

## ANALYTICAL REPORT

Job Number: 280-92266-1

Job Description: ADEM PFC Sampling - 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  
12/27/2016 12:13 PM

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12/27/2016

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 - Gadsden

TestAmerica Job ID: 280-92266-1

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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.
B	Compound was found in the blank and sample.

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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 - Gadsden**

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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 12/15/2016 at 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2°C.

The Sampler field on the COC was not filled out.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): GADSDEN-RAW (280-92266-1). The container labels list a sample collection time of 2100, while the COC lists a sample collection time of 0200. The sample was logged per the COC.

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

Samples GADSDEN-RAW (280-92266-1) and GADSDEN-FINISHED (280-92266-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 12/20/2016 and analyzed on 12/22/2016.

Perfluorohexanoic acid (PFHxA) was detected in method blank MB 280-356258/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

### **PERFLUOROOCTANE SULFONAMIDE (FOSA)**

Samples GADSDEN-RAW (280-92266-1) and GADSDEN-FINISHED (280-92266-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 12/19/2016 and analyzed on 12/21/2016.

Internal standard responses were outside of acceptance limits for the following samples: GADSDEN-RAW (280-92266-1), GADSDEN-FINISHED (280-92266-2). The samples show evidence of matrix interference. GADSDEN-RAW (280-92266-1) required re-extraction at 1mL, due to matrix causing interference with recovering 13C4 PFBA (IS).

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  
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TestAmerica Job ID: 280-92266-1

**Client Sample ID: GADSDEN-RAW**

**Lab Sample ID: 280-92266-1**

Date Collected: 12/14/16 02:00

Matrix: Water

Date Received: 12/15/16 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.036		0.018	0.0075	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorobutanoic acid (PFBA)	0.014	J	0.018	0.0089	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorodecane sulfonate (PFDS)	0.0083	U	0.018	0.0083	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorodecanoic acid (PFDA)	0.0071	U	0.018	0.0071	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.027	0.014	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluoroheptanoic acid (PFHpA)	0.018	J	0.027	0.012	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorohexane Sulfonate (PFHxS)	0.0064	U	0.027	0.0064	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorohexanoic acid (PFHxA)	0.089	B	0.018	0.0027	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorooctanoic acid (PFOA)	0.031		0.018	0.0089	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorooctane Sulfonate (PFOS)	0.012	U	0.027	0.012	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluoropentanoic acid (PFPA)	0.069		0.027	0.0099	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.027	0.013	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.036	0.016	ug/L		12/20/16 09:46	12/22/16 10:15	1
Perfluoroundecanoic acid (PFUnA)	0.0063	U	0.018	0.0063	ug/L		12/20/16 09:46	12/22/16 10:15	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	108		60 - 155				12/20/16 09:46	12/22/16 10:15	1
13C8 PFOS	107		45 - 130				12/20/16 09:46	12/22/16 10:15	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0051	U	0.044	0.0051	ug/L		12/19/16 13:08	12/21/16 01:10	1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-92266-2**

Date Collected: 12/14/16 13:00

Matrix: Water

Date Received: 12/15/16 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.047		0.018	0.0075	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorobutanoic acid (PFBA)	0.019		0.018	0.0089	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorodecane sulfonate (PFDS)	0.0083	U	0.018	0.0083	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorodecanoic acid (PFDA)	0.0071	U	0.018	0.0071	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.027	0.014	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluoroheptanoic acid (PFHpA)	0.019	J	0.027	0.012	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorohexane Sulfonate (PFHxS)	0.0063	U	0.027	0.0063	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorohexanoic acid (PFHxA)	0.087	B	0.018	0.0026	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorooctanoic acid (PFOA)	0.026		0.018	0.0089	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorooctane Sulfonate (PFOS)	0.016	J	0.027	0.012	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluoropentanoic acid (PFPA)	0.074		0.027	0.0099	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.027	0.013	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.036	0.016	ug/L		12/20/16 09:46	12/22/16 10:27	1
Perfluoroundecanoic acid (PFUnA)	0.0063	U	0.018	0.0063	ug/L		12/20/16 09:46	12/22/16 10:27	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				12/20/16 09:46	12/22/16 10:27	1
13C8 PFOS	105		45 - 130				12/20/16 09:46	12/22/16 10:27	1

# Client Sample Results

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

TestAmerica Job ID: 280-92266-1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-92266-2**

**Date Collected: 12/14/16 13:00**

**Matrix: Water**

**Date Received: 12/15/16 09:50**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0052	U	0.045	0.0052	ug/L		12/19/16 13:08	12/21/16 01:22	1