

4.0 Initial and Continuing Calibration

		Yes	No	NA
4.1	For each calibration standard, was each analyte calculated within 70%-130% of the true value, RSD ≤20%, or $r^2 \geq 0.99$?	X		
4.2	Was the retention time window for each analyte and surrogate set using the midpoint standard of the curve?	X		
4.3	Was the relative retention time of each analyte within laboratory control limits?	X		
4.4	Was a second source calibration verification (ICV) analyzed for each calibration curve? If no, flag "X".	X		
4.5	Were continuing calibration standards analyzed every ten samples and at the end of the sequence? If no, flag "X".	X		
4.6	For each calibration standard used for quantitation, was the S/N Ratio ≥10:1 and for all analytes with promulgated standards was the confirmation ion at a S/N at 3:1? (Table B-15, non-DW matrices)			X
For initial calibration: 70%-130%, RSD ≤20%, or $r^2 \geq 0.99$. J(+)/UJ(-)				
For ICV/CCV: %D>30%, Positive: J(+), Negative:J(+)/UJ(-).				

Notes: ICV minor exceedance greater than the UCL only associated with non-detects

5.0 Laboratory Control Sample (LCS)

		Yes	No	NA
5.1	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	X		
5.2	Are there any %R for LCS/LCSD recoveries outside the laboratory QC limits(lab default is 70%-130%)?	X		
	Action: If Yes, for %R >130, J+(+) only; for %R 30%-70%, J-(-)/UJ(-), and %R<30%, J-(-)/X(-).			
5.3	Are there any RPD for LCS/LCSD recoveries outside the QC limits? If Yes, J(+) only.		X	

Notes: PFNA at 140% associated with non-detects; no data qualifying action is required

6.0 Surrogate Recovery/Internal Standard Area Count/Extracted Internal Standards (For Table B-15 Matrices)

		Yes	No	NA
6.1	Are recoveries within acceptance criteria for all samples and method blanks?		X	
6.2	If No in Section 6.1, are these sample(s) or method blank(s) reanalyzed?	X		
6.3	If No in Section 6.2, is any sample dilution factor greater than 10? (recoveries may be diluted out.)		X	
	<10% low high			
	Positives J- J- J+			
	Non-detects X UJ None			
6.4	Has the Extracted/Injected Standard area count been met for all quality control and field samples? (50%-150%)		X	
	<20% low high			
	Positives J+ J+ J-			
	Non-detects X UJ None			

Notes: Several surrogates less than UCL but greater than 10%, associated mostly with NMeFOSAA and EtFOSAA

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

		Yes	No	NA
7.1	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	X		
7.2	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the laboratory QC limits?	X		
	%Recovery: <10% 10%-70% >130%			
	Action: J-(+)/X(-) J-(+)/UJ(-) J+(+) only			
7.3	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits? ($\pm 30\%$)	X		
	Action: No action is required based on MS/MSd failure alone. Note in the report and use professional judgement.			

Notes: Several less than the LCL, the parent sample results are flagged UJ because these are minor exceedances

8.0 Field/Laboratory Duplicates

		Yes	No	NA
8.1	Acceptable field duplicate results? If no, J(+) parent sample/field duplicate only.	X		

Notes:

9.0 Instrument Sensitivity Check (ISC)

		Yes	No	NA
9.1	Was an instrument sensitivity check analyzed prior to analysis and every 12 hours? If not X(+/-)	X		
9.2	Were analyte concentrations at the LOQ for the ISC and within $\pm 30\%$ of their true values? If not (J(+)/UJ(-)	X		

Notes:

10.0 Compound Identification/Tune and Detection Limit Verification

		Yes	No	NA
10.1	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	X		
10.2	Was a mass calibration performed daily prior to analysis?	X		

Notes:

11.0 Data Completeness

		Yes	No	NA
11.1	Is % completeness within the control limits? (Control limit 95% _{aq} and 90% _{so})	X		
11.1.1	Number of samples: <u>13</u>			
11.1.2	Number of target compounds in each analysis: <u>14</u>			
11.1.3	Number of results "X" or "R" flagged results: <u>0</u>			

LCMS1 Run Log

Analyst: BMH
 Batch: 22001288
 Current ICAL Bath: 22001288CALDW
 20mM Amm Acetate 010-35-8
 Methanol 2128743
 Calibration Std 010-34-6
 ICV Std 010-19-7
 EIS Mix 010-32-6
 IIS Mix 010-32-7
 Expiration Date 1/25/2020
 10/1/2024
 7/24/2020
 6/3/2020
 7/17/2020
 7/20/2020

Name	Data File	Type	Acq. Date-Time	Comment	Dil.
MeOH Shot	22001288_01.d	Method Blank	1/28/2020 20:58		1
1201	22001288_02.d	Cal	1/28/2020 21:08		1
1202	22001288_03.d	Cal	1/28/2020 21:20		1
1203	22001288_04.d	Cal	1/28/2020 21:31		1
1204	22001288_05.d	Cal	1/28/2020 21:42		1
1205	22001288_06.d	Cal	1/28/2020 21:54		1
1206	22001288_07.d	Cal	1/28/2020 22:05		1
1207	22001288_08.d	Cal	1/28/2020 22:16		1
1600	22001288_09.d	QC	1/28/2020 22:28		1
1450	22001288_10.d	QC	1/28/2020 22:39		1
1500	22001288_11.d	Sample	1/28/2020 22:51		1
2005451	22001288_12.d	Sample	1/28/2020 23:02	676188	1
2005452	22001288_13.d	QC	1/28/2020 23:13	676188	1
2005453	22001288_14.d	QC	1/28/2020 23:25	676188	1
22001230601	22001288_15.d	Sample	1/28/2020 23:36	676188	1
22001241201	22001288_16.d	Sample	1/28/2020 23:47	676188	1
22001241202	22001288_17.d	Sample	1/28/2020 23:59	676188	1
22001241203	22001288_18.d	Sample	1/29/2020 0:10	676188	1
22001241204	22001288_19.d	Sample	1/29/2020 0:22	676188	1
22001241205	22001288_20.d	Sample	1/29/2020 0:33	676188	1

22001241206	2200128B_21.d	Sample	1/29/2020 0:44	676188	1
22001241207	2200128B_22.d	QC	1/29/2020 0:56	676188	1
22001241208	2200128B_23.d	QC	1/29/2020 1:07	676188	1
22001241209	2200128B_24.d	Sample	1/29/2020 1:18	676188	1
1400	2200128B_25.d	Sample	1/29/2020 1:29	676188 22001241210	1
22001241210	2200128B_26.d	Sample	1/29/2020 1:41	676188 22001241211	1
22001241211	2200128B_27.d	QC	1/29/2020 1:52	CCV	1
22001241212	2200128B_28.d	Sample	1/29/2020 2:04	676188	1
22001241213	2200128B_29.d	Sample	1/29/2020 2:15	676188	1
22001241214	2200128B_30.d	Sample	1/29/2020 2:27	676188	1
22001241215	2200128B_31.d	Sample	1/29/2020 2:38	676188	1
1400	2200128B_32.d	QC	1/29/2020 2:49		1
MeOH Shot	2200128B_33.d	Method Blank	1/29/2020 3:01		1
MeOH Shot	2200128B_34.d	Method Blank	1/29/2020 3:11		1

ORGANICS INITIAL CALIBRATION VERIFICATION

Report No:	<u>220012412</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>01/28/2020 22:28</u>	Lab File ID:	<u>2200128B_09.d</u>
Analytical Method:	<u>EPA 537 Revision 1.1</u>	Analytical Batch:	<u>676395</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i> ✓	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	42100	84	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	43200	86	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	50000	54700	109	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	55800	112	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	53700	107	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	51700	103	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	58000	116	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	50000	53700	107	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	65700	131	70	130	*
Perfluorooctanoic acid (PFOA)	ng/L	50000	51400	103	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	50000	50300	101	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	60500	121	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	50700	101	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	51800	104	70	130	

FORM 61 - ORG

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	<u>220012412</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>01/28/2020 22:39</u>	Lab File ID:	<u>2200128B_10.d</u>
Analytical Method:	<u>EPA 537 Revision 1.1</u>	Analytical Batch:	<u>676395</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	8.33	8.87	106	50	150	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	8.33	7.27	87	50	150	
Perfluorobutanesulfonic acid (PFBS)	ng/L	7.40	6.93	94	50	150	
Perfluorodecanoic acid (PFDA)	ng/L	8.33	7.27	87	50	150	
Perfluorododecanoic acid (PFDoA)	ng/L	8.33	8.07	97	50	150	
Perfluoroheptanoic acid (PFHpA)	ng/L	8.33	7.00	84	50	150	
Perfluorohexanoic acid (PFHxA)	ng/L	8.33	8.47	102	50	150	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	7.60	6.53	86	50	150	
Perfluorononanoic acid (PFNA)	ng/L	8.33	10.5	126	50	150	
Perfluorooctanoic acid (PFOA)	ng/L	8.33	7.73	93	50	150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	7.73	9.93	128	50	150	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	8.33	8.27	99	50	150	
Perfluorotridecanoic acid (PFTrDA)	ng/L	8.33	7.73	93	50	150	
Perfluoroundecanoic acid (PFUdA)	ng/L	8.33	8.27	99	50	150	

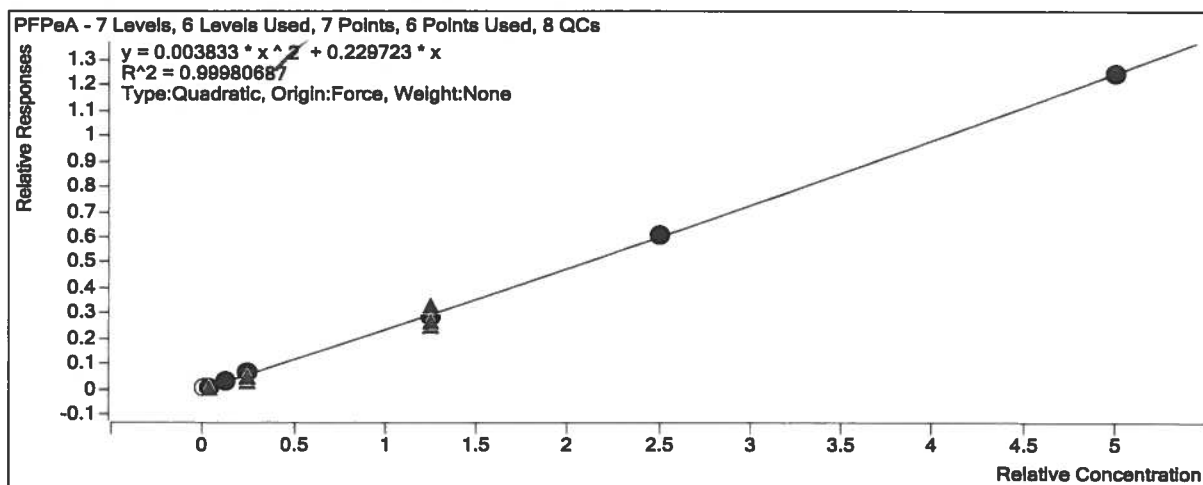
ORGANICS INSTRUMENT BLANK

Report No: 220012412 Instrument ID: QQQ1
 Analysis Date: 01/28/2020 22:51 Lab File ID: 2200128B_11.d
 Analytical Method: EPA 537 Revision 1.1 Analytical Batch: 676395

<i>ANALYTE</i>	<i>UNITS</i>	<i>RESULT</i>	<i>Q</i> ✓	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>	<i>#</i>
Perfluorobutanesulfonic acid	ng/L	4.00	U	1.47	4.00	10.0	
Perfluorodecanoic acid	ng/L	4.00	U	1.65	4.00	10.0	
Perfluorododecanoic acid	ng/L	4.00	U	2.45	4.00	10.0	
Perfluoroheptanoic acid	ng/L	4.00	U	1.85	4.00	10.0	
Perfluorohexanesulfonic acid	ng/L	4.00	U	1.64	4.00	10.0	
Perfluorohexanoic acid	ng/L	4.00	U	1.94	4.00	10.0	
Perfluorononanoic acid	ng/L	4.00	U	1.68	4.00	10.0	
Perfluorooctanesulfonic acid	ng/L	4.00	U	1.70	4.00	10.0	
Perfluorooctanoic acid	ng/L	4.00	U	1.80	4.00	10.0	
Perfluorotridecanoic acid	ng/L	4.00	U	2.56	4.00	10.0	
Perfluoroundecanoic acid	ng/L	4.00	U	1.86	4.00	10.0	

* - Result greater than 1/2 LOQ

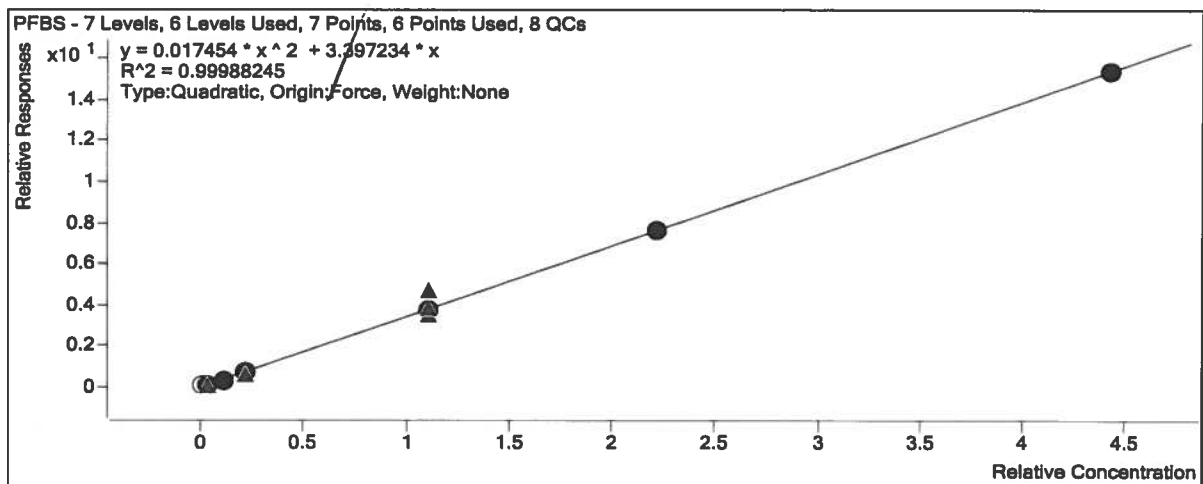
Quantitative Analysis Calibration Report



Target Compound

PFBS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	1860	0.4425	3.0476
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	4521	1.1100	2.8482
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	20093	4.4250	2.8218
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	35212	8.8500	3.0599
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	194070	44.2500	3.3508
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	412851	88.5000	3.4700
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	803877	177.0000	3.4713



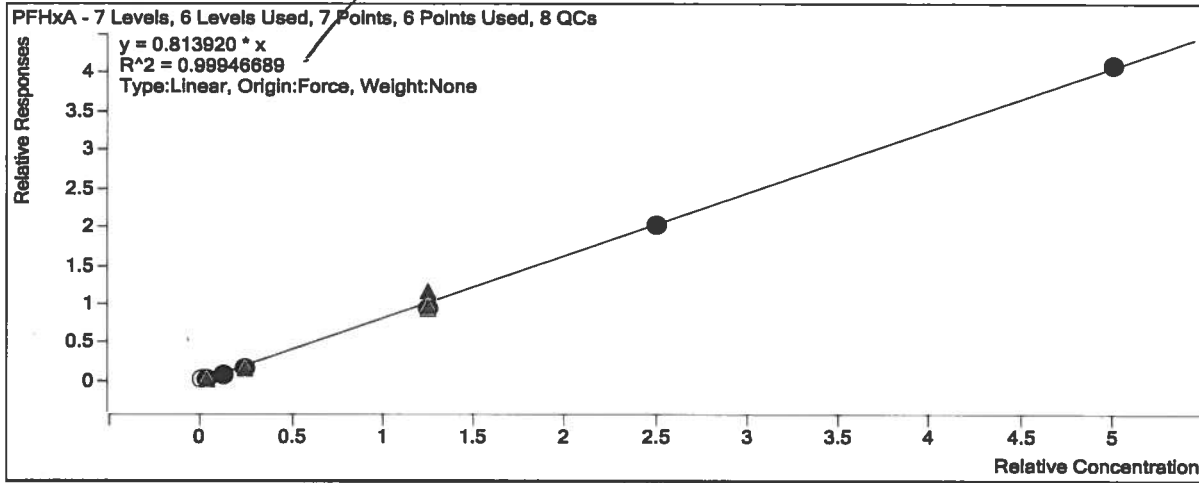
Target Compound

PFHxA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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Quantitative Analysis Calibration Report

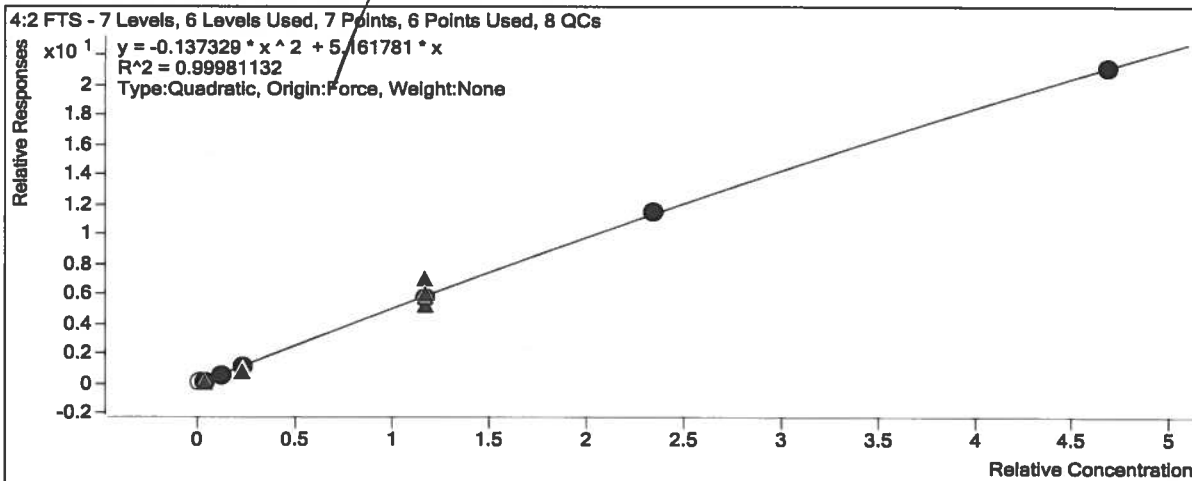
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	214176	200.0000	0.8185



Target Compound

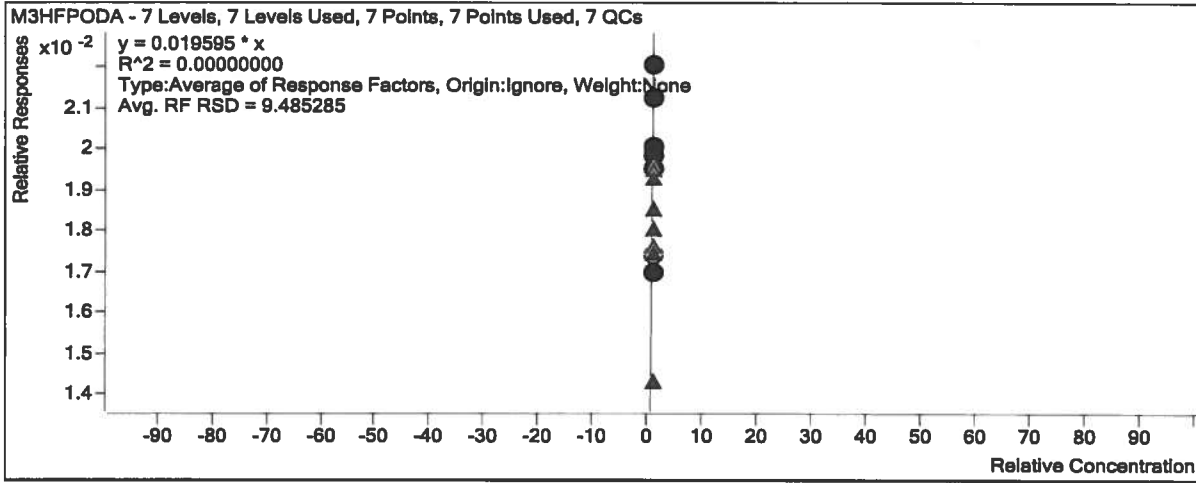
4:2 FTS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	6792	1.1700	4.0590
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	31185	4.6700	4.1497
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	57129	9.3500	4.6991
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	298535	46.7500	4.8789
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	615938	93.5000	4.9000
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	1104492	187.0000	4.5143



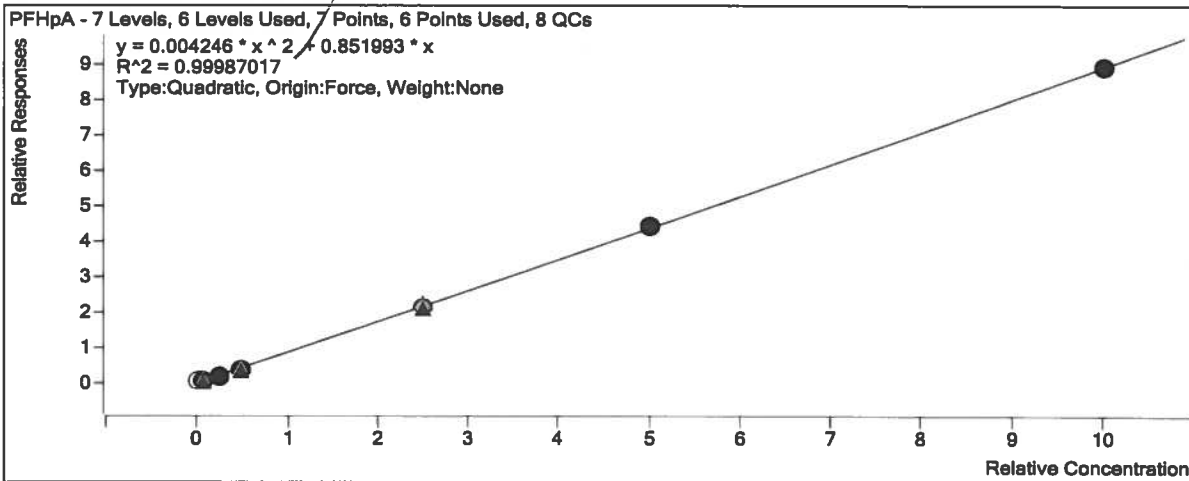
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	660	20.0000	0.0174



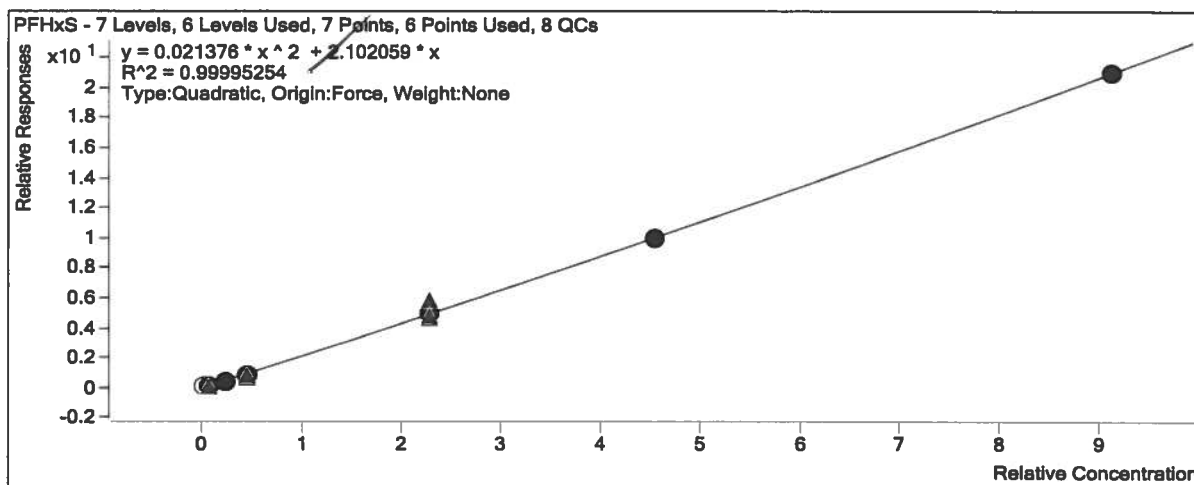
Target Compound *PFHpA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	809	0.5000	0.8035
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	1875	1.2500	0.7199
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	8670	5.0000	0.7506
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	14984	10.0000	0.7572
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	79074	50.0000	0.8430
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	174803	100.0000	0.8829
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	338755	200.0000	0.8936



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	34026	9.1200	1.8855
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	185286	45.6000	2.1660
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	397134	91.2000	2.1995
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	794117	182.4000	2.2968

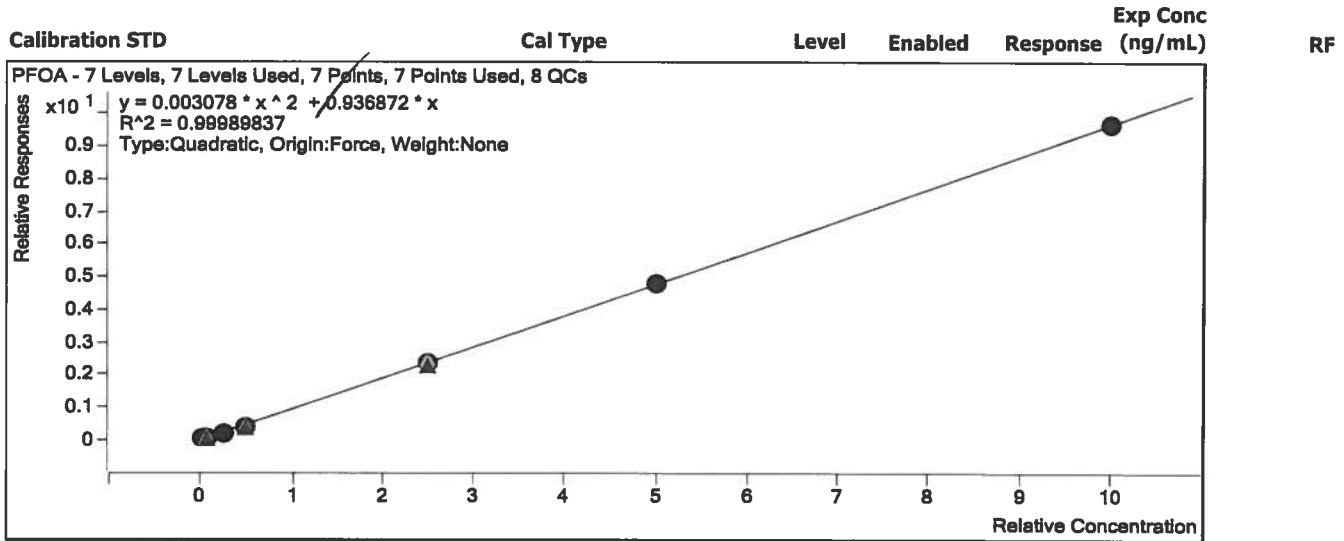


Target Compound

ADONA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	2008	0.5000	1.9950
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	5460	1.2500	2.0968
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	25766	5.0000	2.2307
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	45549	10.0000	2.3019
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	235732	50.0000	2.5132
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	494510	100.0000	2.4978
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	960371	200.0000	2.5332

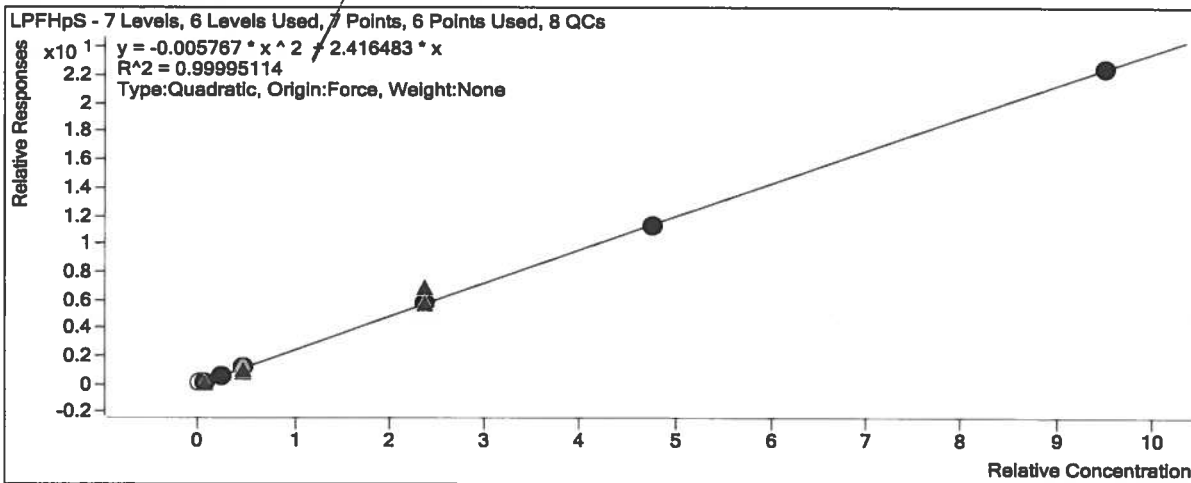
Quantitative Analysis Calibration Report



Target Compound

LPFHpS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	1828	0.4750	1.9976
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	5443	1.1900	2.2187
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	23253	4.7500	2.3859
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	40954	9.5000	2.4838
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	243919	47.5000	2.4457
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	545243	95.0000	2.3719
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	1106515	190.0000	2.3632

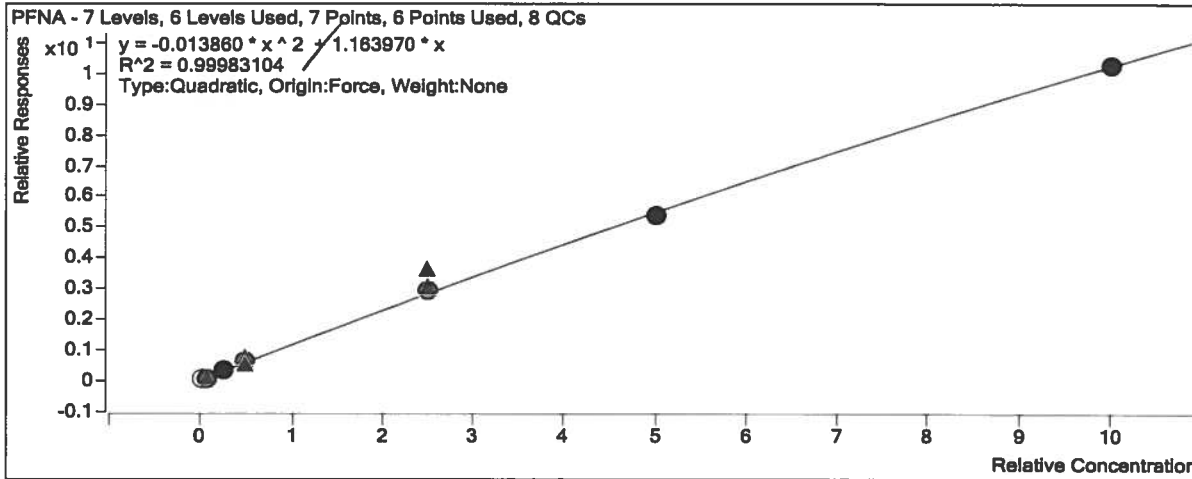


Target Compound

PFNA

Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	122125	50.0000	1.1633
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	261501	100.0000	1.0807
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	505979	200.0000	1.0266



Extracted ISTD

M4PFOS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input checked="" type="checkbox"/>	38523	20.0000	1926.1542
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	41234	20.0000	2061.7225
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	41036	20.0000	2051.8093
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	34713	20.0000	1735.6691
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	41993	20.0000	2099.6252
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	48396	20.0000	2419.7939
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	49288	20.0000	2464.3868

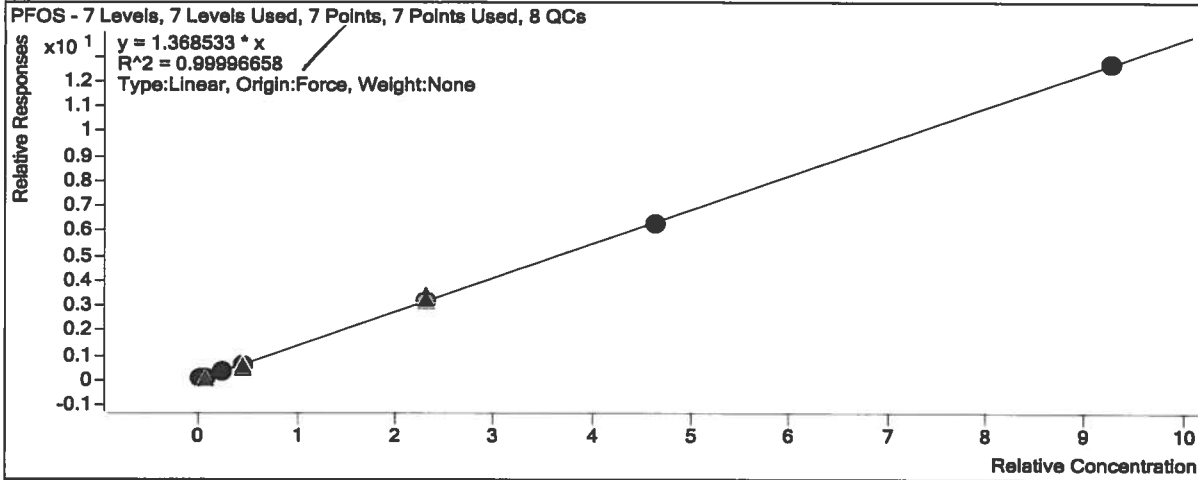
Target Compound

PFOS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input checked="" type="checkbox"/>	1287	0.4628	1.4438
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	3627	1.1600	1.5165
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	12948	4.6280	1.3635
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	21974	9.2550	1.3679
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	134285	46.2800	1.3820

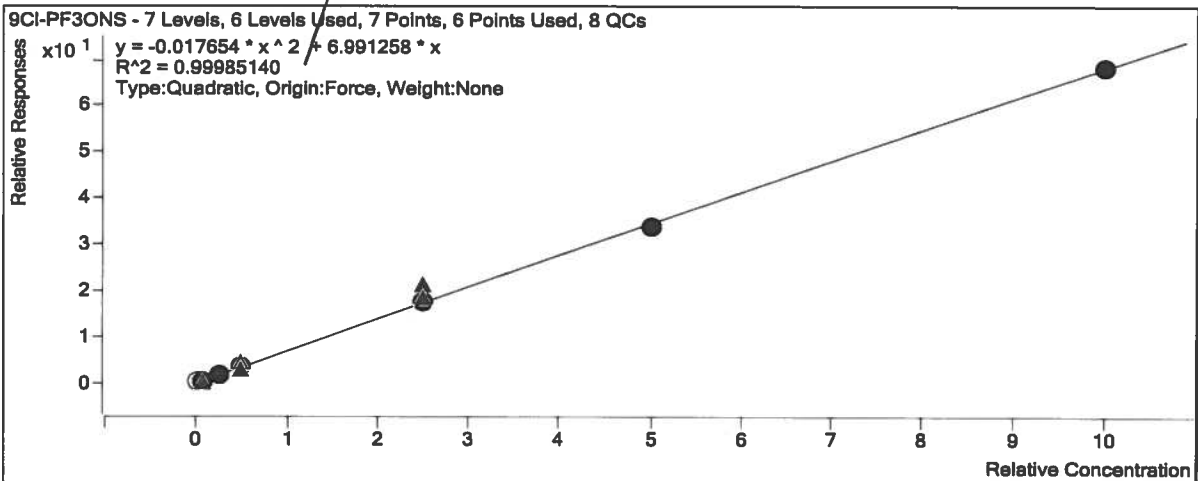
Quantitative Analysis Calibration Report

D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	303816	92.5500	1.3566
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	625243	185.1000	1.3707



Target Compound **9CI-PF3ONS**

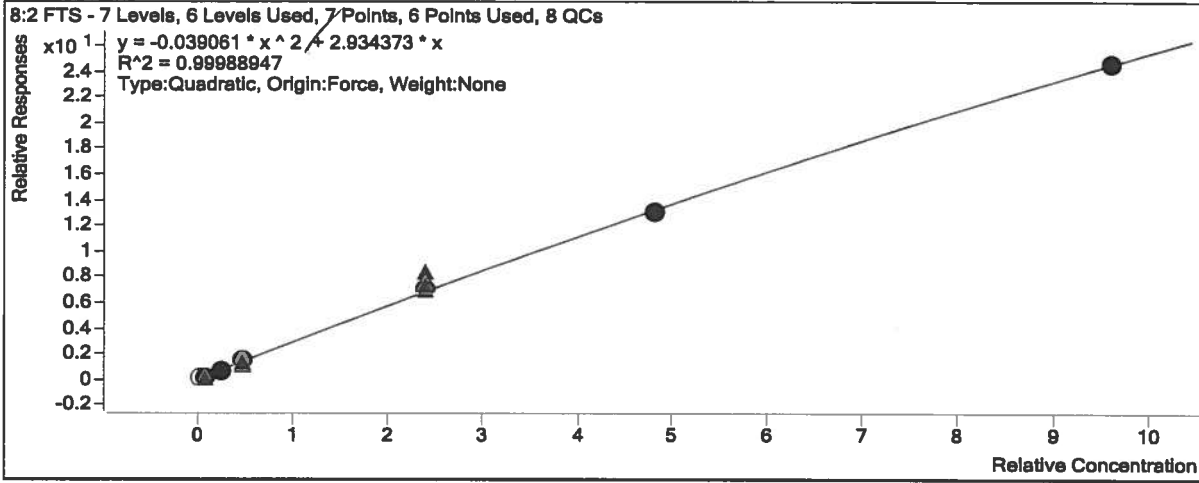
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	6216	0.5000	6.4544
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	16309	1.2500	6.3285
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	77402	5.0000	7.5448
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	133457	10.0000	7.6891
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	747975	50.0000	7.1248
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	1650396	100.0000	6.8204
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	3362490	200.0000	6.8222



Target Compound **8:2 FTS**

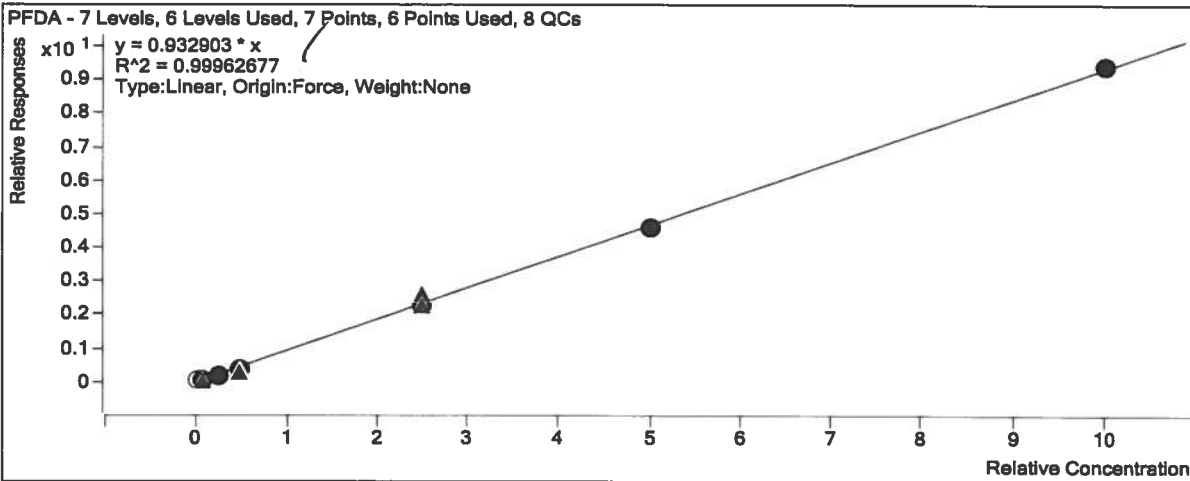
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	1212137	192.0000	2.5618



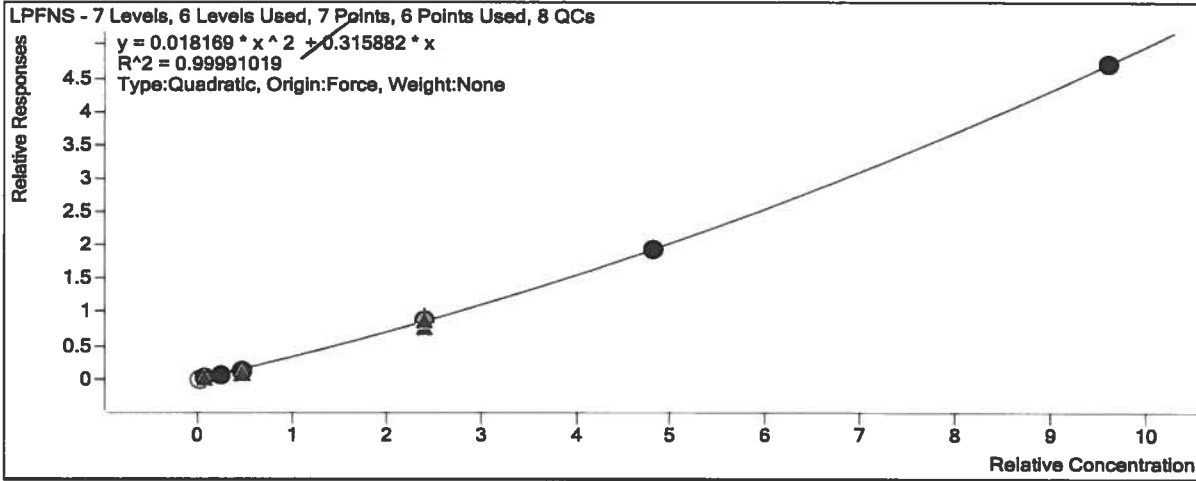
Target Compound **PFDA**

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	1568	0.5000	0.8541
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	3599	1.2500	0.7588
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	16173	5.0000	0.7438
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	27864	10.0000	0.7392
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	159084	50.0000	0.9174
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	330602	100.0000	0.9149
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	626105	200.0000	0.9390



Quantitative Analysis Calibration Report

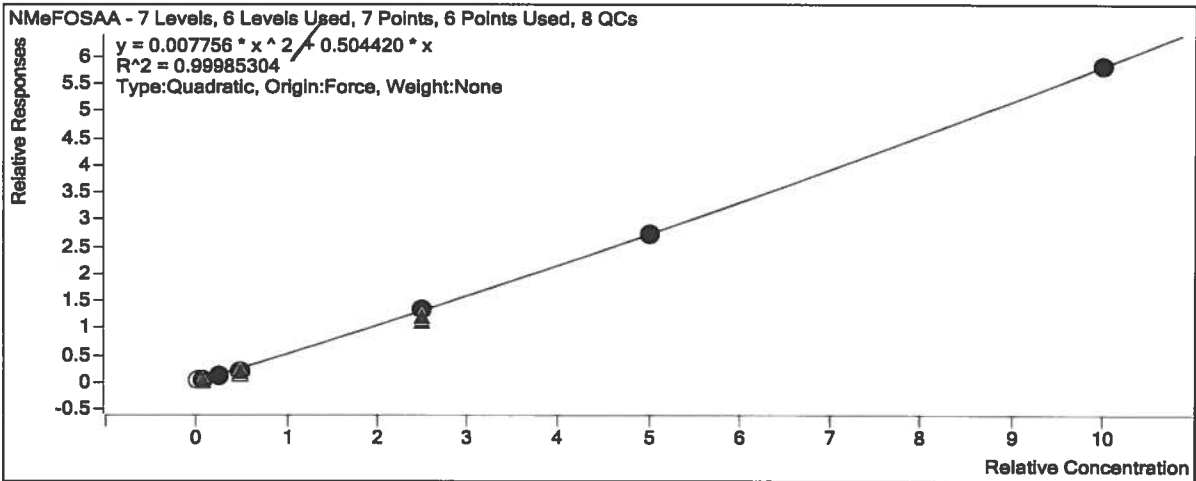
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	61200	48.0000	0.3676
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	139278	96.0000	0.4015
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	313906	192.0000	0.4904



Target Compound

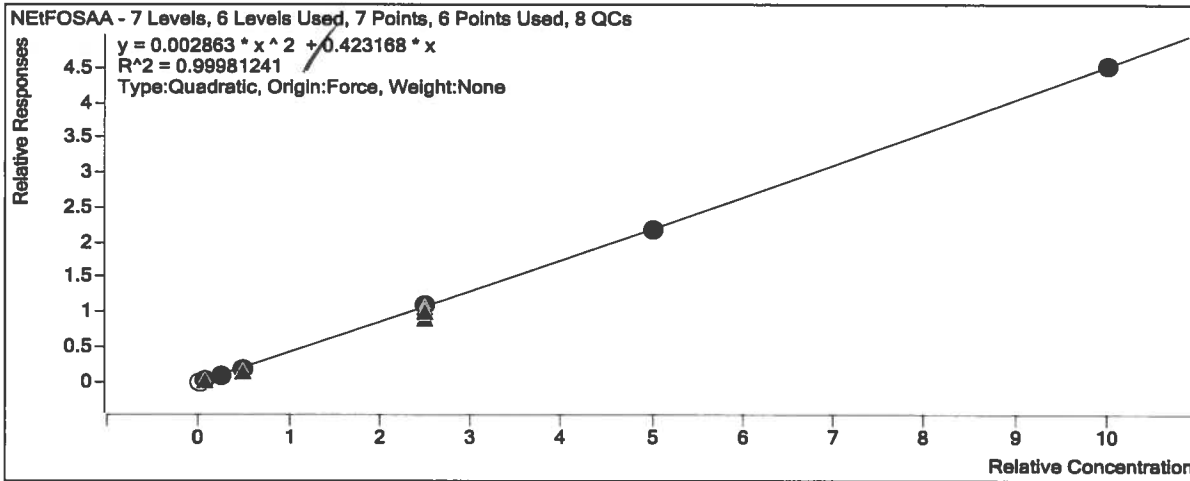
NMeFOSAA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	797	0.5000	0.4344
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	1880	1.2500	0.3963
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	8315	5.0000	0.3824
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	15722	10.0000	0.4171
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	92595	50.0000	0.5340
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	195773	100.0000	0.5418
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	388078	200.0000	0.5820



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	12585	10.0000	0.3339
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	75346	50.0000	0.4345
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	158343	100.0000	0.4382
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	301157	200.0000	0.4517

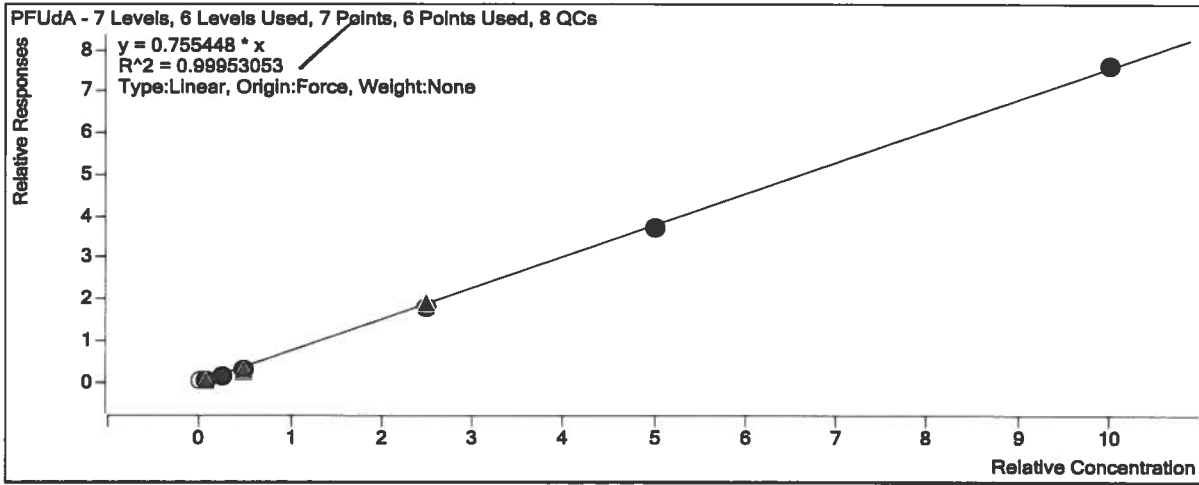


Target Compound

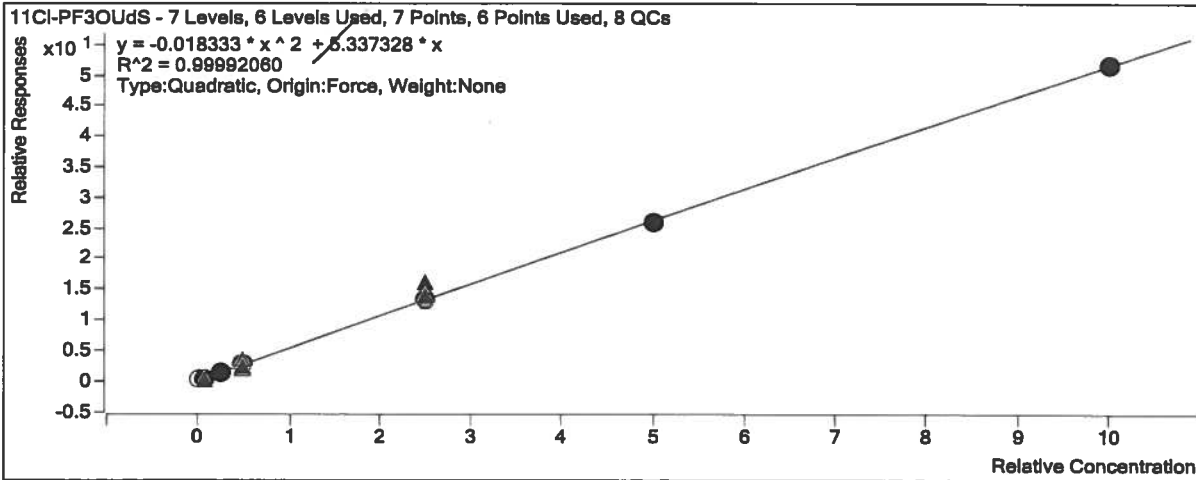
PFUDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	1208	0.5000	0.6584
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	3018	1.2500	0.6362
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	12971	5.0000	0.5965
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	22102	10.0000	0.5863
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	124479	50.0000	0.7178
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	270623	100.0000	0.7489
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	506733	200.0000	0.7600

Quantitative Analysis Calibration Report



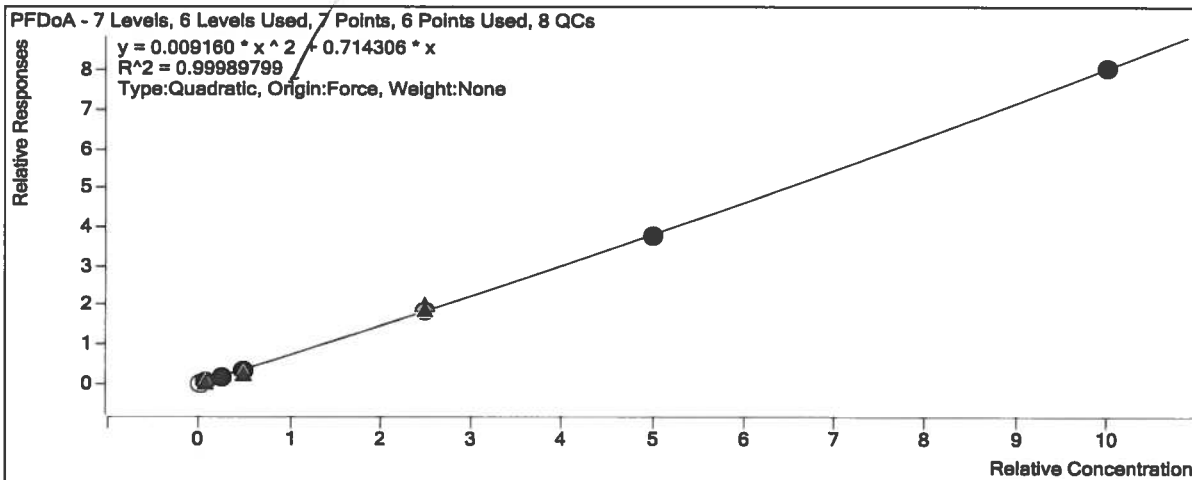
Quantitative Analysis Calibration Report



Target Compound

PFDaA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	992	0.5000	0.5404
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	2607	1.2500	0.5495
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	12026	5.0000	0.5531
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	23103	10.0000	0.6129
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	129305	50.0000	0.7456
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	274562	100.0000	0.7598
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	537313	200.0000	0.8058



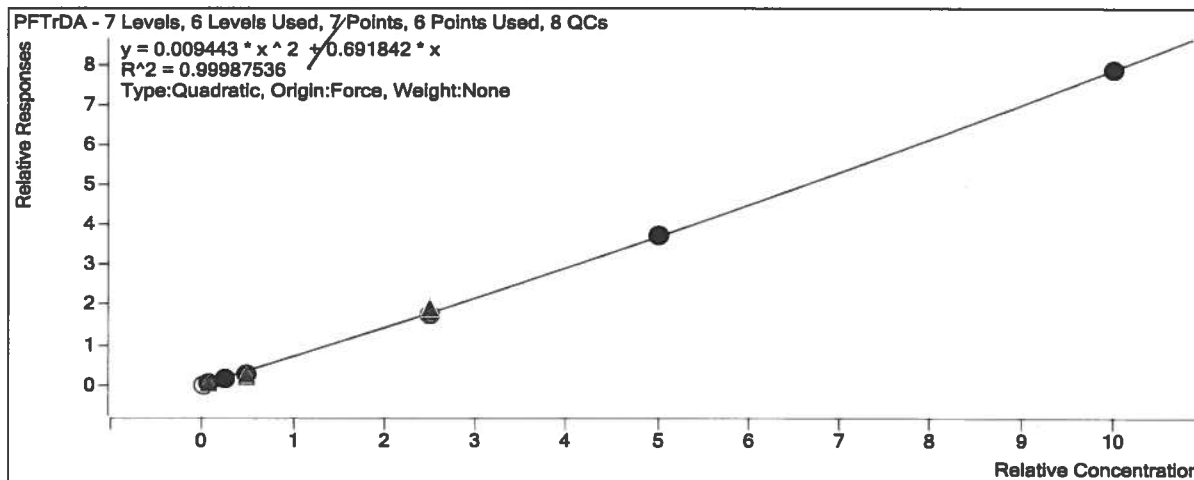
Target Compound

PFTrDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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Quantitative Analysis Calibration Report

D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	854	0.5000	0.4653
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	2597	1.2500	0.5475
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	11858	5.0000	0.5453
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	21740	10.0000	0.5767
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	123183	50.0000	0.7103
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	268859	100.0000	0.7440
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	523929	200.0000	0.7858

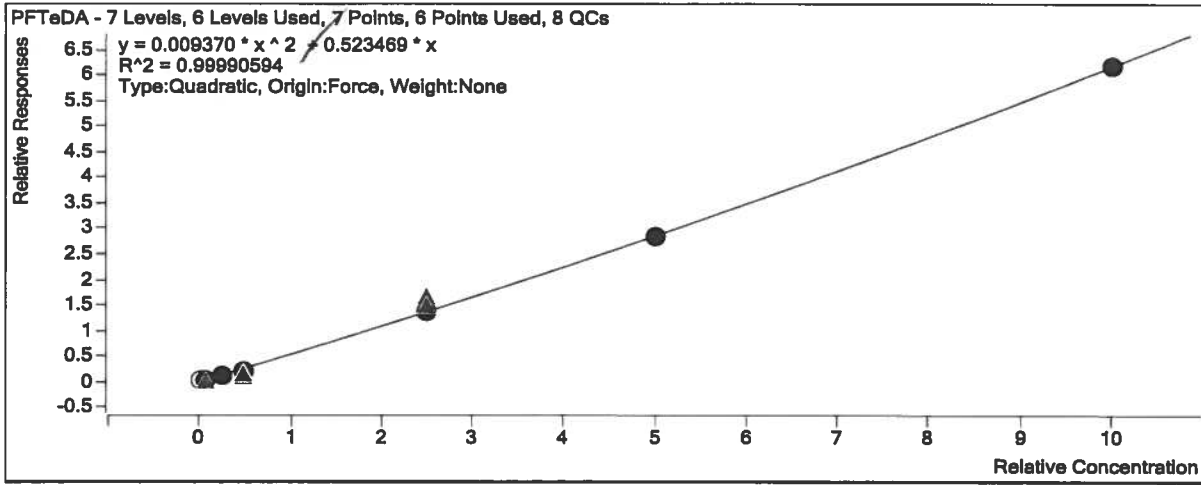


Target Compound

PFTeDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200128ACALDW\2200128B_02.d	Calibration	1	<input type="checkbox"/>	905	0.5000	0.4933
D:\MassHunter\Data\2200128ACALDW\2200128B_03.d	Calibration	2	<input checked="" type="checkbox"/>	2025	1.2500	0.4269
D:\MassHunter\Data\2200128ACALDW\2200128B_04.d	Calibration	3	<input checked="" type="checkbox"/>	9407	5.0000	0.4326
D:\MassHunter\Data\2200128ACALDW\2200128B_05.d	Calibration	4	<input checked="" type="checkbox"/>	16540	10.0000	0.4388
D:\MassHunter\Data\2200128ACALDW\2200128B_06.d	Calibration	5	<input checked="" type="checkbox"/>	94774	50.0000	0.5465
D:\MassHunter\Data\2200128ACALDW\2200128B_07.d	Calibration	6	<input checked="" type="checkbox"/>	206930	100.0000	0.5726
D:\MassHunter\Data\2200128ACALDW\2200128B_08.d	Calibration	7	<input checked="" type="checkbox"/>	411338	200.0000	0.6169

Quantitative Analysis Calibration Report



7E
ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220012412</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>01/29/2020 01:52</u>	Lab File ID:	<u>2200128B_27.d</u>
Analytical Method:	<u>EPA 537 Revision 1.1</u>	Analytical Batch:	<u>676395</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	49700	99	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	46500	93	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	41800	94	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	49500	99	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	54700	109	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	49600	99	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	46900	94	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	43600	96	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	53500	107	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	48500	97	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	46100	100	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	55100	110	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	54300	109	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	50800	102	70	130	

FORM 7E - ORG

7E
ORGANICS CALIBRATION VERIFICATION

Report No: <u>220012412</u>	Instrument ID: <u>QQQ1</u>
Analysis Date: <u>01/29/2020 02:49</u>	Lab File ID: <u>2200128B_32.d</u>
Analytical Method: <u>EPA 537 Revision 1.1</u>	Analytical Batch: <u>676395</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	47000	94	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	46600	93	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	45000	102	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	49000	98	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	52000	104	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	49300	99	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	48000	96	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	44600	98	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	54200	108	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	48500	97	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	48200	104	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	55100	110	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	54000	108	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	50900	102	70	130	

FORM 7E - ORG

INTERNAL STANDARD AREA SUMMARY

Report No:	<u>220012412</u>	Standard ID:	<u>1205 (ICAL Midpoint)</u>
Analyst:	<u>BMH</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>01/28/20 21:54</u>	Lab File ID:	<u>2200128B_06.d</u>
Analytical Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Batch:	<u>676395</u>

	M2PFOA	M2PFHxA	M4PFOS	M2PFDA
	<i>Area</i>	<i>Area</i>	<i>Area</i>	<i>Area</i>
STANDARD	37519	52354	41993	69366

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMP ID</i>	<i>/ #</i>	<i>/ #</i>	<i>/ #</i>	<i>/ #</i>
MB2005451	2005451	41197	55308	37554	74975
LCS2005452	2005452	40545	53721	36379	77915
LCSD2005453	2005453	39812	55299	24299	74079
Potable-01	22001241201	42605	57177	40186	81907
Potable-02	22001241202	44243	55525	41307	81714
Potable-03	22001241203	42775	56129	38008	79761
Potable-04	22001241204	41722	56653	39841	83336
Potable-04-FD	22001241205	37604	56945	36761	80345
Potable-05	22001241206	42112	55984	38402	80349
Potable-05MS	22001241207	40921	54879	37198	73402
Potable-05MSD	22001241208	39048	52914	35493	76878
Potable-06	22001241209	40647	54429	42697	80410
Potable-07	22001241210	43043	54477	37927	79540
Potable-08	22001241211	41747	55450	41622	77870
Potable-09	22001241212	41205	55590	37379	81400
Potable-10	22001241213	39235	50918	36136	76943
Potable-11	22001241214	40632	54233	39251	71329
FRB-012220	22001241215	37225	51732	33394	76203

AREA UPPER LIMIT = +50% of internal standard area
 AREA LOWER LIMIT = -50% of internal standard area

Column used to flag values outside QC limits
 * Value outside QC limits

LCMS1 Run Log

Analyst: BMH
 Instrument: LCMS1
 Batch: 2200205B
 Current ICAL Bath: 2200205BCAL/2200205BCALDW
 20mM Amm Acetate 010-38-6
 Methanol 2128763
 Calibration Std 010-38-5
 ICV Std 010-36-4
 EIS Mix 010-38-2
 IIS Mix 010-37-5

Expiration
 Date 10/1/2024
 Date 9/5/2020
 Date 7/29/2020
 Date 8/3/2020
 Date 8/2/2020

Name	Data File	Type	Acq. Date-Time	Comment	Dil.
MeOH Shot	2200205B_01.d	MeOH Shot	2/5/2020 13:19	MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200205B_02.d	MeOH Shot	2/5/2020 13:30	MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200205B_03.d	MeOH Shot	2/5/2020 13:41	MeOH SHOT/INSTRUMENT IDLE	1
1201	2200205B_04.d	Cal	2/5/2020 13:52		1
1202	2200205B_05.d	Cal	2/5/2020 14:03		1
1203	2200205B_06.d	Cal	2/5/2020 14:14		1
1204	2200205B_07.d	Cal	2/5/2020 14:26		1
1205	2200205B_08.d	Cal	2/5/2020 14:37		1
1206	2200205B_09.d	Cal	2/5/2020 14:48		1
1207	2200205B_10.d	Cal	2/5/2020 15:00		1
MeOH Shot	2200205B_11.d	MeOH Shot	2/5/2020 15:28	MeOH SHOT/INSTRUMENT IDLE	1
1202	2200205B_12.d	Cal	2/5/2020 15:38	RR for low PFDS conc for DOD curve only	1
MeOH Shot	2200205B_13.d	MeOH Shot	2/5/2020 15:50	MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200205B_14.d	MeOH Shot	2/5/2020 16:11	MeOH SHOT/INSTRUMENT IDLE	1
1600	2200205B_15.d	QC	2/5/2020 16:22		1
MeOH Shot	2200205B_16.d	MeOH Shot	2/5/2020 16:34	MeOH SHOT/INSTRUMENT IDLE	1
1450	2200205B_17.d	QC	2/5/2020 16:44		1
1500	2200205B_18.d	Sample	2/5/2020 16:56		1
MeOH Shot	2200205B_19.d	MeOH Shot	2/5/2020 17:07	MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200205B_20.d	MeOH Shot	2/5/2020 17:29	MeOH SHOT/INSTRUMENT IDLE	1

MeOH Shot	2200205B_21.d	MeOH Shot	2/5/2020 17:40	MeOH SHOT/INSTRUMENT IDLE	1
22001241215	2200205B_22.d	Sample	2/5/2020 17:50	676405 DW	1
22001241201	2200205B_23.d	Sample	2/5/2020 18:02	676405 DW	1
22001241202	2200205B_24.d	Sample	2/5/2020 18:13	676405 DW	1
22001241203	2200205B_25.d	Sample	2/5/2020 18:24	676405 DW	1
22001241204	2200205B_26.d	Sample	2/5/2020 18:36	676405 DW	1
22001241205	2200205B_27.d	Sample	2/5/2020 18:47	676405 DW	1
22001241206	2200205B_28.d	Sample	2/5/2020 18:58	676405 DW	1
22001241207	2200205B_29.d	QC	2/5/2020 19:10	676405 DW	1
22001241208	2200205B_30.d	QC	2/5/2020 19:21	676405 DW	1
22001241209	2200205B_31.d	Sample	2/5/2020 19:32	676405 DW	1
1400	2200205B_32.d	QC	2/5/2020 19:44		1
22001241210	2200205B_33.d	Sample	2/5/2020 19:55	676405 DW	1
22001241211	2200205B_34.d	Sample	2/5/2020 20:06	676405 DW	1
22001241212	2200205B_35.d	Sample	2/5/2020 20:18	676405 DW	1
22001241213	2200205B_36.d	Sample	2/5/2020 20:29	676405 DW	1
22001241214	2200205B_37.d	Sample	2/5/2020 20:40	676405 DW	1
1400	2200205B_38.d	QC	2/5/2020 20:51		1
MeOH Shot	2200205B_39.d	MeOH Shot	2/5/2020 21:03	MeOH SHOT/INSTRUMENT IDLE	1
2006259	2200205B_40.d	Sample	2/5/2020 21:14	676392	1
2006260	2200205B_41.d	QC	2/5/2020 21:25	676392	1
2006261	2200205B_42.d	QC	2/5/2020 21:36	676392	1
22001283704	2200205B_43.d	Sample	2/5/2020 21:48	676392	1
22001283701	2200205B_44.d	Sample	2/5/2020 21:59	676392	1
22001283702	2200205B_45.d	Sample	2/5/2020 22:10	676392	1
22001283703 x5	2200205B_46.d	Sample	2/5/2020 22:22	676392	5
22001283703	2200205B_47.d	Sample	2/5/2020 22:33	676392	1
1400	2200205B_48.d	QC	2/5/2020 22:44		1
22001020204	2200205B_49.d	Sample	2/5/2020 22:56	674594	1
22001020205	2200205B_50.d	Sample	2/5/2020 23:07	674594	1
22001020206	2200205B_51.d	Sample	2/5/2020 23:18	674594	1
1400	2200205B_52.d	QC	2/5/2020 23:30		1
2007156	2200205B_53.d	Sample	2/5/2020 23:41	676610	1
2007157	2200205B_54.d	QC	2/5/2020 23:52	676610	1

2007158	2200205B_55.d	QC	2/6/2020 0:04	676610	1
22001283911	2200205B_56.d	Sample	2/6/2020 0:15	676610	1
22001283912	2200205B_57.d	Sample	2/6/2020 0:26	676610	1
22001313002	2200205B_58.d	Sample	2/6/2020 0:38	676610	1
22001283901	2200205B_59.d	Sample	2/6/2020 0:49	676610	1
22001283902	2200205B_60.d	Sample	2/6/2020 1:00	676610	1
22001283903 x5	2200205B_61.d	Sample	2/6/2020 1:12	676610	5
22001283903	2200205B_62.d	Sample	2/6/2020 1:23	676610	1
MeOH Shot	2200205B_63.d	MeOH Shot	2/6/2020 1:35		1
22001283904	2200205B_64.d	Sample	2/6/2020 1:45	676610	1
22001283905	2200205B_65.d	Sample	2/6/2020 1:57	676610	1
22001283906	2200205B_66.d	Sample	2/6/2020 2:08	676610	1
1400	2200205B_67.d	QC	2/6/2020 2:19		1
22001283907	2200205B_68.d	Sample	2/6/2020 2:31	676610	1
22001283908	2200205B_69.d	Sample	2/6/2020 2:42	676610	1
22001283909	2200205B_70.d	Sample	2/6/2020 2:53	676610	1
22001283910	2200205B_71.d	Sample	2/6/2020 3:05	676610	1
22001313001 2000x DIA	2200205B_72.d	Sample	2/6/2020 3:16	676610	1
22001313001 200x DIA	2200205B_73.d	Sample	2/6/2020 3:28	676610	1
MeOH Shot	2200205B_74.d	MeOH Shot	2/6/2020 3:39		1
1400	2200205B_75.d	QC	2/6/2020 3:50		1
2008241	2200205B_76.d	Sample	2/6/2020 4:01	676854	1
2008242	2200205B_77.d	QC	2/6/2020 4:12	676854	1
2008243	2200205B_78.d	QC	2/6/2020 4:24	676854	1
22002041604	2200205B_79.d	Sample	2/6/2020 4:35	676854	1
22002041601	2200205B_80.d	Sample	2/6/2020 4:46	676854	1
22002041602	2200205B_81.d	Sample	2/6/2020 4:58	676854	1
22002041603	2200205B_82.d	Sample	2/6/2020 5:09	676854	1
MeOH Shot	2200205B_83.d	MeOH Shot	2/6/2020 5:21		1
22002041401	2200205B_84.d	Sample	2/6/2020 5:31	676854	1
22002041402	2200205B_85.d	Sample	2/6/2020 5:43	676854	1
22002041403	2200205B_86.d	Sample	2/6/2020 5:54	676854	1
22002041404	2200205B_87.d	Sample	2/6/2020 6:05	676854	1
22002041405	2200205B_88.d	Sample	2/6/2020 6:17	676854	1

ORGANICS INITIAL CALIBRATION VERIFICATION

Report No:	<u>220012412</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>02/05/2020 16:22</u>	Lab File ID:	<u>2200205B_15.d</u>
Analytical Method:	<u>EPA 537 Revision 1.1</u>	Analytical Batch:	<u>676962</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	42500	85	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	43900	88	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	50000	44000	88	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	54600	109	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	48900	98	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	55100	110	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	51800	104	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	50000	55200	110	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	56700	113	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	54100	108	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	50000	48400	97	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	52200	104	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	45000	90	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	49300	99	70	130	

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	<u>220012412</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>02/05/2020 16:44</u>	Lab File ID:	<u>2200205B_17.d</u>
Analytical Method:	<u>EPA 537 Revision 1.1</u>	Analytical Batch:	<u>676962</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	8.33	8.47	101	50	150	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	8.33	9.60	115	50	150	
Perfluorobutanesulfonic acid (PFBS)	ng/L	7.40	7.07	96	50	150	
Perfluorodecanoic acid (PFDA)	ng/L	8.33	9.73	117	50	150	
Perfluorododecanoic acid (PFDoA)	ng/L	8.33	8.33	100	50	150	
Perfluoroheptanoic acid (PFHpA)	ng/L	8.33	10.3	123	50	150	
Perfluorohexanoic acid (PFHxA)	ng/L	8.33	8.60	103	50	150	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	7.60	8.07	106	50	150	
Perfluorononanoic acid (PFNA)	ng/L	8.33	8.73	104	50	150	
Perfluorooctanoic acid (PFOA)	ng/L	8.33	8.93	107	50	150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	7.73	8.20	106	50	150	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	8.33	8.80	105	50	150	
Perfluorotridecanoic acid (PFTrDA)	ng/L	8.33	8.07	97	50	150	
Perfluoroundecanoic acid (PFUdA)	ng/L	8.33	9.00	108	50	150	

ORGANICS INSTRUMENT BLANK

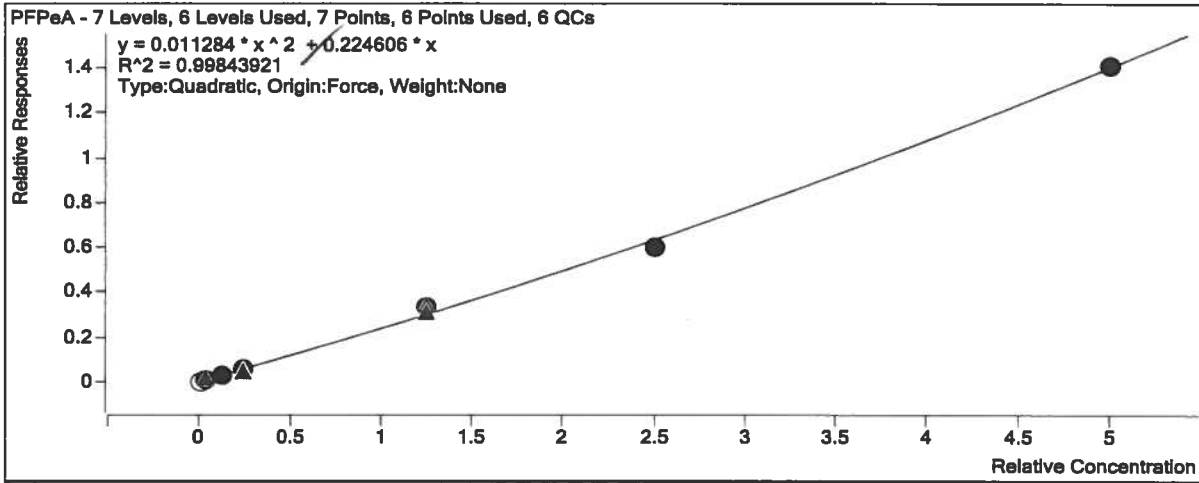
Report No: 220012412 Instrument ID: QQQ1
 Analysis Date: 02/05/2020 16:56 Lab File ID: 2200205B_18.d
 Analytical Method: EPA 537 Revision 1.1 Analytical Batch: 676962

<i>ANALYTE</i>	<i>UNITS</i>	<i>RESULT</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>	<i>#</i>
Perfluorobutanesulfonic acid	ng/L	4.00	U	1.47	4.00	10.0	
Perfluorodecanoic acid	ng/L	4.00	U	1.65	4.00	10.0	
Perfluorododecanoic acid	ng/L	4.00	U	2.45	4.00	10.0	
Perfluoroheptanoic acid	ng/L	4.00	U	1.85	4.00	10.0	
Perfluorohexanesulfonic acid	ng/L	4.00	U	1.64	4.00	10.0	
Perfluorohexanoic acid	ng/L	4.00	U	1.94	4.00	10.0	
Perfluorononanoic acid	ng/L	4.00	U	1.68	4.00	10.0	
Perfluorooctanesulfonic acid	ng/L	4.00	U	1.70	4.00	10.0	
Perfluorooctanoic acid	ng/L	4.00	U	1.80	4.00	10.0	
Perfluorotridecanoic acid	ng/L	4.00	U	2.56	4.00	10.0	
Perfluoroundecanoic acid	ng/L	4.00	U	1.86	4.00	10.0	

* - Result greater than 1/2 LOQ

FORM 41 - ORG

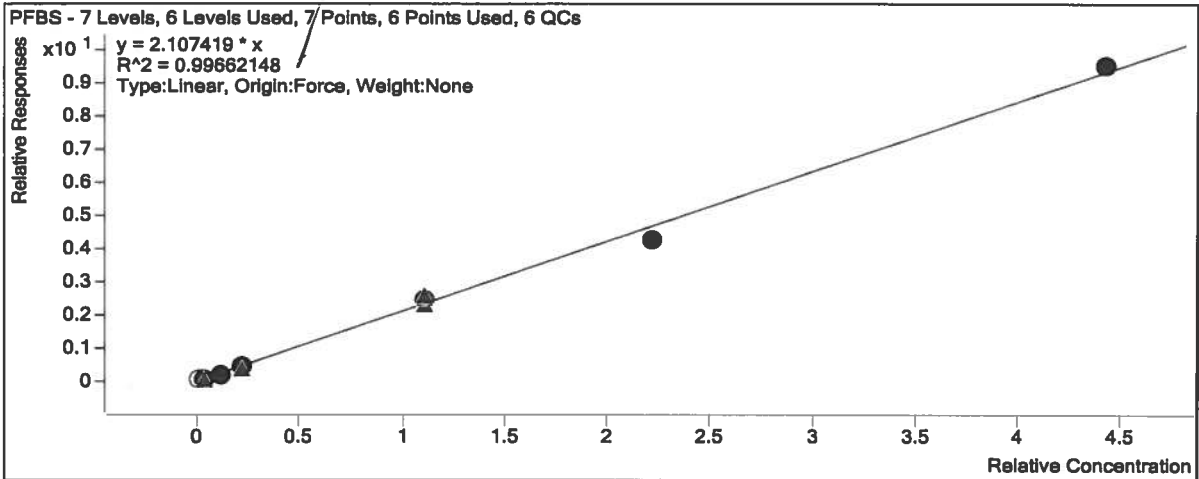
Quantitative Analysis Calibration Report



Target Compound

PFBS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1662	0.4425	1.6841
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	4491	1.1100	1.8187
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	19089	4.4250	1.8870
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	38761	8.8500	1.9615
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	206877	44.2500	2.1945
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	427180	88.5000	1.9158
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	847724	177.0000	2.1504



Target Compound

4:2 FTS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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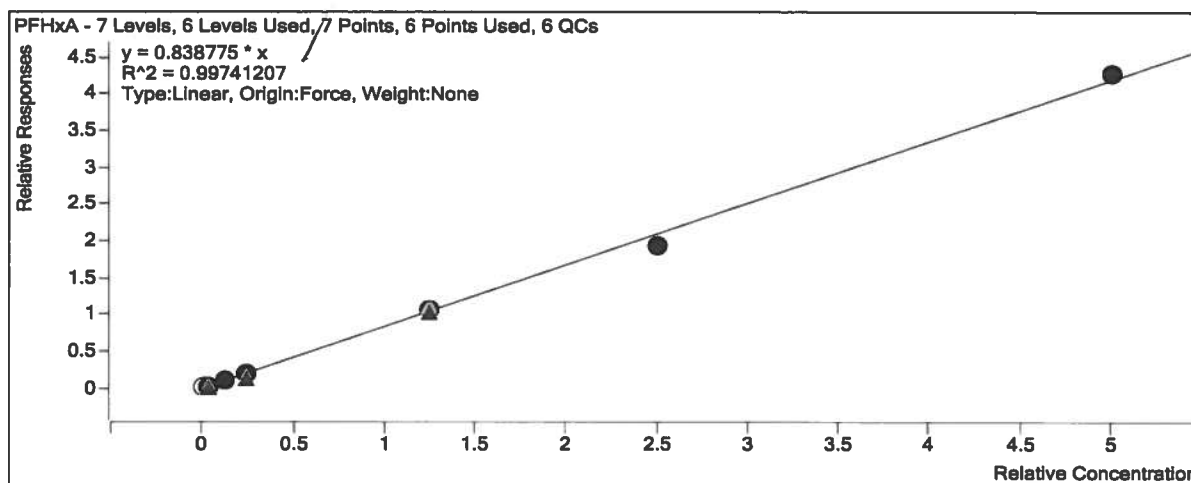
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	89316	40.0000	2232.8932
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	85217	40.0000	2130.4270
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	100782	40.0000	2519.5618
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	89088	40.0000	2227.2092

Target Compound

PFHxA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	858	0.5000	0.7695
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	2284	1.2500	0.8214
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	8960	5.0000	0.7839
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	17159	10.0000	0.7685
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	90965	50.0000	0.8540
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	194461	100.0000	0.7718
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	380755	200.0000	0.8548



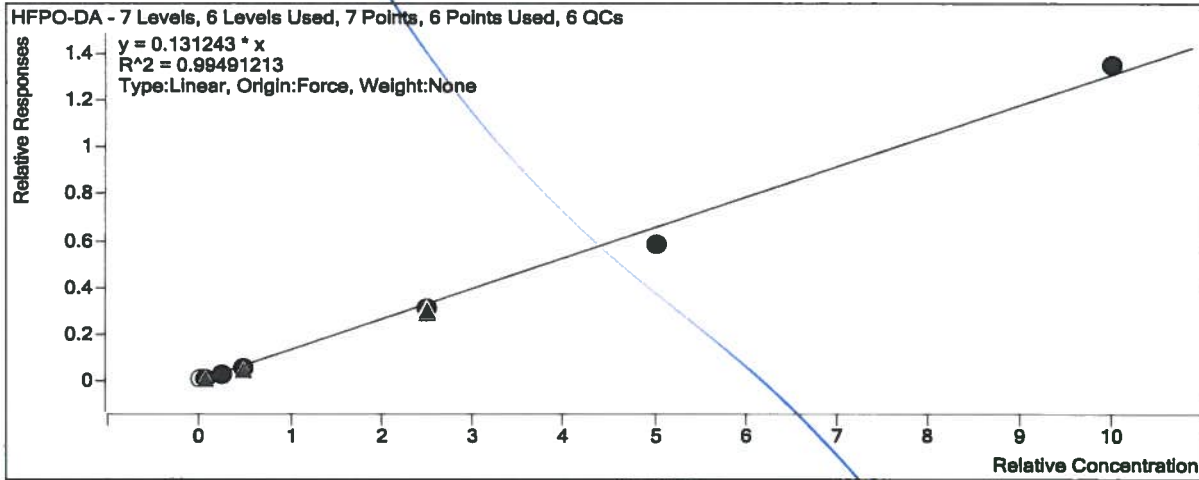
Target Compound

LPFPeS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	901	0.4700	0.6005
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	2591	1.1800	0.6795
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	10690	4.7000	0.6904
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	22083	9.4000	0.7256

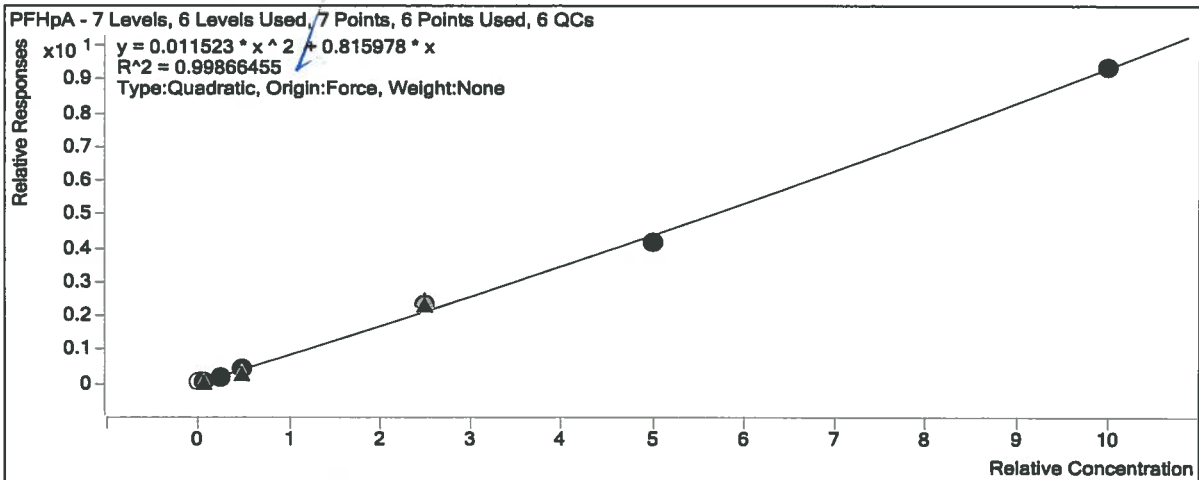
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	84934	200.0000	0.1352



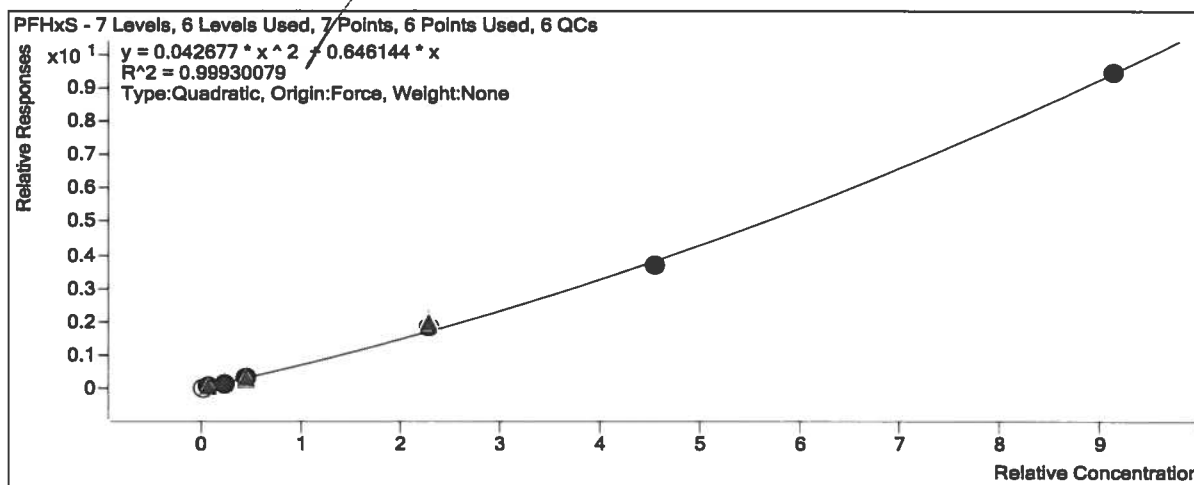
Target Compound *PFHpA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1376	0.5000	0.8620
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	3130	1.2500	0.7750
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	12407	5.0000	0.7532
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	27065	10.0000	0.8360
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	147233	50.0000	0.9385
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	299032	100.0000	0.8385
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	586685	200.0000	0.9341



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	19390	9.1200	0.6567
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	117211	45.6000	0.8192
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	264343	91.2000	0.8128
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	594370	182.4000	1.0377

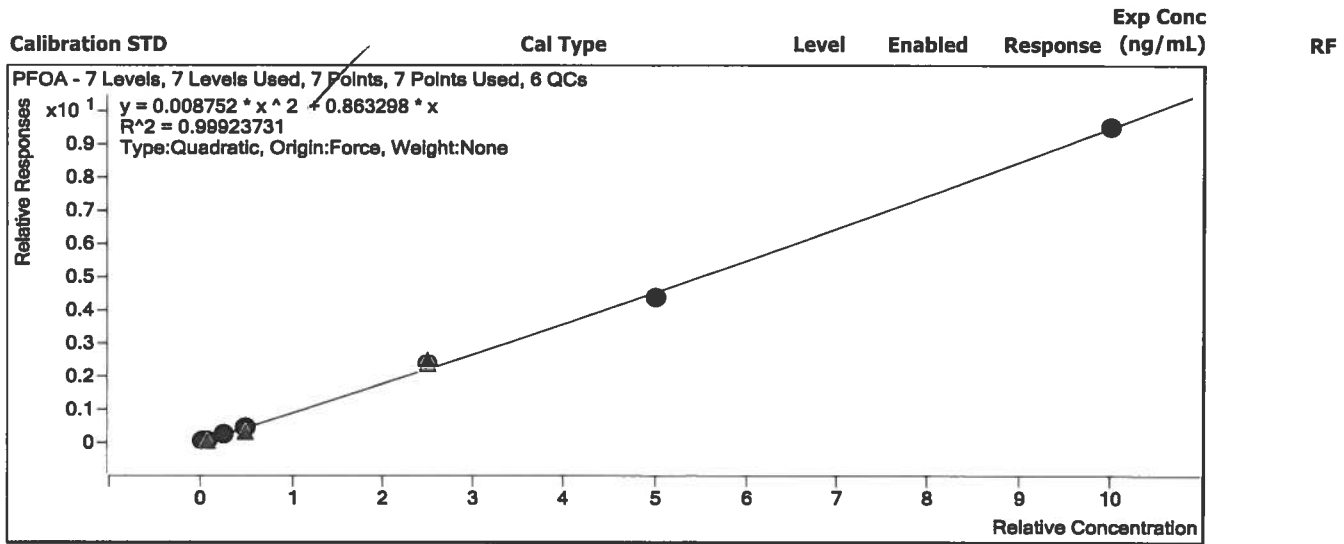


Target Compound

ADONA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	2784	0.5000	1.7437
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	7421	1.2500	1.8372
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	34085	5.0000	2.0693
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	70474	10.0000	2.1767
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	356438	50.0000	2.2720
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	726898	100.0000	2.0383
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	1369376	200.0000	2.1803

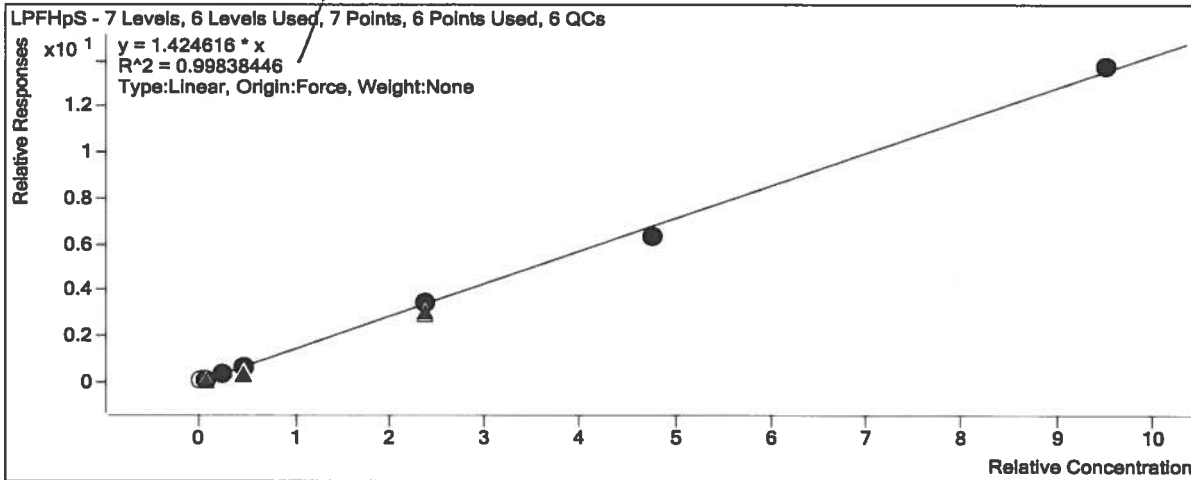
Quantitative Analysis Calibration Report



Target Compound

LPFHpS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1103	0.4750	1.3528
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	2469	1.1900	1.2834
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	9994	4.7500	1.3342
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	21482	9.5000	1.3818
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	125808	47.5000	1.4336
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	299515	95.0000	1.3348
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	717953	190.0000	1.4467

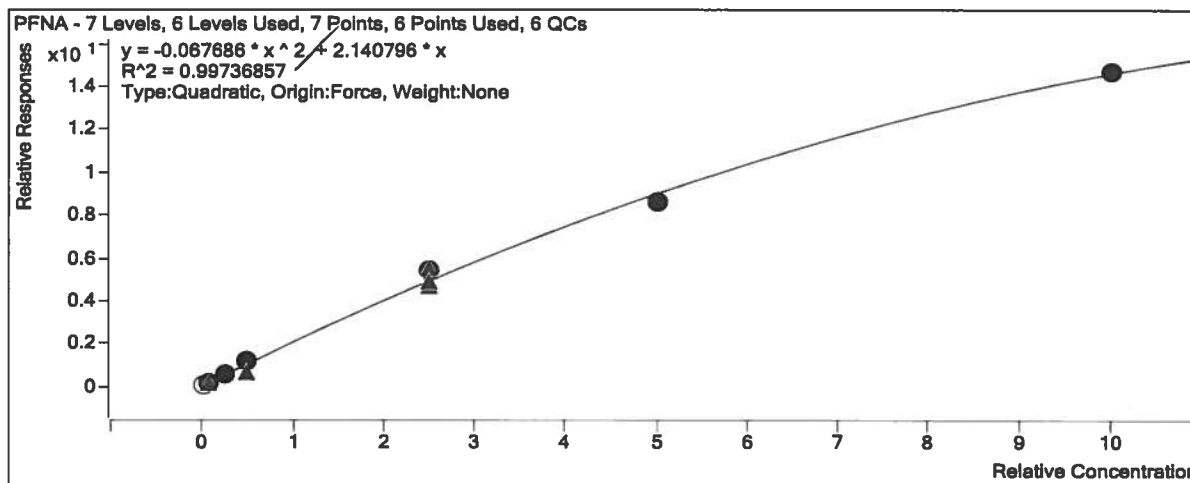


Target Compound

PFNA

Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	200345	50.0000	2.1688
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	406712	100.0000	1.7218
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	768378	200.0000	1.4709



Extracted ISTD

M4PFOS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input checked="" type="checkbox"/>	34321	20.0000	1716.0723
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	32331	20.0000	1616.5576
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	31539	20.0000	1576.9688
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	32728	20.0000	1636.4192
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	36950	20.0000	1847.5048
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	47242	20.0000	2362.0769
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	52239	20.0000	2611.9660

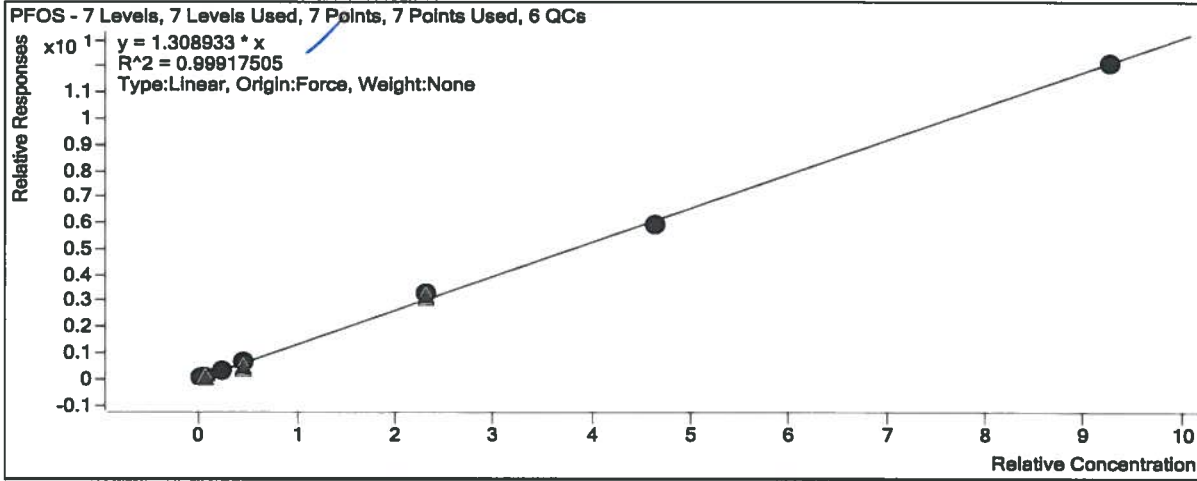
Target Compound

PFOS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input checked="" type="checkbox"/>	1146	0.4628	1.4430
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	2639	1.1600	1.4073
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	10131	4.6280	1.3882
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	20793	9.2550	1.3730
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	122639	46.2800	1.4343

Quantitative Analysis Calibration Report

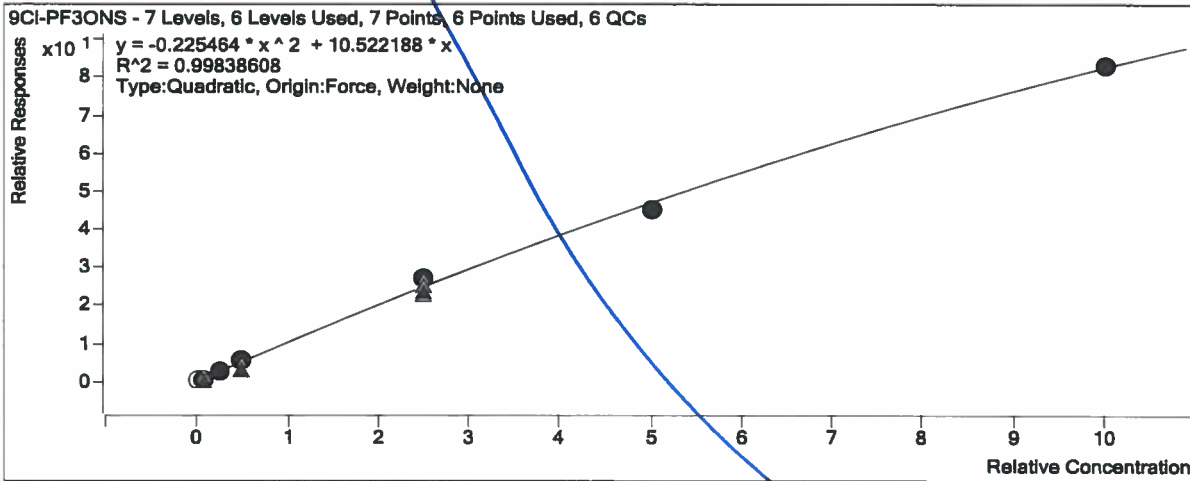
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	280473	92.5500	1.2830
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	632080	185.1000	1.3074



Target Compound

9CI-PF3ONS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	8668	0.5000	10.1024
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	21973	1.2500	10.8740
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	92967	5.0000	11.7906
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	190404	10.0000	11.6354
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	999688	50.0000	10.8220
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	2135598	100.0000	9.0412
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	4334865	200.0000	8.2981

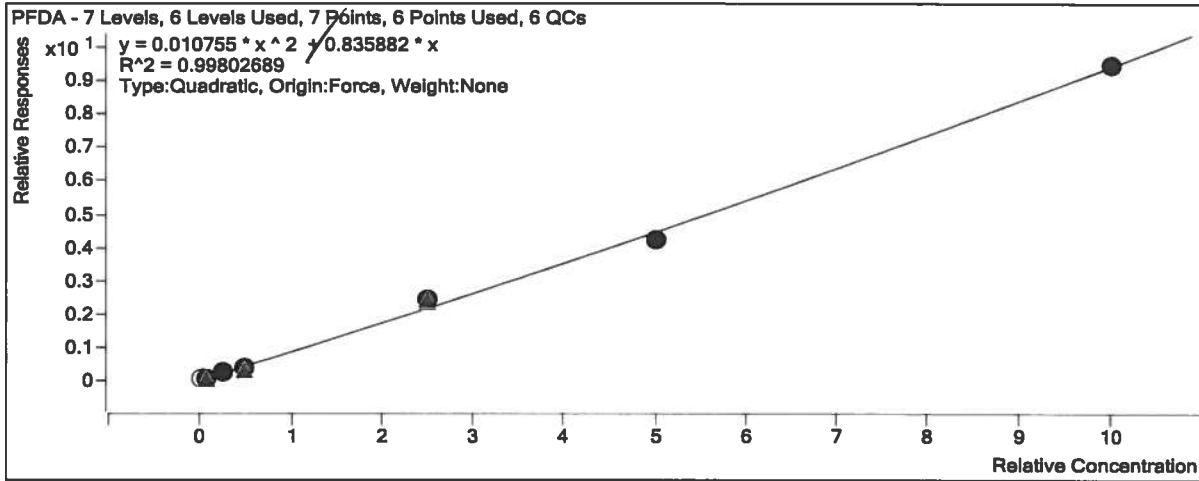


Target Compound

8:2 FTS

Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	44078	10.0000	0.8266
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	235018	50.0000	0.9777
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	463291	100.0000	0.8464
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	836048	200.0000	0.9470



Extracted ISTD

M2PFDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input checked="" type="checkbox"/>	107710	20.0000	5385.4958
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	103256	20.0000	5162.8059
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	102550	20.0000	5127.5084
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	106643	20.0000	5332.1707
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	96149	20.0000	4807.4506
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	109474	20.0000	5473.6949
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	88280	20.0000	4413.9954

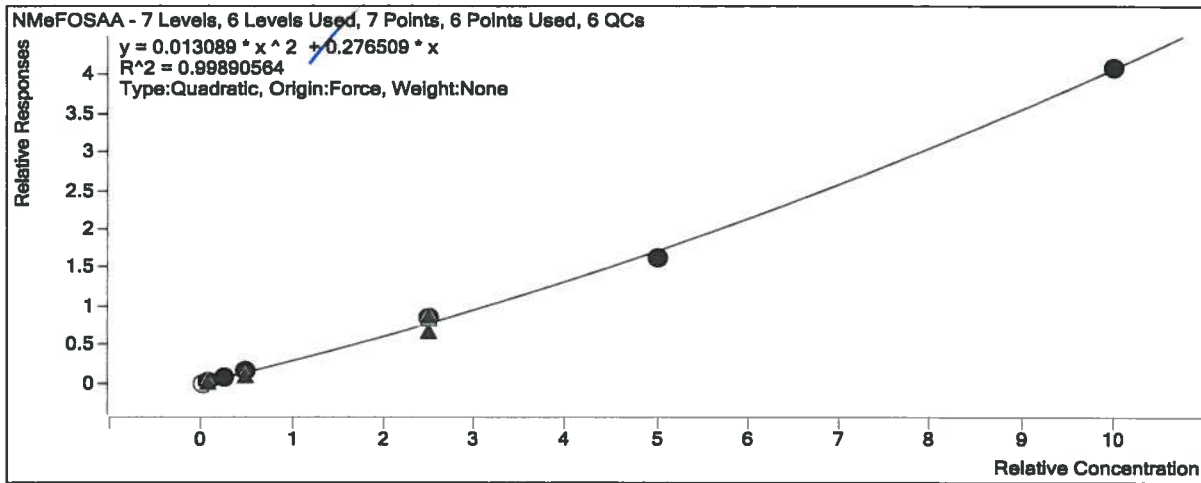
Target Compound

LPFNS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	407	0.4800	0.1576
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	1143	1.2000	0.1845
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	5193	4.8000	0.2110
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	10519	9.6000	0.2055

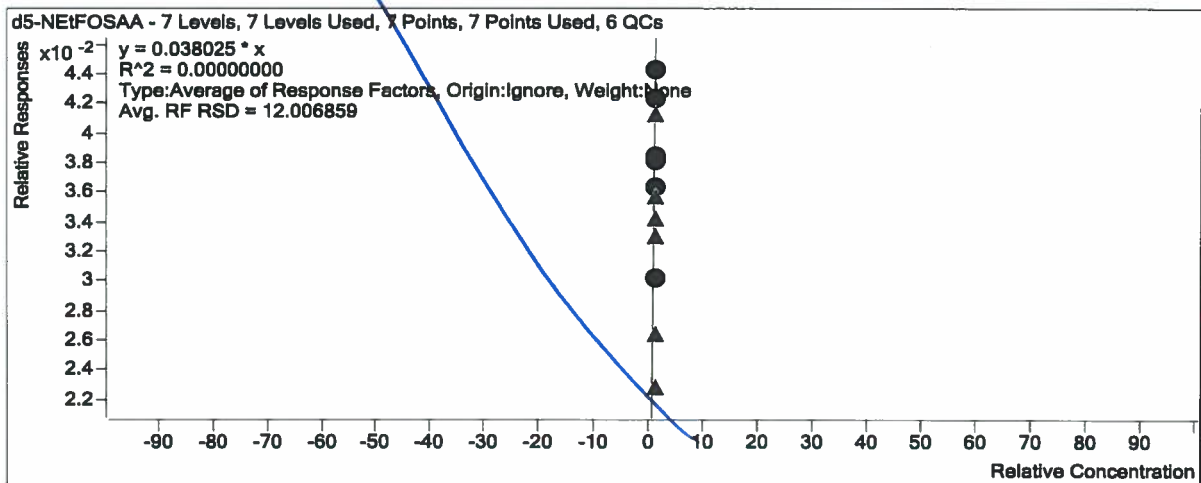
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	360709	200.0000	0.4086



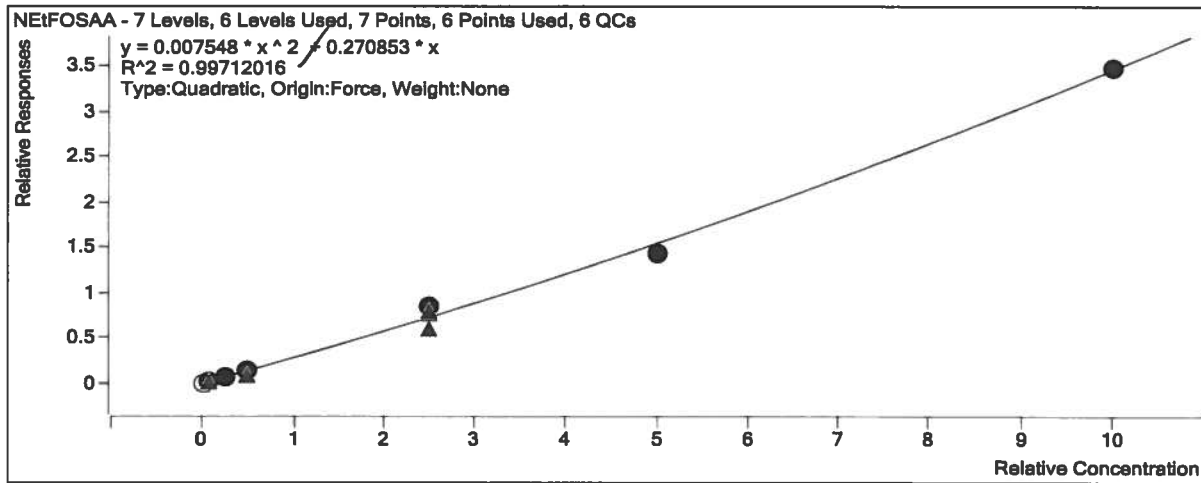
Instrument ISTD *d5-NEtFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input checked="" type="checkbox"/>	3916	20.0000	0.0364
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	3938	20.0000	0.0381
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	3944	20.0000	0.0385
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	3220	20.0000	0.0302
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	4078	20.0000	0.0424
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	3980	20.0000	0.0364
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	3907	20.0000	0.0443



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	14965	10.0000	0.2807
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	81856	50.0000	0.3405
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	158364	100.0000	0.2893
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	307163	200.0000	0.3479

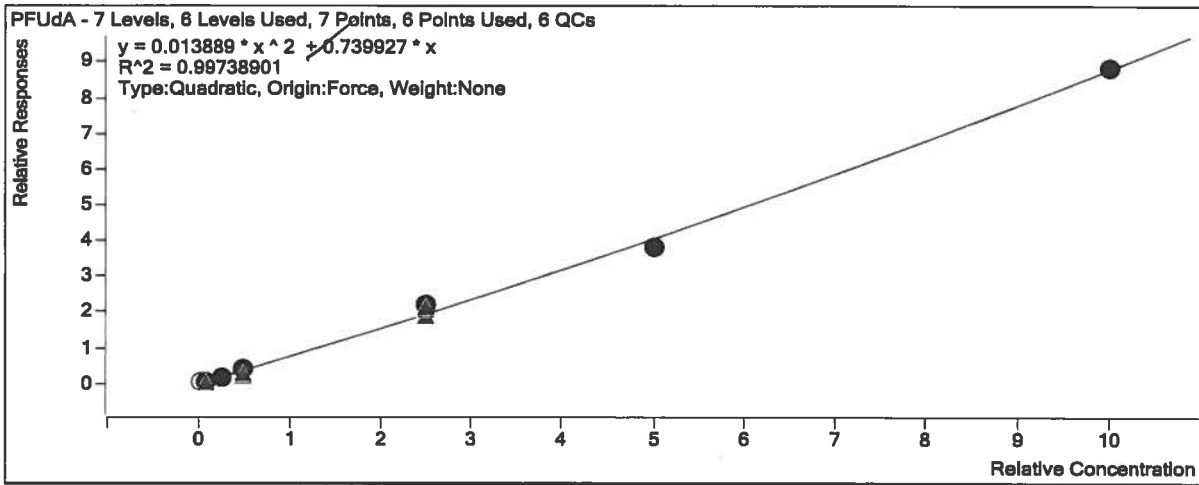


Target Compound

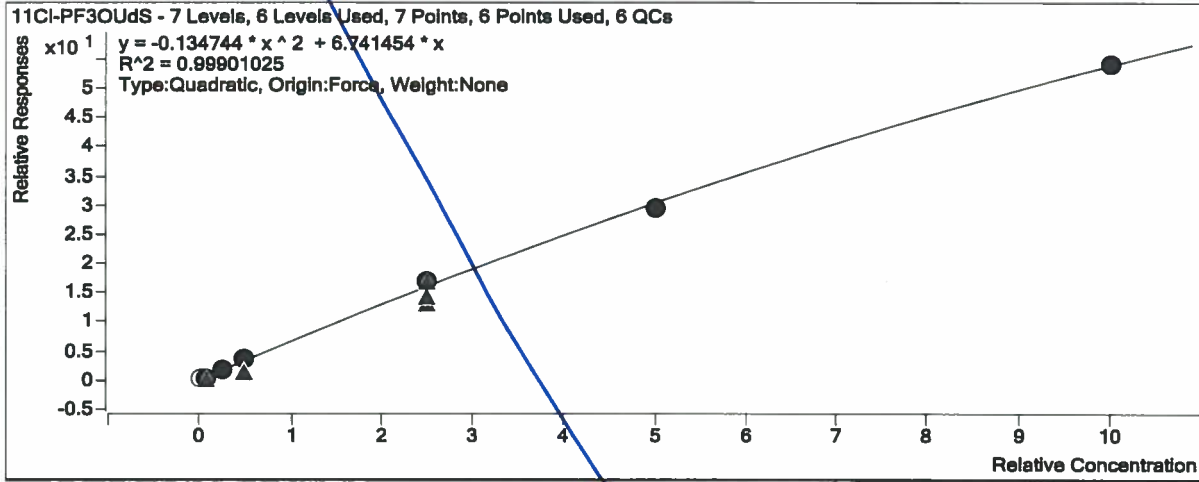
PFUDa

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1700	0.5000	0.6312
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	4508	1.2500	0.6985
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	19907	5.0000	0.7765
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	41335	10.0000	0.7752
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	215694	50.0000	0.8973
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	417468	100.0000	0.7627
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	779276	200.0000	0.8827

Quantitative Analysis Calibration Report



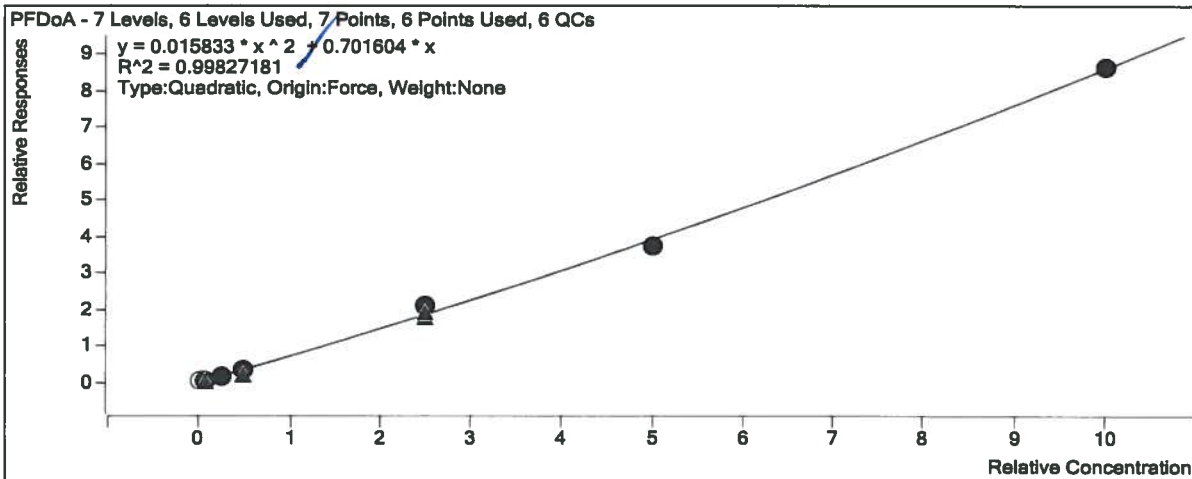
Quantitative Analysis Calibration Report



Target Compound

PFDaA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1835	0.5000	0.6815
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	4160	1.2500	0.6446
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	17563	5.0000	0.6850
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	38543	10.0000	0.7228
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	201774	50.0000	0.8394
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	407133	100.0000	0.7438
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	761876	200.0000	0.8630



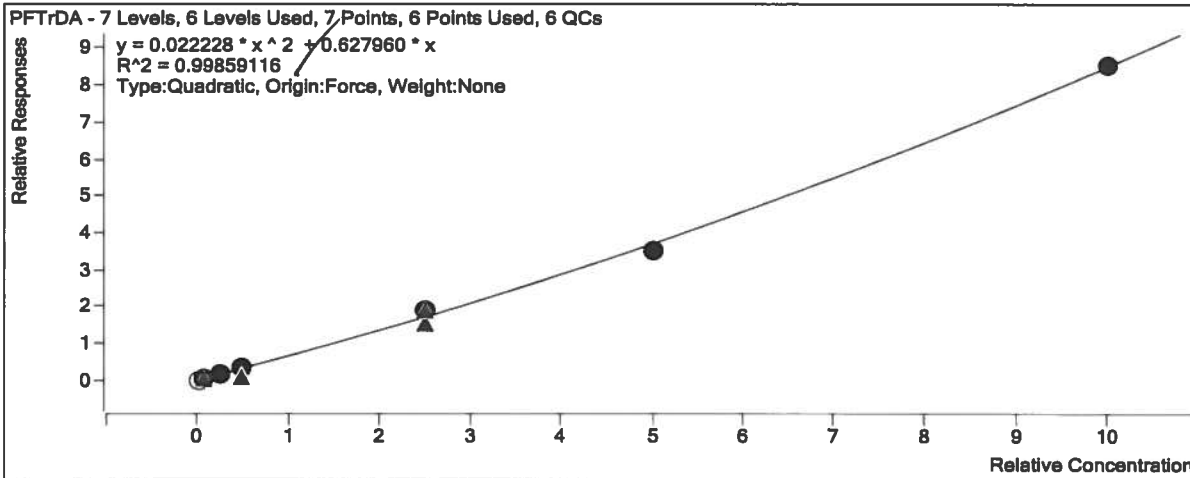
Target Compound

PFTrDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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Quantitative Analysis Calibration Report

D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1439	0.5000	0.5345
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	4237	1.2500	0.6565
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	17112	5.0000	0.6674
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	35679	10.0000	0.6691
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	185172	50.0000	0.7704
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	386331	100.0000	0.7058
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	753065	200.0000	0.8530

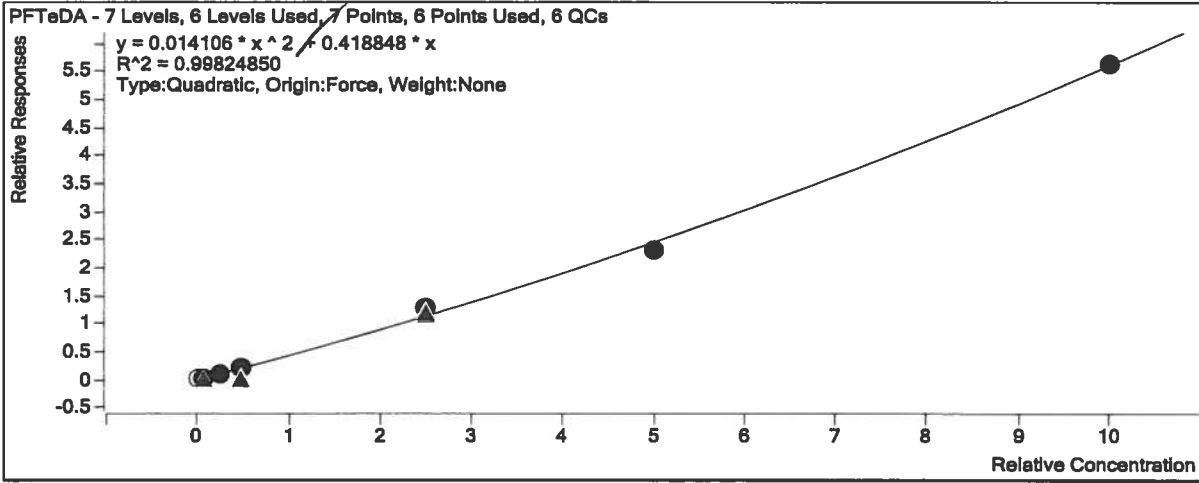


Target Compound

PFTeDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200205BCALDW\2200205B_04.d	Calibration	1	<input type="checkbox"/>	1087	0.5000	0.4035
D:\MassHunter\Data\2200205BCALDW\2200205B_05.d	Calibration	2	<input checked="" type="checkbox"/>	2811	1.2500	0.4356
D:\MassHunter\Data\2200205BCALDW\2200205B_06.d	Calibration	3	<input checked="" type="checkbox"/>	10777	5.0000	0.4204
D:\MassHunter\Data\2200205BCALDW\2200205B_07.d	Calibration	4	<input checked="" type="checkbox"/>	23258	10.0000	0.4362
D:\MassHunter\Data\2200205BCALDW\2200205B_08.d	Calibration	5	<input checked="" type="checkbox"/>	124598	50.0000	0.5184
D:\MassHunter\Data\2200205BCALDW\2200205B_09.d	Calibration	6	<input checked="" type="checkbox"/>	254581	100.0000	0.4651
D:\MassHunter\Data\2200205BCALDW\2200205B_10.d	Calibration	7	<input checked="" type="checkbox"/>	496080	200.0000	0.5619

Quantitative Analysis Calibration Report



7E
ORGANICS CALIBRATION VERIFICATION

Report No: <u>220012412</u>	Instrument ID: <u>QQQ1</u>
Analysis Date: <u>02/05/2020 19:44</u>	Lab File ID: <u>2200205B_32.d</u>
Analytical Method: <u>EPA 537 Revision 1.1</u>	Analytical Batch: <u>676962</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	53600	107	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	54800	110	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	48300	109	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	54700	109	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	51100	102	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	58000	116	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	51900	104	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	53200	117	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	47900	96	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	55700	111	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	48200	104	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	54600	109	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	54700	109	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	53900	108	70	130	

7E
ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220012412</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>02/05/2020 20:51</u>	Lab File ID:	<u>2200205B_38.d</u>
Analytical Method:	<u>EPA 537 Revision 1.1</u>	Analytical Batch:	<u>676962</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	54200	108	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	56400	113	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	49300	111	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	56100	112	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	51600	103	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	55800	112	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	49300	99	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	52100	114	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	50500	101	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	56300	113	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	49200	106	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	53700	107	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	54500	109	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	55100	110	70	130	

8F
INTERNAL STANDARD AREA SUMMARY

Report No:	<u>220012412</u>	Standard ID:	<u>1205 (ICAL Midpoint)</u>
Analyst:	<u>BMH</u>	Instrument ID:	<u>QQQ1</u>
Analysis Date:	<u>02/05/20 14:37</u>	Lab File ID:	<u>2200205B_08.d</u>
Analytical Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Batch:	<u>676962</u>

	M2PFOA	M2PFHxA	M4PFOS	M2PFDA
	<i>Area</i>	<i>Area</i>	<i>Area</i>	<i>Area</i>
STANDARD	62754	85217	36950	96149
CLIENT SAMPLE ID	GCAL SAMP ID	#	#	#
Potable-01RE	22001241201RE	74777	107057	48601
Potable-02RE	22001241202RE	70693	108099	46825
Potable-03RE	22001241203RE	77144	109665	46219
Potable-04RE	22001241204RE	81194	114464	48845
Potable-04-FDRE	22001241205RE	83869	115648	53114
Potable-05RE	22001241206RE	82843	111070	49158
Potable-05MSRE	22001241207RE	76975	110314	50251
Potable-05MSDRE	22001241208RE	92801	131865	60772 *
Potable-06RE	22001241209RE	69224	100842	43312
Potable-07RE	22001241210RE	76422	107152	48440
Potable-08RE	22001241211RE	70862	103167	45277
Potable-09RE	22001241212RE	76272	107888	44005
Potable-10RE	22001241213RE	77569	105881	48006
Potable-11RE	22001241214RE	75318	107427	47709
FRB-012220RE	22001241215RE	76216	110330	48832

AREA UPPER LIMIT = +50% of internal standard area
 AREA LOWER LIMIT = -50% of internal standard area

Column used to flag values outside QC limits
 * Value outside QC limits

164.5%

WATER SEMIVOLATILE SURROGATE RECOVERY

Report No: 220012412

Analytical Method: EPA 537 Rev. 1.1

MC PDA - *ds-NE+FO5AA*

	Client Sample ID	GCAL Sample ID	SMC1 #	SMC2 #	SMC3 #	SMC4 #	SMC5 #	SMC6 #	TOT OUT
1.	Potable-01	22001241201	86	80	69 *				1
2.	Potable-01RE	22001241201	87	78	66 *				1
3.	Potable-02	22001241202	82	85	77				0
4.	Potable-02RE	22001241202	79	75	69 *				1
5.	Potable-03	22001241203	83	84	69 *				1
6.	Potable-03RE	22001241203	81	81	68 *				1
7.	Potable-04	22001241204	83	71	63 *				1
8.	Potable-04RE	22001241204	78	73	63 *				1
9.	Potable-04-FD	22001241205	76	85	74				0
10.	Potable-04-FDRE	22001241205	84	80	71				0
11.	Potable-05	22001241206	77	81	64 *				1
12.	Potable-05RE	22001241206	81	69 *	66 *				2
13.	Potable-05MS	22001241207	76	80	75				0
14.	Potable-05MSRE	22001241207	78	72	60 *				1
15.	Potable-05MSD	22001241208	81	80	75				0
16.	Potable-05MSDRE	22001241208	78	79	69 *				1
17.	Potable-06	22001241209	87	73	71				0
18.	Potable-06RE	22001241209	88	75	58 *				1
19.	Potable-07	22001241210	86	80	60 *				1
20.	Potable-07RE	22001241210	80	75	73				0
21.	Potable-08	22001241211	82	81	56 *				1
22.	Potable-08RE	22001241211	79	68 *	65 *				2
23.	Potable-09	22001241212	83	82	72				0
24.	Potable-09RE	22001241212	79	67 *	39 *				2
25.	Potable-10	22001241213	92	88	78				0
26.	Potable-10RE	22001241213	82	71	66 *				1
27.	Potable-11	22001241214	78	85	63 *				1
28.	Potable-11RE	22001241214	85	72	76				0
29.	FRB-012220	22001241215	86	93	76				0
30.	FRB-012220RE	22001241215	91	84	68 *				1
31.	MB2005451	2005451	82	80	83				0
32.	LCS2005452	2005452	82	81	68 *				1
33.	LCSD2005453	2005453	96	89	76				0
34.	MB2006526	2006526	105	94	80				0
35.	LCS2006527	2006527	95	90	83				0
36.	LCSD2006528	2006528	89	75	81				0

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Report No:	<u>220012412</u>	Method Blank ID:	<u>2005451</u>
Matrix:	<u>Water</u>	Instrument ID:	<u>QQQ1</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200128B_12.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>01/27/20</u>	Analysis Date:	<u>01/28/20</u> Time: <u>2302</u>
Prep Batch:	<u>676188</u>	Analytical Batch:	<u>676395</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

CLIENT SAMPLE ID	GCAL SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1. LCS2005452	2005452	2200128B_13.d	01/28/20	2313
2. LCSD2005453	2005453	2200128B_14.d	01/28/20	2325
3. Potable-01	22001241201	2200128B_16.d	01/28/20	2347
4. Potable-02	22001241202	2200128B_17.d	01/28/20	2359
5. Potable-03	22001241203	2200128B_18.d	01/29/20	0010
6. Potable-04	22001241204	2200128B_19.d	01/29/20	0022
7. Potable-04-FD	22001241205	2200128B_20.d	01/29/20	0033
8. Potable-05	22001241206	2200128B_21.d	01/29/20	0044
9. Potable-05MS	22001241207	2200128B_22.d	01/29/20	0056
10. Potable-05MSD	22001241208	2200128B_23.d	01/29/20	0107
11. Potable-06	22001241209	2200128B_24.d	01/29/20	0118
12. Potable-07	22001241210	2200128B_25.d	01/29/20	0129
13. Potable-08	22001241211	2200128B_26.d	01/29/20	0141
14. Potable-09	22001241212	2200128B_28.d	01/29/20	0204
15. Potable-10	22001241213	2200128B_29.d	01/29/20	0215
16. Potable-11	22001241214	2200128B_30.d	01/29/20	0227
17. FRB-012220	22001241215	2200128B_31.d	01/29/20	0238

FORM IV SV

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220012412</u>	Client Sample ID:	<u>MB2005451</u>
Collect Date:	<u>NA</u> Time: <u>NA</u>	GCAL Sample ID:	<u>2005451</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ1</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200128B_12.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>01/27/20</u>	Analysis Date:	<u>01/28/20</u> Time: <u>2302</u>
Prep Batch:	<u>676188</u>	Analytical Batch:	<u>676395</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
375-73-5	Perfluorobutanesulfonic acid	4.00	U	1.47	4.00	10.0
335-76-2	Perfluorodecanoic acid	4.00	U	1.65	4.00	10.0
307-55-1	Perfluorododecanoic acid	4.00	U	2.45	4.00	10.0
375-85-9	Perfluoroheptanoic acid	4.00	U	1.85	4.00	10.0
355-46-4	Perfluorohexanesulfonic acid	4.00	U	1.64	4.00	10.0
307-24-4	Perfluorohexanoic acid	4.00	U	1.94	4.00	10.0
375-95-1	Perfluorononanoic acid	4.00	U	1.68	4.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	4.00	U	1.70	4.00	10.0
335-67-1	Perfluorooctanoic acid	4.00	U	1.80	4.00	10.0
72629-94-8	Perfluorotridecanoic acid	4.00	U	2.56	4.00	10.0
2058-94-8	Perfluoroundecanoic acid	4.00	U	1.86	4.00	10.0

3C
WATER SEMIVOLATILE LCS/LCSD RECOVERY

Report No: 220012412
 Prep Method: EPA 537 Rev. 1.1 Prep
 Analytical Method: EPA 537 Rev. 1.1

Prep Batch: 676188
 Analytical Batch: 676395

GCAL QC ID: 2005452

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	LCS RESULT	LCS % REC	#	QC LIMITS	
Perfluorobutanesulfonic acid	ng/L	70.8	0	61	86		70	- 130
Perfluorodecanoic acid	ng/L	80	0	61.4	77		70	- 130
Perfluorododecanoic acid	ng/L	80	0	61.9	77		70	- 130
Perfluoroheptanoic acid	ng/L	80	0	66.1	83		70	- 130
Perfluorohexanesulfonic acid	ng/L	73	0	60.3	83		70	- 130
Perfluorohexanoic acid	ng/L	80	0	64.1	80		70	- 130
Perfluorononanoic acid	ng/L	80	0	80.6	101		70	- 130
Perfluorooctanesulfonic acid	ng/L	74	0	65.5	88		70	- 130
Perfluorooctanoic acid	ng/L	80	0	65.3	82		70	- 130
Perfluorotridecanoic acid	ng/L	80	0	61.1	76		70	- 130
Perfluoroundecanoic acid	ng/L	80	0	60.3	75		70	- 130

GCAL QC ID: 2005453

ANALYTE	UNITS	SPIKE ADDED	LCSD RESULT	LCSD % REC	#	% RPD	#	QC LIMITS	
								REC	RPD
Perfluorobutanesulfonic acid	ng/L	70.8	55.3	78		10		70 - 130	0 - 30
Perfluorodecanoic acid	ng/L	80	58.5	73		5		70 - 130	0 - 30
Perfluorododecanoic acid	ng/L	80	63.2	79		2		70 - 130	0 - 30
Perfluoroheptanoic acid	ng/L	80	66.8	84		1		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ng/L	73	56.9	78		6		70 - 130	0 - 30
Perfluorohexanoic acid	ng/L	80	60.2	75		6		70 - 130	0 - 30
Perfluorononanoic acid	ng/L	80	112	140	*	33	*	70 - 130	0 - 30
Perfluorooctanesulfonic acid	ng/L	74	77.2	104		16		70 - 130	0 - 30
Perfluorooctanoic acid	ng/L	80	63.5	79		3		70 - 130	0 - 30
Perfluorotridecanoic acid	ng/L	80	61.7	77		.9		70 - 130	0 - 30
Perfluoroundecanoic acid	ng/L	80	62.1	78		3		70 - 130	0 - 30

RPD : 1 out of 11 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 1 out of 22 outside limits

* Values outside of QC limits

FORM III SV-1

3C
WATER SEMIVOLATILE MS/MSD RECOVERY

Report No: 220012412
 Prep Method: EPA 537 Rev. 1.1 Prep
 Analytical Method: EPA 537 Rev. 1.1

Parent Sample ID: Potable-05
 Prep Batch: 676188
 Analytical Batch: 676395

GCAL QC ID: 22001241207

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS	
							REC	RPD
Perfluorobutanesulfonic acid	ng/L	70.8	1.09	58.4	81		70	- 130
Perfluorodecanoic acid	ng/L	80	.89	57.6	71		70	- 130
Perfluorododecanoic acid	ng/L	80	.00939	58	72		70	- 130
Perfluoroheptanoic acid	ng/L	80	.52	64.6	80		70	- 130
Perfluorohexanesulfonic acid	ng/L	73	.956	58.6	79		70	- 130
Perfluorohexanoic acid	ng/L	80	1.79	68.7	84		70	- 130
Perfluorononanoic acid	ng/L	80	.172	80.6	101		70	- 130
Perfluorooctanesulfonic acid	ng/L	74	.553	63.3	85		70	- 130
Perfluorooctanoic acid	ng/L	80	.138	63.3	79		70	- 130
Perfluorotridecanoic acid	ng/L	80	.026	50.1	63	*	70	- 130
Perfluoroundecanoic acid	ng/L	80	.391	57.9	72		70	- 130

GCAL QC ID: 22001241208

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS	
								REC	RPD
Perfluorobutanesulfonic acid	ng/L	70.8	60.5	84		3		70 - 130	0 - 30
Perfluorodecanoic acid	ng/L	80	56.6	70		2		70 - 130	0 - 30
Perfluorododecanoic acid	ng/L	80	61	76		5		70 - 130	0 - 30
Perfluoroheptanoic acid	ng/L	80	66.1	82		2		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ng/L	73	61	82		4		70 - 130	0 - 30
Perfluorohexanoic acid	ng/L	80	66.2	81		4		70 - 130	0 - 30
Perfluorononanoic acid	ng/L	80	78	97		3		70 - 130	0 - 30
Perfluorooctanesulfonic acid	ng/L	74	66.8	90		5		70 - 130	0 - 30
Perfluorooctanoic acid	ng/L	80	63.8	80		.8		70 - 130	0 - 30
Perfluorotridecanoic acid	ng/L	80	59	74		16		70 - 130	0 - 30
Perfluoroundecanoic acid	ng/L	80	60.3	75		4		70 - 130	0 - 30

RPD : 0 out of 11 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 1 out of 22 outside limits

* Values outside of QC limits

FORM III SV-1

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Report No:	<u>220012412</u>	Method Blank ID:	<u>2006526</u>
Matrix:	<u>Water</u>	Instrument ID:	<u>QQQ1</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200130A_31.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>01/30/20</u>	Analysis Date:	<u>01/30/20</u> Time: <u>1522</u>
Prep Batch:	<u>676405</u>	Analytical Batch:	<u>676542</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	CLIENT SAMPLE ID	GCAL SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1.	LCS2006527	2006527	2200130A_32.d	01/30/20	1533
2.	LCSD2006528	2006528	2200130A_33.d	01/30/20	1545
3.	FRB-012220RE	22001241215RE	2200205B_22.d	02/05/20	1750
4.	Potable-01RE	22001241201RE	2200205B_23.d	02/05/20	1802
5.	Potable-02RE	22001241202RE	2200205B_24.d	02/05/20	1813
6.	Potable-03RE	22001241203RE	2200205B_25.d	02/05/20	1824
7.	Potable-04RE	22001241204RE	2200205B_26.d	02/05/20	1836
8.	Potable-04-FDRE	22001241205RE	2200205B_27.d	02/05/20	1847
9.	Potable-05RE	22001241206RE	2200205B_28.d	02/05/20	1858
10.	Potable-05MSRE	22001241207RE	2200205B_29.d	02/05/20	1910
11.	Potable-05MSDRE	22001241208RE	2200205B_30.d	02/05/20	1921
12.	Potable-06RE	22001241209RE	2200205B_31.d	02/05/20	1932
13.	Potable-07RE	22001241210RE	2200205B_33.d	02/05/20	1955
14.	Potable-08RE	22001241211RE	2200205B_34.d	02/05/20	2006
15.	Potable-09RE	22001241212RE	2200205B_35.d	02/05/20	2018
16.	Potable-10RE	22001241213RE	2200205B_36.d	02/05/20	2029
17.	Potable-11RE	22001241214RE	2200205B_37.d	02/05/20	2040

FORM IV SV

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220012412</u>	Client Sample ID: <u>MB2006526</u>
Collect Date: <u>NA</u> Time: <u>NA</u>	GCAL Sample ID: <u>2006526</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ1</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200130A_31.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>01/30/20</u>	Analysis Date: <u>01/30/20</u> Time: <u>1522</u>
Prep Batch: <u>676405</u>	Analytical Batch: <u>676542</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	8.00	U	5.38	8.00	10.0
2355-31-9	NMeFOSAA	8.00	U	4.60	8.00	10.0
376-06-7	Perfluorotetradecanoic acid	4.00	U	2.76	4.00	10.0

3C
WATER SEMIVOLATILE LCS/LCSD RECOVERY

Report No: 220012412
 Prep Method: EPA 537 Rev. 1.1 Prep Prep Batch: 676405
 Analytical Method: EPA 537 Rev. 1.1 Analytical Batch: 676542

GCAL QC ID: 2006527

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	LCS RESULT	LCS % REC	#	QC LIMITS	
NEtFOSAA	ng/L	80	0	68.8	86		70	- 130
NMeFOSAA	ng/L	80	0	67.4	84		70	- 130
Perfluorotetradecanoic acid	ng/L	80	0	70.2	88		70	- 130

GCAL QC ID: 2006528

ANALYTE	UNITS	SPIKE ADDED	LCSD RESULT	LCSD % REC	#	% RPD	#	QC LIMITS	
								REC	RPD
NEtFOSAA	ng/L	80	71.5	89		4		70 - 130	0 - 30
NMeFOSAA	ng/L	80	68	85		.9		70 - 130	0 - 30
Perfluorotetradecanoic acid	ng/L	80	63.5	79		10		70 - 130	0 - 30

RPD : 0 out of 3 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 0 out of 6 outside limits

* Values outside of QC limits

FORM III SV-1

3C
WATER SEMIVOLATILE MS/MSD RECOVERY

Report No: <u>220012412</u>	Parent Sample ID: <u>Potable-05RE</u>
Prep Method: <u>EPA 537 Rev. 1.1 Prep</u>	Prep Batch: <u>676405</u>
Analytical Method: <u>EPA 537 Rev. 1.1</u>	Analytical Batch: <u>676962</u>

GCAL QC ID: 22001241207

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS	
NEtFOSAA	ng/L	400	.235	50	12	*	70	- 130
NMeFOSAA	ng/L	400	.155	58.3	15	*	70	- 130
Perfluorotetradecanoic acid	ng/L	400	.503	26.9	7	*	70	- 130

GCAL QC ID: 22001241208

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS	
								REC	RPD
NEtFOSAA	ng/L	400	56.5	14	*	12		70 - 130	0 - 30
NMeFOSAA	ng/L	400	61.7	15	*	6		70 - 130	0 - 30
Perfluorotetradecanoic acid	ng/L	400	11.9	3	*	77		70 - 130	0 - 30

RPD : 1 out of 3 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 6 out of 6 outside limits

* Values outside of QC limits

FORM III SV-1

Sample Summary

LAB ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
22001241201	Potable-01	Water	01/22/2020 08:35	01/24/2020 10:00
22001241202	Potable-02	Water	01/22/2020 09:20	01/24/2020 10:00
22001241203	Potable-03	Water	01/22/2020 09:55	01/24/2020 10:00
22001241204	Potable-04	Water	01/22/2020 10:20	01/24/2020 10:00
22001241205	Potable-04-FD	Water	01/22/2020 10:20	01/24/2020 10:00
22001241206	Potable-05	Water	01/22/2020 10:45	01/24/2020 10:00
22001241207	Potable-05MS	Water	01/22/2020 10:45	01/24/2020 10:00
22001241208	Potable-05MSD	Water	01/22/2020 10:45	01/24/2020 10:00
22001241209	Potable-06	Water	01/22/2020 11:40	01/24/2020 10:00
22001241210	Potable-07	Water	01/22/2020 13:10	01/24/2020 10:00
22001241211	Potable-08	Water	01/22/2020 13:40	01/24/2020 10:00
22001241212	Potable-09	Water	01/22/2020 14:00	01/24/2020 10:00
22001241213	Potable-10	Water	01/23/2020 08:45	01/24/2020 10:00
22001241214	Potable-11	Water	01/23/2020 09:20	01/24/2020 10:00
22001241215	FRB-012220	Water	01/22/2020 15:00	01/24/2020 10:00

Case Narrative

Client: AECOM-East **Report:** 220012412

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was completed in accordance with DOD QSM 5.1.1 as specified in the contract.

SEMI-VOLATILES MASS SPECTROMETRY

In the EPA 537 Revision 1.1 analysis, the recovery for the surrogate, d5-NEtFOSAA is outside control limits for several samples and the recovery for the surrogate, M6PFDA is outside control limits and all samples were prepped twice. All samples were extracted twice and the recoveries for these surrogates are reported for both extracts. No additional sample volume was available to extract a third time.

In the EPA 537 Revision 1.1 analysis of prep batch 676188, the MS and/or MSD exhibited recovery failures. The LCSD recovery is above the upper control limit for Perfluorononanoic acid. The LCS/LCSD RPD is above the upper control limit for this analyte. The associated samples were re-extracted but the LCS/LCSD recoveries were low for this analyte in the second batch.

In the EPA 537 Revision 1.1 analysis for prep batch 676405, the MS/MSD exhibited recovery and RPD failures. All LCS/LCSD recoveries and RPDs are acceptable.

In the EPA 537 Revision 1.1 analysis of analytical batch 676395 (1/28/2020), the recovery for Perfluorononanoic acid (PFNA)CV is above the upper control limit in the ICV. This analyte was not detected in the associated samples.

In the EPA 537 Revision 1.1 analysis for analytical batch 676962, the area for the injected internal standard, M4PFOS is outside the acceptance range for sample 22001241208 (Potable-05MSD). No target analytes reported in this batch are associated with this internal standard.

Q Flag Summary

Client Sample ID: **Potable-01** Lab Sample ID: **22001241201**

Method: EPA 537 Revision 1.1 Analysis Date: 1/28/2020 11:47:00 PM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-02** Lab Sample ID: **22001241202**

Method: EPA 537 Revision 1.1 Analysis Date: 1/28/2020 11:59:00 PM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-03** Lab Sample ID: **22001241203**

Method: EPA 537 Revision 1.1 Analysis Date: 1/29/2020 12:10:00 AM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-04** Lab Sample ID: **22001241204**

Method: EPA 537 Revision 1.1 Analysis Date: 1/29/2020 12:22:00 AM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-04-FD** Lab Sample ID: **22001241205**

Method: EPA 537 Revision 1.1 Analysis Date: 1/29/2020 12:33:00 AM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-05** Lab Sample ID: **22001241206**

Method: EPA 537 Revision 1.1 Analysis Date: 1/29/2020 12:44:00 AM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-06** Lab Sample ID: **22001241209**

Method: EPA 537 Revision 1.1 Analysis Date: 1/29/2020 1:18:00 AM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-07** Lab Sample ID: **22001241210**

Method: EPA 537 Revision 1.1 Analysis Date: 1/29/2020 1:29:00 AM						
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-08** Lab Sample ID: **22001241211**

Method: EPA 537 Revision 1.1		Analysis Date: 1/29/2020 1:41:00 AM				
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-09** Lab Sample ID: **22001241212**

Method: EPA 537 Revision 1.1		Analysis Date: 1/29/2020 2:04:00 AM				
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-10** Lab Sample ID: **22001241213**

Method: EPA 537 Revision 1.1		Analysis Date: 1/29/2020 2:15:00 AM				
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **Potable-11** Lab Sample ID: **22001241214**

Method: EPA 537 Revision 1.1		Analysis Date: 1/29/2020 2:27:00 AM				
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

Client Sample ID: **FRB-012220** Lab Sample ID: **22001241215**

Method: EPA 537 Revision 1.1		Analysis Date: 1/29/2020 2:38:00 AM				
Analyte	CAS	CCV OUL	LCS/LCSD OUL	SURROGATE OUL	IS OUL	CLCCV OUL
PFNA	375-95-1		X			

CCV OUL=CCV out of limits
LCS/LCSD OUL=LCS/LCSD out of limits
SURROGATE OUL=Surrogate out of limits
IS OUL=Internal Standard out of limits
CLCCV OUL=Closing CCV out of limits



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 220012412		CHECKLIST	YES	NO
Client 4859 - AEC 4859 - AECOM-East	Transport Method FEDEX	Samples received with proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Profile Number 279946	Received By Savage, Tiffany R	Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Line Item(s) 3 - DW	Receive Date(s) 01/24/20	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		If received, was headspace for VOC water containers < 6mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Samples collected in containers provided by Pace Gulf Coast?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COOLERS		DISCREPANCIES	LAB PRESERVATIONS	
Airbill 7786-4405-1450	Thermometer ID: E34	None	None	
	Temp °C 3.1			
NOTES				



CHAIN OF CUSTODY RECORD

Client ID: 4859 - AECOM-East

SDG: 220012412

PM: AEC



Report To:
 Client: AECOM
 Address: 12420 Milestone Center Dr.
 Germantown, MD 20876
 Contact: Naoum Tavanizis
 Phone: 919-461-1178
 Email: naoum.tavanizis@aecom.com

Bill To:
 Client: SAME
 Address: SAME
 Contact: SAME
 Phone: SAME
 Email: SAME

Analytical Requests & Method
 EPA Method 537

P.O. Number
 104397

Project Name/Number
 60552172 - ARNG PFAS - Grand Ledge Residential DW

Custody Seal:
 Used: Yes No
 Intact: Yes No

Temperature: 31 E34
 37.8M

Dissolved Analysis Requested
 Field Filtered
 Lab Filtered

Sampled By: Scott Kalemba

Matrix ¹	Date	Time (2400)	Comp	Grab	Sample Description	No. of Containers	GCAL ID
W	01/22/20	835	X		Potable-01	2	1
W	01/22/20	920	X		Potable-02	2	2
W	01/22/20	955	X		Potable-03	2	3
W	01/22/20	1020	X		Potable-04	2	4
W	01/22/20	1020	X		Potable-04-FD	2	5
W	01/22/20	1045	X		Potable-05	2	6
W	01/22/20	1045	X		Potable-05MS	2	7
W	01/22/20	1045	X		Potable-05MSD	2	8
W	01/22/20	1140	X		Potable-06	2	9
W	01/22/20	1310	X		Potable-07	2	10
W	01/22/20	1340	X		Potable-08	2	11
W	01/22/20	1400	X		Potable-09	2	12

Preservative / Notes ↓

← Preservative / Notes ↓

Notes: EPA Method 537 for drinking water Preservative = Trizma

Turn Around Time (Business Days): 7780-4405-1450

RUSH* ___ Days Standard (per contract/quote)

Received by: (Signature) *[Signature]* Date/Time: 01/23/2020 - 1600

Received by: (Signature) *[Signature]* Date/Time: 01/24/20

Received by: (Signature) *[Signature]* Date/Time: 01/24/20

Received by: (Signature) *[Signature]* Date/Time: 01/24/20

¹Matrix: W = Water, S=Solid, L=Liquid, T=Tissue. * Requires prior approval, Rush charges may apply. We cannot accept verbal changes. Please email written changes to your GCAL Project Manager.



CHAIN OF CUSTODY RECORD

Client ID: 4859 - AECOM-East

SDG: 220012412

PM: AEC



Report To:
 Client: AECOM
 Address: 12420 Milestone Center Dr.
 Germantown, MD 20876
 Contact: Naoum Tavantzis
 Phone: 919-461-1178
 Email: naoum.tavantzis@aecom.com

Bill To:
 Client: SAME
 Address: SAME
 Contact: SAME
 Phone: SAME
 Email: SAME

Analytical Requests & Method
 EPA Method 537

P.O. Number
104397

Project Name/Number
60552172 - ARNG PFAS - Grand Ledge Residential DW

Sampled By:
 Scott Kalemba

Matrix ¹	Date	Time (2400)	Comp	Grab	Sample Description	No. of Containers	GCAL ID
W	01/23/20	845	X	X	Potable-10	2	13
W	01/23/20	920	X	X	Potable-11	2	14
W	01/22/20	1500	X	X	FRB-012220	2	15

Temperature: 3.1 E34
 37.6 PM

Dissolved Analysis Requested
 Field Filtered
 Lab Filtered

Custody Seal:
 Used: Yes No
 Intact: Yes No

Preservative / Notes
 Unpreserved

Notes:
 EPA Method 537 for drinking water
 Preservative = Trizma

Turn Around Time (Business Days):
 RUSH* Days Standard (per contract/quote)

Relinquished by: (Signature) **Received by:** (Signature)
Relinquished by: (Signature) **Received by:** (Signature)
Relinquished by: (Signature) **Received by:** (Signature)

Date/Time: 01/23/2020 - 1600
Date/Time: 1/24/20
Date/Time: 1/24/20

Matrix: W = Water, S=Solid, L=Liquid, T=Tissue.

*. Requires prior approval, Rush charges may apply. We cannot accept verbal changes. Please email written changes to your GCAL Project Manager.

Data Qualifying Codes

Two types of data qualifying codes or flags are applied in the course of the data review. The data validation flags indicate data that are not usable for decision-making, more than normally biased and/or variable, or not representative of field conditions. These codes and their definitions are presented below in the hierarchy stipulated in the USEPA Contract Laboratory Program National Functional Guidelines for Organic (January 2017) Data Review.

Data Validation Flags

Flag	Interpretation
R	The sample results are 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.
U	The analyte was analyzed for, but not detected at a level greater than or equal to the level of the adjusted Detection Limit (DL) for sample and method.
J+	Reported value may not be accurate or precise, but the result may be biased high.
J-	Reported value may not be accurate or precise, but the result may be biased low.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the Limit of Detection (LOD)).
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.
C	This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by gas Chromatograph/Mass Spectrometer (GC/MS)
X	This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.

The other type of code used by AECOM is a “Reason Code”. The reason code indicates the type of quality control failure that led to the application of the data validation flag.

Reason Codes

<i>Code</i>	<i>Description</i>
a	Tracer recovery (radiochemical data only)
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
bm	Missing Blank Information
c	Calibration issue
cl	Clean-up standard recovery
cp	Insufficient in growth (radiochemical data only)
cr	Chromatographic resolution
d	Reporting limit raised due to chromatographic interference
e	Ether interference
fd	Field duplicate RPDs
g	Chromatographic pattern match issue
h	Holding times
i	Internal standard areas
ii	Injection internal standard area or retention time exceedance
k	Estimated Maximum Possible Concentrations
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs (matrix duplicate, MSD, LCSD)
m	Matrix spike recovery
nb	Negative laboratory blank contamination
p	Chemical preservation issue
pe	Post Extraction Spike
q	Quantitation issue
r	Dual column RPD
rp	Re-extraction precision issue [PAHs only]

DATA VALIDATION REPORT – Stage 2b Review

SDG No.:	220073108	Analysis:	Per- and Polyfluorinated Alkyl Substances
Laboratory:	GCAL	Project:	Grand Ledge
Reviewer:	Naoum Tavantzis	Date:	August 21st, 2020

This report presents the findings of a review of the referenced data. The report consists of this summary, a listing of the samples included in the review, copies of data reports with data qualifying flags applied, data review worksheets, supporting documentation, and an explanation of the data qualifying flags employed. The review performed is based on the specifics of the analytical method referenced and provisions of the approved project-specific work plan; and, qualified according to the *Contract Laboratory Program National Functional Guidelines (NFG) for Superfund Organic Methods Data Review*, EPA-540-R-2017-002, January 2017, Modifications reflect the level of review requested, the specifications of the project-specific QAPP, and the specifics of the analytical methods employed.

Major

Anomalies: None.

Minor

Anomalies: The matrix spike pair (MS/MSD) performed on field sample GL-POTABLE-12 displayed percent recoveries less than the lower quality control limit of 70%:

Analyte	MS Recovery (%)	MSD Recovery (%)
NEtFOSAA	70	66
PFDaA	69	72
PFTeDA	20	27
PFTrDA	46	60
PFUnDA	70	64

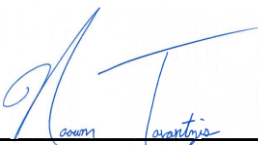
The associated parent sample and field duplicate results were non-detect and were qualified UJ,m.

Correctable

Anomalies: None.

Comments: On the basis of this evaluation, the laboratory appears to have followed the specified method, with the exception of anomalies discussed previously. If a given fraction was not discussed, all quality control criteria reviewed were within acceptable limits. All data are usable, as qualified, for their intended purpose based on the data reviewed.

Signed:



Naoum Tavantzis

Summary of Qualified Results

Field Sample	Analyte	Result Value	Lab Qualifier	Final DV Flag	Reason Code
GL-POTABLE-12	PFUnDA	5.00	UJ	UJ	m
	NEtFOSAA	6.00	UJ	UJ	m
	PFDoA	5.00	UJ	UJ	m
	PFTeDA	5.00	UJ	UJ	m
	PFTrDA	5.00	UJ	UJ	m
GL-POTABLE-12-DUP	PFUnDA	5.00	U	UJ	m
	NEtFOSAA	6.00	U	UJ	m
	PFDoA	5.00	U	UJ	m
	PFTeDA	5.00	U	UJ	m
	PFTrDA	5.00	U	UJ	m

Grand Ledge

Laboratory: Pace Gulf Coast

Job: 60552172

SDG#: 220073108

Sample ID	Client ID	Sample Type	Sample Date	Matrix	PFAS - Method 537M
22007310801	GL-POTABLE-12	Field Sample	7/28/2020	Aqueous	X
22007310802	GL-POTABLE-12-DUP	Field Duplicate	7/28/2020	Aqueous	X
22007310805	GL-POTABLE-20	Field Sample	7/28/2020	Aqueous	X

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: 220073108 Client Sample ID: GL-POTABLE-12
 Collect Date: 07/28/20 Time: 0920 GCAL Sample ID: 22007310801
 Matrix: Water % Moisture: NA Instrument ID: QQQ2
 Sample Amt: 125 mL Lab File ID: 2200804A_44.d
 Injection Vol.: 1.0 (µL) GC Column: ACC-C18-30M ID 2.1 (mm)
 Prep Final Vol.: 1000 (µL) Dilution Factor: 1 Analyst: BMH
 Prep Date: 08/03/20 Analysis Date: 08/05/20 Time: 0318
 Prep Batch: 689113 Analytical Batch: 689424
 Prep Method: EPA 537 Rev. 1.1 Analytical Method: EPA 537 Rev. 1.1

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	UJ	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	UJ	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	UJ	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	UJ	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	UJ	2.52	5.00	10.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-12-DUP</u>
Collect Date:	<u>07/28/20</u> Time: <u>0920</u>	GCAL Sample ID:	<u>22007310802</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_45.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0332</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-POTABLE-20</u>
Collect Date: <u>07/28/20</u> Time: <u>1015</u>	GCAL Sample ID: <u>22007310805</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200804A_49.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/05/20</u> Time: <u>0424</u>
Prep Batch: <u>689113</u>	Analytical Batch: <u>689424</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: *ng/L*

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-24</u>
Collect Date:	<u>07/28/20</u> Time: <u>1110</u>	GCAL Sample ID:	<u>22007310806</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_50.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0437</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-23</u>
Collect Date:	<u>07/28/20</u> Time: <u>1320</u>	GCAL Sample ID:	<u>22007310807</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_51.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0451</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-22</u>
Collect Date:	<u>07/28/20</u> Time: <u>1415</u>	GCAL Sample ID:	<u>22007310808</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_52.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0504</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-POTABLE-13</u>
Collect Date: <u>07/28/20</u> Time: <u>1514</u>	GCAL Sample ID: <u>22007310809</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200804A_53.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/05/20</u> Time: <u>0517</u>
Prep Batch: <u>689113</u>	Analytical Batch: <u>689424</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-FB-072820</u>
Collect Date: <u>07/28/20</u> Time: <u>1525</u>	GCAL Sample ID: <u>22007310810</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200804A_54.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/05/20</u> Time: <u>0530</u>
Prep Batch: <u>689113</u>	Analytical Batch: <u>689424</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-POTABLE-16</u>
Collect Date: <u>07/28/20</u> Time: <u>1605</u>	GCAL Sample ID: <u>22007310811</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200804A_55.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/05/20</u> Time: <u>0543</u>
Prep Batch: <u>689113</u>	Analytical Batch: <u>689424</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-18</u>
Collect Date:	<u>07/28/20</u> Time: <u>1628</u>	GCAL Sample ID:	<u>22007310812</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_56.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0557</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-21</u>
Collect Date:	<u>07/29/20</u> Time: <u>0912</u>	GCAL Sample ID:	<u>22007310813</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_55.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0628</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-POTABLE-21-DUP</u>
Collect Date: <u>07/29/20</u> Time: <u>0912</u>	GCAL Sample ID: <u>22007310814</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200806A_56.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/07/20</u> Time: <u>0641</u>
Prep Batch: <u>689285</u>	Analytical Batch: <u>689642</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-POTABLE-25</u>
Collect Date: <u>07/29/20</u> Time: <u>1003</u>	GCAL Sample ID: <u>22007310815</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200806A_57.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/07/20</u> Time: <u>0655</u>
Prep Batch: <u>689285</u>	Analytical Batch: <u>689642</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-FB-072920</u>
Collect Date:	<u>07/29/20</u> Time: <u>1005</u>	GCAL Sample ID:	<u>22007310816</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_58.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0708</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-19</u>
Collect Date:	<u>07/29/20</u> Time: <u>1030</u>	GCAL Sample ID:	<u>22007310817</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_59.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0721</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-14</u>
Collect Date:	<u>07/29/20</u> Time: <u>1322</u>	GCAL Sample ID:	<u>22007310818</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_60.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0734</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	2.37	J	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>GL-POTABLE-15</u>
Collect Date:	<u>07/29/20</u> Time: <u>1355</u>	GCAL Sample ID:	<u>22007310819</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_61.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0747</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No: <u>220073108</u>	Client Sample ID: <u>GL-POTABLE-26</u>
Collect Date: <u>07/29/20</u> Time: <u>1420</u>	GCAL Sample ID: <u>22007310820</u>
Matrix: <u>Water</u> % Moisture: <u>NA</u>	Instrument ID: <u>QQQ2</u>
Sample Amt: <u>125</u> mL	Lab File ID: <u>2200806A_63.d</u>
Injection Vol.: <u>1.0</u> (µL)	GC Column: <u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.: <u>1000</u> (µL)	Dilution Factor: <u>1</u> Analyst: <u>BMH</u>
Prep Date: <u>08/03/20</u>	Analysis Date: <u>08/07/20</u> Time: <u>0814</u>
Prep Batch: <u>689285</u>	Analytical Batch: <u>689642</u>
Prep Method: <u>EPA 537 Rev. 1.1</u>	Analytical Method: <u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

DATA VALIDATION WORKSHEET

Per- and Polyfluorinated Compounds by LC/MS/MS

Reviewer: Naoum Tavantzis

Date: 8/20/2020

DV Level: II III IV

Review Document:

National Functional Guidelines for Organic Data Review

DOD QSM 5.1, Table B-15

Method 537 Rev. 1.1

Project Name: Grand Ledge

Project Number: 60552172

Laboratory: Pace Gulf Coast

SDG No.: 220073108

Test Name: PFAS

1.0 Laboratory Deliverables

		Yes	No	NA
1.1	Do Chain-of-Custody forms list all samples that were analyzed?	X		
1.2	Are all Chain-of-Custody forms signed, indicating sample chain-of-custody was maintained?	X		
1.3	Do sample preservation, collection and storage condition meet method requirement? 4±2°C If samples were received with the cooler temperature exceeding 6°C, then flag J(+)/UJ(-). If >20°C, J(+)/X(-)	X		
1.4	Do the traffic Reports, chain-of-custody, and lab narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?		X	

Notes:

2.0 Holding Times

		Yes	No	NA
2.1	Have any technical holding times, determined from date of sampling to date of analysis, been exceeded? If yes, J(+)/UJ(-). Extraction: 14 days; Analysis: 40 days.		X	
2.2	Have any technical holding time grossly (twice the holding time) been exceeded? If yes, J(+)/X(-) .		X	

Notes:

3.0 Blanks (Laboratory and Field)

		Yes	No	NA
3.1	Were method blanks (MB) prepared at the appropriate frequency (one per 20 samples, per batch per matrix?)	X		
3.2	Do any instrument/method blanks have positive results?		X	
3.3	Do any field equipment blanks/trip blanks have positive results?		X	

Notes:

4.0 Initial and Continuing Calibration

		Yes	No	NA
4.1	For each calibration standard, was each analyte calculated within 70%-130% of the true value, RSD ≤20%, or r ² ≥0.99?	X		
4.2	Was the retention time window for each analyte and surrogate set using the midpoint standard of the curve?	X		
4.3	Was the relative retention time of each analyte within laboratory control limits?	X		
4.4	Was a second source calibration verification (ICV) analyzed for each calibration curve? If no, flag "X".	X		
4.5	Were continuing calibration standards analyzed every ten samples and at the end of the sequence? If no, flag	X		
4.6	For each calibration standard used for quantitation, was the S/N Ratio ≥10:1 and for all analytes with promulgated standards was the confirmation ion at a S/N at 3:1? (Table B-15, non-DW matrices)			X
For initial calibration: 70%-130%, RSD ≤20%, or r ² ≥0.99. J(+)/UJ(-)				
For ICV/CCV: %D>30%, Positive: J(+), Negative:J(+)/UJ(-).				

Notes:

5.0 Laboratory Control Sample (LCS)

		Yes	No	NA
5.1	Were LCS/LCSD analyzed at required frequency (one per 20 samples per batch) for each matrix?	X		
5.2	Are there any %R for LCS/LCSD recoveries outside the laboratory QC limits(lab default is 70%-130%)? Action: If Yes, for %R >130, J+(+) only; for %R 30%-70%, J-(+)/UJ(-), and %R<30%, J-(+)/X(-).		X	
5.3	Are there any RPD for LCS/LCSD recoveries outside the QC limits? If Yes, J(+) only.		X	

Notes:

6.0 Surrogate Recovery/Internal Standard Area Count/Extracted Internal Standards (For Table B-15 Matrices)

		Yes	No	NA
6.1	Are recoveries within acceptance criteria for all samples and method blanks?	X		
6.2	If No in Section 6.1, are these sample(s) or method blank(s) reanalyzed?			X
6.3	If No in Section 6.2, is any sample dilution factor greater than 10? (recoveries may be diluted out.)			X
	<10% low high			
	Positives J- J- J+			
	Non-detects X UJ None			
6.4	Has the Extracted/Injected Standard area count been met for all quality control and field samples? (50%-150%)	X		
	<20% low high			
	Positives J+ J+ J-			
	Non-detects X UJ None			

Notes:

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

		Yes	No	NA
7.1	Were matrix spikes analyzed at required frequency (one per 20 samples per batch) for each matrix?	X		
7.2	Are there any %R for matrix spike and matrix spike duplicate recoveries outside the laboratory QC limits?	X		
	%Recovery: <10% 10%-70% >130%			
	Action: J-(+)/X(-) J-(+)/UJ(-) J+(+) only			
7.3	Are there any RPD for matrix spike and matrix spike duplicate recoveries outside the QC limits? ($\pm 30\%$)		X	
	Action: No action is required based on MS/MSd failure alone. Note in the report and use professional			

Notes: Several less than the LCL but greater than 10%: NEtFOSA; PFDoA, PFTeDA, PFTrDA, PFTUnDA

8.0 Field/Laboratory Duplicates

		Yes	No	NA
8.1	Acceptable field duplicate results? If no, J(+) parent sample/field duplicate only.	X		

Notes: All field duplicate results were non-detect; no field duplicate evaluation form was created since all results were ND

9.0 Instrument Sensitivity Check (ISC)

		Yes	No	NA
9.1	Was an instrument sensitivity check analyzed prior to analysis and every 12 hours? If not X(+/-)	X		
9.2	Were analyte concentrations at the LOQ for the ISC and within $\pm 30\%$ of their true values? If not (J(+)/UJ(-)	X		

Notes:

10.0 Compound Identification/Tune and Detection Limit Verification

		Yes	No	NA
10.1	Do detection limits meet those required by the project QAPP and were they properly adjusted for dilution factors and moisture (including adjustment of wet weight aliquot)?	X		
10.2	Was a mass calibration performed daily prior to analysis?	X		

Notes:

11.0 Data Completeness

		Yes	No	NA
11.1	Is % completeness within the control limits? (Control limit 95% _{aq} and 90% _{so})	X		
11.1.1	Number of samples: <u>18</u>			
11.1.2	Number of target compounds in each analysis: <u>14</u>			
11.1.3	Number of results "X" or "R" flagged results: <u>0</u>			

QQQ2 Run Log

Analyst: BMH Expiration:

Instrument: QQQ2

Batch: 2200804A

Current ICAL Bath: 2200804ACAL/2200804ACALDW

20mM Amm Acetate 8/6/2020

Methanol 2129224 3/31/2025

Calibration Std 012-40-2 1/30/2021

ICV Std 012-38-3 1/25/2021

EIS Mix 012-40-3 1/30/2021

IIS Mix 012-41-1 1/31/2021

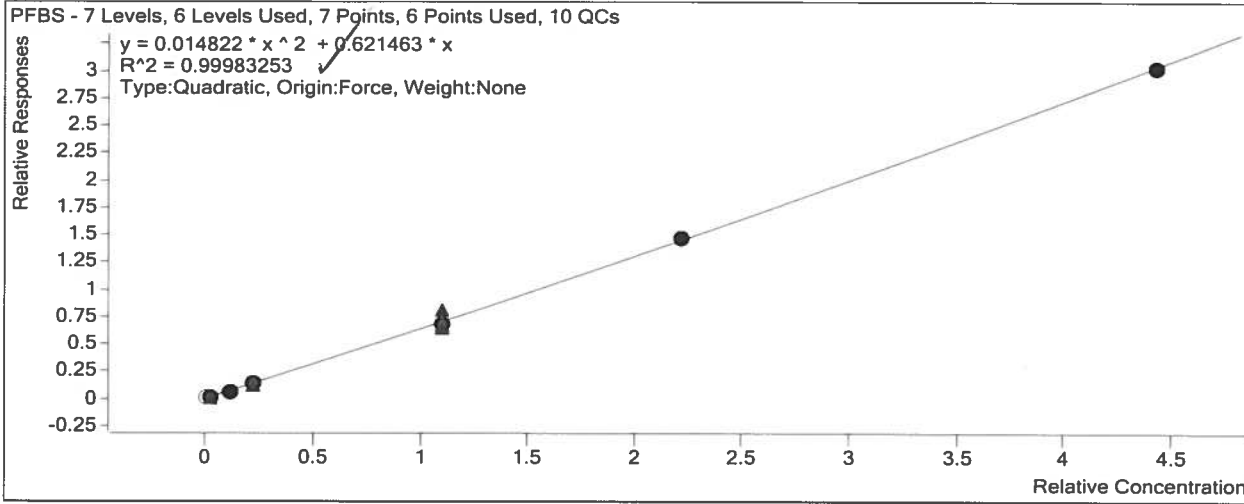
Name	Data File	Type	Acq. Date-Time	Comment	Dil.
MeOH Shot	2200804A_01.d	MeOH Shot	8/4/2020 17:29	MRA,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
1201	2200804A_02.d	Cal	8/4/2020 17:42	MRA,QQQ2;Cal	1
1202	2200804A_03.d	Cal	8/4/2020 17:55	BMH,QQQ2;Cal	1
1203	2200804A_04.d	Cal	8/4/2020 18:08	BMH,QQQ2;Cal	1
1204	2200804A_05.d	Cal	8/4/2020 18:22	BMH,QQQ2;Cal	1
1205	2200804A_06.d	Cal	8/4/2020 18:35	BMH,QQQ2;Cal	1
1206	2200804A_07.d	Cal	8/4/2020 18:48	BMH,QQQ2;Cal	1
1207	2200804A_08.d	Cal	8/4/2020 19:01	BMH,QQQ2;Cal	1
MeOH Shot	2200804A_09.d	MeOH Shot	8/4/2020 19:27	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
1500	2200804A_10.d	Sample	8/4/2020 19:41	BMH,QQQ2;Cal	1
1600	2200804A_11.d	QC	8/4/2020 19:54	BMH,QQQ2;Cal	1
1450	2200804A_12.d	QC	8/4/2020 20:07	BMH,QQQ2;Cal	1
MeOH Shot	2200804A_13.d	MeOH Shot	8/4/2020 20:30	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200804A_14.d	MeOH Shot	8/4/2020 20:43	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200804A_15.d	MeOH Shot	8/4/2020 20:56	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200804A_16.d	MeOH Shot	8/4/2020 21:09	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
2068787	2200804A_17.d	Sample	8/4/2020 21:23	BMH,QQQ2;689356	1
2068788	2200804A_18.d	QC	8/4/2020 21:36	BMH,QQQ2;689356	1
2068789	2200804A_19.d	QC	8/4/2020 21:49	BMH,QQQ2;689356	1
22008042701	2200804A_20.d	Sample	8/4/2020 22:02	BMH,QQQ2;689356	1

22008042702	2200804A_21.d	Sample	8/4/2020 22:15	BMH,QQQ2;689356	1
22008042703	2200804A_22.d	Sample	8/4/2020 22:28	BMH,QQQ2;689356	1
22008042704	2200804A_23.d	Sample	8/4/2020 22:42	BMH,QQQ2;689356	1
22008042705	2200804A_24.d	Sample	8/4/2020 22:55	BMH,QQQ2;689356	1
22008042706	2200804A_25.d	Sample	8/4/2020 23:08	BMH,QQQ2;689356	1
22008042707	2200804A_26.d	Sample	8/4/2020 23:21	BMH,QQQ2;689356	1
22008042708	2200804A_27.d	Sample	8/4/2020 23:34	BMH,QQQ2;689356	1
22008042709	2200804A_28.d	Sample	8/4/2020 23:48	BMH,QQQ2;689356	1
22008042710	2200804A_29.d	Sample	8/5/2020 0:01	BMH,QQQ2;689356	1
1400	2200804A_30.d	QC	8/5/2020 0:14	BMH,QQQ2;CCV	1
22008042701 x5	2200804A_31.d	Sample	8/5/2020 0:27	BMH,QQQ2;689356	5
1400	2200804A_32.d	QC	8/5/2020 0:40	BMH,QQQ2;CCV	1
2067457	2200804A_33.d	Sample	8/5/2020 0:53	BMH,QQQ2;689113	1
2067458	2200804A_34.d	QC	8/5/2020 1:07	BMH,QQQ2;689113	1
2067459	2200804A_35.d	QC	8/5/2020 1:20	BMH,QQQ2;689113	1
22007286701	2200804A_36.d	Sample	8/5/2020 1:33	BMH,QQQ2;689113	1
22007286801	2200804A_37.d	Sample	8/5/2020 1:46	BMH,QQQ2;689113	1
22007286901	2200804A_38.d	Sample	8/5/2020 1:59	BMH,QQQ2;689113	1
22007292201	2200804A_39.d	Sample	8/5/2020 2:12	BMH,QQQ2;689113	1
22007292202	2200804A_40.d	Sample	8/5/2020 2:26	BMH,QQQ2;689113	1
22007292203	2200804A_41.d	Sample	8/5/2020 2:39	BMH,QQQ2;689113	1
22007292301	2200804A_42.d	Sample	8/5/2020 2:52	BMH,QQQ2;689113	1
22007292302	2200804A_43.d	Sample	8/5/2020 3:05	BMH,QQQ2;689113	1
22007310801	2200804A_44.d	Sample	8/5/2020 3:18	BMH,QQQ2;689113	1
22007310802	2200804A_45.d	Sample	8/5/2020 3:32	BMH,QQQ2;689113	1
22007310803	2200804A_46.d	QC	8/5/2020 3:45	BMH,QQQ2;689113	1
22007310804	2200804A_47.d	QC	8/5/2020 3:58	BMH,QQQ2;689113	1
1400	2200804A_48.d	QC	8/5/2020 4:11	BMH,QQQ2;CCV	1
22007310805	2200804A_49.d	Sample	8/5/2020 4:24	BMH,QQQ2;689113	1
22007310806	2200804A_50.d	Sample	8/5/2020 4:37	BMH,QQQ2;689113	1
22007310807	2200804A_51.d	Sample	8/5/2020 4:51	BMH,QQQ2;689113	1
22007310808	2200804A_52.d	Sample	8/5/2020 5:04	BMH,QQQ2;689113	1
22007310809	2200804A_53.d	Sample	8/5/2020 5:17	BMH,QQQ2;689113	1
22007310810	2200804A_54.d	Sample	8/5/2020 5:30	BMH,QQQ2;689113	1

22007310811	2200804A_55.d	Sample	8/5/2020 5:43	BMH,QQQ2;689113	1
22007310812	2200804A_56.d	Sample	8/5/2020 5:57	BMH,QQQ2;689113	1
2068440	2200804A_57.d	Sample	8/5/2020 6:10	BMH,QQQ2;689294	1
2068441	2200804A_58.d	QC	8/5/2020 6:23	BMH,QQQ2;689294	1
2068442	2200804A_59.d	QC	8/5/2020 6:36	BMH,QQQ2;689294	1
22007252301	2200804A_60.d	Sample	8/5/2020 6:49	BMH,QQQ2;689294	1
1450	2200804A_61.d	QC	8/5/2020 7:02	BMH,QQQ2;CCV	1
2069400	2200804A_62.d	Sample	8/5/2020 7:16	BMH,QQQ2;22007226901	1
2069401	2200804A_63.d	QC	8/5/2020 7:29	BMH,QQQ2;22007226901	1
2069402	2200804A_64.d	QC	8/5/2020 7:42	BMH,QQQ2;22007226901	1
22007226901 x1000 DIA	2200804A_65.d	Sample	8/5/2020 7:55	BMH,QQQ2;22007226901	1
6901 x1000 Dup	2200804A_66.d	Sample	8/5/2020 8:08	BMH,QQQ2;22007226901	1
6901 x1000 MS	2200804A_67.d	Sample	8/5/2020 8:21	BMH,QQQ2;22007226901	1
22007226901 x500 DIA	2200804A_68.d	Sample	8/5/2020 8:35	BMH,QQQ2;22007226901	1
2068789	2200804A_69.d	QC	8/5/2020 8:48	BMH,QQQ2;689356	1
1400	2200804A_70.d	QC	8/5/2020 9:01	BMH,QQQ2;CCV	1
MeOH Shot	2200804A_71.d	MeOH Shot	8/5/2020 9:14	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1

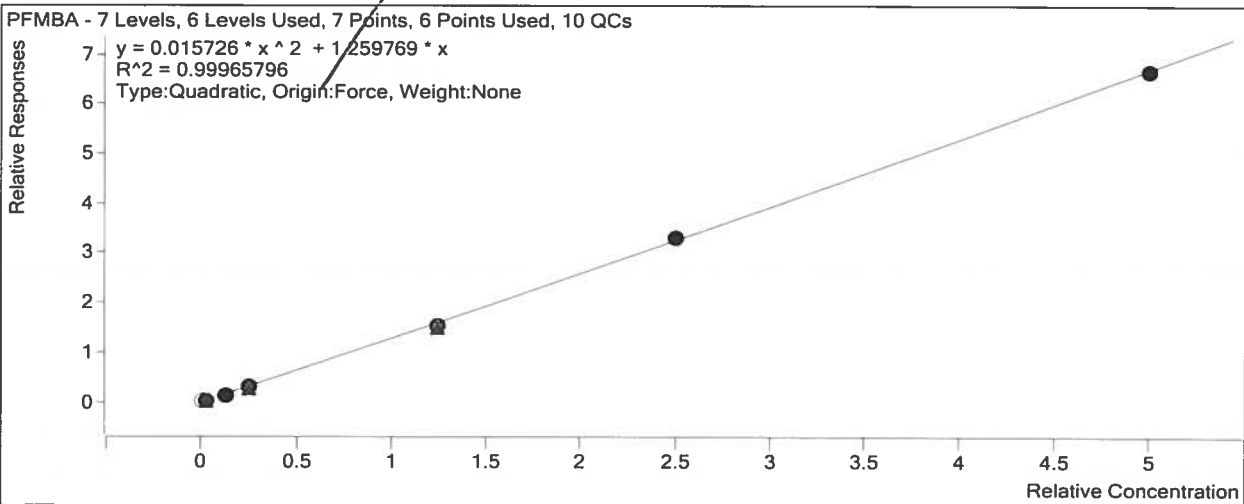
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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Target Compound *PFMBA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	32704	5.0000	1.0623
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	70630	10.0000	1.1730
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	371046	50.0000	1.2170
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	750032	100.0000	1.3253
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1439788	200.0000	1.3361



Quantitative Analysis Calibration Report

Batch Data Path
Analysis Time
Report Time
Last Calib Update

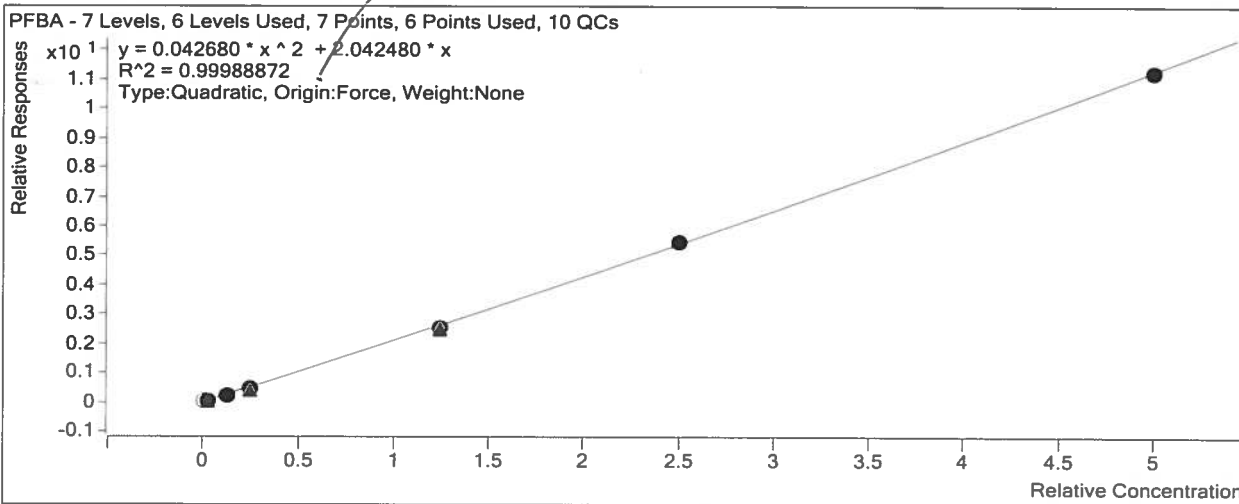
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 8/5/2020 4:32 PM
 8/5/2020 4:35 PM
 8/5/2020 7:24 AM

Analyst Name GCAL\jcms
Reporter Name GCAL\jcms
Batch State Processed

Calibration Info
Target Compound

PFBA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	5109	0.5000	1.8971
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	13746	1.2500	1.8622
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	56262	5.0000	1.8274
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	116436	10.0000	1.9338
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	621599	50.0000	2.0388
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	1230374	100.0000	2.1740
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	2428559	200.0000	2.2537

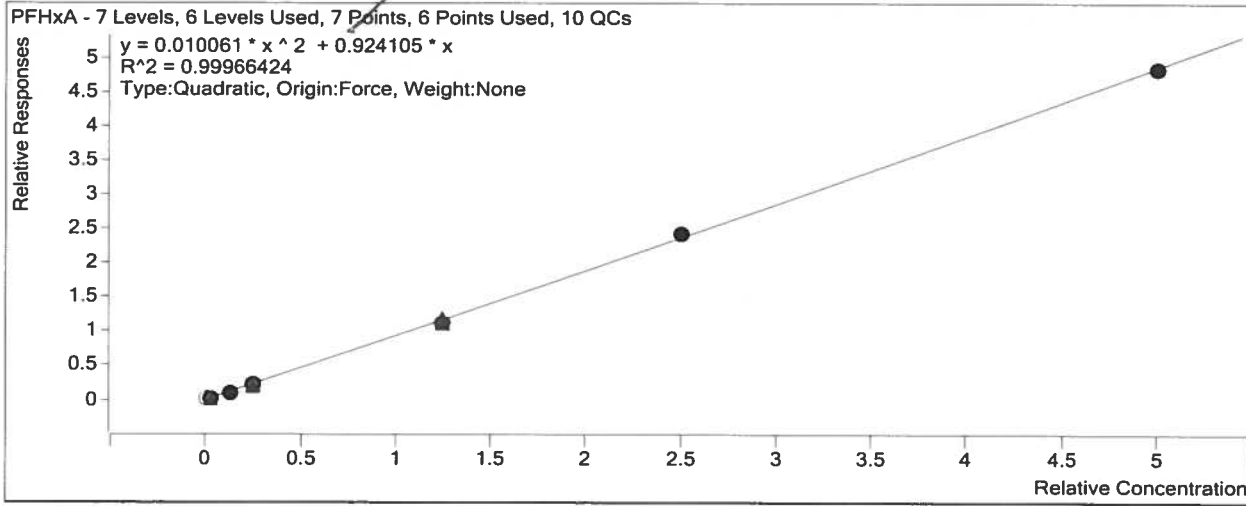


Target Compound

PFMPA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	2810	0.5000	1.0434
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	7213	1.2500	0.9772
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	29686	5.0000	0.9642
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	61993	10.0000	1.0296
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	332083	50.0000	1.0892
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	661552	100.0000	1.1689
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1309263	200.0000	1.2150

Quantitative Analysis Calibration Report

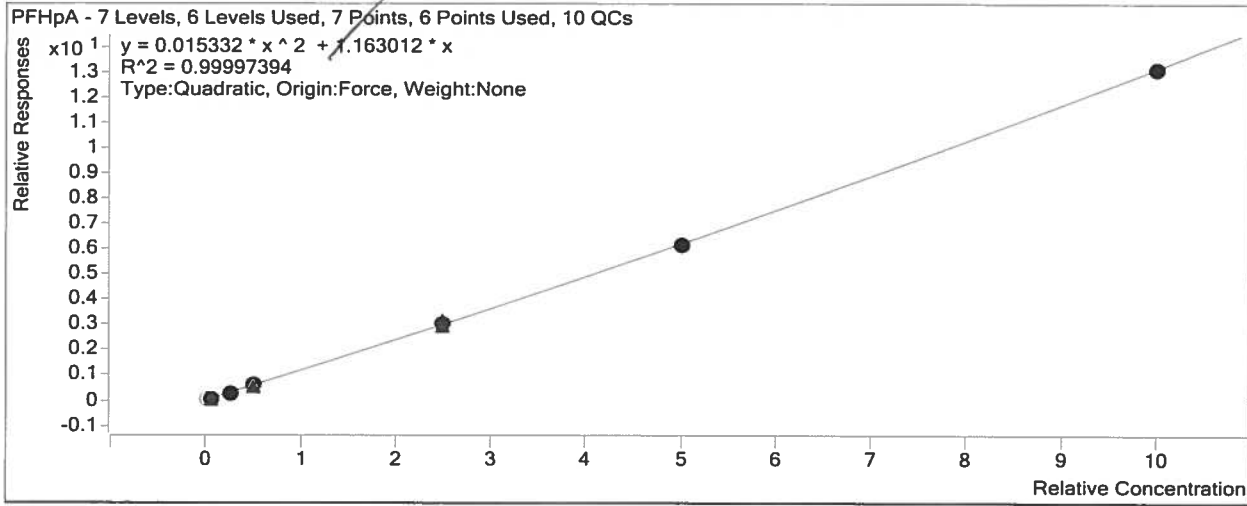


Target Compound

LPFPeS

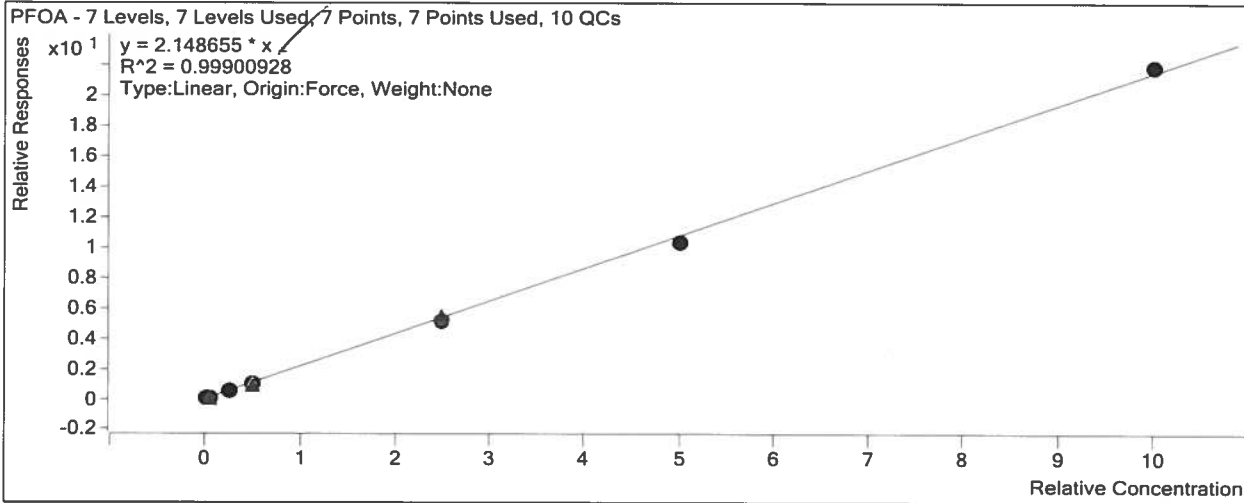
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	1693	0.4700	0.8729
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	3721	1.1800	0.7011
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	15597	4.7000	0.7187
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	33891	9.4000	0.7915
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	179054	47.0000	0.8721

Quantitative Analysis Calibration Report



Quantitative Analysis Calibration Report

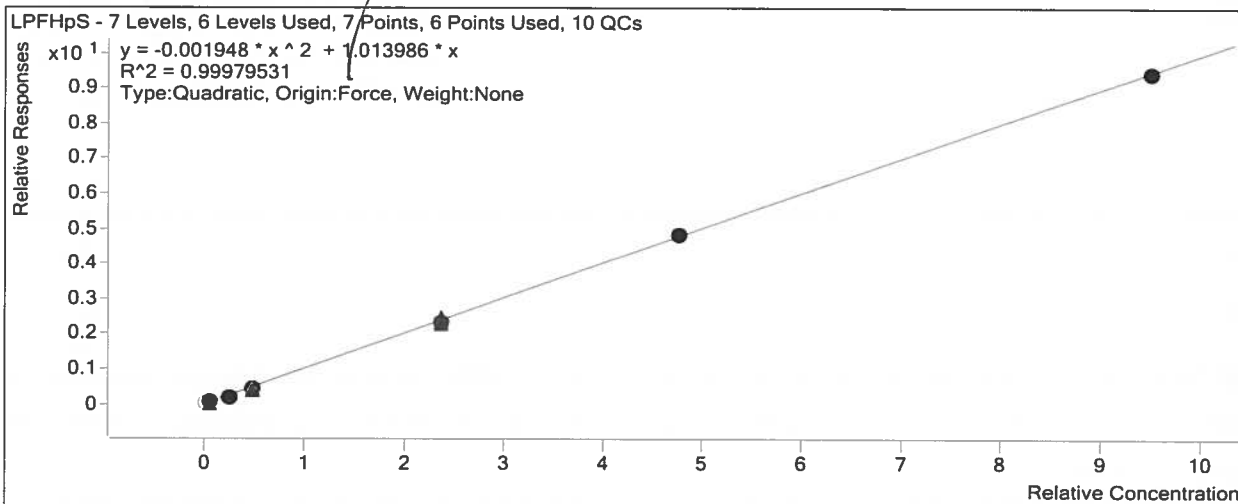
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	801153	100.0000	2.0529
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1545435	200.0000	2.1789



Target Compound

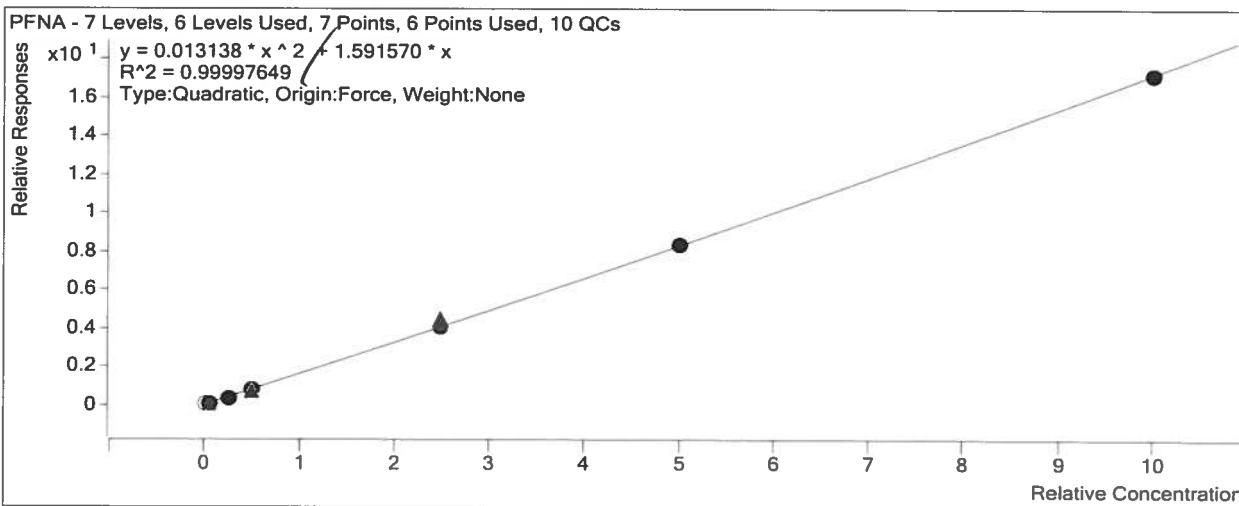
LPFHpS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	1784	0.4750	0.9103
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	4726	1.1900	0.8829
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	18120	4.7500	0.8261
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	37449	9.5000	0.8654
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	204463	47.5000	0.9853
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	403606	95.0000	1.0175
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	764232	190.0000	0.9943



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	28052	5.0000	1.4192
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	62502	10.0000	1.4912
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	325544	50.0000	1.6309
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	646958	100.0000	1.6578
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1221937	200.0000	1.7228

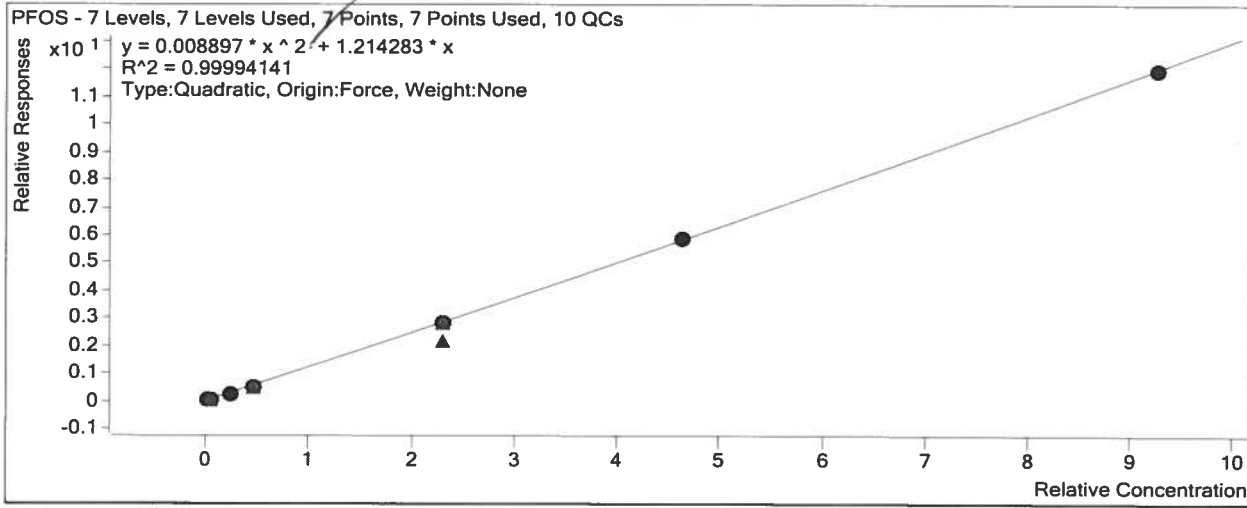


Target Compound

PFOS

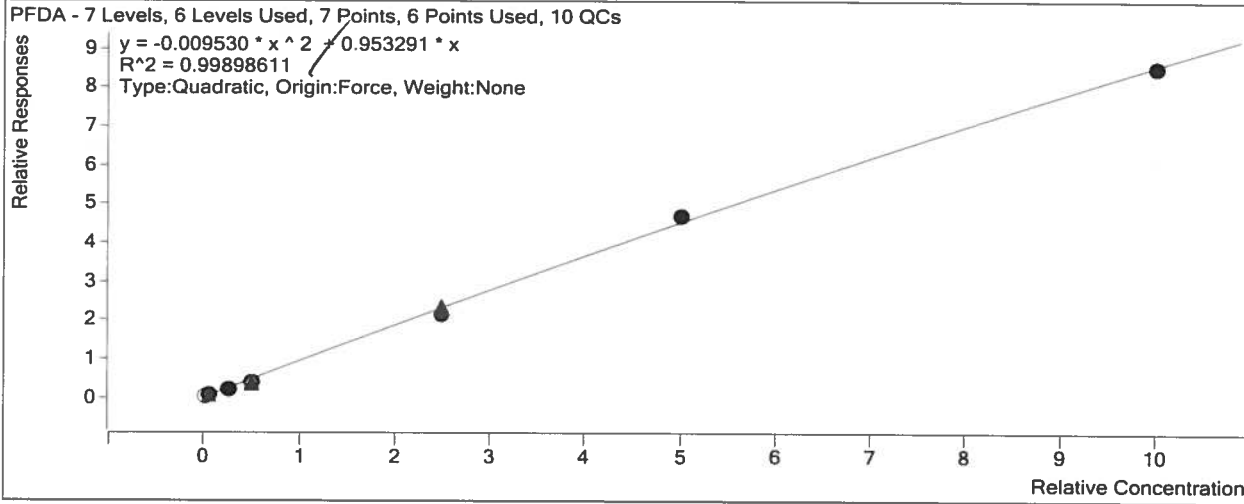
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input checked="" type="checkbox"/>	2351	0.4628	1.2312
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	5830	1.1600	1.1174
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	23358	4.6280	1.0930
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	46289	9.2550	1.0980
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	246455	46.2800	1.2190
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	488577	92.5500	1.2643
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	970287	185.1000	1.2958

Quantitative Analysis Calibration Report



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	158653	50.0000	0.8594
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	316301	100.0000	0.9349
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	586295	200.0000	0.8554



Extracted ISTD

M2PFDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input checked="" type="checkbox"/>	66827	20.0000	3341.3714
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	74232	20.0000	3711.5918
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	75515	20.0000	3775.7744
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	76552	20.0000	3827.6204
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	73847	20.0000	3692.3629
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	67662	20.0000	3383.1064
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	68537	20.0000	3426.8684

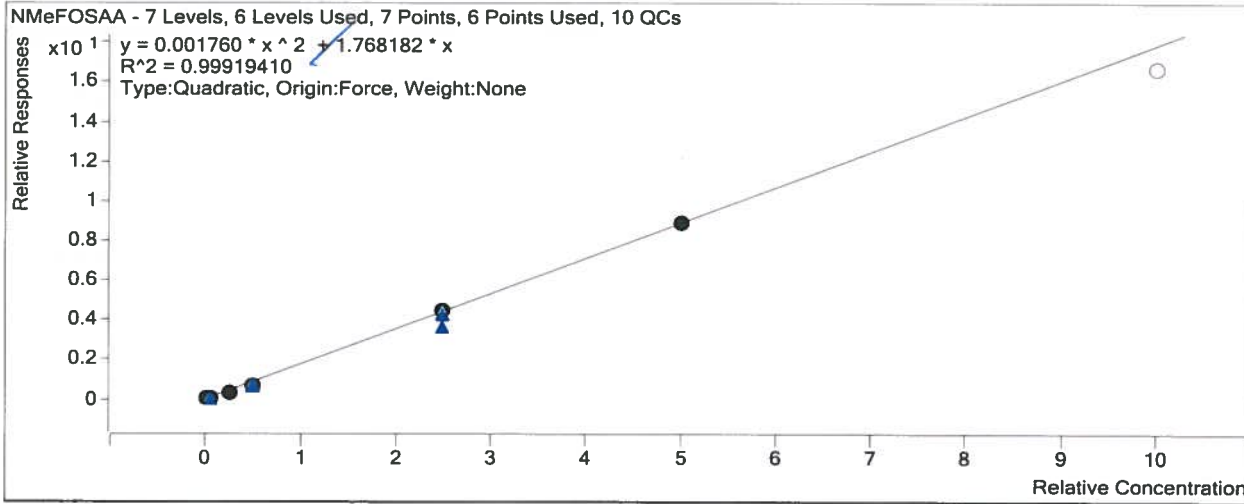
Target Compound

LPFNS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	1508	0.4800	0.7615
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	4298	1.2000	0.7963
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	17294	4.8000	0.7802
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	36566	9.6000	0.8362
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	195857	48.0000	0.9340

Quantitative Analysis Calibration Report

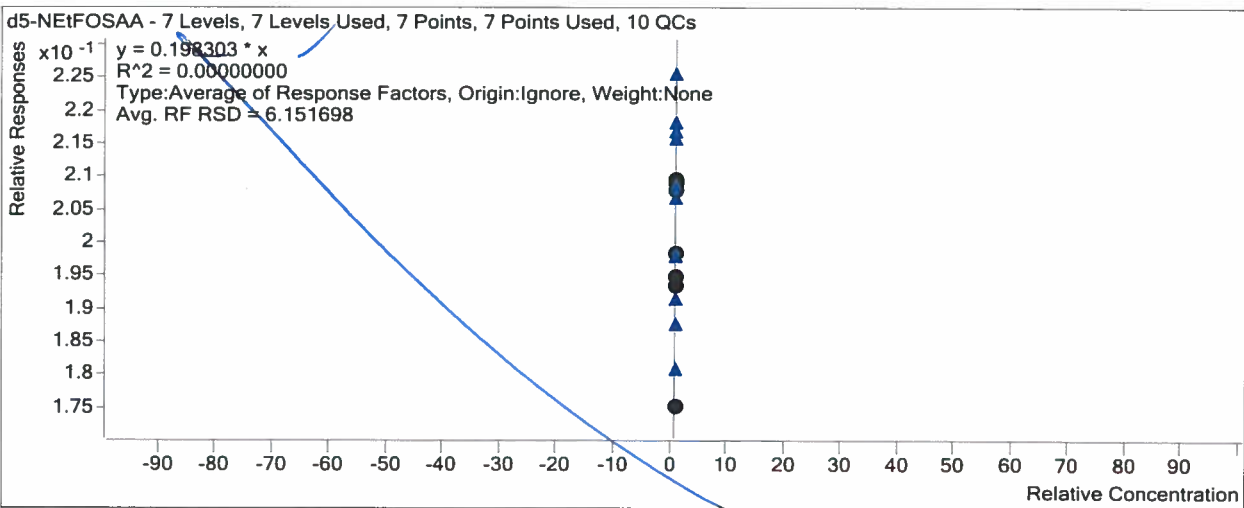
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input type="checkbox"/>	1145632	200.0000	1.6715



Instrument *ISTD*

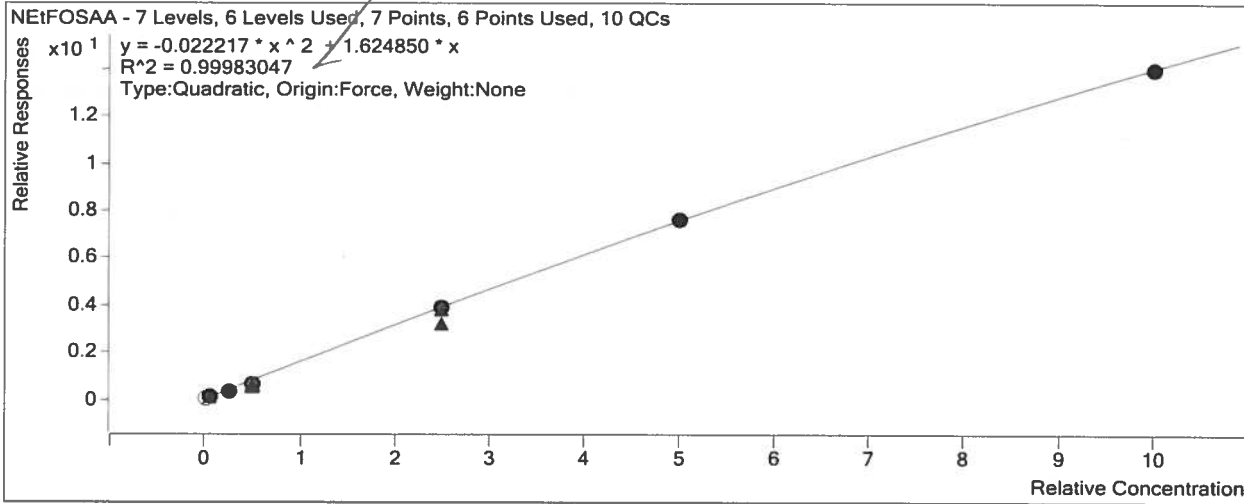
d5-NEtFOSAA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input checked="" type="checkbox"/>	13997	20.0000	0.2095
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	15424	20.0000	0.2078
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	14712	20.0000	0.1948
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	14803	20.0000	0.1934
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	14647	20.0000	0.1983
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	14142	20.0000	0.2090
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	12017	20.0000	0.1753



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	51501	10.0000	1.3455
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	290338	50.0000	1.5726
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	513988	100.0000	1.5193
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	960881	200.0000	1.4020

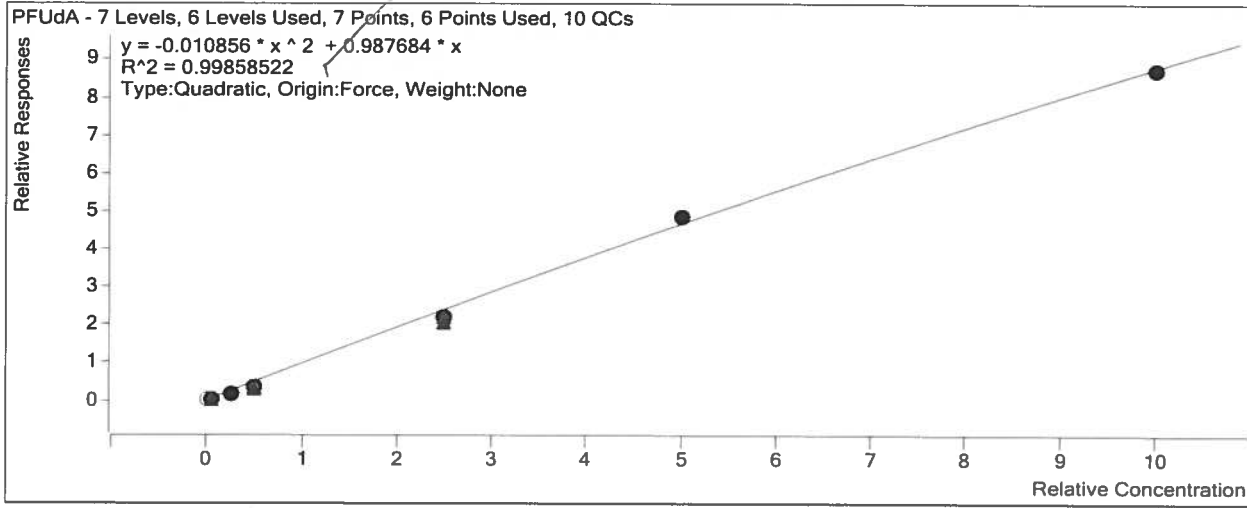


Target Compound

PFUDA

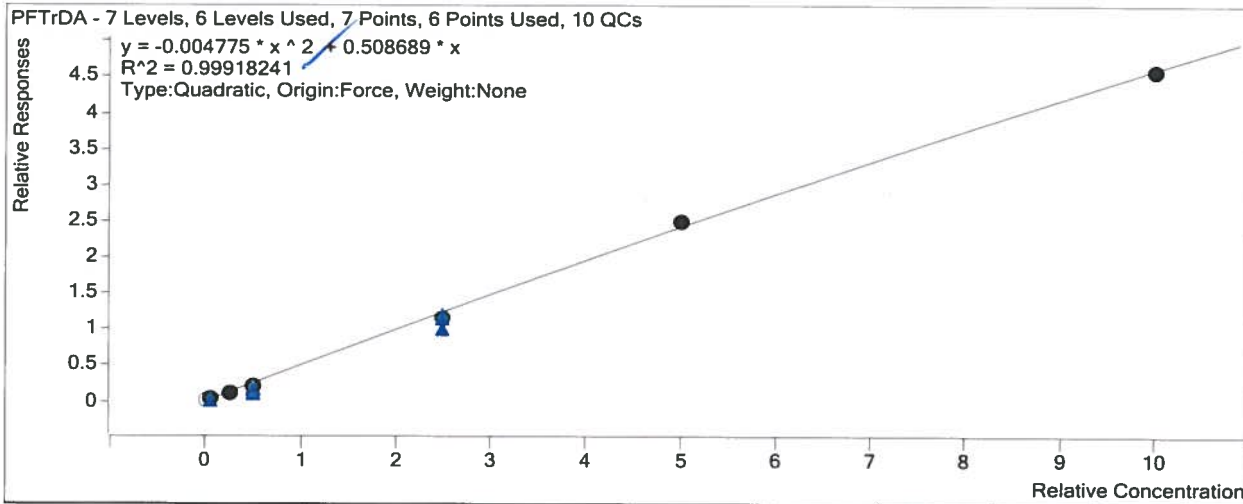
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	1187	0.5000	0.7103
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	3271	1.2500	0.7050
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	13477	5.0000	0.7139
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	27904	10.0000	0.7290
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	163614	50.0000	0.8862
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	327312	100.0000	0.9675
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	600426	200.0000	0.8761

Quantitative Analysis Calibration Report



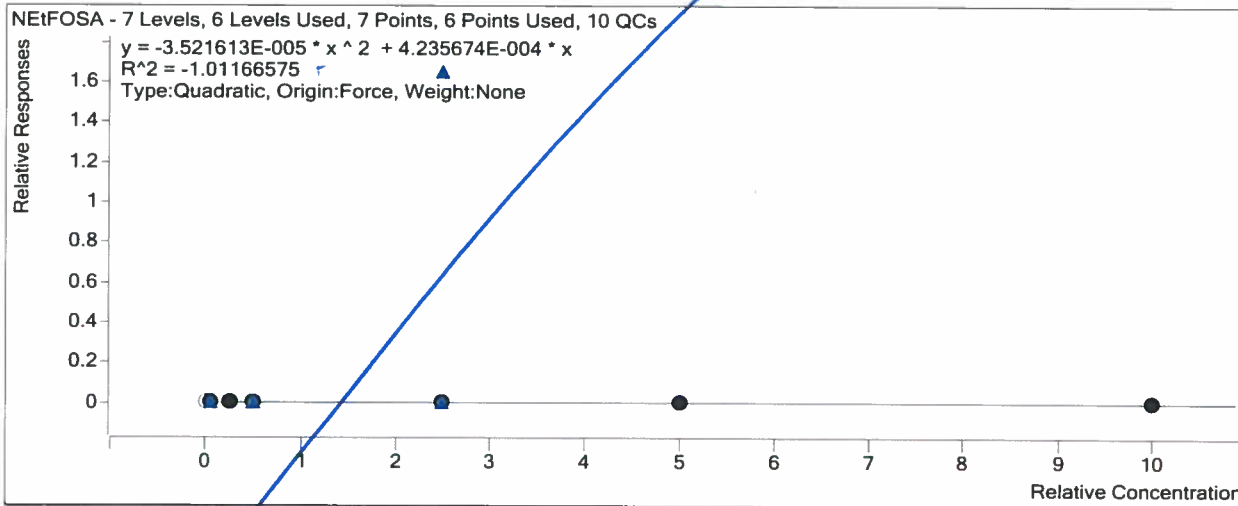
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	315074	200.0000	0.4597

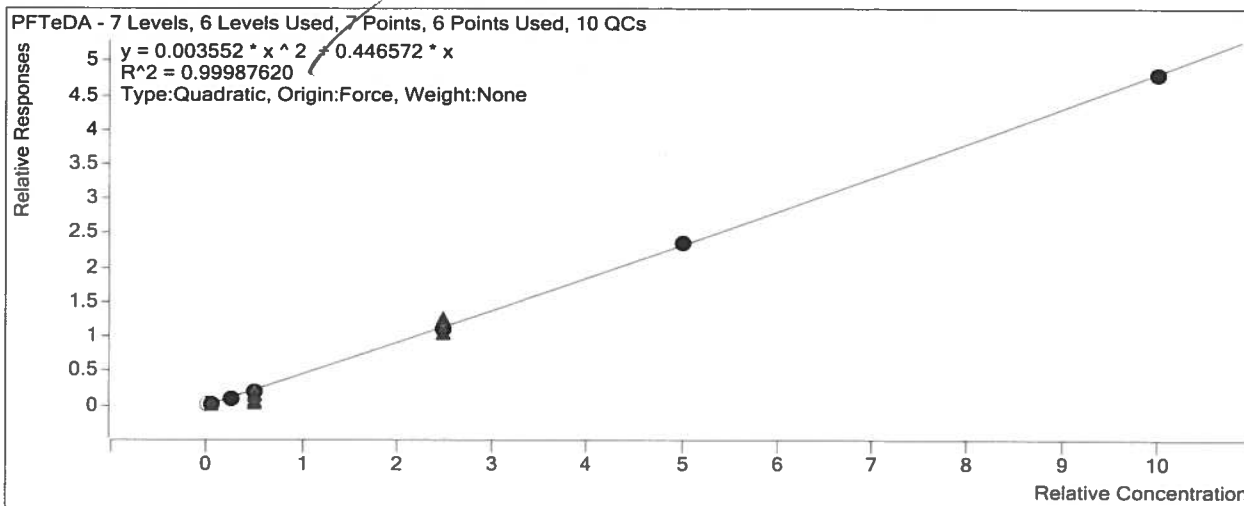


Target Compound NETFOSA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200804ACALDW\2200804A_02.d	Calibration	1	<input type="checkbox"/>	35	0.5000	0.0210
D:\MassHunter\Data\2200804ACALDW\2200804A_03.d	Calibration	2	<input checked="" type="checkbox"/>	58	1.2500	0.0126
D:\MassHunter\Data\2200804ACALDW\2200804A_04.d	Calibration	3	<input checked="" type="checkbox"/>	23	5.0000	0.0012
D:\MassHunter\Data\2200804ACALDW\2200804A_05.d	Calibration	4	<input checked="" type="checkbox"/>	47	10.0000	0.0012
D:\MassHunter\Data\2200804ACALDW\2200804A_06.d	Calibration	5	<input checked="" type="checkbox"/>	55	50.0000	0.0003
D:\MassHunter\Data\2200804ACALDW\2200804A_07.d	Calibration	6	<input checked="" type="checkbox"/>	80	100.0000	0.0002
D:\MassHunter\Data\2200804ACALDW\2200804A_08.d	Calibration	7	<input checked="" type="checkbox"/>	50	200.0000	0.0001



Quantitative Analysis Calibration Report



ORGANICS INSTRUMENT BLANK

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/04/2020 19:41</u>	Lab File ID:	<u>2200804A_10.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689424</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>RESULT</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>	<i>#</i>
NEtFOSAA	ng/L	6.00	U	2.09	6.00	10.0	
NMeFOSAA	ng/L	5.00	U	2.63	5.00	10.0	
Perfluorobutanesulfonic acid	ng/L	5.00	U	2.45	5.00	10.0	
Perfluorodecanoic acid	ng/L	5.00	U	2.21	5.00	10.0	
Perfluorododecanoic acid	ng/L	5.00	U	2.17	5.00	10.0	
Perfluoroheptanoic acid	ng/L	5.00	U	2.46	5.00	10.0	
Perfluorohexanesulfonic acid	ng/L	5.00	U	2.89	5.00	10.0	
Perfluorohexanoic acid	ng/L	5.00	U	2.27	5.00	10.0	
Perfluorononanoic acid	ng/L	5.00	U	3.14	5.00	10.0	
Perfluorooctanesulfonic acid	ng/L	5.00	U	3.85	5.00	10.0	
Perfluorooctanoic acid	ng/L	5.00	U	2.28	5.00	10.0	
Perfluorotetradecanoic acid	ng/L	5.00	U	3.16	5.00	10.0	
Perfluorotridecanoic acid	ng/L	5.00	U	2.56	5.00	10.0	
Perfluoroundecanoic acid	ng/L	5.00	U	2.52	5.00	10.0	

* - Result greater than 1/2 LOQ

ORGANICS INITIAL CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/04/2020 19:54</u>	Lab File ID:	<u>2200804A_11.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689424</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	40300	81	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	41000	82	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	50200	50500	101	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50100	51800	103	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50100	46600	93	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50100	49800	99	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50300	48700	97	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	50600	52600	104	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50100	55400	111	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50200	50300	100	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	50300	45400	90	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50100	55300	110	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50100	39800	80	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50100	45500	91	70	130	

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/04/2020 20:07</u>	Lab File ID:	<u>2200804A_12.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689424</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	10.0	8.08	80	50	150	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	10.0	7.93	79	50	150	
Perfluorobutanesulfonic acid (PFBS)	ng/L	8.88	8.16	92	50	150	
Perfluorodecanoic acid (PFDA)	ng/L	10.0	8.24	82	50	150	
Perfluorododecanoic acid (PFDoA)	ng/L	10.0	8.48	85	50	150	
Perfluoroheptanoic acid (PFHpA)	ng/L	10.0	8.56	86	50	150	
Perfluorohexanoic acid (PFHxA)	ng/L	10.0	8.48	85	50	150	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	9.12	8.24	90	50	150	
Perfluorononanoic acid (PFNA)	ng/L	10.0	9.12	91	50	150	
Perfluorooctanoic acid (PFOA)	ng/L	10.0	8.48	85	50	150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	9.28	8.00	87	50	150	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	10.0	8.16	81	50	150	
Perfluorotridecanoic acid (PFTrDA)	ng/L	10.0	7.75	77	50	150	
Perfluoroundecanoic acid (PFUdA)	ng/L	10.0	6.97	70	50	150	

7E
ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/05/2020 00:40</u>	Lab File ID:	<u>2200804A_32.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689424</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	49100	98	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	49700	99	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	42400	96	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	50400	101	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	51400	103	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	49600	99	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	50500	101	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	44100	97	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	51600	103	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	49400	99	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	44800	97	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	46500	93	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	48700	97	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	45400	91	70	130	

FORM 7E - ORG

7E
ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/05/2020 04:11</u>	Lab File ID:	<u>2200804A_48.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689424</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	49000	98	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	48700	97	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	40400	91	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	48100	96	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	47900	96	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	52400	105	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	48000	96	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	43700	96	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	53500	107	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	51100	102	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	46100	100	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	45900	92	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	46600	93	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	42600	85	70	130	

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/05/2020 07:02</u>	Lab File ID:	<u>2200804A_61.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689424</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i> ✓	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	10.0	7.72	77	50	150	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	10.0	7.27	73	50	150	
Perfluorobutanesulfonic acid (PFBS)	ng/L	8.88	7.64	86	50	150	
Perfluorodecanoic acid (PFDA)	ng/L	10.0	8.32	83	50	150	
Perfluorododecanoic acid (PFDoA)	ng/L	10.0	7.85	79	50	150	
Perfluoroheptanoic acid (PFHpA)	ng/L	10.0	8.64	87	50	150	
Perfluorohexanoic acid (PFHxA)	ng/L	10.0	7.81	78	50	150	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	9.12	7.20	79	50	150	
Perfluorononanoic acid (PFNA)	ng/L	10.0	8.88	89	50	150	
Perfluorooctanoic acid (PFOA)	ng/L	10.0	7.90	79	50	150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	9.28	8.00	87	50	150	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	10.0	6.40	64	50	150	
Perfluorotridecanoic acid (PFTrDA)	ng/L	10.0	7.07	71	50	150	
Perfluoroundecanoic acid (PFUdA)	ng/L	10.0	6.58	66	50	150	

INTERNAL STANDARD AREA SUMMARY

Report No:	<u>220073108</u>	Standard ID:	<u>1205 (ICAL Midpoint)</u>
Analyst:	<u>BMH</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/04/20 18:35</u>	Lab File ID:	<u>2200804A_06.d</u>
Analytical Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Batch:	<u>689424</u>

	M2PFOA	M2PFHxA	M2PFDA	M4PFOS	
	Area	Area	Area	Area	
STANDARD	79842	243914	73847	87371	
CLIENT SAMPLE ID	GCAL SAMP ID	#	#	#	#
MB2067457	2067457	93974	267077	84971	95127
LCS2067458	2067458	89905	260257	86215	91034
LCSD2067459	2067459	88475	254047	80277	90810
GL-POTABLE-12	22007310801	81172	230564	75091	82716
GL-POTABLE-12-DUP	22007310802	83235	239594	78785	85052
GL-POTABLE-12-MS	22007310803	81723	242380	72048	83542
GL-POTABLE-12-MSD	22007310804	81687	246717	79390	86282
GL-POTABLE-20	22007310805	86476	239289	73408	84317
GL-POTABLE-24	22007310806	80435	244946	75952	83392
GL-POTABLE-23	22007310807	86098	236221	75100	84183
GL-POTABLE-22	22007310808	84184	239245	73963	80851
GL-POTABLE-13	22007310809	84539	236517	76255	83187
GL-FB-072820	22007310810	90944	258807	80776	91475
GL-POTABLE-16	22007310811	80369	239985	76936	82259
GL-POTABLE-18	22007310812	82921	250097	74298	81141

AREA UPPER LIMIT = +50% of internal standard area
 AREA LOWER LIMIT = -50% of internal standard area

Column used to flag values outside QC limits
 * Value outside QC limits

QQQ2 Run Log

Analyst: BMH Expiration:

Instrument: QQQ2

Batch: 2200806A

Current ICAL Bath: 2200806ACAL/2200806ACALDW

20mM Amm Acetate 012-43-5 8/8/2020

Methanol 2129224 3/31/2025

Calibration Std 012-40-2 1/30/2021

ICV Std 012-38-3 1/25/2021

EIS Mix 012-42-2 2/4/2020

IIS Mix 012-42-8 2/5/2021

Name	Data File	Type	Acq. Date-Time	Comment	Dil.
MeOH Shot	2200806A_01.d	MeOH Shot	8/6/2020 18:19	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
1201	2200806A_02.d	Cal	8/6/2020 18:32	BMH,QQQ2;Cal	1
1202	2200806A_03.d	Cal	8/6/2020 18:45	BMH,QQQ2;Cal	1
1203	2200806A_04.d	Cal	8/6/2020 18:58	BMH,QQQ2;Cal	1
1204	2200806A_05.d	Cal	8/6/2020 19:11	BMH,QQQ2;Cal	1
1205	2200806A_06.d	Cal	8/6/2020 19:25	BMH,QQQ2;Cal	1
1206	2200806A_07.d	Cal	8/6/2020 19:38	BMH,QQQ2;Cal	1
1207	2200806A_08.d	Cal	8/6/2020 19:51	BMH,QQQ2;Cal	1
MeOH Shot	2200806A_09.d	MeOH Shot	8/6/2020 20:19	MRA,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
1500	2200806A_10.d	Sample	8/6/2020 20:32	BMH,QQQ2;IB	1
1600	2200806A_11.d	QC	8/6/2020 20:45	BMH,QQQ2;ICV	1
1450	2200806A_12.d	QC	8/6/2020 20:58	BMH,QQQ2;ISC	1
MeOH Shot	2200806A_13.d	MeOH Shot	8/6/2020 21:15	MRA,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
2069645	2200806A_14.d	Sample	8/6/2020 21:28	BMH,QQQ2;689517	1
2069646	2200806A_15.d	QC	8/6/2020 21:41	BMH,QQQ2;689517	1
2069647	2200806A_16.d	QC	8/6/2020 21:54	BMH,QQQ2;689517	1
22008061501 x5	2200806A_17.d	Sample	8/6/2020 22:08	BMH,QQQ2;689517	5
22008061511 x5	2200806A_18.d	Sample	8/6/2020 22:21	BMH,QQQ2;689517	5
22008061502	2200806A_19.d	Sample	8/6/2020 22:34	BMH,QQQ2;689517	1
22008061503	2200806A_20.d	Sample	8/6/2020 22:47	BMH,QQQ2;689517	1

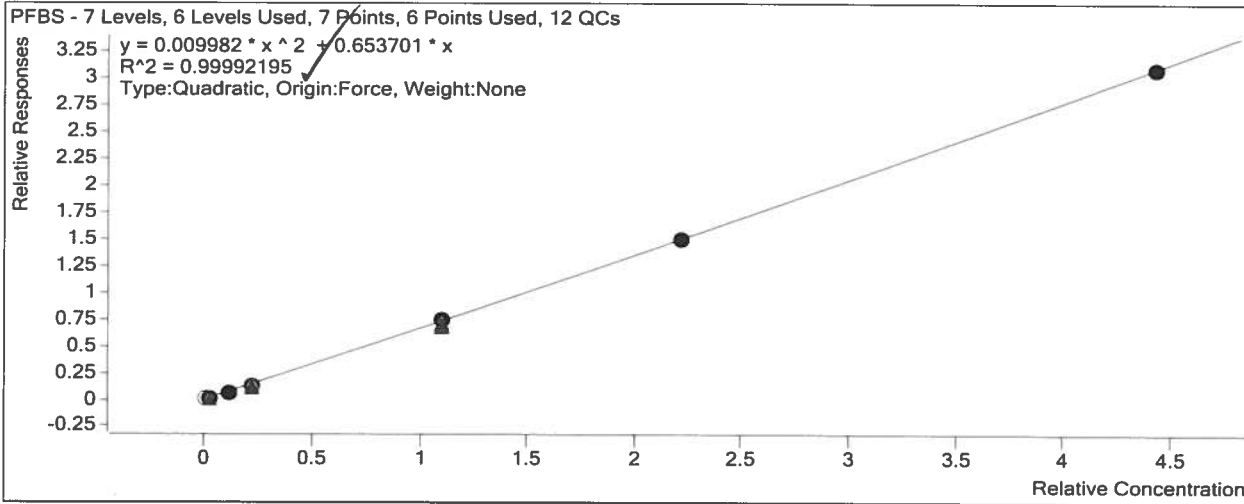
22008061504		2200806A_21.d	Sample	8/6/2020 23:00	BMH,QQQ2;689517	1
22008061505		2200806A_22.d	Sample	8/6/2020 23:14	BMH,QQQ2;689517	1
22008061506		2200806A_23.d	Sample	8/6/2020 23:27	BMH,QQQ2;689517	1
22008061507		2200806A_24.d	Sample	8/6/2020 23:40	BMH,QQQ2;689517	1
22008061508		2200806A_25.d	Sample	8/6/2020 23:53	BMH,QQQ2;689517	1
22008061509		2200806A_26.d	Sample	8/7/2020 0:06	BMH,QQQ2;689517	1
1400		2200806A_27.d	QC	8/7/2020 0:19	BMH,QQQ2;CCV	1
22008061510		2200806A_28.d	Sample	8/7/2020 0:33	BMH,QQQ2;689517	1
22008061513		2200806A_29.d	Sample	8/7/2020 0:46	BMH,QQQ2;689517	1
22008061512		2200806A_30.d	Sample	8/7/2020 0:59	BMH,QQQ2;689517	1
22008061511 x10		2200806A_31.d	Sample	8/7/2020 1:12	BMH,QQQ2;689517	10
22008061501 x1		2200806A_32.d	Sample	8/7/2020 1:25	BMH,QQQ2;689517	1
22008061511 x1		2200806A_33.d	Sample	8/7/2020 1:39	BMH,QQQ2;689517	1
1400		2200806A_34.d	QC	8/7/2020 1:52	BMH,QQQ2;CCV	1
2068383		2200806A_35.d	Sample	8/7/2020 2:05	BMH,QQQ2;689286	1
2068384		2200806A_36.d	QC	8/7/2020 2:18	BMH,QQQ2;689286	1
2068385		2200806A_37.d	QC	8/7/2020 2:31	BMH,QQQ2;689286	1
22007317802		2200806A_38.d	Sample	8/7/2020 2:44	BMH,QQQ2;689286	1
22007234701		2200806A_39.d	Sample	8/7/2020 2:58	BMH,QQQ2;689286	1
22007235701		2200806A_40.d	Sample	8/7/2020 3:11	BMH,QQQ2;689286	1
22007245102		2200806A_41.d	Sample	8/7/2020 3:24	BMH,QQQ2;689286	1
22007250901		2200806A_42.d	Sample	8/7/2020 3:37	BMH,QQQ2;689286	1
22007251101		2200806A_43.d	Sample	8/7/2020 3:50	BMH,QQQ2;689286	1
2068441		2200806A_44.d	QC	8/7/2020 4:03	BMH,QQQ2;689294	1
22007252201		2200806A_45.d	Sample	8/7/2020 4:17	BMH,QQQ2;689294	1
22007252202		2200806A_46.d	Sample	8/7/2020 4:30	BMH,QQQ2;689294	1
22007252401		2200806A_47.d	Sample	8/7/2020 4:43	BMH,QQQ2;689294	1
1400		2200806A_48.d	QC	8/7/2020 4:56	BMH,QQQ2;CCV	1
22007286202		2200806A_49.d	Sample	8/7/2020 5:09	BMH,QQQ2;689359	1
22008042003		2200806A_50.d	Sample	8/7/2020 5:22	BMH,QQQ2;689359	1
22008042101		2200806A_51.d	Sample	8/7/2020 5:36	BMH,QQQ2;689359	1
2068380		2200806A_52.d	Sample	8/7/2020 5:49	BMH,QQQ2;689285	1
2068381		2200806A_53.d	QC	8/7/2020 6:02	BMH,QQQ2;689285	1
2068382		2200806A_54.d	QC	8/7/2020 6:15	BMH,QQQ2;689285	1

22007310813	2200806A_55.d	Sample	8/7/2020 6:28	BMH,QQQ2;689285	1
22007310814	2200806A_56.d	Sample	8/7/2020 6:41	BMH,QQQ2;689285	1
22007310815	2200806A_57.d	Sample	8/7/2020 6:55	BMH,QQQ2;689285	1
22007310816	2200806A_58.d	Sample	8/7/2020 7:08	BMH,QQQ2;689285	1
22007310817	2200806A_59.d	Sample	8/7/2020 7:21	BMH,QQQ2;689285	1
22007310818	2200806A_60.d	Sample	8/7/2020 7:34	BMH,QQQ2;689285	1
22007310819	2200806A_61.d	Sample	8/7/2020 7:47	BMH,QQQ2;689285	1
1450	2200806A_62.d	QC	8/7/2020 8:00	BMH,QQQ2;CCV	1
22007310820	2200806A_63.d	Sample	8/7/2020 8:14	BMH,QQQ2;689285	1
22007304801	2200806A_64.d	Sample	8/7/2020 8:27	BMH,QQQ2;689285	1
22007304802	2200806A_65.d	Sample	8/7/2020 8:40	BMH,QQQ2;689285	1
22007310101	2200806A_66.d	Sample	8/7/2020 8:53	BMH,QQQ2;689285	1
22007310102	2200806A_67.d	Sample	8/7/2020 9:06	BMH,QQQ2;689285	1
22007310201	2200806A_68.d	Sample	8/7/2020 9:20	BMH,QQQ2;689285	1
22007310202	2200806A_69.d	Sample	8/7/2020 9:33	BMH,QQQ2;689285	1
22007310301	2200806A_70.d	Sample	8/7/2020 9:46	BMH,QQQ2;689285	1
22007310401	2200806A_71.d	Sample	8/7/2020 9:59	BMH,QQQ2;689285	1
22007310402	2200806A_72.d	Sample	8/7/2020 10:12	BMH,QQQ2;689285	1
1400	2200806A_73.d	QC	8/7/2020 10:25	BMH,QQQ2;CCV	1
22007310403	2200806A_74.d	Sample	8/7/2020 10:39	BMH,QQQ2;689285	1
22007314001	2200806A_75.d	Sample	8/7/2020 10:52	BMH,QQQ2;689285	1
22007317801	2200806A_76.d	Sample	8/7/2020 11:05	BMH,QQQ2;689285	1
2069274	2200806A_77.d	Sample	8/7/2020 11:18	BMH,QQQ2;689453	1
2069275	2200806A_78.d	QC	8/7/2020 11:31	BMH,QQQ2;689453	1
2069276	2200806A_79.d	QC	8/7/2020 11:44	BMH,QQQ2;689453	1
22008042601	2200806A_80.d	Sample	8/7/2020 11:58	BMH,QQQ2;689453	1
2069277	2200806A_81.d	QC	8/7/2020 12:11	BMH,QQQ2;689453	1
22008042602	2200806A_82.d	Sample	8/7/2020 12:24	BMH,QQQ2;689453	1
22008051606	2200806A_83.d	Sample	8/7/2020 12:37	BMH,QQQ2;689453	1
22008051607	2200806A_84.d	Sample	8/7/2020 12:50	BMH,QQQ2;689453	1
MeOH Shot	2200806A_85.d	MeOH Shot	8/7/2020 13:42	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
22008051608	2200806A_86.d	Sample	8/7/2020 13:55	BMH,QQQ2;689453	1
1400	2200806A_87.d	QC	8/7/2020 14:08	BMH,QQQ2;CCV	1
2069274	2200806A_88.d	Sample	8/7/2020 14:21	BMH,QQQ2;689453	1

2069275	2200806A_89.d	QC	8/7/2020 14:35	BMH,QQQ2;689453	1
2069276	2200806A_90.d	QC	8/7/2020 14:48	BMH,QQQ2;689453	1
MeOH Shot	2200806A_91.d	MeOH Shot	8/7/2020 15:01	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
22008042602	2200806A_92.d	Sample	8/7/2020 15:14	BMH,QQQ2;689453	1
22008051606	2200806A_93.d	Sample	8/7/2020 15:27	BMH,QQQ2;689453	1
22008051607	2200806A_94.d	Sample	8/7/2020 15:41	BMH,QQQ2;689453	1
1400	2200806A_95.d	QC	8/7/2020 15:54	BMH,QQQ2;CCV	1
MeOH Shot	2200806A_96.d	MeOH Shot	8/7/2020 16:07	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1
MeOH Shot	2200806A_97.d	MeOH Shot	8/7/2020 16:20	BMH,QQQ2;MeOH SHOT/INSTRUMENT IDLE	1

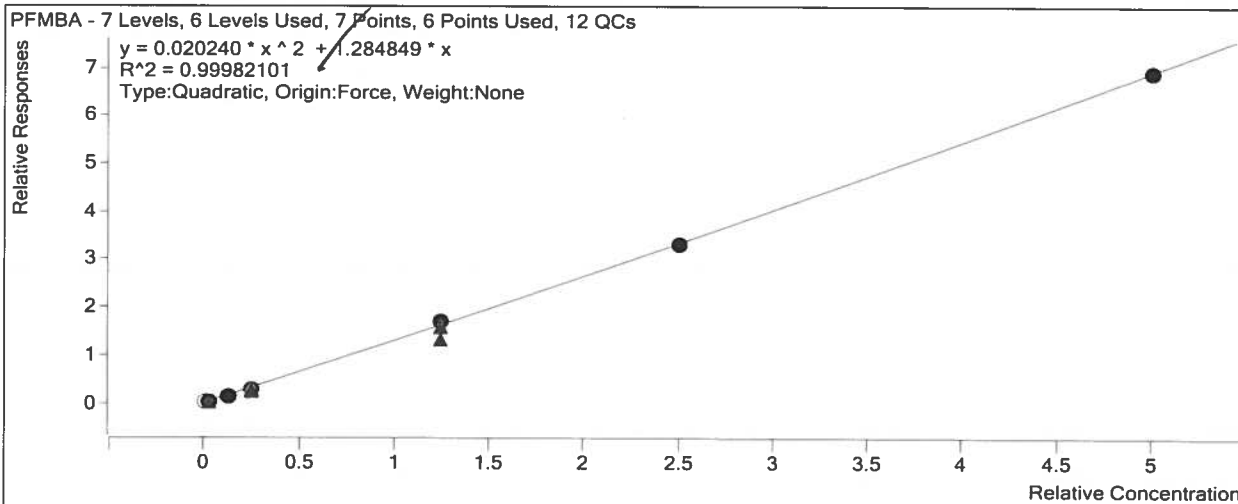
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	769357	177.0000	0.6981

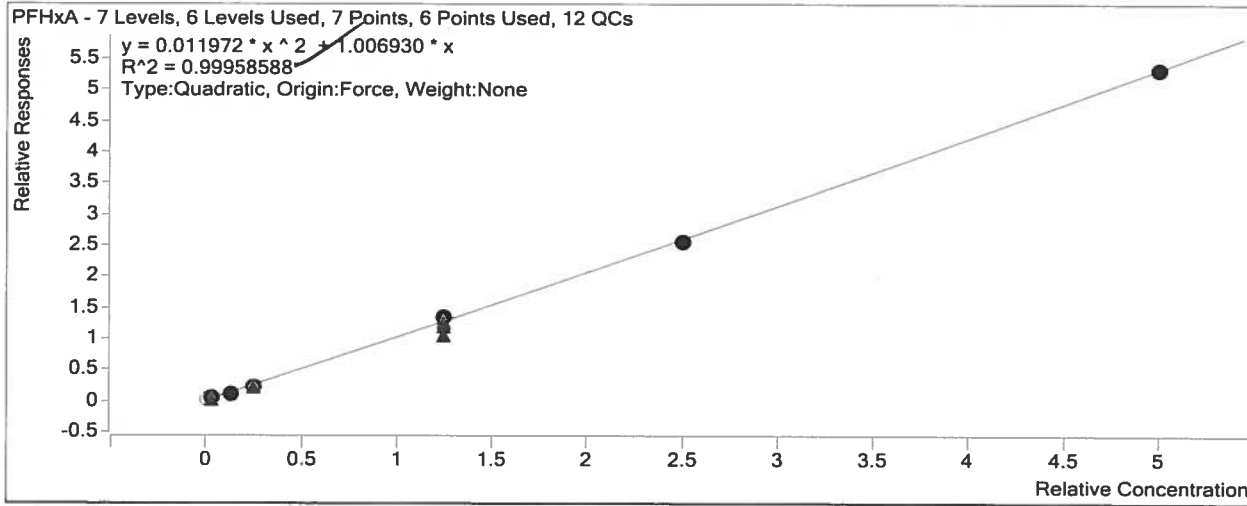


Target Compound *PFMBA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	2960	0.5000	1.0705
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	10098	1.2500	1.1526
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	40294	5.0000	1.1169
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	83688	10.0000	1.1616
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	442458	50.0000	1.3583
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	891184	100.0000	1.3207
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1727339	200.0000	1.3872



Quantitative Analysis Calibration Report

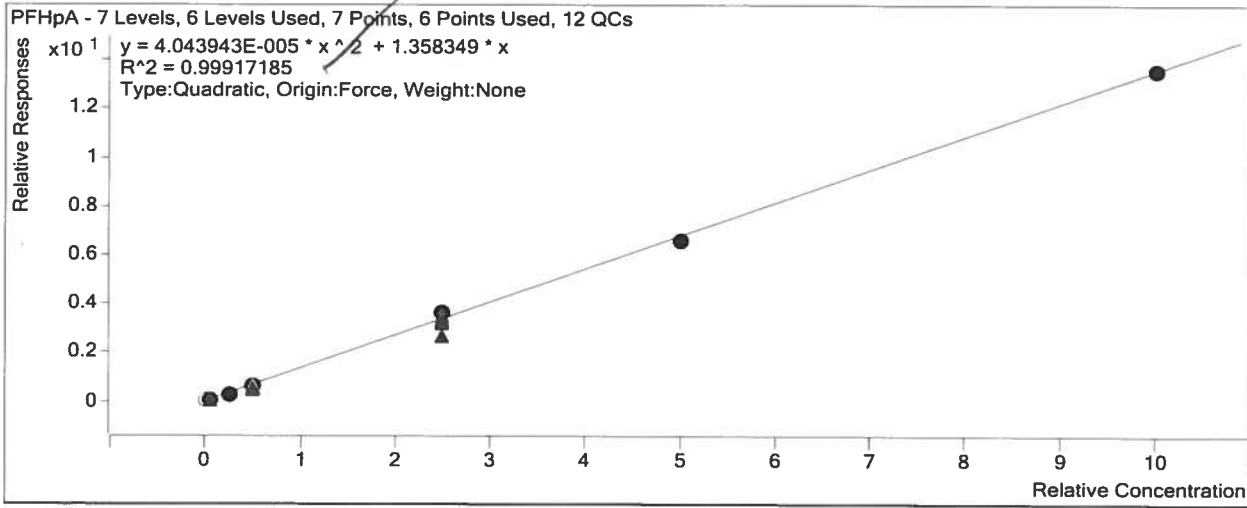


Target Compound

LPFPeS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	1406	0.4700	0.7526
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	5056	1.1800	0.8152
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	21022	4.7000	0.8800
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	43636	9.4000	0.8997
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	219893	47.0000	0.9263

Quantitative Analysis Calibration Report

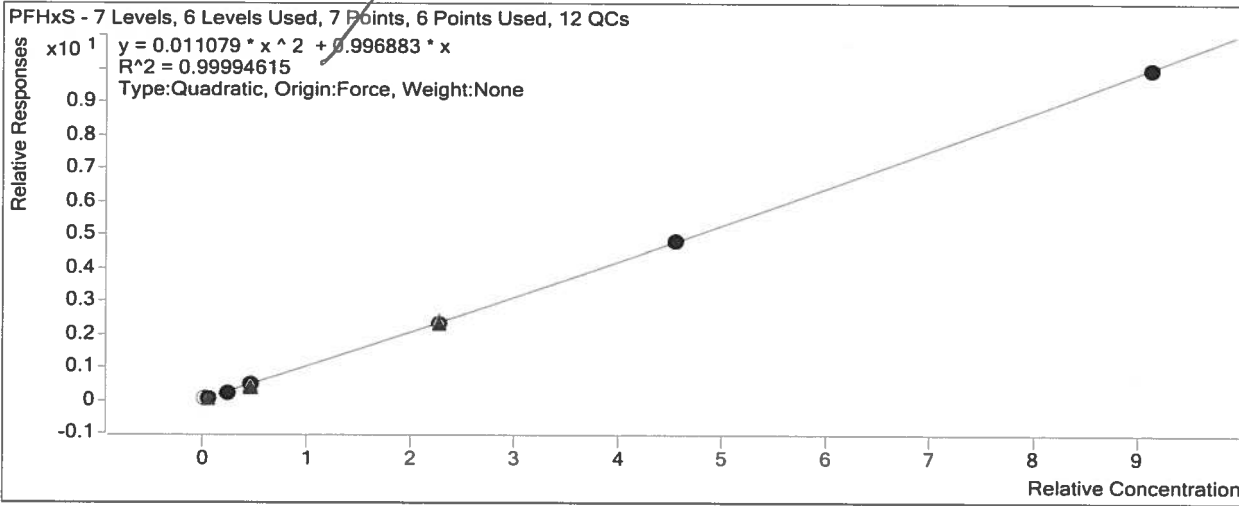


Quantitative Analysis Calibration Report

Target Compound

PFHxS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	1675	0.4560	0.9243
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	5231	1.1400	0.8731
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	21063	4.5600	0.9088
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	44859	9.1200	0.9533
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	231263	45.6000	1.0041
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	457108	91.2000	1.0556
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	885206	182.4000	1.0972



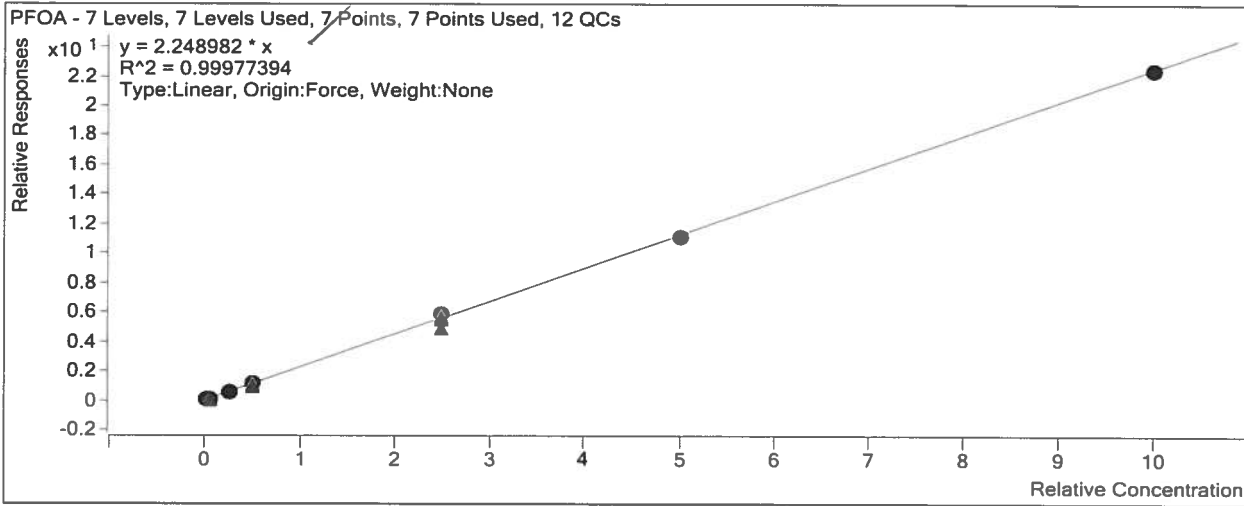
Target Compound

ADONA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	7851	0.5000	4.1975
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	29920	1.2500	4.7897
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	130878	5.0000	5.0452
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	261982	10.0000	5.4796
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	1310070	50.0000	6.0596
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	2616099	100.0000	5.6379
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	4999022	200.0000	5.7464

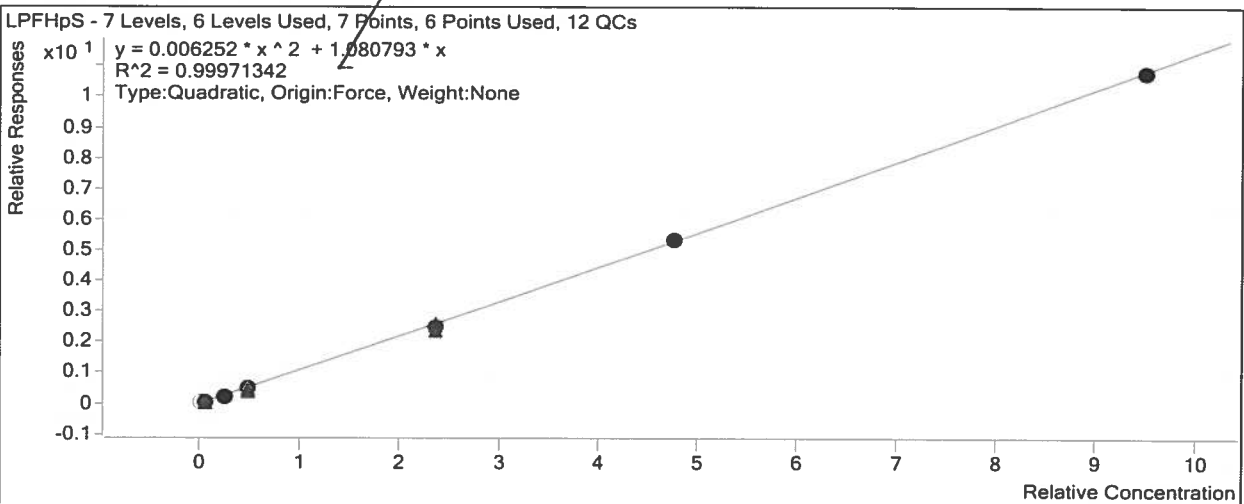
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	1031146	100.0000	2.2222
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1956635	200.0000	2.2492



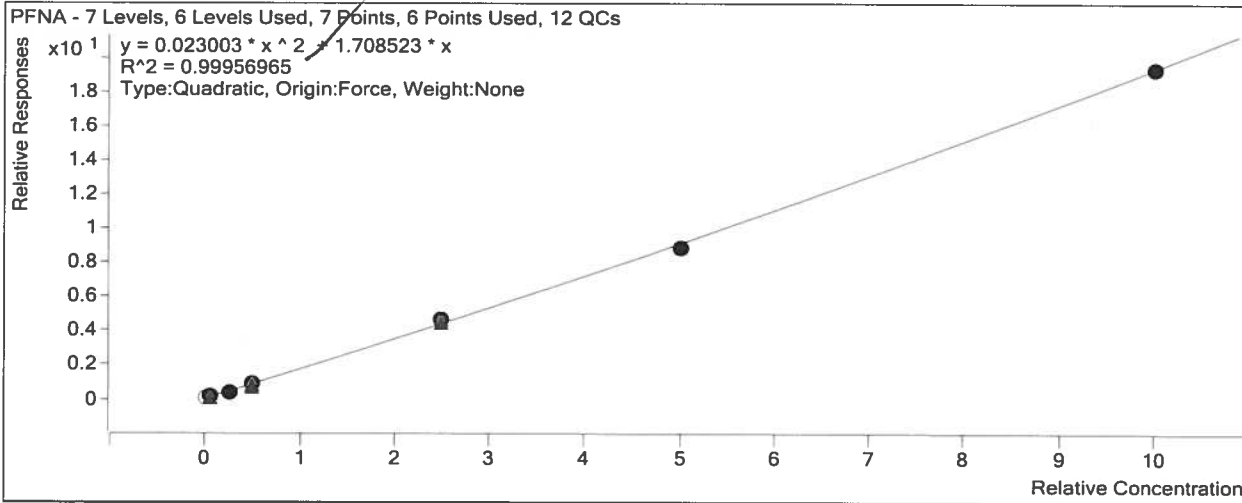
Target Compound *LPFHpS*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	1507	0.4750	0.7986
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	5789	1.1900	0.9257
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	23541	4.7500	0.9750
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	48692	9.5000	0.9934
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	251220	47.5000	1.0471
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	510166	95.0000	1.1310
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	956719	190.0000	1.1384



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	39720	5.0000	1.5311
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	80621	10.0000	1.6863
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	405903	50.0000	1.8775
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	827467	100.0000	1.7833
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1689284	200.0000	1.9419

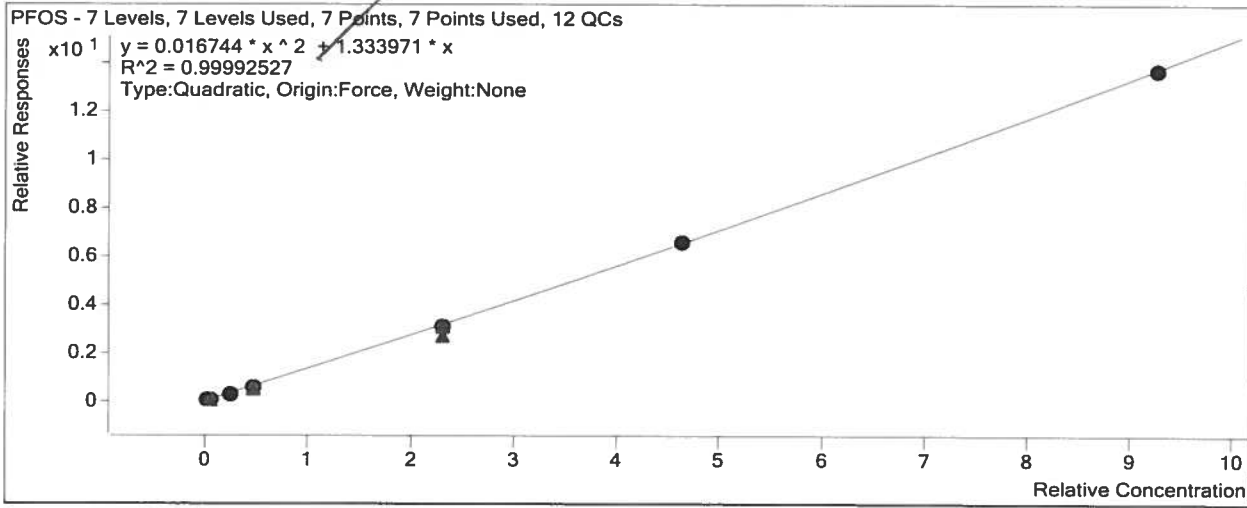


Target Compound

PFOS

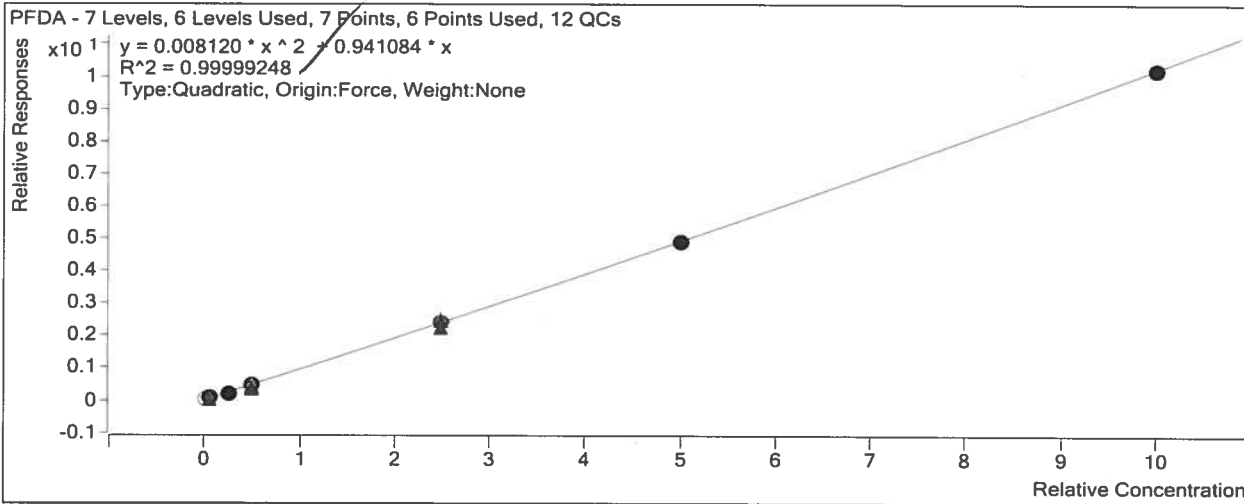
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input checked="" type="checkbox"/>	2071	0.4628	1.1266
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	7211	1.1600	1.1828
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	27578	4.6280	1.1723
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	61310	9.2550	1.2840
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	313506	46.2800	1.3412
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	626327	92.5500	1.4252
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1218045	185.1000	1.4877

Quantitative Analysis Calibration Report



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	208114	50.0000	0.9608
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	421908	100.0000	0.9829
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	802216	200.0000	1.0221



Extracted ISTD

M2PFDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input checked="" type="checkbox"/>	68195	20.0000	3409.7419
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	91834	20.0000	4591.7136
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	95227	20.0000	4761.3423
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	92978	20.0000	4648.9237
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	86646	20.0000	4332.2871
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	85854	20.0000	4292.6771
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	78483	20.0000	3924.1661

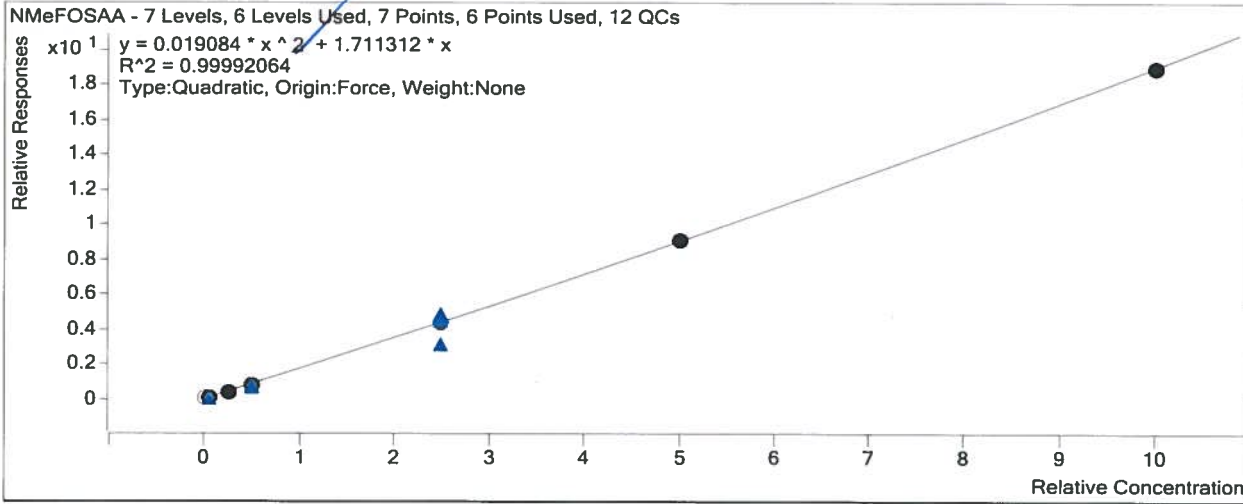
Target Compound

LPFNS

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	1730	0.4800	0.9073
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	5830	1.2000	0.9244
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	23150	4.8000	0.9488
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	50521	9.6000	1.0200
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	252819	48.0000	1.0428

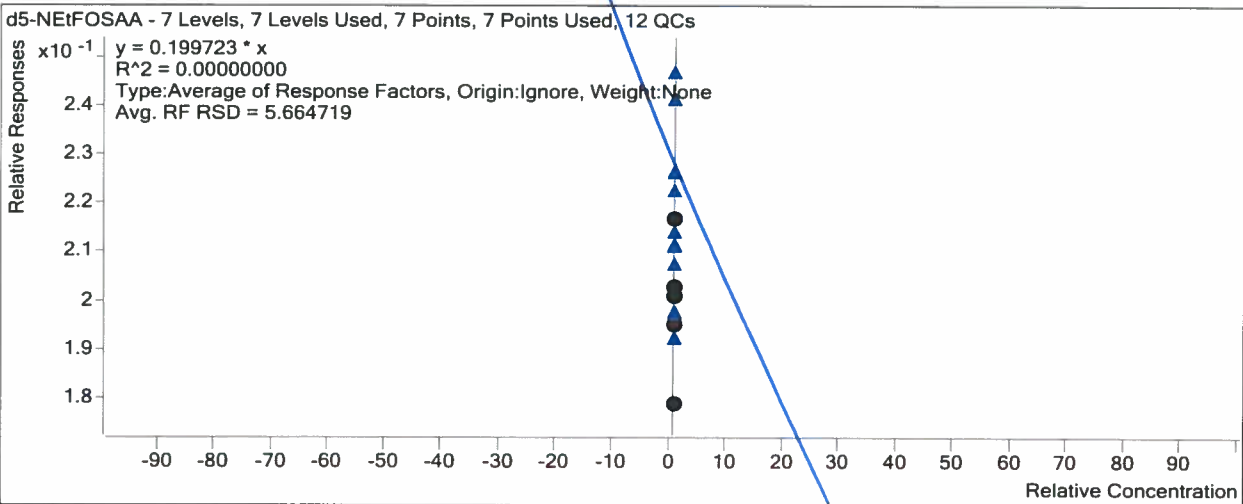
Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1491837	200.0000	1.9008



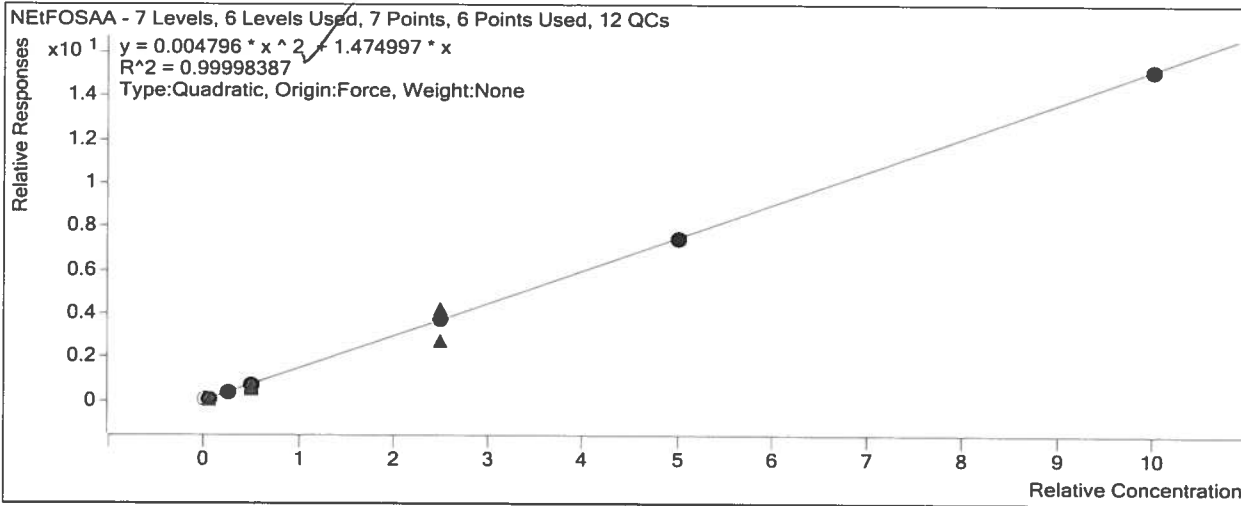
Instrument *ISTD* *d5-NEtFOSAA*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input checked="" type="checkbox"/>	14788	20.0000	0.2168
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	18605	20.0000	0.2026
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	19150	20.0000	0.2011
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	16639	20.0000	0.1790
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	17400	20.0000	0.2008
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	17411	20.0000	0.2028
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	15299	20.0000	0.1949



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	66701	10.0000	1.4348
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	325232	50.0000	1.5014
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	641666	100.0000	1.4948
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	1195504	200.0000	1.5233

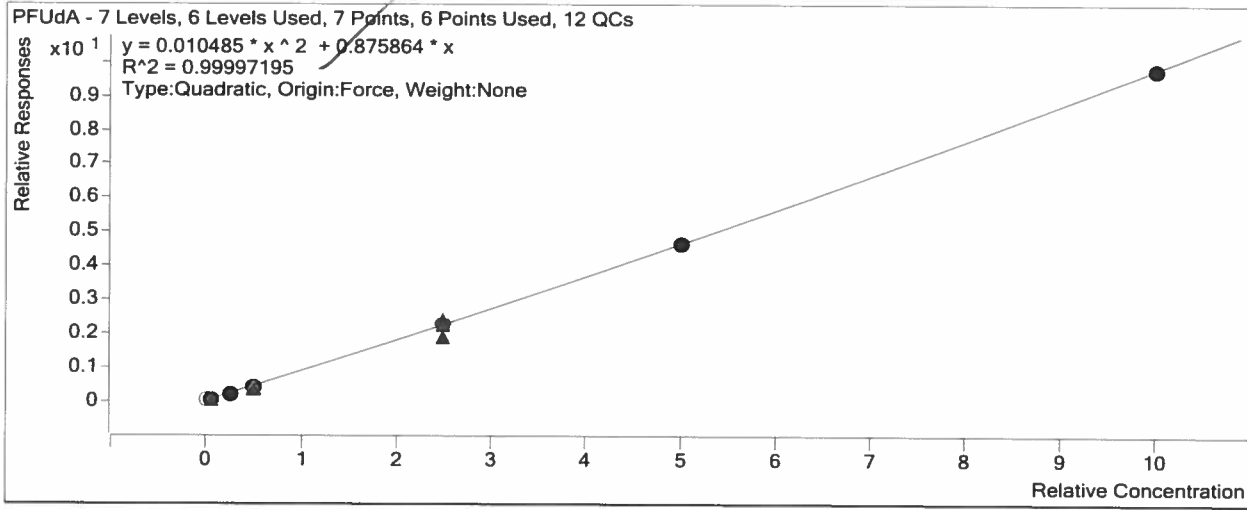


Target Compound

PFUDA

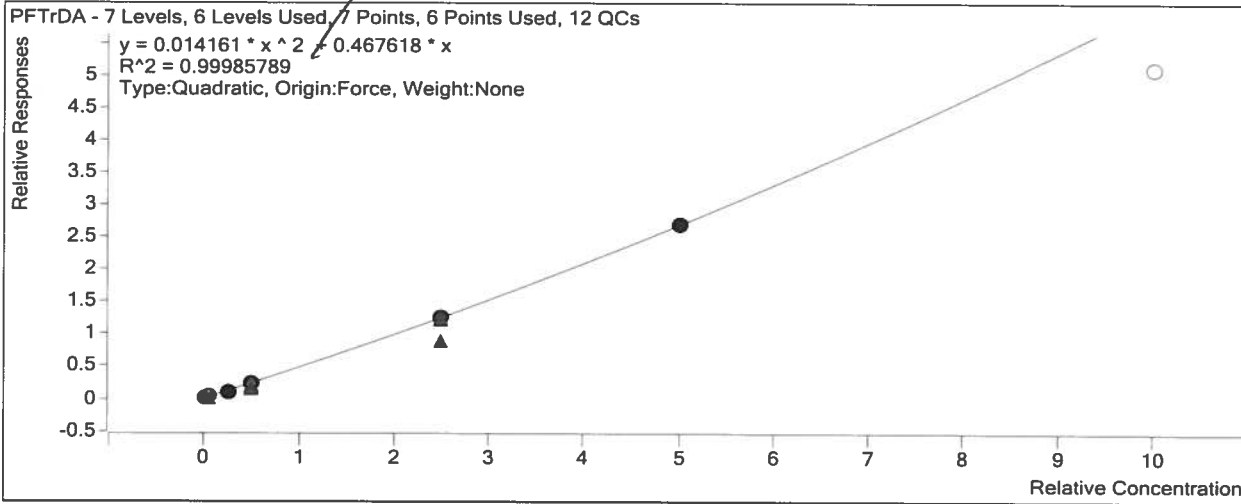
Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	1567	0.5000	0.9191
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	4285	1.2500	0.7465
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	19629	5.0000	0.8245
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	37504	10.0000	0.8067
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	194458	50.0000	0.8977
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	399922	100.0000	0.9316
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	769427	200.0000	0.9804

Quantitative Analysis Calibration Report



Quantitative Analysis Calibration Report

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	21200	10.0000	0.4560
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	109672	50.0000	0.5063
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	230966	100.0000	0.5380
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input type="checkbox"/>	402670	200.0000	0.5131

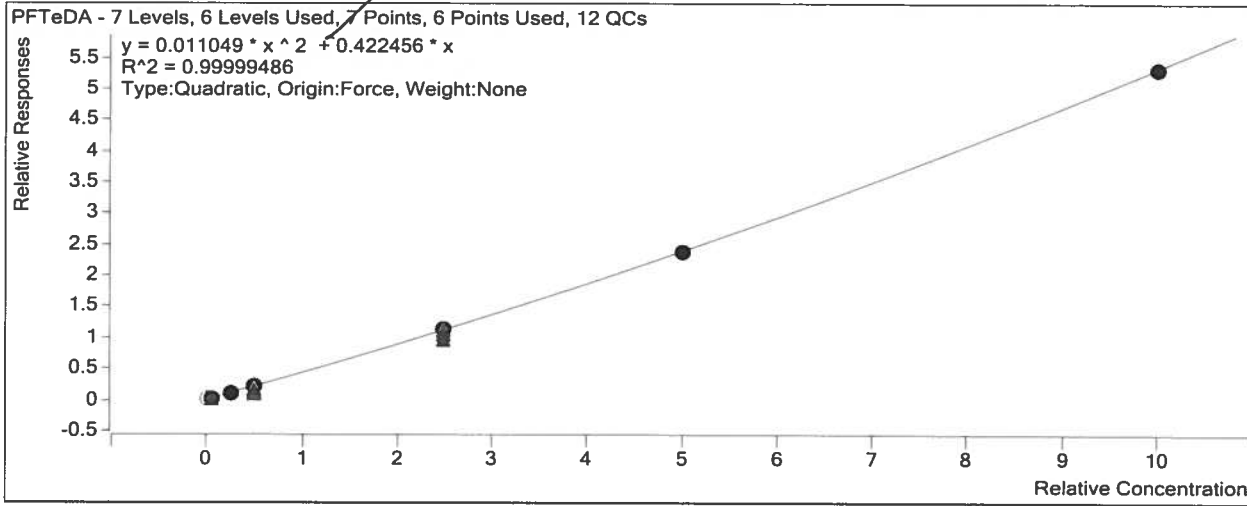


Target Compound

NETFOSA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	54	0.5000	0.0317
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	55	1.2500	0.0095
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	36	5.0000	0.0015
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	60	10.0000	0.0013
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	57	50.0000	0.0003
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	133	100.0000	0.0003
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	127	200.0000	0.0002

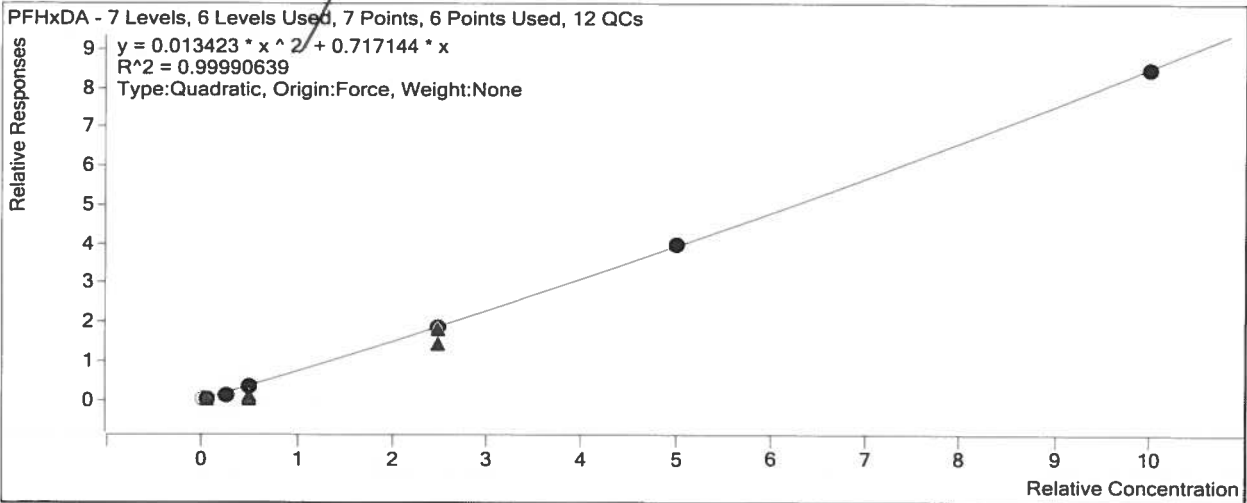
Quantitative Analysis Calibration Report



Target Compound

PFHxDA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
D:\MassHunter\Data\2200806ACALDW\2200806A_02.d	Calibration	1	<input type="checkbox"/>	1223	0.5000	0.7173
D:\MassHunter\Data\2200806ACALDW\2200806A_03.d	Calibration	2	<input checked="" type="checkbox"/>	4163	1.2500	0.7253
D:\MassHunter\Data\2200806ACALDW\2200806A_04.d	Calibration	3	<input checked="" type="checkbox"/>	12845	5.0000	0.5395
D:\MassHunter\Data\2200806ACALDW\2200806A_05.d	Calibration	4	<input checked="" type="checkbox"/>	31399	10.0000	0.6754
D:\MassHunter\Data\2200806ACALDW\2200806A_06.d	Calibration	5	<input checked="" type="checkbox"/>	159581	50.0000	0.7367
D:\MassHunter\Data\2200806ACALDW\2200806A_07.d	Calibration	6	<input checked="" type="checkbox"/>	339682	100.0000	0.7913
D:\MassHunter\Data\2200806ACALDW\2200806A_08.d	Calibration	7	<input checked="" type="checkbox"/>	667671	200.0000	0.8507



Target Compound

PFODA

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc (ng/mL)	RF
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ORGANICS INSTRUMENT BLANK

Report No: 220073108 Instrument ID: QQQ2
 Analysis Date: 08/06/2020 20:32 Lab File ID: 2200806A_10.d
 Analytical Method: EPA 537.1 Analytical Batch: 689642

<i>ANALYTE</i>	<i>UNITS</i>	<i>RESULT</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>	<i>#</i>
NETFOSAA	ng/L	6.00	U	2.09	6.00	10.0	
NMeFOSAA	ng/L	5.00	U	2.63	5.00	10.0	
Perfluorobutanesulfonic acid	ng/L	5.00	U	2.45	5.00	10.0	
Perfluorodecanoic acid	ng/L	5.00	U	2.21	5.00	10.0	
Perfluorododecanoic acid	ng/L	5.00	U	2.17	5.00	10.0	
Perfluoroheptanoic acid	ng/L	5.00	U	2.46	5.00	10.0	
Perfluorohexanesulfonic acid	ng/L	5.00	U	2.89	5.00	10.0	
Perfluorohexanoic acid	ng/L	5.00	U	2.27	5.00	10.0	
Perfluorononanoic acid	ng/L	5.00	U	3.14	5.00	10.0	
Perfluorooctanesulfonic acid	ng/L	5.00	U	3.85	5.00	10.0	
Perfluorooctanoic acid	ng/L	5.00	U	2.28	5.00	10.0	
Perfluorotetradecanoic acid	ng/L	5.00	U	3.16	5.00	10.0	
Perfluorotridecanoic acid	ng/L	5.00	U	2.56	5.00	10.0	
Perfluoroundecanoic acid	ng/L	5.00	U	2.52	5.00	10.0	

* - Result greater than 1/2 LOQ

ORGANICS INITIAL CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/06/2020 20:45</u>	Lab File ID:	<u>2200806A_11.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689642</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	37000	74	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	36200	72	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	50200	41800	83	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50100	47000	94	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50100	41500	83	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50100	40100	80	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50300	41800	83	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	50600	46800	93	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50100	50300	100	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50200	43800	87	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	50300	39800	79	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50100	43300	87	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50100	36300	72	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50100	42400	85	70	130	

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/06/2020 20:58</u>	Lab File ID:	<u>2200806A_12.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689642</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	10.0	8.96	90	50	150	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	10.0	7.96	80	50	150	
Perfluorobutanesulfonic acid (PFBS)	ng/L	8.88	7.22	82	50	150	
Perfluorodecanoic acid (PFDA)	ng/L	10.0	8.48	85	50	150	
Perfluorododecanoic acid (PFDoA)	ng/L	10.0	8.08	81	50	150	
Perfluoroheptanoic acid (PFHpA)	ng/L	10.0	7.84	78	50	150	
Perfluorohexanoic acid (PFHxA)	ng/L	10.0	8.32	83	50	150	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	9.12	8.56	94	50	150	
Perfluorononanoic acid (PFNA)	ng/L	10.0	8.72	87	50	150	
Perfluorooctanoic acid (PFOA)	ng/L	10.0	8.48	85	50	150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	9.28	7.91	86	50	150	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	10.0	10.0	100	50	150	
Perfluorotridecanoic acid (PFTrDA)	ng/L	10.0	7.94	79	50	150	
Perfluoroundecanoic acid (PFUdA)	ng/L	10.0	8.48	85	50	150	

7E
ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/07/2020 01:52</u>	Lab File ID:	<u>2200806A_34.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689642</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	52800	106	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	51000	102	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	42600	96	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	52200	104	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	51200	102	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	48900	98	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	50200	100	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	45600	100	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	53300	107	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	51300	103	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	46200	100	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	49900	100	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	49500	99	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	50400	101	70	130	

ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/07/2020 04:56</u>	Lab File ID:	<u>2200806A_48.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689642</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	55400	111	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	51600	103	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	40500	92	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	52300	105	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	53700	107	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	51100	102	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	49300	99	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	45200	99	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	52300	105	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	51500	103	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	45700	99	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	51000	102	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	50300	101	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	53000	106	70	130	

ORGANICS INSTRUMENT SENSITIVITY CHECK

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/07/2020 08:00</u>	Lab File ID:	<u>2200806A_62.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689642</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% REC</i>	<i>LCL</i>	<i>UCL</i>	<i>Q</i>
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	10.0	8.80	88	50	150	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	10.0	8.56	85	50	150	
Perfluorobutanesulfonic acid (PFBS)	ng/L	8.88	6.90	78	50	150	
Perfluorodecanoic acid (PFDA)	ng/L	10.0	8.24	82	50	150	
Perfluorododecanoic acid (PFDoA)	ng/L	10.0	10.3	104	50	150	
Perfluoroheptanoic acid (PFHpA)	ng/L	10.0	8.00	80	50	150	
Perfluorohexanoic acid (PFHxA)	ng/L	10.0	8.16	82	50	150	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	9.12	7.51	82	50	150	
Perfluorononanoic acid (PFNA)	ng/L	10.0	8.32	83	50	150	
Perfluorooctanoic acid (PFOA)	ng/L	10.0	8.96	89	50	150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	9.28	7.77	84	50	150	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	10.0	8.32	83	50	150	
Perfluorotridecanoic acid (PFTrDA)	ng/L	10.0	8.32	84	50	150	
Perfluoroundecanoic acid (PFUdA)	ng/L	10.0	7.92	79	50	150	

7E
ORGANICS CALIBRATION VERIFICATION

Report No:	<u>220073108</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/07/2020 10:25</u>	Lab File ID:	<u>2200806A_73.d</u>
Analytical Method:	<u>EPA 537.1</u>	Analytical Batch:	<u>689642</u>

ANALYTE	UNITS	TRUE	FOUND	% REC	LCL	UCL	Q
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ng/L	50000	56000	112	70	130	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ng/L	50000	53300	107	70	130	
Perfluorobutanesulfonic acid (PFBS)	ng/L	44300	42200	95	70	130	
Perfluorodecanoic acid (PFDA)	ng/L	50000	51500	103	70	130	
Perfluorododecanoic acid (PFDoA)	ng/L	50000	54200	108	70	130	
Perfluoroheptanoic acid (PFHpA)	ng/L	50000	47500	95	70	130	
Perfluorohexanoic acid (PFHxA)	ng/L	50000	49400	99	70	130	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	45600	44800	98	70	130	
Perfluorononanoic acid (PFNA)	ng/L	50000	50600	101	70	130	
Perfluorooctanoic acid (PFOA)	ng/L	50000	49300	99	70	130	
Perfluorooctanesulfonic acid (PFOS)	ng/L	46300	45500	98	70	130	
Perfluorotetradecanoic acid (PFTeDA)	ng/L	50000	49200	98	70	130	
Perfluorotridecanoic acid (PFTrDA)	ng/L	50000	49000	98	70	130	
Perfluoroundecanoic acid (PFUdA)	ng/L	50000	52000	104	70	130	

INTERNAL STANDARD AREA SUMMARY

Report No:	<u>220073108</u>	Standard ID:	<u>1205 (ICAL Midpoint)</u>
Analyst:	<u>BMH</u>	Instrument ID:	<u>QQQ2</u>
Analysis Date:	<u>08/06/20 19:25</u>	Lab File ID:	<u>2200806A_06.d</u>
Analytical Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Batch:	<u>689642</u>

	M2PFOA	M2PFHxA	M2PFDA	M4PFOS	
	Area	Area	Area	Area	
STANDARD	86479	260599	86646	101016	
<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMP ID</i>	<i>#</i>	<i>#</i>	<i>#</i>	
MB2068380	2068380	99009	278826	95764	97274
LCS2068381	2068381	98613	281339	90993	96644
LCSD2068382	2068382	100300	287070	98667	101010
GL-POTABLE-21	22007310813	91339	266582	86210	96677
GL-POTABLE-21-DUP	22007310814	96569	272045	94580	96919
GL-POTABLE-25	22007310815	92032	273558	82383	93713
GL-FB-072920	22007310816	95923	274726	92002	99962
GL-POTABLE-19	22007310817	91266	269592	87227	97407
GL-POTABLE-14	22007310818	88339	260452	72026	86137
GL-POTABLE-15	22007310819	100545	271880	92856	97894
GL-POTABLE-26	22007310820	92227	268604	90189	96198

AREA UPPER LIMIT = +50% of internal standard area
 AREA LOWER LIMIT = -50% of internal standard area

Column used to flag values outside QC limits
 * Value outside QC limits

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Report No: 220073108

Analytical Method: EPA 537 Rev. 1.1

	Client Sample ID	GCAL Sample ID	SMC1 #	SMC2 #	SMC3 #	SMC4 #	SMC5 #	SMC6 #	TOT OUT
1.	GL-POTABLE-12	22007310801	113	106	89				0
2.	GL-POTABLE-12-DUP	22007310802	103	104	84				0
3.	GL-POTABLE-12-MS	22007310803	100	97	97				0
4.	GL-POTABLE-12-MSD	22007310804	110	98	91				0
5.	GL-POTABLE-20	22007310805	105	106	84				0
6.	GL-POTABLE-24	22007310806	102	94	87				0
7.	GL-POTABLE-23	22007310807	102	98	88				0
8.	GL-POTABLE-22	22007310808	103	97	84				0
9.	GL-POTABLE-13	22007310809	99	97	76				0
10.	GL-FB-072820	22007310810	103	85	83				0
11.	GL-POTABLE-16	22007310811	100	95	78				0
12.	GL-POTABLE-18	22007310812	96	97	92				0
13.	GL-POTABLE-21	22007310813	102	89	86				0
14.	GL-POTABLE-21-DUP	22007310814	102	87	93				0
15.	GL-POTABLE-25	22007310815	104	109	103				0
16.	GL-FB-072920	22007310816	110	94	110				0
17.	GL-POTABLE-19	22007310817	99	99	107				0
18.	GL-POTABLE-14	22007310818	95	93	89				0
19.	GL-POTABLE-15	22007310819	101	100	105				0
20.	GL-POTABLE-26	22007310820	93	89	93				0
21.	MB2067457	2067457	103	106	112				0
22.	LCS2067458	2067458	104	98	105				0
23.	LCSD2067459	2067459	113	111	114				0
24.	MB2068380	2068380	100	97	101				0
25.	LCS2068381	2068381	102	103	106				0
26.	LCSD2068382	2068382	99	94	106				0

QC LIMITS

SMC 1	M5PFHxA	70	130	# Column to be used to flag recovery limits
SMC 2	M6PFDA	70	130	* Value outside of QC limits
SMC 3	d5-NEIFOSAA	70	130	D Surrogate diluted out
SMC 4				
SMC 5				
SMC 6				

FORM II SV-1

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Report No:	<u>220073108</u>	Method Blank ID:	<u>2067457</u>
Matrix:	<u>Water</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_33.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0053</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMPLE ID</i>	<i>LAB FILE ID</i>	<i>DATE ANALYZED</i>	<i>TIME ANALYZED</i>
1.	LCS2067458	2067458	2200804A_34.d	08/05/20 0107
2.	LCSD2067459	2067459	2200804A_35.d	08/05/20 0120
3.	GL-POTABLE-12	22007310801	2200804A_44.d	08/05/20 0318
4.	GL-POTABLE-12-DUP	22007310802	2200804A_45.d	08/05/20 0332
5.	GL-POTABLE-12-MS	22007310803	2200804A_46.d	08/05/20 0345
6.	GL-POTABLE-12-MSD	22007310804	2200804A_47.d	08/05/20 0358
7.	GL-POTABLE-20	22007310805	2200804A_49.d	08/05/20 0424
8.	GL-POTABLE-24	22007310806	2200804A_50.d	08/05/20 0437
9.	GL-POTABLE-23	22007310807	2200804A_51.d	08/05/20 0451
10.	GL-POTABLE-22	22007310808	2200804A_52.d	08/05/20 0504
11.	GL-POTABLE-13	22007310809	2200804A_53.d	08/05/20 0517
12.	GL-FB-072820	22007310810	2200804A_54.d	08/05/20 0530
13.	GL-POTABLE-16	22007310811	2200804A_55.d	08/05/20 0543
14.	GL-POTABLE-18	22007310812	2200804A_56.d	08/05/20 0557

FORM IV SV

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>MB2067457</u>
Collect Date:	<u>NA</u> Time: <u>NA</u>	GCAL Sample ID:	<u>2067457</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200804A_33.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/05/20</u> Time: <u>0053</u>
Prep Batch:	<u>689113</u>	Analytical Batch:	<u>689424</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

3C
WATER SEMIVOLATILE LCS/LCSD RECOVERY

Report No: 220073108
 Prep Method: EPA 537 Rev. 1.1 Prep
 Analytical Method: EPA 537 Rev. 1.1

Prep Batch: 689113
 Analytical Batch: 689424

GCAL QC ID: 2067458

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	LCS RESULT	LCS % REC	#	QC LIMITS	
NEtFOSAA	ng/L	80	0	64.8	81		70	- 130
NMeFOSAA	ng/L	80	0	63.1	79		70	- 130
Perfluorobutanesulfonic acid	ng/L	70.8	0	64.4	91		70	- 130
Perfluorodecanoic acid	ng/L	80	0	64.7	81		70	- 130
Perfluorododecanoic acid	ng/L	80	0	61.8	77		70	- 130
Perfluoroheptanoic acid	ng/L	80	0	71.2	89		70	- 130
Perfluorohexanesulfonic acid	ng/L	73	0	62.2	85		70	- 130
Perfluorohexanoic acid	ng/L	80	0	71.2	89		70	- 130
Perfluorononanoic acid	ng/L	80	0	75	94		70	- 130
Perfluorooctanesulfonic acid	ng/L	74	0	62.3	84		70	- 130
Perfluorooctanoic acid	ng/L	80	0	68.2	85		70	- 130
Perfluorotetradecanoic acid	ng/L	80	0	56.2	70		70	- 130
Perfluorotridecanoic acid	ng/L	80	0	61.5	77		70	- 130
Perfluoroundecanoic acid	ng/L	80	0	56.2	70		70	- 130

GCAL QC ID: 2067459

ANALYTE	UNITS	SPIKE ADDED	LCSD RESULT	LCSD % REC	#	% RPD	#	QC LIMITS	
								REC	RPD
NEtFOSAA	ng/L	80	69.2	86		7		70 - 130	0 - 30
NMeFOSAA	ng/L	80	73.2	91		15		70 - 130	0 - 30
Perfluorobutanesulfonic acid	ng/L	70.8	65.6	93		2		70 - 130	0 - 30
Perfluorodecanoic acid	ng/L	80	72.6	91		12		70 - 130	0 - 30
Perfluorododecanoic acid	ng/L	80	60.9	76		1		70 - 130	0 - 30
Perfluoroheptanoic acid	ng/L	80	72.9	91		2		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ng/L	73	63.8	87		3		70 - 130	0 - 30
Perfluorohexanoic acid	ng/L	80	78.2	98		9		70 - 130	0 - 30
Perfluorononanoic acid	ng/L	80	76.7	96		2		70 - 130	0 - 30
Perfluorooctanesulfonic acid	ng/L	74	64.5	87		3		70 - 130	0 - 30
Perfluorooctanoic acid	ng/L	80	71.7	90		5		70 - 130	0 - 30
Perfluorotetradecanoic acid	ng/L	80	59	74		5		70 - 130	0 - 30
Perfluorotridecanoic acid	ng/L	80	57.6	72		7		70 - 130	0 - 30
Perfluoroundecanoic acid	ng/L	80	59.4	74		6		70 - 130	0 - 30

RPD : 0 out of 14 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 0 out of 28 outside limits

* Values outside of QC limits

FORM III SV-1

3C
WATER SEMIVOLATILE MS/MSD RECOVERY

Report No: 220073108
 Prep Method: EPA 537 Rev. 1.1 Prep
 Analytical Method: EPA 537 Rev. 1.1

Parent Sample ID: GL-POTABLE-12
 Prep Batch: 689113
 Analytical Batch: 689424

GCAL QC ID: 22007310803

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS	
NETFOSAA	ng/L	80	.031	55.8	70		70	- 130
NMeFOSAA	ng/L	80	.092	60.3	75		70	- 130
Perfluorobutanesulfonic acid	ng/L	70.8	.113	59.7	84		70	- 130
Perfluorodecanoic acid	ng/L	80	.202	66.1	82		70	- 130
Perfluorododecanoic acid	ng/L	80	.069	55.2	69	*	70	- 130
Perfluoroheptanoic acid	ng/L	80	.044	78.2	98		70	- 130
Perfluorohexanesulfonic acid	ng/L	73	.025	62.8	86		70	- 130
Perfluorohexanoic acid	ng/L	80	.548	72.9	90		70	- 130
Perfluorononanoic acid	ng/L	80	.277	72.2	90		70	- 130
Perfluorooctanesulfonic acid	ng/L	74	.362	63.5	85		70	- 130
Perfluorooctanoic acid	ng/L	80	.11	70.7	88		70	- 130
Perfluorotetradecanoic acid	ng/L	80	.107	16.4	20	*	70	- 130
Perfluorotridecanoic acid	ng/L	80	.094	36.8	46	*	70	- 130
Perfluoroundecanoic acid	ng/L	80	.026	56	70		70	- 130

GCAL QC ID: 22007310804

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	QC LIMITS	
							REC	RPD
NETFOSAA	ng/L	80	53.1	66	*	5	70	- 130
NMeFOSAA	ng/L	80	57.9	72		4	70	- 130
Perfluorobutanesulfonic acid	ng/L	70.8	62.3	88		4	70	- 130
Perfluorodecanoic acid	ng/L	80	62.1	77		6	70	- 130
Perfluorododecanoic acid	ng/L	80	57.3	72		4	70	- 130
Perfluoroheptanoic acid	ng/L	80	75.7	95		3	70	- 130
Perfluorohexanesulfonic acid	ng/L	73	62.7	86		.07	70	- 130
Perfluorohexanoic acid	ng/L	80	72.3	90		.8	70	- 130
Perfluorononanoic acid	ng/L	80	75	93		4	70	- 130
Perfluorooctanesulfonic acid	ng/L	74	61.6	83		3	70	- 130
Perfluorooctanoic acid	ng/L	80	74.1	92		5	70	- 130
Perfluorotetradecanoic acid	ng/L	80	21.4	27	*	26	70	- 130
Perfluorotridecanoic acid	ng/L	80	48.1	60	*	27	70	- 130
Perfluoroundecanoic acid	ng/L	80	51.3	64	*	9	70	- 130

RPD : 0 out of 14 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 7 out of 28 outside limits

* Values outside of QC limits

FORM III SV-1

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Report No:	<u>220073108</u>	Method Blank ID:	<u>2068380</u>
Matrix:	<u>Water</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_52.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0549</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

CLIENT SAMPLE ID	GCAL SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1.	LCS2068381	2068381	2200806A_53.d	08/07/20 0602
2.	LCSD2068382	2068382	2200806A_54.d	08/07/20 0615
3.	GL-POTABLE-21	22007310813	2200806A_55.d	08/07/20 0628
4.	GL-POTABLE-21-DUP	22007310814	2200806A_56.d	08/07/20 0641
5.	GL-POTABLE-25	22007310815	2200806A_57.d	08/07/20 0655
6.	GL-FB-072920	22007310816	2200806A_58.d	08/07/20 0708
7.	GL-POTABLE-19	22007310817	2200806A_59.d	08/07/20 0721
8.	GL-POTABLE-14	22007310818	2200806A_60.d	08/07/20 0734
9.	GL-POTABLE-15	22007310819	2200806A_61.d	08/07/20 0747
10.	GL-POTABLE-26	22007310820	2200806A_63.d	08/07/20 0814

FORM IV SV

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	<u>220073108</u>	Client Sample ID:	<u>MB2068380</u>
Collect Date:	<u>NA</u> Time: <u>NA</u>	GCAL Sample ID:	<u>2068380</u>
Matrix:	<u>Water</u> % Moisture: <u>NA</u>	Instrument ID:	<u>QQQ2</u>
Sample Amt:	<u>125</u> mL	Lab File ID:	<u>2200806A_52.d</u>
Injection Vol.:	<u>1.0</u> (µL)	GC Column:	<u>ACC-C18-30M</u> ID <u>2.1</u> (mm)
Prep Final Vol.:	<u>1000</u> (µL)	Dilution Factor:	<u>1</u> Analyst: <u>BMH</u>
Prep Date:	<u>08/03/20</u>	Analysis Date:	<u>08/07/20</u> Time: <u>0549</u>
Prep Batch:	<u>689285</u>	Analytical Batch:	<u>689642</u>
Prep Method:	<u>EPA 537 Rev. 1.1</u>	Analytical Method:	<u>EPA 537 Rev. 1.1</u>

CONCENTRATION UNITS: ng/L

CAS	ANALYTE	RESULT	Q ✓	DL	LOD	LOQ
2991-50-6	NEtFOSAA	6.00	U	2.09	6.00	10.0
2355-31-9	NMeFOSAA	5.00	U	2.63	5.00	10.0
375-73-5	Perfluorobutanesulfonic acid	5.00	U	2.45	5.00	10.0
335-76-2	Perfluorodecanoic acid	5.00	U	2.21	5.00	10.0
307-55-1	Perfluorododecanoic acid	5.00	U	2.17	5.00	10.0
375-85-9	Perfluoroheptanoic acid	5.00	U	2.46	5.00	10.0
355-46-4	Perfluorohexanesulfonic acid	5.00	U	2.89	5.00	10.0
307-24-4	Perfluorohexanoic acid	5.00	U	2.27	5.00	10.0
375-95-1	Perfluorononanoic acid	5.00	U	3.14	5.00	10.0
1763-23-1	Perfluorooctanesulfonic acid	5.00	U	3.85	5.00	10.0
335-67-1	Perfluorooctanoic acid	5.00	U	2.28	5.00	10.0
376-06-7	Perfluorotetradecanoic acid	5.00	U	3.16	5.00	10.0
72629-94-8	Perfluorotridecanoic acid	5.00	U	2.56	5.00	10.0
2058-94-8	Perfluoroundecanoic acid	5.00	U	2.52	5.00	10.0

FORM I SV-1

3C
WATER SEMIVOLATILE LCS/LCSD RECOVERY

Report No: 220073108
 Prep Method: EPA 537 Rev. 1.1 Prep Prep Batch: 689285
 Analytical Method: EPA 537 Rev. 1.1 Analytical Batch: 689642

GCAL QC ID: 2068381

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	LCS RESULT	LCS % REC	✓ #	QC LIMITS
NEtFOSAA	ng/L	80	0	77.6	97		70 - 130
NMeFOSAA	ng/L	80	0	71.6	90		70 - 130
Perfluorobutanesulfonic acid	ng/L	70.8	0	58.9	83		70 - 130
Perfluorodecanoic acid	ng/L	80	0	74	93		70 - 130
Perfluorododecanoic acid	ng/L	80	0	69.4	87		70 - 130
Perfluoroheptanoic acid	ng/L	80	0	65.9	82		70 - 130
Perfluorohexanesulfonic acid	ng/L	73	0	65.5	90		70 - 130
Perfluorohexanoic acid	ng/L	80	0	69.4	87		70 - 130
Perfluorononanoic acid	ng/L	80	0	77.8	97		70 - 130
Perfluorooctanesulfonic acid	ng/L	74	0	68.3	92		70 - 130
Perfluorooctanoic acid	ng/L	80	0	69.9	87		70 - 130
Perfluorotetradecanoic acid	ng/L	80	0	69	86		70 - 130
Perfluorotridecanoic acid	ng/L	80	0	68	85		70 - 130
Perfluoroundecanoic acid	ng/L	80	0	72.3	90		70 - 130

GCAL QC ID: 2068382

ANALYTE	UNITS	SPIKE ADDED	LCSD RESULT	LCSD % REC	✓ #	% RPD	#	QC LIMITS	
								REC	RPD
NEtFOSAA	ng/L	80	75.3	94		3		70 - 130	0 - 30
NMeFOSAA	ng/L	80	70.7	88		1		70 - 130	0 - 30
Perfluorobutanesulfonic acid	ng/L	70.8	58.9	83		.04		70 - 130	0 - 30
Perfluorodecanoic acid	ng/L	80	72.3	90		2		70 - 130	0 - 30
Perfluorododecanoic acid	ng/L	80	65.9	82		5		70 - 130	0 - 30
Perfluoroheptanoic acid	ng/L	80	66.2	83		.5		70 - 130	0 - 30
Perfluorohexanesulfonic acid	ng/L	73	62.4	86		5		70 - 130	0 - 30
Perfluorohexanoic acid	ng/L	80	68.8	86		.8		70 - 130	0 - 30
Perfluorononanoic acid	ng/L	80	74.7	93		4		70 - 130	0 - 30
Perfluorooctanesulfonic acid	ng/L	74	64	86		6		70 - 130	0 - 30
Perfluorooctanoic acid	ng/L	80	70.2	88		.5		70 - 130	0 - 30
Perfluorotetradecanoic acid	ng/L	80	58.5	73		16		70 - 130	0 - 30
Perfluorotridecanoic acid	ng/L	80	67.9	85		.1		70 - 130	0 - 30
Perfluoroundecanoic acid	ng/L	80	66.9	84		8		70 - 130	0 - 30

RPD : 0 out of 14 outside limits

Column to be used to flag recovery and RPD values with an asterisk

Spike Recovery: 0 out of 28 outside limits

* Values outside of QC limits

FORM III SV-1

Sample Summary

LAB ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
22007310801	GL-POTABLE-12	Water	07/28/2020 09:20	07/30/2020 09:42
22007310802	GL-POTABLE-12-DUP	Water	07/28/2020 09:20	07/30/2020 09:42
22007310803	GL-POTABLE-12-MS	Water	07/28/2020 09:20	07/30/2020 09:42
22007310804	GL-POTABLE-12-MSD	Water	07/28/2020 09:20	07/30/2020 09:42
22007310805	GL-POTABLE-20	Water	07/28/2020 10:15	07/30/2020 09:42
22007310806	GL-POTABLE-24	Water	07/28/2020 11:10	07/30/2020 09:42
22007310807	GL-POTABLE-23	Water	07/28/2020 13:20	07/30/2020 09:42
22007310808	GL-POTABLE-22	Water	07/28/2020 14:15	07/30/2020 09:42
22007310809	GL-POTABLE-13	Water	07/28/2020 15:14	07/30/2020 09:42
22007310810	GL-FB-072820	Water	07/28/2020 15:25	07/30/2020 09:42
22007310811	GL-POTABLE-16	Water	07/28/2020 16:05	07/30/2020 09:42
22007310812	GL-POTABLE-18	Water	07/28/2020 16:28	07/30/2020 09:42
22007310813	GL-POTABLE-21	Water	07/29/2020 09:12	07/30/2020 09:42
22007310814	GL-POTABLE-21-DUP	Water	07/29/2020 09:12	07/30/2020 09:42
22007310815	GL-POTABLE-25	Water	07/29/2020 10:03	07/30/2020 09:42
22007310816	GL-FB-072920	Water	07/29/2020 10:05	07/30/2020 09:42
22007310817	GL-POTABLE-19	Water	07/29/2020 10:30	07/30/2020 09:42
22007310818	GL-POTABLE-14	Water	07/29/2020 13:22	07/30/2020 09:42
22007310819	GL-POTABLE-15	Water	07/29/2020 13:55	07/30/2020 09:42
22007310820	GL-POTABLE-26	Water	07/29/2020 14:20	07/30/2020 09:42

Case Narrative

Client: AECOM-East **Report:** 220073108

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was completed in accordance with DOD QSM 5.1.1 as specified in the contract.

SEMI-VOLATILES MASS SPECTROMETRY

In the EPA 537.1 analysis for prep batch 689113, the MS/MSD exhibited recovery failures. All LCS/LCSD recoveries are acceptable.



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 220073108		CHECKLIST	YES	NO
Client 4859 - AECOM-East	PM AEC FEDEX	Samples received with proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Profile Number 279946	Received By McCune, Dodie N	Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Line Item(s) 3 - DW	Receive Date(s) 07/30/20	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		If received, was headspace for VOC water containers < 6mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Samples collected in containers provided by Pace Gulf Coast?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COOLERS		LAB PRESERVATIONS		
Airbill 9022-7622-9220	Thermometer ID: E26	Temp °C 2.4	None	
DISCREPANCIES		NOTES		
None				



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **AECOM**
 Address: **12420 Military Center Dr, Suite 150**
 Report To: **Claire Mitchell**
 Copy To: **Nasim Tavantzis**
 Customer Project Name/Number: **60552172 / 0007-DW4**

Billing information: **(same address)**
 Email To: **claire.mitchell@aecom.com**
 Site Collection Info/Address: **Grand Ledger Base & Army**
 State: **MI / Grand Ledger** | PT | MT | CT | ET

Lab Profile/Line: **0**
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact Y N NA
 Custody Signatures Present Y N NA
 Collector Signatures Present Y N NA
 Bottles Intact Y N NA
 Correct Bottles Y N NA
 Sufficient Volume Y N NA
 Samples Received on Ice Y N NA
 VOA - Headspace Acceptable Y N NA
 USDA Regulated Soils Y N NA
 Samples in Holding Time Y N NA
 Residual Chlorine Present Y N NA
 CI Strips: Y N NA
 Sample pH Acceptable Y N NA
 pH Strips: Y N NA
 Sulfide Present Y N NA
 Lead Acetate Strips: Y N NA
 LAB USE ONLY:
 Lab Sample # / Comments:

Site/Facility ID #: **MI / Grand Ledger** | PT | MT | CT | ET
 Compliance Monitoring?
 Yes No
 DW PWS ID #: **Standard**
 DW Location Code: **Standard**
 Immediately Packed on Ice:
 Yes No
 Field Filtered (if applicable):
 Yes No
 Analysis:
 Same Day Next Day
 1-2 Day 3-4 Day 5 Day
 (Expedite Charges Apply)

Container Preservative Type: **0**
 ** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other **11111111**

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Res CI	# of Ctrns
			Date	Time		
GL-Potable-12	DW	Grab	7/28/20	0920		2
GL-Potable-12-BUF				0920		2
GL-Potable-12-MS				0920		2
GL-Potable-12-MSD				1015		2
GL-Potable-20				1110		2
GL-Potable-24				1320		2
GL-Potable-23				1415		2
GL-Potable-22				1514		2
GL-FB-072820				1525		2

Customer Remarks / Special Conditions / Possible Hazards:	Type of Ice Used:	Blue	Dry	None
	Water			

Customer Remarks / Special Conditions / Possible Hazards:
 Packing Material Used:
 Type of Ice Used: **Water**
 Received by/Company: (Signature)
 Date/Time: **7/24/20 1800**
 Received by/Company: (Signature)
 Date/Time: **07/30/20 9:42**
 Received by/Company: (Signature)
 Date/Time: **07/30/20 9:42**

SHORT HOLDS PRESENT (<72 hours): Y N N/A
 Lab Tracking #: **2375732**
 Samples received via:
 FEDEX UPS Client Courier Pace Courier
 Date/Time: **07/30/20 9:42**
 Date/Time: **07/30/20 9:42**
 Date/Time: **07/30/20 9:42**

Lab Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: **2.4 oc**
 Cooler 1 Temp Upon Receipt: **2.4 oc**
 Cooler 1 Therm Corr. Factor: **oc**
 Cooler 1 Corrected Temp: **oc**
 Comments: **9022-7622-9720**
 Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s):
 YES / NO
 Page: **1** of: **2**

Client ID: 4859 - AECOM-East
 SDG: 220073108
 PM: AEC

LAB USE ONLY - Affix Work
ALL SHAL



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: **AECOM**
 Billing Information: (Same address)
 Address: **12420 Milestone Center Dr, Suite 150, Germantown, MD 20876**
 Report To: **Clare Mitchell**
 Email: **clare.mitchell@aecom.com**
 Copy To: **Nasim Tavantzis**
 Site Collection Info/Address: **ANAP PPS - Grand Lodge**
 State: **MI** / County/City: **Grand Lodge | PT | MT | CT | DE**
 Customer Project Name/Number: **6052172 / 0009 - DW4**
 Site/Facility ID #: _____
 Phone: **410-698-5785**
 Email: _____
 Purchased By (print): **Seymanu Tam**
 Quote #: **Standard**
 Turnaround Date Required: _____
 Rush: Same Day Next Day 1-2 Day 3 Day 4 Day 5 Day (Expedite Charges Apply)
 Sample Disposal: Dispose as appropriate Return Archive: _____ Hold: _____
 Compliance Monitoring? Yes No
 DW PWS ID #: _____
 DW Location Code: _____
 Immediately Packed on Ice: Yes No
 Field Filtered (if applicable): Yes No
 Analysis: _____

* Matrix Codes (insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix*	Comp / Grab	Collected (or Composite Start)		Composite End	Res CI	# of Ctns
			Date	Time			
GL-Potable-16	DW	Grab	7/29/20	1605			2
GL-Potable-18	DW	Grab	7/29/20	1628			2
GL-Potable-21	DW	Grab	7/29/20	0912			2
GL-Potable-25				1003			2
GL-FB-072120				1005			2
GL-Potable-19				1630			2
GL-Potable-14				1322			2
GL-Potable-15				1355			2
GL-Potable-26				1420			2

Customer Remarks / Special Conditions / Possible Hazards: _____
 Type of Ice Used: Wet Blue Dry None
 Packing Material Used: _____
 Radchem sample(s) screened (<500 cpm): Y N NA
 Received by/Company: (Signature) **TRANSFER TO FEDEX**
 Date/Time: **7/29/20**
 Received by/Company: (Signature) **8/13/20 9:42**
 Date/Time: **7/30/20 9:42**
 Received by/Company: (Signature) _____
 Date/Time: _____
 Relinquished by/Company: (Signature) _____
 Date/Time: _____

LAB USE ONLY - Affix Work
 Container Preservative Type: **0**
 ALL SHAD
 SDG: 220073108
 PM: AEC

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other **FEDEX**

Analyses

Lab Profile/Line:	Receipt Checklist:	Y	N	NA
Custody Seals Present/Intact				
Custody Signatures Present				
Collector Signatures Present				
Bottles Intact				
Correct Bottles				
Sufficient Volume				
Samples Received on Ice				
VOA - Headspace Acceptable				
USDA Regulated Soils				
Samples in Holding Time				
Residual Chlorine present				
C1 Strips:				
Sample pH Acceptable				
pH Strips:				
Sulfide Present				
Lead Acetate Strips:				
LAB USE ONLY:				
Lab Sample # / Comments:				

SHORT HOLDS PRESENT (<72 hours): Y N N/A
 Lab Tracking #: **2375730**
 Samples received via: (FEDEX) UPS Client Courier Pace Courier
 Date/Time: _____
 Date/Time: **07/30/20 9:42**
 Date/Time: _____
 Table #: _____
 Actnum: _____
 Template: _____
 Prelogin: _____
 PM: _____
 PB: _____
 Lab Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: _____
 Cooler 1 Temp Upon Receipt: **2.4** oC **FEDEX**
 Cooler 1 Therm Corr. Factor: _____ oC
 Cooler 1 Corrected Temp: _____ oC
 Comments: **902-7622-9220**
 Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s): _____
 YES / NO
 Page: **3** of: _____

Data Qualifying Codes

Two types of data qualifying codes or flags are applied in the course of the data review. The data validation flags indicate data that are not usable for decision-making, more than normally biased and/or variable, or not representative of field conditions. These codes and their definitions are presented below in the hierarchy stipulated in the USEPA Contract Laboratory Program National Functional Guidelines for Organic (January 2017) Data Review.

Data Validation Flags

Flag	Interpretation
R	The sample results are 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.
U	The analyte was analyzed for, but not detected at a level greater than or equal to the level of the adjusted Detection Limit (DL) for sample and method.
J+	Reported value may not be accurate or precise, but the result may be biased high.
J-	Reported value may not be accurate or precise, but the result may be biased low.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the Limit of Detection (LOD)).
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.
C	This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by gas Chromatograph/Mass Spectrometer (GC/MS)
X	This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.

The other type of code used by AECOM is a “Reason Code”. The reason code indicates the type of quality control failure that led to the application of the data validation flag.

Reason Codes

<i>Code</i>	<i>Description</i>
a	Tracer recovery (radiochemical data only)
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
bm	Missing Blank Information
c	Calibration issue
cl	Clean-up standard recovery
cp	Insufficient in growth (radiochemical data only)
cr	Chromatographic resolution
d	Reporting limit raised due to chromatographic interference
e	Ether interference
fd	Field duplicate RPDs
g	Chromatographic pattern match issue
h	Holding times
i	Internal standard areas
ii	Injection internal standard area or retention time exceedance
k	Estimated Maximum Possible Concentrations
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs (matrix duplicate, MSD, LCSD)
m	Matrix spike recovery
nb	Negative laboratory blank contamination
p	Chemical preservation issue
pe	Post Extraction Spike
q	Quantitation issue
r	Dual column RPD
rp	Re-extraction precision issue [PAHs only]

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Appendix B

Field Documentation

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Appendix B1
Logs of Daily Notice of Field Activities

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**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/ Visitors
MOBILIZATION NO. 4 (Residential Sampling)						
7/29/2020	Stephanie Tjan (SS)	Sunny, High 84°F, Low 60°F	<ul style="list-style-type: none"> - AECOM held a Tailgate SH&E meeting with the Michigan Department of Military and Veterans Affairs (DMVA). Reviewed scope of work, SH&E concerns, AHAs, and daily PFAS sampling checklist. - The last remaining residence with a signed Right-of-Entry (ROE) was contacted and able to be sampled today. - Completed sampling at six (6) residential homes. - Collected a field blank sample. - One cooler of samples was packed and shipped to the analytical laboratory, Pace Gulf Coast Analytical, via FedEx for delivery on Thursday, 30 July. 	- None	Residential Wells Sampled: 14/14	- Patricia Lyman (DMVA)
7/28/2020	Stephanie Tjan (SS)	Sunny, High 87°F, Low 64°F	<ul style="list-style-type: none"> - AECOM held a Tailgate SH&E meeting with the Michigan Department of Military and Veterans Affairs (DMVA). Reviewed scope of work, SH&E concerns, AHAs, and daily PFAS sampling checklist. - Completed sampling at eight (8) residential homes. - Collected a field blank sample. 	- None	Residential Wells Sampled: 8/13	- Patricia Lyman (DMVA)
MOBILIZATION NO. 3 (Residential Sampling)						
1/23/2020	Scott Kalemba (SS)	20s, Sunny	<ul style="list-style-type: none"> - AECOM held a Tailgate SH&E meeting with the Michigan Department of Military and Veterans Affairs (DMVA). Reviewed scope of work, SH&E concerns, AHAs, and daily PFAS sampling checklist. - Completed sampling at two (2) residential homes. - One cooler of samples was packed and shipped to the analytical laboratory, GCAL, via FedEx for delivery on Friday, 24 January. 	- None	Residential Wells Sampled: 11/11	- Patricia Lyman (DMVA)
1/22/2020	Scott Kalemba (SS)	20s, Sunny	<ul style="list-style-type: none"> - AECOM mobilized to Grand Ledge AASF to conduct residential well sampling of the surrounding homes. - AECOM held a Tailgate SH&E meeting with the Michigan Department of Military and Veterans Affairs (DMVA) and Department of Health and Human Services (DHHS). Reviewed scope of work, SH&E concerns, AHAs, and daily PFAS sampling checklist. - Completed sampling at nine (9) residential homes. - Collected a FRB. 	- None	Residential Wells Sampled: 9/11	<ul style="list-style-type: none"> - Patricia Lyman (DMVA) - Susan Manente (DHHS)
MOBILIZATION NO. 2						

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/Visitors
12/20/2019	- Scott Kalembe (SS)	Sunny, High 36°F, Low 27°F	AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed groundwater sampling of monitoring well AOI 1-12. - Location data were collected using a handheld GPS for the areas where IDW was placed. - One cooler of samples was packed and shipped to the analytical laboratory, GCAL, via FedEx for delivery on Saturday 12/21/19. - Groundwater sampling activities are complete. - AECOM demobilized from Grand Ledge.	- None	- Boring Locations: 7/7 - MW Developed: 7/7 - GW Samples: 7/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5	- None
12/19/2019	- Scott Kalembe (SS)	Sunny, High 32°F, Low 21°F	AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed groundwater sampling of monitoring wells AOI 1-13, AOI 1-14, and AOI 1-15.	- None	- Boring Locations: 7/7 - MW Developed: 7/7 - GW Samples: 6/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5	- None
12/18/2019	- Scott Kalembe (SS)	Partly Cloudy, High 18°F, Low 10°F	AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed well development at AOI 1-12. - Completed groundwater sampling of monitoring wells AOI 1-11 and AOI 2-4.	- None	- Boring Locations: 7/7 - MW Developed: 7/7 - GW Samples: 3/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5	- None
12/17/2019	- Scott Kalembe (SS)	Partly Cloudy, High 32°F, Low 16°F	- AECOM mobilized to Grand Ledge AASF to continue the SI field work. - Upon arrival, AECOM checked in at the Gate Guard and base personnel, reviewed the scope of work and airfield safety protocols. AECOM will contact Flight Operations via cell phone to request approval before any movement to, from, or within the airfield. - AECOM held an internal Tailgate SH&E meeting. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed well development at AOI 1-11 and AOI 1-13.	- None	- Boring Locations: 7/7 - MW Developed: 6/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5	- None

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/ Visitors
12/6/2019	-Anay Shah (SSHO)	Partly Cloudy, High 36°F, Low 21°F	<ul style="list-style-type: none"> - AECOM and CTS checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed soil boring and subsequent well installation at AOI 1-12. Well screen is set at 37-47 ft bgs. - CTS completed setting well pads. - IDW was placed into 55-gallon steel drums. - AECOM and CTS demobilized from Grand Ledge. 	<ul style="list-style-type: none"> - Grand Ledge AASF building manager Reinmann advised AECOM that Site restoration activities can be completed in the Spring. - AECOM will be mobilizing back to the Site, the week of December 15th, to complete well development and well sampling on the remaining wells. 	<ul style="list-style-type: none"> - Boring Locations: 7/7 - MW Developed: 4/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5 	<ul style="list-style-type: none"> - Chris Banlen, CTS - Reggie Castro, CTS - Jose Perales, CTS
12/5/2019	-Scott Kalembe (SS) -Anay Shah (SSHO)	Partly Cloudy, High 39°F, Low 34°F	<ul style="list-style-type: none"> - AECOM and CTS checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed soil boring and subsequent well installation at AOI 1-13. Well screen is set at 42-52 ft bgs. - Completed well development at AOI 1-14 and AOI 2-4. - CTS began setting well pads and site restoration. - IDW was placed into 55-gallon steel drums. 	- None	<ul style="list-style-type: none"> - Boring Locations: 6/7 - MW Developed: 4/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5 	<ul style="list-style-type: none"> - Chris Banlen, CTS - Reggie Castro, CTS - Jose Perales, CTS
12/4/2019	-Scott Kalembe (SS) -Anay Shah (SSHO)	Scattered Snow and Windy, High 34°F, Low 28°F	<ul style="list-style-type: none"> - AECOM and CTS checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed well installation at AOI 1-11. Well screen is set at 30-40 ft bgs. - Completed soil boring and subsequent well installation at AOI 1-14. Well screen is set at 50-60 ft bgs. - Completed well development at AOI 1-15. - IDW was placed into 55-gallon steel drums. 	- Well development equipment malfunctioned while developing AOI 2-4. Will complete well development at AOI 2-4 on Thursday, December 5th.	<ul style="list-style-type: none"> - Boring Locations: 5/7 - MW Developed: 2/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5 	<ul style="list-style-type: none"> - Chris Banlen, CTS - Reggie Castro, CTS - Jose Perales, CTS

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/ Visitors
12/3/2019	-Scott Kalembe (SS) -Anay Shah (SSHO)	Overcast and Windy, High 36°F, Low 32°F	<ul style="list-style-type: none"> - AECOM and CTS checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Completed well installation at AOI 1-15. Well screen is set at 60-75 ft bgs. - Completed soil boring and subsequent well installation at AOI 2-4. Well screen is set at 25-35 ft bgs. - IDW was placed into 55-gallon steel drums. 	- None	<ul style="list-style-type: none"> - Boring Locations: 4/7 - MW Developed: 1/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5 	<ul style="list-style-type: none"> - Chris Banlen, CTS - Reggie Castro, CTS
12/2/2019	-Scott Kalembe (SS) -Anay Shah (SSHO)	Overcast, High 32°F, Low 27°F	<ul style="list-style-type: none"> - AECOM and Cascade mobilized to Grand Ledge AASF to continue the SI field work. - Upon arrival, AECOM checked in at the Gate Guard and base personnel, reviewed the scope of work and airfield safety protocols. AECOM will contact Flight Operations via cell phone to request approval before any movement to, from, or within the airfield. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - A larger Rotasonic drill rig was delivered to the Site on Tuesday November 26, 2019. - Completed soil boring at AOI 1-11 to 50 ft bg. AECOM will install well screen upon client approval of proposed interval from 30-40 ft bgs. - IDW was placed into 55-gallon steel drums. 	- None	<ul style="list-style-type: none"> - Boring Locations: 3/7 - MW Developed: 1/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5 	<ul style="list-style-type: none"> - Chris Banlen, CTS - Reggie Castro, CTS
11/22/2019	-Stephanie Tjan (SS) -Anay Shah (SSHO)	Overcast, High 39°F, Low 25°F	<ul style="list-style-type: none"> - AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - City of Grand Ledge public works personnel visited the site to ensure utility markings were in place. - IDW was placed into 55-gallon steel drums. - AECOM and CTS demobilized from Grand Ledge. 	<ul style="list-style-type: none"> - The drill rig experienced an electrical issue and was unable to start. Drill rods have been removed but the casing remains in place at 75 ft bgs at AOI 1-15. - A local homeowner attempted to access the site and gather information about the project work. LT Layton has contacted the homeowner. 	<ul style="list-style-type: none"> - Boring Locations: 1/7 - MW Developed: 1/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5 	<ul style="list-style-type: none"> - Fred Dorse, CTS - Jose Perales, CTS - Jeremy Trieph, CTS

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/Visitors
11/21/2019	-Stephanie Tjan (SS) -Anay Shah (SSHO)	Rainy, High 52°F, Low 30°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Media were present for approximately an hour (1:30 to 2:30 PM). They were escorted by Jonathan Edgerly (MIARNG) and approached the site from a distance. - Surface water sample collection was completed during a qualifying rain event at AOI 1-21, AOI 1-22, AOI 1-23, and AOI 1-24. - One cooler of samples was packed and shipped to the analytical laboratory, GCAL, via FedEx for delivery on Friday, 11/22/19.	- A hydraulic component on the drill rig had to be replaced because it was damaged while trying to pull out the casing. - Drill rods and casing are currently stuck at 75 ft bgs.	- Boring Locations: 1/7 - MW Developed: 1/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 8/8 - Sediment Samples: 5/5	- Fred Dorse, CTS - Jose Perales, CTS - Jeremy Trieph, CTS - Jonathan Edgerly, MIARNG
11/20/2019	-Stephanie Tjan (SS) -Anay Shah (SSHO)	Overcast, High 43°F, Low 35°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Drilling on AOI 1-15 progressed to 75 ft bgs. Will complete on 11/21/19. - 2 EBs were collected.	- CTS had a delayed start because the drill rig had to be repaired before commencing drilling activities.	- Boring Locations: 1/7 - MW Developed: 1/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5	- Fred Dorse, CTS - Jose Perales, CTS - Jeremy Trieph, CTS
11/19/2019	-Stephanie Tjan (SS) -Anay Shah (SSHO)	Overcast, High 42°F, Low 29°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. -CTS brought replacement drill rig onsite and set up at AOI 1-15. -Groundwater sampling was completed at AOI 1-10.	-CTS had multiple equipment malfunctions on replacement drill rig related to a hydraulic line leak, air compressor, and head rotation. CTS had a mechanic come out to troubleshoot and plan to contact the drill rig manufacturer for further instruction.	- Boring Locations: 1/7 - MW Developed: 1/7 - GW Samples: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5	- Fred Dorse, CTS - Jose Perales, CTS - Jeremy Trieph, CTS
11/18/2019	-Stephanie Tjan (SS) -Anay Shah (SSHO)	Partly Cloudy, High 45°F, Low 32°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. AECOM reviewed scope of work, SH&E concerns, the SSHP, daily PFAS sampling checklist, and airfield operation protocols. - MW development was completed at AOI 1-10. - One EB was collected. - Field crew will start drilling at AOI 1-15 on 11/19/2019.	- Cascade's drill rig unable to be repaired. A new mini rotonomic rig will be mobilized to the site to re-start drilling activities on 11/19/2019.	- Boring Locations: 1/7 - MW Developed: 1/7 - GW Samples: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5	- None

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/Visitors
11/15/2019	- Scott Kalembe (SS) - Anay Shah (SSHO) - Stephanie Tjan	Overcast, High 32°F, Low 29°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Location data were collected using a handheld GPS for the sample locations and the areas where IDW was placed.	- Drill rig is having electrical issues and will not start. CTS is in the process of contacting electricians to come out and troubleshoot. - MW development equipment was malfunctioning, a replacement is being sent via overnight to AECOM's hotel.	- Boring Locations: 1/7 - MW Developed: 0/7 - GW Samples: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5	- Fred Dorse, CTS - Jose Perales, CTS
11/14/2019	- Scott Kalembe (SS) - Anay Shah (SSHO)	Overcast, High 32°F, Low 27°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Drilling, and subsequent MW installation, was completed at AOI 1-10. Will develop on 11/15/19. - CTS will set all MW pads at the end of all borings and MW installations. - Location data were collected using a handheld GPS for the sample locations and the areas where IDW was placed.	- Inclement weather is still hindering and slowing down drilling activities.	- Boring Locations: 1/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- Fred Dorse, CTS - Jose Perales, CTS
11/13/2019	- Scott Kalembe (SS) - Anay Shah (SSHO)	Overcast, High 23°F, Low 19°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Drilling on AOI 1-10 continued and progressed to 90 ft bg. Will complete on 11/14/19. - AECOM was able to obtain as-built drawings of the Base from Base personnel.	- Inclement weather is hindering and slowing down drilling activities again. - Components of the drill rig are freezing and base personnel are allowing CTS to store their rig and water totes inside one of the hangers to thaw.	- Boring Locations: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- Fred Dorse, CTS - Jose Perales, CTS
11/12/2019	- Scott Kalembe (SS) - Anay Shah (SSHO)	Snow, High 23°F, Low 5°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - Drilling on AOI 1-10 progressed to 70 ft bg. Will complete on 11/13/19. - Communicated with Operations to have vehicles and concrete barriers relocated from AOI 1-13 location. - One EB was collected.	- Inclement weather is hindering and slowing down drilling activities. - Base personnel are allowing CTS to store their water totes inside one of the hangers to prevent freezing overnight.	- Boring Locations: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- Fred Dorse, CTS - Jose Perales, CTS

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/Visitors
11/11/2019	- Scott Kalembe (SS) - Anay Shah (SSHO)	Snow, High 25°F, Low 15°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held a Tailgate SH&E meeting with CTS. Reviewed scope of work, SH&E concerns, AHAs, daily PFAS sampling checklist, and airfield operation protocols. - CTS unloaded equipment/supplies and set-up on AOI 1-10 to begin on 11/12/19.	- Inclement weather hindered CTS's mobilization which resulted in a later arrival time at the Site.	- Boring Locations: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- Fred Dorse, Cascade (CTS) - Jose Perales, CTS
11/8/2019	- Scott Kalembe (SS)	Sunny, High 34°F, Low 25°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM took delivery of monitoring well supplies, staged outside the Supply Room. - One cooler of samples was packed and shipped to the analytical laboratory, GCAL, via FedEx for delivery on Saturday 11/09/19. - No other field activities occurred onsite.	- None	- Boring Locations: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- None
11/7/2019	- Scott Kalembe (SS)	Sunny, High 32°F, Low 21°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. AECOM reviewed scope of work, SH&E concerns, the SSHP, daily PFAS sampling checklist, and airfield operation protocols. - Underground utility locate was completed.	- AOI 1-13 location will need military vehicles and Jersey barriers relocated in order to provide working space for the drill crew. SGT Branden Brown ensured AECOM this would not be an issue.	- Boring Locations: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- USIC Public Utility Locators
11/6/2019	- Scott Kalembe (SS)	Overcast, occasional snow flurries, High 39°F, Low 27°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. AECOM reviewed scope of work, SH&E concerns, the SSHP, daily PFAS sampling checklist, and airfield operation protocols. - Sediment sample collection was completed at AOI 1-25. - Surface soil sample collection was completed at AOI 1-16, AOI 1-17, AOI 1-18, AOI 1-19, and AOI 1-20. - One EB and one FRB were collected.	- None	- Boring Locations: 0/7 - Surface Soil Samples: 5/5 - Surface Water Samples: 4/4 - Sediment Samples: 5/5 - GW Samples: 0/7	- None
11/5/2019	- Scott Kalembe (SS)	Sunny, High 43°F, Low 27°F	- AECOM checked in at the Gate Guard and base personnel upon arrival onsite. - AECOM held an internal Tailgate SH&E meeting. AECOM reviewed scope of work, SH&E concerns, the SSHP, daily PFAS sampling checklist, and airfield operation protocols. - Surface water sample collection was completed at AOI 1-21, AOI 1-22, AOI 1-23, and AOI 1-24. - Sediment sample collection was also completed at AOI 1-21, AOI 1-22, AOI 1-23, and AOI 1-24.	- None	- Boring Locations: 0/7 - Surface Soil Samples: 0/5 - Surface Water Samples: 4/4 - Sediment Samples: 4/5 - GW Samples: 0/7	- None

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/Visitors
11/4/2019	- Scott Kalemba (SS)	Sunny, High 54°F, Low 34°F	<ul style="list-style-type: none"> - AECOM personnel (Scott Kalemba) mobilized to Grand Ledge AASF for SI field work. - Upon arrival, AECOM checked in at the Gate Guard and base personnel, reviewed the scope of work and airfield safety protocols. AECOM will contact Flight Operations via cell phone to request approval before any movement to, from, or within the airfield. - AECOM held an internal Tailgate SH&E meeting. AECOM reviewed scope of work, SH&E concerns, the SSHP, daily PFAS sampling checklist, and airfield operation protocols. - AECOM staked all sample locations for utility clearance. - AECOM obtained Certificates of Survey for the Grand Ledge AASF and Annex Building from CW4 Randolph Bebee. 	<ul style="list-style-type: none"> - CW4 John Ashley advised AECOM there will be no work allowed on the Airfield on Tuesdays and Thursday, except for hand augering (AOI 1-16 through AOI 1-20) and SRB sampling (AOI 1-21 through AOI 1-24). Mondays and Fridays are the best days for drilling activities to occur on the Airfield. - Location AOI 2-4 is in asphalt. - Location AOI 1-13 is potentially in concrete, will verify during utility clearance walk on November 7th. 	<ul style="list-style-type: none"> - Boring Locations: 0/7 - Surface Soil Samples: 0/5 - Surface Water Samples: 0/4 - Sediment Samples: 0/5 - GW Samples: 0/7 	- None
MOBILIZATION NO. 1						
5/10/2019	Mike Glinski (SSHO) Scott Kalemba	40s, Sunny	<ul style="list-style-type: none"> - AECOM held internal kickoff meeting. Reviewed scope of work, H&S as well as daily PFAS sampling checklist. - Sampled surface soil at AOI-1-3 and AOI-1-4. - Sampled soil 2-4 feet bgs at AOI-1-3. - Completed groundwater sampling of temporary well AOI-2-3. - Abandoned all temporary wells. - AECOM packed coolers and shipped samples to laboratory. - AECOM demobilized from Grand Ledge. 	- None	<ul style="list-style-type: none"> Soil Borings: 9/9 Temporary Wells Installed: 9/9 Groundwater Samples: 9/9 Soil Samples: 16/27 (16/16) Surface Water Samples: 3/3 Sediment Samples: 3/3 	NA
5/9/2019	Mike Glinski (SSHO) Scott Kalemba	60s, Rain	<ul style="list-style-type: none"> - AECOM held internal kickoff meeting. Reviewed scope of work, H&S as well as daily PFAS sampling checklist. - Sampled surface soil at AOI-1-1, AOI-1-2, AOI-2-1, AOI-2-2, and AOI-2-3. - Sampled soil 2-4 feet Bgs at AOI-1-2, AOI-1-6, and AOI-2-2. - Completed groundwater sampling of temporary wells at AOI-1-1, AOI-5, AOI-2-1, and AOI-2-2. 	<ul style="list-style-type: none"> - AOI-2-3 went dry during groundwater sampling. As a result, it will be allowed to recharge and will be sampled the morning of 05/10/2019. - Depth-to-water in soil borings AOI-1-2, AOI-1-5, and AOI-2-2, was shallower than 5 ft Bgs and as a result, only 2 soil samples were collected. (0-2 and 2-4 ft Bgs). - Depth-to-water in soil borings AOI-1-1, AOI-2-1, and AOI-2-3 was shallower than 3 ft Bgs and as a result, only 1 soil sample was collected. (0-2 ft Bgs). 	<ul style="list-style-type: none"> Soil Borings: 9/9 Temporary Wells Installed: 9/9 Groundwater Samples: 8/9 Soil Samples: 13/27 (13/16) Surface Water Samples: 3/3 Sediment Samples: 3/3 	NA

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/ Visitors
5/8/2019	Mike Gliński (SSHO) Scott Kalemba	40s, Sunny	<ul style="list-style-type: none"> - AECOM held kickoff meeting with Cascade. Reviewed scope of work, H&S as well as daily PFAS sampling checklist. - Advanced soil borings and completed installing temporary wells at AOI-1-1, AOI-1-5, and AOI-1-6. - Sampled surface soil at AOI-1-5. - Sampled soil 2-4 feet Bgs at AOI-1-5. - Completed groundwater sampling of temporary wells at AOI-1-2, AOI-1-3, AOI-1-4, and AOI-1-6. - Drilling operations are complete. Cascade decontaminated all drilling equipment and disassembled decontamination pad. - Cascade demobilized from Grand Ledge. 	<ul style="list-style-type: none"> - AOI-1-6 was installed beneath an overlying confining clay layer which resulted in the creation of an artesian well. No water bearing zone was observed above the clay layer. Subsequently, AOI-1-6 was quickly sampled, casing pulled, and borehole plugged/abandoned. 	<ul style="list-style-type: none"> Soil Borings: 9/9 Temporary Wells Installed: 9/9 Groundwater Samples: 4/9 Soil Samples: 5/27 Surface Water Samples: 3/3 Sediment Samples: 3/3 	Cascade (Todd Grossman, Luke Taylor)
5/7/2019	Mike Gliński (SSHO) Scott Kalemba	30s, Rain	<ul style="list-style-type: none"> - AECOM mobilized to Grand Ledge ARNG for the SI field work. - Cascade mobilized to Grand Ledge ARNG. - AECOM held kickoff meeting with Cascade. Reviewed scope of work, H&S as well as daily PFAS sampling checklist. - Cascade set up decontamination pad and that has been tested. - Advanced soil borings and completed installing temporary wells at AOI-1-2, AOI-1-3, AOI-1-4, AOI-2-1, AOI-2-2 and AOI-2-3. - Completed surface water/sediment sampling at AOI-1-7, AOI-1-8, and AOI-1-9. 	<ul style="list-style-type: none"> - Depth-to-water in soil borings AOI-1-2, AOI-1-3, AOI-2-1, and AOI-2-3 was between 4 to 6 feet Bgs and as a result, soil will be sampled in two intervals (0-2 and 2-4 ft Bgs). 	<ul style="list-style-type: none"> Soil Borings: 6/9 Temporary Wells Installed: 6/9 Groundwater Samples: 0/9 Soil Samples: 2/27 Surface Water Samples: 3/3 Sediment Samples: 3/3 	Cascade (Todd Grossman, Luke Taylor)

Notes

AHA = activity hazard analysis

AOI = area of interest

ARNG = Army National Guard

AASF = Army Aviation Support Facility

bgs = below ground surface

CTS = Cascade Technical Services

DHHS = Department of Health and Human Services

DMVA = Department of Military and Veterans Affairs

DPT = direct push technology

EB = equipment blank

FRB = field reagent blank

ft = feet

GPS = Global Positioning System

HA = hand auger

IDW = investigation derived waste

MIARNG = Michigan Army National Guard

MW = Monitoring Well

PFAS = per- and polyfluoroalkyl substances

**Log of Daily Notice of Field Activity
Grand Ledge AASF SI, Grand Ledge, MI**

Date	AECOM Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/ Visitors
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PM = Project Manager

SH&E = Safety, Health, and Environment

SS = Site Supervisor

SSHO = Site Safety and Health Officer

Tjan, Stephanie

From: Mitchell, Claire
Sent: Sunday, November 24, 2019 9:05 AM
To: Packer, Bonnie M CTR NG NGB ARNG (US); Tim Peck (timothy.j.peck@usace.army.mil); Hess, Pamela S CPT USARMY NG (US); Gragert, Steven CIV USARMY CENWO (USA); Lyman, Patricia (DMVA); Edgerly, Jonathan (DMVA)
Cc: Gwinn, Rosa; Kalemba, Scott; Shah, Anay; Wilhelm, Jake; Tjan, Stephanie
Subject: ARNG PFAS: Log of Daily Notice for Grand Ledge- Proposed Path Forward
Attachments: Markup_Fig_17-1_Grand_Ledge_AASF_Supplemental_Sampling_Locations_20191029.pdf; Log of Daily Notice of Field Activity_Grand Ledge.xlsx

Good morning,

Please find attached the Log of Daily Notice of Field Activity for the Supplemental Site Investigation (SI), Second Mobilization, at Grand Ledge AASF and Armory, Michigan for Friday, 11/22.

I have had an opportunity to speak with representatives from ARNG, MIARNG and USACE regarding our plan for next steps based on the difficult lithologic conditions that have been encountered at the site.

Our proposed path forward is as follows:

- 1.) Proceed with obtaining ROEs and completing residential drinking water sampling within target zones south of the facility (exact locations to be discussed with the project team).
- 2.) Discontinue attempts to complete remaining deep well locations within bedrock material.
 - a. AOI 1-10 has already been installed at 80-100 feet bgs, as described in the QAPP.
 - b. AOI 1-15 has been drilled down to 75 ft bgs. We propose completing this well at the current boring depth and installing the well screen from top of bedrock (approx. 60 ft bgs) to 75 ft bgs.
 - c. Proposed deep wells, AOI 1-14 and AOI 2-4, proposed to be installed to a depth of approximately 50 ft bgs as opposed to 100 ft bgs.
- 3.) AOI 1-11, 1-12, 1-13 will be installed as outlined in the QAPP to a depth of 50 ft bgs.

Based on my conversations with ARNG, MIARNG and USACE, I believe what is outlined above is an agreeable path forward; however, please reply all to this email regarding your feedback on how to proceed.

Thank you,
Claire

Claire Mitchell, PE, PMP
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