



Analytical Laboratory Report

Report ID: S24164.01(01)
Generated on 05/26/2021

Report to

Attention: Don Popma
Biotech Agronomics, Inc.
1651 Bevlah Highway
Bevlah, MI 49617

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Report produced by

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Report Summary

Lab Sample ID(s): S24164.01
Project: Howell TWP WWTP
Collected Date(s): 05/13/2021
Submitted Date/Time: 05/13/2021 14:40
Sampled by: Don Popma
P.O. #:

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

There is no additional narrative for this analytical report



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Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
ASTM D7968-17M	ASTM Method D7968 - 17 Modified (Isotopic Dilution)
SM2540B	Standard Method 2540 B 2011

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



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Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S24164.01	Biosolids	Sludge	05/13/21 09:30



Analytical Laboratory Report

Lab Sample ID: S24164.01

Sample Tag: Biosolids

Collected Date/Time: 05/13/2021 09:30

Matrix: Sludge

COC Reference: 137665

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.1	IR
1	250ml Plastic	None	Yes	5.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	13.11/7.08/10	ASTM D7968-17M	05/21/21 11:00	KCV	

Inorganics

Method: SM2540B, Run Date: 05/13/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	4.4	1		%	1		

Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 05/22/21 12:20, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	4.1		ug/kg	37.7	375-22-4	IX
PFPeA*	2.4	0.38		ug/kg	37.7	2706-90-3	I
4:2 FTSA*	Not detected	0.38		ug/kg	37.7	757124-72-4	I
PFHxA*	3.5	0.38		ug/kg	37.7	307-24-4	I
PFBS*	2.5	0.38		ug/kg	37.7	375-73-5	
PFHpA*	0.45	0.38		ug/kg	37.7	375-85-9	I
PFPeS*	Not detected	0.38		ug/kg	37.7	2706-91-4	
6:2 FTSA*	Not detected	0.38		ug/kg	37.7	27619-97-2	I
PFOA*	9.5	0.38		ug/kg	37.7	335-67-1	I
PFHxS*	Not detected	0.38		ug/kg	37.7	355-46-4	
PFHxS-LN*	Not detected	0.38		ug/kg	37.7	355-46-4-LN	
PFHxS-BR*	Not detected	0.38		ug/kg	37.7	355-46-4-BR	
PFNA*	2.2	0.38		ug/kg	37.7	375-95-1	
8:2 FTSA*	Not detected	0.38		ug/kg	37.7	39108-34-4	I
PFHpS*	Not detected	0.38		ug/kg	37.7	375-92-8	
PFDA*	15	0.38		ug/kg	37.7	335-76-2	I
N-MeFOSAA*	6.5	0.38		ug/kg	37.7	2355-31-9	
EtFOSAA*	3.8	0.38		ug/kg	37.7	2991-50-6	
PFOS*	14	0.38		ug/kg	37.7	1763-23-1	
PFOS-LN*	13	0.38		ug/kg	37.7	1763-23-1-LN	
PFOS-BR*	1.7	0.38		ug/kg	37.7	1763-23-1-BR	
PFUnDA*	1.4	0.38		ug/kg	37.7	2058-94-8	I
PFNS*	Not detected	0.38		ug/kg	37.7	68259-12-1	
PFDODA*	3	0.38		ug/kg	37.7	307-55-1	I
PFDS*	1.2	0.38		ug/kg	37.7	335-77-3	
PFTDA*	Not detected	0.38		ug/kg	37.7	72629-94-8	I
FOSA*	1.7	0.38		ug/kg	37.7	754-91-6	
PFTeDA*	Not detected	0.38		ug/kg	37.7	376-06-7	I1
11CI-PF3OUdS*	Not detected	0.38		ug/kg	37.7	763051-92-9	

I-Matrix interference with internal standard X-Elevated reporting limit due to matrix interference

1-IS recovery <10%



Analytical Laboratory Report

Lab Sample ID: S24164.01 (continued)

Sample Tag: Biosolids

28 PFAs, Method: ASTM D7968-17M, Run Date: 05/22/21 12:20, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
9CI-PF3ONS*	Not detected	0.38		ug/kg	37.7	756426-58-1	
ADONA*	Not detected	0.38		ug/kg	37.7	919005-14-4	I
HFPO-DA*	Not detected	0.38		ug/kg	37.7	13252-13-6	I

I-Matrix interference with internal standard

Merit Laboratories Login Checklist

Lab Set ID:S24164

Client:BIOTECHAGRO (Biotech Agronomics, Inc.)

Project: Howell TWP WWTP

Submitted:05/13/2021 14:40 Login User: SRS

Attention: Don Popma

Address: Biotech Agronomics, Inc.
1651 Bevlah Highway
Bevlah, MI 49617

Phone: 616-835-0100 FAX:

Email: dpopma@biotechag.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.1
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.marilabs.com

OF
PAGE #

137665

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME		Don Popma	
COMPANY		Biotech Agronomics, Inc	
ADDRESS		1651 Beulah Hwy	
CITY		Beulah	
PHONE NO.		616.835-0100	
FAX NO.			
E-MAIL ADDRESS		dpopma@biotechag.com	
PROJECT NO./NAME		Howell Twp WRRP	
TURNAROUND TIME REQUIRED		<input type="checkbox"/> 1 DAY <input type="checkbox"/> 2 DAYS <input type="checkbox"/> 3 DAYS <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> OTHER	
DELIVERABLES REQUIRED		<input checked="" type="checkbox"/> STD <input type="checkbox"/> LEVEL II <input type="checkbox"/> LEVEL III <input type="checkbox"/> LEVEL IV <input type="checkbox"/> EDD <input type="checkbox"/> OTHER	
MATRIX CODE:		GW=GROUNDWATER SL=SLUDGE WW=WASTEWATER DW=DRINKING WATER S=SOIL O=OIL L=LIQUID WP=WPIPE A=AIR SD=SOLID W=WASTE	
MERIT LAB NO. FOR LAB USE ONLY		29104.01	
DATE		5/13	
TIME		9:30A	
SAMPLE TAG IDENTIFICATION-DESCRIPTION		Biosolids	
MATRIX		bs	
# OF BOTTLES		4	
# Containers & Preservatives		PFAS D7968	
NONE		<input checked="" type="checkbox"/>	
HCl		<input type="checkbox"/>	
HNO ₃		<input type="checkbox"/>	
H ₂ SO ₄		<input type="checkbox"/>	
NaOH		<input type="checkbox"/>	
MeOH		<input type="checkbox"/>	
OTHER		<input type="checkbox"/>	
ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)		Certifications <input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water <input type="checkbox"/> DOD <input type="checkbox"/> NPDES Project Locations <input type="checkbox"/> Detroit <input type="checkbox"/> New York <input type="checkbox"/> Other <input type="checkbox"/> Special Instructions	
RELINQUISHED BY:		D-12	
SIGNATURE/ORGANIZATION		S-13-21	
RECEIVED BY:		S-13-21	
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RELINQUISHED BY:		S-13-21	
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