



# Analytical Laboratory Report

Report ID: S32652.01(01)  
Generated on 02/21/2022

## Report to

Attention: Highland Treatment  
Highland Treatment Inc  
PO Box 1089  
Highland, MI 48357

Phone: 248-889-1922 FAX:  
Email: Highland.Treatment@comcast.net

## Report produced by

Merit Laboratories, Inc.  
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East Lansing, MI 48823

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## Report Summary

Lab Sample ID(s): S32652.01  
Project: Multi Lakes WWTP  
Collected Date(s): 02/07/2022  
Submitted Date/Time: 02/08/2022 10:26  
Sampled by: Jack Fuller  
P.O. #:

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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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 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.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

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

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There is no additional narrative for this analytical report



# Analytical Laboratory 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 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   |



# Analytical Laboratory Report

## Sample Summary (1 samples)

| Sample ID | Sample Tag           | Matrix | Collected Date/Time |
|-----------|----------------------|--------|---------------------|
| S32652.01 | Multi Lakes Digester | Liquid | 02/07/22 08:45      |



# Analytical Laboratory Report

Lab Sample ID: S32652.01

Sample Tag: Multi Lakes Digester

Collected Date/Time: 02/07/2022 08:45

Matrix: Liquid

COC Reference: 147679

## Sample Containers

| # | Type                 | Preservative(s) | Refrigerated? | Arrival Temp. (C) | Thermometer # |
|---|----------------------|-----------------|---------------|-------------------|---------------|
| 1 | 250ml Plastic        | None            | Yes           | 5.6               | IR            |
| 1 | 15ml Centrifuge Tube | None            | Yes           | 5.6               | IR            |

## Extraction / Prep.

| Parameter                                      | Result        | Method         | Run Date       | Analyst | Flags |
|------------------------------------------------|---------------|----------------|----------------|---------|-------|
| Initial wt. (g) / Final wt. (g) / Volume (ml)* | 12.36/7.05/10 | ASTM D7968-17M | 02/09/22 12:30 | KCV     |       |

## Inorganics

Method: SM2540B, Run Date: 02/08/22 17:00, Analyst: MAM

| Parameter    | Result | RL | MDL | Units | Dilution | CAS# | Flags |
|--------------|--------|----|-----|-------|----------|------|-------|
| Total Solids | 1.8    | 1  |     | %     | 1        |      |       |

## Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 02/10/22 00:54, Analyst: KCV

| Parameter     | Result       | RL  | MDL | Units | Dilution | CAS#         | Flags |
|---------------|--------------|-----|-----|-------|----------|--------------|-------|
| PFBA*         | Not detected | 11  |     | ug/kg | 105      | 375-22-4     | IX    |
| PFPeA*        | 5.9          | 1.1 |     | ug/kg | 105      | 2706-90-3    |       |
| 4:2 FTSA*     | Not detected | 1.1 |     | ug/kg | 105      | 757124-72-4  | I     |
| PFHxA*        | 3            | 1.1 |     | ug/kg | 105      | 307-24-4     |       |
| PFBS*         | 8.5          | 1.1 |     | ug/kg | 105      | 375-73-5     |       |
| PFHpA*        | Not detected | 1.1 |     | ug/kg | 105      | 375-85-9     |       |
| PFPeS*        | Not detected | 1.1 |     | ug/kg | 105      | 2706-91-4    |       |
| 6:2 FTSA*     | Not detected | 1.1 |     | ug/kg | 105      | 27619-97-2   | I     |
| PFOA*         | 13           | 1.1 |     | ug/kg | 105      | 335-67-1     |       |
| PFHxS*        | Not detected | 1.1 |     | ug/kg | 105      | 355-46-4     |       |
| PFHxS-LN*     | Not detected | 1.1 |     | ug/kg | 105      | 355-46-4-LN  |       |
| PFHxS-BR*     | Not detected | 1.1 |     | ug/kg | 105      | 355-46-4-BR  |       |
| PFNA*         | 1.2          | 1.1 |     | ug/kg | 105      | 375-95-1     |       |
| 8:2 FTSA*     | Not detected | 1.1 |     | ug/kg | 105      | 39108-34-4   | I     |
| PFHpS*        | Not detected | 1.1 |     | ug/kg | 105      | 375-92-8     |       |
| PFDA*         | 11           | 1.1 |     | ug/kg | 105      | 335-76-2     |       |
| N-MeFOSAA*    | 7.4          | 1.1 |     | ug/kg | 105      | 2355-31-9    |       |
| EtFOSAA*      | 5.4          | 1.1 |     | ug/kg | 105      | 2991-50-6    | I     |
| PFOS*         | 15           | 1.1 |     | ug/kg | 105      | 1763-23-1    |       |
| PFOS-LN*      | 13           | 1.1 |     | ug/kg | 105      | 1763-23-1-LN |       |
| PFOS-BR*      | 2.2          | 1.1 |     | ug/kg | 105      | 1763-23-1-BR |       |
| PFUnDA*       | Not detected | 1.1 |     | ug/kg | 105      | 2058-94-8    |       |
| PFNS*         | Not detected | 1.1 |     | ug/kg | 105      | 68259-12-1   |       |
| PFDODA*       | 3.6          | 1.1 |     | ug/kg | 105      | 307-55-1     |       |
| PFDS*         | 1.1          | 1.1 |     | ug/kg | 105      | 335-77-3     |       |
| PFTTrDA*      | Not detected | 1.1 |     | ug/kg | 105      | 72629-94-8   |       |
| FOSA*         | 1.8          | 1.1 |     | ug/kg | 105      | 754-91-6     |       |
| PFTeDA*       | Not detected | 1.1 |     | ug/kg | 105      | 376-06-7     |       |
| 11CI-PF3OUdS* | Not detected | 1.1 |     | ug/kg | 105      | 763051-92-9  |       |
| 9CI-PF3ONS*   | Not detected | 1.1 |     | ug/kg | 105      | 756426-58-1  |       |

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



# Analytical Laboratory Report

Lab Sample ID: S32652.01 (continued)

Sample Tag: Multi Lakes Digester

28 PFAs, Method: ASTM D7968-17M, Run Date: 02/10/22 00:54, Analyst: KCV (continued)

| Parameter | Result       | RL  | MDL | Units | Dilution | CAS#        | Flags |
|-----------|--------------|-----|-----|-------|----------|-------------|-------|
| ADONA*    | Not detected | 1.1 |     | ug/kg | 105      | 919005-14-4 |       |
| HFPO-DA*  | Not detected | 1.1 |     | ug/kg | 105      | 13252-13-6  | I     |

I-Matrix interference with internal standard

# Merit Laboratories Login Checklist

Lab Set ID:S32652

Client:HIGHLAND (Highland Treatment Inc)

Project: Multi Lakes WWTP

Submitted:02/08/2022 10:26 Login User: PFD

Attention: Highland Treatment

Address: Highland Treatment Inc

PO Box 1089

Highland, MI 48357

Phone: 248-889-1922

FAX:

Email: Highland.Treatment@comcast.net

| Selection                | Description                                                                                      | Note                                                   |
|--------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>Sample Receiving</b>  |                                                                                                  |                                                        |
| 01.                      | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.6 |
| 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 |
| <b>Chain of Custody</b>  |                                                                                                  |                                                        |
| 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:               |
| <b>Preservation</b>      |                                                                                                  |                                                        |
| 10.                      | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input 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?       |
| <b>Bottle Conditions</b> |                                                                                                  |                                                        |
| 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

|                                                  |  |                         |                   |
|--------------------------------------------------|--|-------------------------|-------------------|
| CONTACT NAME<br>Anthony Dawson                   |  |                         |                   |
| COMPANY<br>Highland Treatment INC                |  |                         |                   |
| ADDRESS<br>P.O. Box 1089, 938 N. Milford Rd      |  |                         |                   |
| CITY<br>Highland                                 |  | STATE<br>MI             | ZIP CODE<br>48357 |
| PHONE NO.<br>248-889-1922                        |  | FAX NO.<br>248-887-6256 | P.O. NO.          |
| E-MAIL ADDRESS<br>Highland.Treatment@Comcast.net |  | QUOTE NO.               |                   |

## CHAIN OF CUSTODY RECORD

|              |  |                               |          |
|--------------|--|-------------------------------|----------|
| CONTACT NAME |  | <input type="checkbox"/> SAME |          |
| COMPANY      |  |                               |          |
| ADDRESS      |  |                               |          |
| CITY         |  | STATE                         | ZIP CODE |
| PHONE NO.    |  | E-MAIL ADDRESS                |          |

**INVOICE TO**

|                                                                                                                                                                                                                             |                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| PROJECT NO./NAME<br><b>MULLI LAKE, WWTB</b>                                                                                                                                                                                 | SAMPLER(S) - PLEASE PRINT/SIGN NAME<br><b>JACK FULLER</b> |
| 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 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 _____ |                                                           |

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

## # Containers & Preservatives

## Certifications

☐ OHIO VAP    ☐ Drinking Water☐ DoD ☐ NPDES

## Project Locations

☐ Detroit      ☐ New York☐ Other \_\_\_\_\_

Special Instructions

[illegible]

|                        |                                  |        |       |
|------------------------|----------------------------------|--------|-------|
| RELINQUISHED BY:       | <input type="checkbox"/> Sampler | DATE   | TIME  |
| SIGNATURE/ORGANIZATION | <i>Roger Gimes</i>               | 2/8/22 | 10:26 |
| RECEIVED BY:           | <input type="checkbox"/> Samplee | DATE   | TIME  |
| SIGNATURE/ORGANIZATION | <i>Patricia</i>                  | 2/8/22 | 10:26 |
| RELINQUISHED BY:       | <input type="checkbox"/> Sampler | DATE   | TIME  |
| SIGNATURE/ORGANIZATION |                                  |        |       |
| RECEIVED BY:           | <input type="checkbox"/> Samplee | DATE   | TIME  |
| SIGNATURE/ORGANIZATION |                                  |        |       |

|                                            |                                                                         |          |                                          |      |
|--------------------------------------------|-------------------------------------------------------------------------|----------|------------------------------------------|------|
| RELINQUISHED BY:<br>SIGNATURE/ORGANIZATION |                                                                         |          | DATE                                     | TIME |
| RECEIVED BY:<br>SIGNATURE/ORGANIZATION     |                                                                         |          | DATE                                     | TIME |
| SEAL NO.                                   | SEAL INTACT<br>YES <input type="checkbox"/> NO <input type="checkbox"/> | INITIALS | NOTES: TEMP. ON ARRIVAL _____<br><br>5.6 |      |
| SEAL NO.                                   | SEAL INTACT<br>YES <input type="checkbox"/> NO <input type="checkbox"/> | INITIALS |                                          |      |

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