

## ANALYTICAL REPORT

Job Number: 280-86732-1

Job Description: ADEM PFC Sampling

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  
9/1/2016 3:55 PM

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The test results in this report relate only to the samples in this report and meet all requirements of NELAC, 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

TestAmerica Job ID: 280-86732-1

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### Qualifiers

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#### LCMS

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

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### Glossary

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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, 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)

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## CASE NARRATIVE

**Client: Alabama Dept. Environmental Management**

**Project: ADEM PFC Sampling**

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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 8/10/2016 at 7:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

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

Samples GADSDEN-RAW (280-86732-1) and GADSDEN-FINISHED (280-86732-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 08/23/2016 and analyzed on 08/26/2016.

13C8 PFOS failed the surrogate recovery criteria high for MB 280-339179/1-A. All associated sample surrogates were in control.

The continuing calibration verification (CCV) associated with batch 280-339904 recovered above the upper control limit for Perfluorotetradecanoic acid and Perfluorotridecanoic acid. The samples associated with this CCV were non-detect for the affected analytes; therefore, the data have been reported.

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 (280-86732-1) and GADSDEN-FINISHED (280-86732-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 08/23/2016 and analyzed on 08/31/2016.

No 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

TestAmerica Job ID: 280-86732-1

## Client Sample ID: GADSDEN-RAW

Date Collected: 08/09/16 11:00

Date Received: 08/10/16 07:45

## Lab Sample ID: 280-86732-1

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.069		0.018	0.0076	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorobutanoic acid (PFBA)	0.017	J	0.018	0.0091	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorodecane sulfonate (PFDS)	0.0085	U	0.018	0.0085	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorodecanoic acid (PFDA)	0.0072	U	0.018	0.0072	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.028	0.014	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluoroheptanoic acid (PFHpA)	0.016	J	0.028	0.012	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorohexane Sulfonate (PFHxS)	0.0064	U	0.028	0.0064	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorohexanoic acid (PFHxA)	0.047		0.018	0.0027	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorooctanoic acid (PFOA)	0.027		0.018	0.0091	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorooctane Sulfonate (PFOS)	0.042		0.028	0.012	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluoropentanoic acid (PFPA)	0.074		0.028	0.010	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorotetradecanoic acid (PFTeA)	0.014	U	0.028	0.014	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.037	0.016	ug/L		08/23/16 18:37	08/26/16 17:54	1
Perfluoroundecanoic acid (PFUnA)	0.0064	U	0.018	0.0064	ug/L		08/23/16 18:37	08/26/16 17:54	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	112		60 - 155				08/23/16 18:37	08/26/16 17:54	1
13C8 PFOS	114		45 - 130				08/23/16 18:37	08/26/16 17:54	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0053	U	0.047	0.0053	ug/L		08/23/16 18:42	08/31/16 15:42	1

## Client Sample ID: GADSDEN-FINISHED

Date Collected: 08/09/16 11:02

Date Received: 08/10/16 07:45

## Lab Sample ID: 280-86732-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.066		0.018	0.0076	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorobutanoic acid (PFBA)	0.020		0.018	0.0091	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorodecane sulfonate (PFDS)	0.0085	U	0.018	0.0085	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorodecanoic acid (PFDA)	0.0072	U	0.018	0.0072	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.028	0.014	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluoroheptanoic acid (PFHpA)	0.015	J	0.028	0.012	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorohexane Sulfonate (PFHxS)	0.0064	U	0.028	0.0064	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorohexanoic acid (PFHxA)	0.042		0.018	0.0027	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorooctanoic acid (PFOA)	0.026		0.018	0.0091	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorooctane Sulfonate (PFOS)	0.050		0.028	0.012	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluoropentanoic acid (PFPA)	0.070		0.028	0.010	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorotetradecanoic acid (PFTeA)	0.014	U	0.028	0.014	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.037	0.016	ug/L		08/23/16 18:37	08/26/16 18:07	1
Perfluoroundecanoic acid (PFUnA)	0.0064	U	0.018	0.0064	ug/L		08/23/16 18:37	08/26/16 18:07	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	119		60 - 155				08/23/16 18:37	08/26/16 18:07	1
13C8 PFOS	126		45 - 130				08/23/16 18:37	08/26/16 18:07	1

# Client Sample Results

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

TestAmerica Job ID: 280-86732-1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-86732-2**

**Date Collected: 08/09/16 11:02**

**Matrix: Water**

**Date Received: 08/10/16 07:45**

**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		08/23/16 18:42	08/31/16 15:54	1