

Friday, November 19, 2021

Daniel T Robb  
City of West Branch  
121 N. 4th Street  
West Branch, MI 48661

Workorder: 373688  
Project Name: Biosolids Wastewater Plant

Daniel Robb,  
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
3736880001	Biosolids	Grab	SO	10/27/2021 15:30	10/28/2021 11:47	Don Rob
3736880002	Field Blank	Grab	SO	10/27/2021 15:30	10/28/2021 11:47	Don Rob
3736880003	Trip Blank		SO		10/28/2021 11:47	Don Rob

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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)

## Surrogate Results Narrative

3736880001 - Biosolids - M2-6:2 FTS

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

3736880001 - Biosolids - M2-8:2 FTS

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.

3736880001 - Biosolids - 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.

3736880001 - Biosolids - 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.

3736880001 - Biosolids - M4PFBA

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

3736880001 - Biosolids - M6PFDA

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

3736880001 - Biosolids - 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.

3736880001 - Biosolids - M8PFOS

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

3736880001 - Biosolids - 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.

3736880001 - Biosolids - 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.

3736880001 - Biosolids - 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.

3736880002 - Field Blank - M2-4:2 FTS

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

3736880002 - Field Blank - M2-6:2 FTS

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

3736880002 - Field Blank - M2-8:2 FTS

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

3736880002 - Field Blank - M3PFBS

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

# ANALYTICAL RESULTS

Lab ID: 3736880001  
Sample ID: Biosolids  
Description: Grab

Date Collected: 10/27/2021 15:30  
Date Received: 10/28/2021 11:47

Matrix: Solid  
Collector: Don Robb

Parameter	Result	Qual	Unit	RL	MDL	DF	Min	Max	Analyzed	By
Individual Parameters by SM 2540 G										
Percent Total Solids	23		% m/m	0.10		1			11/03/2021 08:52	CTJ

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

11CI-PF3OUdS	<100		ng/Kg-dry	100	65	1			11/12/2021 18:25	JKP
4:2 FTSA	<100		ng/Kg-dry	100	58	1			11/12/2021 18:25	JKP
6:2 FTSA	300		ng/Kg-dry	150	130	1			11/12/2021 18:25	JKP
8:2 FTSA	470		ng/Kg-dry	100	50	1			11/12/2021 18:25	JKP
9CI-PF3ONS	<100		ng/Kg-dry	100	59	1			11/12/2021 18:25	JKP
ADONA	<100		ng/Kg-dry	100	68	1			11/12/2021 18:25	JKP
HFPO-DA	<150		ng/Kg-dry	150	130	1			11/12/2021 18:25	JKP
NEtFOSAA	12000		ng/Kg-dry	100	57	1			11/12/2021 18:25	JKP
NMeFOSAA	7000		ng/Kg-dry	200	190	1			11/12/2021 18:25	JKP
PFBA	1900		ng/Kg-dry	25	20	1			11/12/2021 18:25	JKP
PFBS	1600		ng/Kg-dry	10	9.2	1			11/12/2021 18:25	JKP
PFDA	2500		ng/Kg-dry	15	14	1			11/12/2021 18:25	JKP
PFDS	110		ng/Kg-dry	15	15	1			11/12/2021 18:25	JKP
PFDoA	140		ng/Kg-dry	20	17	1			11/12/2021 18:25	JKP
PFHpA	1100		ng/Kg-dry	20	16	1			11/12/2021 18:25	JKP
PFHpS	170		ng/Kg-dry	15	12	1			11/12/2021 18:25	JKP
PFHxA	830		ng/Kg-dry	10	7.5	1			11/12/2021 18:25	JKP
PFHxS	600		ng/Kg-dry	10	5.8	1			11/12/2021 18:25	JKP
PFNA	1800		ng/Kg-dry	10	5.2	1			11/12/2021 18:25	JKP
PFNS	270		ng/Kg-dry	30	29	1			11/12/2021 18:25	JKP
PFOA	2500		ng/Kg-dry	10	9.3	1			11/12/2021 18:25	JKP
PFOS	14000		ng/Kg-dry	400	400	20			11/12/2021 19:27	JKP
PFOSA	490		ng/Kg-dry	15	10	1			11/12/2021 18:25	JKP
PFPeA	690		ng/Kg-dry	15	12	1			11/12/2021 18:25	JKP
PFPeS	38		ng/Kg-dry	15	15	1			11/12/2021 18:25	JKP
PFTeDA	<25		ng/Kg-dry	25	23	1			11/12/2021 18:25	JKP
PFTTrDA	<20		ng/Kg-dry	20	10	1			11/12/2021 18:25	JKP
PFUnDA	180		ng/Kg-dry	10	8.7	1			11/12/2021 18:25	JKP
PFecHS	<15		ng/Kg-dry	15	9.6	1			11/12/2021 18:25	JKP

Surrogate	Unit	Spiked Amount	Spike Result	Spike % Recovery	Control Limits	Qual
13C-HFPO-DA (S)	ng/Kg-dry	35000	29000	83	70 - 130	
d3-NMeFOSAA (S)	ng/Kg-dry	3500	1100	30	70 - 130	*
d5-NEtFOSAA (S)	ng/Kg-dry	3500	1400	39	70 - 130	*
M2-4:2 FTS (S)	ng/Kg-dry	3500	3800	108	70 - 130	
M2-6:2 FTS (S)	ng/Kg-dry	3500	4800	137	70 - 130	*
M2-8:2 FTS (S)	ng/Kg-dry	3500	2000	58	70 - 130	*
M2PFDoA (S)	ng/Kg-dry	3500	340	10	70 - 130	*

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## ANALYTICAL RESULTS

M2PFTeDA (S)	ng/Kg-dry	3500	88	3	70 - 130	*
M3PFBS (S)	ng/Kg-dry	3500	2800	80	70 - 130	
M3PFHxS (S)	ng/Kg-dry	3500	2600	76	70 - 130	
M4PFBA (S)	ng/Kg-dry	3500	2000	58	70 - 130	*
M4PFHpA (S)	ng/Kg-dry	3500	2700	78	70 - 130	
M5PFHxA (S)	ng/Kg-dry	3500	2400	70	70 - 130	
M5PFPeA (S)	ng/Kg-dry	3500	2900	84	70 - 130	
M6PFDA (S)	ng/Kg-dry	3500	1700	50	70 - 130	*
M7PFUnDA (S)	ng/Kg-dry	3500	1000	29	70 - 130	*
M8PFOA (S)	ng/Kg-dry	3500	2600	75	70 - 130	
M8PFOS (S)	ng/Kg-dry	3500	3300	94	70 - 130	
M8PFOSA (S)	ng/Kg-dry	3500	530	15	70 - 130	*
M9PFNA (S)	ng/Kg-dry	3500	2700	78	70 - 130	

### Sample Preparation by ASTM D7968 Mod.

Tumble Extraction for PFAS	2.0053	grams	1	11/10/2021 11:30	JKP
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## ANALYTICAL RESULTS

Lab ID: 3736880002  
 Sample ID: Field Blank  
 Description: Grab

Date Collected: 10/27/2021 15:30  
 Date Received: 10/28/2021 11:47

Matrix: Solid  
 Collector: Don Robb

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			11/12/2021 20:29	JKP
4:2 FTSA	<100		ng/Kg-dry	100	58	1			11/12/2021 20:29	JKP
6:2 FTSA	<150		ng/Kg-dry	150	130	1			11/12/2021 20:29	JKP
8:2 FTSA	<100		ng/Kg-dry	100	50	1			11/12/2021 20:29	JKP
9CI-PF3ONS	<100		ng/Kg-dry	100	59	1			11/12/2021 20:29	JKP
ADONA	<100		ng/Kg-dry	100	68	1			11/12/2021 20:29	JKP
HFPO-DA	<150		ng/Kg-dry	150	130	1			11/12/2021 20:29	JKP
NEtFOSAA	<100		ng/Kg-dry	100	57	1			11/12/2021 20:29	JKP
NMeFOSAA	<200		ng/Kg-dry	200	190	1			11/12/2021 20:29	JKP
PFBA	<25		ng/Kg-dry	25	20	1			11/12/2021 20:29	JKP
PFBS	<10		ng/Kg-dry	10	9.2	1			11/12/2021 20:29	JKP
PFDA	<15		ng/Kg-dry	15	14	1			11/12/2021 20:29	JKP
PFDS	<15		ng/Kg-dry	15	15	1			11/12/2021 20:29	JKP
PFDaA	<20		ng/Kg-dry	20	17	1			11/12/2021 20:29	JKP
PFHpA	<20		ng/Kg-dry	20	16	1			11/12/2021 20:29	JKP
PFHpS	<15		ng/Kg-dry	15	12	1			11/12/2021 20:29	JKP
PFHxA	<10		ng/Kg-dry	10	7.5	1			11/12/2021 20:29	JKP
PFHxS	<10		ng/Kg-dry	10	5.8	1			11/12/2021 20:29	JKP
PFNA	<10		ng/Kg-dry	10	5.2	1			11/12/2021 20:29	JKP
PFNS	<30		ng/Kg-dry	30	29	1			11/12/2021 20:29	JKP
PFOA	<10		ng/Kg-dry	10	9.3	1			11/12/2021 20:29	JKP
PFOS	<20		ng/Kg-dry	20	20	1			11/12/2021 20:29	JKP
PFOSA	<15		ng/Kg-dry	15	10	1			11/12/2021 20:29	JKP
PFPeA	<15		ng/Kg-dry	15	12	1			11/12/2021 20:29	JKP
PFPeS	<15		ng/Kg-dry	15	15	1			11/12/2021 20:29	JKP
PFTeDA	<25		ng/Kg-dry	25	23	1			11/12/2021 20:29	JKP
PFTTrDA	<20		ng/Kg-dry	20	10	1			11/12/2021 20:29	JKP
PFUnDA	<10		ng/Kg-dry	10	8.7	1			11/12/2021 20:29	JKP
PFecHS	<15		ng/Kg-dry	15	9.6	1			11/12/2021 20:29	JKP

Surrogate	Unit	Spiked Amount	Spike Result	Spike % Recovery	Control Limits	Qual
13C-HFPO-DA (S)	ng/Kg-dry	8000	9100	114	70 - 130	
d3-NMeFOSAA (S)	ng/Kg-dry	800	610	77	70 - 130	
d5-NEtFOSAA (S)	ng/Kg-dry	800	630	79	70 - 130	
M2-4:2 FTS (S)	ng/Kg-dry	800	470	59	70 - 130	*
M2-6:2 FTS (S)	ng/Kg-dry	800	520	64	70 - 130	*
M2-8:2 FTS (S)	ng/Kg-dry	800	500	63	70 - 130	*
M2PFDoA (S)	ng/Kg-dry	800	620	77	70 - 130	
M2PFTeDA (S)	ng/Kg-dry	800	650	81	70 - 130	
M3PFBS (S)	ng/Kg-dry	800	550	68	70 - 130	*
M3PFHxS (S)	ng/Kg-dry	800	570	71	70 - 130	

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## ANALYTICAL RESULTS

M4PFBA (S)	ng/Kg-dry	800	600	75	70 - 130
M4PFHpA (S)	ng/Kg-dry	800	600	75	70 - 130
M5PFHxA (S)	ng/Kg-dry	800	570	71	70 - 130
M5PFPeA (S)	ng/Kg-dry	800	570	72	70 - 130
M6PFDA (S)	ng/Kg-dry	800	670	84	70 - 130
M7PFUnDA (S)	ng/Kg-dry	800	650	81	70 - 130
M8PFOA (S)	ng/Kg-dry	800	590	74	70 - 130
M8PFOS (S)	ng/Kg-dry	800	630	79	70 - 130
M8PFOSA (S)	ng/Kg-dry	800	590	74	70 - 130
M9PFNA (S)	ng/Kg-dry	800	670	84	70 - 130

### Sample Preparation by ASTM D7968 Mod.

Tumble Extraction for PFAS	2.0006	grams	1	11/10/2021 11:30	JKP
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## ANALYTICAL RESULTS

Lab ID: 3736880003  
Sample ID: Trip Blank  
Description:

Date Collected:  
Date Received: 10/28/2021 11:47

Matrix: Solid  
Collector: Don Robb

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

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