

Friday, April 29, 2022

Nick Roggenbuck
City of Harbor Beach WWTP
766 State St
Harbor Beach, MI 48441

Workorder: 376939
Project Name: Biosolids PFAS

Nick Roggenbuck,
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

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
3769390001	Biosolids	Grab	SO	04/14/2022 09:00	04/14/2022 14:44	NR
3769390002	Field Blank		S		04/14/2022 14:44	NR
3769390003	Trip Blank		S		04/14/2022 14:44	NR

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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

3769390001 - Biosolids - 13C-HFPO-DA

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

3769390001 - Biosolids - M2-4:2 FTS

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

3769390001 - Biosolids - d3-NMeFOSAA

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

3769390001 - Biosolids - d5-NEtFOSAA

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

3769390002 - Field Blank - M4PFBA

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

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ANALYTICAL RESULTS

Lab ID: 3769390001
Sample ID: Biosolids
Description: Grab

Date Collected: 04/14/2022 09:00
Date Received: 04/14/2022 14:44

Matrix: Solid
Collector: NR

Parameter	Result	Qual	Unit	RL	MDL	DF	Min	Max	Analyzed	By
Individual Parameters by SM 2540 G										
Percent Total Solids	4.1		% m/m	0.10		1			04/18/2022 15:29	LDP

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

11CI-PF3OUdS	390		ng/Kg-dry	100	65	1			04/27/2022 07:30	JKP
4:2 FTSA	<100		ng/Kg-dry	100	58	1			04/27/2022 07:30	JKP
6:2 FTSA	<150		ng/Kg-dry	150	130	1			04/27/2022 07:30	JKP
8:2 FTSA	180		ng/Kg-dry	100	50	1			04/27/2022 07:30	JKP
9CI-PF3ONS	170		ng/Kg-dry	100	59	1			04/27/2022 07:30	JKP
ADONA	<100		ng/Kg-dry	100	68	1			04/27/2022 07:30	JKP
HFPO-DA	<150		ng/Kg-dry	150	130	1			04/27/2022 07:30	JKP
NEtFOSAA	2200		ng/Kg-dry	100	57	1			04/27/2022 07:30	JKP
NMeFOSAA	3100		ng/Kg-dry	200	190	1			04/27/2022 07:30	JKP
PFBA	<25		ng/Kg-dry	25	20	1			04/27/2022 07:30	JKP
PFBS	6600		ng/Kg-dry	10	9.2	1			04/27/2022 07:30	JKP
PFDA	2000		ng/Kg-dry	15	14	1			04/27/2022 07:30	JKP
PFDS	14000		ng/Kg-dry	15	15	1			04/27/2022 07:30	JKP
PFDoA	620		ng/Kg-dry	20	17	1			04/27/2022 07:30	JKP
PFHpA	170		ng/Kg-dry	20	16	1			04/27/2022 07:30	JKP
PFHpS	640		ng/Kg-dry	15	12	1			04/27/2022 07:30	JKP
PFHxA	630		ng/Kg-dry	10	7.5	1			04/27/2022 07:30	JKP
PFHxS	4600		ng/Kg-dry	10	5.8	1			04/27/2022 07:30	JKP
PFNA	970		ng/Kg-dry	10	5.2	1			04/27/2022 07:30	JKP
PFNS	<30		ng/Kg-dry	30	29	1			04/27/2022 07:30	JKP
PFOA	1700		ng/Kg-dry	10	9.3	1			04/27/2022 07:30	JKP
PFOS	9100		ng/Kg-dry	20	20	1			04/27/2022 07:30	JKP
PFOSA	800		ng/Kg-dry	15	10	1			04/27/2022 07:30	JKP
PFPeA	420		ng/Kg-dry	15	12	1			04/27/2022 07:30	JKP
PFPeS	1200		ng/Kg-dry	15	15	1			04/27/2022 07:30	JKP
PFTeDA	360		ng/Kg-dry	25	23	1			04/27/2022 07:30	JKP
PFTTrDA	300		ng/Kg-dry	20	10	1			04/27/2022 07:30	JKP
PFUnDA	280		ng/Kg-dry	10	8.7	1			04/27/2022 07:30	JKP
PFecHS	<15		ng/Kg-dry	15	9.6	1			04/27/2022 07:30	JKP

Surrogate	Unit	Spiked Amount	Spike Result	Spike % Recovery	Control Limits	Qual
13C-HFPO-DA (S)	ng/Kg-dry	200000	110000	57	70 - 130	*
d3-NMeFOSAA (S)	ng/Kg-dry	20000	28000	142	70 - 130	*
d5-NEtFOSAA (S)	ng/Kg-dry	20000	31000	159	70 - 130	*
M2-4:2 FTS (S)	ng/Kg-dry	20000	12000	63	70 - 130	*
M2-6:2 FTS (S)	ng/Kg-dry	20000	20000	99	70 - 130	
M2-8:2 FTS (S)	ng/Kg-dry	20000	18000	91	70 - 130	
M2PFDoA (S)	ng/Kg-dry	20000	19000	95	70 - 130	

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ANALYTICAL RESULTS

M2PFTeDA (S)	ng/Kg-dry	20000	21000	104	70 - 130
M3PFBS (S)	ng/Kg-dry	20000	14000	72	70 - 130
M3PFHxS (S)	ng/Kg-dry	20000	16000	82	70 - 130
M4PFBA (S)	ng/Kg-dry	20000	17000	87	70 - 130
M4PFHpA (S)	ng/Kg-dry	20000	17000	85	70 - 130
M5PFHxA (S)	ng/Kg-dry	20000	14000	71	70 - 130
M5PFPeA (S)	ng/Kg-dry	20000	20000	104	70 - 130
M6PFDA (S)	ng/Kg-dry	20000	21000	104	70 - 130
M7PFUnDA (S)	ng/Kg-dry	20000	17000	86	70 - 130
M8PFOA (S)	ng/Kg-dry	20000	19000	95	70 - 130
M8PFOS (S)	ng/Kg-dry	20000	17000	85	70 - 130
M8PFOSA (S)	ng/Kg-dry	20000	19000	98	70 - 130
M9PFNA (S)	ng/Kg-dry	20000	19000	97	70 - 130

Sample Preparation by ASTM D7968 Mod.

Tumble Extraction for PFAS	2.0007	grams	1	04/26/2022 12:36	JKP
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ANALYTICAL RESULTS

Lab ID: 3769390002	Date Collected:	Matrix: Soil
Sample ID: Field Blank	Date Received: 04/14/2022 14:44	Collector: NR
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			04/27/2022 09:33	JKP
4:2 FTSA	<100		ng/Kg-dry	100	58	1			04/27/2022 09:33	JKP
6:2 FTSA	<150		ng/Kg-dry	150	130	1			04/27/2022 09:33	JKP
8:2 FTSA	<100		ng/Kg-dry	100	50	1			04/27/2022 09:33	JKP
9CI-PF3ONS	<100		ng/Kg-dry	100	59	1			04/27/2022 09:33	JKP
ADONA	<100		ng/Kg-dry	100	68	1			04/27/2022 09:33	JKP
HFPO-DA	<150		ng/Kg-dry	150	130	1			04/27/2022 09:33	JKP
NEtFOSAA	<100		ng/Kg-dry	100	57	1			04/27/2022 09:33	JKP
NMeFOSAA	<200		ng/Kg-dry	200	190	1			04/27/2022 09:33	JKP
PFBA	<25		ng/Kg-dry	25	20	1			04/27/2022 09:33	JKP
PFBS	<10		ng/Kg-dry	10	9.2	1			04/27/2022 09:33	JKP
PFDA	<15		ng/Kg-dry	15	14	1			04/27/2022 09:33	JKP
PFDS	<15		ng/Kg-dry	15	15	1			04/27/2022 09:33	JKP
PFDaA	<20		ng/Kg-dry	20	17	1			04/27/2022 09:33	JKP
PFHpA	<20		ng/Kg-dry	20	16	1			04/27/2022 09:33	JKP
PFHpS	<15		ng/Kg-dry	15	12	1			04/27/2022 09:33	JKP
PFHxA	<10		ng/Kg-dry	10	7.5	1			04/27/2022 09:33	JKP
PFHxS	<10		ng/Kg-dry	10	5.8	1			04/27/2022 09:33	JKP
PFNA	<10		ng/Kg-dry	10	5.2	1			04/27/2022 09:33	JKP
PFNS	<30		ng/Kg-dry	30	29	1			04/27/2022 09:33	JKP
PFOA	<10		ng/Kg-dry	10	9.3	1			04/27/2022 09:33	JKP
PFOS	<20		ng/Kg-dry	20	20	1			04/27/2022 09:33	JKP
PFOSA	<15		ng/Kg-dry	15	10	1			04/27/2022 09:33	JKP
PFPeA	<15		ng/Kg-dry	15	12	1			04/27/2022 09:33	JKP
PFPeS	<15		ng/Kg-dry	15	15	1			04/27/2022 09:33	JKP
PFTeDA	<25		ng/Kg-dry	25	23	1			04/27/2022 09:33	JKP
PFTTrDA	<20		ng/Kg-dry	20	10	1			04/27/2022 09:33	JKP
PFUnDA	<10		ng/Kg-dry	10	8.7	1			04/27/2022 09:33	JKP
PFechS	<15		ng/Kg-dry	15	9.6	1			04/27/2022 09:33	JKP

Surrogate	Unit	Spiked Amount	Spike Result	Spike % Recovery	Control Limits	Qual
13C-HFPO-DA (S)	ng/Kg-dry	8000	7100	89	70 - 130	
d3-NMeFOSAA (S)	ng/Kg-dry	800	1000	126	70 - 130	
d5-NEtFOSAA (S)	ng/Kg-dry	800	1000	129	70 - 130	
M2-4:2 FTS (S)	ng/Kg-dry	800	600	75	70 - 130	
M2-6:2 FTS (S)	ng/Kg-dry	800	720	91	70 - 130	
M2-8:2 FTS (S)	ng/Kg-dry	800	720	90	70 - 130	
M2PFDoA (S)	ng/Kg-dry	800	950	118	70 - 130	
M2PFTeDA (S)	ng/Kg-dry	800	1000	130	70 - 130	
M3PFBS (S)	ng/Kg-dry	800	570	72	70 - 130	
M3PFHxS (S)	ng/Kg-dry	800	780	98	70 - 130	

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ANALYTICAL RESULTS

M4PFBA (S)	ng/Kg-dry	800	540	68	70 - 130	*
M4PFHpA (S)	ng/Kg-dry	800	850	106	70 - 130	
M5PFHxA (S)	ng/Kg-dry	800	780	98	70 - 130	
M5PFPeA (S)	ng/Kg-dry	800	690	86	70 - 130	
M6PFDA (S)	ng/Kg-dry	800	920	114	70 - 130	
M7PFUnDA (S)	ng/Kg-dry	800	860	107	70 - 130	
M8PFOA (S)	ng/Kg-dry	800	910	114	70 - 130	
M8PFOS (S)	ng/Kg-dry	800	840	106	70 - 130	
M8PFOSA (S)	ng/Kg-dry	800	800	100	70 - 130	
M9PFNA (S)	ng/Kg-dry	800	900	112	70 - 130	

Sample Preparation by ASTM D7968 Mod.

Tumble Extraction for PFAS	2.0005	grams	1	04/26/2022 12:36	JKP
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ANALYTICAL RESULTS

Lab ID: 3769390003
Sample ID: Trip Blank
Description:

Date Collected:
Date Received: 04/14/2022 14:44

Matrix: Soil
Collector: NR

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

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