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ANALYTICAL REPORT

Eurofins Michigan
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Laboratory Job ID: 190-28132-1
Client Project/Site: Biosolids PFAS

For:
City of Marysville WWTP
1535 River Rd.
PO BOX 389
Marysville, Michigan 48040

Attn: Jim Mieksztyn

Sue Schafer

Authorized for release by:
3/15/2022 4:59:06 PM

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Sample Summary

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
190-28132-1	PFAS - Biosolids	Solid	02/28/22 09:45	03/01/22 14:30

Job ID: 190-28132-1

Laboratory: Eurofins Michigan

Narrative

Job Narrative
190-28132-1

Comments
The PFC_IDA Perfluorinated Hydrocarbons analysis was performed at the Eurofins Environment Testing, Sacramento laboratory.
Receipt
The sample was received on 3/1/2022 2:30 PM. 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 7.2º C.

LCMS
Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: PFAS - Biosolids (190-28132-1). 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
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method SHAKE: Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PFAS - Biosolids (190-28132-1). Samples were prepped at 1 gram. The reporting limits (RLs) have been adjusted proportionately.

preparation batch 320-570201
Method: PFC_IDA/Shake_Bath_14D
Matrix: Solids

Method SHAKE: The following sample was yellow after extraction: PFAS - Biosolids (190-28132-1).

preparation batch 320-570201
Method: PFC_IDA/Shake_Bath_14D
Matrix: Solids

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

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Client Sample ID: PFAS - Biosolids

Date Collected: 02/28/22 09:45
Date Received: 03/01/22 14:30

Lab Sample ID: 190-28132-1

Matrix: Solid
Percent Solids: 5.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
F-53B Major	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
F-53B Minor	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
4:2 FTS	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
6:2 FTS	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
8:2 FTS	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
HFPO-DA (GenX)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorobutanesulfonic acid (PFBS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorobutanoic acid (PFBA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorodecanesulfonic acid (PFDS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorodecanoic acid (PFDA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorododecanoic acid (PFDoA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluoroheptanoic acid (PFHpA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorohexanesulfonic acid (PFHxS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorohexanoic acid (PFHxA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorononanesulfonic acid (PFNS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorononanoic acid (PFNA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorooctanesulfonamide (FOSA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorooctanesulfonic acid (PFOS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorooctanoic acid (PFOA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluoropentanesulfonic acid (PFPeS)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluoropentanoic acid (PFPeA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorotetradecanoic acid (PFTeA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluorotridecanoic acid (PFTriA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1
Perfluoroundecanoic acid (PFUnA)	<14		14		ug/Kg	☼	03/03/22 11:37	03/09/22 04:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*113*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C3 HFPO-DA	*93*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C4 PFBA	*30*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C3 PFBS	*108*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C2 PFDA	*108*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C2 PFDoA	*76*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C4 PFHpA	*107*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C2 PFHxA	*98*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C5 PFNA	*105*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C4 PFOA	*107*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C4 PFOS	*110*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C5 PFPeA	*88*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C2 PFTeDA	*40*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
13C2 PFUnA	*97*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
d5-NEtFOSAA	*121*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
d3-NMeFOSAA	*113*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Client Sample ID: PFAS - Biosolids

Date Collected: 02/28/22 09:45
Date Received: 03/01/22 14:30

Lab Sample ID: 190-28132-1

Matrix: Solid
Percent Solids: 5.6

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*122*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
M2-6:2 FTS	*131*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
M2-8:2 FTS	*163*	*5+	*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*
18O2 PFHxS	*100*		*25 - 150*	*03/03/22 11:37*	*03/09/22 04:20*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**94.4**		0.1		%			03/03/22 14:38	1
Percent Solids	**5.6**		0.1		%			03/03/22 14:38	1

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-570201/1-A
Matrix: Solid
Analysis Batch: 570577

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 570201

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
F-53B Major	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
F-53B Minor	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
4:2 FTS	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
6:2 FTS	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
8:2 FTS	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
HFPO-DA (GenX)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorobutanoic acid (PFBA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorodecanesulfonic acid (PFDS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorodecanoic acid (PFDA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorododecanoic acid (PFDoA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluoroheptanoic acid (PFHpA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorohexanesulfonic acid (PFHxS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorohexanoic acid (PFHxA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorononanesulfonic acid (PFNS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorononanoic acid (PFNA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorooctanesulfonamide (FOSA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorooctanesulfonic acid (PFOS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorooctanoic acid (PFOA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluoropentanesulfonic acid (PFPeS)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluoropentanoic acid (PFPeA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorotetradecanoic acid (PFTeA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluorotridecanoic acid (PFTriA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1
Perfluoroundecanoic acid (PFUnA)	<0.20		0.20		ug/Kg		03/03/22 11:37	03/04/22 16:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*86*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C3 HFPO-DA	*80*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C4 PFBA	*54*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C3 PFBS	*87*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C2 PFDA	*86*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C2 PFDoA	*86*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C4 PFHpA	*93*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C2 PFHxA	*82*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C5 PFNA	*88*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C4 PFOA	*87*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C4 PFOS	*92*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C5 PFPeA	*84*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
13C2 PFUnA	*89*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*03/03/22 11:37*	*03/04/22 16:47*	*1*

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

Lab Sample ID: MB 320-570201/1-A
Matrix: Solid
Analysis Batch: 570577

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 570201

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	87		25 - 150	03/03/22 11:37	03/04/22 16:47	1
M2-4:2 FTS	94		25 - 150	03/03/22 11:37	03/04/22 16:47	1
M2-6:2 FTS	90		25 - 150	03/03/22 11:37	03/04/22 16:47	1
M2-8:2 FTS	98		25 - 150	03/03/22 11:37	03/04/22 16:47	1
18O2 PFHxS	80		25 - 150	03/03/22 11:37	03/04/22 16:47	1

Lab Sample ID: LCS 320-570201/2-A
Matrix: Solid
Analysis Batch: 570577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 570201

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	1.63		ug/Kg		87	79 - 139
F-53B Major	1.86	1.59		ug/Kg		85	74 - 134
F-53B Minor	1.88	1.66		ug/Kg		88	66 - 136
4:2 FTS	1.87	1.73		ug/Kg		93	68 - 143
6:2 FTS	1.90	1.78		ug/Kg		94	73 - 139
8:2 FTS	1.92	1.61		ug/Kg		84	75 - 135
HFPO-DA (GenX)	2.00	1.95		ug/Kg		98	53 - 158
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	1.81		ug/Kg		90	72 - 132
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	1.74		ug/Kg		87	72 - 132
Perfluorobutanesulfonic acid (PFBS)	1.77	1.49		ug/Kg		84	69 - 129
Perfluorobutanoic acid (PFBA)	2.00	1.81		ug/Kg		91	76 - 136
Perfluorodecanesulfonic acid (PFDS)	1.93	1.75		ug/Kg		91	71 - 131
Perfluorodecanoic acid (PFDA)	2.00	1.73		ug/Kg		86	72 - 132
Perfluorododecanoic acid (PFDoA)	2.00	1.89		ug/Kg		94	71 - 131
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	1.58		ug/Kg		83	76 - 136
Perfluoroheptanoic acid (PFHpA)	2.00	1.71		ug/Kg		85	71 - 131
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.70		ug/Kg		93	62 - 122
Perfluorohexanoic acid (PFHxA)	2.00	1.74		ug/Kg		87	71 - 131
Perfluorononanesulfonic acid (PFNS)	1.92	1.60		ug/Kg		83	72 - 132
Perfluorononanoic acid (PFNA)	2.00	1.77		ug/Kg		88	73 - 133
Perfluorooctanesulfonamide (FOSA)	2.00	1.91		ug/Kg		95	77 - 137
Perfluorooctanesulfonic acid (PFOS)	1.86	1.56		ug/Kg		84	68 - 141
Perfluorooctanoic acid (PFOA)	2.00	1.72		ug/Kg		86	72 - 132
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.51		ug/Kg		81	66 - 126
Perfluoropentanoic acid (PFPeA)	2.00	1.73		ug/Kg		86	69 - 129
Perfluorotetradecanoic acid (PFTeA)	2.00	1.85		ug/Kg		93	67 - 127
Perfluorotridecanoic acid (PFTriA)	2.00	1.87		ug/Kg		93	71 - 131

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

Lab Sample ID: LCS 320-570201/2-A
Matrix: Solid
Analysis Batch: 570577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 570201

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluoroundecanoic acid (PFUnA)			2.00	1.90		ug/Kg		95	66 - 126		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*90*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*
13C4 PFBA	*59*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*
13C2 PFDA	*95*		*25 - 150*
13C2 PFDoA	*89*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C2 PFHxA	*85*		*25 - 150*
13C5 PFNA	*95*		*25 - 150*
13C4 PFOA	*92*		*25 - 150*
13C4 PFOS	*95*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFTeDA	*81*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
d5-NEtFOSAA	*97*		*25 - 150*
d3-NMeFOSAA	*95*		*25 - 150*
M2-4:2 FTS	*97*		*25 - 150*
M2-6:2 FTS	*98*		*25 - 150*
M2-8:2 FTS	*102*		*25 - 150*
18O2 PFHxS	*85*		*25 - 150*

Isotope Dilution Summary

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFOSA	HFPODA	PFBA	C3PFBS	PFDA	PFDoA	C4PFHA	PFHxA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
190-28132-1	PFAS - Biosolids	113	93	30	108	108	76	107	98
LCS 320-570201/2-A	Lab Control Sample	90	85	59	93	95	89	94	85
MB 320-570201/1-A	Method Blank	86	80	54	87	86	86	93	82

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFNA	PFOA	PFOS	PFPeA	PFTDA	PFUnA	d5NEFOS	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
190-28132-1	PFAS - Biosolids	105	107	110	88	40	97	121	113
LCS 320-570201/2-A	Lab Control Sample	95	92	95	85	81	94	97	95
MB 320-570201/1-A	Method Blank	88	87	92	84	78	89	91	87

		Percent Isotope Dilution Recovery (Acceptance Limits)			
		M242FTS	M262FTS	M282FTS	PFHxS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)
190-28132-1	PFAS - Biosolids	122	131	163 *5+	100
LCS 320-570201/2-A	Lab Control Sample	97	98	102	85
MB 320-570201/1-A	Method Blank	94	90	98	80

Surrogate Legend

PFOSA = 13C8 FOSA
HFPODA = 13C3 HFPO-DA
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

Method Summary

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

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

Lab Chronicle

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Client Sample ID: PFAS - Biosolids
Date Collected: 02/28/22 09:45
Date Received: 03/01/22 14:30

Lab Sample ID: 190-28132-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	570060	03/03/22 14:38	DJW	TAL SAC

Client Sample ID: PFAS - Biosolids
Date Collected: 02/28/22 09:45
Date Received: 03/01/22 14:30

Lab Sample ID: 190-28132-1
Matrix: Solid
Percent Solids: 5.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			570201	03/03/22 11:37	FX	TAL SAC
Total/NA	Analysis	537 (modified)		1	571368	03/09/22 04:20	K1S	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

FX = Fong Xiong

Batch Type: Analysis

DJW = Darian Wong

K1S = Kotechakon Sorndee

Definitions/Glossary

Client: City of Marysville WWTP
Project/Site: Biosolids PFAS

Job ID: 190-28132-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.

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

Euorfins Test America, Michigan
10448 Citation Drive Suite 200
Brighton, MI 48116
Phone: (810) 229-2763 Fax: (810) 229-0000

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: ☐ DW ☑ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager:	Site Contact:	Lab Contact:	COC No:
Company Name: City of Marysville	Bari Wrubel	Bari Wrubel	Sue Schafer	
Address: 980 E Huron Blvd	Telephone: 810-364-8460 810-364-6110	Telephone: 810-364-8460 810-364-6110	Telephone: 810-229-2763	of COCs
City/State/Zip: Marysville, MI 48040	Email: bwrubel@cityofmarysvillemi.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 810-364-8460 810-364-6110		TAT if different from below ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: Lab sampling: Job/SDG No:
Project Name: Biosolids PFAS				
Project Number:	Method of Shipment/Carrier: FEDEX 1 800 463-3339			
PO #	Shipping/Tracking No:			

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	PFAS 28 with Dry weight correction	Sample Specific Notes / Special Instructions:
PFAS - Biosolids	2/28/2022	9:45AM				x							2			G	x	

190-28132 Chain of Custody

Possible Hazard Identification
☐ 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:

PLEASE RETURN SHIPPER. WE WILL NEED THIS AGAIN NEXT QUARTER.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Bari Wrubel	City of Marysville	2/28/2022 2:15PM	Jeri Hale	EEA	3/1/22 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

3/15/2022

eurofins | Environment Testing TestAmerica

☐ 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 Marysville
Work Oder #: 190-28132

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: TBH Date: 3-1-22 Time: 1430

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

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

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

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

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	7.2	7.2		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: 3/2/22

WI-MI-010_020720