ID: IC L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 03-Oct-2018 18:49:02 ALS Bottle#: 1 Worklist Smp#: 2  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L1\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:04 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 13:11:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.577	1.575	0.002	1.000	15213	0.0235		3.4	
298.90 > 99.00	1.577	1.575	0.002	1.000	11553		1.32(0.00-0.00)	3.7	M
13 Perfluorohexanoic acid									
313.00 > 269.00	1.851	1.840	0.011	0.706	13074	0.0232		4.4	M
313.00 > 119.00	1.851	1.840	0.011	0.706	1792		7.30(0.00-0.00)	4.3	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	661543	1.02		3930	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.237	2.235	0.002	1.000	15463	0.0226		3.0	M
363.00 > 169.00	2.237	2.235	0.002	1.000	8299		1.86(0.00-0.00)	11.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.253	2.253	0.0	1.000	17038	0.0213		24.1	M
399.00 > 99.00	2.253	2.253	0.0	1.000	6750		2.52(0.00-0.00)	8.2	
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		649738	1.00		5382	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	16978	0.0248		3.2	
413.00 > 169.00	2.624	2.624	0.0	1.000	10464		1.62(0.00-0.00)	20.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	14503	0.0251		10.7	M
499.00 > 99.00	3.026	3.010	0.016	1.005	2665		5.44(0.00-0.00)	4.0	M
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		485337	0.9560		1206	
9 Perfluorononanoic acid									
463.00 > 419.00	3.026	3.012	0.014	1.000	16543	0.0300		2.5	
463.00 > 169.00	3.010	3.012	-0.002	0.995	3893		4.25(0.00-0.00)	36.1	

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_004.d  
 Lims ID: IC L2  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 03-Oct-2018 18:56:22 ALS Bottle#: 2 Worklist Smp#: 3  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L2\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:07 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 13:13:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.561	1.575	-0.014	1.000	25772	0.0433		5.4	
298.90 > 99.00	1.577	1.575	0.002	1.010	15649		1.65(0.00-0.00)	4.9	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.835	1.840	-0.005	0.699	25933	0.0486		8.0	M
313.00 > 119.00	1.835	1.840	-0.005	0.699	1728		15.01(0.00-0.00)	4.6	M
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	581884	0.9494		3524	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.221	2.235	-0.014	1.000	33543	0.0517		6.1	
363.00 > 169.00	2.237	2.235	0.002	1.007	11711		2.86(0.00-0.00)	16.7	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.253	2.253	0.0	1.000	30909	0.0421		41.1	M
399.00 > 99.00	2.253	2.253	0.0	1.000	8728		3.54(0.00-0.00)	9.1	M
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		614675	1.00		5932	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	31770	0.0491		6.3	M
413.00 > 169.00	2.624	2.624	0.0	1.000	14939		2.13(0.00-0.00)	23.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	22377	0.0422		19.2	M
499.00 > 99.00	3.010	3.010	0.0	1.000	5739		3.90(0.00-0.00)	10.5	M
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		445394	0.9560		1256	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.012	-0.002	1.000	25482	0.0488		4.5	
463.00 > 169.00	3.010	3.012	-0.002	1.000	5287		4.82(0.00-0.00)	42.0	

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_005.d  
 Lims ID: IC L3  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 03-Oct-2018 19:03:42 ALS Bottle#: 3 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L3\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10

Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:02 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 15:08:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.577	1.575	0.002	1.000	118477	0.2071		25.1	
298.90 > 99.00	1.577	1.575	0.002	1.000	78906		1.50(0.00-0.00)	27.5	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.835	1.840	-0.005	0.699	119110	0.2247		36.4	
313.00 > 119.00	1.835	1.840	-0.005	0.699	11338		10.51(0.00-0.00)	26.2	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	540589	0.8874		3655	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.237	2.235	0.002	1.000	150938	0.2342		28.9	
363.00 > 169.00	2.237	2.235	0.002	1.000	62646		2.41(0.00-0.00)	85.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.254	2.253	0.001	1.000	156174	0.2210		209	
399.00 > 99.00	2.254	2.253	0.001	1.000	52403		2.98(0.00-0.00)	63.3	
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		610913	1.00		5482	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	146145	0.2271		29.0	
413.00 > 169.00	2.624	2.624	0.0	1.000	83762		1.74(0.00-0.00)	159	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	102764	0.2013		71.8	
499.00 > 99.00	3.010	3.010	0.0	1.000	26310		3.91(0.00-0.00)	65.2	
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		428429	0.9560		1290	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.012	-0.002	1.000	115178	0.2220		19.8	
463.00 > 169.00	3.010	3.012	-0.002	1.000	27952		4.12(0.00-0.00)	225	



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_006.d  
 Lims ID: IC L4  
 Client ID:  
 Sample Type: ICISAV Calib Level: 4  
 Inject. Date: 03-Oct-2018 19:11:01 ALS Bottle#: 4 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L4\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10

Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:09 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 13:14:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.577	1.575	0.002	1.000	469394	0.8064		98.6	
298.90 > 99.00	1.577	1.575	0.002	1.000	345329		1.36(0.00-0.00)	110	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.835	1.840	-0.005	0.699	521860	1.07		170	
313.00 > 119.00	1.835	1.840	-0.005	0.699	55265		9.44(0.00-0.00)	135	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	598064	1.07		3367	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.237	2.235	0.002	1.000	605240	1.02		118	
363.00 > 169.00	2.237	2.235	0.002	1.000	250625		2.41(0.00-0.00)	318	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.253	2.253	0.0	1.000	608141	0.8459		771	
399.00 > 99.00	2.253	2.253	0.0	1.000	203738		2.98(0.00-0.00)	230	
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		560805	1.00		6318	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	603584	1.02		128	
413.00 > 169.00	2.624	2.624	0.0	1.000	329622		1.83(0.00-0.00)	580	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	469681	0.9041		383	M
499.00 > 99.00	3.010	3.010	0.0	1.000	101973		4.61(0.00-0.00)	229	M
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		435868	0.9560		1235	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.012	-0.002	1.000	471778	0.99		85.5	
463.00 > 169.00	3.010	3.012	-0.002	1.000	123359		3.82(0.00-0.00)	1133	

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_007.d  
 Lims ID: IC L5  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 03-Oct-2018 19:18:21 ALS Bottle#: 5 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L5\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10

Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:10 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 13:15:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.577	1.575	0.002	1.000	1279716	2.20		268	
298.90 > 99.00	1.577	1.575	0.002	1.000	860192		1.49(0.00-0.00)	281	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.851	1.840	0.011	0.706	1323149	2.61		425	
313.00 > 119.00	1.851	1.840	0.011	0.706	129110		10.25(0.00-0.00)	292	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	608318	1.05		3867	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.237	2.235	0.002	1.000	1659661	2.70		321	
363.00 > 169.00	2.237	2.235	0.002	1.000	639563		2.59(0.00-0.00)	908	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.253	2.253	0.0	1.000	1807379	2.52		2581	
399.00 > 99.00	2.253	2.253	0.0	1.000	567804		3.18(0.00-0.00)	604	
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		583307	1.00		6486	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	1647858	2.68		330	
413.00 > 169.00	2.624	2.624	0.0	1.000	816395		2.02(0.00-0.00)	1338	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	1251259	2.41		1011	
499.00 > 99.00	3.010	3.010	0.0	1.000	256226		4.88(0.00-0.00)	578	
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		435520	0.9560		1295	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.012	-0.002	1.000	1175996	2.37		219	
463.00 > 169.00	3.010	3.012	-0.002	1.000	325655		3.61(0.00-0.00)	2861	

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_008.d  
 Lims ID: IC L6  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 03-Oct-2018 19:25:41 ALS Bottle#: 6 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L6\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:12 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 13:15:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.577	1.575	0.002	1.000	2671829	4.51		543	
298.90 > 99.00	1.577	1.575	0.002	1.000	1743465		1.53(0.00-0.00)	536	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.835	1.840	-0.005	0.699	2561375	4.91		756	
313.00 > 119.00	1.835	1.840	-0.005	0.699	262564		9.76(0.00-0.00)	611	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	584620	0.9751		4478	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.237	2.235	0.002	1.000	3113029	4.91		597	
363.00 > 169.00	2.237	2.235	0.002	1.000	1248214		2.49(0.00-0.00)	1666	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.253	2.253	0.0	1.000	3488921	4.77		4832	
399.00 > 99.00	2.253	2.253	0.0	1.000	1085781		3.21(0.00-0.00)	1140	
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		601255	1.00		5829	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	3200746	5.05		680	
413.00 > 169.00	2.624	2.624	0.0	1.000	1697169		1.89(0.00-0.00)	2709	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	2458622	4.65		1755	
499.00 > 99.00	3.010	3.010	0.0	1.000	515885		4.77(0.00-0.00)	1235	
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		443875	0.9560		1213	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.012	-0.002	1.000	2387795	4.68		429	
463.00 > 169.00	3.010	3.012	-0.002	1.000	597320		4.00(0.00-0.00)	4420	

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d  
 Lims ID: IC L7  
 Client ID:  
 Sample Type: IC Calib Level: 7  
 Inject. Date: 03-Oct-2018 19:33:01 ALS Bottle#: 7 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L7\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub10

Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 04-Oct-2018 15:08:13 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK008

First Level Reviewer: roycea Date: 04-Oct-2018 13:16:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.577	1.575	0.002	1.000	5213659	9.66		1143	
298.90 > 99.00	1.577	1.575	0.002	1.000	3426039		1.52(0.00-0.00)	1065	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.835	1.840	-0.005	0.699	5339489	11.0		1585	
313.00 > 119.00	1.835	1.840	-0.005	0.699	527440		10.12(0.00-0.00)	1115	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	585653	1.05		3948	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.237	2.235	0.002	1.000	6151326	10.4		1197	
363.00 > 169.00	2.237	2.235	0.002	1.000	2423548		2.54(0.00-0.00)	2953	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.253	2.253	0.0	1.000	6580448	9.88		7203	
399.00 > 99.00	2.253	2.253	0.0	1.000	2174349		3.03(0.00-0.00)	2094	
* 5 13C2-PFOA									
415.00 > 370.00	2.624	2.624	0.0		558562	1.00		5116	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.624	2.624	0.0	1.000	6001345	10.2		1213	
413.00 > 169.00	2.624	2.624	0.0	1.000	3312280		1.81(0.00-0.00)	4746	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	3.010	3.010	0.0	1.000	5042156	10.5		3879	
499.00 > 99.00	3.010	3.010	0.0	1.000	1015718		4.96(0.00-0.00)	2120	
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		403997	0.9560		1043	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.012	-0.002	1.000	5035624	10.6		843	
463.00 > 169.00	3.010	3.012	-0.002	1.000	1201636		4.19(0.00-0.00)	7662	

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65246.b\2018.10.03\_537A\_035.d  
 Lims ID: 320-43361-A-1-A  
 Client ID: **NAWC-091918-RW-316**  
 Sample Type: Client  
 Inject. Date: 04-Oct-2018 00:05:03 ALS Bottle#: 22 Worklist Smp#: 31  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-43361-a-1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65246.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 05-Oct-2018 13:27:00 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 05-Oct-2018 11:05:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.561	1.577	-0.016	1.000	349286	0.5461		71.7	
298.90 > 99.00	1.561	1.577	-0.016	1.000	234474		1.49(0.00-0.00)	73.2	
13 Perfluorohexanoic acid									
313.00 > 269.00	1.835	1.835	0.0	0.704	172741	0.3203		54.1	
313.00 > 119.00	1.835	1.835	0.0	0.704	18010		9.59(0.00-0.00)	39.1	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.851	1.851	0.0	1.000	612687	0.9886		4496	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.221	2.237	-0.016	1.000	140587	0.2144		23.9	
363.00 > 169.00	2.221	2.237	-0.016	1.000	51691		2.72(0.00-0.00)	69.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.254	2.253	0.001	1.000	175191	0.2218		167	
399.00 > 99.00	2.254	2.253	0.001	1.000	53659		3.26(0.00-0.00)	46.9	
* 5 13C2-PFOA									
415.00 > 370.00	2.608	2.624	-0.016		621555	1.00		6943	
6 Perfluorooctanoic acid									
413.00 > 369.00	2.608	2.624	-0.016	1.000	459155	0.7013		74.5	M
413.00 > 169.00	2.608	2.624	-0.016	1.000	291521		1.58(0.00-0.00)	456	M
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.881	3.010	-0.129	1.000	195278	0.3421		98.5	
499.00 > 99.00	3.010	3.010	0.0	1.045	24780		7.88(0.00-0.00)	22.6	
* 7 13C4 PFOS									
503.00 > 80.00	3.010	3.010	0.0		478943	0.9560		962	
9 Perfluorononanoic acid									
463.00 > 419.00	3.010	3.010	0.0	1.000	20887	0.0396		3.3	
463.00 > 169.00	3.010	3.010	0.0	1.000	5362		3.90(0.00-0.00)	29.2	
\$ 10 13C2 PFDA									
515.00 > 470.00	3.364	3.380	-0.016	1.000	424861	1.01		4236	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 12 d3-NMeFOSAA	573.00 > 419.00	3.525	3.541	-0.016	183776	1.00		1224	
\$ 11 d5-NEtFOSAA	589.00 > 419.00	3.702	3.702	0.0	184398	0.9350	1.050	558	

**QC Flag Legend**

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65246.b\2018.10.03\_537A\_035.d

Injection Date: 04-Oct-2018 00:05:03

Instrument ID: A8\_N

Lims ID: 320-43361-A-1-A

Lab Sample ID: 320-43361-1

Client ID: NAWC-091918-RW-316

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

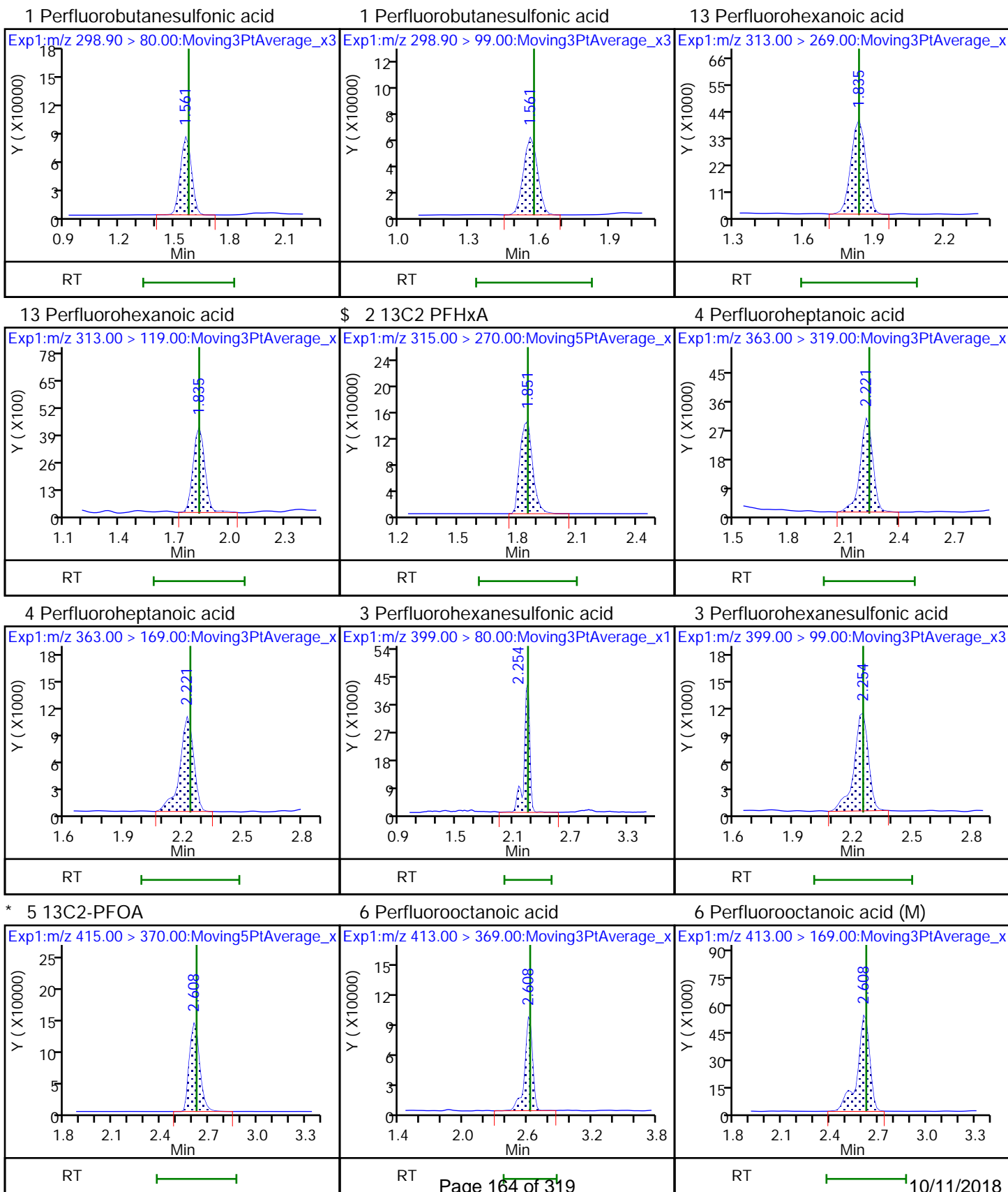
Worklist Smp#: 31

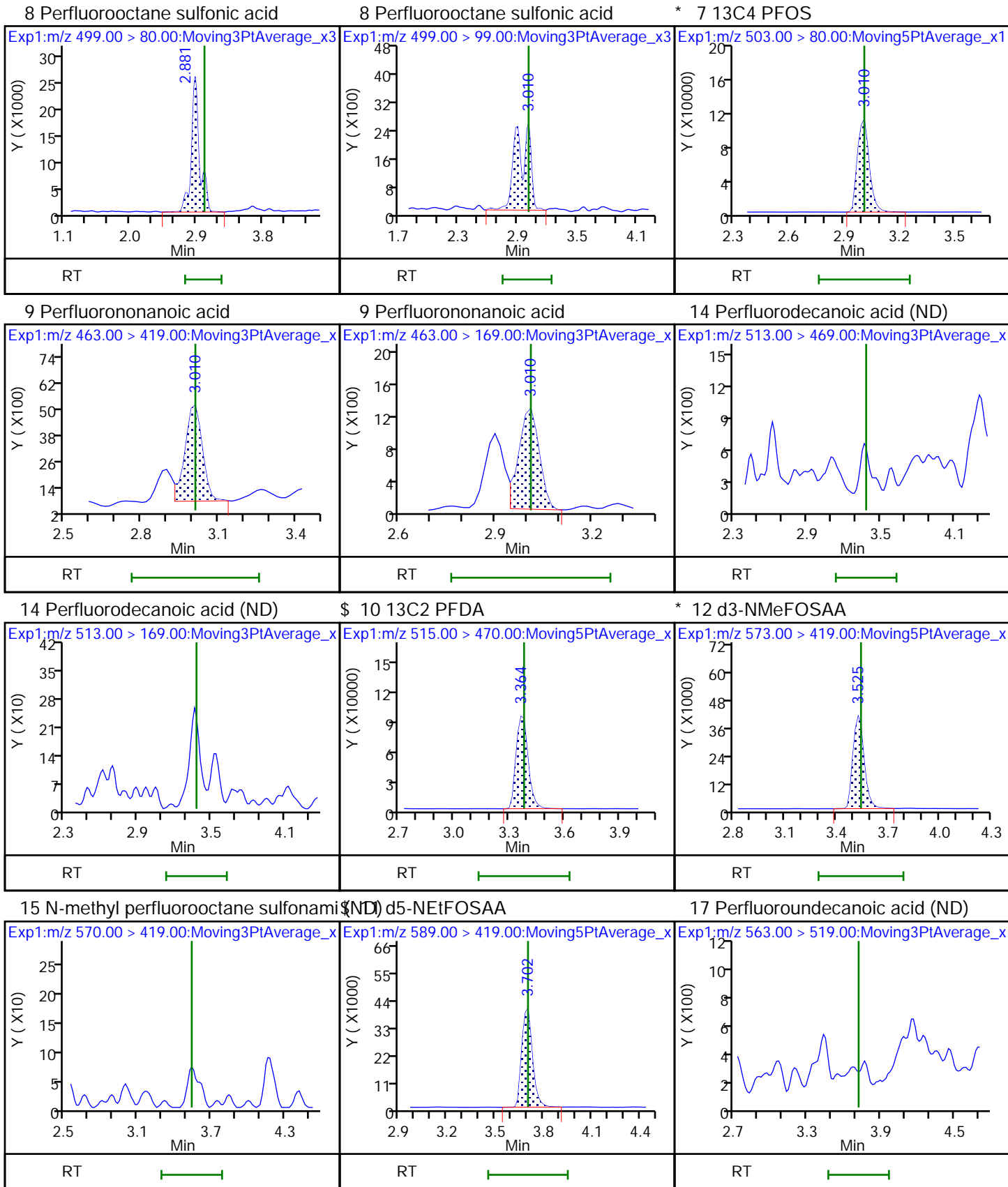
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537\_A8\_N

Limit Group: LC 537 ICAL



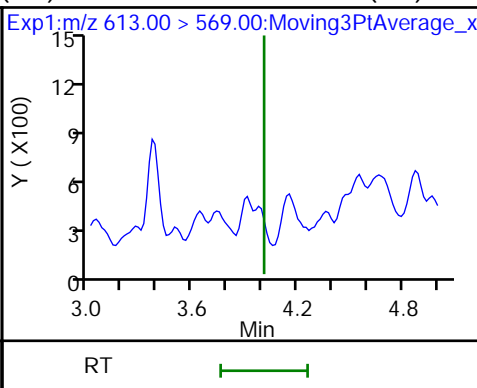
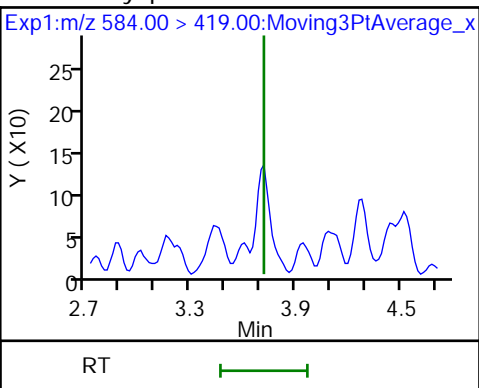
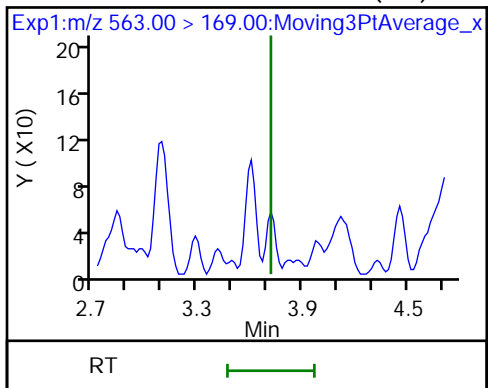




17 Perfluoroundecanoic acid (ND)

16 N-ethyl perfluorooctane sulfonamid (ND)

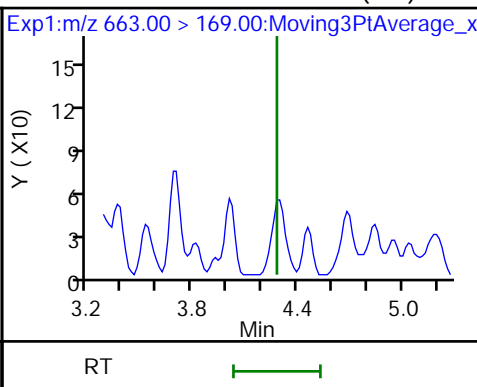
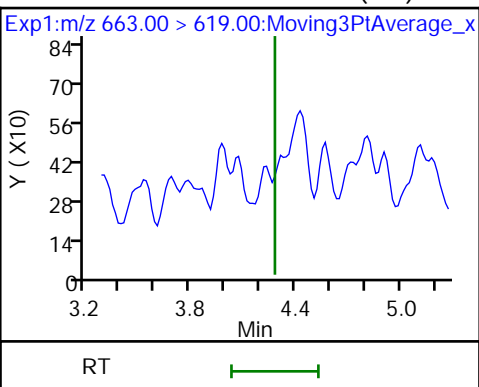
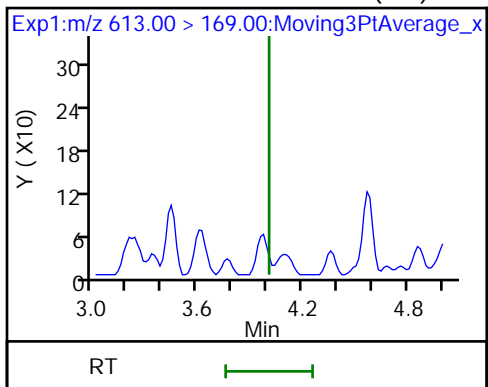
Perfluorododecanoic acid (ND)



18 Perfluorododecanoic acid (ND)

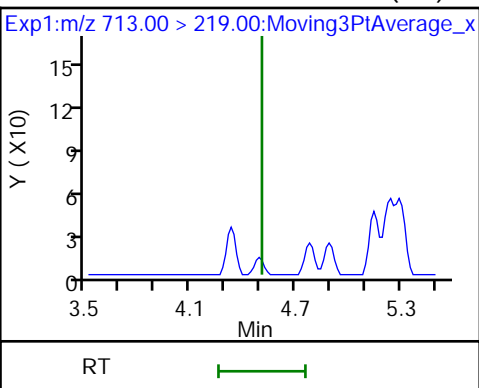
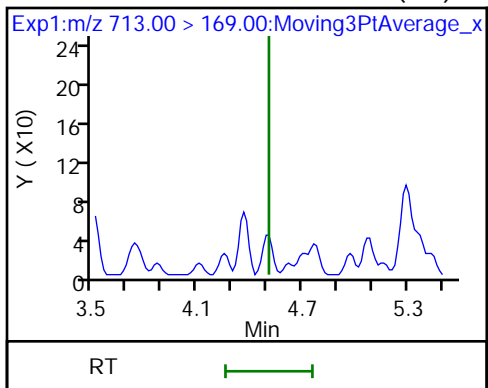
19 Perfluorotridecanoic acid (ND)

19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND)

20 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65246.b\2018.10.03\_537A\_035.d  
 Lims ID: 320-43361-A-1-A  
 Client ID: NAWC-091918-RW-316  
 Sample Type: Client  
 Inject. Date: 04-Oct-2018 00:05:03 ALS Bottle#: 22 Worklist Smp#: 31  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-43361-a-1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65246.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 05-Oct-2018 13:27:00 Calib Date: 03-Oct-2018 19:33:01  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b\2018.10.03\_537ICAL\_009.d

Column 1 : Det: EXP1  
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 05-Oct-2018 11:05:21

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	1.00	0.9886	98.86
\$ 10 13C2 PFDA	1.00	1.01	100.65
\$ 11 d5-NEtFOSAA	1.00	0.9350	93.50

TestAmerica Sacramento

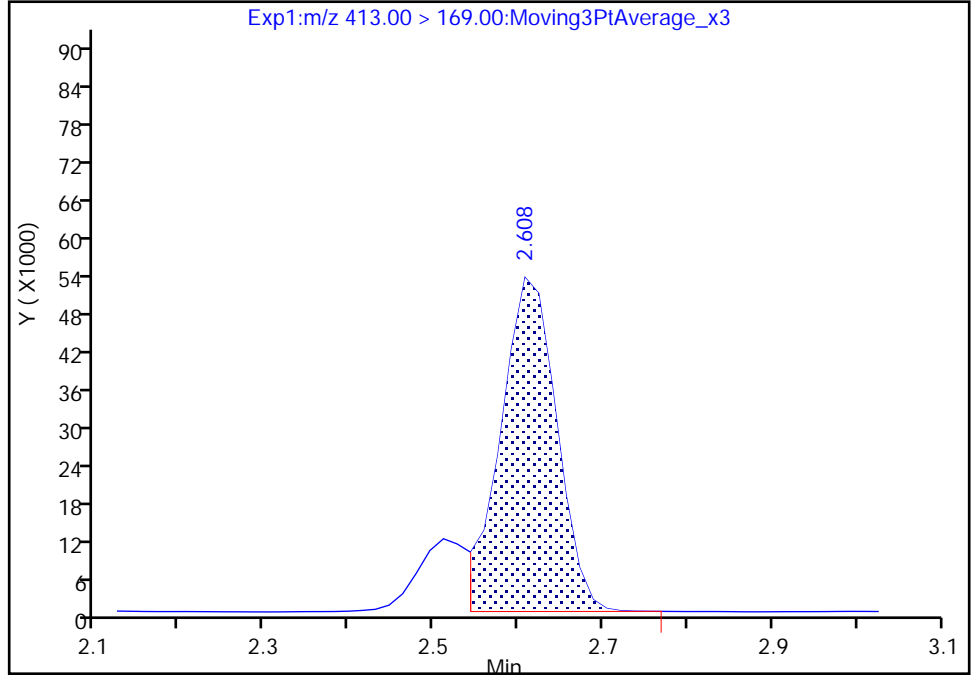
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65246.b\2018.10.03\_537A\_035.d  
Injection Date: 04-Oct-2018 00:05:03 Instrument ID: A8\_N  
Lims ID: 320-43361-A-1-A Lab Sample ID: 320-43361-1  
Client ID: NAWC-091918-RW-316  
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 31  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

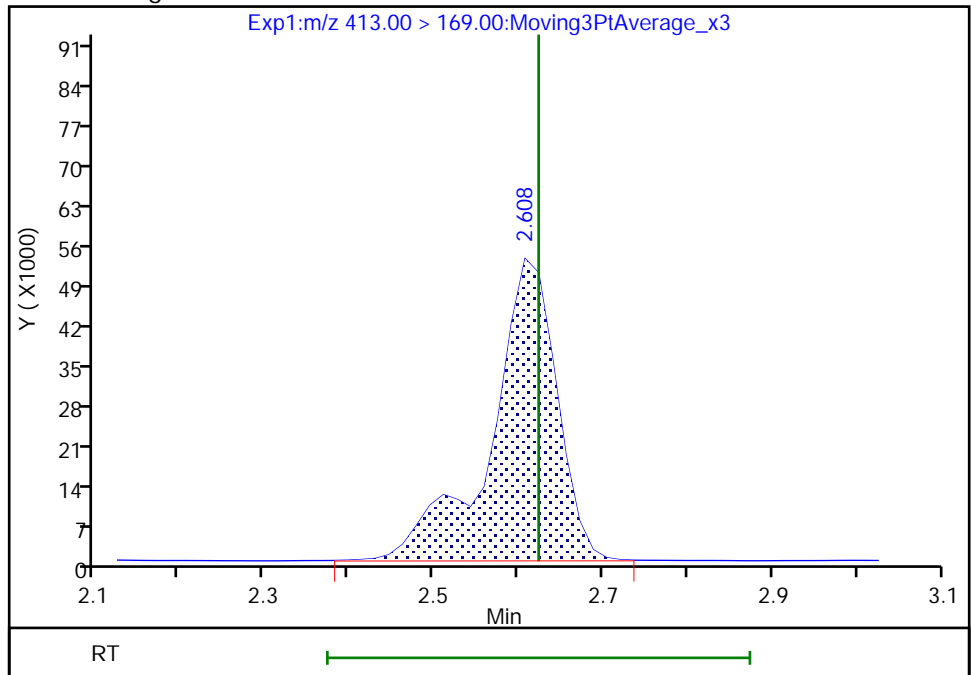
RT: 2.61  
Area: 244065  
Amount: 0.701265  
Amount Units: ng/ml

Processing Integration Results



RT: 2.61  
Area: 291521  
Amount: 0.701265  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 05-Oct-2018 11:05:04  
Audit Action: Manually Integrated

Audit Reason: Isomers  
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**TestAmerica Sacramento**

880 Riverside Parkway  
West Sacramento, CA 95605-1500  
phone 916.373.5600 fax 303.467.7248

**Chain of Custody Record**

**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

<b>Client Contact</b>	<b>Project Manager:</b> Andy Frebowitz	<b>Site Contact:</b> Mary Kay Bond	<b>Date:</b> 9/19/2018	<b>COC No:</b>
TetraTech	<b>Tel/Fax:</b> 610.382.2920	<b>Lab Contact:</b> Dave Alltucker	<b>Carrier:</b> FedEx	1 of 1 COCs
234 Mall Boulevard Suite 260	<b>Analysis Turnaround Time</b>			<b>Sampler:</b> Seth Oshier
King of Prussia, PA 19406	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS			<b>For Lab Use Only:</b>
610-382-2924	TAT if different from Below 21			<b>Walk-in Client:</b>
610-491-9688	<input checked="" type="checkbox"/> 2 weeks			<b>Lab Sampling:</b>
Project Name: WE04	<input type="checkbox"/> 1 week			<b>Job / SDG No.:</b>
Site: WE04	<input type="checkbox"/> 2 days			
P O # 1132358 (through EarthToxics)	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
NAWC-091918-RW-316	9/19/2018	09:10	G	DW	2	N	N	Y	
NAWC-091918-FRB-316	9/19/2018	09:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-091918-DUP-47	9/19/2018	07:00	G	DW	2	N	N	Y	Duplicate



320-43361 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma **6**

<b>Possible Hazard Identification:</b> Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.	<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months

Fed Ex Tracking: 7732 7206 9860

Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: 5.0 Corr'd: 5.0	Therm ID No.: HIC-5
Relinquished by: <i>[Signature]</i>	Company: Tetra Tech	Date/Time: 9/19/2018 16:00	Received by: <i>[Signature]</i>
Relinquished by:	Company:	Date/Time:	Received by:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:

\* Labeled as "361" on samples, 9/20/18

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04/1/2018

## Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-43361-1

**Login Number: 43361**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-091918-RW-316	320-43361-1	99	101
NAWC-091918-FRB-316	320-43361-2	89	98
WGNA-091918-DUP-47	320-43361-3	91	105
	MB 320-249159/1-A	95	105
	LLCS 320-249159/2-A	101	107
	LLCSD 320-249159/3-A	93	97

PFHxA = 13C2 PFHxA  
PFDA = 13C2 PFDA

QC LIMITS  
70-130  
70-130

# Column to be used to flag recovery values

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 10/03/2018 19:33  
 Calibration ID: 41433

	13PFOA		PFOS			
	AREA #	RT #	AREA #	RT #	AREA #	RT #
<b>INITIAL CALIBRATION MEAN AREA AND MEAN RT</b>	597036	2.62	439774	3.01		
UPPER LIMIT	895554	3.12	659661	3.51		
LOWER LIMIT	298518	2.12	219887	2.51		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-249591/10			554015	2.62	423056	3.01
ICV 320-249591/12			583387	2.62	423382	3.03
CCV 320-249690/22 CCVIS			521026	2.61	381324	3.01
LLCS 320-249159/2-A			638870	2.61	490624	3.01
LLCSD 320-249159/3-A			661372	2.62	490780	3.03
320-43361-1	NAWC-091918-RW-316		621555	2.61	478943	3.01
320-43361-2	NAWC-091918-FRB-316		659296	2.61	468654	3.01
320-43361-3	WGNA-091918-DUP-47		636567	2.62	490084	3.01
CCV 320-249690/34 CCVIS			478051	2.62	369298	3.01
CCVL 320-249925/1			532602	2.61	393298	2.99
CCV 320-250053/24 CCVIS			593961	2.61	417790	2.99
MB 320-249159/1-A			662658	2.61	514446	3.01
CCV 320-250053/29 CCVIS			615258	2.61	475427	3.01

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area  
 RT Limit = ± 0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-249690/22 Date Analyzed: 10/03/2018 22:58  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.10.03\_537A\_026 Heated Purge: (Y/N) N  
 Calibration ID: 41433

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	521026	2.61	381324	3.01		
UPPER LIMIT	729436	3.11	533854	3.51		
LOWER LIMIT	364718	2.11	266927	2.51		
LAB SAMPLE ID	CLIENT SAMPLE ID					
LLCS 320-249159/2-A		638870	2.61	490624	3.01	
LLCSD 320-249159/3-A		661372	2.62	490780	3.03	
320-43361-1	NAWC-091918-RW-316	621555	2.61	478943	3.01	
320-43361-2	NAWC-091918-FRB-316	659296	2.61	468654	3.01	
320-43361-3	WGNA-091918-DUP-47	636567	2.62	490084	3.01	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 0.5 minutes of internal standard RT

# Column used to flag values outside QC limits



FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-249690/34 Date Analyzed: 10/04/2018 00:27  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.10.03\_537A\_038 Heated Purge: (Y/N) N  
 Calibration ID: 41433

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	478051	2.62	369298	3.01		
UPPER LIMIT	669271	3.12	517017	3.51		
LOWER LIMIT	334636	2.12	258509	2.51		
LAB SAMPLE ID	CLIENT SAMPLE ID					
LLCS 320-249159/2-A		638870	2.61	490624	3.01	
LLCSD 320-249159/3-A		661372	2.62	490780	3.03	
320-43361-1	NAWC-091918-RW-316	621555	2.61	478943	3.01	
320-43361-2	NAWC-091918-FRB-316	659296	2.61	468654	3.01	
320-43361-3	WGNA-091918-DUP-47	636567	2.62	490084	3.01	

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-250053/24 Date Analyzed: 10/05/2018 15:29  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.10.05\_537B\_051 Heated Purge: (Y/N) N  
 Calibration ID: 41433

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	593961	2.61	417790	2.99		
UPPER LIMIT	831545	3.11	584906	3.49		
LOWER LIMIT	415773	2.11	292453	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-249159/1-A	662658	2.61	514446	3.01		

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-250053/29 Date Analyzed: 10/05/2018 16:05  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2018.10.05\_537B\_056 Heated Purge: (Y/N) N  
 Calibration ID: 41433

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	615258	2.61	475427	3.01		
UPPER LIMIT	861361	3.11	665598	3.51		
LOWER LIMIT	430681	2.11	332799	2.51		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-249159/1-A	662658	2.61	514446	3.01		

13PFOA = 13C2 PFOA  
 PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area  
 RT Limit = ± 0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2018.10.05\_537B\_053.d Lab Sample ID: MB 320-249159/1-A  
 Matrix: Water Date Extracted: 10/02/2018 14:58  
 Instrument ID: A8\_N Date Analyzed: 10/05/2018 15:43  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-249159/2-A	2018.10.03_537A 029.d	10/03/2018 23:20
	LLCSD 320-249159/3-A	2018.10.03_537A 030.d	10/03/2018 23:28
NAWC-091918-RW-316	320-43361-1	2018.10.03_537A 035.d	10/04/2018 00:05
NAWC-091918-FRB-316	320-43361-2	2018.10.03_537A 036.d	10/04/2018 00:12
WGNA-091918-DUP-47	320-43361-3	2018.10.03_537A 037.d	10/04/2018 00:19

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-249159/1-A  
 Matrix: Water Lab File ID: 2018.10.05\_537B\_053.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 10/02/2018 14:58  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/05/2018 15:43  
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 250053 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.0	U	5.0	2.0	0.95
335-67-1	Perfluorooctanoic acid (PFOA)	6.0	U	7.0	6.0	2.7
375-95-1	Perfluorononanoic acid (PFNA)	1.0	U	5.0	1.0	0.47
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	5.0	2.0	0.64
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.0	U	5.0	3.0	1.3
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	5.0	2.0	0.80

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	105		70-130

FORM III  
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 2018.10.03\_537A\_029.d

Lab ID: LLCS 320-249159/2-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	3.71	3.32 J	89	50-150	
Perfluorooctanoic acid (PFOA)	4.00	4.28 J	107	50-150	
Perfluorononanoic acid (PFNA)	4.00	3.69 J	92	50-150	
Perfluorohexanesulfonic acid (PFHxS)	3.64	3.27 J	90	50-150	
Perfluoroheptanoic acid (PFHpA)	4.00	4.08 J	102	50-150	
Perfluorobutanesulfonic acid (PFBS)	3.54	3.19 J	90	50-150	

# Column to be used to flag recovery and RPD values

FORM III  
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 2018.10.03\_537A\_030.d

Lab ID: LLCSD 320-249159/3-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ng/L)	LLCSD CONCENTRATION (ng/L)	LLCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	3.71	3.81 J	103	14	50	50-150	
Perfluorooctanoic acid (PFOA)	4.00	3.94 J	98	8	50	50-150	
Perfluorononanoic acid (PFNA)	4.00	3.68 J	92	0.3	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	3.64	3.07 J	84	6	50	50-150	
Perfluoroheptanoic acid (PFHpA)	4.00	3.85 J	96	6	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	3.54	2.97 J	84	7	50	50-150	

# Column to be used to flag recovery and RPD values

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/03/2018 18:49

Analysis Batch Number: 249591 End Date: 10/03/2018 20:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-249591/2		10/03/2018 18:49	1	2018.10.03_537I CAL 003.d	GeminiC18 3x100 3(mm)
IC 320-249591/3		10/03/2018 18:56	1	2018.10.03_537I CAL 004.d	GeminiC18 3x100 3(mm)
IC 320-249591/4		10/03/2018 19:03	1	2018.10.03_537I CAL 005.d	GeminiC18 3x100 3(mm)
IC 320-249591/5 ICISAV		10/03/2018 19:11	1	2018.10.03_537I CAL 006.d	GeminiC18 3x100 3(mm)
IC 320-249591/6		10/03/2018 19:18	1	2018.10.03_537I CAL 007.d	GeminiC18 3x100 3(mm)
IC 320-249591/7		10/03/2018 19:25	1	2018.10.03_537I CAL 008.d	GeminiC18 3x100 3(mm)
IC 320-249591/8		10/03/2018 19:33	1	2018.10.03_537I CAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/03/2018 19:40	1		GeminiC18 3x100 3(mm)
CCVL 320-249591/10		10/03/2018 19:47	1	2018.10.03_537I CAL 011.d	GeminiC18 3x100 3(mm)
ICB 320-249591/11		10/03/2018 19:55	1		GeminiC18 3x100 3(mm)
ICV 320-249591/12		10/03/2018 20:02	1	2018.10.03_537I CAL 013.d	GeminiC18 3x100 3(mm)



FORM VI  
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1 Analy Batch No.: 249591

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/03/2018 18:49 Calibration End Date: 10/03/2018 19:33 Calibration ID: 41433

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-249591/2	2018.10.03_537ICAL_003.d
Level 2	IC 320-249591/3	2018.10.03_537ICAL_004.d
Level 3	IC 320-249591/4	2018.10.03_537ICAL_005.d
Level 4	IC 320-249591/5	2018.10.03_537ICAL_006.d
Level 5	IC 320-249591/6	2018.10.03_537ICAL_007.d
Level 6	IC 320-249591/7	2018.10.03_537ICAL_008.d
Level 7	IC 320-249591/8	2018.10.03_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanesulfonic acid (PFBS)	1.3559 1.3019	1.2515 1.3956	1.1962	1.1646	1.2711	Ave		1.2767			6.5		30.0				
Perfluoroheptanoic acid (PFHpA)	0.9520 1.0355	1.0914 1.1013	0.9883	1.0792	1.1381	Ave		1.0551			6.3		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.4752 1.6515	1.4581 1.7112	1.5318	1.4658	1.7439	Ave		1.5768			7.8		30.0				
Perfluorooctanoic acid (PFOA)	1.0442 1.0636	1.0327 1.0734	0.9559	1.0752	1.1289	Ave		1.0534			5.0		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.2314 1.1412	1.0351 1.2857	0.9884	1.1101	1.1839	Ave		1.1394			9.2		30.0				
Perfluorononanoic acid (PFNA)	1.0184 0.7943	0.8291 0.9015	0.7541	0.8413	0.8064	Ave		0.8493			10.3		30.0				
13C2 PFHxA	1.0182 0.9723	0.9467 1.0485	0.8849	1.0664	1.0429	Ave		0.9971			6.6		30.0				
13C2 PFDA	0.6787 0.6530	0.7022 0.6943	0.6377	0.6907	0.6973	Ave		0.6791			3.6		30.0				

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI  
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1 Analy Batch No.: 249591

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/03/2018 18:49 Calibration End Date: 10/03/2018 19:33 Calibration ID: 41433

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-249591/2	2018.10.03_537ICAL_003.d
Level 2	IC 320-249591/3	2018.10.03_537ICAL_004.d
Level 3	IC 320-249591/4	2018.10.03_537ICAL_005.d
Level 4	IC 320-249591/5	2018.10.03_537ICAL_006.d
Level 5	IC 320-249591/6	2018.10.03_537ICAL_007.d
Level 6	IC 320-249591/7	2018.10.03_537ICAL_008.d
Level 7	IC 320-249591/8	2018.10.03_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	15213 2671829	25772 5213659	118477	469394	1279716	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	15463 3113029	33543 6151326	150938	605240	1659661	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	17038 3488921	30909 6580448	156174	608141	1807379	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	16978 3200746	31770 6001345	146145	603584	1647858	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	14503 2458622	22377 5042156	102764	469681	1251259	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)	13PF OA	Ave	16543 2387795	25482 5035624	115178	471778	1175996	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C2 PFHxA	13PF OA	Ave	661543 584620	581884 585653	540589	598064	608318	1.00 1.00	1.00 1.00	1.00	1.00	1.00
13C2 PFDA	13PF OA	Ave	440954 392601	431629 387818	389556	387332	406769	1.00 1.00	1.00 1.00	1.00	1.00	1.00

Curve Type Legend:

Ave = Average ISTD

FORM VI  
 LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA  
 READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1 Analy Batch No.: 249591

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 10/03/2018 18:49 Calibration End Date: 10/03/2018 19:33 Calibration ID: 41433

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-249591/2	2018.10.03_537ICAL_003.d
Level 2	IC 320-249591/3	2018.10.03_537ICAL_004.d
Level 3	IC 320-249591/4	2018.10.03_537ICAL_005.d
Level 4	IC 320-249591/5	2018.10.03_537ICAL_006.d
Level 5	IC 320-249591/6	2018.10.03_537ICAL_007.d
Level 6	IC 320-249591/7	2018.10.03_537ICAL_008.d
Level 7	IC 320-249591/8	2018.10.03_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	6.2 9.3	-2.0	-6.3	-8.8	-0.4	2.0	50 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-9.8 4.4	3.4	-6.3	2.3	7.9	-1.9	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-6.4 8.5	-7.5	-2.9	-7.0	10.6	4.7	50 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-0.9 1.9	-2.0	-9.3	2.1	7.2	1.0	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	8.1 12.8	-9.2	-13.3	-2.6	3.9	0.2	50 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	19.9 6.1	-2.4	-11.2	-0.9	-5.0	-6.5	50 30	30	30	30	30	30
13C2 PFHxA	2.1 5.2	-5.1	-11.3	7.0	4.6	-2.5	30 30	30	30	30	30	30
13C2 PFDA	-0.1 2.2	3.4	-6.1	1.7	2.7	-3.9	30 30	30	30	30	30	30

TestAmerica Laboratories  
Istd/Surrogate Recovery Report

Worklist Name: 03OCT2018\_537FULL\_ICAL      Worklist Num: 65225  
 Instrument: A8\_N      Method: 537\_A8\_N  
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20181004-65225.b  
 Limit Group: LC 537 ICAL  
 Analysis Type: SemiVOA  
 Inj Volume: 2.00      Inj Vol Units: ul

Lims Batch: 249591  
 CCV IS Mode: Select Ical Level, Cal Level: 3  
 Non-Cal IS Mode: Last Ccal Sample

\$ 2 13C2 PFHxA  
 \$ 10 13C2 PFDA  
 \$ 11 d5-NEtFOSAA

Lab ID	Inj Date	\$ 2	\$ 10	\$ 11	* 5 13C2-PFOA	* 7 13C4 PFOS	* 12 d3-NMeFOSAA
	IS Std				537786 2.59	432701 2.98	110637 3.49
# 1 RB	03-Oct-2018 18:41:41				537317 99.9	397693 91.9	163078 147.4
	IS Std						
# 2 IC L1	03-Oct-2018 18:49:02	1.85 102.10	3.38 99.93	3.70 107.10	2.62 649738> 100.0*	3.01 485337> 100.0*	3.54 186771> 100.0*
# 3 IC L2	03-Oct-2018 18:56:22	1.85 94.94	3.38 103.40	3.70 103.10	2.62 614675> 94.6*	3.01 445394> 91.8*	3.53 167378> 89.6*
# 4 IC L3	03-Oct-2018 19:03:42	1.85 88.74	3.38 93.90	3.70 92.41	2.62 610913> 94.0*	3.01 428429> 88.3*	3.54 166236> 89.0*
# 5 IC L4	03-Oct-2018 19:11:01	1.85 107.00	3.38 101.70	3.70 104.50	2.62 560805> 86.3*	3.01 435868> 89.8*	3.54 160728> 86.1*
# 6 IC L5	03-Oct-2018 19:18:21	1.85 104.60	3.38 102.70	3.70 96.95	2.62 583307> 89.8*	3.01 435520> 89.7*	3.53 174713> 93.5*
# 7 IC L6	03-Oct-2018 19:25:41	1.85 97.51	3.38 96.15	3.70 94.01	2.62 601255> 92.5*	3.01 443875> 91.5*	3.54 171458> 91.8*
# 8 IC L7	03-Oct-2018 19:33:01	1.85 105.20	3.38 102.20	3.70 101.90	2.62 558562> 86.0*	3.01 403997> 83.2*	3.53 162209> 86.8*
	IS Std				610913 2.62	428429 3.01	166236 3.54
# 9 RB	03-Oct-2018 19:40:21				581110 95.1	431131 100.6	165558 99.6
	IS Std				560805 2.62	435868 3.01	160728 3.54
#10 CCVL	03-Oct-2018 19:47:42	1.85 108.20	3.38 104.70	3.70 95.91	2.62 554015 98.8	3.01 423056 97.1	3.54 171982 107.0
	IS Std				554015 2.62	423056 3.01	171982 3.54
#11 ICB	03-Oct-2018 19:55:03				579835 104.7	398804 94.3	162662 94.6
	IS Std				560805 2.62	435868 3.01	160728 3.54
#12 ICV	03-Oct-2018 20:02:23	1.85 103.40	3.38 100.90	3.70 104.90	2.62 583387 104.0	3.03 423382 97.1	3.54 156636 97.5

13C2 PFOA

$$RPD = \frac{649738 - 558562}{\left(\frac{649738 + 558562}{2}\right)} \times 100 = 15.7\%$$

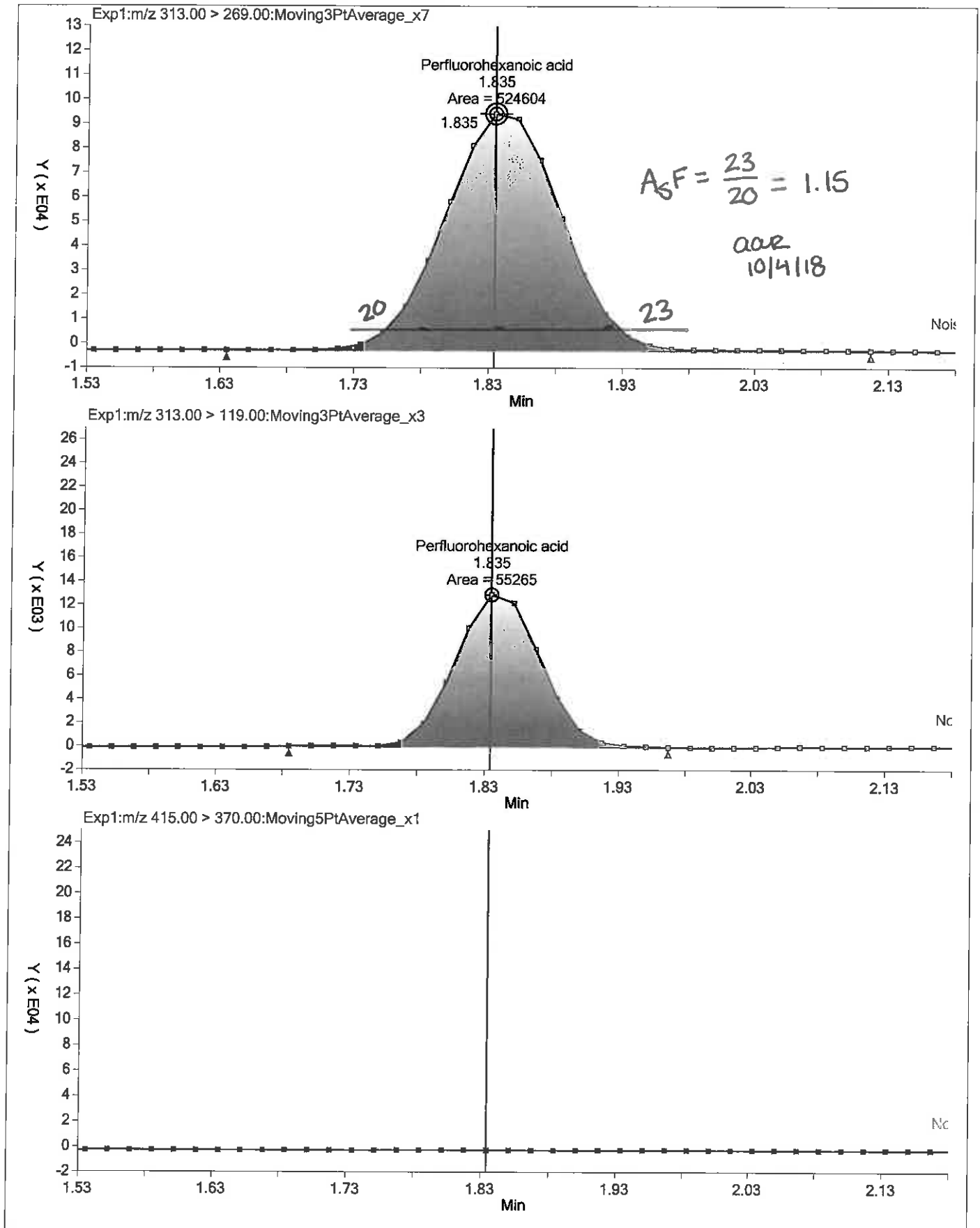
d3 - NMeFOSAA

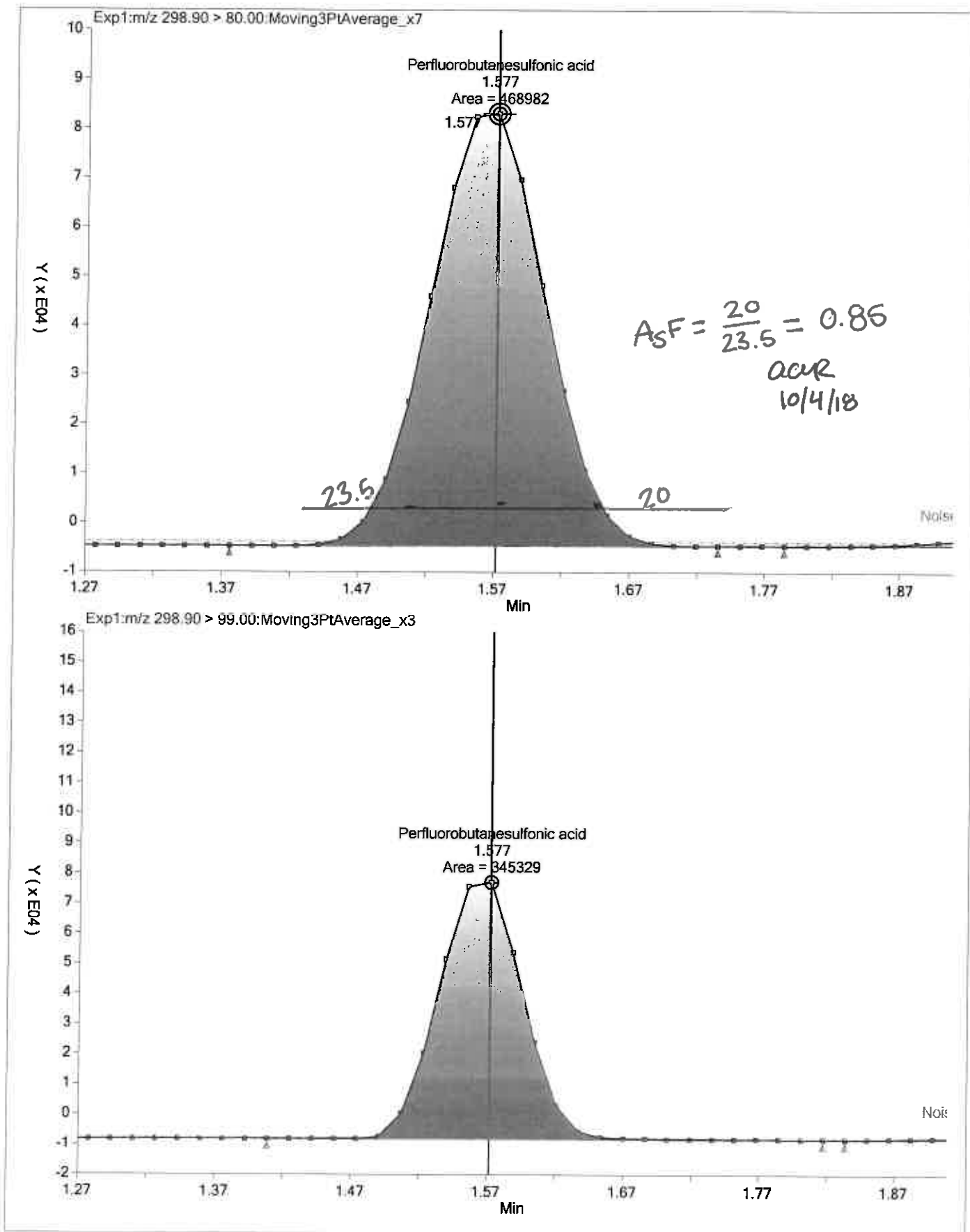
$$RPD = \frac{186771 - 160728}{\left(\frac{186771 + 160728}{2}\right)} \times 100 = 15.0\%$$

13C4 PFOS

$$RPD = \frac{485337 - 403997}{\left(\frac{485337 + 403997}{2}\right)} \times 100 = 18.3\%$$

acc  
10/4/18





**Calibration**

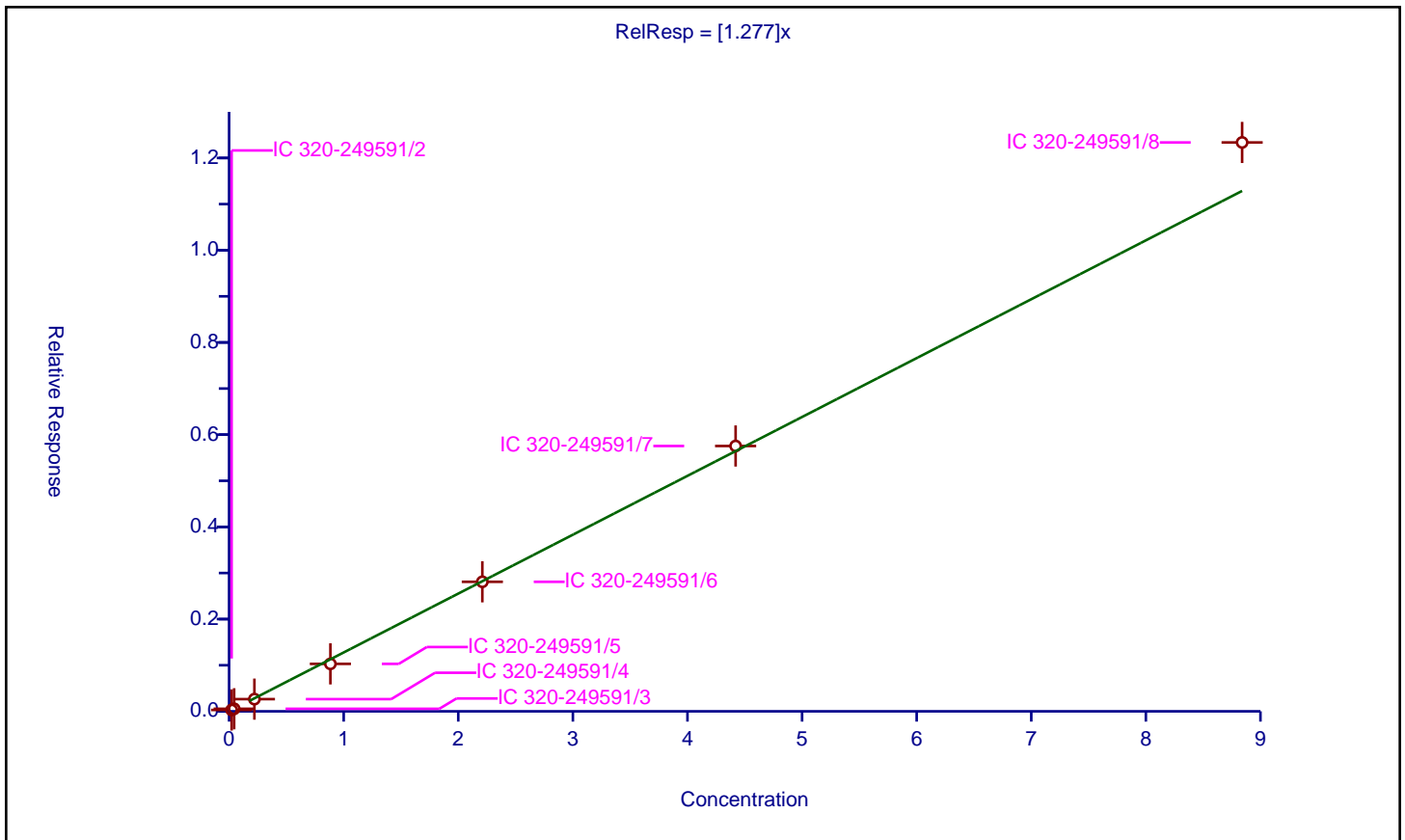
/ Perfluorobutanesulfonic acid

Curve Type: Average  
 Weighting: Conc\_Sq  
 Origin: Force  
 Dependency: Response  
 Calib Mode: ISTD  
 Response Base: AREA  
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.277

Error Coefficients	
Standard Error:	2460000
Relative Standard Error:	6.5
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	0.0221	0.029966	0.956	485337.0	1.355929	Y
2	IC 320-249591/3	0.0442	0.055317	0.956	445394.0	1.251525	Y
3	IC 320-249591/4	0.221	0.264371	0.956	428429.0	1.196247	Y
4	IC 320-249591/5	0.884	1.029533	0.956	435868.0	1.164631	Y
5	IC 320-249591/6	2.21	2.809075	0.956	435520.0	1.271075	Y
6	IC 320-249591/7	4.42	5.754477	0.956	443875.0	1.301918	Y
7	IC 320-249591/8	8.84	12.337364	0.956	403997.0	1.395629	Y



**Calibration**

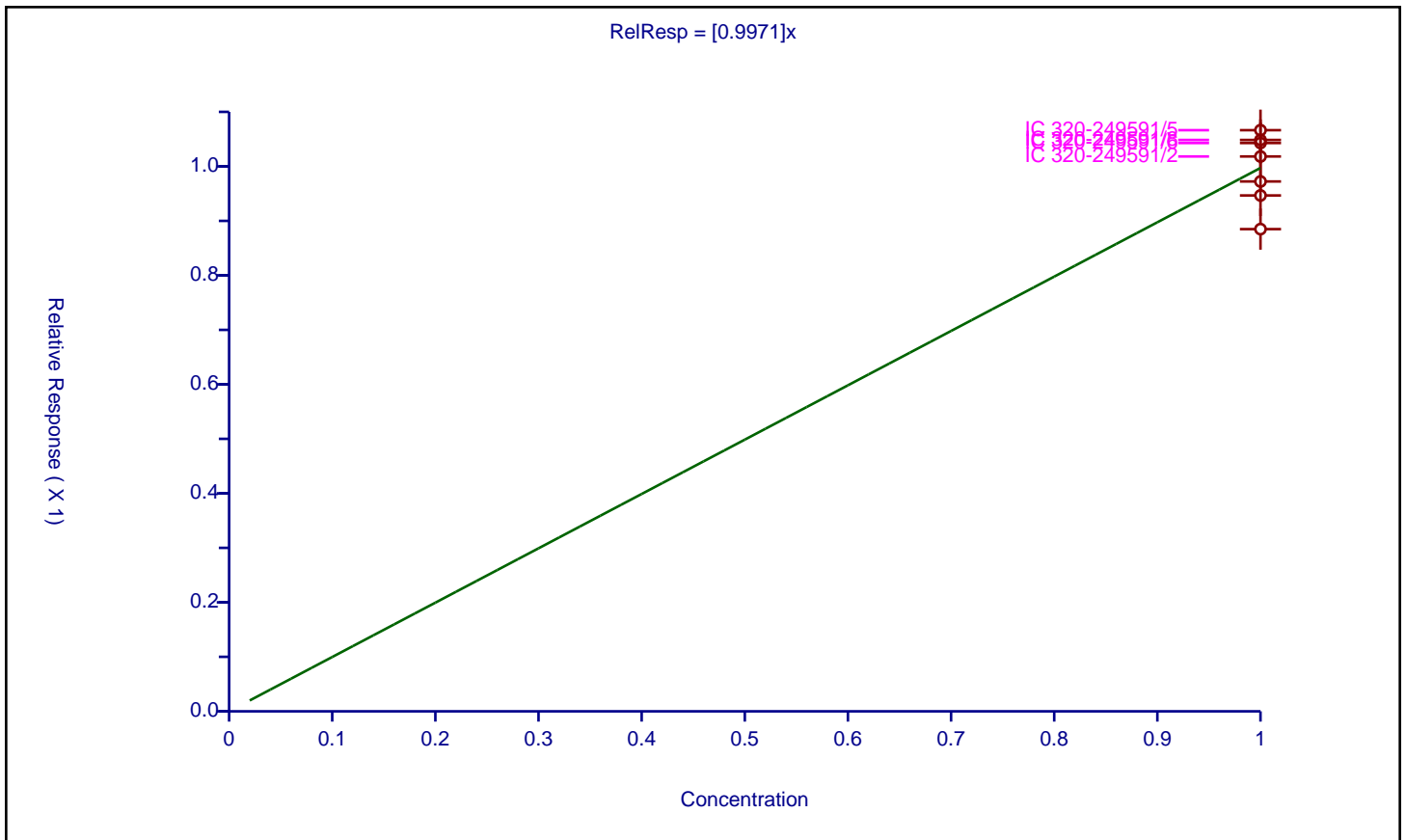
/ 13C2 PFHxA

**Curve Type:** Average  
**Weighting:** Conc\_Sq  
**Origin:** Force  
**Dependency:** Response  
**Calib Mode:** ISTD  
**Response Base:** AREA  
**RF Rounding:** 0

Curve Coefficients	
Intercept:	0
Slope:	0.9971

Error Coefficients	
Standard Error:	643000
Relative Standard Error:	6.6
Correlation Coefficient:	0.00000000000000000000
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	1.0	1.018169	1.0	649738.0	1.018169	Y
2	IC 320-249591/3	1.0	0.946653	1.0	614675.0	0.946653	Y
3	IC 320-249591/4	1.0	0.884887	1.0	610913.0	0.884887	Y
4	IC 320-249591/5	1.0	1.066438	1.0	560805.0	1.066438	Y
5	IC 320-249591/6	1.0	1.042878	1.0	583307.0	1.042878	Y
6	IC 320-249591/7	1.0	0.972333	1.0	601255.0	0.972333	Y
7	IC 320-249591/8	1.0	1.048501	1.0	558562.0	1.048501	Y





**Calibration**

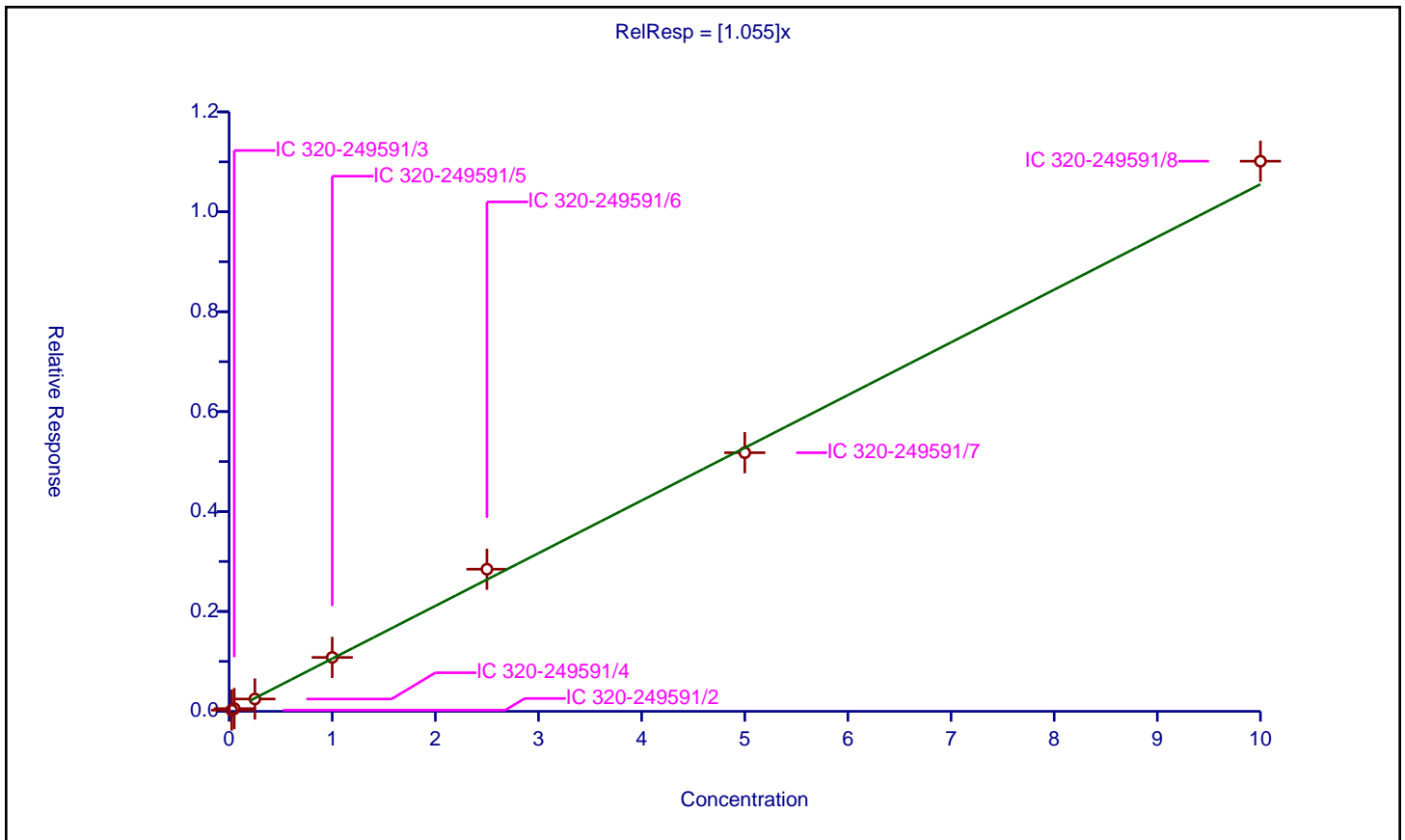
/ Perfluoroheptanoic acid

Curve Type: Average  
 Weighting: Conc\_Sq  
 Origin: Force  
 Dependency: Response  
 Calib Mode: ISTD  
 Response Base: AREA  
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.055

Error Coefficients	
Standard Error:	2910000
Relative Standard Error:	6.3
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	0.025	0.023799	1.0	649738.0	0.951953	Y
2	IC 320-249591/3	0.05	0.05457	1.0	614675.0	1.091406	Y
3	IC 320-249591/4	0.25	0.24707	1.0	610913.0	0.988278	Y
4	IC 320-249591/5	1.0	1.079234	1.0	560805.0	1.079234	Y
5	IC 320-249591/6	2.5	2.845262	1.0	583307.0	1.138105	Y
6	IC 320-249591/7	5.0	5.177552	1.0	601255.0	1.03551	Y
7	IC 320-249591/8	10.0	11.01279	1.0	558562.0	1.101279	Y



**Calibration**

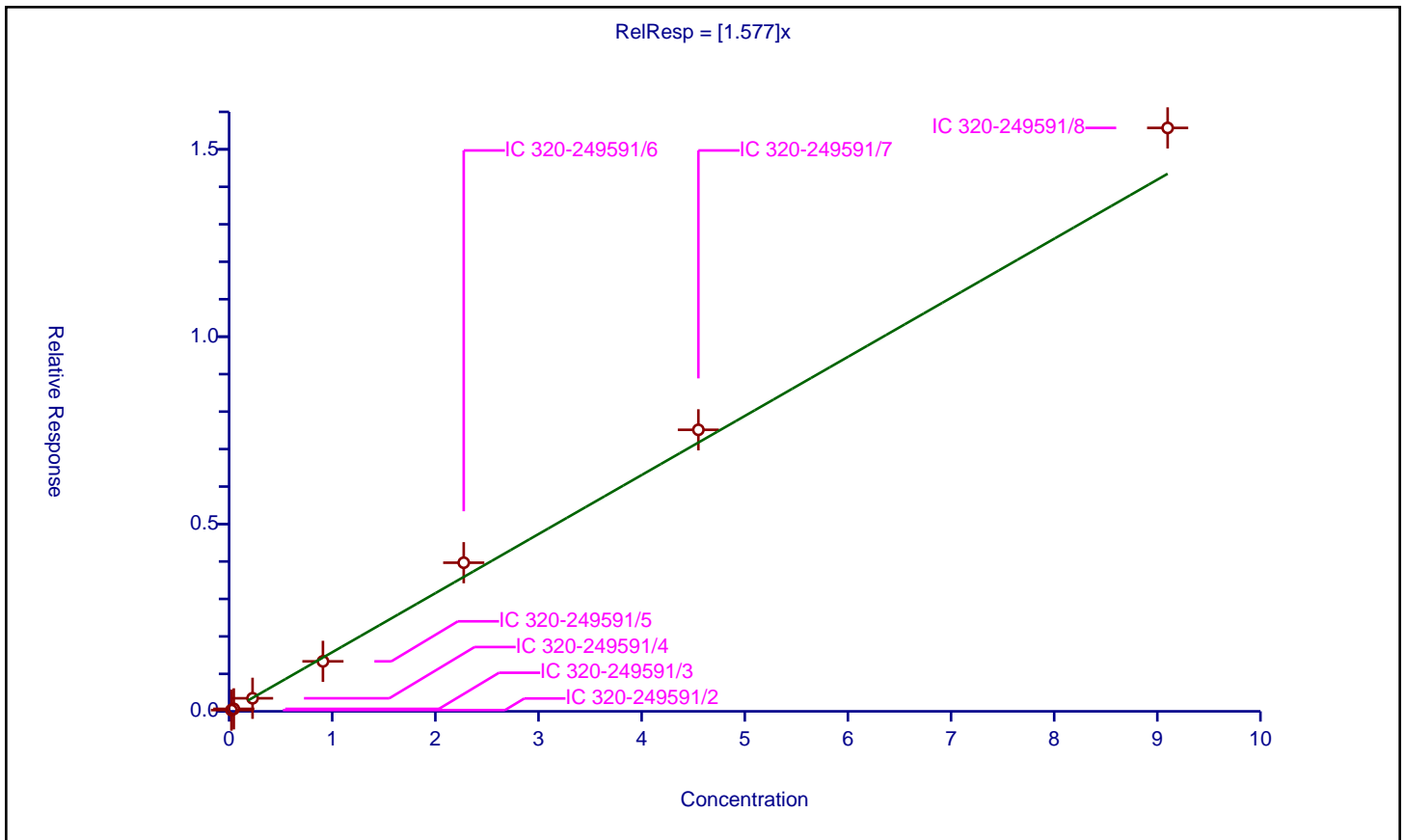
**/ Perfluorohexanesulfonic acid**

**Curve Type:** Average  
**Weighting:** Conc\_Sq  
**Origin:** Force  
**Dependency:** Response  
**Calib Mode:** ISTD  
**Response Base:** AREA  
**RF Rounding:** 0

Curve Coefficients	
Intercept:	0
Slope:	1.577

Error Coefficients	
Standard Error:	3140000
Relative Standard Error:	7.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	0.02275	0.033561	0.956	485337.0	1.475203	Y
2	IC 320-249591/3	0.0455	0.066344	0.956	445394.0	1.458099	Y
3	IC 320-249591/4	0.2275	0.348488	0.956	428429.0	1.531815	Y
4	IC 320-249591/5	0.91	1.333851	0.956	435868.0	1.46577	Y
5	IC 320-249591/6	2.275	3.967336	0.956	435520.0	1.743884	Y
6	IC 320-249591/7	4.55	7.514297	0.956	443875.0	1.651494	Y
7	IC 320-249591/8	9.1	15.571671	0.956	403997.0	1.711173	Y



**Calibration**

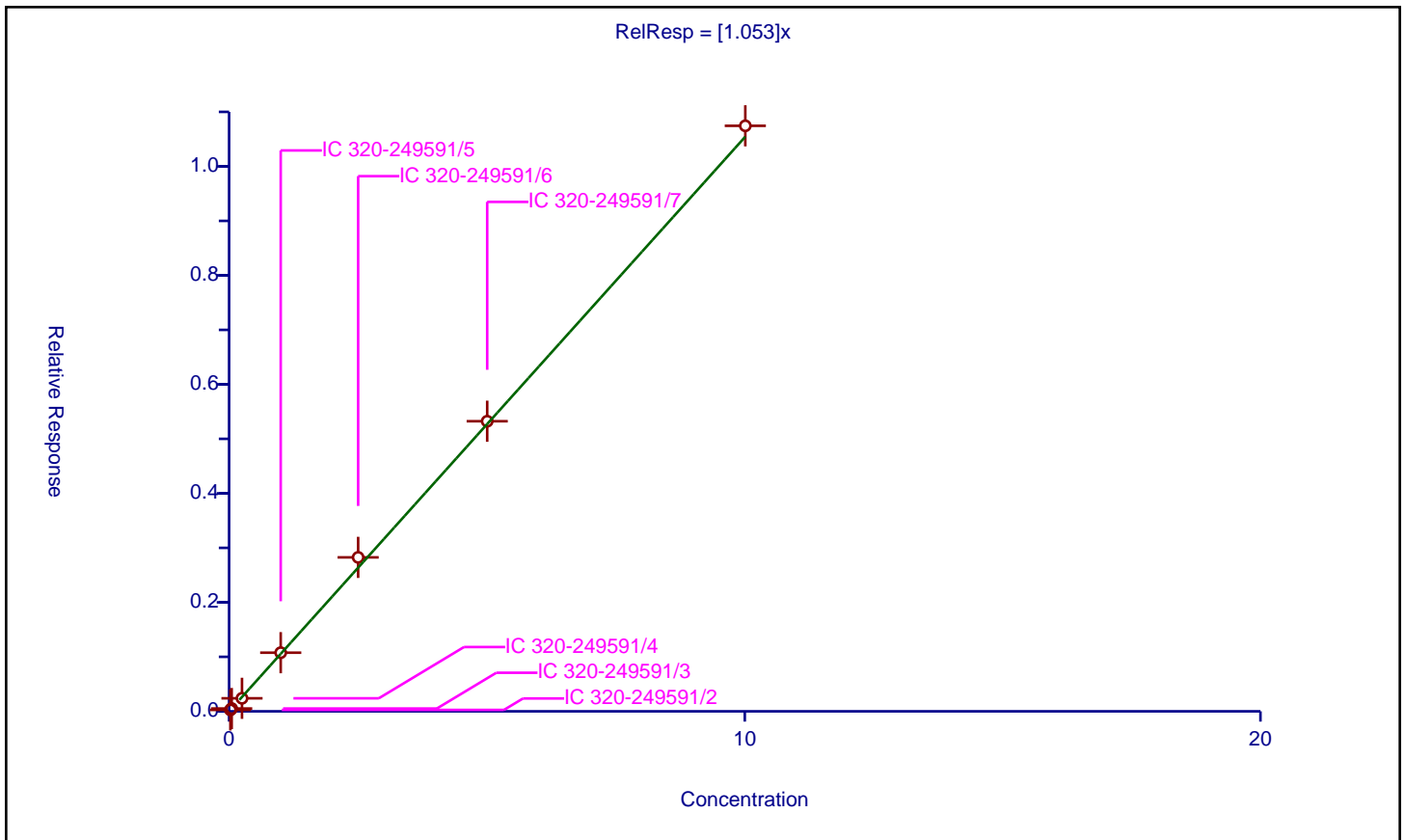
/ Perfluorooctanoic acid

Curve Type: Average  
 Weighting: Conc\_Sq  
 Origin: Force  
 Dependency: Response  
 Calib Mode: ISTD  
 Response Base: AREA  
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.053

Error Coefficients	
Standard Error:	2870000
Relative Standard Error:	5.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	0.025025	0.026131	1.0	649738.0	1.044177	Y
2	IC 320-249591/3	0.05005	0.051686	1.0	614675.0	1.032684	Y
3	IC 320-249591/4	0.25025	0.239224	1.0	610913.0	0.95594	Y
4	IC 320-249591/5	1.001	1.076281	1.0	560805.0	1.075206	Y
5	IC 320-249591/6	2.5025	2.825027	1.0	583307.0	1.128882	Y
6	IC 320-249591/7	5.005	5.323442	1.0	601255.0	1.063625	Y
7	IC 320-249591/8	10.01	10.744277	1.0	558562.0	1.073354	Y



**Calibration**

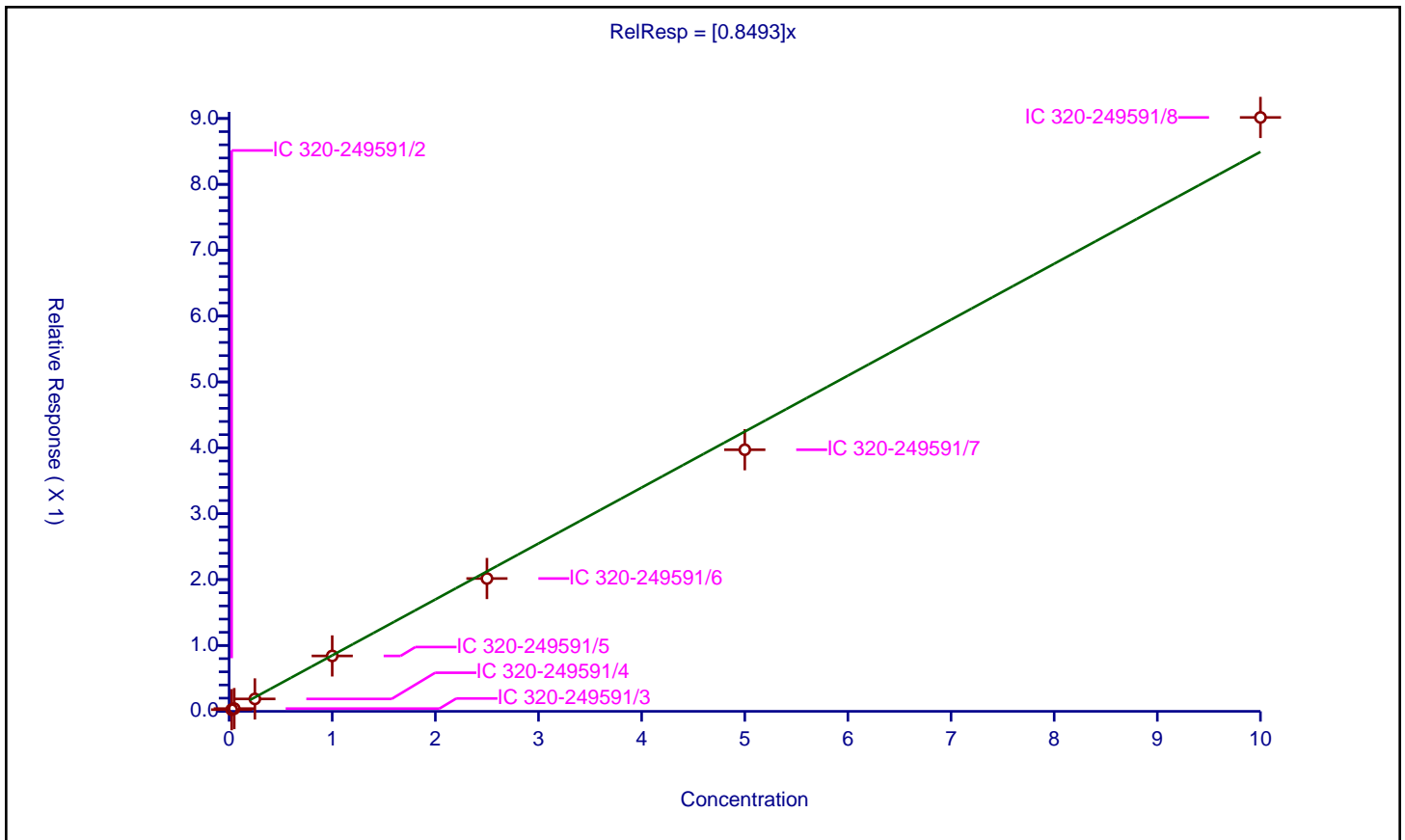
/ Perfluorononanoic acid

Curve Type: Average  
 Weighting: Conc\_Sq  
 Origin: Force  
 Dependency: Response  
 Calib Mode: ISTD  
 Response Base: AREA  
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.8493

Error Coefficients	
Standard Error:	2330000
Relative Standard Error:	10.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.986

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	0.025	0.025461	1.0	649738.0	1.018441	Y
2	IC 320-249591/3	0.05	0.041456	1.0	614675.0	0.829121	Y
3	IC 320-249591/4	0.25	0.188534	1.0	610913.0	0.754137	Y
4	IC 320-249591/5	1.0	0.841251	1.0	560805.0	0.841251	Y
5	IC 320-249591/6	2.5	2.016084	1.0	583307.0	0.806434	Y
6	IC 320-249591/7	5.0	3.971352	1.0	601255.0	0.79427	Y
7	IC 320-249591/8	10.0	9.015336	1.0	558562.0	0.901534	Y



**Calibration**

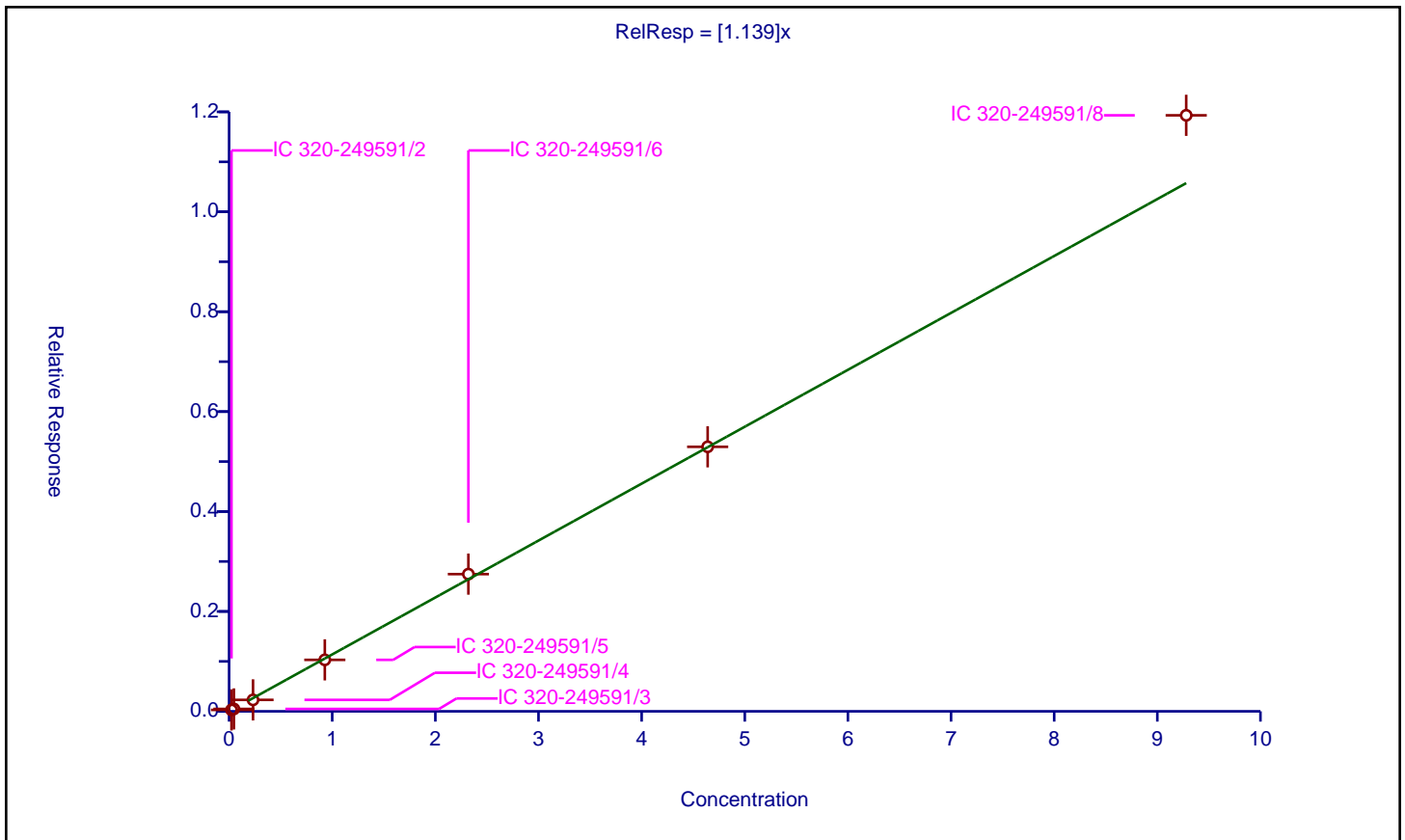
**/ Perfluorooctane sulfonic acid**

**Curve Type:** Average  
**Weighting:** Conc\_Sq  
**Origin:** Force  
**Dependency:** Response  
**Calib Mode:** ISTD  
**Response Base:** AREA  
**RF Rounding:** 0

Curve Coefficients	
Intercept:	0
Slope:	1.139

Error Coefficients	
Standard Error:	2350000
Relative Standard Error:	9.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.989

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	0.0232	0.028568	0.956	485337.0	1.231358	Y
2	IC 320-249591/3	0.0464	0.04803	0.956	445394.0	1.035136	Y
3	IC 320-249591/4	0.232	0.229308	0.956	428429.0	0.988398	Y
4	IC 320-249591/5	0.928	1.030163	0.956	435868.0	1.110089	Y
5	IC 320-249591/6	2.32	2.74661	0.956	435520.0	1.183884	Y
6	IC 320-249591/7	4.64	5.295281	0.956	443875.0	1.141224	Y
7	IC 320-249591/8	9.28	11.931527	0.956	403997.0	1.285725	Y



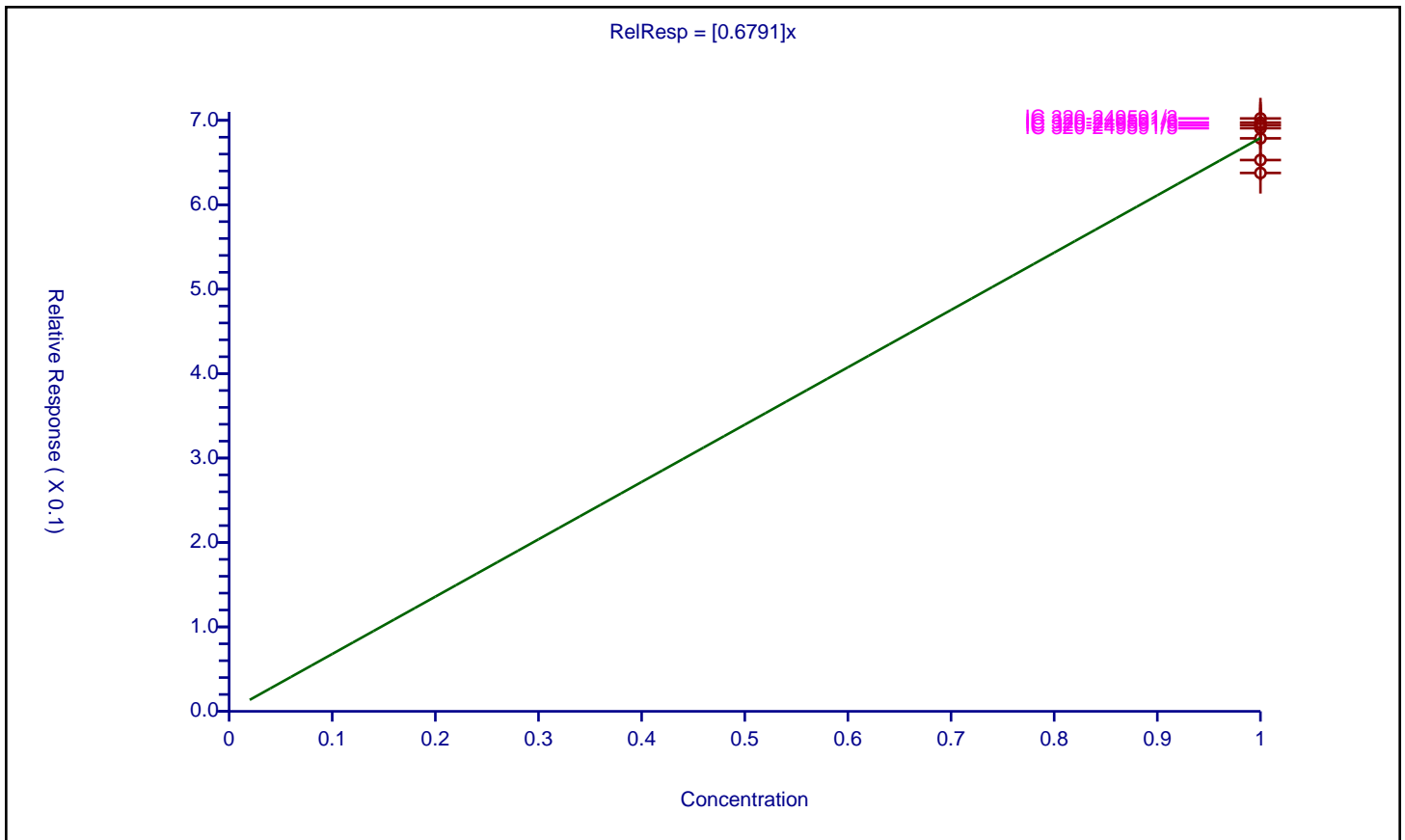
**Calibration**

**Curve Type:** Average  
**Weighting:** Conc\_Sq  
**Origin:** Force  
**Dependency:** Response  
**Calib Mode:** ISTD  
**Response Base:** AREA  
**RF Rounding:** 0

Curve Coefficients	
Intercept:	0
Slope:	0.6791

Error Coefficients	
Standard Error:	438000
Relative Standard Error:	3.6
Correlation Coefficient:	0
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-249591/2	1.0	0.678664	1.0	649738.0	0.678664	Y
2	IC 320-249591/3	1.0	0.702207	1.0	614675.0	0.702207	Y
3	IC 320-249591/4	1.0	0.637662	1.0	610913.0	0.637662	Y
4	IC 320-249591/5	1.0	0.690671	1.0	560805.0	0.690671	Y
5	IC 320-249591/6	1.0	0.69735	1.0	583307.0	0.69735	Y
6	IC 320-249591/7	1.0	0.652969	1.0	601255.0	0.652969	Y
7	IC 320-249591/8	1.0	0.694315	1.0	558562.0	0.694315	Y



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-249591/10 Calibration Date: 10/03/2018 19:47  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.03\_537ICAL\_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.232		9.00	0.0442	-3.5	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.162		1.00	0.0500	10.1	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.695		3.00	0.0455	7.5	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.091		2.00	0.0501	3.6	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.8747		5.00	0.0500	3.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.222		4.00	0.0464	7.3	50.0
13C2 PFHxA	Ave	0.997	1.079		1.08	1.00	8.2	30.0
13C2 PFDA	Ave	0.6791	0.7112		1.05	1.00	4.7	30.0
d5-NEtFOSAA	Ave	1.073	1.029		0.959	1.00	-4.1	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-249591/12 Calibration Date: 10/03/2018 20:02  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.03\_537ICAL\_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.274		9.00	2.21	-0.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.016		2.41	2.50	-3.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.548		2.24	2.28	-1.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.076		2.55	2.50	2.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.8012		2.36	2.50	-5.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.107		2.25	2.31	-2.8	30.0
13C2 PFHxA	Ave	0.997	1.031		1.03	1.00	3.4	30.0
13C2 PFDA	Ave	0.6791	0.6855		1.01	1.00	0.9	30.0
d5-NEtFOSAA	Ave	1.073	1.125		1.05	1.00	4.9	30.0



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/03/2018 22:58

Analysis Batch Number: 249690 End Date: 10/04/2018 00:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-249690/22 CCVIS		10/03/2018 22:58	1	2018.10.03_537A 026.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/03/2018 23:13	1		GeminiC18 3x100 3(mm)
LLCS 320-249159/2-A		10/03/2018 23:20	1	2018.10.03_537A 029.d	GeminiC18 3x100 3(mm)
LLCSD 320-249159/3-A		10/03/2018 23:28	1	2018.10.03_537A 030.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/03/2018 23:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/03/2018 23:42	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/03/2018 23:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/03/2018 23:57	1		GeminiC18 3x100 3(mm)
320-43361-1		10/04/2018 00:05	1	2018.10.03_537A 035.d	GeminiC18 3x100 3(mm)
320-43361-2		10/04/2018 00:12	1	2018.10.03_537A 036.d	GeminiC18 3x100 3(mm)
320-43361-3		10/04/2018 00:19	1	2018.10.03_537A 037.d	GeminiC18 3x100 3(mm)
CCV 320-249690/34 CCVIS		10/04/2018 00:27	1	2018.10.03_537A 038.d	GeminiC18 3x100 3(mm)

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-249690/22 Calibration Date: 10/03/2018 22:58  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.03\_537A\_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.304		9.00	2.21	2.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.091		2.58	2.50	3.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.687		2.43	2.28	7.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.128		2.68	2.50	7.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.8393		2.47	2.50	-1.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.204		2.45	2.32	5.6	30.0
13C2 PFHxA	Ave	0.997	0.9648		0.968	1.00	-3.2	30.0
13C2 PFDA	Ave	0.6791	0.7321		1.08	1.00	7.8	30.0
d5-NEtFOSAA	Ave	1.073	1.001		0.933	1.00	-6.7	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/05/2018 15:29

Analysis Batch Number: 250053 End Date: 10/05/2018 16:05

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-250053/24 CCVIS		10/05/2018 15:29	1	2018.10.05_537B 051.d	GeminiC18 3x100 3(mm)
MB 320-249159/1-A		10/05/2018 15:43	1	2018.10.05_537B 053.d	GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 15:51	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 15:58	1		GeminiC18 3x100 3(mm)
CCV 320-250053/29 CCVIS		10/05/2018 16:05	1	2018.10.05_537B 056.d	GeminiC18 3x100 3(mm)

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-249690/34 Calibration Date: 10/04/2018 00:27  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.03\_537A\_038.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.278		9.00	0.221	0.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.126		1.00	0.250	6.7	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.491		3.00	0.228	-5.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.041		2.00	0.250	-1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.9341		5.00	0.250	10.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.041		4.00	0.232	-8.6	30.0
13C2 PFHxA	Ave	0.997	1.089		1.09	1.00	9.2	30.0
13C2 PFDA	Ave	0.6791	0.6783		0.999	1.00	-0.1	30.0
d5-NEtFOSAA	Ave	1.073	1.143		1.07	1.00	6.5	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Instrument ID: A8\_N Start Date: 10/05/2018 09:43

Analysis Batch Number: 249925 End Date: 10/05/2018 11:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-249925/1		10/05/2018 09:43	1	2018.10.04_537B 004.d	GeminiC18 3x100 3(mm)
CCV 320-249925/2 CCVIS		10/05/2018 09:50	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:19	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:34	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:42	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 10:56	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 11:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		10/05/2018 11:11	1		GeminiC18 3x100 3(mm)
CCV 320-249925/14 CCVIS		10/05/2018 11:18	1		GeminiC18 3x100 3(mm)

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-249925/1 Calibration Date: 10/05/2018 09:43  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.04\_537B\_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.451		9.00	0.0442	13.7	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.050		1.00	0.0500	-0.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.733		3.00	0.0455	9.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.276		2.00	0.0501	21.1	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.9199		5.00	0.0500	8.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.055		4.00	0.0464	-7.4	50.0
13C2 PFHxA	Ave	0.997	0.998		1.00	1.00	0.0	30.0
13C2 PFDA	Ave	0.6791	0.6895		1.02	1.00	1.5	30.0
d5-NEtFOSAA	Ave	1.073	1.061		0.989	1.00	-1.1	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-250053/24 Calibration Date: 10/05/2018 15:29  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.05\_537B\_051.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.327		9.00	2.21	3.9	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.063		2.52	2.50	0.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.720		2.48	2.28	9.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.085		2.58	2.50	3.0	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.8495		2.50	2.50	0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.193		2.43	2.32	4.7	30.0
13C2 PFHxA	Ave	0.997	1.035		1.04	1.00	3.8	30.0
13C2 PFDA	Ave	0.6791	0.6563		0.966	1.00	-3.4	30.0
d5-NEtFOSAA	Ave	1.073	1.013		0.944	1.00	-5.6	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-250053/29 Calibration Date: 10/05/2018 16:05  
 Instrument ID: A8\_N Calib Start Date: 10/03/2018 18:49  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 10/03/2018 19:33  
 Lab File ID: 2018.10.05\_537B\_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.277	1.220		9.00	0.221	-4.5	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.055	1.012		1.00	0.250	-4.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.577	1.455		3.00	0.228	-7.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.053	1.068		2.00	0.250	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8493	0.8251		5.00	0.250	-2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.139	1.058		4.00	0.232	-7.1	30.0
13C2 PFHxA	Ave	0.997	1.067		1.07	1.00	7.0	30.0
13C2 PFDA	Ave	0.6791	0.6911		1.02	1.00	1.8	30.0
d5-NEtFOSAA	Ave	1.073	1.034		0.964	1.00	-3.6	30.0



LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Batch Number: 249159 Batch Start Date: 10/02/18 14:58 Batch Analyst: Long, Tyrel W

Batch Method: 537 Batch End Date: 10/02/18 21:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00085
MB 320-249159/1		537, 537				250 mL	10.00 mL	7 SU	500 uL
LLCS 320-249159/2		537, 537				250 mL	10.00 mL	7 SU	500 uL
LLCSD 320-249159/3		537, 537				250 mL	10.00 mL	7 SU	500 uL
320-43361-A-1	NAWC-091918-RW-316	537, 537	T	315.26 g	28.41 g	286.9 mL	10.00 mL	7 SU	500 uL
320-43361-A-2	NAWC-091918-FRB-316	537, 537	T	316.51 g	27.35 g	289.2 mL	10.00 mL	7 SU	500 uL
320-43361-A-3	WGNA-091918-DUP-47	537, 537	T	317.26 g	29.08 g	288.2 mL	10.00 mL	7 SU	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00082	LC537SP 00009	AnalysisComment			
MB 320-249159/1		537, 537		500 uL		Chlorine ND			
LLCS 320-249159/2		537, 537		500 uL	500 uL	Chlorine ND			
LLCSD 320-249159/3		537, 537		500 uL	500 uL	Chlorine ND			
320-43361-A-1	NAWC-091918-RW-316	537, 537	T	500 uL		Chlorine ND			
320-43361-A-2	NAWC-091918-FRB-316	537, 537	T	500 uL		Chlorine ND			
320-43361-A-3	WGNA-091918-DUP-47	537, 537	T	500 uL		Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-43361-1

SDG No.: \_\_\_\_\_

Batch Number: 249159 Batch Start Date: 10/02/18 14:58 Batch Analyst: Long, Tyrel W

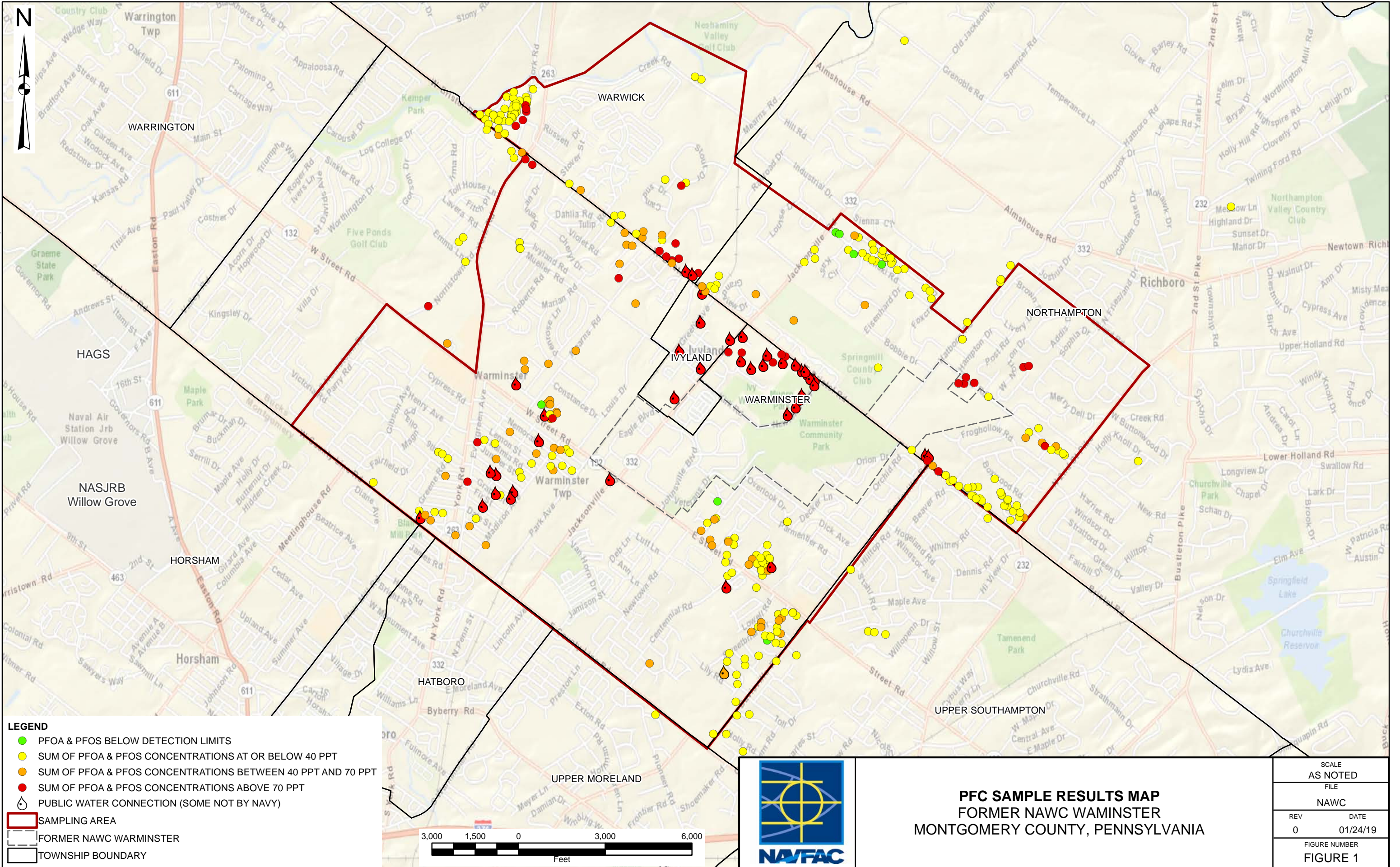
Batch Method: 537 Batch End Date: 10/02/18 21:30

Batch Notes	
Analyst ID - Aliquot Step	TWL
Batch Comment	Client labels match TA labels TWL 10/02/18
Analyst ID - Final Volume Step	TWL
Internal Standard ID#	1361283
Manifold ID	537 manifolds
Methanol ID	1378810
pH Indicator ID	0818
Pipette ID	I 46162G
Analyst ID - IS Reagent Drop	TWL
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	TWL
Analyst ID - SU Reagent Drop Witness	KJP
Analyst ID - TA Reagent Drop	TWL
Analyst ID - TA Reagent Drop Witness	KJP
SPE Cartridge Lot ID	6390138-09
Trizma ID	SLBR5241V
Reagent Water ID	09/28/18

Basis	Basis Description
T	Total/NA

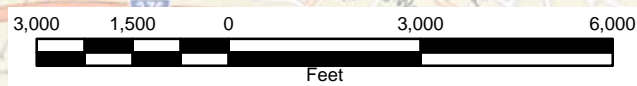
The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

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**LEGEND**

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARRINSTER
- TOWNSHIP BOUNDARY



**PFC SAMPLE RESULTS MAP**  
 FORMER NAWC WARRINSTER  
 MONTGOMERY COUNTY, PENNSYLVANIA

SCALE AS NOTED	
FILE	
NAWC	
REV 0	DATE 01/24/19
FIGURE NUMBER	
FIGURE 1	