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ANALYTICAL REPORT

Eurofins Michigan
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Laboratory Job ID: 190-28293-1
Client Project/Site: Sludge PFAS Land Application

For:
City of Lapeer WWTP
576 Liberty Park
Lapeer, Michigan 48446

Attn: Tom Woolley

Sue Schafer

Authorized for release by:
4/6/2022 1:50:18 PM

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Table of Contents

Sample Summary

Client: City of Lapeer WWTP
Project/Site: Sludge PFAS Land Application

Job ID: 190-28293-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
190-28293-1	Sludge Storage Combo	Solid	03/21/22 10:00	03/22/22 11:11

Case Narrative

Client: City of Lapeer WWTP
Project/Site: Sludge PFAS Land Application

Job ID: 190-28293-1

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Laboratory: Eurofins Michigan

Narrative

Job Narrative
190-28293-1

Comments
No additional comments.

Receipt
The sample was received on 3/22/2022 11:11 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

LCMS
Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: Sludge Storage Combo (190-28293-1). 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 sample(s).

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: Sludge Storage Combo (190-28293-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was below the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte.

Sludge Storage Combo (190-28293-1)

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

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

Organic Prep
Method SHAKE: The following sample was light yellow after adjusting for final volume: Sludge Storage Combo (190-28293-1)

Method Code: PFC_IDA
Matrix: Solid
preparation batch 320-576444

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

Client: City of Lapeer WWTP
Project/Site: Sludge PFAS Land Application

Job ID: 190-28293-1

Client Sample ID: Sludge Storage Combo

Date Collected: 03/21/22 10:00
Date Received: 03/22/22 11:11

Lab Sample ID: 190-28293-1

Matrix: Solid
Percent Solids: 5.5

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
6:2 FTS	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
8:2 FTS	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**8.7**		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorobutanesulfonic acid (PFBS)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorobutanoic acid (PFBA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorodecanesulfonic acid (PFDS)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorodecanoic acid (PFDA)	**8.9**		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorododecanoic acid (PFDoA)	**3.7**		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluoroheptanoic acid (PFHpA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorohexanesulfonic acid (PFHxS)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorohexanoic acid (PFHxA)	**6.4**		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorononanesulfonic acid (PFNS)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorononanoic acid (PFNA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorooctanesulfonamide (FOSA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorooctanesulfonic acid (PFOS)	**30**	I	3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorooctanoic acid (PFOA)	**7.2**		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluoropentanesulfonic acid (PFPeS)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluoropentanoic acid (PFPeA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorotetradecanoic acid (PFTeA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluorotridecanoic acid (PFTriA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1
Perfluoroundecanoic acid (PFUnA)	<3.5		3.5		ug/Kg	☼	03/29/22 11:32	04/01/22 02:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*92*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C4 PFBA	*18*	*5-	*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C3 PFBS	*71*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C2 PFDA	*86*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C2 PFDoA	*70*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C4 PFHpA	*79*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C2 PFHxA	*74*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C5 PFNA	*79*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C4 PFOA	*81*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C4 PFOS	*84*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C5 PFPeA	*67*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C2 PFTeDA	*50*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
13C2 PFUnA	*79*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
M2-4:2 FTS	*92*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
M2-6:2 FTS	*133*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
M2-8:2 FTS	*166*	*5+	*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*
18O2 PFHxS	*79*		*25 - 150*	*03/29/22 11:32*	*04/01/22 02:00*	*1*

Client Sample Results

Client: City of Lapeer WWTP
Project/Site: Sludge PFAS Land Application

Job ID: 190-28293-1

Client Sample ID: Sludge Storage Combo

Lab Sample ID: 190-28293-1

Date Collected: 03/21/22 10:00
Matrix: Solid
Date Received: 03/22/22 11:11
Percent Solids: 5.5

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	94.5		0.1		%			03/25/22 11:25	1
Percent Solids	5.5		0.1		%			03/25/22 11:25	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-576444/1-A
Matrix: Solid
Analysis Batch: 576788

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576444

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
6:2 FTS	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
8:2 FTS	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorobutanoic acid (PFBA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorodecanesulfonic acid (PFDS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorodecanoic acid (PFDA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorododecanoic acid (PFDoA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluoroheptanoic acid (PFHpA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorohexanesulfonic acid (PFHxS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorohexanoic acid (PFHxA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorononanesulfonic acid (PFNS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorononanoic acid (PFNA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorooctanesulfonamide (FOSA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorooctanoic acid (PFOA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluoropentanesulfonic acid (PFPeS)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluoropentanoic acid (PFPeA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorotetradecanoic acid (PFTeA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluorotridecanoic acid (PFTriA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1
Perfluoroundecanoic acid (PFUnA)	<0.20		0.20		ug/Kg		03/29/22 11:32	04/01/22 00:49	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*100*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C4 PFBA	*32*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C3 PFBS	*76*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C2 PFDA	*89*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C2 PFDoA	*83*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C4 PFHpA	*85*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C2 PFHxA	*84*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C5 PFNA	*87*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C4 PFOA	*89*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C4 PFOS	*84*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C5 PFPeA	*74*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
13C2 PFUnA	*90*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
M2-4:2 FTS	*104*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
M2-6:2 FTS	*106*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*
18O2 PFHxS	*84*		*25 - 150*	*03/29/22 11:32*	*04/01/22 00:49*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-576444/2-A
Matrix: Solid
Analysis Batch: 576788

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576444

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4:2 FTS	1.87	2.32		ug/Kg		124	68 - 143
6:2 FTS	1.90	1.96		ug/Kg		103	73 - 139
8:2 FTS	1.92	2.01		ug/Kg		105	75 - 135
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.10		ug/Kg		105	72 - 132
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.32		ug/Kg		116	72 - 132
Perfluorobutanesulfonic acid (PFBS)	1.77	2.07		ug/Kg		117	69 - 129
Perfluorobutanoic acid (PFBA)	2.00	2.26		ug/Kg		113	76 - 136
Perfluorodecanesulfonic acid (PFDS)	1.93	2.01		ug/Kg		104	71 - 131
Perfluorodecanoic acid (PFDA)	2.00	2.08		ug/Kg		104	72 - 132
Perfluorododecanoic acid (PFDoA)	2.00	2.22		ug/Kg		111	71 - 131
Perfluoroheptanesulfonic acid (PFHpS)	1.90	2.19		ug/Kg		115	76 - 136
Perfluoroheptanoic acid (PFHpA)	2.00	2.41		ug/Kg		121	71 - 131
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.90		ug/Kg		104	62 - 122
Perfluorohexanoic acid (PFHxA)	2.00	2.10		ug/Kg		105	71 - 131
Perfluorononanesulfonic acid (PFNS)	1.92	2.18		ug/Kg		113	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.32		ug/Kg		116	73 - 133
Perfluorooctanesulfonamide (FOSA)	2.00	1.85		ug/Kg		93	77 - 137
Perfluorooctanesulfonic acid (PFOS)	1.86	2.00		ug/Kg		108	68 - 141
Perfluorooctanoic acid (PFOA)	2.00	2.16		ug/Kg		108	72 - 132
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.12		ug/Kg		113	66 - 126
Perfluoropentanoic acid (PFPeA)	2.00	2.35		ug/Kg		118	69 - 129
Perfluorotetradecanoic acid (PFTeA)	2.00	2.22		ug/Kg		111	67 - 127
Perfluorotridecanoic acid (PFTriA)	2.00	2.13		ug/Kg		106	71 - 131
Perfluoroundecanoic acid (PFUnA)	2.00	2.26		ug/Kg		113	66 - 126

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*99*		*25 - 150*
13C4 PFBA	*30*		*25 - 150*
13C3 PFBS	*78*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFDoA	*84*		*25 - 150*
13C4 PFHpA	*84*		*25 - 150*
13C2 PFHxA	*85*		*25 - 150*
13C5 PFNA	*83*		*25 - 150*
13C4 PFOA	*87*		*25 - 150*
13C4 PFOS	*84*		*25 - 150*
13C5 PFPeA	*72*		*25 - 150*
13C2 PFTeDA	*75*		*25 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-576444/2-A
Matrix: Solid
Analysis Batch: 576788

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576444

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	87		25 - 150
d5-NEtFOSAA	96		25 - 150
d3-NMeFOSAA	82		25 - 150
M2-4:2 FTS	107		25 - 150
M2-6:2 FTS	110		25 - 150
M2-8:2 FTS	106		25 - 150
18O2 PFHxS	86		25 - 150

Isotope Dilution Summary

Client: City of Lapeer WWTP
Job ID: 190-28293-1
Project/Site: Sludge PFAS Land Application

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFOSA	PFBA	C3PFBS	PFDA	PFDoA	C4PFHA	PFHxA	PFNA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
190-28293-1	Sludge Storage Combo	92	18 *5-	71	86	70	79	74	79
LCS 320-576444/2-A	Lab Control Sample	99	30	78	86	84	84	85	83
MB 320-576444/1-A	Method Blank	100	32	76	89	83	85	84	87

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFOA	PFOS	PFPeA	PFTDA	PFUnA	d5NEFOS	d3NMFOS	M242FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
190-28293-1	Sludge Storage Combo	81	84	67	50	79	88	83	92
LCS 320-576444/2-A	Lab Control Sample	87	84	72	75	87	96	82	107
MB 320-576444/1-A	Method Blank	89	84	74	76	90	96	90	104

		Percent Isotope Dilution Recovery (Acceptance Limits)		
		M262FTS	M282FTS	PFHxS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)
190-28293-1	Sludge Storage Combo	133	166 *5+	79
LCS 320-576444/2-A	Lab Control Sample	110	106	86
MB 320-576444/1-A	Method Blank	106	103	84

Surrogate Legend

PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
C3PFBS = 13C3 PFBS
PFDA = 13C2 PFDA
PFDoA = 13C2 PFDoA
C4PFHA = 13C4 PFHpA
PFHxA = 13C2 PFHxA
PFNA = 13C5 PFNA
PFOA = 13C4 PFOA
PFOS = 13C4 PFOS
PFPeA = 13C5 PFPeA
PFTDA = 13C2 PFTeDA
PFUnA = 13C2 PFUnA
d5NEFOS = d5-NEtFOSAA
d3NMFOS = d3-NMeFOSAA
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
PFHxS = 18O2 PFHxS

Definitions/Glossary

Client: City of Lapeer WWTP
Job ID: 190-28293-1
Project/Site: Sludge PFAS Land Application

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
I	Value is EMPC (estimated maximum possible concentration).

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

QC Association Summary

Client: City of Lapeer WWTP
Job ID: 190-28293-1
Project/Site: Sludge PFAS Land Application

LCMS

Prep Batch: 576444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-28293-1	Sludge Storage Combo	Total/NA	Solid	SHAKE	
MB 320-576444/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-576444/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 576788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-28293-1	Sludge Storage Combo	Total/NA	Solid	537 (modified)	576444
MB 320-576444/1-A	Method Blank	Total/NA	Solid	537 (modified)	576444
LCS 320-576444/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	576444

General Chemistry

Analysis Batch: 575762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-28293-1	Sludge Storage Combo	Total/NA	Solid	D 2216	

Lab Chronicle

Client: City of Lapeer WWTP
Job ID: 190-28293-1
Project/Site: Sludge PFAS Land Application

Client Sample ID: Sludge Storage Combo
Lab Sample ID: 190-28293-1
Date Collected: 03/21/22 10:00
Matrix: Solid
Date Received: 03/22/22 11:11

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	575762	03/25/22 11:25	KMW	TAL SAC

Client Sample ID: Sludge Storage Combo
Lab Sample ID: 190-28293-1
Date Collected: 03/21/22 10:00
Matrix: Solid
Date Received: 03/22/22 11:11
Percent Solids: 5.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			576444	03/29/22 11:32	OP	TAL SAC
Total/NA	Analysis	537 (modified)		1	576788	04/01/22 02:00	D1R	TAL SAC

Laboratory References:

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Analyst References:

Lab: TAL SAC

Batch Type: Prep

OP = Oscar Pascual-Diaz

Batch Type: Analysis

D1R = Dhatpakorn Ruangyotsakul

KMW = Kelly White

Accreditation/Certification Summary

Client: City of Lapeer WWTP
Job ID: 190-28293-1
Project/Site: Sludge PFAS Land Application

Laboratory: Eurofins Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-24
ANAB	ISO/IEC 17025	L2468	01-20-24
Arizona	State	AZ0708	08-11-22
Arkansas DEQ	State	88-0691	06-17-22
California	State	2897	01-31-23
Colorado	State	CA0004	08-31-22
Florida	NELAP	E87570	06-30-22
Georgia	State	4040	01-30-23
Hawaii	State	<cert No.>	01-29-23
Illinois	NELAP	200060	03-17-23
Louisiana	NELAP	01944	06-30-22
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-31-23
Nevada	State	CA00044	08-31-22
New Hampshire	NELAP	2997	04-18-22
New Jersey	NELAP	CA005	06-30-22
New York	NELAP	11666	04-02-23
Ohio	State	41252	01-29-23
Oregon	NELAP	4040	01-29-23
Texas	NELAP	T104704399-19-13	05-31-22
US Fish & Wildlife	US Federal Programs	58448	07-31-22
USDA	US Federal Programs	P330-18-00239	01-23-23
Utah	NELAP	CA000442021-12	03-01-22 *
Virginia	NELAP	460278	03-14-23
Washington	State	C581	05-05-22
West Virginia (DW)	State	9930C	12-31-22
Wisconsin	State	998204680	08-31-22
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: City of Lapeer WWTP
Project/Site: Sludge PFAS Land Application

Job ID: 190-28293-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Login Sample Receipt Checklist

Client: City of Lapeer WWTP

Job Number: 190-28293-1

Login Number: 28293
List Number: 2
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 03/24/22 02:20 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1794084
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

MICHIGAN 190

Chain of Custody Record 507234

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Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Company Name: City of Lapeer	Tel/Email:	Lab Contact:	Carrier:	_____ of _____ COCs
Address: 576 Liberty Park	Analysis Turnaround Time			Sampler:
City/State/Zip: Lapeer MI 48446	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 810-664-6887	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Sludge PFAS Land Application	☐ 1 week			
Site: WWTP Sludge Storage Tanks	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Sample Specific Notes:
Sludge Storage Combo	3-21-22	10:00A	G	Bio Solids	2			Bio Solids Matrix

190-28293 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	City of Lapeer		[signature]	EETA	3/21/22 1148
Relinquished by: [signature]	Company: EETA	Date/Time: 3/21/22 1132	Received by: Cold storage	Company: EETA	Date/Time: 3/21/22 1700
Relinquished by: Coldstorage	Company: EETA	Date/Time: 3/22/22 1110	Received in Laboratory by: [signature]	Company: EETA	Date/Time: 3/22/22 1111

Page 17 of 19

4/6/2022

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☐ SDS or Known Hazard Information Supplied by Client
☐ Discrepancies
☐ Short Hold
☐ Rush ☐ 24 Hr ☐ 2-Day ☐ 3-Day ☐ 5-Day ☐ Other: _____

Client ID: City of Lapeer
Work Oder #: 190-28293

Cooler / Sample Receipt

After hours receipt: complete gray areas. Place cooler in walk-in, place form in Receiving box. Date: _____ Time: _____

Receipt Evaluation Performed by: Initials: TDA Date: 3/22/22 Time: 11:11

Method of Shipment:
(Walk-In Client) Eurofins TA Field/Courier
Other Client / 3rd Party Courier: _____
Fed Ex Tracking #: _____
UPS Tracking #: _____
Other: _____

Shipping Container Type:
☑ Cooler ☐ Box
☐ None ☐ Other: _____

Custody Seals Intact:
☐ Yes ☐ No
☑ NA (not used or required)

Packing Materials:
☑ Plastic Bags ☐ Foam
☐ Bubble Wrap ☐ Paper
☐ Packing Peanuts ☐ None
☐ Other: _____

Cooling Materials:
☑ Ice (Solid) ☐ Ice (Melted)
☐ Blue Ice ☐ None
☐ Other: _____

Bacteriological Samples	Temp Corrected (°C)	Frozen? Yes	Frozen? No	Rec'd Within 2 Hrs? Yes	Rec'd Within 2 Hrs? No	Sample Flagged? Yes	Sample Flagged? No

Received on same day sampled? (Yes) No Additional Sheets Required? Yes (No)

Receipt Temperatures

Thermometer ID	Observed (°C)	Corrected (°C)	Temp Blank	Sample Temp	Acceptable	Cooler ID	Affected Samples
CP313209	4.0	4.0		X	X Y __ N		
					__ Y __ N		
					__ Y __ N		

Receipt Questions**	Y	N	NA	"No" answers require additional comment
CoC present and ETA receipt signature, date, and time properly documented?	X			
Containers and Labels in good condition? *(unbroken, not leaking, appropriately filled, labels legible & attached)*	X			
Appropriate containers used and adequate volume provided?	X			Preserved bottles checked for pH?* Yes No
Number of sample containers match CoC?	X			pH strip lot # _____
Samples received within hold?	X			
Samples submitted for GRO and Volatiles analysis (8260, 624, 524) received without headspace?			X	
Was a Trip Blank received with VOA samples?			X	
Were the samples free of any questionable physical conformities? (i.e.; field duplicates or multiple bottles of the same sample do not significantly vary in appearance – color, solid proportions, etc.)	X			
Were the CoC bottle labels and all other items free of all other discrepancies or issues that would need to be addressed with the Project Manager and/or Client?	X			
**May not be applicable if samples are not for compliance testing				*Excludes FOG, VOAs, TOC Vials, HEM

Client Contact Record

Contact Via: ☐ Phone ☐ Email ☐ Other: _____ Person Contacted: _____ Date/Time: _____
☐ Discrepancy allowance agreement is on record in the client project file

Discussion / Resolution

Any additional documentation and clarification from the client must be noted in the narrative and/or scanned into the CoC directory.

Reviewed by Teri Hall Date: 3/22/22

WI-MI-010_020720

Eurofins Michigan
10448 Citation Drive Suite 200
Brighton, MI 48116
Phone: 810-229-2763 Fax: 810-229-0000

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Schafer, Sue	Carrier Tracking No(s):	COC No: 190-31959.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Sue.Schafer@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note):		Job #: 190-28293-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 4/4/2022			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Sludge PFAS Land Application	Project #: 19000372			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Shake_Bath_14D (MOD) PFAS, Standard List (24 Analytes)	Moisture	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
Sludge Storage Combo (190-28293-1)	3/21/22	10:00 Eastern		Solid			X	X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	3/22/22 1700		[signature]	3/24/22 910	BTEAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 1794084	Cooler Temperature(s) °C and Other Remarks: 1.5C

Ver: 06/08/2021