

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



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

April 06, 2021

Ms. Elaine Venema  
Fleis and Vandenbrink Engineers  
2960 Lucerne Drive, SE  
Grand Rapids, MI 49546

Phone: (616) 588-1913  
Fax: (616) 977-1005

RE: Trace ID: 21C0702

Dear Ms. Venema:

Enclosed are your analytical results associated with your project for Biosolids PFAS. The results of this report relate only to the samples listed in the body of this report.

The results were obtained from Fibertec Environmental Services

Thank you for working with Trace. If you have questions concerning this report, please contact me at 231.773.5998 or by email at [tbrewer@trace-labs.com](mailto:tbrewer@trace-labs.com).

Sincerely,

A handwritten signature in black ink that reads "Timothy W. Brewer".

Tim Brewer  
Project Manager

Enclosures



NJDEP Accreditation No. MI008

This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.



Monday, April 05, 2021

Fibertec Project Number: A00818  
Project Identification: 21C0702 /21C0702  
Submittal Date: 03/22/2021

Mr. Tim Brewer  
Trace Analytical Laboratories, Inc.  
2241 Black Creek Road  
Muskegon, MI 49444

Dear Mr. Brewer,

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.

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 "Sharon L. Rakow".

By Sharon Rakow at 3:58 PM, Apr 05, 2021

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

T: (517) 699-0345  
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 21C0702-01</b>	Chain of Custody:	<b>N/A</b>
Client Project Name:	<b>21C0702</b>	Sample No:		Collect Date:	<b>03/18/21</b>
Client Project No:	<b>21C0702</b>	Sample Matrix:	<b>Soil/Solid</b>	Collect Time:	<b>13:20</b>
Sample Comments:	<b>Soil results have been calculated and reported on a dry weight basis unless otherwise noted.</b>				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.				

PFAS					Aliquot ID: A00818-001	Matrix: Soil/Solid				
Method: ASTM D7968-17a					Description: Biosolids 21C0702-01					
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. N-EtFOSAA	560		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 2. FtS 4:2	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 3. FtS 6:2	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 4. FtS 8:2	290		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 5. N-MeFOSAA	670		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 6. PFBA	3200		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 7. PFBS	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 8. PFDA	1100		ng/kg	1000	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 9. PFDoA	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 10. PFDS	650		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 11. PFHpA	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 12. PFHpS	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 13. PFHxA	360		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 14. PFHxS-Total	U		ng/kg	300	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 15. PFNA	250		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 16. PFNS	U	ISC-	ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 17. PFOA	1500		ng/kg	1000	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 18. PFOSA	500		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 19. PFOS-Total	4500		ng/kg	310	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 20. PFPeA	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 21. PFPeS	U		ng/kg	500	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 22. PFTeA	U	ISC+	ng/kg	1000	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 23. PFTriA	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT
‡ 24. PFUnA	U		ng/kg	250	10	03/31/21	PS21C29H	04/02/21	SM21D02B	TKT

---

**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

---

**Exception Summary:**

- ISC-** : Recovery in the associated Instrument Sensitivity Check (ISC) exceeds the lower control limit. Results may be biased low.  
**ISC+** : Recovery in the associated Instrument Sensitivity Check (ISC) exceeds the upper control limit. Results may be biased high.

---

**Analysis Locations:**

All analyses performed in Holt.

---



Accreditation Number(s):

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

---

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

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

T: (517) 699-0345  
T: (810) 220-3300  
T: (231) 775-8368

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

PS21C29H: Method Blank (MB)

ASTM D7968-17a

Run Time: PS21C29H.MB 03/30/2021 03:58 [SM21C29A]

Analyte	MB Result	MB Qualifier	MB RDL
	ng/kg		ng/kg
N-EtFOSAA	U		25
FtS 4:2	U		25
FtS 6:2	U		25
FtS 8:2	U		25
N-MeFOSAA	U		25
PFBA	U		25
PFBS	U		25
PFDA	U		100
PFDoA	U		25
PFDS	U		25
PFHpA	U		25
PFHpS	U		25
PFHxA	U		25
PFHxS-Total	U		31
PFNA	U		25
PFNS	U		25
PFOA	U		100
PFOSA	U		25
PFOS-Total	U		31
PFPeA	U		25
PFPeS	U		25
PFTeA	U		100
PFTriA	U		25
PFUnA	U		25

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

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

T: (517) 699-0345  
T: (810) 220-3300  
T: (231) 775-8368

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

**PS21C29H: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)**

**ASTM D7968-17a**

Run Time: PS21C29H.LCS: 03/30/2021 04:13 [SM21C29A] PS21C29H.LCSD: 03/30/2021 04:28 [SM21C29A]

	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
Analyte	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier			Qualifier
	ng/kg	ng/kg	%	%		ng/kg	ng/kg	%		%	%	
N-EtFOSAA	2500	2710	109	70-130		2500	2700	108		1	30	
FtS 4:2	2500	2950	118	70-130		2500	2980	119		1	30	
FtS 6:2	2500	2670	107	70-130		2500	3070	123		14	30	
FtS 8:2	2500	2760	110	70-130		2500	2600	104		6	30	
N-MeFOSAA	2500	2610	104	70-130		2500	2490	100		4	30	
PFBA	2500	2690	107	50-130		2500	2610	104		3	30	
PFBS	2500	2660	106	70-130		2500	2530	101		5	30	
PFDA	2500	2550	102	70-130		2500	2570	103		1	30	
PFDaA	2500	2540	101	70-130		2500	2590	104		3	30	
PFDS	2500	2260	91	70-130		2500	1960	78		15	30	
PFHpA	2500	2530	101	50-130		2500	2500	100		1	30	
PFHpS	2500	2790	111	70-130		2500	2610	104		7	30	
PFHxA	2500	2630	105	50-130		2500	2570	103		2	30	
PFHxS-Total	2500	2450	98	70-130		2500	2580	103		5	30	
PFNA	2500	2660	106	70-130		2500	2590	104		2	30	
PFNS	2500	2640	106	70-130		2500	2630	105		1	30	
PFOA	2500	2780	111	70-130		2500	2800	112		1	30	
PFOSA	2500	2650	106	70-130		2500	2600	104		2	30	
PFOS-Total	2500	2470	99	70-130		2500	2490	100		1	30	
PFPeA	2500	2730	109	70-130		2500	2670	107		2	30	
PFPeS	2500	2910	117	70-130		2500	2660	107		9	30	
PFTeA	2500	2790	112	70-130		2500	2740	110		2	30	
PFTriA	2500	2000	80	70-130		2500	2090	84		5	30	
PFUnA	2500	2490	99	70-130		2500	2440	98		1	30	

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

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

T: (517) 699-0345  
T: (810) 220-3300  
T: (231) 775-8368

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

---

**Definitions/ Qualifiers:**

U: The analyte was not detected at or above the Reporting Limit (RL).  
\*: Value reported is outside QC limits

---

**Exception Summary:**

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

---

**Report Generated By:**



By Sharon Rakow at 3:59 PM, Apr 05, 2021

Report ID: 21C0702 TRACE Farmed Out FINAL 04 06 21 1010



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



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

### SAMPLE LOG IN CHECKLIST

Trace ID #: <u>21C0702</u>	Date: <u>3/19/21</u>	Package Description: <u>Cooler</u>	Temperature: <u>0.0</u>
Client Name: <u>F&amp;V Operations - Leon</u>	Time: <u>16:35</u>	Logged in by: <u>JS</u>	

### Cooler Receipt

Cooler/samples delivered by:	Trace courier <input checked="" type="checkbox"/>	Hand delivered <input type="checkbox"/>	Commercial courier <input type="checkbox"/>	UPS <input type="checkbox"/>	FED EX <input type="checkbox"/>	US Mail <input type="checkbox"/>
			Name of delivery person: <u>Daniel Peters</u>			
Tracking Number: <input checked="" type="checkbox"/> Not Applicable			Tracking #: _____			
COC Seals present and intact on cooler? <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> No <input type="checkbox"/> Yes						
Custody seals signed by Client? <input type="checkbox"/> No <input type="checkbox"/> Yes			Client custody seal # (if applicable): _____			

### Coolant and Temperature

<b>Type of Coolant Used</b>		<b>Cooler Temperature</b>	
Slurry w/ crushed, cubed, or chip ice? <input checked="" type="checkbox"/>		<u>Correction Factors:</u>	• Digital Stick Thermometer CF = -0.5°C (030930)
Multiple bags of ice around samples? <input type="checkbox"/>			• IR Thermometer CF = -0.4°C (IR #8)
Ice Packs/ Blue Ice : <input type="checkbox"/>		Representative Sample Temperature: <u>2.9</u> °C (check one below)	
No Coolant Present: <input type="checkbox"/>		<input checked="" type="checkbox"/> Temp Blank (Stick Thermometer)	
Ice still present upon receipt (circle one):		<input type="checkbox"/> Client Sample (IR Thermometer)	
<u>Yes</u> No N/A		Melt Water: <u>none</u> °C (Use Digital Stick Thermometer)	

### General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
*pH checked - samples at correct pH and labeled as such?	<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"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

#### Notes:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### \*EMD pH Test Strips Used:

☐ pH 0-2.5 Lot: HC029115 ☐ pH 11.0-13.0 Lot: HC729101  
☐ Other: \_\_\_\_\_

Form 70-A.35  
Effective 2/25/21

TRACE Analytical Laboratories, Inc.

### CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Trace Analytical Laboratories, Inc.

Report ID: 21C0702 TRACE\_Farmed\_Out FINAL 04 06 21 1010