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ANALYTICAL REPORT

Eurofins TestAmerica, Michigan
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Laboratory Job ID: 190-25768-1
Client Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

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

Attn: Tom Woolley

Sue Schafer

Authorized for release by:
5/10/2021 11:34:57 AM

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
190-25768-1	ALL STORAGE TANKS COMBINATION	Solid	04/27/21 08:20	04/28/21 08:00	

Case Narrative

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

Job ID: 190-25768-1

Laboratory: Eurofins TestAmerica, Michigan

Narrative

Job Narrative
190-25768-1

Comments
No additional comments.

Receipt
The sample was received on 4/28/2021 8:00 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 0.5º C.

LCMS
Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte: ALL STORAGE TANKS COMBINATION (190-25768-1).

Method 537 (modified): 13C4 PFBA Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: ALL STORAGE TANKS COMBINATION (190-25768-1). 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 M2-6:2 FTS and M2-8:2 FTS for the following sample: ALL STORAGE TANKS COMBINATION (190-25768-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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

General Chemistry
Method Moisture: The sample duplicate (DUP) precision for analytical batch 320-484488 was outside control limits; however, the RPD does not apply to samples with less than 10% moisture content. Sample non-homogeneity is suspected. Samples were dry sand with pebbles of various sizes. Data is being reported. (160-41870-A-1) and (160-41870-A-1 DU)

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

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

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

Client Sample ID: ALL STORAGE TANKS COMBINATION

Lab Sample ID: 190-25768-1
Date Collected: 04/27/21 08:20
Matrix: Solid
Date Received: 04/28/21 08:00
Percent Solids: 5.1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	<38		38		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
6:2 FTS	<38		38		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
8:2 FTS	<38		38		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<38		38		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<38		38		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorobutanesulfonic acid (PFBS)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorobutanoic acid (PFBA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorodecanesulfonic acid (PFDS)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorodecanoic acid (PFDA)	**5.5**		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorododecanoic acid (PFDoA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluoroheptanoic acid (PFHpA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorohexanesulfonic acid (PFHxS)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorohexanoic acid (PFHxA)	**6.5**		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorononanesulfonic acid (PFNS)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorononanoic acid (PFNA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorooctanesulfonamide (FOSA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorooctanesulfonic acid (PFOS)	**33**	I	9.6		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorooctanoic acid (PFOA)	**3.9**		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluoropentanesulfonic acid (PFPeS)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluoropentanoic acid (PFPeA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorotetradecanoic acid (PFTeA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluorotridecanoic acid (PFTriA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1
Perfluoroundecanoic acid (PFUnA)	<3.8		3.8		ug/Kg	☼	05/03/21 04:39	05/04/21 10:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*84*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C4 PFBA	*20*	*5-	*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C3 PFBS	*77*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C2 PFDA	*86*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C2 PFDoA	*76*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C4 PFHpA	*90*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C2 PFHxA	*60*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C5 PFNA	*92*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C4 PFOA	*92*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C4 PFOS	*87*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C5 PFPeA	*74*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C2 PFTeDA	*54*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
13C2 PFUnA	*92*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
M2-4:2 FTS	*115*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
M2-6:2 FTS	*170*	*5+	*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
M2-8:2 FTS	*179*	*5+	*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*
18O2 PFHxS	*81*		*25 - 150*	*05/03/21 04:39*	*05/04/21 10:27*	*1*

Client Sample Results

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

Client Sample ID: ALL STORAGE TANKS COMBINATION
Lab Sample ID: 190-25768-1
Date Collected: 04/27/21 08:20
Matrix: Solid
Date Received: 04/28/21 08:00
Percent Solids: 5.1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	94.9		0.1		%			04/29/21 16:49	1
Percent Solids	5.1		0.1		%			04/29/21 16:49	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-485145/1-A
Matrix: Solid
Analysis Batch: 485809

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 485145

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	<2.0		2.0		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
6:2 FTS	<2.0		2.0		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
8:2 FTS	<2.0		2.0		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorobutanoic acid (PFBA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorodecanesulfonic acid (PFDS)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorodecanoic acid (PFDA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorododecanoic acid (PFDoA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluoroheptanoic acid (PFHpA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorohexanesulfonic acid (PFHxS)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorohexanoic acid (PFHxA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorononanesulfonic acid (PFNS)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorononanoic acid (PFNA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorooctanesulfonamide (FOSA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		0.50		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorooctanoic acid (PFOA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluoropentanesulfonic acid (PFPeS)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluoropentanoic acid (PFPeA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorotetradecanoic acid (PFTeA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluorotridecanoic acid (PFTriA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1
Perfluoroundecanoic acid (PFUnA)	<0.20		0.20		ug/Kg		05/03/21 04:39	05/04/21 09:41	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*101*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C4 PFBA	*86*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C3 PFBS	*88*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C2 PFDA	*93*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C2 PFDoA	*96*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C4 PFHpA	*97*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C2 PFHxA	*93*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C5 PFNA	*97*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C4 PFOA	*97*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C4 PFOS	*97*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C5 PFPeA	*90*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
13C2 PFUnA	*95*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
d5-NEtFOSAA	*131*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
d3-NMeFOSAA	*111*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
M2-4:2 FTS	*96*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
M2-6:2 FTS	*105*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
M2-8:2 FTS	*102*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*
18O2 PFHxS	*89*		*25 - 150*	*05/03/21 04:39*	*05/04/21 09:41*	*1*

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

Lab Sample ID: LCS 320-485145/2-A
Matrix: Solid
Analysis Batch: 485809

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4:2 FTS	1.87	1.74	J	ug/Kg		93	68 - 143
6:2 FTS	1.90	1.95	J	ug/Kg		103	73 - 139
8:2 FTS	1.92	2.10		ug/Kg		109	75 - 135
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.24		ug/Kg		112	72 - 132
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.15		ug/Kg		108	72 - 132
Perfluorobutanesulfonic acid (PFBS)	1.77	1.82		ug/Kg		103	69 - 129
Perfluorobutanoic acid (PFBA)	2.00	2.15		ug/Kg		107	76 - 136
Perfluorodecanesulfonic acid (PFDS)	1.93	2.01		ug/Kg		104	71 - 131
Perfluorodecanoic acid (PFDA)	2.00	1.96		ug/Kg		98	72 - 132
Perfluorododecanoic acid (PFDoA)	2.00	2.23		ug/Kg		111	71 - 131
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	2.06		ug/Kg		108	76 - 136
Perfluoroheptanoic acid (PFHpA)	2.00	2.09		ug/Kg		105	71 - 131
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.87		ug/Kg		103	62 - 122
Perfluorohexanoic acid (PFHxA)	2.00	2.04		ug/Kg		102	71 - 131
Perfluorononanesulfonic acid (PFNS)	1.92	1.93		ug/Kg		101	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.12		ug/Kg		106	73 - 133
Perfluorooctanesulfonamide (FOSA)	2.00	2.30		ug/Kg		115	77 - 137
Perfluorooctanesulfonic acid (PFOS)	1.86	1.87		ug/Kg		101	68 - 141
Perfluorooctanoic acid (PFOA)	2.00	2.07		ug/Kg		103	72 - 132
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.02		ug/Kg		108	66 - 126
Perfluoropentanoic acid (PFPeA)	2.00	2.09		ug/Kg		105	69 - 129
Perfluorotetradecanoic acid (PFTeA)	2.00	2.05		ug/Kg		102	67 - 127
Perfluorotridecanoic acid (PFTriA)	2.00	2.08		ug/Kg		104	71 - 131
Perfluoroundecanoic acid (PFUnA)	2.00	1.94		ug/Kg		97	66 - 126

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*102*		*25 - 150*
13C4 PFBA	*85*		*25 - 150*
13C3 PFBS	*87*		*25 - 150*
13C2 PFDA	*96*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C5 PFNA	*95*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C4 PFOS	*89*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFTeDA	*94*		*25 - 150*

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

Lab Sample ID: LCS 320-485145/2-A
Matrix: Solid
Analysis Batch: 485809

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 485145

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	99		25 - 150
d5-NEtFOSAA	118		25 - 150
d3-NMeFOSAA	112		25 - 150
M2-4:2 FTS	106		25 - 150
M2-6:2 FTS	93		25 - 150
M2-8:2 FTS	92		25 - 150
18O2 PFHxS	86		25 - 150

Isotope Dilution Summary

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

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)
190-25768-1	ALL STORAGE TANKS COMBIN	84	20 *5-	77	86	76	90	60	92
LCS 320-485145/2-A	Lab Control Sample	102	85	87	96	103	96	91	95
MB 320-485145/1-A	Method Blank	101	86	88	93	96	97	93	97

		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)
190-25768-1	ALL STORAGE TANKS COMBIN	92	87	74	54	92	87	97	115
LCS 320-485145/2-A	Lab Control Sample	94	89	92	94	99	118	112	106
MB 320-485145/1-A	Method Blank	97	97	90	94	95	131	111	96

		Percent Isotope Dilution Recovery (Acceptance Limits)		
		M262FTS	M282FTS	PFHxS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)
190-25768-1	ALL STORAGE TANKS COMBIN	170 *5+	179 *5+	81
LCS 320-485145/2-A	Lab Control Sample	93	92	86
MB 320-485145/1-A	Method Blank	105	102	89

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: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

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).
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
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: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

LCMS

Prep Batch: 485145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25768-1	ALL STORAGE TANKS COMBINATION	Total/NA	Solid	SHAKE	
MB 320-485145/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-485145/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 485809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25768-1	ALL STORAGE TANKS COMBINATION	Total/NA	Solid	537 (modified)	485145
MB 320-485145/1-A	Method Blank	Total/NA	Solid	537 (modified)	485145
LCS 320-485145/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	485145

General Chemistry

Analysis Batch: 484488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25768-1	ALL STORAGE TANKS COMBINATION	Total/NA	Solid	D 2216	

Lab Chronicle

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

Client Sample ID: ALL STORAGE TANKS COMBINATION
Lab Sample ID: 190-25768-1
Date Collected: 04/27/21 08:20
Matrix: Solid
Date Received: 04/28/21 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	484488	04/29/21 16:49	TCS	TAL SAC

Client Sample ID: ALL STORAGE TANKS COMBINATION
Lab Sample ID: 190-25768-1
Date Collected: 04/27/21 08:20
Matrix: Solid
Date Received: 04/28/21 08:00
Percent Solids: 5.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			485145	05/03/21 04:39	HK	TAL SAC
Total/NA	Analysis	537 (modified)		1	485809	05/04/21 10:27	RS1	TAL SAC

Laboratory References:

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

Analyst References:

Lab: TAL SAC

Batch Type: Prep

HK = Harmandeep Kaur

Batch Type: Analysis

RS1 = Rungtip Sanjumnai

TCS = Tammy Saechao

Accreditation/Certification Summary

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

Laboratory: Eurofins TestAmerica, 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	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-29-22
Hawaii	State	<cert No.>	01-29-22
Illinois	NELAP	200060	03-18-22
Kansas	NELAP	E-10375	10-31-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-22
Nevada	State	CA000442021-2	07-31-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-22
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-30-23
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442021-12	03-01-22
Virginia	NELAP	460278	03-14-22
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

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

Method Summary

Client: City of Lapeer WWTP
Job ID: 190-25768-1
Project/Site: ALL Storage Tanks PFAS/BIO-SOLIDS

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 TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Login Sample Receipt Checklist

Client: City of Lapeer WWTP

Job Number: 190-25768-1

Login Number: 25768
List Number: 2
Creator: Cahill, Nicholas P

List Source: Eurofins TestAmerica, Sacramento
List Creation: 04/29/21 03:28 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.	N/A	
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	1.6c
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	

0.4165

Chain of Custody Record

417979

MICHIGAN 190

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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 WWTP	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: Bio-Solids PFAS Land App	☐ 1 week			
Site: All 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)	PFAS
All Storage Tanks Combination	4-27-21	8:20A	G	BS, Solids	2			✓

Sample Specific Notes:

Matrix must be Solids in ug/Kg

Project- 19000372
AG- Solids • PFAS 24
(WSAC)

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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: City of Lapeer	Date/Time: 4-27-21	Received by:	Company: ETA	Date/Time: 4/27/21 11:07
Relinquished by: Amanda Battaglia	Company: ETA	Date/Time: 4/27/21 11:07	Received by: MJS	Company: ETA CANTON	Date/Time: APR 28 2021 800
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 190-25768

Client City of Lapeer Site Name

Cooler Received on APR 28 2021 Opened on APR 28 2021

Cooler unpacked by: MJS ETA CANTON

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 0.4 °C Corrected Cooler Temp. 0.5 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes No
-Were tamper/custody seals intact and uncompromised?	Yes No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes No
4. Did custody papers accompany the sample(s)?	Yes No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes No
7. Did all bottles arrive in good condition (Unbroken)?	Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	
10. Were correct bottle(s) used for the test(s) indicated?	Yes No
11. Sufficient quantity received to perform indicated analyses?	Yes No
12. Are these work share samples and all listed on the COC?	Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC022887
14. Were VOAs on the COC?	Yes No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes No
17. Was a LL Hg or Me Hg trip blank present? ____	Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Schafer, Sue	Carrier Tracking No(s):	COC No: 240-135734.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Sue.Schafer@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 190-25768-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 5/11/2021			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: City of Lapeer WWTP	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:							
ALL STORAGE TANKS COMBINATION (190-25768-1)	4/27/21	08:20 Eastern		Solid			X	X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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 TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

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]	4-28-21 1442	ENA	[signature]	4-29-21 10:00	ETASAC
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: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.6

• Sample shows discoloration, 2 of 2. MC 4-29-21

Ver: 11/01/2020