

## ANALYTICAL REPORT

Eurofins TestAmerica, Michigan  
10448 Citation Drive  
Suite 200  
Brighton, MI 48116  
Tel: (810)229-2763

Laboratory Job ID: 190-25624-1

Client Project/Site: City of Port Huron

**For:**

City of Port Huron  
100 Merchant Street  
Port Huron, Michigan 48060

Attn: Doug Westbrook

*Sue Schafer*

Authorized for release by:  
4/20/2021 8:50:07 PM

Sue Schafer, Project Manager II  
(810)229-2763

[Sue.Schafer@Eurofinset.com](mailto:Sue.Schafer@Eurofinset.com)

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*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Sample Summary

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
190-25624-1	POTW BIOSOLIDS (SAMPLE #10-21)	Solid	04/05/21 08:20	04/07/21 08:00	

# Case Narrative

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

**Job ID: 190-25624-1**

**Laboratory: Eurofins TestAmerica, Michigan**

## Narrative

### Job Narrative 190-25624-1

#### Comments

No additional comments.

#### Receipt

The sample was received on 4/7/2021 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1° C.

#### LCMS

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-478864 and analytical batch 320-480014 recovered outside control limits for the following several analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C4 PFBA and 13C3 PFBS: POTW BIOSOLIDS (SAMPLE #10-21) (190-25624-1). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS and M2-8:2 FTS the following sample: POTW BIOSOLIDS (SAMPLE #10-21) (190-25624-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgement was used to positively identify the analyte.  
POTW BIOSOLIDS (SAMPLE #10-21) (190-25624-1)

Method 537 (modified): Results for sample POTW BIOSOLIDS (SAMPLE #10-21) (190-25624-1) were reported from the analysis of a diluted extract due to matrix interference of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Client Sample Results

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

Client Sample ID: POTW BIOSOLIDS (SAMPLE #10-21)

Lab Sample ID: 190-25624-1

Date Collected: 04/05/21 08:20

Matrix: Solid

Date Received: 04/07/21 08:00

Percent Solids: 7.4

## Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
F-53B Major	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
F-53B Minor	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
4:2 FTS	<26		26	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
6:2 FTS	<26	+	26	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
8:2 FTS	<26	+	26	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
HFPO-DA (GenX)	<3.2		3.2	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<26		26	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<26		26	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorobutanesulfonic acid (PFBS)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorobutanoic acid (PFBA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorodecanesulfonic acid (PFDS)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorodecanoic acid (PFDA)	12		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorododecanoic acid (PFDoA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluoroheptanoic acid (PFHpA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorohexanesulfonic acid (PFHxS)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorohexanoic acid (PFHxA)	3.1		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorononanesulfonic acid (PFNS)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorononanoic acid (PFNA)	2.7		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorooctanesulfonamide (FOSA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorooctanesulfonic acid (PFOS)	38	I	6.4	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorooctanoic acid (PFOA)	8.8		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluoropentanesulfonic acid (PFPeS)	<2.6	+	2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorotetradecanoic acid (PFTeA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluorotridecanoic acid (PFTrIA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1
Perfluoroundecanoic acid (PFUnA)	<2.6		2.6	ug/Kg	✱	04/13/21 04:42	04/16/21 23:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	73		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C3 HFPO-DA	40		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C4 PFBA	13	*5-	25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C3 PFBS	22	*5-	25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C2 PFDA	88		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C2 PFDoA	52		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C4 PFHpA	55		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C2 PFHxA	54		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C5 PFNA	80		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C4 PFOA	76		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C4 PFOS	80		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C2 PFTeDA	46		25 - 150	04/13/21 04:42	04/16/21 23:56	1
13C2 PFUnA	91		25 - 150	04/13/21 04:42	04/16/21 23:56	1
d5-NEtFOSAA	87		25 - 150	04/13/21 04:42	04/16/21 23:56	1
d3-NMeFOSAA	70		25 - 150	04/13/21 04:42	04/16/21 23:56	1
M2-4:2 FTS	105		25 - 150	04/13/21 04:42	04/16/21 23:56	1
M2-6:2 FTS	171	*5+	25 - 150	04/13/21 04:42	04/16/21 23:56	1

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# Client Sample Results

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

**Client Sample ID: POTW BIOSOLIDS (SAMPLE #10-21)**

**Lab Sample ID: 190-25624-1**

**Date Collected: 04/05/21 08:20**

**Matrix: Solid**

**Date Received: 04/07/21 08:00**

**Percent Solids: 7.4**

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	162	*5+	25 - 150	04/13/21 04:42	04/16/21 23:56	1
18O2 PFHxS	74		25 - 150	04/13/21 04:42	04/16/21 23:56	1

## Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	<260		260	ug/Kg	☼	04/13/21 04:42	04/14/21 22:39	100
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C5 PFPeA	49		25 - 150			04/13/21 04:42	04/14/21 22:39	100

## General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	92.6		0.1	%			04/13/21 14:42	1
Percent Solids	7.4		0.1	%			04/13/21 14:42	1

# QC Sample Results

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-478864/1-A

Matrix: Solid

Analysis Batch: 480014

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 478864

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
F-53B Major	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
F-53B Minor	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
4:2 FTS	<2.0		2.0	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
6:2 FTS	<2.0		2.0	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
8:2 FTS	<2.0		2.0	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
HFPO-DA (GenX)	<0.25		0.25	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorobutanoic acid (PFBA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorodecanesulfonic acid (PFDS)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorodecanoic acid (PFDA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorododecanoic acid (PFDoA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluoroheptanoic acid (PFHpA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorohexanesulfonic acid (PFHxS)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorohexanoic acid (PFHxA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorononanesulfonic acid (PFNS)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorononanoic acid (PFNA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorooctanesulfonamide (FOSA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		0.50	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorooctanoic acid (PFOA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluoropentanesulfonic acid (PFPeS)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluoropentanoic acid (PFPeA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorotetradecanoic acid (PFTeA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluorotridecanoic acid (PFTriA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1
Perfluoroundecanoic acid (PFUnA)	<0.20		0.20	ug/Kg		04/13/21 04:42	04/14/21 20:18	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	85		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C3 HFPO-DA	83		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C4 PFBA	76		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C3 PFBS	85		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C2 PFDA	86		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C2 PFDoA	89		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C4 PFHpA	90		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C2 PFHxA	91		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C5 PFNA	95		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C4 PFOA	86		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C4 PFOS	92		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C5 PFPeA	84		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C2 PFTeA	84		25 - 150	04/13/21 04:42	04/14/21 20:18	1
13C2 PFUnA	86		25 - 150	04/13/21 04:42	04/14/21 20:18	1
d5-NEtFOSAA	104		25 - 150	04/13/21 04:42	04/14/21 20:18	1

Eurofins TestAmerica, Michigan

# QC Sample Results

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-478864/1-A

Matrix: Solid

Analysis Batch: 480014

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 478864

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	95		25 - 150	04/13/21 04:42	04/14/21 20:18	1
M2-4:2 FTS	84		25 - 150	04/13/21 04:42	04/14/21 20:18	1
M2-6:2 FTS	82		25 - 150	04/13/21 04:42	04/14/21 20:18	1
M2-8:2 FTS	66		25 - 150	04/13/21 04:42	04/14/21 20:18	1
18O2 PFHxS	90		25 - 150	04/13/21 04:42	04/14/21 20:18	1

Lab Sample ID: LCS 320-478864/2-A

Matrix: Solid

Analysis Batch: 480014

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 478864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.28		ug/Kg		121	79 - 139
F-53B Major	1.86	2.18		ug/Kg		117	74 - 134
F-53B Minor	1.88	2.16		ug/Kg		115	66 - 136
4:2 FTS	1.87	2.18		ug/Kg		117	68 - 143
6:2 FTS	1.90	2.76	*+	ug/Kg		145	73 - 139
8:2 FTS	1.92	3.22	*+	ug/Kg		168	75 - 135
HFPO-DA (GenX)	2.00	2.28		ug/Kg		114	53 - 158
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.04		ug/Kg		102	72 - 132
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.09		ug/Kg		104	72 - 132
Perfluorobutanesulfonic acid (PFBS)	1.77	2.10		ug/Kg		119	69 - 129
Perfluorobutanoic acid (PFBA)	2.00	2.52		ug/Kg		126	76 - 136
Perfluorodecanesulfonic acid (PFDS)	1.93	2.29		ug/Kg		119	71 - 131
Perfluorodecanoic acid (PFDA)	2.00	2.34		ug/Kg		117	72 - 132
Perfluorododecanoic acid (PFDoA)	2.00	2.35		ug/Kg		117	71 - 131
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	2.29		ug/Kg		120	76 - 136
Perfluoroheptanoic acid (PFHpA)	2.00	2.36		ug/Kg		118	71 - 131
Perfluorohexanesulfonic acid (PFHxS)	1.82	2.11		ug/Kg		116	62 - 122
Perfluorohexanoic acid (PFHxA)	2.00	2.42		ug/Kg		121	71 - 131
Perfluorononanesulfonic acid (PFNS)	1.92	2.29		ug/Kg		119	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.20		ug/Kg		110	73 - 133
Perfluorooctanesulfonamide (FOSA)	2.00	2.32		ug/Kg		116	77 - 137
Perfluorooctanesulfonic acid (PFOS)	1.86	2.31		ug/Kg		124	68 - 141
Perfluorooctanoic acid (PFOA)	2.00	2.32		ug/Kg		116	72 - 132
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.44	*+	ug/Kg		130	66 - 126
Perfluoropentanoic acid (PFPeA)	2.00	2.50		ug/Kg		125	69 - 129
Perfluorotetradecanoic acid (PFTeA)	2.00	2.17		ug/Kg		108	67 - 127
Perfluorotridecanoic acid (PFTriA)	2.00	2.40		ug/Kg		120	71 - 131

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# QC Sample Results

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-478864/2-A

Matrix: Solid

Analysis Batch: 480014

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 478864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	2.00	2.25		ug/Kg		113	66 - 126
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C8 FOSA	88		25 - 150				
13C3 HFPO-DA	94		25 - 150				
13C4 PFBA	79		25 - 150				
13C3 PFBS	88		25 - 150				
13C2 PFDA	90		25 - 150				
13C2 PFDoA	88		25 - 150				
13C4 PFHpA	91		25 - 150				
13C2 PFHxA	88		25 - 150				
13C5 PFNA	94		25 - 150				
13C4 PFOA	87		25 - 150				
13C4 PFOS	86		25 - 150				
13C5 PFPeA	84		25 - 150				
13C2 PFTeDA	88		25 - 150				
13C2 PFUnA	86		25 - 150				
d5-NEtFOSAA	103		25 - 150				
d3-NMeFOSAA	105		25 - 150				
M2-4:2 FTS	87		25 - 150				
M2-6:2 FTS	76		25 - 150				
M2-8:2 FTS	64		25 - 150				
18O2 PFHxS	90		25 - 150				

## Method: D 2216 - Percent Moisture

Lab Sample ID: 190-25624-1 DU

Matrix: Solid

Analysis Batch: 479194

Client Sample ID: POTW BIOSOLIDS (SAMPLE #10-21)

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	92.6		92.6		%		0.08	20
Percent Solids	7.4		7.4		%		1	20

# Isotope Dilution Summary

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFPeA (25-150)							
190-25624-1 - DL	POTW BIOSOLIDS (SAMPLE #	49							

#### Surrogate Legend

PFPeA = 13C5 PFPeA

## Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFOSA (25-150)	HFPODA (25-150)	PFBA (25-150)	C3PFBS (25-150)	PFDA (25-150)	PFDoA (25-150)	C4PFHA (25-150)	PFHxA (25-150)
190-25624-1	POTW BIOSOLIDS (SAMPLE #	73	40	13 *5-	22 *5-	88	52	55	54
LCS 320-478864/2-A	Lab Control Sample	88	94	79	88	90	88	91	88
MB 320-478864/1-A	Method Blank	85	83	76	85	86	89	90	91

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFPeA (25-150)	PFTDA (25-150)	PFUnA (25-150)	d5NEFOS (25-150)	d3NMFOS (25-150)
190-25624-1	POTW BIOSOLIDS (SAMPLE #	80	76	80		46	91	87	70
LCS 320-478864/2-A	Lab Control Sample	94	87	86	84	88	86	103	105
MB 320-478864/1-A	Method Blank	95	86	92	84	84	86	104	95

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	PFHxS (25-150)				
190-25624-1	POTW BIOSOLIDS (SAMPLE #	105	171 *5+	162 *5+	74				
LCS 320-478864/2-A	Lab Control Sample	87	76	64	90				
MB 320-478864/1-A	Method Blank	84	82	66	90				

#### Surrogate Legend

PFOSA = 13C8 FOSA

HFPODA = 13C3 HFPO-DA

PFBA = 13C4 PFBA

C3PFBS = 13C3 PFBS

PFDA = 13C2 PFDA

PFDoA = 13C2 PFDoA

C4PFHA = 13C4 PFHpA

PFHxA = 13C2 PFHxA

PFNA = 13C5 PFNA

PFOA = 13C4 PFOA

PFOS = 13C4 PFOS

PFPeA = 13C5 PFPeA

PFTDA = 13C2 PFTeDA

PFUnA = 13C2 PFUnA

d5NEFOS = d5-NEtFOSAA

d3NMFOS = d3-NMeFOSAA

M242FTS = M2-4:2 FTS

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

PFHxS = 18O2 PFHxS

Eurofins TestAmerica, Michigan

# Definitions/Glossary

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
I	Value is EMPC (estimated maximum possible concentration).

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# QC Association Summary

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## LCMS

### Prep Batch: 478864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25624-1 - DL	POTW BIOSOLIDS (SAMPLE #10-21)	Total/NA	Solid	SHAKE	
190-25624-1	POTW BIOSOLIDS (SAMPLE #10-21)	Total/NA	Solid	SHAKE	
MB 320-478864/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-478864/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

### Analysis Batch: 480014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25624-1 - DL	POTW BIOSOLIDS (SAMPLE #10-21)	Total/NA	Solid	537 (modified)	478864
MB 320-478864/1-A	Method Blank	Total/NA	Solid	537 (modified)	478864
LCS 320-478864/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	478864

### Analysis Batch: 480414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25624-1	POTW BIOSOLIDS (SAMPLE #10-21)	Total/NA	Solid	537 (modified)	478864

## General Chemistry

### Analysis Batch: 479194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
190-25624-1	POTW BIOSOLIDS (SAMPLE #10-21)	Total/NA	Solid	D 2216	
190-25624-1 DU	POTW BIOSOLIDS (SAMPLE #10-21)	Total/NA	Solid	D 2216	

# Lab Chronicle

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

**Client Sample ID: POTW BIOSOLIDS (SAMPLE #10-21)**

**Lab Sample ID: 190-25624-1**

**Date Collected: 04/05/21 08:20**

**Matrix: Solid**

**Date Received: 04/07/21 08:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	479194	04/13/21 14:42	TCS	TAL SAC

**Client Sample ID: POTW BIOSOLIDS (SAMPLE #10-21)**

**Lab Sample ID: 190-25624-1**

**Date Collected: 04/05/21 08:20**

**Matrix: Solid**

**Date Received: 04/07/21 08:00**

**Percent Solids: 7.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE	DL		478864	04/13/21 04:42	NSS	TAL SAC
Total/NA	Analysis	537 (modified)	DL	100	480014	04/14/21 22:39	S1M	TAL SAC
Total/NA	Prep	SHAKE			478864	04/13/21 04:42	NSS	TAL SAC
Total/NA	Analysis	537 (modified)		1	480414	04/16/21 23:56	S1M	TAL SAC

## Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## Analyst References:

Lab: TAL SAC

Batch Type: Prep

NSS = Nikita Singh

Batch Type: Analysis

S1M = Sudarat Mongkol

TCS = Tammy Saechao

# Accreditation/Certification Summary

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

## Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-24
ANAB	ISO/IEC 17025	L2468	01-20-24
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-29-22
Hawaii	State	<cert No.>	01-29-22
Illinois	NELAP	200060	03-18-22
Kansas	NELAP	E-10375	10-31-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-22
Nevada	State	CA000442021-2	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-22
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-30-23
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442021-12	02-28-21 *
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-22
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Michigan

## Method Summary

Client: City of Port Huron  
Project/Site: City of Port Huron

Job ID: 190-25624-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

### Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

## Login Sample Receipt Checklist

Client: City of Port Huron

Job Number: 190-25624-1

**Login Number: 25624**

**List Number: 2**

**Creator: Cahill, Nicholas P**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 04/09/21 06:55 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.0c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Eurofins TestAmerica, Michigan Service Center  
10448 Citation Drive  
Suite 200  
Brighton, MI 48116-6561  
phone 810.229.2763 fax

## Chain of Custody Record



Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other:

<b>Project Manager:</b> Email: _____ Tel/Fax: _____		<b>Site Contact:</b> Lab Contact: _____		<b>Date:</b> 4-5-2021		<b>COC No:</b> 1 of 1 COCs					
<b>Analysis Turnaround Time</b> <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		<b>For Lab Use Only:</b> Sampler: DWesbrook/DHarsman Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: _____									
<b>Sample Identification</b>		<b>Sample Date</b>		<b>Sample Time</b>		<b>Sample Type</b> (C=Comp, G=Grab)		<b>Matrix</b>		<b># of Cont.</b>	
POTW Biosolids (Sample # 10-21)		4/5/2021		8:20am		G		Sludge		2	
<b>Preservation Used:</b> 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____											
<b>Possible Hazard Identification:</b> Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown											
<b>Special Instructions/QC Requirements &amp; Comments:</b> Sample(s) shipped in a cooler with ice.											
<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months											
<b>Custody Seal Intact</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No											
<b>Relinquished by:</b> Doug Westbrook		<b>Company:</b> City of Port Huron		<b>Date/Time:</b> 4/5/2021 1:00 PM		<b>Received by:</b> [Signature]		<b>Company:</b> EPA		<b>Date/Time:</b> 4/6/21 9:38	
<b>Relinquished by:</b> [Signature]		<b>Company:</b> EPA		<b>Date/Time:</b> 4/6/21 9:38		<b>Received by:</b> [Signature]		<b>Company:</b> EPA		<b>Date/Time:</b> 4/7/21 08:00	
<b>Relinquished by:</b> [Signature]		<b>Company:</b> EPA		<b>Date/Time:</b> 4/6/21 9:38		<b>Received by:</b> [Signature]		<b>Company:</b> EPA		<b>Date/Time:</b> 4/7/21 08:00	



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**Eurofins TestAmerica Canton Sample Receipt Form/Narrative** Login # : 19025621  
**Canton Facility**

Client City of Port Huron Site Name \_\_\_\_\_ Cooler unpacked by: Adam Jensen  
Cooler Received on 4-7-21 Opened on 4-7-21  
FedEx: 1<sup>st</sup> Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other \_\_\_\_\_

**Receipt After-hours: Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_**

TestAmerica Cooler # TA Foam Box Client Cooler Box Other \_\_\_\_\_  
Packing material used: Bubble Wrap Foam Plastic Bag None Other \_\_\_\_\_  
COOLANT: Wet Ice Blue Ice Dry Ice Water None \_\_\_\_\_

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form  
IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 20 °C Corrected Cooler Temp. 21 °C  
IR GUN #IR-12 (CF +0.2 °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp. \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No  
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA  
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No  
-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No  
4. Did custody papers accompany the sample(s)? Yes No  
5. Were the custody papers relinquished & signed in the appropriate place? Yes No  
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No  
7. Did all bottles arrive in good condition (Unbroken)? Yes No  
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No  
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No  
10. Were correct bottle(s) used for the test(s) indicated? Yes No  
11. Sufficient quantity received to perform indicated analyses? Yes No  
12. Are these work share samples and all listed on the COC? Yes No  
If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC022887  
14. Were VOAs on the COC? Yes No  
15. Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA  
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_ Yes No  
17. Was a LL Hg or Me Hg trip blank present? Yes No

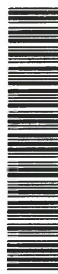
Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_  
Concerning \_\_\_\_\_

**18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES** ☐ additional next page Samples processed by: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**19. SAMPLE CONDITION**  
Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
Sample(s) \_\_\_\_\_ were received in a broken container.  
Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter. (Notify PM)

**20. SAMPLE PRESERVATION**  
Sample(s) \_\_\_\_\_ were further preserved in the laboratory.  
Time preserved: \_\_\_\_\_ Preservative(s) added/Lot number(s): \_\_\_\_\_  
VOA Sample Preservation - Date/Time VOAs Frozen: \_\_\_\_\_

## Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>				Lab PM: Schafer, Sue		Carrier Tracking No(s): 240-134547.1	
Client Contact: Shipping/Receiving				Phone: Sue Schafer@Eurofins.com		State of Origin: Michigan	
Company: TestAmerica Laboratories, Inc.				Accreditations Required (See note): 190-25624-1		Job #: 190-25624-1	
Address: 880 Riverside Parkway, West Sacramento CA, 95605				Due Date Requested: 4/20/2021		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
PO #: 916-373-5600(Tel) 916-372-1059(Fax) Email:				TAT Requested (days):		Analysis Requested	
Project #: 19000895				Matrix (W=water, S=solid, O=water/oil, BT=tissue, AA=air)		Total Number of containers	
Site: City of Port Huron				Sample Type (C=comp, G=grab)		Perform MS/MSD (Yes or No)	
Sample Date 4/5/21				Sample Time 08:20 Eastern		Moisture	
Sample Identification - Client ID (Lab ID) POTW BIOSOLIDS (SAMPLE #10-21) (190-25624-1)				Preservation Code: Solid		Special Instructions/Note:	
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.							
<b>Possible Hazard Identification</b> Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)							
Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Special Instructions/QC Requirements:							
Method of Shipment							
Date/Time: 4-6-21 10:39		Date/Time: 4-9-21 18:00		Date/Time: 4-9-21 18:00		Date/Time: 4-9-21 18:00	
Relinquished by: [Signature]		Relinquished by: [Signature]		Relinquished by: [Signature]		Relinquished by: [Signature]	
Relinquished by: [Signature]		Relinquished by: [Signature]		Relinquished by: [Signature]		Relinquished by: [Signature]	
Custody Seal No.: Δ Yes Δ No		Custody Seal No.: Δ Yes Δ No		Custody Seal No.: Δ Yes Δ No		Custody Seal No.: Δ Yes Δ No	