

Trace Analytical Laboratories, Inc.  
2241 Black Creek Road  
Muskegon, MI 49444-2673



231-773-5998 Phone  
888-979-4469 Fax  
www.trace-labs.com

May 09, 2022

Ms. Tammi Gall  
Mead & Hunt  
8288 South Pleasantview Rd.  
Harbor Springs, MI 49740

RE: Trace Project 22D0739  
Client Project Tuscarora- GW1810271

Dear Ms. Gall:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

The results were obtained from Fibertec Environmental Services.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at dhilleary@trace-labs.com.

Sincerely,

A handwritten signature in black ink that reads "Drew Hilleary".

Drew Hilleary  
Project Manager

Enclosures



NJDEP Accreditation No. MI008

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#### SAMPLE SUMMARY

Trace Project ID: 22D0739  
Client Project ID: Tuscarora- GW1810271

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
22D0739-01	Biosolids Storage	Sludge	TG	04/19/22 08:00	04/20/22 12:27

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## AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

### DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.



Monday, May 09, 2022

Fibertec Project Number: A08091  
Project Identification: PFAS ANALYSIS /  
Submittal Date: 04/20/2022

Mr. Drew Hilleary  
Trace Analytical Laboratories, Inc.  
2241 Black Creek Road  
Muskegon, MI 49444

Dear Mr. Hilleary,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

Percent Solids for sample -001 were reported at 6.1%.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

A handwritten signature in black ink, appearing to read "Sue Ricketts".

*By Sue Ricketts at 3:50 PM, May 09, 2022*

For Daryl P. Strandbergh  
Laboratory Director

Enclosures

1914 Holloway Drive  
11766 E. Grand River  
8660 S. Mackinaw Trail

Holt, MI 48842  
Brighton, MI 48116  
Cadillac, MI 49601

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T: (810) 220-3300  
T: (231) 775-8368

F: (517) 699-0388  
F: (810) 220-3311  
F: (231) 775-8584

Client Identification:	<b>Trace Analytical Laboratories, Inc.</b>	Sample Description:	<b>Biosolids Storage 22D0739-01</b>	Chain of Custody:	<b>NA</b>
Client Project Name:	<b>PFAS ANALYSIS</b>	Sample No:		Collect Date:	<b>04/19/22</b>
Client Project No:	<b>NA</b>	Sample Matrix:	<b>Biosolids</b>	Collect Time:	<b>08:00</b>

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

PFAS		Aliquot ID: A08091-001		Matrix: Biosolids						
Method: ASTM D7968-17a		Description: Biosolids Storage 22D0739-01								
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. ADONA	2.9		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 2. 9CI-PF3ONS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 3. 11CI-PF3OUdS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 4. N-EtFOSAA	3.8		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 5. FtS 4:2	U	EIS+	µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 6. FtS 6:2	2.7	EIS+	µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 7. FtS 8:2	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 8. HFPO-DA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 9. N-MeFOSAA	3.3		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 10. PFBA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 11. PFBS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 12. PFDA	6.3		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 13. PFDoA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 14. PFDS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 15. PFHpA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 16. PFHpS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 17. PFHxA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 18. PFHxS-Total	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 19. PFNA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 20. PFNS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 21. PFOA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 22. PFOSA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 23. PFOS-Total	5.9		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 24. PFPeA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 25. PFPeS	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 26. PFTeA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 27. PFTrIA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG
‡ 28. PFUnA	U		µg/kg	2.0	1.0	04/27/22	PS22D27G	05/02/22	SM22E02A	SKG

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Acronym (Param)	Analyte Name	CAS Number
1. ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
2. 9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	756426-58-1
3. 11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
4. N-EtFOSAA	2-(N-Ethylperfluorooctanesulfonamido) acetic acid	2991-50-6
5. FtS 4:2	Fluorotelomer sulphonic acid 4:2	757124-72-4
6. FtS 6:2	Fluorotelomer sulphonic acid 6:2	27619-97-2
7. FtS 8:2	Fluorotelomer sulphonic acid 8:2	39108-34-4
8. HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6
9. N-MeFOSAA	2-(N-Methylperfluorooctanesulfonamido) acetic acid	2355-31-9
10. PFBA	Perfluorobutanoic acid	375-22-4
11. PFBS	Perfluorobutanesulfonic acid	375-73-5
12. PFDA	Perfluorodecanoic acid	335-76-2
13. PFDoA	Perfluorododecanoic acid	307-55-1
14. PFDS	Perfluorodecanesulfonic acid	335-77-3
15. PFHpA	Perfluoroheptanoic acid	375-85-9
16. PFHpS	Perfluoroheptanesulfonic acid	375-92-8
17. PFHxA	Perfluorohexanoic acid	307-24-4
18. PFHxS-Total	Perfluorohexanesulfonic acid	355-46-4
19. PFNA	Perfluorononanoic acid	375-95-1
20. PFNS	Perfluorononanesulfonic acid	68259-12-1
21. PFOA	Perfluorooctanoic acid	335-67-1
22. PFOSA	Perfluorooctanesulfonamide	754-91-6
23. PFOS-Total	Perfluorooctanesulfonic acid	1763-23-1
24. PFPeA	Perfluoropentanoic acid	2706-90-3
25. PFPeS	Perfluoropentanesulfonic acid	2706-91-4
26. PFTeA	Perfluorotetradecanoic acid	376-06-7
27. PFTriA	Perfluorotridecanoic acid	72629-94-8
28. PFUnA	Perfluoroundecanoic acid	2058-94-8

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**Definitions/ Qualifiers:**

- A:** Spike recovery or precision unusable due to dilution.  
**B:** The analyte was detected in the associated method blank.  
**E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.  
**J:** The concentration is an estimated value.  
**M:** Modified Method  
**U:** The analyte was not detected at or above the reporting limit.  
**X:** Matrix Interference has resulted in a raised reporting limit or distorted result.  
**W:** Results reported on a wet-weight basis.  
**\*:** Value reported is outside QC limits

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**Exception Summary:**

**EIS+** : The Isotope Dilution/Extracted Internal Standard area exceeds the upper control limit.

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**Analysis Locations:**

All analyses performed in Holt.

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Accreditation Number(s):

**T104704518-19-8 (TX)**

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**TRUDE**  
ANALYTICAL LABORATORIES, INC.

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Phone 231.773.5998  
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Trace ID No.  
22150739

## CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Report Results To:		Bill To:	
Company Name: Meade Hunt		PO #:	
Report To: thom.gale@meadehunt.com		Contact Name: Dawn Webb	
Mailing Address:		Billing Address (if different):	
City, State, Zip Code:		City, State, Zip Code:	
Office Phone:	Cell Phone: 231-333-6874	Phone Number:	
Email Address:		Billing Email Address: clerk@tuscaroratawp.com	

Trace Use:	
Logged By:	UB
Checked By:	dl
Soil Volatiles Preserved (circle if applicable):	
MeOH	Low Level Lab
Sampling Time:	

**Turnaround Requirements:**

☐ Standard, 5-10 Days

☐ 3 Day\*

☐ 1 Day\*

*\*Results provided end of business day, requires prior approval.*

**Matrix Key:**

S = Soil / Solid

W = Water

SL = Sludge

OI = Oil

WI = Wipes

LW = Liquid Waste

A = Air

D = Drinking Water

[illegible]

☐ Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at [www.trace-labs.com/downloads](http://www.trace-labs.com/downloads)

Form 70-Z.1



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**22D0739**

Mead & Hunt

Project Manager: Drew Hilleary

**Sample Log In Checklist**

Date: 4/20/22	Original Observation	Corrected Temperature	IR-9 (CF: +0.4°C)	IR-10 (CF: +0.4°C)	20B12743 (CF: -0.2°C)	Temp Blank	Client Sample
Time: 12:22							
Logged by: KB							
Package Description: Cooler							
Package Temp °C	1.6	2.0					
Representative Sample Temp °C	5.1	5.5					

**Sample Receipt**

Yes	No	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Received on ice or other coolant
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ice still present upon receipt
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Custody seals present
<input type="checkbox"/>	<input type="checkbox"/>	Trace Courier
<input type="checkbox"/>	<input type="checkbox"/>	Client Drop-off
<input type="checkbox"/>	<input type="checkbox"/>	Yes
<input checked="" type="checkbox"/>	<input type="checkbox"/>	No
Custody seals intact (if applicable)		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	UPS
<input type="checkbox"/>	<input type="checkbox"/>	Fed Ex
<input type="checkbox"/>	<input type="checkbox"/>	US Mail
<input type="checkbox"/>	<input type="checkbox"/>	Other

**Sample Condition**

Yes	No	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All sample containers arrived unbroken and labeled
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sufficient sample to run requested analyses
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Correct chemical preservative added to samples
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Samples preserved at Trace
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Chemical preservation verified, check EMD pH test strip used (if applicable)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH 0-2.5 (Lot: HC046681)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH 11.0-13.0 (Lot: HC022540)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Air bubbles absent from VOAs

**Chain of Custody (COC)**

Yes	No	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	All bottle labels agree with COC
<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC filled out properly
<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC signed by client

**Notes:**