

## ANALYTICAL REPORT

Job Number: 280-116563-1

Job Description: ADEM PFC Sampling - Gadsden

For:

Alabama Dept. Environmental Management  
2715 Sandlin Road, SW  
Decatur, AL 35603

Attention: Mr. Bruce Freeman



Approved for release.  
DiLea R Bindel  
Project Manager I  
11/15/2018 3:34 PM

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11/15/2018

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 - Gadsden

TestAmerica Job ID: 280-116563-1

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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.
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: Alabama Dept. Environmental Management**

**Project: ADEM PFC Sampling - Gadsden**

**Report Number: 280-116563-1**

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 11/3/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

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

Samples GADSDEN-RAW (280-116563-1) and GADSDEN-FINISHED (280-116563-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 11/07/2018 and analyzed on 11/08/2018.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: GADSDEN-RAW (280-116563-1) and GADSDEN-FINISHED (280-116563-2). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

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 - Gadsden

TestAmerica Job ID: 280-116563-1

**Client Sample ID: GADSDEN-RAW**

**Lab Sample ID: 280-116563-1**

Date Collected: 10/31/18 21:15

Matrix: Water

Date Received: 11/03/18 09:00

**Method: DV-LC-0012 - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.028		0.018	0.0087	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorodecanoic acid (PFDA)	0.0069	U	0.018	0.0069	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.026	0.013	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluoroheptanoic acid (PFHpA)	0.018	J	0.026	0.012	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorohexanoic acid (PFHxA)	0.053		0.018	0.0026	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorooctanoic acid (PFOA)	0.035		0.018	0.0086	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorooctane sulfonate (PFOS)	0.072		0.026	0.012	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluoropentanoic acid (PFPA)	0.094		0.026	0.0096	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.026	0.013	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorotridecanoic acid (PFTriA)	0.016	U	0.035	0.016	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluoroundecanoic acid (PFUnA)	0.0061	U	0.018	0.0061	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorobutanesulfonic acid (PFBS)	0.22		0.018	0.0073	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorodecanesulfonic acid (PFDS)	0.0081	U	0.018	0.0081	ug/L		11/07/18 12:23	11/08/18 16:35	1
Perfluorohexanesulfonic acid (PFHxS)	0.0062	U	0.026	0.0062	ug/L		11/07/18 12:23	11/08/18 16:35	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	101		60 - 155				11/07/18 12:23	11/08/18 16:35	1
13C8 PFOS	111		45 - 130				11/07/18 12:23	11/08/18 16:35	1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-116563-2**

Date Collected: 11/01/18 12:00

Matrix: Water

Date Received: 11/03/18 09:00

**Method: DV-LC-0012 - Fluorinated Alkyl Substances**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.026		0.018	0.0088	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorodecanoic acid (PFDA)	0.0070	U	0.018	0.0070	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.027	0.013	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluoroheptanoic acid (PFHpA)	0.016	J	0.027	0.012	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorohexanoic acid (PFHxA)	0.052		0.018	0.0026	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorooctanoic acid (PFOA)	0.036		0.018	0.0088	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorooctane sulfonate (PFOS)	0.051		0.027	0.012	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluoropentanoic acid (PFPA)	0.087		0.027	0.0098	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.027	0.013	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorotridecanoic acid (PFTriA)	0.016	U	0.036	0.016	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluoroundecanoic acid (PFUnA)	0.0062	U	0.018	0.0062	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorobutanesulfonic acid (PFBS)	0.20		0.018	0.0074	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorodecanesulfonic acid (PFDS)	0.0082	U	0.018	0.0082	ug/L		11/07/18 12:23	11/08/18 16:48	1
Perfluorohexanesulfonic acid (PFHxS)	0.0063	U	0.027	0.0063	ug/L		11/07/18 12:23	11/08/18 16:48	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	99		60 - 155				11/07/18 12:23	11/08/18 16:48	1
13C8 PFOS	109		45 - 130				11/07/18 12:23	11/08/18 16:48	1