

Technical Memorandum

To	Erika Biemann, ATC	Page 1 of 6
CC	Mike Schmoller, WDNR	
Subject	Confirmation Soil Results for Containment Pit Area ATC Blount Transmission Substation, Madison Wisconsin	
From	Leo Linnemanstons, AECOM	
Date	November 12, 2019	

This technical memorandum presents the laboratory results from soil samples collected at the American Transmission Company (ATC) Blount Transmission (BLT) Substation located within the Madison Gas & Electric (MG&E) Blount Spot (BLS) Substation, 722 East Main Street, Madison Wisconsin.

Background Information

As part of the transformer replacement construction, hydro-excavation was required to clear subsurface utilities to allow for the driving of H-piles to support the new transformer foundation and containment structure. The excavation area inside the substation has known manufactured gas plant (MGP) residual impacts and also impacts from the use of aqueous film forming foam (AFFF) fire suppressant agent that contained Per- and Polyfluoroalkyl Substances (PFAS). Because the hydro-excavation equipment had limited storage capacity, ATC's construction coordinator, Tom Betthausser, consulted with the WDNR Spill Coordinator, Michael Schmoller, to determine if the contaminated spoils could be temporarily managed in a containment pit constructed outside of the substation walls but still within the historic substation boundary. The location of the containment pit is show on the attached Figure 1. As documented in the attached email from August 27, 2019, the WDNR approved the use of the temporary containment pit on the condition that confirmation soil samples be collected from beneath the containment liner after the spoils had been removed for disposal.

On August 24, 2019, ATC directed their construction contractor, MJ Electric, to construct the containment pit using clean imported gravel for side berms and heavy plastic sheeting for the pit liner. Once constructed, the hydro-excavator was offloaded into the pit be simple dumping from its rear hatch. Once hydro-excavating was completed, the water was allowed to drain from the soil and collected from a sump location within the pit. On August 28, 2019, North Shore Environmental Construction, Inc. (NSEC), used a vacuum truck to remove the free liquids from the containment pit. A small loader was then used to gently remove the dewatered soil from the pit and load into rolloff boxes for proper offsite disposal.

Liquids collected from the containment pit were transported, consolidated, and stored in a FRAC tank at the MGE coal yard with the other impacted water that was collected from response and cleanup efforts from the July 19, 2019 transformer fire. The impacted water was scheduled for treatment and discharge pending WDNR approvals.

Solids from the containment pit were profiled for disposal with other soils generated during the response and cleanup. The materials were transported for disposal as nonhazardous waste at the US Ecology disposal facility in Belleville, Michigan.

FIELD ACTIVITIES

On August 28, 2019, AECOM collected soil samples for analytical laboratory testing after the soil containment pit described above was removed by NSEC. AECOM was escorted at the site by Tom Betthausser (ATC Construction Coordinator) who provided access during the site activities.

As directed by the WDNR, five soil samples were collected using hand methods where the temporary spoils dewatering pit had been removed. The soil sample location map is attached (Figure 1). The former spoils pit area was inspected for indications of potential releases, such as staining or wet areas on the gravel, and none were found. The soil samples were collected from the fine-grained material in the area that was immediately underneath the dewatering pit liner. The material for these samples was collected within two inches of the ground surface. Soil samples were collected following PFAS protocols and placed directly in laboratory prepared sample containers.

The samples were maintained in a cooler on ice and shipped via courier to Eurofins/TestAmerica Laboratory, Sacramento, California under chain-of-custody (COC) control, and analysis was conducted following EPA Method 537 (Modified) isotope dilution.

LABORATORY RESULTS

A summary of the laboratory data is presented in the attached Table 1 and the complete laboratory report is attached. The laboratory analytical results indicate that PFAS were present only at low estimated concentrations that were between the limit of detection (LOD) and the limit of quantitation (LOQ). The results were compared to generic residual contaminant levels (RCLs) provided on the WDNR's Remediation and Redevelopment website, which are determined in accordance with Chapter NR 720, Wisconsin Administrative Code. Among the PFAS compounds with an NR720 RCL, the following was noted:

- Perfluorobutanesulfonic acid (PFBS) was detected at three locations (CON-1, CON-2, and CON-4) with an estimated concentration ranging from 0.066 to 0.077 ug/kg, which is well below the generic non-industrial direct contact RCL of 1,260,000 ug/kg;
- Perfluorooctanoic Acid (PFOA) was only detected at one location (CON-4) at an estimated concentration of 0.1 ug/kg, which is also well below the generic non-industrial direct contact RCL of 1,260 ug/kg; and
- Perfluorooctanesulfonic Acid (PFOS) was not detected.

Because these results are substantially below NR720 RCLs, no further action should be required regarding the temporary use of the containment pit area.

Memo Attachments:

- Table 1 – Soil Analytical Results
- Figure 1 – Soil Sample Location Map
- Attachment A – WDNR Email, dated August 27, 2019
- Attachment B – Eurofins/TestAmerica Laboratory Report



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TABLE

Table 1
Soil Sample Laboratory Analytical Results
ATC Blount SS - Madison, WI
Project No. 60611431

Parameters	Generic RCLs			CON-1	CON-2	CON-3	CON-4	CON-5
	Non-Industrial	Industrial	Groundwater Pathway	2" 8/28/2019	2" 8/28/2019	2" 8/28/2019	2" 8/28/2019	2" 8/28/2019
Dry Weight (%)	--	--	--	95.4	95.7	95	93.1	95.4
PFAS (µg/kg)								
	ABBR.							
4:2 Fluorotelomer Sulfonic Acid or 4:2 FTSA	4:2 FTS	--	--	<0.37	<0.37	<0.37	<0.40	<0.38
6:2 Fluorotelomer sulfonic acid	6:2 FTS	--	--	0.44 ^J	<0.15	<0.15	0.17 ^J	<0.16
8:2 Fluorotelomer sulfonic acid	8:2 FTS	--	--	<0.25	<0.25	<0.25	<0.27	<0.26
10:2 FTS	10:2 FTS	--	--	<0.051	<0.05	<0.05	<0.054	<0.052
ADONA	ADONA	--	--	<0.019	<0.019	<0.019	0.033 ^J	<0.020
Ammonium Perfluorooctanoate	APFO	--	--	<0.09	<0.089	<0.089	0.11 ^J	<0.092
DONA	DONA	--	--	<0.018	<0.018	<0.018	0.031 ^J	<0.019
EtFOSAA	EtFOSAA	--	--	-	-	-	-	-
F-53B Major	F-53B Major	--	--	<0.027	<0.027	<0.027	0.041 ^J	<0.028
F-53B Minor	F-53B Minor	--	--	<0.022	<0.022	<0.022	0.028 ^J	<0.023
Perfluorooctanesulfonamide	FOSA	--	--	<0.083	<0.082	<0.082	<0.088	<0.085
HFPO-DA	GenX	--	--	<0.11	<.11	<0.11	<0.12	<0.11
NaDONA	NaDONA	--	--	<0.019	<0.019	<0.019	0.033 ^J	<0.020
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	--	--	<0.37	<0.37	<0.37	<0.4	<0.38
N-methylperfluorooctanesulfonamidoacetic acid	NMeFOSAA	--	--	<0.4	<0.39	<0.39	<0.42	<0.40
Perfluorobutanoic acid	PFBA	--	--	0.11 ^J	<0.028	0.032 ^J	0.11 ^J	0.084 ^J
Perfluorobutanesulfonic acid	PFBS	1,260,000	16,400,000	0.066 ^{J B}	0.066 ^{J B}	<0.025	0.077 ^J	<0.026
Perfluorodecanoic acid	PFDA	--	--	<0.022	<0.022	<0.022	0.045 ^J	<0.023
Perfluorododecanoic acid	PFDoA	--	--	<0.068	<0.067	<0.067	<0.072	<0.069
Perfluorododecanesulfonic acid	PFDos	--	--	<0.061	<0.060	<0.060	<0.065	<0.062
Perfluorodecanesulfonic acid	PFDS	--	--	<0.04	<0.039	<0.039	<0.042	<0.040
Perfluoroheptanoic acid	PFHpA	--	--	<0.029	<0.029	<0.029	0.08 ^J	<0.030
Perfluoroheptanesulfonic Acid	PFHpS	--	--	<0.035	<0.035	<0.035	0.042 ^J	<0.036
Perfluorohexanoic acid	PFHxA	--	--	0.071 ^J	<0.042	<0.042	0.13 ^J	<0.044
Perfluoro-n-hexadecanoic acid	PFHxDA	--	--	<0.045 [*]	<0.044 [*]	<0.044 [*]	<0.047 [*]	<0.046 ^{* F1}
Perfluorohexanesulfonic acid	PFHxS	--	--	<0.031	<0.031	<0.031	0.049 ^J	<0.032
Perfluorononaic acid	PFNA	--	--	<0.036	<0.036	<0.036	0.043 ^J	<0.037
Perfluorononanesulfonic Acid	PFNS	--	--	<0.020	<0.02	<0.020	0.039 ^J	<0.021
Perfluorooctanoic acid	PFOA	1,260	16,400	<0.087	<0.086	<0.086	0.1 ^J	<0.089
Perfluoro-n-octadecanoic acid	PFODA	--	--	<0.028 [*]	<0.028 [*]	<0.028 [*]	0.035 ^{J*}	<0.029 ^{* F1}
Perfluorooctanesulfonic acid	PFOS	1,260	16,400	<0.20	<0.20	<0.20	<0.22	<0.21
Perfluoropentanoic acid	PFPeA	--	--	0.084 ^J	<0.077	<0.077	0.12 ^J	<0.080
Perfluoropentanesulfonic acid	PFPeS	--	--	<0.020	<0.020	<0.02	0.035 ^J	<0.021
Perfluorotetradecanoic acid	PFTeA	--	--	<0.055	<0.054	<0.054	<0.058	<0.056
Perfluorotridecanoic acid	PFTriA	--	--	<0.052	<0.051	<0.051	<0.055	<0.053
Perfluoroundecanoic acid	PFUnA	--	--	<0.036	<0.036	<0.036	0.046 ^J	<0.037
Total Detected PFAS		--	--	1	0	0	1	0

Notes:

NA = Not analyzed

µg/kg = micrograms per kilogram

^J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

^B Compound was found in the blank and sample

^{*} Isotope dilution and/or LCS/LCSD is outside acceptance limits

^{F1} MS and/or MSD Recovery is outside acceptance limits

⁴ Standards are for Total PCBs.

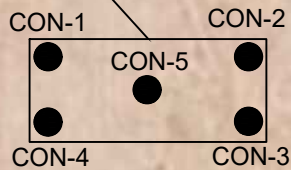
-- No Generic RCL established.

Generic RCLs from WDNR RR-890, January 2014: WDNR RCL Calculator December 2018

FIGURE

E WASHINGTON AVE

Approx. Containment
Location



File: C:\Users\emily.sengstock\Desktop\CAD_TEMPLATE.dwg; USER: SENGSTOCK, EMILY; PLOTTED: September 24, 2019 - 1:46 PM

AECOM
Milwaukee Office
1555 RiverCenter Dr
Milwaukee, WI
414.944.6080

Blount Transformer Site
722 E. Main St
Madison, WI 53703

Containment Sample Locations

AECOM

Project Number:
60611431

Drawn By:
EMS

Date:
9/24/2019

Figure No. 1

AECOM

ATTACHMENT A – WDNR Email, dated August 27, 2019

Linnemanstons, Leo

From: Schmoller, Michael R - DNR <Michael.Schmoller@wisconsin.gov>
Sent: Tuesday, August 27, 2019 8:51 AM
To: Linnemanstons, Leo
Cc: Erika Biemann; Keith Hitzke; Betthausen, Thomas; Martin, Steven L - DNR
Subject: RE: ATC Blount SS - 722 E Main Covered Spoils

Leo

This is correct. That is our agreement for managing these spoils.

Mike

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

R. Michael Schmoller

Phone: 608-275-3303

Michael.schmoller@wisconsin.gov

From: Linnemanstons, Leo <Leo.Linnemanstons@aecom.com>
Sent: Monday, August 26, 2019 3:08 PM
To: Schmoller, Michael R - DNR <Michael.Schmoller@wisconsin.gov>
Cc: Erika Biemann <ebiemann@atcllc.com>; Keith Hitzke <khitzke@nsecinc.com>; Betthausen, Thomas <tbetthausen@atcllc.com>
Subject: ATC Blount SS - 722 E Main Covered Spoils

Hi, Mike.

Tom Betthausen (ATC Construction Coordinator) updated me on the construction activities from Saturday (8/24) and indicated that you (WDNR) had approved the management of the hydrovac spoils into a constructed containment on the adjacent parcel owned by ATC. I also observed the containment area this morning (8/26) and noted that it was intact and still covered. We understand that the WDNR approval was with the condition that confirmation soil samples must be collected as described in your email below. North Shore Environmental Construction (NSEC) is scheduled to empty and remove the constructed containment this Wednesday (8/28). Once NSEC has completed the removal, AECOM will then plan to collect the required soil samples under the former containment area and have them analyzed for PFAS compounds. Please let us know if this information needs further clarification. Thanks!

Leo B. Linnemanstons, P.G. (WI)
Senior Project Hydrogeologist, Environment
D +1-608-828-8208
M +1-608-658-6700

From: Schmoller, Michael R - DNR [<mailto:Michael.Schmoller@wisconsin.gov>]
Sent: Monday, August 26, 2019 10:08 AM
To: Linnemanstons, Leo
Cc: Keith Hitzke
Subject: FW: 722 E Main Covered Spoils

Leo

Here is where the spoils from the last borings for the H beams is stored. This site was created on Saturday. The Department agreed to this action with the requirement there would be soil sampling after the material is removed. It is plastic lined and covered. These spoils likely contain PFAS. Once this material is containerized later this week the set of discrete soil samples will need to be collected from the top foot of soil in 5 locations. (The 4 corners and center of the plastic covered area.)

Mike

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

R. Michael Schmoller

Phone: 608-275-3303

Michael.schmoller@wisconsin.gov

From: Jaeckels, Jeff <JJaeckels@mge.com>
Sent: Monday, August 26, 2019 9:21 AM
To: Schmoller, Michael R - DNR <Michael.Schmoller@wisconsin.gov>
Subject: 722 E Main Covered Spoils

Mike:

Attached is a picture of the spoils in the substation. It was covered since the work was completed Saturday and ATC anticipates it would be in rolloffs on Wednesday.

Regards,

Jeffrey M. Jaeckels, P.E.
Director, Safety and Environmental Affairs
Madison Gas and Electric Company
623 Railroad Street
Madison, WI 53703
608-252-7060



From: Kramer, Kyle <kkramer@mge.com>
Sent: Monday, August 26, 2019 9:17 AM
To: Jaeckels, Jeff <JJaeckels@mge.com>
Subject: 722 E Main Covered Spoils

Jeff,

Please see attached photo.

Kyle

Kyle Kramer, PG
Environmental Specialist II

Madison Gas and Electric Company
Office: (608) 252-1577



AECOM

ATTACHMENT B – Eurofins/TestAmerica Laboratory Report

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-53858-1
Client Project/Site: ATC - Madison 60611431

For:
AECOM
1350 Deming Way Suite 100
Middleton, Wisconsin 53562

Attn: Mr. Leo B Linnemanstons, P.G.



Authorized for release by:
9/24/2019 8:07:00 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Job ID: 320-53858-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-53858-1

Comments

No additional comments.

Receipt

The samples were received on 8/30/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

LCMS

Method(s) 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-322246/11) (ICV 320-322148/11) (ICV 320-322248/11)

Method(s) 537 (modified): The laboratory control sample (LCS) for preparation batch 320-320285 and analytical batch 320-322465 recovered outside control limits for the following analytes: Perfluoro-n-hexadecanoic acid (PFHxDA) and Perfluoro-n-octadecanoic acid (PFODA). These analytes were biased high in the LCS and were not detected in the associated samples above the reporting limit (RL); therefore, the data have been reported.

Method(s) 537 (modified): The matrix spike (MS) recoveries for Perfluoro-n-octadecanoic acid (PFODA) and Perfluoro-n-hexadecanoic acid (PFHxDA) preparation batch 320-320285 and analytical batch 320-322824 were outside control limits. Sample matrix interference is suspected.

Method(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-8:2 FTS in the following sample: CON-4 (320-53858-6). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. The sample was re-analyzed with concurring results; therefore, data have been reported.

Method(s) 537 (modified): Perfluorooctanesulfonic acid (PFOS) was detected above the reporting limit (RL) in the method blank associated with preparation batch 320-321186 and analytical batch 320-321967 as well as in the following samples: (MB 320-321186/1-A) and (320-53790-B-3-A). All affected samples were re-extracted outside of holding time. Both sets of data have been reported.

Method(s) 537 (modified): The matrix spike (MS) recoveries for Perfluorooctanesulfonic acid (PFOS) in preparation batch 320-321186 and analytical batch 320-321967 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537 (modified): The method blank for preparation batch 320-321186 contained Perfluorooctanesulfonic acid (PFOS) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) Moisture: The sample duplicate (DUP) precision for analytical batch 320-320917 was outside control limits; however, the RPD does not apply to samples with less than 10% moisture content. Sample non-homogeneity is suspected. Data is being reported with this narration. (320-53497-E-21) and (320-53497-E-21 DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-321186. 320-321186 Method: 3535 PFC-W

Method(s) 3535: The following sample is light yellow prior to extraction: EB08282019 (320-53858-1) 320-321186 Method: 3535 PFC-W

Case Narrative

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Job ID: 320-53858-1 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

Method(s) SHAKE: The following samples CON-1 (320-53858-3), CON-2 (320-53858-4), CON-3 (320-53858-5), CON-4 (320-53858-6), CON-5 (320-53858-7), (320-53858-A-7 MS) and (320-53858-A-7 MSD) were a yellow color after the final volume. Method: PFC_IDA Matrix: Solid Prep Batch: 320-320285

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Detection Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: EB08282019

Lab Sample ID: 320-53858-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB08282019

Lab Sample ID: 320-53858-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: CON-1

Lab Sample ID: 320-53858-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.11	J	0.20	0.028	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.084	J	0.20	0.078	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.071	J	0.20	0.043	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.066	J B	0.20	0.025	ug/Kg	1	*	537 (modified)	Total/NA
6:2 FTS	0.44	J	2.0	0.15	ug/Kg	1	*	537 (modified)	Total/NA

Client Sample ID: CON-2

Lab Sample ID: 320-53858-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.066	J B	0.20	0.025	ug/Kg	1	*	537 (modified)	Total/NA

Client Sample ID: CON-3

Lab Sample ID: 320-53858-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.032	J	0.20	0.028	ug/Kg	1	*	537 (modified)	Total/NA

Client Sample ID: CON-4

Lab Sample ID: 320-53858-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.11	J	0.22	0.030	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.12	J	0.22	0.083	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.13	J	0.22	0.045	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.080	J	0.22	0.031	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.10	J	0.22	0.093	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.043	J	0.22	0.039	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.045	J	0.22	0.024	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.046	J	0.22	0.039	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.077	J	0.22	0.027	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoro-n-octadecanoic acid (PFODA)	0.035	J *	0.22	0.030	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.035	J	0.22	0.022	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.049	J	0.22	0.033	ug/Kg	1	*	537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.042	J	0.22	0.038	ug/Kg	1	*	537 (modified)	Total/NA
Perfluorononanesulfonic acid (PFNS)	0.039	J	0.22	0.022	ug/Kg	1	*	537 (modified)	Total/NA
6:2 FTS	0.17	J	2.2	0.16	ug/Kg	1	*	537 (modified)	Total/NA
ADONA	0.033	J	0.23	0.020	ug/Kg	1	*	537 (modified)	Total/NA
F-53B Major	0.041	J	0.22	0.029	ug/Kg	1	*	537 (modified)	Total/NA
F-53B Minor	0.028	J	0.22	0.024	ug/Kg	1	*	537 (modified)	Total/NA
NaDONA	0.033	J	0.23	0.020	ug/Kg	1	*	537 (modified)	Total/NA
DONA	0.031	J	0.22	0.019	ug/Kg	1	*	537 (modified)	Total/NA
Ammonium Perfluorooctanoate (APFO)	0.11	J	0.23	0.096	ug/Kg	1	*	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento

Detection Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-5

Lab Sample ID: 320-53858-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.084	J	0.21	0.029	ug/Kg	1	☼	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Sacramento



Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: EB08282019

Lab Sample ID: 320-53858-1

Date Collected: 08/28/19 09:00

Matrix: Water

Date Received: 08/30/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.33		1.9	0.33	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoropentanoic acid (PFPeA)	<0.46		1.9	0.46	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorohexanoic acid (PFHxA)	<0.54		1.9	0.54	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.9	0.23	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorooctanoic acid (PFOA)	<0.79		1.9	0.79	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorononanoic acid (PFNA)	<0.25		1.9	0.25	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.9	0.51	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.9	0.27	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.83		1.9	0.83	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.43		1.9	0.43	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.9	0.28	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.9	0.16	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.18		1.9	0.18	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		1.9	0.50	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorononanesulfonic acid (PFNS)	<0.15		1.9	0.15	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorooctanesulfonamide (FOSA)	<0.33		1.9	0.33	ng/L		09/06/19 06:13	09/08/19 12:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		09/06/19 06:13	09/08/19 12:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		09/06/19 06:13	09/08/19 12:29	1
4:2 FTS	<4.9		19	4.9	ng/L		09/06/19 06:13	09/08/19 12:29	1
6:2 FTS	<1.9		19	1.9	ng/L		09/06/19 06:13	09/08/19 12:29	1
8:2 FTS	<1.9		19	1.9	ng/L		09/06/19 06:13	09/08/19 12:29	1
10:2 FTS	<0.18		1.9	0.18	ng/L		09/06/19 06:13	09/08/19 12:29	1
NEtFOSA	<0.81		1.9	0.81	ng/L		09/06/19 06:13	09/08/19 12:29	1
NMeFOSA	<0.40		1.9	0.40	ng/L		09/06/19 06:13	09/08/19 12:29	1
Perfluorododecanesulfonic acid (PFDoS)	<0.42		1.9	0.42	ng/L		09/06/19 06:13	09/08/19 12:29	1
NMeFOSE	<1.3		3.7	1.3	ng/L		09/06/19 06:13	09/08/19 12:29	1
NEtFOSE	<0.79		1.9	0.79	ng/L		09/06/19 06:13	09/08/19 12:29	1
ADONA	<0.18		2.0	0.18	ng/L		09/06/19 06:13	09/08/19 12:29	1
F-53B Major	<0.22		1.9	0.22	ng/L		09/06/19 06:13	09/08/19 12:29	1
HFPO-DA (GenX)	<1.4		3.7	1.4	ng/L		09/06/19 06:13	09/08/19 12:29	1
F-53B Minor	<0.30		1.9	0.30	ng/L		09/06/19 06:13	09/08/19 12:29	1
NaDONA	<0.18		2.0	0.18	ng/L		09/06/19 06:13	09/08/19 12:29	1
DONA	<0.17		1.9	0.17	ng/L		09/06/19 06:13	09/08/19 12:29	1
Ammonium Perfluorooctanoate (APFO)	<0.82		2.0	0.82	ng/L		09/06/19 06:13	09/08/19 12:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C4 PFBA	93		25 - 150	09/06/19 06:13	09/08/19 12:29	1
¹³ C5 PFPeA	89		25 - 150	09/06/19 06:13	09/08/19 12:29	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: EB08282019

Lab Sample ID: 320-53858-1

Date Collected: 08/28/19 09:00

Matrix: Water

Date Received: 08/30/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	91		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C4 PFHpA	92		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C4 PFOA	91		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C5 PFNA	88		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C2 PFDA	90		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C2 PFHxDA	77		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C2 PFUnA	92		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C2 PFDaA	91		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C2 PFTeDA	102		25 - 150	09/06/19 06:13	09/08/19 12:29	1
18O2 PFHxS	109		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C4 PFOS	93		25 - 150	09/06/19 06:13	09/08/19 12:29	1
13C8 FOSA	86		25 - 150	09/06/19 06:13	09/08/19 12:29	1
d3-NMeFOSAA	80		25 - 150	09/06/19 06:13	09/08/19 12:29	1
d5-NEtFOSAA	79		25 - 150	09/06/19 06:13	09/08/19 12:29	1
M2-6:2 FTS	86		25 - 150	09/06/19 06:13	09/08/19 12:29	1
M2-8:2 FTS	90		25 - 150	09/06/19 06:13	09/08/19 12:29	1
M2-4:2 FTS	93		25 - 150	09/06/19 06:13	09/08/19 12:29	1
d-N-MeFOSA-M	56		20 - 150	09/06/19 06:13	09/08/19 12:29	1
d-N-EtFOSA-M	40		20 - 150	09/06/19 06:13	09/08/19 12:29	1
d7-N-MeFOSE-M	28		10 - 120	09/06/19 06:13	09/08/19 12:29	1
d9-N-EtFOSE-M	27		10 - 120	09/06/19 06:13	09/08/19 12:29	1
13C3 HFPO-DA	101		25 - 150	09/06/19 06:13	09/08/19 12:29	1

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: FB08282019

Lab Sample ID: 320-53858-2

Date Collected: 08/28/19 09:05

Matrix: Water

Date Received: 08/30/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.33		1.9	0.33	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoropentanoic acid (PFPeA)	<0.46		1.9	0.46	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorohexanoic acid (PFHxA)	<0.55		1.9	0.55	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorooctanoic acid (PFOA)	<0.80		1.9	0.80	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorononanoic acid (PFNA)	<0.25		1.9	0.25	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.9	0.27	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.84		1.9	0.84	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.43		1.9	0.43	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.9	0.28	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.9	0.16	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.18		1.9	0.18	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorooctanesulfonic acid (PFOS)	<0.51		1.9	0.51	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorononanesulfonic acid (PFNS)	<0.15		1.9	0.15	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorooctanesulfonamide (FOSA)	<0.33		1.9	0.33	ng/L		09/06/19 06:13	09/08/19 12:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		09/06/19 06:13	09/08/19 12:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		09/06/19 06:13	09/08/19 12:39	1
4:2 FTS	<4.9		19	4.9	ng/L		09/06/19 06:13	09/08/19 12:39	1
6:2 FTS	<1.9		19	1.9	ng/L		09/06/19 06:13	09/08/19 12:39	1
8:2 FTS	<1.9		19	1.9	ng/L		09/06/19 06:13	09/08/19 12:39	1
10:2 FTS	<0.18		1.9	0.18	ng/L		09/06/19 06:13	09/08/19 12:39	1
NEtFOSA	<0.82		1.9	0.82	ng/L		09/06/19 06:13	09/08/19 12:39	1
NMeFOSA	<0.40		1.9	0.40	ng/L		09/06/19 06:13	09/08/19 12:39	1
Perfluorododecanesulfonic acid (PFDoS)	<0.42		1.9	0.42	ng/L		09/06/19 06:13	09/08/19 12:39	1
NMeFOSE	<1.3		3.8	1.3	ng/L		09/06/19 06:13	09/08/19 12:39	1
NEtFOSE	<0.80		1.9	0.80	ng/L		09/06/19 06:13	09/08/19 12:39	1
ADONA	<0.18		2.0	0.18	ng/L		09/06/19 06:13	09/08/19 12:39	1
F-53B Major	<0.23		1.9	0.23	ng/L		09/06/19 06:13	09/08/19 12:39	1
HFPO-DA (GenX)	<1.4		3.8	1.4	ng/L		09/06/19 06:13	09/08/19 12:39	1
F-53B Minor	<0.30		1.9	0.30	ng/L		09/06/19 06:13	09/08/19 12:39	1
NaDONA	<0.18		2.0	0.18	ng/L		09/06/19 06:13	09/08/19 12:39	1
DONA	<0.17		1.9	0.17	ng/L		09/06/19 06:13	09/08/19 12:39	1
Ammonium Perfluorooctanoate (APFO)	<0.83		2.0	0.83	ng/L		09/06/19 06:13	09/08/19 12:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	90		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C5 PFPeA	88		25 - 150	09/06/19 06:13	09/08/19 12:39	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: FB08282019

Lab Sample ID: 320-53858-2

Date Collected: 08/28/19 09:05

Matrix: Water

Date Received: 08/30/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	88		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C4 PFHpA	87		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C4 PFOA	87		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C5 PFNA	86		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C2 PFDA	87		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C2 PFHxDA	81		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C2 PFUnA	85		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C2 PFDoA	86		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C2 PFTeDA	97		25 - 150	09/06/19 06:13	09/08/19 12:39	1
18O2 PFHxS	102		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C4 PFOS	92		25 - 150	09/06/19 06:13	09/08/19 12:39	1
13C8 FOSA	82		25 - 150	09/06/19 06:13	09/08/19 12:39	1
d3-NMeFOSAA	81		25 - 150	09/06/19 06:13	09/08/19 12:39	1
d5-NEtFOSAA	75		25 - 150	09/06/19 06:13	09/08/19 12:39	1
M2-6:2 FTS	82		25 - 150	09/06/19 06:13	09/08/19 12:39	1
M2-8:2 FTS	84		25 - 150	09/06/19 06:13	09/08/19 12:39	1
M2-4:2 FTS	79		25 - 150	09/06/19 06:13	09/08/19 12:39	1
d-N-MeFOSA-M	59		20 - 150	09/06/19 06:13	09/08/19 12:39	1
d-N-EtFOSA-M	42		20 - 150	09/06/19 06:13	09/08/19 12:39	1
d7-N-MeFOSE-M	29		10 - 120	09/06/19 06:13	09/08/19 12:39	1
d9-N-EtFOSE-M	26		10 - 120	09/06/19 06:13	09/08/19 12:39	1
13C3 HFPO-DA	94		25 - 150	09/06/19 06:13	09/08/19 12:39	1

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-1

Lab Sample ID: 320-53858-3

Date Collected: 08/28/19 16:00

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.4

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.11	J	0.20	0.028	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoropentanoic acid (PFPeA)	0.084	J	0.20	0.078	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorohexanoic acid (PFHxA)	0.071	J	0.20	0.043	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoroheptanoic acid (PFHpA)	<0.029		0.20	0.029	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorooctanoic acid (PFOA)	<0.087		0.20	0.087	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorononanoic acid (PFNA)	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorodecanoic acid (PFDA)	<0.022		0.20	0.022	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoroundecanoic acid (PFUnA)	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorododecanoic acid (PFDoA)	<0.068		0.20	0.068	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorotridecanoic acid (PFTriA)	<0.052		0.20	0.052	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorotetradecanoic acid (PFTeA)	<0.055		0.20	0.055	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.045	*	0.20	0.045	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorobutanesulfonic acid (PFBS)	0.066	J B	0.20	0.025	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.028	*	0.20	0.028	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoropentanesulfonic acid (PFPeS)	<0.020		0.20	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorohexanesulfonic acid (PFHxS)	<0.031		0.20	0.031	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.035		0.20	0.035	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.51	0.20	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorononanesulfonic acid (PFNS)	<0.020		0.20	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorodecanesulfonic acid (PFDS)	<0.040		0.20	0.040	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorooctanesulfonamide (FOSA)	<0.083		0.20	0.083	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.40		2.0	0.40	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.37		2.0	0.37	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
4:2 FTS	<0.37		2.0	0.37	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
6:2 FTS	0.44	J	2.0	0.15	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
8:2 FTS	<0.25		2.0	0.25	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
10:2 FTS	<0.051		0.20	0.051	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
NEtFOSA	<0.024		0.20	0.024	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
NMeFOSA	<0.042		0.20	0.042	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Perfluorododecanesulfonic acid (PFDoS)	<0.061		0.20	0.061	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
NMeFOSE	<0.072		0.20	0.072	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
NEtFOSE	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
ADONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
F-53B Major	<0.027		0.20	0.027	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
HFPO-DA (GenX)	<0.11		0.25	0.11	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
F-53B Minor	<0.022		0.20	0.022	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
NaDONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
DONA	<0.018		0.20	0.018	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1
Ammonium Perfluorooctanoate (APFO)	<0.090		0.21	0.090	ug/Kg	☼	09/03/19 11:57	09/12/19 19:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	101		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C5 PFPeA	102		25 - 150	09/03/19 11:57	09/12/19 19:51	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-1

Lab Sample ID: 320-53858-3

Date Collected: 08/28/19 16:00

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.4

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	103		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C4 PFHpA	108		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C4 PFOA	101		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C5 PFNA	110		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C2 PFDA	111		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C2 PFHxDA	93		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C2 PFUnA	117		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C2 PFDoA	119		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C2 PFTeDA	108		25 - 150	09/03/19 11:57	09/12/19 19:51	1
18O2 PFHxS	131		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C4 PFOS	123		25 - 150	09/03/19 11:57	09/12/19 19:51	1
13C8 FOSA	89		25 - 150	09/03/19 11:57	09/12/19 19:51	1
d3-NMeFOSAA	92		25 - 150	09/03/19 11:57	09/12/19 19:51	1
d5-NEtFOSAA	86		25 - 150	09/03/19 11:57	09/12/19 19:51	1
M2-6:2 FTS	131		25 - 150	09/03/19 11:57	09/12/19 19:51	1
M2-8:2 FTS	143		25 - 150	09/03/19 11:57	09/12/19 19:51	1
M2-4:2 FTS	118		25 - 150	09/03/19 11:57	09/12/19 19:51	1
d-N-MeFOSA-M	45		25 - 150	09/03/19 11:57	09/12/19 19:51	1
d-N-EtFOSA-M	46		25 - 150	09/03/19 11:57	09/12/19 19:51	1
d7-N-MeFOSE-M	29		10 - 120	09/03/19 11:57	09/12/19 19:51	1
d9-N-EtFOSE-M	29		10 - 120	09/03/19 11:57	09/12/19 19:51	1
13C3 HFPO-DA	94		25 - 150	09/03/19 11:57	09/12/19 19:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.6		0.1	0.1	%			09/05/19 10:30	1
Percent Solids	95.4		0.1	0.1	%			09/05/19 10:30	1

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-2

Lab Sample ID: 320-53858-4

Date Collected: 08/28/19 16:05

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.7

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.028		0.20	0.028	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoropentanoic acid (PFPeA)	<0.077		0.20	0.077	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorohexanoic acid (PFHxA)	<0.042		0.20	0.042	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoroheptanoic acid (PFHpA)	<0.029		0.20	0.029	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorooctanoic acid (PFOA)	<0.086		0.20	0.086	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorononanoic acid (PFNA)	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorodecanoic acid (PFDA)	<0.022		0.20	0.022	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoroundecanoic acid (PFUnA)	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorododecanoic acid (PFDoA)	<0.067		0.20	0.067	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorotridecanoic acid (PFTriA)	<0.051		0.20	0.051	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorotetradecanoic acid (PFTeA)	<0.054		0.20	0.054	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.044 *		0.20	0.044	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorobutanesulfonic acid (PFBS)	0.066	J B	0.20	0.025	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.028 *		0.20	0.028	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoropentanesulfonic acid (PFPeS)	<0.020		0.20	0.020	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorohexanesulfonic acid (PFHxS)	<0.031		0.20	0.031	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.035		0.20	0.035	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.50	0.20	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorononanesulfonic acid (PFNS)	<0.020		0.20	0.020	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorodecanesulfonic acid (PFDS)	<0.039		0.20	0.039	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorooctanesulfonamide (FOSA)	<0.082		0.20	0.082	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.39		2.0	0.39	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.37		2.0	0.37	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
4:2 FTS	<0.37		2.0	0.37	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
6:2 FTS	<0.15		2.0	0.15	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
8:2 FTS	<0.25		2.0	0.25	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
10:2 FTS	<0.050		0.20	0.050	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
NEtFOSA	<0.024		0.20	0.024	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
NMeFOSA	<0.041		0.20	0.041	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Perfluorododecanesulfonic acid (PFDoS)	<0.060		0.20	0.060	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
NMeFOSE	<0.071		0.20	0.071	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
NEtFOSE	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
ADONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
F-53B Major	<0.027		0.20	0.027	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
HFPO-DA (GenX)	<0.11		0.25	0.11	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
F-53B Minor	<0.022		0.20	0.022	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
NaDONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
DONA	<0.018		0.20	0.018	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1
Ammonium Perfluorooctanoate (APFO)	<0.089		0.21	0.089	ug/Kg	☼	09/03/19 11:57	09/11/19 08:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C5 PFPeA	99		25 - 150	09/03/19 11:57	09/11/19 08:24	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-2

Lab Sample ID: 320-53858-4

Date Collected: 08/28/19 16:05

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.7

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	94		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C4 PFHpA	106		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C4 PFOA	102		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C5 PFNA	105		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C2 PFDA	105		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C2 PFHxDA	93		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C2 PFUnA	109		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C2 PFDoA	101		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C2 PFTeDA	107		25 - 150	09/03/19 11:57	09/11/19 08:24	1
18O2 PFHxS	106		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C4 PFOS	98		25 - 150	09/03/19 11:57	09/11/19 08:24	1
13C8 FOSA	95		25 - 150	09/03/19 11:57	09/11/19 08:24	1
d3-NMeFOSAA	96		25 - 150	09/03/19 11:57	09/11/19 08:24	1
d5-NEtFOSAA	97		25 - 150	09/03/19 11:57	09/11/19 08:24	1
M2-6:2 FTS	131		25 - 150	09/03/19 11:57	09/11/19 08:24	1
M2-8:2 FTS	148		25 - 150	09/03/19 11:57	09/11/19 08:24	1
M2-4:2 FTS	114		25 - 150	09/03/19 11:57	09/11/19 08:24	1
d-N-MeFOSA-M	57		25 - 150	09/03/19 11:57	09/11/19 08:24	1
d-N-EtFOSA-M	54		25 - 150	09/03/19 11:57	09/11/19 08:24	1
d7-N-MeFOSE-M	14		10 - 120	09/03/19 11:57	09/11/19 08:24	1
d9-N-EtFOSE-M	14		10 - 120	09/03/19 11:57	09/11/19 08:24	1
13C3 HFPO-DA	93		25 - 150	09/03/19 11:57	09/11/19 08:24	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Percent Moisture	4.3		0.1	0.1	%			09/05/19 10:30	1
Percent Solids	95.7		0.1	0.1	%			09/05/19 10:30	1

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-3

Lab Sample ID: 320-53858-5

Date Collected: 08/28/19 16:10

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.032	J	0.20	0.028	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoropentanoic acid (PFPeA)	<0.077		0.20	0.077	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorohexanoic acid (PFHxA)	<0.042		0.20	0.042	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoroheptanoic acid (PFHpA)	<0.029		0.20	0.029	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorooctanoic acid (PFOA)	<0.086		0.20	0.086	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorononanoic acid (PFNA)	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorodecanoic acid (PFDA)	<0.022		0.20	0.022	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoroundecanoic acid (PFUnA)	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorododecanoic acid (PFDoA)	<0.067		0.20	0.067	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorotridecanoic acid (PFTriA)	<0.051		0.20	0.051	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorotetradecanoic acid (PFTeA)	<0.054		0.20	0.054	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.044	*	0.20	0.044	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorobutanesulfonic acid (PFBS)	<0.025		0.20	0.025	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.028	*	0.20	0.028	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoropentanesulfonic acid (PFPeS)	<0.020		0.20	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorohexanesulfonic acid (PFHxS)	<0.031		0.20	0.031	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.035		0.20	0.035	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.50	0.20	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorononanesulfonic acid (PFNS)	<0.020		0.20	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorodecanesulfonic acid (PFDS)	<0.039		0.20	0.039	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorooctanesulfonamide (FOSA)	<0.082		0.20	0.082	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.39		2.0	0.39	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.37		2.0	0.37	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
4:2 FTS	<0.37		2.0	0.37	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
6:2 FTS	<0.15		2.0	0.15	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
8:2 FTS	<0.25		2.0	0.25	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
10:2 FTS	<0.050		0.20	0.050	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
NEtFOSA	<0.024		0.20	0.024	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
NMeFOSA	<0.041		0.20	0.041	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Perfluorododecanesulfonic acid (PFDoS)	<0.060		0.20	0.060	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
NMeFOSE	<0.071		0.20	0.071	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
NEtFOSE	<0.036		0.20	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
ADONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
F-53B Major	<0.027		0.20	0.027	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
HFPO-DA (GenX)	<0.11		0.25	0.11	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
F-53B Minor	<0.022		0.20	0.022	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
NaDONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
DONA	<0.018		0.20	0.018	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1
Ammonium Perfluorooctanoate (APFO)	<0.089		0.21	0.089	ug/Kg	☼	09/03/19 11:57	09/12/19 20:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	101		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C5 PFPeA	99		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C2 PFHxA	101		25 - 150	09/03/19 11:57	09/12/19 20:01	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-3

Lab Sample ID: 320-53858-5

Date Collected: 08/28/19 16:10

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.0

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	103		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C4 PFOA	99		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C5 PFNA	102		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C2 PFDA	110		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C2 PFHxDA	97		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C2 PFUnA	112		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C2 PFDoA	112		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C2 PFTeDA	109		25 - 150	09/03/19 11:57	09/12/19 20:01	1
18O2 PFHxS	125		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C4 PFOS	115		25 - 150	09/03/19 11:57	09/12/19 20:01	1
13C8 FOSA	90		25 - 150	09/03/19 11:57	09/12/19 20:01	1
d3-NMeFOSAA	76		25 - 150	09/03/19 11:57	09/12/19 20:01	1
d5-NEtFOSAA	70		25 - 150	09/03/19 11:57	09/12/19 20:01	1
M2-6:2 FTS	87		25 - 150	09/03/19 11:57	09/12/19 20:01	1
M2-8:2 FTS	104		25 - 150	09/03/19 11:57	09/12/19 20:01	1
M2-4:2 FTS	111		25 - 150	09/03/19 11:57	09/12/19 20:01	1
d-N-MeFOSA-M	56		25 - 150	09/03/19 11:57	09/12/19 20:01	1
d-N-EtFOSA-M	58		25 - 150	09/03/19 11:57	09/12/19 20:01	1
d7-N-MeFOSE-M	15		10 - 120	09/03/19 11:57	09/12/19 20:01	1
d9-N-EtFOSE-M	16		10 - 120	09/03/19 11:57	09/12/19 20:01	1
13C3 HFPO-DA	105		25 - 150	09/03/19 11:57	09/12/19 20:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	5.0		0.1	0.1	%			09/05/19 10:30	1
Percent Solids	95.0		0.1	0.1	%			09/05/19 10:30	1

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-4

Lab Sample ID: 320-53858-6

Date Collected: 08/28/19 16:15

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 93.1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.11	J	0.22	0.030	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoropentanoic acid (PFPeA)	0.12	J	0.22	0.083	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorohexanoic acid (PFHxA)	0.13	J	0.22	0.045	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoroheptanoic acid (PFHpA)	0.080	J	0.22	0.031	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorooctanoic acid (PFOA)	0.10	J	0.22	0.093	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorononanoic acid (PFNA)	0.043	J	0.22	0.039	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorodecanoic acid (PFDA)	0.045	J	0.22	0.024	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoroundecanoic acid (PFUnA)	0.046	J	0.22	0.039	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorododecanoic acid (PFDoA)	<0.072		0.22	0.072	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorotridecanoic acid (PFTriA)	<0.055		0.22	0.055	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorotetradecanoic acid (PFTeA)	<0.058		0.22	0.058	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.047	*	0.22	0.047	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorobutanesulfonic acid (PFBS)	0.077	J	0.22	0.027	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoro-n-octadecanoic acid (PFODA)	0.035	J *	0.22	0.030	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoropentanesulfonic acid (PFPeS)	0.035	J	0.22	0.022	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorohexanesulfonic acid (PFHxS)	0.049	J	0.22	0.033	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.042	J	0.22	0.038	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorooctanesulfonic acid (PFOS)	<0.22		0.54	0.22	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorononanesulfonic acid (PFNS)	0.039	J	0.22	0.022	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorodecanesulfonic acid (PFDS)	<0.042		0.22	0.042	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorooctanesulfonamide (FOSA)	<0.088		0.22	0.088	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.42		2.2	0.42	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.40		2.2	0.40	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
4:2 FTS	<0.40		2.2	0.40	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
6:2 FTS	0.17	J	2.2	0.16	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
8:2 FTS	<0.27		2.2	0.27	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
10:2 FTS	<0.054		0.22	0.054	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
NEtFOSA	<0.026		0.22	0.026	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
NMeFOSA	<0.044		0.22	0.044	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Perfluorododecanesulfonic acid (PFDoS)	<0.065		0.22	0.065	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
NMeFOSE	<0.077		0.22	0.077	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
NEtFOSE	<0.039		0.22	0.039	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
ADONA	0.033	J	0.23	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
F-53B Major	0.041	J	0.22	0.029	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
HFPO-DA (GenX)	<0.12		0.27	0.12	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
F-53B Minor	0.028	J	0.22	0.024	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
NaDONA	0.033	J	0.23	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
DONA	0.031	J	0.22	0.019	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1
Ammonium Perfluorooctanoate (APFO)	0.11	J	0.23	0.096	ug/Kg	☼	09/03/19 11:57	09/12/19 20:10	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-4

Lab Sample ID: 320-53858-6

Date Collected: 08/28/19 16:15

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 93.1

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	95		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C5 PFPeA	96		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C2 PFHxA	97		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C4 PFHpA	106		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C4 PFOA	102		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C5 PFNA	106		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C2 PFDA	111		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C2 PFHxDA	81		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C2 PFUnA	111		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C2 PFDaA	107		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C2 PFTeDA	95		25 - 150	09/03/19 11:57	09/12/19 20:10	1
18O2 PFHxS	131		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C4 PFOS	119		25 - 150	09/03/19 11:57	09/12/19 20:10	1
13C8 FOSA	95		25 - 150	09/03/19 11:57	09/12/19 20:10	1
d3-NMeFOSAA	78		25 - 150	09/03/19 11:57	09/12/19 20:10	1
d5-NEtFOSAA	69		25 - 150	09/03/19 11:57	09/12/19 20:10	1
M2-6:2 FTS	108		25 - 150	09/03/19 11:57	09/12/19 20:10	1
M2-8:2 FTS	151 *		25 - 150	09/03/19 11:57	09/12/19 20:10	1
M2-4:2 FTS	109		25 - 150	09/03/19 11:57	09/12/19 20:10	1
d-N-MeFOSA-M	69		25 - 150	09/03/19 11:57	09/12/19 20:10	1
d-N-EtFOSA-M	56		25 - 150	09/03/19 11:57	09/12/19 20:10	1
d7-N-MeFOSE-M	28		10 - 120	09/03/19 11:57	09/12/19 20:10	1
d9-N-EtFOSE-M	27		10 - 120	09/03/19 11:57	09/12/19 20:10	1
13C3 HFPO-DA	88		25 - 150	09/03/19 11:57	09/12/19 20:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	6.9		0.1	0.1	%			09/05/19 10:30	1
Percent Solids	93.1		0.1	0.1	%			09/05/19 10:30	1

Client Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-5

Lab Sample ID: 320-53858-7

Date Collected: 08/28/19 16:20

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.4

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.084	J	0.21	0.029	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoropentanoic acid (PFPeA)	<0.080		0.21	0.080	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorohexanoic acid (PFHxA)	<0.044		0.21	0.044	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoroheptanoic acid (PFHpA)	<0.030		0.21	0.030	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorooctanoic acid (PFOA)	<0.089		0.21	0.089	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorononanoic acid (PFNA)	<0.037		0.21	0.037	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorodecanoic acid (PFDA)	<0.023		0.21	0.023	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoroundecanoic acid (PFUnA)	<0.037		0.21	0.037	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorododecanoic acid (PFDoA)	<0.069		0.21	0.069	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorotridecanoic acid (PFTriA)	<0.053		0.21	0.053	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorotetradecanoic acid (PFTeA)	<0.056		0.21	0.056	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.046	* F1	0.21	0.046	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorobutanesulfonic acid (PFBS)	<0.026		0.21	0.026	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.029	* F1	0.21	0.029	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoropentanesulfonic acid (PFPeS)	<0.021		0.21	0.021	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorohexanesulfonic acid (PFHxS)	<0.032		0.21	0.032	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.036		0.21	0.036	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorooctanesulfonic acid (PFOS)	<0.21		0.52	0.21	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorononanesulfonic acid (PFNS)	<0.021		0.21	0.021	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorodecanesulfonic acid (PFDS)	<0.040		0.21	0.040	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorooctanesulfonamide (FOSA)	<0.085		0.21	0.085	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.40		2.1	0.40	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.38		2.1	0.38	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
4:2 FTS	<0.38		2.1	0.38	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
6:2 FTS	<0.16		2.1	0.16	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
8:2 FTS	<0.26		2.1	0.26	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
10:2 FTS	<0.052		0.21	0.052	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
NEtFOSA	<0.025		0.21	0.025	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
NMeFOSA	<0.042		0.21	0.042	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Perfluorododecanesulfonic acid (PFDoS)	<0.062		0.21	0.062	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
NMeFOSE	<0.074		0.21	0.074	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
NEtFOSE	<0.037		0.21	0.037	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
ADONA	<0.020		0.22	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
F-53B Major	<0.028		0.21	0.028	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
HFPO-DA (GenX)	<0.11		0.26	0.11	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
F-53B Minor	<0.023		0.21	0.023	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
NaDONA	<0.020		0.22	0.020	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
DONA	<0.019		0.21	0.019	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1
Ammonium Perfluorooctanoate (APFO)	<0.092		0.22	0.092	ug/Kg	☼	09/03/19 11:57	09/12/19 20:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C5 PFPeA	99		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C2 PFHxA	96		25 - 150	09/03/19 11:57	09/12/19 20:20	1

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-5

Lab Sample ID: 320-53858-7

Date Collected: 08/28/19 16:20

Matrix: Solid

Date Received: 08/30/19 09:20

Percent Solids: 95.4

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	103		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C4 PFOA	99		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C5 PFNA	104		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C2 PFDA	108		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C2 PFHxDA	98		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C2 PFUnA	105		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C2 PFDaA	107		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C2 PFTeDA	106		25 - 150	09/03/19 11:57	09/12/19 20:20	1
18O2 PFHxS	119		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C4 PFOS	108		25 - 150	09/03/19 11:57	09/12/19 20:20	1
13C8 FOSA	86		25 - 150	09/03/19 11:57	09/12/19 20:20	1
d3-NMeFOSAA	77		25 - 150	09/03/19 11:57	09/12/19 20:20	1
d5-NEtFOSAA	76		25 - 150	09/03/19 11:57	09/12/19 20:20	1
M2-6:2 FTS	89		25 - 150	09/03/19 11:57	09/12/19 20:20	1
M2-8:2 FTS	101		25 - 150	09/03/19 11:57	09/12/19 20:20	1
M2-4:2 FTS	92		25 - 150	09/03/19 11:57	09/12/19 20:20	1
d-N-MeFOSA-M	47		25 - 150	09/03/19 11:57	09/12/19 20:20	1
d-N-EtFOSA-M	48		25 - 150	09/03/19 11:57	09/12/19 20:20	1
d7-N-MeFOSE-M	31		10 - 120	09/03/19 11:57	09/12/19 20:20	1
d9-N-EtFOSE-M	31		10 - 120	09/03/19 11:57	09/12/19 20:20	1
13C3 HFPO-DA	97		25 - 150	09/03/19 11:57	09/12/19 20:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.6		0.1	0.1	%			09/05/19 10:30	1
Percent Solids	95.4		0.1	0.1	%			09/05/19 10:30	1

Isotope Dilution Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFHxDA (25-150)
320-53858-3	CON-1	101	102	103	108	101	110	111	93
320-53858-4	CON-2	99	99	94	106	102	105	105	93
320-53858-5	CON-3	101	99	101	103	99	102	110	97
320-53858-6	CON-4	95	96	97	106	102	106	111	81
320-53858-7	CON-5	98	99	96	103	99	104	108	98
320-53858-7 MS	CON-5	103	104	101	103	101	101	109	86
320-53858-7 MSD	CON-5	100	100	98	104	100	101	104	92
LCS 320-320285/2-A	Lab Control Sample	105	105	105	113	105	108	105	107
MB 320-320285/1-A	Method Blank	102	103	104	110	104	106	108	99

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFOA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/2 (25-150)	-NEtFOS/2 (25-150)
320-53858-3	CON-1	117	119	108	131	123	89	92	86
320-53858-4	CON-2	109	101	107	106	98	95	96	97
320-53858-5	CON-3	112	112	109	125	115	90	76	70
320-53858-6	CON-4	111	107	95	131	119	95	78	69
320-53858-7	CON-5	105	107	106	119	108	86	77	76
320-53858-7 MS	CON-5	111	111	100	131	116	92	76	74
320-53858-7 MSD	CON-5	108	108	96	130	115	87	76	71
LCS 320-320285/2-A	Lab Control Sample	108	112	111	122	106	97	108	105
MB 320-320285/1-A	Method Blank	111	110	104	120	103	96	102	106

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	I-MeFOSA (25-150)	∑-EtFOSA (25-150)	NMFM (10-120)	NEFM (10-120)	HFPODA (25-150)
320-53858-3	CON-1	131	143	118	45	46	29	29	94
320-53858-4	CON-2	131	148	114	57	54	14	14	93
320-53858-5	CON-3	87	104	111	56	58	15	16	105
320-53858-6	CON-4	108	151 *	109	69	56	28	27	88
320-53858-7	CON-5	89	101	92	47	48	31	31	97
320-53858-7 MS	CON-5	95	113	99	56	56	21	22	100
320-53858-7 MSD	CON-5	92	105	88	43	42	19	18	120
LCS 320-320285/2-A	Lab Control Sample	107	104	101	46	43	32	32	111
MB 320-320285/1-A	Method Blank	111	105	99	54	44	21	20	117

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- PFHpA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFHxDA = 13C2 PFHxDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA

Isotope Dilution Summary

Client: AECOM

Job ID: 320-53858-1

Project/Site: ATC - Madison 60611431

d3-NMeFOSAA = d3-NMeFOSAA

d5-NEtFOSAA = d5-NEtFOSAA

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

M242FTS = M2-4:2 FTS

d-N-MeFOSA-M = d-N-MeFOSA-M

d-N-EtFOSA-M = d-N-EtFOSA-M

NMFM = d7-N-MeFOSE-M

NEFM = d9-N-EtFOSE-M

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFHxDA (25-150)
320-53858-1	EB08282019	93	89	91	92	91	88	90	77
320-53858-2	FB08282019	90	88	88	87	87	86	87	81
LCS 320-321186/2-A	Lab Control Sample	105	99	98	102	102	100	99	96
LCSD 320-321186/3-A	Lab Control Sample Dup	106	103	101	104	103	101	104	86
MB 320-321186/1-A	Method Blank	101	98	95	104	101	100	98	90

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS (25-150)	-NEtFOS (25-150)
320-53858-1	EB08282019	92	91	102	109	93	86	80	79
320-53858-2	FB08282019	85	86	97	102	92	82	81	75
LCS 320-321186/2-A	Lab Control Sample	96	95	114	110	96	93	87	87
LCSD 320-321186/3-A	Lab Control Sample Dup	102	104	110	113	102	94	99	94
MB 320-321186/1-A	Method Blank	100	96	104	108	101	95	88	83

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	I-MeFOSA (20-150)	∇-EtFOSA (20-150)	NMFM (10-120)	NEFM (10-120)	HFPODA (25-150)
320-53858-1	EB08282019	86	90	93	56	40	28	27	101
320-53858-2	FB08282019	82	84	79	59	42	29	26	94
LCS 320-321186/2-A	Lab Control Sample	90	89	91	61	39	29	25	106
LCSD 320-321186/3-A	Lab Control Sample Dup	100	101	99	64	44	30	27	98
MB 320-321186/1-A	Method Blank	98	93	89	57	40	26	23	97

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- PFHpA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFHxDA = 13C2 PFHxDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

Isotope Dilution Summary

Client: AECOM

Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

M242FTS = M2-4:2 FTS

d-N-MeFOSA-M = d-N-MeFOSA-M

d-N-EtFOSA-M = d-N-EtFOSA-M

NMFM = d7-N-MeFOSE-M

NEFM = d9-N-EtFOSE-M

HFPODA = 13C3 HFPO-DA

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QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-320285/1-A
Matrix: Solid
Analysis Batch: 322465

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 320285

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.028		0.20	0.028	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoropentanoic acid (PFPeA)	<0.077		0.20	0.077	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorohexanoic acid (PFHxA)	<0.042		0.20	0.042	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoroheptanoic acid (PFHpA)	<0.029		0.20	0.029	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorooctanoic acid (PFOA)	<0.086		0.20	0.086	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorononanoic acid (PFNA)	<0.036		0.20	0.036	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorodecanoic acid (PFDA)	<0.022		0.20	0.022	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoroundecanoic acid (PFUnA)	<0.036		0.20	0.036	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorododecanoic acid (PFDoA)	<0.067		0.20	0.067	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorotridecanoic acid (PFTriA)	<0.051		0.20	0.051	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorotetradecanoic acid (PFTeA)	<0.054		0.20	0.054	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.044		0.20	0.044	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorobutanesulfonic acid (PFBS)	0.0549	J	0.20	0.025	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.028		0.20	0.028	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoropentanesulfonic acid (PFPeS)	<0.020		0.20	0.020	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorohexanesulfonic acid (PFHxS)	<0.031		0.20	0.031	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.035		0.20	0.035	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.50	0.20	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorononanesulfonic acid (PFNS)	<0.020		0.20	0.020	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorodecanesulfonic acid (PFDS)	<0.039		0.20	0.039	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorooctanesulfonamide (FOSA)	<0.082		0.20	0.082	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.39		2.0	0.39	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.37		2.0	0.37	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
4:2 FTS	<0.37		2.0	0.37	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
6:2 FTS	<0.15		2.0	0.15	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
8:2 FTS	<0.25		2.0	0.25	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
10:2 FTS	<0.050		0.20	0.050	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
NEtFOSA	<0.024		0.20	0.024	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
NMeFOSA	<0.041		0.20	0.041	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Perfluorododecanesulfonic acid (PFDoS)	<0.060		0.20	0.060	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
NMeFOSE	<0.071		0.20	0.071	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
NEtFOSE	<0.036		0.20	0.036	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
ADONA	<0.019		0.21	0.019	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
F-53B Major	<0.027		0.20	0.027	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
HFPO-DA (GenX)	<0.11		0.25	0.11	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
F-53B Minor	<0.022		0.20	0.022	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
NaDONA	<0.019		0.21	0.019	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
DONA	<0.018		0.20	0.018	ug/Kg		09/03/19 11:57	09/11/19 07:55	1
Ammonium Perfluorooctanoate (APFO)	<0.089		0.21	0.089	ug/Kg		09/03/19 11:57	09/11/19 07:55	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	102		25 - 150	09/03/19 11:57	09/11/19 07:55	1

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QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-320285/1-A
Matrix: Solid
Analysis Batch: 322465

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 320285

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFPeA	103		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C2 PFHxA	104		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C4 PFHpA	110		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C4 PFOA	104		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C5 PFNA	106		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C2 PFDA	108		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C2 PFHxDA	99		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C2 PFUnA	111		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C2 PFDaA	110		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C2 PFTeDA	104		25 - 150	09/03/19 11:57	09/11/19 07:55	1
18O2 PFHxS	120		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C4 PFOS	103		25 - 150	09/03/19 11:57	09/11/19 07:55	1
13C8 FOSA	96		25 - 150	09/03/19 11:57	09/11/19 07:55	1
d3-NMeFOSAA	102		25 - 150	09/03/19 11:57	09/11/19 07:55	1
d5-NEtFOSAA	106		25 - 150	09/03/19 11:57	09/11/19 07:55	1
M2-6:2 FTS	111		25 - 150	09/03/19 11:57	09/11/19 07:55	1
M2-8:2 FTS	105		25 - 150	09/03/19 11:57	09/11/19 07:55	1
M2-4:2 FTS	99		25 - 150	09/03/19 11:57	09/11/19 07:55	1
d-N-MeFOSA-M	54		25 - 150	09/03/19 11:57	09/11/19 07:55	1
d-N-EtFOSA-M	44		25 - 150	09/03/19 11:57	09/11/19 07:55	1
d7-N-MeFOSE-M	21		10 - 120	09/03/19 11:57	09/11/19 07:55	1
d9-N-EtFOSE-M	20		10 - 120	09/03/19 11:57	09/11/19 07:55	1
13C3 HFPO-DA	117		25 - 150	09/03/19 11:57	09/11/19 07:55	1

Lab Sample ID: LCS 320-320285/2-A
Matrix: Solid
Analysis Batch: 322465

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 320285

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	2.00	2.07		ug/Kg		103	81 - 133
Perfluoropentanoic acid (PFPeA)	2.00	2.03		ug/Kg		102	79 - 120
Perfluorohexanoic acid (PFHxA)	2.00	2.02		ug/Kg		101	75 - 125
Perfluoroheptanoic acid (PFHpA)	2.00	2.04		ug/Kg		102	76 - 124
Perfluorooctanoic acid (PFOA)	2.00	2.01		ug/Kg		101	76 - 121
Perfluorononanoic acid (PFNA)	2.00	2.10		ug/Kg		105	74 - 126
Perfluorodecanoic acid (PFDA)	2.00	2.07		ug/Kg		103	74 - 124
Perfluoroundecanoic acid (PFUnA)	2.00	1.89		ug/Kg		95	74 - 114
Perfluorododecanoic acid (PFDaA)	2.00	2.08		ug/Kg		104	75 - 123
Perfluorotridecanoic acid (PFTriA)	2.00	1.93		ug/Kg		96	43 - 116
Perfluorotetradecanoic acid (PFTeA)	2.00	1.94		ug/Kg		97	22 - 129
Perfluoro-n-hexadecanoic acid (PFHxDA)	2.00	2.04	*	ug/Kg		102	10 - 100
Perfluorobutanesulfonic acid (PFBS)	1.77	1.69		ug/Kg		95	73 - 142
Perfluoro-n-octadecanoic acid (PFODA)	2.00	1.94	*	ug/Kg		97	10 - 84

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-320285/2-A
Matrix: Solid
Analysis Batch: 322465

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 320285

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.71		ug/Kg		91	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.55		ug/Kg		85	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	1.95		ug/Kg		102	78 - 146
Perfluorooctanesulfonic acid (PFOS)	1.86	2.00		ug/Kg		107	69 - 131
Perfluorononanesulfonic acid (PFNS)	1.92	2.01		ug/Kg		104	70 - 130
Perfluorodecanesulfonic acid (PFDS)	1.93	1.85		ug/Kg		96	54 - 113
Perfluorooctanesulfonamide (FOSA)	2.00	1.99		ug/Kg		100	62 - 135
N-methylperfluorooctanesulfonamide	2.00	2.07		ug/Kg		103	65 - 135
N-ethylperfluorooctanesulfonamide	2.00	2.09		ug/Kg		104	65 - 135
4:2 FTS	1.87	2.06		ug/Kg		110	50 - 150
6:2 FTS	1.90	2.04		ug/Kg		108	65 - 135
8:2 FTS	1.92	2.10		ug/Kg		110	65 - 135
10:2 FTS	1.93	2.06		ug/Kg		107	70 - 130
NMeFOSA	2.00	2.05		ug/Kg		102	65 - 135
Perfluorododecanesulfonic acid (PFDoS)	1.94	2.08		ug/Kg		108	70 - 130
NMeFOSE	2.00	1.93		ug/Kg		97	65 - 135
NEtFOSE	2.00	2.05		ug/Kg		103	65 - 135
ADONA	1.97	2.00		ug/Kg		101	70 - 130
F-53B Major	1.86	1.83		ug/Kg		98	70 - 130
HFPO-DA (GenX)	2.00	2.03		ug/Kg		102	70 - 130
F-53B Minor	1.88	1.52		ug/Kg		81	70 - 130
NaDONA	2.00	2.02		ug/Kg		101	70 - 130
DONA	1.88	1.91		ug/Kg		101	70 - 130
Ammonium Perfluorooctanoate (APFO)	2.08	2.10		ug/Kg		101	76 - 121

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	105		25 - 150
13C5 PFPeA	105		25 - 150
13C2 PFHxA	105		25 - 150
13C4 PFHpA	113		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	108		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFHxDA	107		25 - 150
13C2 PFUnA	108		25 - 150
13C2 PFDoA	112		25 - 150
13C2 PFTeDA	111		25 - 150
18O2 PFHxS	122		25 - 150
13C4 PFOS	106		25 - 150
13C8 FOSA	97		25 - 150

QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-320285/2-A
Matrix: Solid
Analysis Batch: 322465

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 320285

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
d3-NMeFOSAA	108		25 - 150
d5-NEtFOSAA	105		25 - 150
M2-6:2 FTS	107		25 - 150
M2-8:2 FTS	104		25 - 150
M2-4:2 FTS	101		25 - 150
d-N-MeFOSA-M	46		25 - 150
d-N-EtFOSA-M	43		25 - 150
d7-N-MeFOSE-M	32		10 - 120
d9-N-EtFOSE-M	32		10 - 120
13C3 HFPO-DA	111		25 - 150

Lab Sample ID: 320-53858-7 MS
Matrix: Solid
Analysis Batch: 322824

Client Sample ID: CON-5
Prep Type: Total/NA
Prep Batch: 320285

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Perfluorobutanoic acid (PFBA)	0.084	J	2.07	1.99		ug/Kg	☼	92	81 - 133
Perfluoropentanoic acid (PFPeA)	<0.080		2.07	1.93		ug/Kg	☼	93	79 - 120
Perfluorohexanoic acid (PFHxA)	<0.044		2.07	2.12		ug/Kg	☼	103	75 - 125
Perfluoroheptanoic acid (PFHpA)	<0.030		2.07	2.20		ug/Kg	☼	106	76 - 124
Perfluorooctanoic acid (PFOA)	<0.089		2.07	2.22		ug/Kg	☼	107	76 - 121
Perfluorononanoic acid (PFNA)	<0.037		2.07	2.25		ug/Kg	☼	109	74 - 126
Perfluorodecanoic acid (PFDA)	<0.023		2.07	2.27		ug/Kg	☼	110	74 - 124
Perfluoroundecanoic acid (PFUnA)	<0.037		2.07	2.27		ug/Kg	☼	110	74 - 114
Perfluorododecanoic acid (PFDoA)	<0.069		2.07	2.12		ug/Kg	☼	103	75 - 123
Perfluorotridecanoic acid (PFTriA)	<0.053		2.07	2.09		ug/Kg	☼	101	43 - 116
Perfluorotetradecanoic acid (PFTeA)	<0.056		2.07	2.00		ug/Kg	☼	97	22 - 129
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.046	* F1	2.07	2.12	F1	ug/Kg	☼	102	10 - 100
Perfluorobutanesulfonic acid (PFBS)	<0.026		1.83	1.75		ug/Kg	☼	96	73 - 142
Perfluoro-n-octadecanoic acid (PFODA)	<0.029	* F1	2.07	1.85	F1	ug/Kg	☼	90	10 - 84
Perfluoropentanesulfonic acid (PFPeS)	<0.021		1.94	1.79		ug/Kg	☼	92	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<0.032		1.88	1.71		ug/Kg	☼	91	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	<0.036		1.97	2.04		ug/Kg	☼	103	78 - 146
Perfluorooctanesulfonic acid (PFOS)	<0.21		1.92	2.09		ug/Kg	☼	109	69 - 131
Perfluorononanesulfonic acid (PFNS)	<0.021		1.99	2.12		ug/Kg	☼	107	70 - 130
Perfluorodecanesulfonic acid (PFDS)	<0.040		1.99	1.99		ug/Kg	☼	100	54 - 113
Perfluorooctanesulfonamide (FOSA)	<0.085		2.07	2.16		ug/Kg	☼	104	62 - 135
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.40		2.07	2.42		ug/Kg	☼	117	65 - 135

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QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-53858-7 MS

Matrix: Solid

Analysis Batch: 322824

Client Sample ID: CON-5

Prep Type: Total/NA

Prep Batch: 320285

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonami doacetic acid (NEtFOSAA)	<0.38		2.07	2.29		ug/Kg	☼	111	65 - 135
4:2 FTS	<0.38		1.93	2.00	J	ug/Kg	☼	104	50 - 150
6:2 FTS	<0.16		1.96	2.13		ug/Kg	☼	109	65 - 135
8:2 FTS	<0.26		1.98	1.69	J	ug/Kg	☼	85	65 - 135
10:2 FTS	<0.052		1.99	2.45		ug/Kg	☼	123	70 - 130
NMeFOSA	<0.042		2.07	2.19		ug/Kg	☼	106	65 - 135
Perfluorododecanesulfonic acid (PFDoS)	<0.062		2.00	1.75		ug/Kg	☼	88	70 - 130
NMeFOSE	<0.074		2.07	2.28		ug/Kg	☼	110	65 - 135
NEtFOSE	<0.037		2.07	2.19		ug/Kg	☼	106	65 - 135
ADONA	<0.020		2.04	1.93		ug/Kg	☼	95	70 - 130
F-53B Major	<0.028		1.93	2.35		ug/Kg	☼	122	70 - 130
HFPO-DA (GenX)	<0.11		2.07	2.09		ug/Kg	☼	101	70 - 130
F-53B Minor	<0.023		1.95	1.79		ug/Kg	☼	92	70 - 130
NaDONA	<0.020		2.07	1.95		ug/Kg	☼	95	70 - 130
DONA	<0.019		1.95	1.84		ug/Kg	☼	95	70 - 130
Ammonium Perfluorooctanoate (APFO)	<0.092		2.15	2.31		ug/Kg	☼	107	76 - 121

Isotope Dilution	MS MS		Limits
	%Recovery	Qualifier	
13C4 PFBA	103		25 - 150
13C5 PFPeA	104		25 - 150
13C2 PFHxA	101		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	101		25 - 150
13C5 PFNA	101		25 - 150
13C2 PFDA	109		25 - 150
13C2 PFHxDA	86		25 - 150
13C2 PFUnA	111		25 - 150
13C2 PFDoA	111		25 - 150
13C2 PFTeDA	100		25 - 150
18O2 PFHxS	131		25 - 150
13C4 PFOS	116		25 - 150
13C8 FOSA	92		25 - 150
d3-NMeFOSAA	76		25 - 150
d5-NEtFOSAA	74		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	113		25 - 150
M2-4:2 FTS	99		25 - 150
d-N-MeFOSA-M	56		25 - 150
d-N-EtFOSA-M	56		25 - 150
d7-N-MeFOSE-M	21		10 - 120
d9-N-EtFOSE-M	22		10 - 120
13C3 HFPO-DA	100		25 - 150

QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-53858-7 MSD
Matrix: Solid
Analysis Batch: 322824

Client Sample ID: CON-5
Prep Type: Total/NA
Prep Batch: 320285

Analyte	Sample	Sample Qualifier	Spike Added	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result			Result	Qualifier						
Perfluorobutanoic acid (PFBA)	0.084	J	2.00	1.94		ug/Kg	☼	93	81 - 133	3	30
Perfluoropentanoic acid (PFPeA)	<0.080		2.00	1.99		ug/Kg	☼	100	79 - 120	3	30
Perfluorohexanoic acid (PFHxA)	<0.044		2.00	2.17		ug/Kg	☼	109	75 - 125	2	30
Perfluoroheptanoic acid (PFHpA)	<0.030		2.00	2.05		ug/Kg	☼	103	76 - 124	7	30
Perfluorooctanoic acid (PFOA)	<0.089		2.00	2.14		ug/Kg	☼	107	76 - 121	4	30
Perfluorononanoic acid (PFNA)	<0.037		2.00	2.03		ug/Kg	☼	101	74 - 126	10	30
Perfluorodecanoic acid (PFDA)	<0.023		2.00	2.18		ug/Kg	☼	109	74 - 124	4	30
Perfluoroundecanoic acid (PFUnA)	<0.037		2.00	2.18		ug/Kg	☼	109	74 - 114	4	30
Perfluorododecanoic acid (PFDoA)	<0.069		2.00	2.16		ug/Kg	☼	108	75 - 123	2	30
Perfluorotridecanoic acid (PFTriA)	<0.053		2.00	2.08		ug/Kg	☼	104	43 - 116	1	30
Perfluorotetradecanoic acid (PFTeA)	<0.056		2.00	2.05		ug/Kg	☼	103	22 - 129	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.046	* F1	2.00	1.99		ug/Kg	☼	100	10 - 100	6	30
Perfluorobutanesulfonic acid (PFBS)	<0.026		1.77	1.60		ug/Kg	☼	90	73 - 142	9	30
Perfluoro-n-octadecanoic acid (PFODA)	<0.029	* F1	2.00	1.64		ug/Kg	☼	82	10 - 84	12	30
Perfluoropentanesulfonic acid (PFPeS)	<0.021		1.87	1.70		ug/Kg	☼	91	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	<0.032		1.82	1.63		ug/Kg	☼	90	75 - 121	5	30
Perfluoroheptanesulfonic Acid (PFHpS)	<0.036		1.90	1.98		ug/Kg	☼	104	78 - 146	3	30
Perfluorooctanesulfonic acid (PFOS)	<0.21		1.85	2.06		ug/Kg	☼	111	69 - 131	2	30
Perfluorononanesulfonic acid (PFNS)	<0.021		1.92	1.93		ug/Kg	☼	101	70 - 130	9	30
Perfluorodecanesulfonic acid (PFDS)	<0.040		1.92	1.97		ug/Kg	☼	102	54 - 113	1	30
Perfluorooctanesulfonamide (FOSA)	<0.085		2.00	2.04		ug/Kg	☼	102	62 - 135	5	30
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<0.40		2.00	2.28		ug/Kg	☼	114	65 - 135	6	30
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	<0.38		2.00	2.31		ug/Kg	☼	116	65 - 135	1	30
4:2 FTS	<0.38		1.87	2.15		ug/Kg	☼	115	50 - 150	7	30
6:2 FTS	<0.16		1.89	2.05		ug/Kg	☼	108	65 - 135	4	30
8:2 FTS	<0.26		1.91	1.77	J	ug/Kg	☼	93	65 - 135	5	30
10:2 FTS	<0.052		1.92	2.41		ug/Kg	☼	125	70 - 130	2	30
NMeFOSA	<0.042		2.00	1.97		ug/Kg	☼	99	65 - 135	11	30
Perfluorododecanesulfonic acid (PFDoS)	<0.062		1.93	1.77		ug/Kg	☼	92	70 - 130	1	30
NMeFOSE	<0.074		2.00	2.06		ug/Kg	☼	103	65 - 135	10	30
NEtFOSE	<0.037		2.00	2.15		ug/Kg	☼	108	65 - 135	2	30
ADONA	<0.020		1.97	1.85		ug/Kg	☼	94	70 - 130	4	30
F-53B Major	<0.028		1.86	2.31		ug/Kg	☼	124	70 - 130	2	30
HFPO-DA (GenX)	<0.11		2.00	1.64		ug/Kg	☼	82	70 - 130	24	30
F-53B Minor	<0.023		1.88	1.70		ug/Kg	☼	90	70 - 130	5	30
NaDONA	<0.020		2.00	1.87		ug/Kg	☼	94	70 - 130	4	30

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QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-53858-7 MSD
Matrix: Solid
Analysis Batch: 322824

Client Sample ID: CON-5
Prep Type: Total/NA
Prep Batch: 320285

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DONA	<0.019		1.88	1.77		ug/Kg	☒	94	70 - 130	4	30
Ammonium Perfluorooctanoate (APFO)	<0.092		2.08	2.23		ug/Kg	☒	107	76 - 121	4	30
		MSD %Recovery	MSD Qualifier								
Isotope Dilution			Limits								
13C4 PFBA	100		25 - 150								
13C5 PFPeA	100		25 - 150								
13C2 PFHxA	98		25 - 150								
13C4 PFHpA	104		25 - 150								
13C4 PFOA	100		25 - 150								
13C5 PFNA	101		25 - 150								
13C2 PFDA	104		25 - 150								
13C2 PFHxDA	92		25 - 150								
13C2 PFUnA	108		25 - 150								
13C2 PFDaA	108		25 - 150								
13C2 PFTeDA	96		25 - 150								
18O2 PFHxS	130		25 - 150								
13C4 PFOS	115		25 - 150								
13C8 FOSA	87		25 - 150								
d3-NMeFOSAA	76		25 - 150								
d5-NEtFOSAA	71		25 - 150								
M2-6:2 FTS	92		25 - 150								
M2-8:2 FTS	105		25 - 150								
M2-4:2 FTS	88		25 - 150								
d-N-MeFOSA-M	43		25 - 150								
d-N-EtFOSA-M	42		25 - 150								
d7-N-MeFOSE-M	19		10 - 120								
d9-N-EtFOSE-M	18		10 - 120								
13C3 HFPO-DA	120		25 - 150								

Lab Sample ID: MB 320-321186/1-A
Matrix: Water
Analysis Batch: 321967

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 321186

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.35		2.0	0.35	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorododecanoic acid (PFDaA)	<0.55		2.0	0.55	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorobutanesulfonic acid (PFBS)	1.09	J	2.0	0.20	ng/L		09/06/19 06:13	09/08/19 09:36	1

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QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-321186/1-A
Matrix: Water
Analysis Batch: 321967

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 321186

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-n-octadecanoic acid (PFODA)	<0.46		2.0	0.46	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorohexanesulfonic acid (PFHxS)	0.351	J	2.0	0.17	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.19		2.0	0.19	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorooctanesulfonic acid (PFOS)	5.79		2.0	0.54	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorononanesulfonic acid (PFNS)	<0.16		2.0	0.16	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorooctanesulfonamide (FOSA)	<0.35		2.0	0.35	ng/L		09/06/19 06:13	09/08/19 09:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		09/06/19 06:13	09/08/19 09:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		09/06/19 06:13	09/08/19 09:36	1
4:2 FTS	<5.2		20	5.2	ng/L		09/06/19 06:13	09/08/19 09:36	1
6:2 FTS	<2.0		20	2.0	ng/L		09/06/19 06:13	09/08/19 09:36	1
8:2 FTS	<2.0		20	2.0	ng/L		09/06/19 06:13	09/08/19 09:36	1
10:2 FTS	<0.19		2.0	0.19	ng/L		09/06/19 06:13	09/08/19 09:36	1
NEtFOSA	<0.87		2.0	0.87	ng/L		09/06/19 06:13	09/08/19 09:36	1
NMeFOSA	<0.43		2.0	0.43	ng/L		09/06/19 06:13	09/08/19 09:36	1
Perfluorododecanesulfonic acid (PFDoS)	<0.45		2.0	0.45	ng/L		09/06/19 06:13	09/08/19 09:36	1
NMeFOSE	<1.4		4.0	1.4	ng/L		09/06/19 06:13	09/08/19 09:36	1
NEtFOSE	<0.85		2.0	0.85	ng/L		09/06/19 06:13	09/08/19 09:36	1
ADONA	<0.19		2.1	0.19	ng/L		09/06/19 06:13	09/08/19 09:36	1
F-53B Major	<0.24		2.0	0.24	ng/L		09/06/19 06:13	09/08/19 09:36	1
HFPO-DA (GenX)	<1.5		4.0	1.5	ng/L		09/06/19 06:13	09/08/19 09:36	1
F-53B Minor	<0.32		2.0	0.32	ng/L		09/06/19 06:13	09/08/19 09:36	1
NaDONA	<0.19		2.1	0.19	ng/L		09/06/19 06:13	09/08/19 09:36	1
DONA	<0.18		2.0	0.18	ng/L		09/06/19 06:13	09/08/19 09:36	1
Ammonium Perfluorooctanoate (APFO)	<0.88		2.1	0.88	ng/L		09/06/19 06:13	09/08/19 09:36	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	101		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C5 PFPeA	98		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C2 PFHxA	95		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C4 PFHpA	104		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C4 PFOA	101		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C5 PFNA	100		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C2 PFDA	98		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C2 PFHxDA	90		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C2 PFUnA	100		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C2 PFDoA	96		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C2 PFTeDA	104		25 - 150	09/06/19 06:13	09/08/19 09:36	1
18O2 PFHxS	108		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C4 PFOS	101		25 - 150	09/06/19 06:13	09/08/19 09:36	1
13C8 FOSA	95		25 - 150	09/06/19 06:13	09/08/19 09:36	1
d3-NMeFOSAA	88		25 - 150	09/06/19 06:13	09/08/19 09:36	1

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QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-321186/1-A
Matrix: Water
Analysis Batch: 321967

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 321186

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
d5-NEtFOSAA	83		25 - 150	09/06/19 06:13	09/08/19 09:36	1
M2-6:2 FTS	98		25 - 150	09/06/19 06:13	09/08/19 09:36	1
M2-8:2 FTS	93		25 - 150	09/06/19 06:13	09/08/19 09:36	1
M2-4:2 FTS	89		25 - 150	09/06/19 06:13	09/08/19 09:36	1
d-N-MeFOSA-M	57		20 - 150	09/06/19 06:13	09/08/19 09:36	1
d-N-EtFOSA-M	40		20 - 150	09/06/19 06:13	09/08/19 09:36	1
d7-N-MeFOSE-M	26		10 - 120	09/06/19 06:13	09/08/19 09:36	1
d9-N-EtFOSE-M	23		10 - 120	09/06/19 06:13	09/08/19 09:36	1
13C3 HFPO-DA	97		25 - 150	09/06/19 06:13	09/08/19 09:36	1

Lab Sample ID: LCS 320-321186/2-A
Matrix: Water
Analysis Batch: 321967

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 321186

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Perfluorobutanoic acid (PFBA)	40.0	42.1		ng/L		105	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	42.2		ng/L		106	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	42.8		ng/L		107	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	41.5		ng/L		104	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	42.6		ng/L		106	64 - 124
Perfluorononanoic acid (PFNA)	40.0	42.3		ng/L		106	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	44.3		ng/L		111	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	44.1		ng/L		110	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	45.1		ng/L		113	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	49.6		ng/L		124	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	44.4		ng/L		111	68 - 128
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.8		ng/L		112	72 - 132
Perfluorobutanesulfonic acid (PFBS)	35.4	32.7		ng/L		92	73 - 133
Perfluoro-n-octadecanoic acid (PFODA)	40.0	43.3		ng/L		108	74 - 134
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.7		ng/L		98	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.1		ng/L		94	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	44.0		ng/L		116	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	39.3		ng/L		106	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	44.4		ng/L		116	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	44.8		ng/L		116	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	42.8		ng/L		107	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.4		ng/L		104	67 - 127

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-321186/2-A
Matrix: Water
Analysis Batch: 321967

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 321186

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonami doacetic acid (NETFOSAA)	40.0	42.4		ng/L		106	65 - 125
4:2 FTS	37.4	42.4		ng/L		114	70 - 130
6:2 FTS	37.9	44.5		ng/L		117	66 - 126
8:2 FTS	38.3	43.6		ng/L		114	67 - 127
10:2 FTS	38.6	43.4		ng/L		113	70 - 130
NMeFOSA	40.0	45.9		ng/L		115	65 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	42.4		ng/L		109	70 - 130
NMeFOSE	40.0	43.7		ng/L		109	65 - 135
NEtFOSE	40.0	43.5		ng/L		109	65 - 135
ADONA	39.5	43.9		ng/L		111	70 - 130
F-53B Major	37.3	40.5		ng/L		109	70 - 130
HFPO-DA (GenX)	40.0	40.2		ng/L		100	70 - 130
F-53B Minor	37.7	35.1		ng/L		93	70 - 130
NaDONA	40.0	44.5		ng/L		111	70 - 130
DONA	37.7	41.9		ng/L		111	70 - 130
Ammonium Perfluorooctanoate (APFO)	41.6	44.3		ng/L		106	64 - 124

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	105		25 - 150
13C5 PFPeA	99		25 - 150
13C2 PFHxA	98		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	100		25 - 150
13C2 PFDA	99		25 - 150
13C2 PFHxDA	96		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDaA	95		25 - 150
13C2 PFTeDA	114		25 - 150
18O2 PFHxS	110		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	93		25 - 150
d3-NMeFOSAA	87		25 - 150
d5-NEtFOSAA	87		25 - 150
M2-6:2 FTS	90		25 - 150
M2-8:2 FTS	89		25 - 150
M2-4:2 FTS	91		25 - 150
d-N-MeFOSA-M	61		20 - 150
d-N-EtFOSA-M	39		20 - 150
d7-N-MeFOSE-M	29		10 - 120
d9-N-EtFOSE-M	25		10 - 120
13C3 HFPO-DA	106		25 - 150

QC Sample Results

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-321186/3-A
Matrix: Water
Analysis Batch: 322513

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 321186

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD
									Limit
Perfluorobutanoic acid (PFBA)	40.0	42.8		ng/L		107	70 - 130	2	30
Perfluoropentanoic acid (PFPeA)	40.0	40.7		ng/L		102	66 - 126	4	30
Perfluorohexanoic acid (PFHxA)	40.0	44.4		ng/L		111	66 - 126	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.4		ng/L		106	66 - 126	2	30
Perfluorooctanoic acid (PFOA)	40.0	41.4		ng/L		103	64 - 124	3	30
Perfluorononanoic acid (PFNA)	40.0	44.7		ng/L		112	68 - 128	6	30
Perfluorodecanoic acid (PFDA)	40.0	44.4		ng/L		111	69 - 129	0	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.3		ng/L		106	60 - 120	4	30
Perfluorododecanoic acid (PFDoA)	40.0	42.0		ng/L		105	71 - 131	7	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.7		ng/L		109	72 - 132	13	30
Perfluorotetradecanoic acid (PFTeA)	40.0	42.9		ng/L		107	68 - 128	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.5		ng/L		111	72 - 132	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.9		ng/L		110	73 - 133	17	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	42.2		ng/L		105	74 - 134	3	30
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.1		ng/L		96	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.5		ng/L		95	63 - 123	1	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.3		ng/L		111	68 - 128	4	30
Perfluorooctanesulfonic acid (PFOS)	37.1	40.8		ng/L		110	67 - 127	4	30
Perfluorononanesulfonic acid (PFNS)	38.4	42.7		ng/L		111	70 - 130	4	30
Perfluorodecanesulfonic acid (PFDS)	38.6	43.5		ng/L		113	68 - 128	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		112	70 - 130	4	30
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	40.0	44.5		ng/L		111	67 - 127	7	30
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	40.0	43.7		ng/L		109	65 - 125	3	30
4:2 FTS	37.4	38.9		ng/L		104	70 - 130	9	30
6:2 FTS	37.9	43.0		ng/L		113	66 - 126	4	30
8:2 FTS	38.3	38.9		ng/L		102	67 - 127	11	30
10:2 FTS	38.6	41.2		ng/L		107	70 - 130	5	30
NMeFOSA	40.0	43.9		ng/L		110	65 - 135	4	30
Perfluorododecanesulfonic acid (PFDoS)	38.7	43.1		ng/L		111	70 - 130	2	30
NMeFOSE	40.0	44.2		ng/L		110	65 - 135	1	30
NEtFOSE	40.0	42.1		ng/L		105	65 - 135	3	30
ADONA	39.5	45.2		ng/L		114	70 - 130	3	30
F-53B Major	37.3	43.0		ng/L		115	70 - 130	6	30
HFPO-DA (GenX)	40.0	41.4		ng/L		104	70 - 130	3	30
F-53B Minor	37.7	36.0		ng/L		96	70 - 130	3	30
NaDONA	40.0	45.7		ng/L		114	70 - 130	3	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: AECOM
 Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-321186/3-A
Matrix: Water
Analysis Batch: 322513

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 321186

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DONA	37.7	43.1		ng/L		114	70 - 130	3	30
Ammonium Perfluorooctanoate (APFO)	41.6	43.1		ng/L		103	64 - 124	3	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	106		25 - 150
13C5 PFPeA	103		25 - 150
13C2 PFHxA	101		25 - 150
13C4 PFHpA	104		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	101		25 - 150
13C2 PFDA	104		25 - 150
13C2 PFHxDA	86		25 - 150
13C2 PFUnA	102		25 - 150
13C2 PFDaA	104		25 - 150
13C2 PFTeDA	110		25 - 150
18O2 PFHxS	113		25 - 150
13C4 PFOS	102		25 - 150
13C8 FOSA	94		25 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	94		25 - 150
M2-6:2 FTS	100		25 - 150
M2-8:2 FTS	101		25 - 150
M2-4:2 FTS	99		25 - 150
d-N-MeFOSA-M	64		20 - 150
d-N-EtFOSA-M	44		20 - 150
d7-N-MeFOSE-M	30		10 - 120
d9-N-EtFOSE-M	27		10 - 120
13C3 HFPO-DA	98		25 - 150

QC Association Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

LCMS

Prep Batch: 320285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-3	CON-1	Total/NA	Solid	SHAKE	
320-53858-4	CON-2	Total/NA	Solid	SHAKE	
320-53858-5	CON-3	Total/NA	Solid	SHAKE	
320-53858-6	CON-4	Total/NA	Solid	SHAKE	
320-53858-7	CON-5	Total/NA	Solid	SHAKE	
MB 320-320285/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-320285/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-53858-7 MS	CON-5	Total/NA	Solid	SHAKE	
320-53858-7 MSD	CON-5	Total/NA	Solid	SHAKE	

Prep Batch: 321186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-1	EB08282019	Total/NA	Water	3535	
320-53858-2	FB08282019	Total/NA	Water	3535	
MB 320-321186/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-321186/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-321186/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 321967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-1	EB08282019	Total/NA	Water	537 (modified)	321186
320-53858-2	FB08282019	Total/NA	Water	537 (modified)	321186
MB 320-321186/1-A	Method Blank	Total/NA	Water	537 (modified)	321186
LCS 320-321186/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	321186

Analysis Batch: 322465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-4	CON-2	Total/NA	Solid	537 (modified)	320285
MB 320-320285/1-A	Method Blank	Total/NA	Solid	537 (modified)	320285
LCS 320-320285/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	320285

Analysis Batch: 322513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-321186/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	321186

Analysis Batch: 322824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-3	CON-1	Total/NA	Solid	537 (modified)	320285
320-53858-5	CON-3	Total/NA	Solid	537 (modified)	320285
320-53858-6	CON-4	Total/NA	Solid	537 (modified)	320285
320-53858-7	CON-5	Total/NA	Solid	537 (modified)	320285
320-53858-7 MS	CON-5	Total/NA	Solid	537 (modified)	320285
320-53858-7 MSD	CON-5	Total/NA	Solid	537 (modified)	320285

General Chemistry

Analysis Batch: 320917

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-3	CON-1	Total/NA	Solid	D 2216	
320-53858-4	CON-2	Total/NA	Solid	D 2216	
320-53858-5	CON-3	Total/NA	Solid	D 2216	

Eurofins TestAmerica, Sacramento

QC Association Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

General Chemistry (Continued)

Analysis Batch: 320917 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53858-6	CON-4	Total/NA	Solid	D 2216	
320-53858-7	CON-5	Total/NA	Solid	D 2216	

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Lab Chronicle

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: EB08282019

Date Collected: 08/28/19 09:00

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.6 mL	10.0 mL	321186	09/06/19 06:13	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			321967	09/08/19 12:29	P1N	TAL SAC

Client Sample ID: FB08282019

Date Collected: 08/28/19 09:05

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.7 mL	10.0 mL	321186	09/06/19 06:13	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			321967	09/08/19 12:39	P1N	TAL SAC

Client Sample ID: CON-1

Date Collected: 08/28/19 16:00

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			320917	09/05/19 10:30	HRB	TAL SAC

Client Sample ID: CON-1

Date Collected: 08/28/19 16:00

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-3

Matrix: Solid

Percent Solids: 95.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.17 g	10.0 mL	320285	09/03/19 11:57	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			322824	09/12/19 19:51	S1M	TAL SAC

Client Sample ID: CON-2

Date Collected: 08/28/19 16:05

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			320917	09/05/19 10:30	HRB	TAL SAC

Client Sample ID: CON-2

Date Collected: 08/28/19 16:05

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-4

Matrix: Solid

Percent Solids: 95.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.21 g	10.0 mL	320285	09/03/19 11:57	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			322465	09/11/19 08:24	P1N	TAL SAC

Lab Chronicle

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Client Sample ID: CON-3

Date Collected: 08/28/19 16:10

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			320917	09/05/19 10:30	HRB	TAL SAC

Client Sample ID: CON-3

Date Collected: 08/28/19 16:10

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-5

Matrix: Solid

Percent Solids: 95.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.24 g	10.0 mL	320285	09/03/19 11:57	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			322824	09/12/19 20:01	S1M	TAL SAC

Client Sample ID: CON-4

Date Collected: 08/28/19 16:15

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			320917	09/05/19 10:30	HRB	TAL SAC

Client Sample ID: CON-4

Date Collected: 08/28/19 16:15

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-6

Matrix: Solid

Percent Solids: 93.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			4.98 g	10.0 mL	320285	09/03/19 11:57	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			322824	09/12/19 20:10	S1M	TAL SAC

Client Sample ID: CON-5

Date Collected: 08/28/19 16:20

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			320917	09/05/19 10:30	HRB	TAL SAC

Client Sample ID: CON-5

Date Collected: 08/28/19 16:20

Date Received: 08/30/19 09:20

Lab Sample ID: 320-53858-7

Matrix: Solid

Percent Solids: 95.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.06 g	10.0 mL	320285	09/03/19 11:57	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			322824	09/12/19 20:20	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State Program	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	DoD	L2468	01-20-21
ANAB	DOE	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	08-09-21
Arizona	State	AZ0708	08-11-20
Arizona	State Program	AZ0708	08-11-20
Arkansas DEQ	State Program	88-0691	06-17-20
California	State	2897	01-31-20
California	State Program	2897	01-31-20
Colorado	State	CA0004	08-31-20
Colorado	State Program	CA00044	08-31-20
Connecticut	State	PH-0691	06-30-21
Connecticut	State Program	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20
Hawaii	State Program	N/A	01-29-20
Illinois	NELAP	200060	03-17-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	30612	06-30-20
Louisiana	NELAP	01944	06-30-20
Maine	State Program	CA0004	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State Program	CA00044	07-31-20
New Hampshire	NELAP	2997	04-20-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399	05-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	Federal	LE148388-0	07-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	Federal	P330-18-00239	01-17-21
USDA	US Federal Programs	P330-18-00239	07-31-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA00044	02-29-20
Vermont	State	VT-4040	04-16-20
Vermont	State Program	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
Washington	State Program	C581	05-05-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Sacramento

Accreditation/Certification Summary

Client: AECOM
Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia (DW)	State	9930C	12-31-19
West Virginia (DW)	State Program	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Method Summary

Client: AECOM

Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: AECOM

Project/Site: ATC - Madison 60611431

Job ID: 320-53858-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-53858-1	EB08282019	Water	08/28/19 09:00	08/30/19 09:20	
320-53858-2	FB08282019	Water	08/28/19 09:05	08/30/19 09:20	
320-53858-3	CON-1	Solid	08/28/19 16:00	08/30/19 09:20	
320-53858-4	CON-2	Solid	08/28/19 16:05	08/30/19 09:20	
320-53858-5	CON-3	Solid	08/28/19 16:10	08/30/19 09:20	
320-53858-6	CON-4	Solid	08/28/19 16:15	08/30/19 09:20	
320-53858-7	CON-5	Solid	08/28/19 16:20	08/30/19 09:20	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 320-53858-1

Login Number: 53858

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Nuval, Mark-Anthony M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	136831
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	