TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 280-92490-1

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
12/31/2016 1:04 PM

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12/31/2016

The Lab Certification ID# is 4025.

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

Qualifiers

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.

Glossary

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

Report Number: 280-92490-1

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 12/22/2016 at 10:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0°C.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): GADSDEN-RAW (280-92490-1). Sample Gadsden - Raw, as listed on the chain of custody, was listed as Raw on the sample container labels. The sample ID was logged as Gadsden - Raw, per the chain of custody.

PERFLUORINATED HYDROCARBONS (PFC)

Samples GADSDEN-RAW (280-92490-1) and GADSDEN-FINISHED (280-92490-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 12/27/2016 and analyzed on 12/28/2016.

During the solid phase extraction process, the following sample clogged the cartridge; therefore, a second cartridge was used to complete the extraction: GADSDEN-RAW (280-92490-1). Both cartridges were eluted, and the two extracts were combined and concentrated to the appropriate volume. As such, reporting limits (RLs) are not impacted.

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 (280-92490-1) and GADSDEN-FINISHED (280-92490-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 12/28/2016 and analyzed on 12/29/2016.

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

Client Sample ID: GADSDEN-RAW

Date Collected: 12/20/16 19:45
Date Received: 12/22/16 10:35

Lab Sample ID: 280-92490-1
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		12/27/16 10:22	12/28/16 20:27	1
Perfluorobutanoic acid (PFBA)	**0.023**		0.018	0.0090	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorodecane sulfonate (PFDS)	0.0084	U	0.018	0.0084	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorodecanoic acid (PFDA)	0.0072	U	0.018	0.0072	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.028	0.014	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluoroheptanoic acid (PFHpA)	**0.022**	**J**	0.028	0.012	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorohexane Sulfonate (PFHxS)	0.0064	U	0.028	0.0064	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorohexanoic acid (PFHxA)	**0.084**		0.018	0.0027	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorooctanoic acid (PFOA)	**0.033**		0.018	0.0090	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorooctane Sulfonate (PFOS)	**0.015**	**J**	0.028	0.012	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluoropentanoic acid (PFPA)	**0.084**		0.028	0.010	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.028	0.013	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.037	0.016	ug/L		12/27/16 10:22	12/28/16 20:27	1
Perfluoroundecanoic acid (PFUnA)	0.0063	U	0.018	0.0063	ug/L		12/27/16 10:22	12/28/16 20:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*105*		*60 - 155*	*12/27/16 10:22*	*12/28/16 20:27*	*1*
13C8 PFOS	*102*		*45 - 130*	*12/27/16 10:22*	*12/28/16 20:27*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0052	U	0.045	0.0052	ug/L		12/28/16 09:49	12/29/16 17:14	1

Client Sample ID: GADSDEN-FINISHED

Date Collected: 12/21/16 10:00
Date Received: 12/22/16 10:35

Lab Sample ID: 280-92490-2
Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.064**		0.018	0.0073	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorobutanoic acid (PFBA)	**0.024**		0.018	0.0087	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorodecane sulfonate (PFDS)	0.0081	U	0.018	0.0081	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorodecanoic acid (PFDA)	0.0069	U	0.018	0.0069	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.027	0.013	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluoroheptanoic acid (PFHpA)	**0.022**	**J**	0.027	0.012	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorohexane Sulfonate (PFHxS)	0.0062	U	0.027	0.0062	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorohexanoic acid (PFHxA)	**0.090**		0.018	0.0026	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorononanoic acid (PFNA)	0.015	U	0.036	0.015	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorooctanoic acid (PFOA)	**0.034**		0.018	0.0087	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorooctane Sulfonate (PFOS)	0.012	U	0.027	0.012	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluoropentanoic acid (PFPA)	**0.087**		0.027	0.0097	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.027	0.013	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.036	0.016	ug/L		12/27/16 10:22	12/28/16 20:39	1
Perfluoroundecanoic acid (PFUnA)	0.0061	U	0.018	0.0061	ug/L		12/27/16 10:22	12/28/16 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*108*		*60 - 155*	*12/27/16 10:22*	*12/28/16 20:39*	*1*
13C8 PFOS	*97*		*45 - 130*	*12/27/16 10:22*	*12/28/16 20:39*	*1*

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

TestAmerica Job ID: 280-92490-1

Client Sample ID: GADSDEN-FINISHED
Date Collected: 12/21/16 10:00
Date Received: 12/22/16 10:35

Lab Sample ID: 280-92490-2
Matrix: Water

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		12/28/16 09:49	12/29/16 17:26	1