

ANALYTICAL REPORT

Job Number: 280-112382-1

Job Description: ADEM PFC Sampling Water - Gadsden

For:

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

Attention: Mr. Bruce Freeman



Approved for release.
Patrick J McEntee
Manager of Project Management
8/17/2018 12:05 PM

Designee for
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08/17/2018

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.

TestAmerica Laboratories, Inc.

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Definitions/Glossary

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

TestAmerica Job ID: 280-112382-1

Qualifiers

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.
*	LCS or LCSD is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time

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: Alabama Dept. Environmental Management

Project: ADEM PFC Sampling Water - 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 7/25/2018 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Receipt Exceptions

One of four containers received for sample ID Gadsden-Raw labeled with an incorrect date of 7/23/31. Sample has been logged with the rest of set using the correct date on other bottles, and date given on CoC, of 7/23/18.

PERFLUORINATED HYDROCARBONS (PFC)

Samples GADSDEN-RAW (280-112382-1) and GADSDEN-FINISHED (280-112382-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 08/01/2018 and 08/09/2018 and analyzed on 08/02/2018 and 08/14/2018.

Perfluoroundecanoic acid (PFUnA) failed the recovery criteria low for LCS 280-424421/2-A. Perfluoroundecanoic acid (PFUnA) failed the recovery criteria low for LCSD 280-424421/3-A. Refer to the QC report for details. The associated sample(s) was re-prepared and/or re-analyzed outside holding time. Both sets of data have been reported.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: GADSDEN-RAW (280-112382-1) and GADSDEN-FINISHED (280-112382-2). 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). PFC preparation batch 280-425603 and analytical batch 280-426227

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: 280-112382-1

Client Sample ID: GADSDEN-RAW

Lab Sample ID: 280-112382-1

Date Collected: 07/23/18 20:13

Matrix: Water

Date Received: 07/25/18 09:15

Method: DV-LC-0012 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.095		0.020	0.0084	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorobutanoic acid (PFBA)	0.017	J	0.020	0.010	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorodecane sulfonate (PFDS)	0.0093	U	0.020	0.0093	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorodecanoic acid (PFDA)	0.0080	U	0.020	0.0080	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorododecanoic acid (PFDoA)	0.015	U	0.031	0.015	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluoroheptanoic acid (PFHpA)	0.013	J	0.031	0.013	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.031	0.0071	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorohexanoic acid (PFHxA)	0.031		0.020	0.0030	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorooctanoic acid (PFOA)	0.023		0.020	0.010	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorooctane Sulfonate (PFOS)	0.046		0.031	0.014	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluoropentanoic acid (PFPA)	0.060		0.031	0.011	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorotetradecanoic acid (PFTeA)	0.015	U	0.031	0.015	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluorotridecanoic Acid (PFTriA)	0.018	U	0.041	0.018	ug/L		08/01/18 12:32	08/02/18 20:41	1
Perfluoroundecanoic acid (PFUnA)	0.0070	U *	0.020	0.0070	ug/L		08/01/18 12:32	08/02/18 20:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	85		60 - 155	08/01/18 12:32	08/02/18 20:41	1
13C8 PFOS	97		45 - 130	08/01/18 12:32	08/02/18 20:41	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.14	H	0.018	0.0073	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorobutanoic acid (PFBA)	0.023	H	0.018	0.0086	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorodecane sulfonate (PFDS)	0.0081	U H	0.018	0.0081	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorodecanoic acid (PFDA)	0.0069	U H	0.018	0.0069	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorododecanoic acid (PFDoA)	0.013	U H	0.026	0.013	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluoroheptanoic acid (PFHpA)	0.018	J H	0.026	0.012	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorohexane Sulfonate (PFHxS)	0.0061	U H	0.026	0.0061	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorohexanoic acid (PFHxA)	0.044	H	0.018	0.0026	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorononanoic acid (PFNA)	0.015	U H	0.035	0.015	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorooctanoic acid (PFOA)	0.037	H	0.018	0.0086	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorooctane Sulfonate (PFOS)	0.064	H	0.026	0.012	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluoropentanoic acid (PFPA)	0.081	H	0.026	0.0096	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U H	0.026	0.013	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U H	0.035	0.016	ug/L		08/09/18 19:40	08/14/18 16:15	1
Perfluoroundecanoic acid (PFUnA)	0.0061	U H	0.018	0.0061	ug/L		08/09/18 19:40	08/14/18 16:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	87		60 - 155	08/09/18 19:40	08/14/18 16:15	1
13C8 PFOS	94		45 - 130	08/09/18 19:40	08/14/18 16:15	1

Client Sample ID: GADSDEN-FINISHED

Lab Sample ID: 280-112382-2

Date Collected: 07/24/18 11:00

Matrix: Water

Date Received: 07/25/18 09:15

Method: DV-LC-0012 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.095		0.017	0.0070	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorobutanoic acid (PFBA)	0.014	J	0.017	0.0084	ug/L		08/01/18 12:32	08/02/18 20:53	1

TestAmerica Denver

Client Sample Results

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

TestAmerica Job ID: 280-112382-1

Client Sample ID: GADSDEN-FINISHED

Lab Sample ID: 280-112382-2

Date Collected: 07/24/18 11:00

Matrix: Water

Date Received: 07/25/18 09:15

Method: DV-LC-0012 - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecane sulfonate (PFDS)	0.0078	U	0.017	0.0078	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorodecanoic acid (PFDA)	0.0067	U	0.017	0.0067	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.026	0.013	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluoroheptanoic acid (PFHpA)	0.012	J	0.026	0.011	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorohexane Sulfonate (PFHxS)	0.0060	U	0.026	0.0060	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorohexanoic acid (PFHxA)	0.030		0.017	0.0025	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorooctanoic acid (PFOA)	0.023		0.017	0.0084	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorooctane Sulfonate (PFOS)	0.046		0.026	0.011	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluoropentanoic acid (PFPA)	0.058		0.026	0.0093	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.026	0.013	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluorotridecanoic Acid (PFTriA)	0.015	U	0.034	0.015	ug/L		08/01/18 12:32	08/02/18 20:53	1
Perfluoroundecanoic acid (PFUnA)	0.0059	U*	0.017	0.0059	ug/L		08/01/18 12:32	08/02/18 20:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	86		60 - 155				08/01/18 12:32	08/02/18 20:53	1
13C8 PFOS	93		45 - 130				08/01/18 12:32	08/02/18 20:53	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.14	H	0.017	0.0070	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorobutanoic acid (PFBA)	0.021	H	0.017	0.0084	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorodecane sulfonate (PFDS)	0.0078	U H	0.017	0.0078	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorodecanoic acid (PFDA)	0.0067	U H	0.017	0.0067	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorododecanoic acid (PFDoA)	0.013	U H	0.026	0.013	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluoroheptanoic acid (PFHpA)	0.017	J H	0.026	0.011	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorohexane Sulfonate (PFHxS)	0.0059	U H	0.026	0.0059	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorohexanoic acid (PFHxA)	0.041	H	0.017	0.0025	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorononanoic acid (PFNA)	0.015	U H	0.034	0.015	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorooctanoic acid (PFOA)	0.035	H	0.017	0.0084	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorooctane Sulfonate (PFOS)	0.064	H	0.026	0.011	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluoropentanoic acid (PFPA)	0.080	H	0.026	0.0093	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U H	0.026	0.013	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluorotridecanoic Acid (PFTriA)	0.015	U H	0.034	0.015	ug/L		08/09/18 19:40	08/14/18 16:27	1
Perfluoroundecanoic acid (PFUnA)	0.0059	U H	0.017	0.0059	ug/L		08/09/18 19:40	08/14/18 16:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	85		60 - 155				08/09/18 19:40	08/14/18 16:27	1
13C8 PFOS	98		45 - 130				08/09/18 19:40	08/14/18 16:27	1