Analytical Laboratory Report

Report ID: S34696.01(01)
Generated on 04/27/2022

Report to

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

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Report produced by

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Report Summary

Lab Sample ID(s): S34696.01
Project: Interlochen State Park
Collected Date(s): 04/07/2022
Submitted Date/Time: 04/08/2022 09:20
Sampled by: Don Popma
P.O. #:

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Maya Murshak
Technical Director

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).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein, acrylonitrile, and 2-chlorovinylethyl ether 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.

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.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

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
Wisconsin DNR	FID# 399147320

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 2015

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
PFTrDA	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

Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34696.01	Biosolids - Lagoon #1	Sludge	04/07/22 11:25

Merit Laboratories, Inc.

Analytical Laboratory Report

Lab Sample ID: S34696.01
Sample Tag: Biosolids - Lagoon #1
Collected Date/Time: 04/07/2022 11:25
Matrix: Sludge
COC Reference: 146611

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.9	IR
1	250ml Plastic	None	Yes	3.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.09/7.00/10	ASTM D7968-17M	04/22/22 15:00	KCV	

Inorganics

Method: SM2540B, Run Date: 04/08/22 14:09, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	1.6	1		%	1		

Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 04/23/22 02:00, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	2.5		ug/kg	123	375-22-4	
PFPeA*	Not detected	1.2		ug/kg	123	2706-90-3	
4:2 FTSA*	Not detected	1.2		ug/kg	123	757124-72-4	I
PFHxA*	Not detected	1.2		ug/kg	123	307-24-4	
PFBS*	Not detected	1.2		ug/kg	123	375-73-5	
PFHpA*	Not detected	1.2		ug/kg	123	375-85-9	
PFPeS*	Not detected	1.2		ug/kg	123	2706-91-4	
6:2 FTSA*	Not detected	1.2		ug/kg	123	27619-97-2	I
PFOA*	Not detected	1.2		ug/kg	123	335-67-1	
PFHxS*	Not detected	1.2		ug/kg	123	355-46-4	
PFHxS-LN*	Not detected	1.2		ug/kg	123	355-46-4-LN	
PFHxS-BR*	Not detected	1.2		ug/kg	123	355-46-4-BR	
PFNA*	Not detected	1.2		ug/kg	123	375-95-1	
8:2 FTSA*	Not detected	1.2		ug/kg	123	39108-34-4	I
PFHpS*	Not detected	1.2		ug/kg	123	375-92-8	
PFDA*	Not detected	1.2		ug/kg	123	335-76-2	
N-MeFOSAA*	Not detected	1.2		ug/kg	123	2355-31-9	
EtFOSAA*	2.5	1.2		ug/kg	123	2991-50-6	I
PFOS*	Not detected	1.2		ug/kg	123	1763-23-1	
PFOS-LN*	Not detected	1.2		ug/kg	123	1763-23-1-LN	
PFOS-BR*	Not detected	1.2		ug/kg	123	1763-23-1-BR	
PFUnDA*	Not detected	1.2		ug/kg	123	2058-94-8	
PFNS*	Not detected	1.2		ug/kg	123	68259-12-1	
PFDoDA*	Not detected	1.2		ug/kg	123	307-55-1	
PFDS*	Not detected	1.2		ug/kg	123	335-77-3	
PFTrDA*	Not detected	1.2		ug/kg	123	72629-94-8	
FOSA*	Not detected	1.2		ug/kg	123	754-91-6	
PFTeDA*	Not detected	1.2		ug/kg	123	376-06-7	
11Cl-PF3OUdS*	Not detected	1.2		ug/kg	123	763051-92-9	
9Cl-PF3ONS*	Not detected	1.2		ug/kg	123	756426-58-1	

I-Matrix interference with internal standard

Lab Sample ID: S34696.01 (continued)

Sample Tag: Biosolids - Lagoon #1

28 PFAs, Method: ASTM D7968-17M, Run Date: 04/23/22 02:00, Analyst: KCV (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
ADONA*	Not detected	1.2		ug/kg	123	919005-14-4	
HFPO-DA*	Not detected	1.2		ug/kg	123	13252-13-6	I

I-Matrix interference with internal standard

Merit Laboratories Login Checklist

Lab Set ID: S34696
Client: BIOTECHAGRO (Biotech Agronomics, Inc.)
Project: Interlochen State Park
Submitted: 04/08/2022 09:20 Login User: MMC

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

Phone: 616-835-0100 FAX:
Email: dpopma@biotechag.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.9
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] 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: _____

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

C.O.C. PAGE # _____ OF _____

146611

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Don Popma
COMPANY: BioTech Agronomics, Inc
ADDRESS: 1651 Beulah Hwy
CITY: Beulah STATE: MI ZIP CODE: 49617
PHONE NO.: 616-835-0100 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: dpopma@biotechagr.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: Interlochen State Park
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Don Popma

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☒ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

D7968 PCBs

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR 22 DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	D7968 PCBs
34696.01	4/7	11:25	biosolids - Lagoon #1	bs	4	X							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Don Popma (Sampler) DATE: 4-8-22 TIME: 9:20A
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcote DATE: 4/8/22 TIME: 0920
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 3.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12