

## ANALYTICAL REPORT

Job Number: 280-88941-1

Job Description: ADEM PFC Sampling Water - Gadsden

For:

Alabama Dept. Environmental Management  
2715 Sandlin Road, SW  
Decatur, AL 35603  
Attention: Mr. Ed Poolos



Approved for release.  
Stephanie K Rothmeyer  
Project Manager I  
10/17/2016 2:59 PM

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10/17/2016

The test results in this report relate only to the samples in this report and meet all requirements of NELAP, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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## Definitions/Glossary

Client: Alabama Dept. Environmental Management  
Project/Site: ADEM PFC Sampling Water - Gadsden

TestAmerica Job ID: 280-88941-1

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### Qualifiers

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#### LCMS

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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### Glossary

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Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: Alabama Dept. Environmental Management**

**Project: ADEM PFC Sampling Water - Gadsden**

**Report Number: 280-88941-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

### **RECEIPT**

The samples were received on 9/29/2016 at 7:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

### **PERFLUORINATED HYDROCARBONS (PFC)**

Samples GADSDEN-RAW (280-88941-1) and GADSDEN-FINISHED (280-88941-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 10/11/2016 and analyzed on 10/12/2016.

During the solid phase extraction process, the following sample clogged the cartridge: GADSDEN-RAW (280-88941-1). Therefore, the IS volume was adjusted to match the volume of sample extracted. As such, reporting limits (RLs) are not impacted.

Internal standard responses were outside of acceptance limits for the following sample: GADSDEN-RAW (280-88941-1). The sample shows evidence of matrix interference.

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

### **PERFLUOROCTANE SULFONAMIDE (FOSA)**

Samples GADSDEN-RAW (280-88941-1) and GADSDEN-FINISHED (280-88941-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 10/10/2016 and analyzed on 10/12/2016.

The Internal Standard 13C8 FOSA (IS) failed low in batch 345862 in the Method Blank and/or low in the LCS in batch 346074. The LCS was in control for the target analyte, FOSA. Some samples also failed low for IS, but were non-detect. A low internal standard recovery would result in a biased high result for the target analyte. Since samples were non-detect, they are reported.

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

# Client Sample Results

Client: Alabama Dept. Environmental Management  
Project/Site: ADEM PFC Sampling Water - Gadsden

TestAmerica Job ID: 280-88941-1

**Client Sample ID: GADSDEN-RAW**

**Lab Sample ID: 280-88941-1**

Date Collected: 09/27/16 19:48

Matrix: Water

Date Received: 09/29/16 07:05

**Method: DV-LC-0012 - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.060		0.025	0.010	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorobutanoic acid (PFBA)	0.022	J	0.025	0.012	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorodecane sulfonate (PFDS)	0.012	U	0.025	0.012	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorodecanoic acid (PFDA)	0.0098	U	0.025	0.0098	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorododecanoic acid (PFDoA)	0.019	U	0.038	0.019	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluoroheptanoic acid (PFHpA)	0.018	J	0.038	0.017	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorohexane Sulfonate (PFHxS)	0.0088	U	0.038	0.0088	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorohexanoic acid (PFHxA)	0.062		0.025	0.0037	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorononanoic acid (PFNA)	0.022	U	0.050	0.022	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorooctanoic acid (PFOA)	0.031		0.025	0.012	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorooctane Sulfonate (PFOS)	0.032	J	0.038	0.017	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluoropentanoic acid (PFPA)	0.070		0.038	0.014	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorotetradecanoic acid (PFTeA)	0.018	U	0.038	0.018	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluorotridecanoic Acid (PFTriA)	0.022	U	0.050	0.022	ug/L		10/11/16 18:47	10/12/16 23:46	1
Perfluoroundecanoic acid (PFUnA)	0.0087	U	0.025	0.0087	ug/L		10/11/16 18:47	10/12/16 23:46	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C8 PFOA	107		60 - 155				10/11/16 18:47	10/12/16 23:46	1
13C8 PFOS	100		45 - 130				10/11/16 18:47	10/12/16 23:46	1

**Method: PFC -FOSA - FOSA in Water (LC/MS/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0057	U	0.050	0.0057	ug/L		10/10/16 19:00	10/12/16 17:49	1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-88941-2**

Date Collected: 09/28/16 10:00

Matrix: Water

Date Received: 09/29/16 07:05

**Method: DV-LC-0012 - Perfluorinated Hydrocarbons**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.072		0.019	0.0079	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorobutanoic acid (PFBA)	0.021		0.019	0.0094	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorodecane sulfonate (PFDS)	0.0088	U	0.019	0.0088	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorodecanoic acid (PFDA)	0.0075	U	0.019	0.0075	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.029	0.014	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluoroheptanoic acid (PFHpA)	0.020	J	0.029	0.013	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorohexanoic acid (PFHxA)	0.062		0.019	0.0028	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorononanoic acid (PFNA)	0.017	U	0.038	0.017	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorooctanoic acid (PFOA)	0.036		0.019	0.0094	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorooctane Sulfonate (PFOS)	0.039		0.029	0.013	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluoropentanoic acid (PFPA)	0.077		0.029	0.010	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorotetradecanoic acid (PFTeA)	0.014	U	0.029	0.014	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluorotridecanoic Acid (PFTriA)	0.017	U	0.038	0.017	ug/L		10/11/16 18:47	10/12/16 23:59	1
Perfluoroundecanoic acid (PFUnA)	0.0066	U	0.019	0.0066	ug/L		10/11/16 18:47	10/12/16 23:59	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C8 PFOA	109		60 - 155				10/11/16 18:47	10/12/16 23:59	1
13C8 PFOS	98		45 - 130				10/11/16 18:47	10/12/16 23:59	1



# Client Sample Results

Client: Alabama Dept. Environmental Management  
Project/Site: ADEM PFC Sampling Water - Gadsden

TestAmerica Job ID: 280-88941-1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-88941-2**

**Date Collected: 09/28/16 10:00**

**Matrix: Water**

**Date Received: 09/29/16 07:05**

**Method: PFC -FOSA - FOSA in Water (LC/MS/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0051	U	0.045	0.0051	ug/L		10/10/16 19:00	10/12/16 18:02	1