

Tuesday, April 19, 2022

Lee Keysor  
Saginaw Township WWTP  
5790 W. Michigan Ave.  
Saginaw, MI 48638

Workorder: 376742  
Project Name: WWTP Biosolids Tanks NPDES Soil WWTP PFAS  
Purchase Order: 46592

Lee Keysor,  
Paragon Laboratories, Inc. received the samples associated with the workorder listed above for the analyses presented in the following report. The analyses pertain only to the aliquot of sample received.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number below.

Please note that any unused portion of the sample(s) will be discarded 40 days after sample receipt, unless requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact me at 734.469.5622.

Sincerely,



Kelsey Q Katynski  
Account Coordinator

## GLOSSARY

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Abbreviation	Meaning	Explanation
ID	Identification	Preceded by "Lab", it describes the unique 10-digit sample number assigned by the laboratory. Preceded by "Sample", it describes the client-specified sample identifier.
Qual	Qualifier	Column that populates with an asterisk (*) when a related narrative comment appears in the Workorder Summary.
RL	Reporting Limit	The value at or above which a result is routinely reported.
MDL	Method Detection Limit	The minimum measured concentration that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results.
DF	Dilution Factor	The dilution applied to the sample during analysis to arrive at the final reported analyte result.
Min	Minimum	The minimum value that a result can be to meet the applicable specification, regulatory, permit, or client-specified limit.
Max	Maximum	The maximum value that a result can be to meet the applicable specification, regulatory, permit, or client-specified limit.
(S)	Surrogate	A compound that is added to the sample to mimic one or more compounds of interest. Its recovery is used to evaluate the efficiency of recovering the compound(s) of interest.
<	Less Than	Symbol that indicates that a result is less than the value following it.
>	Greater Than	Symbol that indicates that a result is greater than the value following it.

## SAMPLE SUMMARY

Lab ID	Sample ID	Sample Description	Matrix	Date Collected	Date Received	Collector
3767420001	Biosolids Tanks	Grab	SL	04/06/2022 08:00	04/06/2022 15:55	JD
3767420002	Field Blank Tube		SL		04/06/2022 15:55	JD
3767420003	TB		SL		04/06/2022 15:55	JD

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# WORKORDER SUMMARY

## Accreditations

Paragon Laboratories, Inc. is certified by the Michigan Department of Environment, Great Lakes, and Energy to analyze Drinking Water. (EGLE Lab No. 9901 Expires 2/25/2023)

## Workorder Narrative

General Comment: No suspected contamination during sampling process, therefore the trip blank was not analyzed.

## Surrogate Results Narrative

3767420001 - Biosolids Tanks - 13C-HFPO-DA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M2-6:2 FTS

Surrogate recovery is above the upper control limit, possibly due to matrix interferences.

Surrogate results reported from 20x dilution due to surrogate recovery exceeding the calibration range; Surrogate recovery without dilution: 19039.37 ng/kg.

3767420001 - Biosolids Tanks - M2PFDoA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M2PFTeDA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M4PFBA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M5PFHxA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M5PFPeA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M6PFDA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M7PFUnDA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M8PFOS

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M8PFOSA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - d3-NMeFOSAA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - d5-NEtFOSAA

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

3767420001 - Biosolids Tanks - M2-8:2 FTS

Surrogate recovery is below the lower control limit, possibly due to matrix interferences.

# ANALYTICAL RESULTS

Lab ID: 3767420001  
Sample ID: Biosolids Tanks  
Description: Grab

Date Collected: 04/06/2022 08:00  
Date Received: 04/06/2022 15:55

Matrix: Sludge  
Collector: JD

Parameter	Result	Qual	Unit	RL	MDL	DF	Min	Max	Analyzed	By
Individual Parameters by SM 2540 G										
Percent Total Solids	8.1		% m/m	0.10		1			04/08/2022 15:49	LDP

## Per- & Polyfluoroalkyls (PFAS) by ASTM D7968 Mod.

11CI-PF3OUdS	150		ng/Kg-dry	100	65	1			04/11/2022 13:23	JKP
4:2 FTSA	<100		ng/Kg-dry	100	58	1			04/11/2022 13:23	JKP
6:2 FTSA	<150		ng/Kg-dry	150	130	1			04/11/2022 13:23	JKP
8:2 FTSA	980		ng/Kg-dry	100	50	1			04/11/2022 13:23	JKP
9CI-PF3ONS	140		ng/Kg-dry	100	59	1			04/11/2022 13:23	JKP
ADONA	<100		ng/Kg-dry	100	68	1			04/11/2022 13:23	JKP
HFPO-DA	<150		ng/Kg-dry	150	130	1			04/11/2022 13:23	JKP
NEtFOSAA	1500		ng/Kg-dry	100	57	1			04/11/2022 13:23	JKP
NMeFOSAA	5100		ng/Kg-dry	200	190	1			04/11/2022 13:23	JKP
PFBA	350		ng/Kg-dry	25	20	1			04/11/2022 13:23	JKP
PFBS	600		ng/Kg-dry	10	9.2	1			04/11/2022 13:23	JKP
PFDA	3100		ng/Kg-dry	15	14	1			04/11/2022 13:23	JKP
PFDS	260		ng/Kg-dry	15	15	1			04/11/2022 13:23	JKP
PFDoA	160		ng/Kg-dry	20	17	1			04/11/2022 13:23	JKP
PFHpA	280		ng/Kg-dry	20	16	1			04/11/2022 13:23	JKP
PFHpS	280		ng/Kg-dry	15	12	1			04/11/2022 13:23	JKP
PFHxA	1300		ng/Kg-dry	10	7.5	1			04/11/2022 13:23	JKP
PFHxS	1900		ng/Kg-dry	10	5.8	1			04/11/2022 13:23	JKP
PFNA	760		ng/Kg-dry	10	5.2	1			04/11/2022 13:23	JKP
PFNS	<30		ng/Kg-dry	30	29	1			04/11/2022 13:23	JKP
PFOA	2900		ng/Kg-dry	10	9.3	1			04/11/2022 13:23	JKP
PFOS	13000		ng/Kg-dry	400	400	20			04/11/2022 14:25	JKP
PFOSA	1400		ng/Kg-dry	15	10	1			04/11/2022 13:23	JKP
PFPeA	640		ng/Kg-dry	15	12	1			04/11/2022 13:23	JKP
PFPeS	<15		ng/Kg-dry	15	15	1			04/11/2022 13:23	JKP
PFTeDA	100		ng/Kg-dry	25	23	1			04/11/2022 13:23	JKP
PFTTrDA	<20		ng/Kg-dry	20	10	1			04/11/2022 13:23	JKP
PFUnDA	330		ng/Kg-dry	10	8.7	1			04/11/2022 13:23	JKP
PFecHS	<15		ng/Kg-dry	15	9.6	1			04/11/2022 13:23	JKP

Surrogate	Unit	Spiked Amount	Spike Result	Spike % Recovery	Control Limits	Qual
13C-HFPO-DA (S)	ng/Kg-dry	99000	63000	64	70 - 130	*
d3-NMeFOSAA (S)	ng/Kg-dry	9900	3300	34	70 - 130	*
d5-NEtFOSAA (S)	ng/Kg-dry	9900	3400	35	70 - 130	*
M2-4:2 FTS (S)	ng/Kg-dry	9900	11000	111	70 - 130	
M2-6:2 FTS (S)	ng/Kg-dry	9900	12000	119	70 - 130	*
M2-8:2 FTS (S)	ng/Kg-dry	9900	8000	82	70 - 130	
M2PFDoA (S)	ng/Kg-dry	9900	810	8	70 - 130	*

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## ANALYTICAL RESULTS

M2PFTeDA (S)	ng/Kg-dry	9900	23		70 - 130	*
M3PFBS (S)	ng/Kg-dry	9900	6900	70	70 - 130	
M3PFHxS (S)	ng/Kg-dry	9900	8000	81	70 - 130	
M4PFBA (S)	ng/Kg-dry	9900	2500	25	70 - 130	*
M4PFHpA (S)	ng/Kg-dry	9900	9700	98	70 - 130	
M5PFHxA (S)	ng/Kg-dry	9900	6700	68	70 - 130	*
M5PFPeA (S)	ng/Kg-dry	9900	5000	51	70 - 130	*
M6PFDA (S)	ng/Kg-dry	9900	6000	61	70 - 130	*
M7PFUnDA (S)	ng/Kg-dry	9900	2900	30	70 - 130	*
M8PFOA (S)	ng/Kg-dry	9900	8900	90	70 - 130	
M8PFOS (S)	ng/Kg-dry	9900	7700	78	70 - 130	
M8PFOSA (S)	ng/Kg-dry	9900	5000	50	70 - 130	*
M9PFNA (S)	ng/Kg-dry	9900	8000	81	70 - 130	

### Sample Preparation by ASTM D7968 Mod.

Tumble Extraction for PFAS	2.008	grams	1	04/08/2022 10:42	JKP
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# ANALYTICAL RESULTS

Lab ID: 3767420002 Date Collected: Matrix: Sludge  
Sample ID: Field Blank Tube Date Received: 04/06/2022 15:55 Collector: JD  
Description:

Parameter	Result	Qual	Unit	RL	MDL	DF	Min	Max	Analyzed	By
Per- & Polyfluoroalkyls (PFAS) by ASTM D7968 Mod.										
11CI-PF3OUdS	<100		ng/Kg-dry	100	65	1			04/11/2022 15:27	JKP
4:2 FTSA	<100		ng/Kg-dry	100	58	1			04/11/2022 15:27	JKP
6:2 FTSA	<150		ng/Kg-dry	150	130	1			04/11/2022 15:27	JKP
8:2 FTSA	<100		ng/Kg-dry	100	50	1			04/11/2022 15:27	JKP
9CI-PF3ONS	<100		ng/Kg-dry	100	59	1			04/11/2022 15:27	JKP
ADONA	<100		ng/Kg-dry	100	68	1			04/11/2022 15:27	JKP
HFPO-DA	<150		ng/Kg-dry	150	130	1			04/11/2022 15:27	JKP
NEtFOSAA	<100		ng/Kg-dry	100	57	1			04/11/2022 15:27	JKP
NMeFOSAA	<200		ng/Kg-dry	200	190	1			04/11/2022 15:27	JKP
PFBA	<25		ng/Kg-dry	25	20	1			04/11/2022 15:27	JKP
PFBS	13		ng/Kg-dry	10	9.2	1			04/11/2022 15:27	JKP
PFDA	<15		ng/Kg-dry	15	14	1			04/11/2022 15:27	JKP
PFDS	<15		ng/Kg-dry	15	15	1			04/11/2022 15:27	JKP
PFDaA	<20		ng/Kg-dry	20	17	1			04/11/2022 15:27	JKP
PFHpA	<20		ng/Kg-dry	20	16	1			04/11/2022 15:27	JKP
PFHpS	<15		ng/Kg-dry	15	12	1			04/11/2022 15:27	JKP
PFHxA	<10		ng/Kg-dry	10	7.5	1			04/11/2022 15:27	JKP
PFHxS	<10		ng/Kg-dry	10	5.8	1			04/11/2022 15:27	JKP
PFNA	<10		ng/Kg-dry	10	5.2	1			04/11/2022 15:27	JKP
PFNS	<30		ng/Kg-dry	30	29	1			04/11/2022 15:27	JKP
PFOA	<10		ng/Kg-dry	10	9.3	1			04/11/2022 15:27	JKP
PFOS	<20		ng/Kg-dry	20	20	1			04/11/2022 15:27	JKP
PFOSA	<15		ng/Kg-dry	15	10	1			04/11/2022 15:27	JKP
PFPeA	<15		ng/Kg-dry	15	12	1			04/11/2022 15:27	JKP
PFPeS	<15		ng/Kg-dry	15	15	1			04/11/2022 15:27	JKP
PFTeDA	<25		ng/Kg-dry	25	23	1			04/11/2022 15:27	JKP
PFTTrDA	<20		ng/Kg-dry	20	10	1			04/11/2022 15:27	JKP
PFUnDA	<10		ng/Kg-dry	10	8.7	1			04/11/2022 15:27	JKP
PFecHS	<15		ng/Kg-dry	15	9.6	1			04/11/2022 15:27	JKP

Surrogate	Unit	Spiked Amount	Spike Result	Spike % Recovery	Control Limits	Qual
13C-HFPO-DA (S)	ng/Kg-dry	8000	7600	94	70 - 130	
d3-NMeFOSAA (S)	ng/Kg-dry	800	960	120	70 - 130	
d5-NEtFOSAA (S)	ng/Kg-dry	800	1000	125	70 - 130	
M2-4:2 FTS (S)	ng/Kg-dry	800	870	108	70 - 130	
M2-6:2 FTS (S)	ng/Kg-dry	800	980	123	70 - 130	
M2-8:2 FTS (S)	ng/Kg-dry	800	1000	127	70 - 130	
M2PFDoA (S)	ng/Kg-dry	800	940	118	70 - 130	
M2PFTeDA (S)	ng/Kg-dry	800	890	111	70 - 130	
M3PFBS (S)	ng/Kg-dry	800	870	109	70 - 130	
M3PFHxS (S)	ng/Kg-dry	800	860	108	70 - 130	

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## ANALYTICAL RESULTS

M4PFBA (S)	ng/Kg-dry	800	970	121	70 - 130
M4PFHpA (S)	ng/Kg-dry	800	960	120	70 - 130
M5PFHxA (S)	ng/Kg-dry	800	850	106	70 - 130
M5PFPeA (S)	ng/Kg-dry	800	790	98	70 - 130
M6PFDA (S)	ng/Kg-dry	800	970	121	70 - 130
M7PFUnDA (S)	ng/Kg-dry	800	920	115	70 - 130
M8PFOA (S)	ng/Kg-dry	800	980	122	70 - 130
M8PFOS (S)	ng/Kg-dry	800	870	109	70 - 130
M8PFOSA (S)	ng/Kg-dry	800	860	108	70 - 130
M9PFNA (S)	ng/Kg-dry	800	990	123	70 - 130

### Sample Preparation by ASTM D7968 Mod.

Tumble Extraction for PFAS	2.0025	grams	1	04/08/2022 10:42	JKP
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## ANALYTICAL RESULTS

Lab ID: 3767420003  
Sample ID: TB  
Description:

Date Collected:  
Date Received: 04/06/2022 15:55

Matrix: Sludge  
Collector: JD

Parameter	Result	Qual	Unit	RL	MDL	DF	Min	Max	Analyzed	By
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No results available.

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