

ANALYTICAL REPORT

Job Number: 280-138183-1

Job Description: ADEM PFC Sampling - Gadsden

For:

Alabama Dept. Environmental Management

2715 Sandlin Road, SW

Decatur, AL 35603

Attention: Whit Slagle



Approved for release.
Betsy A Sara
Project Manager II
7/24/2020 12:59 PM

Betsy A Sara, Project Manager II
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0189
Betsy.Sara@Eurofinset.com
07/24/2020

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The Lab Certification ID# is 4025.

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

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Eurofins TestAmerica, Denver

4955 Yarrow Street, Arvada, CO 80002

Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

Definitions/Glossary

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

Job ID: 280-138183-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
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.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

CASE NARRATIVE

Client: Alabama Dept. Environmental Management

Project: ADEM PFC Sampling - Gadsden

Report Number: 280-138183-1

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 7/1/2020 8:50 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.6° C.

PERFLUORINATED HYDROCARBONS (PFC)

Samples Gadsden-Raw (280-138183-1) and Gadsden-Finished (280-138183-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 07/07/2020 and analyzed on 07/13/2020.

Method DV-LC-0012: The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: Gadsden-Raw (280-138183-1). 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 samples. Preparation batch 280-501323 and analytical batch 280-502066 PFC.

Method DV-LC-0012: The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: Gadsden-Raw (280-138183-1). 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 samples. Preparation batch 280-502097 and analytical batch 280-503011 PFC.

Method DV-LC-0012: Internal standard responses were outside of acceptance limits for the following sample: Gadsden-Raw (280-138183-1). The sample(s) shows evidence of matrix interference. Preparation batch 280-502097 and analytical batch 280-503011 PFC.

The LCS and/or LCSD exhibited recoveries of Perfluorohexanoic acid (PFHxA), Perfluorooctane sulfonate (PFOS) and Perfluoropentanoic acid (PFPA) above the upper control limits. The associated samples were re-extracted past the 7-day holding time and reanalyzed, exhibiting similar results, and all QC samples within control limits. Only the original analysis that was performed within the holding time is reported in this submission.

The method required MS/MSD could not be performed due to insufficient sample volume, however, a LCS/LCSD pair was analyzed to demonstrate method precision and accuracy.

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

Detection Summary

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

Job ID: 280-138183-1

Client Sample ID: Gadsden-Raw

Lab Sample ID: 280-138183-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.015	J	0.016	0.0077	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexanoic acid (PFHxA)	0.040	*	0.016	0.0062	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.027		0.016	0.0077	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctane sulfonate (PFOS)	0.045	*	0.024	0.010	ug/L	1		DV-LC-0012	Total/NA
Perfluoropentanoic acid (PFPA)	0.062	*	0.024	0.0086	ug/L	1		DV-LC-0012	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.083		0.016	0.0065	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: Gadsden-Finished

Lab Sample ID: 280-138183-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.015	J	0.017	0.0083	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexanoic acid (PFHxA)	0.042	*	0.017	0.0067	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.019		0.017	0.0083	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctane sulfonate (PFOS)	0.028	*	0.026	0.011	ug/L	1		DV-LC-0012	Total/NA
Perfluoropentanoic acid (PFPA)	0.071	*	0.026	0.0093	ug/L	1		DV-LC-0012	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.10		0.017	0.0070	ug/L	1		DV-LC-0012	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

Job ID: 280-138183-1

Client Sample ID: Gadsden-Raw

Lab Sample ID: 280-138183-1

Date Collected: 06/29/20 20:22

Matrix: Water

Date Received: 07/01/20 08:50

Method: DV-LC-0012 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.015	J	0.016	0.0077	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorodecanoic acid (PFDA)	0.0062	U	0.016	0.0062	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorododecanoic acid (PFDoA)	0.012	U	0.024	0.012	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluoroheptanoic acid (PFHpA)	0.010	U	0.024	0.010	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorohexanoic acid (PFHxA)	0.040	*	0.016	0.0062	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorononanoic acid (PFNA)	0.0059	U	0.031	0.0059	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorooctanoic acid (PFOA)	0.027		0.016	0.0077	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorooctane sulfonate (PFOS)	0.045	*	0.024	0.010	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluoropentanoic acid (PFPA)	0.062	*	0.024	0.0086	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorotetradecanoic acid (PFTeA)	0.012	U	0.024	0.012	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorotridecanoic acid (PFTriA)	0.014	U	0.031	0.014	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluoroundecanoic acid (PFUnA)	0.0054	U	0.016	0.0054	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorobutanesulfonic acid (PFBS)	0.083		0.016	0.0065	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorodecanesulfonic acid (PFDS)	0.0072	U	0.016	0.0072	ug/L		07/07/20 12:13	07/13/20 11:02	1
Perfluorohexanesulfonic acid (PFHxS)	0.0055	U	0.024	0.0055	ug/L		07/07/20 12:13	07/13/20 11:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155				07/07/20 12:13	07/13/20 11:02	1
13C8 PFOS	119		45 - 130				07/07/20 12:13	07/13/20 11:02	1

Client Sample ID: Gadsden-Finished

Lab Sample ID: 280-138183-2

Date Collected: 06/30/20 11:00

Matrix: Water

Date Received: 07/01/20 08:50

Method: DV-LC-0012 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.015	J	0.017	0.0083	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorodecanoic acid (PFDA)	0.0066	U	0.017	0.0066	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.026	0.013	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorohexanoic acid (PFHxA)	0.042	*	0.017	0.0067	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorononanoic acid (PFNA)	0.0064	U	0.034	0.0064	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorooctanoic acid (PFOA)	0.019		0.017	0.0083	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorooctane sulfonate (PFOS)	0.028	*	0.026	0.011	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluoropentanoic acid (PFPA)	0.071	*	0.026	0.0093	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.026	0.013	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorotridecanoic acid (PFTriA)	0.015	U	0.034	0.015	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluoroundecanoic acid (PFUnA)	0.0059	U	0.017	0.0059	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorobutanesulfonic acid (PFBS)	0.10		0.017	0.0070	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorodecanesulfonic acid (PFDS)	0.0078	U	0.017	0.0078	ug/L		07/07/20 12:13	07/13/20 11:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.0059	U	0.026	0.0059	ug/L		07/07/20 12:13	07/13/20 11:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	100		60 - 155				07/07/20 12:13	07/13/20 11:27	1
13C8 PFOS	115		45 - 130				07/07/20 12:13	07/13/20 11:27	1

Default Detection Limits

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

Job ID: 280-138183-1

Method: DV-LC-0012 - Fluorinated Alkyl Substances

Prep: 3535

Analyte	RL	MDL	Units
Perfluorobutanesulfonic acid (PFBS)	0.020	0.0082	ug/L
Perfluorobutanoic acid (PFBA)	0.020	0.0098	ug/L
Perfluorodecanesulfonic acid (PFDS)	0.020	0.0092	ug/L
Perfluorodecanoic acid (PFDA)	0.020	0.0078	ug/L
Perfluorododecanoic acid (PFDoA)	0.030	0.015	ug/L
Perfluoroheptanoic acid (PFHpA)	0.030	0.013	ug/L
Perfluorohexanesulfonic acid (PFHxS)	0.030	0.0070	ug/L
Perfluorohexanoic acid (PFHxA)	0.020	0.0079	ug/L
Perfluorononanoic acid (PFNA)	0.040	0.0075	ug/L
Perfluorooctane sulfonate (PFOS)	0.030	0.013	ug/L
Perfluorooctanoic acid (PFOA)	0.020	0.0098	ug/L
Perfluoropentanoic acid (PFPA)	0.030	0.011	ug/L
Perfluorotetradecanoic acid (PFTeA)	0.030	0.015	ug/L
Perfluorotridecanoic acid (PFTriA)	0.040	0.018	ug/L
Perfluoroundecanoic acid (PFUnA)	0.020	0.0069	ug/L