

April 08, 2022

Lonnie Bennett
Paw Paw Lake Area WWTP
4689 DeField Road
Coloma, MI 49038

RE: Project: Waste Characterization
Pace Project No.: 50311540

Dear Lonnie Bennett:

Enclosed are the analytical results for sample(s) received by the laboratory on March 17, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jennifer Rice for
Brian Hall
brian.hall@pacelabs.com
(616)975-4500
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Waste Characterization
 Pace Project No.: 50311540

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414	Missouri Certification #: 10100
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab	Montana Certification #: CERT0092
A2LA Certification #: 2926.01*	Nebraska Certification #: NE-OS-18-06
Alabama Certification #: 40770	Nevada Certification #: MN00064
Alaska Contaminated Sites Certification #: 17-009*	New Hampshire Certification #: 2081*
Alaska DW Certification #: MN00064	New Jersey Certification #: MN002
Arizona Certification #: AZ0014*	New York Certification #: 11647*
Arkansas DW Certification #: MN00064	North Carolina DW Certification #: 27700
Arkansas WW Certification #: 88-0680	North Carolina WW Certification #: 530
California Certification #: 2929	North Dakota Certification #: R-036
Colorado Certification #: MN00064	Ohio DW Certification #: 41244
Connecticut Certification #: PH-0256	Ohio VAP Certification (1700) #: CL101
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137	Ohio VAP Certification (1800) #: CL110*
Florida Certification #: E87605*	Oklahoma Certification #: 9507*
Georgia Certification #: 959	Oregon Primary Certification #: MN300001
Hawaii Certification #: MN00064	Oregon Secondary Certification #: MN200001*
Idaho Certification #: MN00064	Pennsylvania Certification #: 68-00563*
Illinois Certification #: 200011	Puerto Rico Certification #: MN00064
Indiana Certification #: C-MN-01	South Carolina Certification #: 74003001
Iowa Certification #: 368	Tennessee Certification #: TN02818
Kansas Certification #: E-10167	Texas Certification #: T104704192*
Kentucky DW Certification #: 90062	Utah Certification #: MN00064*
Kentucky WW Certification #: 90062	Vermont Certification #: VT-027053137
Louisiana DEQ Certification #: AI-03086*	Virginia Certification #: 460163*
Louisiana DW Certification #: MN00064	Washington Certification #: C486*
Maine Certification #: MN00064*	West Virginia DEP Certification #: 382
Maryland Certification #: 322	West Virginia DW Certification #: 9952 C
Michigan Certification #: 9909	Wisconsin Certification #: 999407970
Minnesota Certification #: 027-053-137*	Wyoming UST Certification #: via A2LA 2926.01
Minnesota Dept of Ag Approval: via MN 027-053-137	USDA Permit #: P330-19-00208
Minnesota Petrofund Registration #: 1240*	*Please Note: Applicable air certifications are denoted with an asterisk (*).
Mississippi Certification #: MN00064	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Waste Characterization
Pace Project No.: 50311540

Lab ID	Sample ID	Matrix	Date Collected	Date Received
50311540001	Bio Solids	Solid	03/16/22 09:00	03/17/22 08:20
50311540002	Equipment Blank	Water	03/16/22 00:00	03/17/22 08:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Waste Characterization
Pace Project No.: 50311540

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
50311540001	Bio Solids	ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Waste Characterization
Pace Project No.: 50311540

Lab Sample ID	Client Sample ID	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50311540001 ASTM D2974	Bio Solids Percent Moisture		89.4	%	0.10	03/23/22 12:40	N2

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Waste Characterization
Pace Project No.: 50311540

Sample: Bio Solids Lab ID: **50311540001** Collected: 03/16/22 09:00 Received: 03/17/22 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight / %M by ASTM D2974								
Percent Moisture	89.4	%	0.10	1		03/23/22 12:40		N2

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Waste Characterization

Pace Project No.: 50311540

QC Batch: 805186

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 50311540001

SAMPLE DUPLICATE: 4273718

Parameter	Units	Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10601526002	8.8	8.3	5	30 N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Waste Characterization
Pace Project No.: 50311540

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Waste Characterization
Pace Project No.: 50311540

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50311540001	Bio Solids	ASTM D2974	805186		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CHAIN-OF-CUSTODY / Analytical Request Document

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at <https://info.pacelabs.com>

Section A

Required Client Information:

Company:	Paw Paw Lake Area WWTP
Address:	4689 Dafield Road
City/State:	Coloma, MI 49038
Email:	pplwwip@gmail.com
Phone:	(269)468-7888
Requested Due Date:	

Section B

Required Project Information:

Report To:	LonnIE Bennett
Copy To:	
Purchase Order #:	
Project Name:	PFAS, TENORM & MI 10 Metals
Project #:	

Section C

Invoice Information:



50311540

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9, -,) Sample IDs must be unique	MATRIX Drinking Water Water Waste Water Product Oil/Solid Oil WP SL AR OT TS	CODE DW WT WW P SL OL WP AR OT TS	SAMPLE TYPE (G=GRAIN C=COHESIVE) see valid codes to left	MATRIX CODE (G=GRAIN C=COHESIVE)	# OF CONTAINERS	SAMPLE TEMP AT COLLECTION			Preservatives	Analyses Test Y/N	PFAS by 53T Equipment Blanks Y/N	Residual Chlorine (Y/N)	State / Location Michigan	Requested Analysis Filtered (Y/N)								
							START	END	TIME														
1	BIO-SOLIDS	W	G	3-16-22 9:00		2				X													
2	Equipment Blank					1																	
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
ADDITIONAL COMMENTS			REINFORCED BY / AFFILIATION			ACCEPTED BY / AFFILIATION			DATE			TIME			SAMPLE CONDITIONS								
									3-17-22 6:22			3-17-22 6:22											
<table border="1"> <tr> <td colspan="2">SAMPLER NAME AND SIGNATURE</td> <td colspan="2">PRINT Name of SAMPLER: LONNIE BENNETT</td> <td colspan="2">SIGNATURE of SAMPLER: </td> <td colspan="2">DATE Signed: 3-16-2022</td> </tr> </table>																SAMPLER NAME AND SIGNATURE		PRINT Name of SAMPLER: LONNIE BENNETT		SIGNATURE of SAMPLER:		DATE Signed: 3-16-2022	
SAMPLER NAME AND SIGNATURE		PRINT Name of SAMPLER: LONNIE BENNETT		SIGNATURE of SAMPLER:		DATE Signed: 3-16-2022																	

Sample Conditions Upon Receipt Form (SCUR)

Date/Time: 3.17.22	Evaluated by: WDC	WO# : 50311540 PM: BJH Due Date: 04/14/22 CLIENT: GR-PPLake		
Client: Paw Paw WWTP	Project Manager: BTH	Profile ID:		
Rush TAT Requested: YES	NO	Due Date:		
Lab Notified of Rush or Short Holds: YES	NO		Non Conformance Form Required: YES	NO
Samples Received Via: FedEx UPS Client Pace Courier Other: _____				Comments:
Custody Seals Present and Intact:				YES NO NA
Received Sample Information Form(s): Drinking Waters Only				YES NO NA
USDA Regulated Soils: (AL, AR, CA, FL, GA, ID, LA, MS, NM, NY, NC, OK, OR, SC, TN, TX, WA or Puerto Rico)				YES NO N/A
Short Holds Present (< 72 Hours):				YES NO
Samples Received in Hold:				YES NO
Custody Signatures Present:				YES NO
Collector Signature Present:				YES NO
Packing Material Used:				YES NO
Samples Collected Today and On Ice:				YES NO N/A
IR Gun #: 280 281	Digital Thermometer #: 282 283			
Ice Type: WET Bagged / WET Loose BLUE NONE	1. Cooler Temp Upon Receipt: 19.09 °C			
Ice Location: TOP BOTTOM MIDDLE DISPERSED	Temp should be 0-6°C (Initial/Corrected)			
Temp Blank Received:	YES	NO		
Containers Intact:	YES	NO		
Correct Containers:	YES	NO		
Sufficient Volume:	YES	NO		
Sample pH Acceptable: All containers needing preservation are found to be in compliance with EPA recommendation	YES	NO	N/A	
pH Strip Lot #: _____ Exceptions are VOA, coliform, LLHG, O&G, or any container with a septum cap or preserved with HCl	YES	NO	N/A	
Residual Chlorine Absent: Cl ₂ Strip Lot #: _____ (SVOC/Pest 625, PCB 608, Total/Amenable Cyanide)	YES	NO	N/A	
VOA Headspace Acceptable (<6mm):	YES	NO	N/A	
Trip Blank Received: HCl MeOH TSP OTHER	YES	NO		
Comments:	2. Cooler Temp Upon Receipt: _____ °C			
	3. Cooler Temp Upon Receipt: _____ °C			
	4. Cooler Temp Upon Receipt: _____ °C			

Report Prepared for:

Brian Hall
PACE Indianapolis
5560 Corporate Exchange Ct.
Grand Rapids MI 49512

REPORT OF LABORATORY ANALYSIS FOR PFAAs

Report Prepared Date:

April 8, 2022

Report Information:

Pace Project #: 10601133

Sample Receipt Date: 03/18/2022

Client Project #: 50311540 Paw Paw Lake Area

Client Sub PO #: N/A

State Cert #: 9909

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nick Gilmartin, your Pace Project Manager.

This report has been reviewed by:



April 08, 2022

Nick Gilmartin, Project Manager
(612) 656-2262
(612) 607-6444 (fax)
Nicholas.Gilmartin@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Page 12 of 47

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Indianapolis. The samples were analyzed for twenty-eight perfluorinated compounds using DOD QSM 5.3 for PFAS. Reporting limits were set to quantification limits.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank was free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. The RPDs (relative percent differences) between one designated spike and its duplicate were within the method limits. These spikes indicate that extraction performed as expected. A matrix spike was prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

Diminished extracted internal standard (EIS) recovery ("R" flagged) were present in samples, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Sample "Bio Solids" has elevated EIS recoveries ("R" flagged) for FTS. While the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard, in the case of the FTS compounds, the recoveries are anomalously high, and are adversely impacted by matrix. The results for these native compounds should be considered estimated.

The four injection internal standards (13C4_PFOA, 13C4_PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Values were flagged "I" where incorrect isotope ratios were obtained.



Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Missouri	10100
Alabama	40770	Montana	CERT0092
Alaska-DW	MN00064	Nebraska	NE-OS-18-06
Alaska-UST	17-009	Nevada	MN00064
Arizona	AZ0014	New Hampshire	2081
Arkansas - WW	88-0680	New Jersey	MN002
Arkansas-DW	MN00064	New York	11647
California	2929	North Carolina-	27700
Colorado	MN00064	North Carolina-	530
Connecticut	PH-0256	North Dakota	R-036
Florida	E87605	Ohio-DW	41244
Georgia	959	Ohio-VAP (170)	CL101
Hawaii	MN00064	Ohio-VAP (180)	CL110
Idaho	MN00064	Oklahoma	9507
Illinois	200011	Oregon- rimary	MN300001
Indiana	C-MN-01	Oregon-Second	MN200001
Iowa	368	Pennsylvania	68-00563
Kansas	E-10167	Puerto Rico	MN00064
Kentucky-DW	90062	South Carolina	74003
Kentucky-WW	90062	Tennessee	TN02818
Louisiana-DEQ	AI-84596	Texas	T104704192
Louisiana-DW	MN00064	Utah	MN00064
Maine	MN00064	Vermont	VT-027053137
Maryland	322	Virginia	460163
Michigan	9909	Washington	C486
Minnesota	027-053-137	West Virginia-D	382
Minnesota-Ag	via MN 027-053	West Virginia-D	9952C
Minnesota-Petr	1240	Wisconsin	999407970
Mississippi	MN00064	Wyoming-UST	via A2LA 2926.

REPORT OF LABORATORY ANALYSIS

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

Appendix A

Sample Management



Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Sample ID Cross Reference

<u>Client Sample ID</u>	<u>Pace Sample ID</u>	<u>Date Received</u>	<u>Sample Type</u>
Bio Solids	50311540001	03/18/2022	Solid
Equipment Blank	50311540002	03/18/2022	Water

REPORT OF LABORATORY ANALYSIS

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

Page 16 of 47

Internal Transfer Chain of Custody



Samples Pre-Logged into eCOC.

Report To:

Workorder: 50311540 Workorder Name: Waste Characterization
 Brian Hall
 Pace Analytical Grand Rapids
 4171 40th St. SE
 Grand Rapids, MI 49512
 Phone (616)975-4500

State Of Origin: MI
 Cert. Needed: Yes
 No

Owner Received Date: 3/17/2022 Results Requested By: 4/14/2022

WO# : 10601133

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved	Comments											
							LAB USE ONLY											
1	Bio Solids	PS	3/16/2022 09:00	50311540001	Solid	1												
2	Equipment Blank	PS	3/16/2022 00:00	50311540002	Water	1												
3																		
4																		
5																		
Transfers	Released By	Date/Time	Received By	Date/Time			Comments											
1		3/17/22		3/18/22			<i>Report -001 Bio solids in vial log</i>											
2																		
3																		
Cooler Temperature on Receipt	7.9 °C	Custody Seal Y or (N)	Received on Ice Y or N	Received	on Ice Y or N	Samples Intact Y or N	Comments											

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:
Sample Condition Upon Receipt (SCUR)

Document Revised: 06Jan2022
Page 1 of 1

Document No.:
ENV-FRM-MIN4-0150 Rev.04

Pace Analytical Services - Minneapolis

**Sample Condition
Upon Receipt**

Client Name:

Project #:

WO# : 10601133

Courier:

FedEx UPS USPS
 Pace SpeeDee Commercial

Client

Tracking Number: 5642 5008 0848

See Exceptions
ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? Yes No

Seals Intact? Yes No

Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap Bubble Bags None Other: _____

Temp Blank? Yes No

Thermometer: T1(0461) T2(1336) T3(0459) T4(0254)
 T5(0489) 01339252/1710 122639816 140792808

Type of Ice: Wet Blue None Dry Melted

Did Samples Originate in West Virginia? Yes No **Were All Container Temps Taken?** Yes No N/A

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 7.8 °C

Average Corrected Temp (no temp blank only): _____ °C

See Exceptions
ENV-FRM-MIN4-0142

Correction Factor: +0.1

Cooler Temp Corrected w/temp blank: 7.9 °C

1 Container

USDA Regulated Soil: (N/A, water sample/Other: Solid)

Date/Initials of Person Examining Contents: KN 07/18/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): <input type="checkbox"/> Duluth <input checked="" type="checkbox"/> Minneapolis <input type="checkbox"/> Virginia	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8hr, <24 hrs, <input type="checkbox"/> >24 hrs
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input checked="" type="checkbox"/> Other- Solid	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A kH 07/18/22	Positive for Res. <input type="checkbox"/> Yes Chlorine? <input type="checkbox"/> No pH Paper Lot# <input type="checkbox"/> See Exception <input type="checkbox"/> ENV-FRM-MIN4-0142
Headspace in Methyl Mercury Container? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip
Extra labels present on soil VOA or WIDRO containers? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception <input type="checkbox"/> ENV-FRM-MIN4-0140
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____

Date/Time: _____

Field Data Required? Yes No

Comments/Resolution: _____

Project Manager Review: _____

Date: 3/18/22

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: KNQ

Page 18 of 47

Pace

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant facts must be contained in this document. Submitting a sample via this chain of custody constitutes acknowledgement and acceptance of the Pace Terms and Conditions found at <https://info.pacelabs.com>.

Section A

Required Client Information:

Company: Paw Paw Lake Area WHA TP
Address: 4889 DeField Road
Columbus, MI 49038

Email: Robert@pawpaw@gmail.com
Phone: (269)468-1888

Fax: Requested Due Date:

Section B

Required Project Information:

Purchase Order #: Report To: Lonnie Bennett
Copy To:

Project Name: PFAS, TENORM & MI10 Metals
Project #:

Section C

Invoice Information:

Attention: Company Name:
Address:

Phone: Price Quote:

Price Project Manager: brian.hall@pacelabs.com,
Price Profile #: 9025

Sample Location: Michigan

Sample Type: General Environmental

Preservatives:

PPAS by 527 Equipment Bill

Residual Chlorine (Y/N)

PPAS 537MS

Other

N2S2O3

NaOH

HCl

HNO3

H2SO4

Unpreserved

OF CONTAINERS

SAMPLE TEMP AT COLLECTION

COLLECTED

END

START

MATRIX CODE (See <http://www.pacelabs.com/techinfo/standards.html>)

DRW

WT

WW

R

SL

OL

WP

AR

OT

TS

Other

Tissue

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Tissue

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other

Water

Drinking Water

Waste Water

Product

Clean

Wipe

Air

Other

Water

Soil

Oil

Air

Other



Sample Conditions Upon Receipt Form (SCUR)

Date/Time: <u>3/17/22</u>	Evaluated by: <u>WDC</u>	WO# : 50311540		
Client: <u>Dow Dow UWWTP</u>		PM: <u>BJH</u>	Due Date: <u>04/14/22</u>	
Project Manager: <u>BTH</u>	Profile ID:	CLIENT: <u>GR-PPLake</u>		
Rush TAT Requested: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Due Date:		
Lab Notified of Rush or Short Holds: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Non Conformance Form Required: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		
Samples Received Via: FedEx UPS Client Pace Courier Other: _____ Comments: _____				
Custody Seals Present and Intact:		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	NA <input type="checkbox"/>
Received Sample Information Form(s): Drinking Waters Only		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	NA <input type="checkbox"/>
USDA Regulated Soils: (AL, AR, CA, FL, GA, ID, LA, MS, NM, NY, NC, OK, OR, SC, TN, TX, WA or Puerto Rico)		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	N/A <input type="checkbox"/>
Short Holds Present (< 72 Hours):		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
Samples Received in Hold:		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
Custody Signatures Present:		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
Collector Signature Present:		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
Packing Material Used:		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
Samples Collected Today and On Ice:		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	N/A <input type="checkbox"/>
IR Gun #: <u>280</u> <u>281</u>	Digital Thermometer #: <u>282</u> <u>283</u>			
Ice Type: <u>WET Bagged / WET Loose</u> <u>BLUE</u> <u>NONE</u>	1. Cooler Temp Upon Receipt: <u>19.09</u> °C			
Ice Location: <u>TOP</u> <u>BOTTOM</u> <u>MIDDLE</u> <u>DISPERSED</u>	Temp should be 0-6°C (Initial/Corrected)			
Temp Blank Received:	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
Containers Intact:	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
Correct Containers:	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
Sufficient Volume:	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
Sample pH Acceptable: All containers needing preservation are found to be in compliance with EPA recommendation pH Strip Lot #: _____ Exceptions are VOA, coliform, LLHG, O&G, or any container with a septum cap or preserved with HCl	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	N/A <input type="checkbox"/>	
Residual Chlorine Absent: Cl ₂ Strip Lot #: _____ (SVOC/Pest 625, PCB 608, Total/Amenable Cyanide)	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	N/A <input type="checkbox"/>	
VOA Headspace Acceptable (<6mm):	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	N/A <input type="checkbox"/>	
Trip Blank Received: <u>HCl</u> <u>MeOH</u> <u>TSP</u> <u>OTHER</u>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>		
Comments:	2. Cooler Temp Upon Receipt: _____ °C			
	3. Cooler Temp Upon Receipt: _____ °C			
	4. Cooler Temp Upon Receipt: _____ °C			

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50311540001	Bio Solids	SW3535	32706	PFAS-36	Q220407B_00
50311540002	Equipment Blank	SW3535	32726	PFAS-36	Q220325A_04

4/8/2022 12:06:59 PM

REPORT OF LABORATORY ANALYSIS

Page 1

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 21 of 47

Report No.....10601133_ID36_DFR

Page 10 of 36

Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

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

Page 22 of 47

Appendix B

Sample Analysis Summary

Sample Analysis Summary
PFAS by Isotope Dilution

Page 1 of 4

Client Sample ID	Bio Solids	Extraction Date	03/25/2022 18:18
Lab Sample ID	50311540001	Total Amount Extracted	4.85g
Lab File ID	Q220407B_006	Ical ID	220407A01
Matrix	Soil	CCal File	Q220407B_001
Collected	03/16/2022 09:00	Ending CCal File	Q220407B_008
Received	03/18/2022 08:50	Blank File	Q220404A_010

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.98	0.98	0.23	1	375-22-4		04/07/2022 13:49
PFPeA	ND	0.98	0.98	0.26	1	2706-90-3		04/07/2022 13:49
HFPO-DA	ND	0.98	0.98	0.29	1	13252-13-6		04/07/2022 13:49
PFBS	ND	0.86	0.86	0.21	1	375-73-5		04/07/2022 13:49
PFHxA	2.1	0.98	0.98	0.29	1	307-24-4		04/07/2022 13:49
4:2 FTS	ND	0.91	0.91	0.31	1	757124-72-		04/07/2022 13:49
PFPeS	ND	0.92	0.92	0.18	1	2706-91-4		04/07/2022 13:49
PFHpA	ND	0.98	0.98	0.22	1	375-85-9		04/07/2022 13:49
DONA	ND	0.92	0.92	0.37	1	919005-14-		04/07/2022 13:49
PFHxS	ND	0.89	0.89	0.22	1	355-46-4		04/07/2022 13:49
PFOA	ND	0.98	0.98	0.22	1	335-67-1		04/07/2022 13:49
6:2 FTS	ND	0.93	0.93	0.31	1	27619-97-2		04/07/2022 13:49
PFHpS	ND	0.93	0.93	0.24	1	375-92-8		04/07/2022 13:49
PFNA	ND	0.98	0.98	0.28	1	375-95-1		04/07/2022 13:49
PFOSAm	ND	0.98	0.98	0.23	1	754-91-6		04/07/2022 13:49
PFOS	7.4	0.90	0.90	0.27	1	1763-23-1		04/07/2022 13:49
PFDA	ND	0.98	0.98	0.21	1	335-76-2		04/07/2022 13:49
8:2 FTS	ND	0.94	0.94	0.25	1	39108-34-4		04/07/2022 13:49
9-CI-PF3ON	ND	0.91	0.91	0.14	1	756426-58-		04/07/2022 13:49
PFNS	ND	0.94	0.94	0.17	1	68259-12-1		04/07/2022 13:49
PFUnDA	ND	0.98	0.98	0.27	1	2058-94-8		04/07/2022 13:49
NMeFOSAA	2.7	0.98	0.98	0.23	1	2355-31-9		04/07/2022 13:49
NEtFOSAA	4.8	0.98	0.98	0.24	1	2991-50-6		04/07/2022 13:49
PFDS	ND	0.94	0.94	0.25	1	335-77-3		04/07/2022 13:49
PFDOA	ND	0.98	0.98	0.26	1	307-55-1		04/07/2022 13:49
11-CI-PF3OUdS	ND	0.92	0.92	0.16	1	763051-92-		04/07/2022 13:49
PFTrDA	ND	0.98	0.98	0.21	1	72629-94-8		04/07/2022 13:49
PFTDA	ND	0.98	0.98	0.31	1	376-06-7		04/07/2022 13:49

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	9.8	9.0	92	50-150		04/07/2022 13:49
13C4 PFOA	9.8	10	108	50-150		04/07/2022 13:49
13C2 PFDA	9.8	12	119	50-150		04/07/2022 13:49
13C4 PFOS	9.3	12	128	50-150		04/07/2022 13:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 24 of 47

Sample Analysis Summary

PFAS by Isotope Dilution

Page 2 of 4

Client Sample ID	Bio Solids	Extraction Date	03/25/2022 18:18
Lab Sample ID	50311540001	Total Amount Extracted	4.85g
Lab File ID	Q220407B_006	Ical ID	220407A01
Matrix	Soil	CCal File	Q220407B_001
Collected	03/16/2022 09:00	Ending CCal File	Q220407B_008
Received	03/18/2022 08:50	Blank File	Q220404A_010

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	9.8	6.1	63	50-150		04/07/2022 13:49
13C5 PFPeA	9.8	7.3	75	50-150		04/07/2022 13:49
13C3 PFBS	9.1	7.6	84	50-150		04/07/2022 13:49
13C2 4:2FTS	9.1	32	347	50-150	R	04/07/2022 13:49
13C5 PFHxA	9.8	7.4	76	50-150		04/07/2022 13:49
13C4 PFHpA	9.8	7.3	75	50-150		04/07/2022 13:49
13C3 PFHxS	9.2	8.2	89	50-150		04/07/2022 13:49
13C2 6:2FTS	9.3	36	394	50-150	R	04/07/2022 13:49
13C8 PFOA	9.8	8.0	83	50-150		04/07/2022 13:49
13C9 PFNA	9.8	9.4	96	50-150		04/07/2022 13:49
13C8 PFOS	9.3	8.5	92	50-150		04/07/2022 13:49
13C2 8:2FTS	9.3	33	351	50-150	R	04/07/2022 13:49
13C6 PFDA	9.8	9.6	99	50-150		04/07/2022 13:49
d3-MeFOSAA	9.8	9.0	92	50-150		04/07/2022 13:49
13C8 PFOSA	9.8	4.3	44	50-150	R	04/07/2022 13:49
d5-EtFOSAA	9.8	10	103	50-150		04/07/2022 13:49
13C7 PFUdA	9.8	7.3	75	50-150		04/07/2022 13:49
13C2 PFDoA	9.8	5.2	53	50-150		04/07/2022 13:49
13C2 PFTeDA	9.8	3.3	34	50-150	R	04/07/2022 13:49
13C3 HFPO-DA	9.8	5.4	55	50-150		04/07/2022 13:49

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C2 PFHxA	N/A	N/A	6.16	6.15	65		04/07/2022 13:49
13C4 PFOA	N/A	N/A	7.40	7.39	70		04/07/2022 13:49
13C2 PFDA	N/A	N/A	8.68	8.67	39		04/07/2022 13:49
13C4 PFOS	N/A	N/A	9.17	9.19	23		04/07/2022 13:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 25 of 47

Sample Analysis Summary
PFAS by Isotope Dilution

Page 3 of 4

Client Sample ID	Bio Solids	Extraction Date	03/25/2022 18:18
Lab Sample ID	50311540001	Total Amount Extracted	4.85g
Lab File ID	Q220407B_006	Ical ID	220407A01
Matrix	Soil	CCal File	Q220407B_001
Collected	03/16/2022 09:00	Ending CCal File	Q220407B_008
Received	03/18/2022 08:50	Blank File	Q220404A_010

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C4 PFBA	N/A	N/A	4.79	4.79	34		04/07/2022 13:49
13C5 PFPeA	N/A	N/A	5.54	5.54	68		04/07/2022 13:49
13C3 PFBS	N/A	N/A	6.46	6.45	23		04/07/2022 13:49
13C2 4:2FTS	N/A	N/A	5.90	5.89	12	R	04/07/2022 13:49
13C5 PFHxA	N/A	N/A	6.16	6.15	54		04/07/2022 13:49
13C4 PFHpA	N/A	N/A	6.78	6.76	38		04/07/2022 13:49
13C3 PFHxS	N/A	N/A	7.86	7.83	18		04/07/2022 13:49
13C2 6:2FTS	N/A	N/A	7.07	7.05	27	R	04/07/2022 13:49
13C8 PFOA	N/A	N/A	7.40	7.38	65		04/07/2022 13:49
13C9 PFNA	N/A	N/A	8.04	8.00	73		04/07/2022 13:49
13C8 PFOS	N/A	N/A	9.17	9.17	20		04/07/2022 13:49
13C2 8:2FTS	N/A	N/A	8.31	8.27	35	R	04/07/2022 13:49
13C6 PFDA	N/A	N/A	8.68	8.65	47		04/07/2022 13:49
d3-MeFOSAA	N/A	N/A	8.56	8.53	40		04/07/2022 13:49
13C8 PFOSA	N/A	N/A	11.40	11.37	42	R	04/07/2022 13:49
d5-EtFOSAA	N/A	N/A	8.86	8.83	64		04/07/2022 13:49
13C7 PFUdA	N/A	N/A	9.33	9.30	56		04/07/2022 13:49
13C2 PFDoA	N/A	N/A	9.99	9.97	29		04/07/2022 13:49
13C2 PFTeDA	N/A	N/A	11.34	11.28	55	R	04/07/2022 13:49
13C3 HFPO-DA	N/A	N/A	6.42	6.40	39		04/07/2022 13:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 26 of 47

Sample Analysis Summary
PFAS by Isotope Dilution

Page 4 of 4

Client Sample ID	Bio Solids	Extraction Date	03/25/2022 18:18
Lab Sample ID	50311540001	Total Amount Extracted	4.85g
Lab File ID	Q220407B_006	Ical ID	220407A01
Matrix	Soil	CCal File	Q220407B_001
Collected	03/16/2022 09:00	Ending CCal File	Q220407B_008
Received	03/18/2022 08:50	Blank File	Q220404A_010

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
PFBA	N/A	N/A	0.00	4.79	ND		04/07/2022 13:49
PFPeA	N/A	N/A	5.54	5.55	ND		04/07/2022 13:49
HFPO-DA	0.00	0.78	0.00	6.41	ND		04/07/2022 13:49
PFBS	0.00	0.36	0.00	6.46	ND		04/07/2022 13:49
PFHxA	0.08	0.07	6.17	6.16	10		04/07/2022 13:49
4:2 FTS	0.00	1.20	0.00	5.90	ND		04/07/2022 13:49
PFPeS	0.00	0.43	0.00	7.16	ND		04/07/2022 13:49
PFHpA	0.37	0.42	6.79	6.77	ND		04/07/2022 13:49
DONA	0.00	0.45	0.00	7.01	ND		04/07/2022 13:49
PFHxS	0.00	0.35	0.00	7.85	ND		04/07/2022 13:49
PFOA	0.36	0.37	7.41	7.40	ND		04/07/2022 13:49
6:2 FTS	1.40	1.20	7.07	7.07	ND		04/07/2022 13:49
PFHpS	0.00	0.36	0.00	8.53	ND		04/07/2022 13:49
PFNA	0.15	0.28	8.04	8.03	ND		04/07/2022 13:49
PFOSAm	N/A	N/A	11.41	11.39	ND		04/07/2022 13:49
PFOS	0.25	0.22	9.19	9.20	13		04/07/2022 13:49
PFDA	0.14	0.20	8.69	8.69	ND		04/07/2022 13:49
8:2 FTS	1.30	1.30	8.31	8.31	ND		04/07/2022 13:49
9-Cl-PF3ON	0.00	0.03	0.00	9.69	ND		04/07/2022 13:49
PFNS	0.00	0.25	0.00	9.86	ND		04/07/2022 13:49
PFUnDA	0.17	0.23	9.34	9.34	ND		04/07/2022 13:49
NMeFOSAA	0.60	0.67	8.56	8.56	26		04/07/2022 13:49
NetFOSAA	0.44	0.49	8.87	8.87	56		04/07/2022 13:49
PFDS	0.41	0.27	10.51	10.52	ND		04/07/2022 13:49
PFDOA	0.21	0.19	10.00	10.01	ND		04/07/2022 13:49
11-Cl-PF3OUdS	0.00	0.02	0.00	10.99	ND		04/07/2022 13:49
PFTrDA	0.15	0.20	10.68	10.67	ND		04/07/2022 13:49
PFTDA	0.00	0.15	0.00	11.32	ND		04/07/2022 13:49

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 27 of 47

Sample Analysis Summary
PFAS by Isotope Dilution

Page 1 of 4

Client Sample ID	Equipment Blank	Extraction Date	03/24/2022 08:50
Lab Sample ID	50311540002	Total Amount Extracted	250mL
Lab File ID	Q220325A_043	Ical ID	220322A01
Matrix	Non_Potable_Water	CCal File	Q220325A_042
Collected	03/16/2022 00:00	Ending CCal File	Q220325A_047
Received	03/18/2022 08:50	Blank File	Q220325A_021

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	2.0	0.44	1	375-22-4		03/25/2022 23:33
PFPeA	ND	2.0	2.0	0.44	1	2706-90-3		03/25/2022 23:33
HFPO-DA	ND	2.0	2.0	0.53	1	13252-13-6		03/25/2022 23:33
PFBS	ND	1.8	1.8	0.47	1	375-73-5		03/25/2022 23:33
PFHxA	ND	2.0	2.0	0.44	1	307-24-4		03/25/2022 23:33
4:2 FTS	ND	1.9	1.9	0.56	1	757124-72-		03/25/2022 23:33
PFPeS	ND	1.9	1.9	0.48	1	2706-91-4		03/25/2022 23:33
PFHpA	ND	2.0	2.0	0.55	1	375-85-9		03/25/2022 23:33
DONA	ND	1.9	1.9	0.51	1	919005-14-		03/25/2022 23:33
PFHxS	ND	1.8	1.8	0.51	1	355-46-4		03/25/2022 23:33
PFOA	ND	2.0	2.0	0.59	1	335-67-1		03/25/2022 23:33
6:2 FTS	ND	1.9	1.9	0.65	1	27619-97-2		03/25/2022 23:33
PFHpS	ND	1.9	1.9	0.41	1	375-92-8		03/25/2022 23:33
PFNA	ND	2.0	2.0	0.74	1	375-95-1		03/25/2022 23:33
PFOSAm	ND	2.0	2.0	0.82	1	754-91-6		03/25/2022 23:33
PFOS	ND	1.9	1.9	0.55	1	1763-23-1		03/25/2022 23:33
PFDA	ND	2.0	2.0	0.57	1	335-76-2		03/25/2022 23:33
8:2 FTS	ND	1.9	1.9	0.65	1	39108-34-4		03/25/2022 23:33
9-CI-PF3ON	ND	1.9	1.9	0.31	1	756426-58-		03/25/2022 23:33
PFNS	ND	1.9	1.9	0.45	1	68259-12-1		03/25/2022 23:33
PFUnDA	ND	2.0	2.0	0.54	1	2058-94-8		03/25/2022 23:33
NMeFOSAA	ND	2.0	2.0	0.43	1	2355-31-9		03/25/2022 23:33
NEtFOSAA	ND	2.0	2.0	0.56	1	2991-50-6		03/25/2022 23:33
PFDS	ND	1.9	1.9	0.45	1	335-77-3		03/25/2022 23:33
PFDOA	ND	2.0	2.0	0.48	1	307-55-1		03/25/2022 23:33
11-CI-PF3OUdS	ND	1.9	1.9	0.44	1	763051-92-		03/25/2022 23:33
PFTrDA	ND	2.0	2.0	0.62	1	72629-94-8		03/25/2022 23:33
PFTDA	ND	2.0	2.0	0.48	1	376-06-7		03/25/2022 23:33

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	16	78	50-150		03/25/2022 23:33
13C4 PFOA	20	15	74	50-150		03/25/2022 23:33
13C2 PFDA	20	19	94	50-150		03/25/2022 23:33
13C4 PFOS	19	15	77	50-150		03/25/2022 23:33

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 28 of 47

Sample Analysis Summary
PFAS by Isotope Dilution

Page 2 of 4

Client Sample ID	Equipment Blank	Extraction Date	03/24/2022 08:50
Lab Sample ID	50311540002	Total Amount Extracted	250mL
Lab File ID	Q220325A_043	Ical ID	220322A01
Matrix	Non_Potable_Water	CCal File	Q220325A_042
Collected	03/16/2022 00:00	Ending CCal File	Q220325A_047
Received	03/18/2022 08:50	Blank File	Q220325A_021

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	16	78	50-150		03/25/2022 23:33
13C5 PFPeA	20	16	77	50-150		03/25/2022 23:33
13C3 PFBS	19	15	83	50-150		03/25/2022 23:33
13C2 4:2FTS	19	14	76	50-150		03/25/2022 23:33
13C5 PFHxA	20	17	87	50-150		03/25/2022 23:33
13C4 PFHpA	20	15	76	50-150		03/25/2022 23:33
13C3 PFHxS	19	15	82	50-150		03/25/2022 23:33
13C2 6:2FTS	19	15	79	50-150		03/25/2022 23:33
13C8 PFOA	20	14	72	50-150		03/25/2022 23:33
13C9 PFNA	20	18	92	50-150		03/25/2022 23:33
13C8 PFOS	19	14	73	50-150		03/25/2022 23:33
13C2 8:2FTS	19	14	75	50-150		03/25/2022 23:33
13C6 PFDA	20	17	83	50-150		03/25/2022 23:33
d3-MeFOSAA	20	11	53	50-150		03/25/2022 23:33
13C8 PFOSA	20	11	57	50-150		03/25/2022 23:33
d5-EtFOSAA	20	12	60	50-150		03/25/2022 23:33
13C7 PFUdA	20	12	60	50-150		03/25/2022 23:33
13C2 PFDoA	20	12	60	50-150		03/25/2022 23:33
13C2 PFTeDA	20	9.4	47	50-150	R	03/25/2022 23:33
13C3 HFPO-DA	20	15	74	50-150		03/25/2022 23:33

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C2 PFHxA	N/A	N/A	6.32	6.31	58		03/25/2022 23:33
13C4 PFOA	N/A	N/A	7.65	7.68	52		03/25/2022 23:33
13C2 PFDA	N/A	N/A	9.00	9.04	42		03/25/2022 23:33
13C4 PFOS	N/A	N/A	9.47	9.51	43		03/25/2022 23:33

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 29 of 47

Sample Analysis Summary
PFAS by Isotope Dilution

Page 3 of 4

Client Sample ID	Equipment Blank	Extraction Date	03/24/2022 08:50
Lab Sample ID	50311540002	Total Amount Extracted	250mL
Lab File ID	Q220325A_043	Ical ID	220322A01
Matrix	Non_Potable_Water	CCal File	Q220325A_042
Collected	03/16/2022 00:00	Ending CCal File	Q220325A_047
Received	03/18/2022 08:50	Blank File	Q220325A_021

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C4 PFBA	N/A	N/A	4.75	4.74	85		03/25/2022 23:33
13C5 PFPeA	N/A	N/A	5.63	5.59	94		03/25/2022 23:33
13C3 PFBS	N/A	N/A	6.57	6.58	51		03/25/2022 23:33
13C2 4:2FTS	N/A	N/A	6.04	6.01	17		03/25/2022 23:33
13C5 PFHxA	N/A	N/A	6.32	6.31	51		03/25/2022 23:33
13C4 PFHpA	N/A	N/A	6.99	7.01	57		03/25/2022 23:33
13C3 PFHxS	N/A	N/A	8.07	8.10	71		03/25/2022 23:33
13C2 6:2FTS	N/A	N/A	7.31	7.33	45		03/25/2022 23:33
13C8 PFOA	N/A	N/A	7.66	7.68	45		03/25/2022 23:33
13C9 PFNA	N/A	N/A	8.32	8.35	61		03/25/2022 23:33
13C8 PFOS	N/A	N/A	9.47	9.45	45		03/25/2022 23:33
13C2 8:2FTS	N/A	N/A	8.62	8.65	43		03/25/2022 23:33
13C6 PFDA	N/A	N/A	9.00	9.04	49		03/25/2022 23:33
d3-MeFOSAA	N/A	N/A	8.90	8.92	37		03/25/2022 23:33
13C8 PFOSA	N/A	N/A	11.61	11.51	58		03/25/2022 23:33
d5-EtFOSAA	N/A	N/A	9.21	9.24	37		03/25/2022 23:33
13C7 PFUdA	N/A	N/A	9.68	9.73	48		03/25/2022 23:33
13C2 PFDoA	N/A	N/A	10.36	10.41	43		03/25/2022 23:33
13C2 PFTeDA	N/A	N/A	11.68	11.69	51	R	03/25/2022 23:33
13C3 HFPO-DA	N/A	N/A	6.59	6.59	20		03/25/2022 23:33

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 30 of 47

Sample Analysis Summary
PFAS by Isotope Dilution

Page 4 of 4

Client Sample ID	Equipment Blank	Extraction Date	03/24/2022 08:50
Lab Sample ID	50311540002	Total Amount Extracted	250mL
Lab File ID	Q220325A_043	Ical ID	220322A01
Matrix	Non_Potable_Water	CCal File	Q220325A_042
Collected	03/16/2022 00:00	Ending CCal File	Q220325A_047
Received	03/18/2022 08:50	Blank File	Q220325A_021

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
PFBA	N/A	N/A	4.75	4.74	ND		03/25/2022 23:33
PFPeA	N/A	N/A	5.63	5.59	ND		03/25/2022 23:33
HFPO-DA	0.00	0.67	0.00	6.61	ND		03/25/2022 23:33
PFBS	0.47	0.33	6.57	6.58	ND		03/25/2022 23:33
PFHxA	0.00	0.08	0.00	6.32	ND		03/25/2022 23:33
4:2 FTS	0.00	1.00	0.00	6.01	ND		03/25/2022 23:33
PFPeS	0.00	0.40	0.00	7.35	ND		03/25/2022 23:33
PFHpA	0.00	0.42	0.00	6.99	ND		03/25/2022 23:33
DONA	0.00	0.47	0.00	7.24	ND		03/25/2022 23:33
PFHxS	0.00	0.33	0.00	8.09	ND		03/25/2022 23:33
PFOA	0.24	0.32	7.67	7.67	ND		03/25/2022 23:33
6:2 FTS	0.00	1.20	0.00	7.31	ND		03/25/2022 23:33
PFHpS	0.00	0.33	0.00	8.80	ND		03/25/2022 23:33
PFNA	0.00	0.26	0.00	8.35	ND		03/25/2022 23:33
PFOSAm	N/A	N/A	11.63	11.52	ND		03/25/2022 23:33
PFOS	0.00	0.23	0.00	9.49	ND		03/25/2022 23:33
PFDA	0.00	0.18	0.00	9.02	ND		03/25/2022 23:33
8:2 FTS	0.00	1.50	0.00	8.63	ND		03/25/2022 23:33
9-Cl-PF3ON	0.00	0.04	0.00	9.98	ND		03/25/2022 23:33
PFNS	0.00	0.27	0.00	10.17	ND		03/25/2022 23:33
PFUnDA	0.00	0.19	0.00	9.69	ND		03/25/2022 23:33
NMeFOSAA	0.00	0.63	0.00	8.94	ND		03/25/2022 23:33
NetFOSAA	0.00	0.50	0.00	9.20	ND		03/25/2022 23:33
PFDS	0.00	0.29	0.00	10.81	ND		03/25/2022 23:33
PFDOA	0.00	0.19	0.00	10.39	ND		03/25/2022 23:33
11-Cl-PF3OUdS	0.00	0.03	0.00	11.25	ND		03/25/2022 23:33
PFTrDA	0.00	0.23	0.00	11.04	ND		03/25/2022 23:33
PFTDA	0.00	0.15	0.00	11.66	ND		03/25/2022 23:33

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 31 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 1 of 4

Client Sample ID	BLKAV	Extraction Date	03/24/2022 08:50
Lab Sample ID	BLANK-97557	Total Amount Extracted	250mL
Lab File ID	Q220325A_021	Ical ID	220322A01
Matrix	Water	CCal File	Q220325A_020
Collected	03/23/2022 09:13	Ending CCal File	Q220325A_031
Received	03/23/2022 09:13	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	2.0	2.0	0.44	1	375-22-4		03/25/2022 16:44
PFPeA	ND	2.0	2.0	0.44	1	2706-90-3		03/25/2022 16:44
HFPO-DA	ND	2.0	2.0	0.53	1	13252-13-6		03/25/2022 16:44
PFBS	ND	1.8	1.8	0.47	1	375-73-5		03/25/2022 16:44
PFHxA	ND	2.0	2.0	0.44	1	307-24-4		03/25/2022 16:44
4:2 FTS	ND	1.9	1.9	0.56	1	757124-72-		03/25/2022 16:44
PFPeS	ND	1.9	1.9	0.48	1	2706-91-4		03/25/2022 16:44
PFHpA	ND	2.0	2.0	0.55	1	375-85-9		03/25/2022 16:44
DONA	ND	1.9	1.9	0.51	1	919005-14-		03/25/2022 16:44
PFHxS	ND	1.8	1.8	0.51	1	355-46-4		03/25/2022 16:44
PFOA	ND	2.0	2.0	0.58	1	335-67-1		03/25/2022 16:44
6:2 FTS	ND	1.9	1.9	0.64	1	27619-97-2		03/25/2022 16:44
PFHpS	ND	1.9	1.9	0.41	1	375-92-8		03/25/2022 16:44
PFNA	ND	2.0	2.0	0.74	1	375-95-1		03/25/2022 16:44
PFOSAm	ND	2.0	2.0	0.82	1	754-91-6		03/25/2022 16:44
PFOS	ND	1.8	1.8	0.55	1	1763-23-1		03/25/2022 16:44
PFDA	ND	2.0	2.0	0.56	1	335-76-2		03/25/2022 16:44
8:2 FTS	ND	1.9	1.9	0.65	1	39108-34-4		03/25/2022 16:44
9-CI-PF3ON	ND	1.9	1.9	0.30	1	756426-58-		03/25/2022 16:44
PFNS	ND	1.9	1.9	0.45	1	68259-12-1		03/25/2022 16:44
PFUnDA	ND	2.0	2.0	0.54	1	2058-94-8		03/25/2022 16:44
NMeFOSAA	ND	2.0	2.0	0.43	1	2355-31-9		03/25/2022 16:44
NEtFOSAA	ND	2.0	2.0	0.56	1	2991-50-6		03/25/2022 16:44
PFDS	ND	1.9	1.9	0.45	1	335-77-3		03/25/2022 16:44
PFDOA	ND	2.0	2.0	0.48	1	307-55-1		03/25/2022 16:44
11-CI-PF3OUdS	ND	1.9	1.9	0.44	1	763051-92-		03/25/2022 16:44
PFTrDA	ND	2.0	2.0	0.62	1	72629-94-8		03/25/2022 16:44
PFTDA	ND	2.0	2.0	0.48	1	376-06-7		03/25/2022 16:44

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	20	18	89	50-150		03/25/2022 16:44
13C4 PFOA	20	17	84	50-150		03/25/2022 16:44
13C2 PFDA	20	18	92	50-150		03/25/2022 16:44
13C4 PFOS	19	17	91	50-150		03/25/2022 16:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 32 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 2 of 4

Client Sample ID	BLKAV	Extraction Date	03/24/2022 08:50
Lab Sample ID	BLANK-97557	Total Amount Extracted	250mL
Lab File ID	Q220325A_021	Ical ID	220322A01
Matrix	Water	CCal File	Q220325A_020
Collected	03/23/2022 09:13	Ending CCal File	Q220325A_031
Received	03/23/2022 09:13	Blank File	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	20	18	88	50-150		03/25/2022 16:44
13C5 PFPeA	20	17	83	50-150		03/25/2022 16:44
13C3 PFBS	19	15	82	50-150		03/25/2022 16:44
13C2 4:2FTS	19	16	84	50-150		03/25/2022 16:44
13C5 PFHxA	20	19	93	50-150		03/25/2022 16:44
13C4 PFHpA	20	19	97	50-150		03/25/2022 16:44
13C3 PFHxS	19	16	85	50-150		03/25/2022 16:44
13C2 6:2FTS	19	15	78	50-150		03/25/2022 16:44
13C8 PFOA	20	18	89	50-150		03/25/2022 16:44
13C9 PFNA	20	17	84	50-150		03/25/2022 16:44
13C8 PFOS	19	16	85	50-150		03/25/2022 16:44
13C2 8:2FTS	19	15	79	50-150		03/25/2022 16:44
13C6 PFDA	20	17	85	50-150		03/25/2022 16:44
d3-MeFOSAA	20	16	80	50-150		03/25/2022 16:44
13C8 PFOSA	20	14	71	50-150		03/25/2022 16:44
d5-EtFOSAA	20	14	70	50-150		03/25/2022 16:44
13C7 PFUdA	20	13	64	50-150		03/25/2022 16:44
13C2 PFDoA	20	13	63	50-150		03/25/2022 16:44
13C2 PFTeDA	20	13	65	50-150		03/25/2022 16:44
13C3 HFPO-DA	20	17	83	50-150		03/25/2022 16:44

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C2 PFHxA	N/A	N/A	6.31	6.31	40		03/25/2022 16:44
13C4 PFOA	N/A	N/A	7.65	7.68	73		03/25/2022 16:44
13C2 PFDA	N/A	N/A	9.00	9.04	52		03/25/2022 16:44
13C4 PFOS	N/A	N/A	9.46	9.51	45		03/25/2022 16:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 33 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 3 of 4

Client Sample ID	BLKAV	Extraction Date	03/24/2022 08:50
Lab Sample ID	BLANK-97557	Total Amount Extracted	250mL
Lab File ID	Q220325A_021	Ical ID	220322A01
Matrix	Water	CCal File	Q220325A_020
Collected	03/23/2022 09:13	Ending CCal File	Q220325A_031
Received	03/23/2022 09:13	Blank File	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C4 PFBA	N/A	N/A	4.74	4.74	90		03/25/2022 16:44
13C5 PFPeA	N/A	N/A	5.61	5.59	68		03/25/2022 16:44
13C3 PFBS	N/A	N/A	6.56	6.58	41		03/25/2022 16:44
13C2 4:2FTS	N/A	N/A	6.03	6.01	14		03/25/2022 16:44
13C5 PFHxA	N/A	N/A	6.31	6.31	51		03/25/2022 16:44
13C4 PFHpA	N/A	N/A	6.99	7.01	55		03/25/2022 16:44
13C3 PFHxS	N/A	N/A	8.06	8.10	52		03/25/2022 16:44
13C2 6:2FTS	N/A	N/A	7.31	7.33	32		03/25/2022 16:44
13C8 PFOA	N/A	N/A	7.65	7.68	55		03/25/2022 16:44
13C9 PFNA	N/A	N/A	8.33	8.35	60		03/25/2022 16:44
13C8 PFOS	N/A	N/A	9.46	9.45	56		03/25/2022 16:44
13C2 8:2FTS	N/A	N/A	8.62	8.65	31		03/25/2022 16:44
13C6 PFDA	N/A	N/A	9.00	9.04	44		03/25/2022 16:44
d3-MeFOSAA	N/A	N/A	8.90	8.92	42		03/25/2022 16:44
13C8 PFOSA	N/A	N/A	11.55	11.51	55		03/25/2022 16:44
d5-EtFOSAA	N/A	N/A	9.21	9.24	50		03/25/2022 16:44
13C7 PFUdA	N/A	N/A	9.67	9.73	59		03/25/2022 16:44
13C2 PFDoA	N/A	N/A	10.33	10.41	51		03/25/2022 16:44
13C2 PFTeDA	N/A	N/A	11.63	11.69	50		03/25/2022 16:44
13C3 HFPO-DA	N/A	N/A	6.59	6.59	22		03/25/2022 16:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 34 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 4 of 4

Client Sample ID	BLKAV	Extraction Date	03/24/2022 08:50
Lab Sample ID	BLANK-97557	Total Amount Extracted	250mL
Lab File ID	Q220325A_021	Ical ID	220322A01
Matrix	Water	CCal File	Q220325A_020
Collected	03/23/2022 09:13	Ending CCal File	Q220325A_031
Received	03/23/2022 09:13	Blank File	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
PFBA	N/A	N/A	4.74	4.74	ND		03/25/2022 16:44
PFPeA	N/A	N/A	5.62	5.59	ND		03/25/2022 16:44
HFPO-DA	0.00	0.64	0.00	6.61	ND		03/25/2022 16:44
PFBS	0.29	0.35	6.57	6.58	ND		03/25/2022 16:44
PFHxA	0.00	0.08	0.00	6.32	ND		03/25/2022 16:44
4:2 FTS	0.00	0.97	0.00	6.01	ND		03/25/2022 16:44
PFPeS	0.00	0.45	0.00	7.35	ND		03/25/2022 16:44
PFHpA	0.00	0.38	0.00	6.99	ND		03/25/2022 16:44
DONA	0.00	0.56	0.00	7.24	ND		03/25/2022 16:44
PFHxS	0.00	0.37	0.00	8.09	ND		03/25/2022 16:44
PFOA	0.88	0.34	7.66	7.67	ND		03/25/2022 16:44
6:2 FTS	0.00	1.20	0.00	7.31	ND		03/25/2022 16:44
PFHpS	0.00	0.39	0.00	8.80	ND		03/25/2022 16:44
PFNA	0.00	0.26	0.00	8.35	ND		03/25/2022 16:44
PFOSAm	N/A	N/A	11.57	11.52	ND		03/25/2022 16:44
PFOS	0.15	0.24	9.47	9.49	ND		03/25/2022 16:44
PFDA	0.00	0.19	0.00	9.02	ND		03/25/2022 16:44
8:2 FTS	0.00	1.20	0.00	8.63	ND		03/25/2022 16:44
9-Cl-PF3ON	0.00	0.04	0.00	9.98	ND		03/25/2022 16:44
PFNS	0.00	0.25	0.00	10.17	ND		03/25/2022 16:44
PFUnDA	0.00	0.16	0.00	9.69	ND		03/25/2022 16:44
NMeFOSAA	0.00	0.68	0.00	8.94	ND		03/25/2022 16:44
NetFOSAA	0.00	0.46	0.00	9.20	ND		03/25/2022 16:44
PFDS	0.00	0.28	0.00	10.81	ND		03/25/2022 16:44
PFDOA	0.00	0.17	0.00	10.39	ND		03/25/2022 16:44
11-Cl-PF3OUdS	0.00	0.02	0.00	11.25	ND		03/25/2022 16:44
PFTrDA	0.00	0.22	0.00	11.04	ND		03/25/2022 16:44
PFTDA	0.00	0.17	0.00	11.66	ND		03/25/2022 16:44

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 35 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 1 of 4

Client Sample ID	BLKZU	Extraction Date	03/25/2022 18:18
Lab Sample ID	BLANK-97483	Total Amount Extracted	5.05g
Lab File ID	Q220404A_010	Ical ID	220401B01
Matrix	Soil	CCal File	Q220404A_008
Collected	03/21/2022 07:56	Ending CCal File	Q220404A_020
Received	03/21/2022 07:56	Blank File	

Compound	Concentration (ug/Kg)	QL (ug/Kg)	RL (ug/Kg)	DL (ug/Kg)	Dil.	CAS No.	Qual.	Analyzed
PFBA	ND	0.09	0.09	0.02	1	375-22-4		04/04/2022 13:52
PFPeA	ND	0.09	0.09	0.02	1	2706-90-3		04/04/2022 13:52
HFPO-DA	ND	0.09	0.09	0.02	1	13252-13-6		04/04/2022 13:52
PFBS	ND	0.08	0.08	0.02	1	375-73-5		04/04/2022 13:52
PFHxA	ND	0.09	0.09	0.03	1	307-24-4		04/04/2022 13:52
4:2 FTS	ND	0.09	0.09	0.03	1	757124-72-		04/04/2022 13:52
PFPeS	ND	0.09	0.09	0.01	1	2706-91-4		04/04/2022 13:52
PFHpA	ND	0.09	0.09	0.02	1	375-85-9		04/04/2022 13:52
DONA	ND	0.09	0.09	0.03	1	919005-14-		04/04/2022 13:52
PFHxS	ND	0.09	0.09	0.02	1	355-46-4		04/04/2022 13:52
PFOA	ND	0.09	0.09	0.02	1	335-67-1		04/04/2022 13:52
6:2 FTS	ND	0.09	0.09	0.03	1	27619-97-2		04/04/2022 13:52
PFHpS	ND	0.09	0.09	0.02	1	375-92-8		04/04/2022 13:52
PFNA	ND	0.09	0.09	0.02	1	375-95-1		04/04/2022 13:52
PFOSAm	ND	0.09	0.09	0.02	1	754-91-6		04/04/2022 13:52
PFOS	ND	0.09	0.09	0.02	1	1763-23-1		04/04/2022 13:52
PFDA	ND	0.09	0.09	0.02	1	335-76-2		04/04/2022 13:52
8:2 FTS	ND	0.09	0.09	0.02	1	39108-34-4		04/04/2022 13:52
9-CI-PF3ON	ND	0.09	0.09	0.01	1	756426-58-		04/04/2022 13:52
PFNS	ND	0.09	0.09	0.01	1	68259-12-1		04/04/2022 13:52
PFUnDA	ND	0.09	0.09	0.02	1	2058-94-8		04/04/2022 13:52
NMeFOSAA	ND	0.09	0.09	0.02	1	2355-31-9		04/04/2022 13:52
NEtFOSAA	ND	0.09	0.09	0.02	1	2991-50-6		04/04/2022 13:52
PFDS	ND	0.09	0.09	0.02	1	335-77-3		04/04/2022 13:52
PFDOA	ND	0.09	0.09	0.02	1	307-55-1		04/04/2022 13:52
11-CI-PF3OUdS	ND	0.09	0.09	0.01	1	763051-92-		04/04/2022 13:52
PFTrDA	ND	0.09	0.09	0.02	1	72629-94-8		04/04/2022 13:52
PFTDA	ND	0.09	0.09	0.03	1	376-06-7		04/04/2022 13:52

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C2 PFHxA	0.99	1.2	116	50-150		04/04/2022 13:52
13C4 PFOA	0.99	1.2	124	50-150		04/04/2022 13:52
13C2 PFDA	0.99	1.2	124	50-150		04/04/2022 13:52
13C4 PFOS	0.95	1.2	130	50-150		04/04/2022 13:52

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 36 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 2 of 4

Client Sample ID	BLKZU	Extraction Date	03/25/2022 18:18
Lab Sample ID	BLANK-97483	Total Amount Extracted	5.05g
Lab File ID	Q220404A_010	Ical ID	220401B01
Matrix	Soil	CCal File	Q220404A_008
Collected	03/21/2022 07:56	Ending CCal File	Q220404A_020
Received	03/21/2022 07:56	Blank File	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	Analyzed
13C4 PFBA	0.99	1.00	101	50-150		04/04/2022 13:52
13C5 PFPeA	0.99	0.97	98	50-150		04/04/2022 13:52
13C3 PFBS	0.92	0.85	92	50-150		04/04/2022 13:52
13C2 4:2FTS	0.93	0.93	101	50-150		04/04/2022 13:52
13C5 PFHxA	0.99	0.98	99	50-150		04/04/2022 13:52
13C4 PFHpA	0.99	0.93	94	50-150		04/04/2022 13:52
13C3 PFHxS	0.94	0.89	95	50-150		04/04/2022 13:52
13C2 6:2FTS	0.94	0.90	96	50-150		04/04/2022 13:52
13C8 PFOA	0.99	0.92	93	50-150		04/04/2022 13:52
13C9 PFNA	0.99	0.98	99	50-150		04/04/2022 13:52
13C8 PFOS	0.95	1.2	127	50-150		04/04/2022 13:52
13C2 8:2FTS	0.95	0.91	96	50-150		04/04/2022 13:52
13C6 PFDA	0.99	1.2	118	50-150		04/04/2022 13:52
d3-MeFOSAA	0.99	1.1	112	50-150		04/04/2022 13:52
13C8 PFOSA	0.99	0.89	90	50-150		04/04/2022 13:52
d5-EtFOSAA	0.99	1.0	103	50-150		04/04/2022 13:52
13C7 PFUdA	0.99	1.1	114	50-150		04/04/2022 13:52
13C2 PFDoA	0.99	0.96	97	50-150		04/04/2022 13:52
13C2 PFTeDA	0.99	0.91	92	50-150		04/04/2022 13:52
13C3 HFPO-DA	0.99	0.90	91	50-150		04/04/2022 13:52

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C2 PFHxA	N/A	N/A	6.32	6.33	43		04/04/2022 13:52
13C4 PFOA	N/A	N/A	7.65	7.68	56		04/04/2022 13:52
13C2 PFDA	N/A	N/A	9.01	8.93	41		04/04/2022 13:52
13C4 PFOS	N/A	N/A	9.56	9.46	46		04/04/2022 13:52

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 37 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 3 of 4

Client Sample ID	BLKZU	Extraction Date	03/25/2022 18:18
Lab Sample ID	BLANK-97483	Total Amount Extracted	5.05g
Lab File ID	Q220404A_010	Ical ID	220401B01
Matrix	Soil	CCal File	Q220404A_008
Collected	03/21/2022 07:56	Ending CCal File	Q220404A_020
Received	03/21/2022 07:56	Blank File	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
13C4 PFBA	N/A	N/A	4.82	4.83	38		04/04/2022 13:52
13C5 PFPeA	N/A	N/A	5.64	5.67	70		04/04/2022 13:52
13C3 PFBS	N/A	N/A	6.65	6.65	17		04/04/2022 13:52
13C2 4:2FTS	N/A	N/A	6.04	6.07	13		04/04/2022 13:52
13C5 PFHxA	N/A	N/A	6.32	6.32	52		04/04/2022 13:52
13C4 PFHpA	N/A	N/A	6.99	6.98	49		04/04/2022 13:52
13C3 PFHxS	N/A	N/A	8.15	8.08	54		04/04/2022 13:52
13C2 6:2FTS	N/A	N/A	7.29	7.27	50		04/04/2022 13:52
13C8 PFOA	N/A	N/A	7.65	7.61	67		04/04/2022 13:52
13C9 PFNA	N/A	N/A	8.32	8.26	55		04/04/2022 13:52
13C8 PFOS	N/A	N/A	9.57	9.48	51		04/04/2022 13:52
13C2 8:2FTS	N/A	N/A	8.61	8.54	56		04/04/2022 13:52
13C6 PFDA	N/A	N/A	9.01	8.93	47		04/04/2022 13:52
d3-MeFOSAA	N/A	N/A	8.88	8.81	51		04/04/2022 13:52
13C8 PFOSA	N/A	N/A	11.86	11.77	13		04/04/2022 13:52
d5-EtFOSAA	N/A	N/A	9.19	9.13	39		04/04/2022 13:52
13C7 PFUdA	N/A	N/A	9.69	9.61	46		04/04/2022 13:52
13C2 PFDoA	N/A	N/A	10.39	10.28	51		04/04/2022 13:52
13C2 PFTeDA	N/A	N/A	11.80	11.66	41		04/04/2022 13:52
13C3 HFPO-DA	N/A	N/A	6.60	6.60	31		04/04/2022 13:52

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 38 of 47

Method Blank Analysis Summary

PFAS by Isotope Dilution

Page 4 of 4

Client Sample ID	BLKZU	Extraction Date	03/25/2022 18:18
Lab Sample ID	BLANK-97483	Total Amount Extracted	5.05g
Lab File ID	Q220404A_010	Ical ID	220401B01
Matrix	Soil	CCal File	Q220404A_008
Collected	03/21/2022 07:56	Ending CCal File	Q220404A_020
Received	03/21/2022 07:56	Blank File	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Signal to Noise	Qualifiers	Analyzed
PFBA	N/A	N/A	0.00	4.84	ND		04/04/2022 13:52
PFPeA	N/A	N/A	0.00	5.84	ND		04/04/2022 13:52
HFPO-DA	0.00	0.62	0.00	6.62	ND		04/04/2022 13:52
PFBS	0.00	0.37	0.00	6.66	ND		04/04/2022 13:52
PFHxA	0.00	0.07	0.00	6.35	ND		04/04/2022 13:52
4:2 FTS	0.00	1.20	0.00	6.07	ND		04/04/2022 13:52
PFPeS	0.00	0.43	0.00	7.39	ND		04/04/2022 13:52
PFHpA	0.00	0.44	0.00	6.99	ND		04/04/2022 13:52
DONA	0.00	0.45	0.00	7.22	ND		04/04/2022 13:52
PFHxS	0.00	0.35	0.00	8.11	ND		04/04/2022 13:52
PFOA	0.00	0.37	0.00	7.62	ND		04/04/2022 13:52
6:2 FTS	1.60	1.10	7.29	7.37	ND		04/04/2022 13:52
PFHpS	0.00	0.42	0.00	8.78	ND		04/04/2022 13:52
PFNA	0.00	0.34	0.00	8.31	ND		04/04/2022 13:52
PFOSAm	N/A	N/A	0.00	11.78	ND		04/04/2022 13:52
PFOS	0.00	0.20	0.00	9.49	ND		04/04/2022 13:52
PFDA	0.00	0.21	0.00	8.94	ND		04/04/2022 13:52
8:2 FTS	0.00	1.50	0.00	8.55	ND		04/04/2022 13:52
9-Cl-PF3ON	0.00	0.02	0.00	9.98	ND		04/04/2022 13:52
PFNS	0.00	0.22	0.00	10.14	ND		04/04/2022 13:52
PFUnDA	0.00	0.18	9.70	9.61	ND		04/04/2022 13:52
NMeFOSAA	0.00	0.50	0.00	8.82	ND		04/04/2022 13:52
NetFOSAA	0.00	0.66	0.00	9.20	ND		04/04/2022 13:52
PFDS	0.00	0.24	0.00	10.84	ND		04/04/2022 13:52
PFDOA	0.00	0.19	0.00	10.30	ND		04/04/2022 13:52
11-Cl-PF3OUdS	0.00	0.03	0.00	11.32	ND		04/04/2022 13:52
PFTrDA	0.00	0.26	0.00	10.99	ND		04/04/2022 13:52
PFTDA	0.00	0.16	0.00	11.66	ND		04/04/2022 13:52

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 39 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 1 of 4

Lab Sample ID	LCS-97558	Instrument ID	10LCMS01
Run File Name	Q220325A_022	Column ID	118AB10133
Analyzed	03/25/2022 17:03	Ical ID	220322A01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	18	90	50-150	
13C4_PFOA	20	18	92	50-150	
13C2_PFDA	20	19	96	50-150	
13C4_PFOS	19	18	92	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	20	19	94	50-150	
13C5_PFPeA	20	18	91	50-150	
13C3_PFBS	19	18	95	50-150	
13C2_4:2FTS	19	16	85	50-150	
13C5_PFHxA	20	20	100	50-150	
13C4_PFHpA	20	19	97	50-150	
13C3_PFHxS	19	17	90	50-150	
13C2_6:2FTS	19	18	95	50-150	
13C8_PFOA	20	17	86	50-150	
13C9_PFNA	20	19	97	50-150	
13C8_PFOS	19	19	99	50-150	
13C2_8:2FTS	19	16	82	50-150	
13C6_PFDA	20	19	96	50-150	
d3-MeFOSAA	20	17	87	50-150	
13C8_PFOSA	20	14	71	50-150	
d5-EtFOSAA	20	13	67	50-150	
13C7_PFUdA	20	14	70	50-150	
13C2_PFDoA	20	14	68	50-150	
13C2_PFTeDA	20	18	89	50-150	
13C3_HFPO-DA	20	22	111	50-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 40 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 2 of 4

Lab Sample ID	LCS-97558	Instrument ID	10LCMS01
Run File Name	Q220325A_022	Column ID	118AB10133
Analyzed	03/25/2022 17:03	Ical ID	220322A01
Injected By	NH	Level	L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	4.0	5.0	126	73-129		375-22-4
PFPeA	4.0	4.9	122	72-129		2706-90-3
HFPO-DA	4.0	4.4	111	70-140		13252-13-6
PFBS	3.5	3.9	109	72-130		375-73-5
PFHxA	4.0	4.4	111	72-129		307-24-4
4:2 FTS	3.7	4.1	109	63-143		757124-72-4
PFPeS	3.8	4.4	118	71-127		2706-91-4
PFHpA	4.0	4.5	112	72-130		375-85-9
DONA	3.8	5.1	134	70-140		919005-14-4
PFHxS	3.6	4.2	116	68-131		355-46-4
PFOA	4.0	4.9	123	71-133		335-67-1
6:2 FTS	3.8	4.2	109	64-140		27619-97-2
PFHpS	3.8	4.0	105	69-134		375-92-8
PFNA	4.0	4.7	118	69-130		375-95-1
PFOSAm	4.0	4.5	113	67-137		754-91-6
PFOS	3.7	4.1	111	65-140		1763-23-1
PFDA	4.0	3.7	92	71-129		335-76-2
8:2 FTS	3.8	4.3	111	67-138		39108-34-4
9-CI-PF3ON	3.7	3.7	98	70-130		756426-58-1
PFNS	3.8	4.1	106	69-127		68259-12-1
PFUnDA	4.0	4.2	105	69-133		2058-94-8
NMeFOSAA	4.0	4.3	108	65-136		2355-31-9
NETFOSAA	4.0	4.0	101	61-135		2991-50-6
PFDS	3.9	3.4	89	53-142		335-77-3
PFDOA	4.0	5.2	131	72-134		307-55-1
11-CI-PF3OUDs	3.8	4.1	109	70-140		763051-92-9
PFTrDA	4.0	5.1	127	65-144		72629-94-8
PFTDA	4.0	4.0	99	71-132		376-06-7

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.34	6.31	
13C4 PFOA	N/A	N/A	7.67	7.68	
13C2 PFDA	N/A	N/A	9.00	9.04	
13C4 PFOS	N/A	N/A	9.45	9.51	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 41 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 3 of 4

Lab Sample ID	LCS-97558	Instrument ID	10LCMS01
Run File Name	Q220325A_022	Column ID	118AB10133
Analyzed	03/25/2022 17:03	Ical ID	220322A01
Injected By	NH	Level	L

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.79	4.74	
13C5 PFPeA	N/A	N/A	5.65	5.59	
13C3 PFBS	N/A	N/A	6.59	6.58	
13C2 4:2FTS	N/A	N/A	6.07	6.01	
13C5 PFHxA	N/A	N/A	6.35	6.31	
13C4 PFHpa	N/A	N/A	7.01	7.01	
13C3 PFHxs	N/A	N/A	8.08	8.10	
13C2 6:2FTS	N/A	N/A	7.34	7.33	
13C8 PFOA	N/A	N/A	7.67	7.68	
13C9 PFNA	N/A	N/A	8.34	8.35	
13C8 PFOS	N/A	N/A	9.46	9.45	
13C2 8:2FTS	N/A	N/A	8.62	8.65	
13C6 PFDA	N/A	N/A	9.00	9.04	
d3-MeFOSAA	N/A	N/A	8.90	8.92	
13C8 PFOSA	N/A	N/A	11.58	11.51	
d5-EtFOSAA	N/A	N/A	9.21	9.24	
13C7 PFUdA	N/A	N/A	9.67	9.73	
13C2 PFDoA	N/A	N/A	10.34	10.41	
13C2 PFTeDA	N/A	N/A	11.65	11.69	
13C3 HFPO-DA	N/A	N/A	6.62	6.59	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 42 of 47



LCS Analysis Summary

PFAS by Isotope Dilution

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Page 4 of 4

Lab Sample ID	LCS-97558	Instrument ID	10LCMS01
Run File Name	Q220325A_022	Column ID	118AB10133
Analyzed	03/25/2022 17:03	Ical ID	220322A01
Injected By	NH	Level	L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.80	4.74	
PFPeA	N/A	N/A	5.66	5.59	
HFPO-DA	0.56	0.64	6.63	6.61	
PFBS	0.33	0.35	6.60	6.58	
PFHxA	0.09	0.08	6.35	6.32	
4:2 FTS	1.10	0.97	6.08	6.01	
PFPeS	0.43	0.45	7.37	7.35	
PFHpA	0.47	0.38	7.02	6.99	
DONA	0.50	0.56	7.26	7.24	
PFHxS	0.33	0.37	8.09	8.09	
PFOA	0.37	0.34	7.68	7.67	
6:2 FTS	1.40	1.20	7.34	7.31	
PFHpS	0.45	0.39	8.79	8.80	
PFNA	0.28	0.26	8.34	8.35	
PFOSAm	N/A	N/A	11.59	11.52	
PFOS	0.28	0.24	9.47	9.49	
PFDA	0.16	0.19	9.01	9.02	
8:2 FTS	1.40	1.20	8.63	8.63	
9-CI-PF3ON	0.04	0.04	9.95	9.98	
PFNS	0.21	0.25	10.14	10.17	
PFUnDA	0.17	0.16	9.68	9.69	
NMeFOSAA	0.72	0.68	8.91	8.94	
NEtFOSAA	0.59	0.46	9.22	9.20	
PFDS	0.31	0.28	10.81	10.81	
PFDOA	0.20	0.17	10.34	10.39	
11-CI-PF3OUdS	0.02	0.02	11.28	11.25	
PFTrDA	0.19	0.22	11.01	11.04	
PFTDA	0.16	0.17	11.66	11.66	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 43 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 1 of 4

Lab Sample ID	LCS-97484	Instrument ID	10LCMS01
Run File Name	Q220405C_003	Column ID	118AB10133
Analyzed	04/05/2022 13:22	Ical ID	220405B01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	0.98	1.0	103	50-150	
13C4_PFOA	0.98	0.98	100	50-150	
13C2_PFDA	0.98	1.1	113	50-150	
13C4_PFOS	0.94	0.94	100	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	0.98	0.90	92	50-150	
13C5_PFPeA	0.98	0.92	93	50-150	
13C3_PFBs	0.91	0.77	84	50-150	
13C2_4:2FTS	0.92	0.85	93	50-150	
13C5_PFHxA	0.98	0.88	90	50-150	
13C4_PFHpA	0.98	0.81	83	50-150	
13C3_PFHxS	0.93	0.89	95	50-150	
13C2_6:2FTS	0.93	0.86	92	50-150	
13C8_PFOA	0.98	0.82	84	50-150	
13C9_PFNA	0.98	0.92	93	50-150	
13C8_PFOS	0.94	0.92	98	50-150	
13C2_8:2FTS	0.94	0.93	98	50-150	
13C6_PFDA	0.98	0.81	83	50-150	
d3-MeFOSAA	0.98	0.98	99	50-150	
13C8_PFOSA	0.98	0.93	94	50-150	
d5-EtFOSAA	0.98	0.90	91	50-150	
13C7_PFUdA	0.98	0.95	97	50-150	
13C2_PFDmA	0.98	0.87	88	50-150	
13C2_PFTeDA	0.98	0.95	97	50-150	
13C3_HFPO-DA	0.98	0.98	100	50-150	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 44 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 2 of 4

Lab Sample ID	LCS-97484	Instrument ID	10LCMS01
Run File Name	Q220405C_003	Column ID	118AB10133
Analyzed	04/05/2022 13:22	Ical ID	220405B01
Injected By	NH	Level	L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	0.20	0.22	113	71-135		375-22-4
PFPeA	0.20	0.22	109	69-132		2706-90-3
HFPO-DA	0.20	0.21	107	70-140		13252-13-6
PFBS	0.17	0.19	110	72-128		375-73-5
PFHxA	0.20	0.24	121	70-132		307-24-4
4:2 FTS	0.18	0.16	88	62-145		757124-72-4
PFPeS	0.18	0.19	104	73-123		2706-91-4
PFHpA	0.20	0.24	119	71-131		375-85-9
DONA	0.19	0.24	128	70-140		919005-14-4
PFHxS	0.18	0.17	94	67-130		355-46-4
PFOA	0.20	0.23	119	69-133		335-67-1
6:2 FTS	0.19	0.18	95	64-140		27619-97-2
PFHpS	0.19	0.19	104	70-132		375-92-8
PFNA	0.20	0.23	115	72-129		375-95-1
PFOSAm	0.20	0.22	111	67-137		754-91-6
PFOS	0.18	0.19	106	68-136		1763-23-1
PFDA	0.20	0.21	109	69-133		335-76-2
8:2 FTS	0.19	0.19	103	65-137		39108-34-4
9-CI-PF3ON	0.18	0.19	106	70-140		756426-58-1
PFNS	0.19	0.19	101	69-125		68259-12-1
PFUnDA	0.20	0.20	99	64-136		2058-94-8
NMeFOSAA	0.20	0.17	86	63-144	I	2355-31-9
NETFOSAA	0.20	0.20	100	61-139		2991-50-6
PFDS	0.19	0.20	104	59-134		335-77-3
PFDOA	0.20	0.23	116	69-135		307-55-1
11-CI-PF3OuDS	0.19	0.18	99	70-140		763051-92-9
PFTrDA	0.20	0.21	109	66-139		72629-94-8
PFTDA	0.20	0.21	106	69-133		376-06-7

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2 PFHxA	N/A	N/A	6.16	6.15	
13C4 PFOA	N/A	N/A	7.40	7.39	
13C2 PFDA	N/A	N/A	8.69	8.67	
13C4 PFOS	N/A	N/A	9.21	9.19	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 45 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 3 of 4

Lab Sample ID LCS-97484
Run File Name Q220405C_003
Analyzed 04/05/2022 13:22
Injected By NH
Instrument ID 10LCMS01
Column ID 118AB10133
Ical ID 220405B01
Level L

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4 PFBA	N/A	N/A	4.79	4.79	
13C5 PFPeA	N/A	N/A	5.54	5.54	
13C3 PFBS	N/A	N/A	6.47	6.45	
13C2 4:2FTS	N/A	N/A	5.90	5.89	
13C5 PFHxA	N/A	N/A	6.16	6.15	
13C4 PFHpa	N/A	N/A	6.78	6.76	
13C3 PFHxs	N/A	N/A	7.87	7.83	
13C2 6:2FTS	N/A	N/A	7.07	7.05	
13C8 PFOA	N/A	N/A	7.40	7.38	
13C9 PFNA	N/A	N/A	8.04	8.00	
13C8 PFOS	N/A	N/A	9.21	9.17	
13C2 8:2FTS	N/A	N/A	8.31	8.27	
13C6 PFDA	N/A	N/A	8.69	8.65	
d3-MeFOSAA	N/A	N/A	8.56	8.53	
13C8 PFOSA	N/A	N/A	11.40	11.37	
d5-EtFOSAA	N/A	N/A	8.87	8.83	
13C7 PFUdA	N/A	N/A	9.35	9.30	
13C2 PFDoA	N/A	N/A	10.02	9.97	
13C2 PFTeDA	N/A	N/A	11.33	11.28	
13C3 HFPO-DA	N/A	N/A	6.42	6.40	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 46 of 47



Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

LCS Analysis Summary
PFAS by Isotope Dilution

Page 4 of 4

Lab Sample ID	LCS-97484	Instrument ID	10LCMS01
Run File Name	Q220405C_003	Column ID	118AB10133
Analyzed	04/05/2022 13:22	Ical ID	220405B01
Injected By	NH	Level	L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.80	4.79	
PFPeA	N/A	N/A	5.55	5.55	
HFPO-DA	0.60	0.54	6.43	6.41	
PFBS	0.34	0.32	6.48	6.46	
PFHxA	0.08	0.08	6.17	6.16	
4:2 FTS	1.10	1.00	5.90	5.90	
PFPeS	0.41	0.43	7.19	7.16	
PFHpA	0.42	0.35	6.79	6.77	
DONA	0.49	0.44	7.02	7.01	
PFHxS	0.36	0.35	7.88	7.85	
PFOA	0.34	0.31	7.41	7.40	
6:2 FTS	1.40	1.30	7.07	7.07	
PFHpS	0.40	0.33	8.55	8.53	
PFNA	0.25	0.28	8.04	8.03	
PFOSAm	N/A	N/A	11.41	11.39	
PFOS	0.23	0.24	9.22	9.20	
PFDA	0.20	0.20	8.70	8.69	
8:2 FTS	1.40	1.20	8.31	8.31	
9-CI-PF3ON	0.04	0.03	9.71	9.69	
PFNS	0.23	0.21	9.89	9.86	
PFUnDA	0.16	0.18	9.36	9.34	
NMeFOSAA	0.83	0.54	8.57	8.56	I
NEtFOSAA	0.56	0.72	8.88	8.87	
PFDS	0.25	0.25	10.55	10.52	
PFDOA	0.17	0.17	10.02	10.01	
11-CI-PF3OUdS	0.03	0.04	11.02	10.99	
PFTrDA	0.19	0.20	10.69	10.67	
PFTDA	0.15	0.14	11.34	11.32	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page 47 of 47