



Hazen and Sawyer  
498 Seventh Avenue, 11th Floor  
New York, NY 10018 • 212.539.7000

January 10, 2022

Liberty Utilities – Dykeer Operations District  
PWS ID No. NY5920065  
MCL Deferral for PFOA and PFOS  
Quarterly Report – Fourth Quarter 2021

## Introduction

On behalf of Liberty Utilities (Liberty), Hazen & Sawyer is providing this document in accordance with the requirements of the New York State Department of Health (NYSDOH) for public water suppliers who have been granted deferrals from maximum contaminant level (MCL) violations for PFOA and PFOS. NYAW was granted an MCL deferral for PFOA and PFOS in January of 2021 due to its proactive efforts toward the implementation of treatment for these compounds.

The enclosed is a report describing Liberty’s progress towards maintaining the highest quality of water for their customers and meeting the deadlines set forth in the deferral approval. The project schedule is contained in **Attachment A**.

## Corrective Action Plan Milestones

### Dykeer GAC Treatment

The construction of the Granular Activated Carbon (GAC) treatment has continued through the 4<sup>th</sup> quarter of 2021 since beginning in late July. The buried water electrical utilities between the existing treatment building and the new GAC Building have been installed, along with the foundation, masonry, and roofing system for the new GAC Building.

Every effort has been made by Liberty to meet the December 2021 timeframe for project completion; however, the delayed construction start due to extended WCDOH and NYSDOH review time will move the completion date into 2022. Along with these delays in review, there have been miscellaneous supply chain issues during construction. These complications have become normal during these unprecedented times as we all work through the roadblocks related to Covid-19. For these reasons, Liberty submitted, and received approval for, an extension to this deferral through December 25, 2022, setting a new compliance timeline. This new schedule accounts for any unforeseen supply chain issues that may further delay this project.

The Dykeer system has continued to minimize the usage of the affected wells by trucking in water to supplement the supply and blend down the contaminants at the system entry point.

**Public Notification**

Public notification communicating an update on all of our Dykeer projects was delivered in an email to The Willows board and customers on December 20, 2021. In addition, Liberty has uploaded this quarterly report to their website. Documentation of public notification is contained in **Attachment B**.

**Analytical Sampling**

Sample results for the wells for which deferrals were granted (#1, #3, #4, & #6) and entry point, taken during the fourth quarter of 2021, are contained in the table below. Full laboratory reports for each sample are contained in **Attachment C**.

**Q4 2021 PFOA/PFOS Water Quality Monitoring Results (ng/l or ppt)**

<b>Location</b>	<b>Date Sampled</b>	<b>PFOA</b>	<b>PFOS</b>
<b>Well #1</b>	12/1/2021	16.2	19.1
<b>Well #3</b>	12/1/2021	12.5	7.88
<b>Well #4</b>	12/1/2021	21.4	19.6
<b>Well #6*</b>	N/A	N/A	N/A
<b>Entry Point</b>	12/1/2021	14.6	11.8

\*Well 6 Disconnected

**Conclusion**

As demonstrated above, Liberty is actively working to preserve the quality of water for its customers and comply with the requirements put forth by the NYSDOH. Liberty looks forward to continuing to work towards completion of its treatment facilities.

Should you have any questions, please contact me via email at [KBarrett@hazenandsawyer.com](mailto:KBarrett@hazenandsawyer.com) or via phone at (917) 359-6809.

Very truly yours,



Kristen Barrett, PE  
Associate Vice President

Enclosures: Attachment A – Updated Project Schedule  
Attachment B – Public Notifications  
Attachment C – Laboratory Reports

cc: B. Rogers, P.E. (NYSDOH)  
D. Taylor (WCDOH)  
W. Schneider (WCDOH)  
C. Alario (Liberty)  
J. Kilpatrick (Liberty)  
C. Peters (Liberty)

**ATTACHMENT A**

**Project Schedule**



**ATTACHMENT B**

**Public Notifications**



December 17, 2021

RE: Construction of Treatment Facilities for The Willows Community and Drilling of New Water Sources

Dear Customer,

New York American Water is continuing its efforts to upgrade our water supply system and provide you with reliable service. We would like to take this opportunity to provide an update on these projects.

Our final step to complete the connection and gain approval for use of newly drilled Well 7 is the horizontal directional drill under Plum Brook. We will also be performing an emergency directional drill to replace a section of water main in the same location, as the recent storms have exposed some of the underlying pipe in the waterway. The project is set to begin the start of the new year, the week of January 3<sup>rd</sup>, 2022. Residents can expect digging of test pits, the delivery of the drill rig to the existing plant site, along with piping, tanks and other construction vehicles. Also expect exit pits and pipe staged along the road up near the Well 7 site. Our intent is to avoid any major disruptions to traffic, but you may experience several temporary lane closures as we integrate this very important well into your water system.

We are also set to begin a 72 hour pump test for the other two wells recently drilled (well 8 and 9). We will begin installing the necessary equipment the week of January 3<sup>rd</sup> with a tentative test start up of January 10<sup>th</sup> and shutdown of January 13<sup>th</sup>. We will do our best to shield the generators to reduce the disturbance to nearby homes.

Construction of the GAC facility is ongoing, with the necessary underground piping modifications and new building foundation and walls completed. Future work will include the completion of the new building and installation of GAC vessels with associated piping. Visit <https://www.amwater.com/nyaw/water-quality/Emerging-Compounds/dykeer> for quarterly update reports on the GAC treatment. Please use caution around all projects and contact Chris Peters, Project Manager, at 484-707-6797 with any questions or concerns that need to be taken into consideration during construction.

Work hours will be Monday through Friday, 7:00 a.m. to 5:00 p.m. Any other work outside these hours or on weekends will only take place if needed to maintain the project schedule and are necessary. Work for the directional drill after 5:00 pm will require lights stationed at the entry and exit pits of the drill. We will expedite our work as best we can and make every effort to minimize impacts to residents. Your cooperation, patience and understanding is appreciated.

Sincerely,

John Kilpatrick  
Engineering Manager  
New York American Water

**ATTACHMENT C**

**Laboratory Reports**





## ANALYTICAL REPORT

Lab Number:	L2166855
Client:	Environmental Consultants PO Box 3148 Poughkeepsie, NY 12603
ATTN:	Kenny Sabia
Phone:	(845) 486-1030
Project Name:	DYKEER WATER
Project Number:	Not Specified
Report Date:	12/29/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2166855-01	ENTRY PT.	DW	WESTCHESTER	12/01/21 09:50	12/06/21
L2166855-02	WELL #1	DW	WESTCHESTER	12/01/21 09:50	12/06/21
L2166855-03	WELL #3	DW	WESTCHESTER	12/01/21 11:00	12/06/21
L2166855-04	WELL #4	DW	WESTCHESTER	12/01/21 11:10	12/06/21
L2166855-05	FIELD BLANK	DW	WESTCHESTER	12/01/21 11:20	12/06/21

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

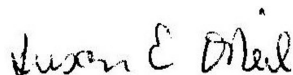
#### Sample Receipt

L2166855-01: The collection date and time on the chain of custody was 01-DEC-21 09:50; however, the collection date/time on the container label was 01-DEC-21 09:36. At the client's request, the collection date/time is reported as 01-DEC-21 09:50.

L2166855-01 and -04 were received above the required pH for the 1,4 Dioxane by 522 analysis. The analysis was not performed per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 12/29/21

# ORGANICS

# SEMIVOLATILES

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2166855-01  
 Client ID: ENTRY PT.  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 09:50  
 Date Received: 12/06/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Dw  
 Analytical Method: 136,533  
 Analytical Date: 12/22/21 00:28  
 Analyst: LV

Extraction Method: EPA 533  
 Extraction Date: 12/14/21 06:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	7.12		ng/l	1.86	0.623	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.86	0.623	1
Perfluoropentanoic Acid (PFPeA)	10.2		ng/l	1.86	0.623	1
Perfluorobutanesulfonic Acid (PFBS)	7.42		ng/l	1.86	0.623	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.86	0.623	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.86	0.623	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.86	0.623	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.86	0.623	1
Perfluorohexanoic Acid (PFHxA)	9.02		ng/l	1.86	0.623	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.86	0.623	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.86	0.623	1
Perfluoroheptanoic Acid (PFHpA)	3.50		ng/l	1.86	0.623	1
Perfluorohexanesulfonic Acid (PFHxS)	2.31		ng/l	1.86	0.623	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.86	0.623	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	0.623	1
Perfluorooctanoic Acid (PFOA)	14.6		ng/l	1.86	0.623	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.623	1
Perfluorononanoic Acid (PFNA)	0.857	J	ng/l	1.86	0.623	1
Perfluorooctanesulfonic Acid (PFOS)	11.8		ng/l	1.86	0.936	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.86	0.623	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	0.623	1
Perfluorodecanoic Acid (PFDA)	0.671	J	ng/l	1.86	0.623	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.623	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.86	0.623	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.623	1

**Project Name:** DYKEER WATER**Lab Number:** L2166855**Project Number:** Not Specified**Report Date:** 12/29/21**SAMPLE RESULTS**

Lab ID: L2166855-01

Date Collected: 12/01/21 09:50

Client ID: ENTRY PT.

Date Received: 12/06/21

Sample Location: WESTCHESTER

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			101		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			120		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			116		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			137		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			101		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			112		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			107		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			101		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			125		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			96		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			102		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			137		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			129		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			113		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			114		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			86		50-200	



**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2166855-02  
 Client ID: WELL #1  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 09:50  
 Date Received: 12/06/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw  
 Analytical Method: 120,522  
 Analytical Date: 12/10/21 20:36  
 Analyst: DB

Extraction Method: EPA 522  
 Extraction Date: 12/10/21 09:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	0.158		ug/l	0.153	0.153	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	92		70-130

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2166855-02  
 Client ID: WELL #1  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 09:50  
 Date Received: 12/06/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Dw  
 Analytical Method: 136,533  
 Analytical Date: 12/22/21 00:37  
 Analyst: LV

Extraction Method: EPA 533  
 Extraction Date: 12/14/21 06:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	9.88		ng/l	1.87	0.625	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.87	0.625	1
Perfluoropentanoic Acid (PFPeA)	12.7		ng/l	1.87	0.625	1
Perfluorobutanesulfonic Acid (PFBS)	9.73		ng/l	1.87	0.625	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.87	0.625	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.87	0.625	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.87	0.625	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	0.625	1
Perfluorohexanoic Acid (PFHxA)	10.2		ng/l	1.87	0.625	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	0.625	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.87	0.625	1
Perfluoroheptanoic Acid (PFHpA)	3.89		ng/l	1.87	0.625	1
Perfluorohexanesulfonic Acid (PFHxS)	3.26		ng/l	1.87	0.625	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	0.625	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	0.625	1
Perfluorooctanoic Acid (PFOA)	16.2		ng/l	1.87	0.625	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.625	1
Perfluorononanoic Acid (PFNA)	1.12	J	ng/l	1.87	0.625	1
Perfluorooctanesulfonic Acid (PFOS)	19.1		ng/l	1.87	0.940	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.87	0.625	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	0.625	1
Perfluorodecanoic Acid (PFDA)	1.01	J	ng/l	1.87	0.625	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.625	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.87	0.625	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.625	1

**Project Name:** DYKEER WATER**Lab Number:** L2166855**Project Number:** Not Specified**Report Date:** 12/29/21**SAMPLE RESULTS**

Lab ID: L2166855-02

Date Collected: 12/01/21 09:50

Client ID: WELL #1

Date Received: 12/06/21

Sample Location: WESTCHESTER

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab</b>						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			98		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			98		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			133		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			133		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			81		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			96		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			107		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			93		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			124		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			79		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			109		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			107		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			138		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			93		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			96		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			70		50-200	

**Project Name:** DYKEER WATER**Lab Number:** L2166855**Project Number:** Not Specified**Report Date:** 12/29/21**SAMPLE RESULTS**

Lab ID: L2166855-03  
 Client ID: WELL #3  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 11:00  
 Date Received: 12/06/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw  
 Analytical Method: 120,522  
 Analytical Date: 12/10/21 21:05  
 Analyst: DB

Extraction Method: EPA 522  
 Extraction Date: 12/10/21 09:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.147	0.147	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
1,4-Dioxane-d8			97		70-130	

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2166855-03  
 Client ID: WELL #3  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 11:00  
 Date Received: 12/06/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Dw  
 Analytical Method: 136,533  
 Analytical Date: 12/22/21 00:46  
 Analyst: LV

Extraction Method: EPA 533  
 Extraction Date: 12/14/21 06:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	4.68		ng/l	1.84	0.615	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	0.615	1
Perfluoropentanoic Acid (PFPeA)	8.36		ng/l	1.84	0.615	1
Perfluorobutanesulfonic Acid (PFBS)	5.04		ng/l	1.84	0.615	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	0.615	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.84	0.615	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	0.615	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.615	1
Perfluorohexanoic Acid (PFHxA)	7.44		ng/l	1.84	0.615	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.615	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	0.615	1
Perfluoroheptanoic Acid (PFHpA)	3.35		ng/l	1.84	0.615	1
Perfluorohexanesulfonic Acid (PFHxS)	1.73	J	ng/l	1.84	0.615	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	0.615	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	0.615	1
Perfluorooctanoic Acid (PFOA)	12.5		ng/l	1.84	0.615	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.615	1
Perfluorononanoic Acid (PFNA)	0.626	J	ng/l	1.84	0.615	1
Perfluorooctanesulfonic Acid (PFOS)	7.88		ng/l	1.84	0.924	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	0.615	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	0.615	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	0.615	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.615	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	0.615	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.615	1

**Project Name:** DYKEER WATER**Lab Number:** L2166855**Project Number:** Not Specified**Report Date:** 12/29/21**SAMPLE RESULTS**

Lab ID: L2166855-03

Date Collected: 12/01/21 11:00

Client ID: WELL #3

Date Received: 12/06/21

Sample Location: WESTCHESTER

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)						Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			109			50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			124			50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			140			50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			141			50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			130			50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			125			50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			118			50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)			115			50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			131			50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			97			50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			122			50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			145			50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			145			50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			115			50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			114			50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			107			50-200

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2166855-04  
 Client ID: WELL #4  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 11:10  
 Date Received: 12/06/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Dw  
 Analytical Method: 136,533  
 Analytical Date: 12/22/21 00:54  
 Analyst: LV

Extraction Method: EPA 533  
 Extraction Date: 12/14/21 06:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	10.5		ng/l	1.84	0.615	1
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	1.84	0.615	1
Perfluoropentanoic Acid (PFPeA)	20.0		ng/l	1.84	0.615	1
Perfluorobutanesulfonic Acid (PFBS)	11.5		ng/l	1.84	0.615	1
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	1.84	0.615	1
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND		ng/l	1.84	0.615	1
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	1.84	0.615	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.615	1
Perfluorohexanoic Acid (PFHxA)	16.9		ng/l	1.84	0.615	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.615	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	1.84	0.615	1
Perfluoroheptanoic Acid (PFHpA)	6.44		ng/l	1.84	0.615	1
Perfluorohexanesulfonic Acid (PFHxS)	3.20		ng/l	1.84	0.615	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	0.615	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	0.615	1
Perfluorooctanoic Acid (PFOA)	21.4		ng/l	1.84	0.615	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.615	1
Perfluorononanoic Acid (PFNA)	1.44	J	ng/l	1.84	0.615	1
Perfluorooctanesulfonic Acid (PFOS)	19.6		ng/l	1.84	0.924	1
9-Chlorohexadecafluoro-3-Oxanonone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	0.615	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	0.615	1
Perfluorodecanoic Acid (PFDA)	1.14	J	ng/l	1.84	0.615	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.615	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.84	0.615	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.615	1

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2166855-04  
 Client ID: WELL #4  
 Sample Location: WESTCHESTER

Date Collected: 12/01/21 11:10  
 Date Received: 12/06/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			98		50-200	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			76		50-200	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			126		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			141		50-200	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			95		50-200	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			93		50-200	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			111		50-200	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			94		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			133		50-200	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			83		50-200	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			108		50-200	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			122		50-200	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			152		50-200	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			107		50-200	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			112		50-200	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			73		50-200	



**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 120,522  
Analytical Date: 12/10/21 08:51  
Analyst: DB

Extraction Method: EPA 522  
Extraction Date: 12/10/21 04:00

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by EPA 522 - Mansfield Lab for sample(s): 02-03 Batch: WG1581601-1					
1,4-Dioxane	ND		ug/l	0.150	0.150

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	95		70-130

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 136,533  
Analytical Date: 12/21/21 23:28  
Analyst: LV

Extraction Method: EPA 533  
Extraction Date: 12/14/21 06:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-04 Batch: WG1582862-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.668
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND		ng/l	2.00	0.668
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.668
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.668
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND		ng/l	2.00	0.668
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	ND		ng/l	2.00	0.668
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.668
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.668
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.668
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	2.00	0.668
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.668
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.668
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.668
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.668
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.668
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.668
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	1.00
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.668
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.668
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.668
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.668
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.668
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.668

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 136,533  
Analytical Date: 12/21/21 23:28  
Analyst: LV

Extraction Method: EPA 533  
Extraction Date: 12/14/21 06:01

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab for sample(s): 01-04 Batch: WG1582862-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	123		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	130		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	141		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		50-200

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by EPA 522 - Mansfield Lab Associated sample(s): 02-03 Batch: WG1581601-2 WG1581601-3								
1,4-Dioxane	94		92		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	97		95		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: DYKEER WATER

Lab Number: L2166855

Project Number: Not Specified

Report Date: 12/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1582862-2								
Perfluorobutanoic Acid (PFBA)	101		-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	101		-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	102		-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	107		-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	97		-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEEESA)	95		-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	96		-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	117		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	101		-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	105		-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	100		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	97		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	96		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	80		-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	96		-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	122		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	107		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	99		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	108		-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	118		-		70-130	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: DYKEER WATER

Lab Number: L2166855

Project Number: Not Specified

Report Date: 12/29/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1582862-2								
Perfluorodecanoic Acid (PFDA)	102		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	104		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	100		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	101		-		70-130	-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	109				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	122				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	141				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	125				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	98				50-200

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** DYKEER WATER

**Lab Number:** L2166855

**Project Number:** Not Specified

**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab		Associated sample(s): 01-04			QC Batch ID: WG1582862-3		QC Sample: L2166769-01		Client ID: MS Sample			
Perfluorobutanoic Acid (PFBA)	1.40J	147	148	101		-	-		70-130	-		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	147	148	101		-	-		70-130	-		30
Perfluoropentanoic Acid (PFPeA)	1.47J	147	156	106		-	-		70-130	-		30
Perfluorobutanesulfonic Acid (PFBS)	2.86	130	136	102		-	-		70-130	-		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	147	158	107		-	-		70-130	-		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	131	120	92		-	-		70-130	-		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	147	117	80		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	138	147	107		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	1.50J	147	152	103		-	-		70-130	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	138	137	99		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	147	159	108		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	1.25J	147	139	94		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.07J	134	129	96		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	139	171	123		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	140	147	105		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	8.80	147	169	109		-	-		70-130	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	140	145	103		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	147	140	95		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.930J	136	126	92		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	137	175	127		-	-		70-130	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	141	145	103		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	147	161	109		-	-		70-130	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** DYKEER WATER

**Lab Number:** L2166855

**Project Number:** Not Specified

**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab			Associated sample(s): 01-04			QC Batch ID: WG1582862-3			QC Sample: L2166769-01		Client ID: MS Sample	
Perfluoroundecanoic Acid (PFUnA)	ND	147	166	113		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	139	160	115		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	147	152	103		-	-		70-130	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>MS Qualifier</b>	<b>MSD % Recovery</b>	<b>MSD Qualifier</b>	<b>Acceptance Criteria</b>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	186				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	149				50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	162				50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	107				50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	124				50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	140				50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	120				50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110				50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104				50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	132				50-200
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93				50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112				50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99				50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	134				50-200



## Lab Duplicate Analysis

### Batch Quality Control

Project Name: DYKEER WATER

Project Number: Not Specified

Lab Number: L2166855

Report Date: 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1582862-4 QC Sample: L2166804-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	ND	ND	ng/l	NC		30
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	ND	ND	ng/l	NC		30
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	0.860J	1.01J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

Batch Quality Control

Project Name: DYKEER WATER

Project Number: Not Specified

Lab Number: L2166855

Report Date: 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 533 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1582862-4 QC Sample: L2166804-01 Client ID: DUP Sample						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	106		109		50-200
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122		106		50-200
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	137		120		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	151		136		50-200
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		120		50-200
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		118		50-200
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		105		50-200
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		111		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	115		113		50-200
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		97		50-200
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		103		50-200
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	129		150		50-200
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	144		143		50-200
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		117		50-200
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	115		124		50-200
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	93		107		50-200

**Project Name:** DYKEER WATER**Lab Number:** L2166855**Project Number:** Not Specified**Report Date:** 12/29/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2166855-01A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-01B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-01C	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	3.9	Y	Absent		HOLD-522(28)
L2166855-01D	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	3.9	Y	Absent		HOLD-522(28)
L2166855-02A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-02B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-02C	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	3.9	Y	Absent		A2-14DIOXANE-522(28)
L2166855-02D	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	3.9	Y	Absent		A2-14DIOXANE-522(28)
L2166855-03A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-03B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-03C	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	3.9	Y	Absent		A2-14DIOXANE-522(28)
L2166855-03D	Amber 500ml NaSulfite/NaHSO4 preserved	A	<4	<4	3.9	Y	Absent		A2-14DIOXANE-522(28)
L2166855-04A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-04B	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-533(28)
L2166855-04C	Amber 500ml NaSulfite/NaHSO4 preserved	A	5	5	3.9	Y	Absent		HOLD-522(28)
L2166855-04D	Amber 500ml NaSulfite/NaHSO4 preserved	A	7	7	3.9	Y	Absent		HOLD-522(28)
L2166855-05A	Plastic 250ml Ammonium Acetate preserved	A	NA		3.9	Y	Absent		A2-L-EXT-533(28)

## PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
<b>FLUOROTELOMERS</b>		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

#### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

#### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

#### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

**Report Format:** DU Report with 'J' Qualifiers



**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

**Data Qualifiers**

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** DYKEER WATER  
**Project Number:** Not Specified

**Lab Number:** L2166855  
**Report Date:** 12/29/21

## REFERENCES

- 120 Determination of 1,4-Dioxane in Drinking Water by Solid Phase Extraction (SPE) and Gas Chromatography/Mass Spectrometry (GC/MS) with Selected Ion Monitoring (SIM). EPA Method 522, EPA/600/R-08/101. Version 1.0, September 2008.
- 136 Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 533, EPA Document 815-B-19-020, November 2019.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

---

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

---

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.


**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

---

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 <b>NEW YORK CHAIN OF CUSTODY</b>	<b>Service Centers</b> Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105	Page	1	Date Rec'd in Lab	12/7/21		ALPHA Job #	L2166855		
		of	1							
Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288	<b>Project Information</b>			<b>Deliverables</b>			<b>Billing Information</b>		
Project Name: <u>Dykeer Water</u> Project Location: <u>Westchester</u>		<input type="checkbox"/> ASP-A <input type="checkbox"/> ASP-B <input type="checkbox"/> EQUIS (1 File) <input type="checkbox"/> EQUIS (4 File) <input type="checkbox"/> Other			<input type="checkbox"/> Same as Client Info PO #					
<b>Client Information</b>		<b>Regulatory Requirement</b>			<b>Disposal Site Information</b>					
Client: <u>Environmental Consultants</u> Address: Phone: <u>845-486-1030</u> Fax: Email:		<input type="checkbox"/> NY TOGS <input type="checkbox"/> NY Part 375 <input type="checkbox"/> AWQ Standards <input type="checkbox"/> NY CP-51 <input type="checkbox"/> NY Restricted Use <input type="checkbox"/> Other <input type="checkbox"/> NY Unrestricted Use <input type="checkbox"/> NYC Sewer Discharge			Please identify below location of applicable disposal facilities. Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other:					
Project # Project name as Project # <input type="checkbox"/>		Project Manager: ALPHAQuote #:			Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: Rush (only if pre approved) <input type="checkbox"/> # of Days:					
These samples have been previously analyzed by Alpha <input type="checkbox"/>		<b>ANALYSIS</b>			<b>Sample Filtration</b>					
Other project specific requirements/comments:		1,4 Dioxane PFAS			<input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below)					
Please specify Metals or TAL.					Sample Specific Comments					
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials					
		Date	Time							
<u>06855-01</u>	<u>Entry Pt.</u>	<u>12-1-21</u>	<u>9:50</u>	<u>W</u>	<u>RAK</u>	<u>✓</u>	<u>✓</u>			
<u>02</u>	<u>Well #1</u>	<u>12-1-21</u>	<u>9:50</u>	<u>W</u>	<u>RAK</u>	<u>✓</u>	<u>✓</u>			
<u>03</u>	<u>Well #3</u>	<u>12-1-21</u>	<u>11:00</u>	<u>W</u>	<u>RAK</u>	<u>✓</u>	<u>✓</u>			
<u>04</u>	<u>Well #4</u>	<u>12-1-21</u>	<u>11:10</u>	<u>W</u>	<u>RAK</u>	<u>✓</u>	<u>✓</u>			
<u>05</u>	<u>Well #6 offline</u>	<u>12-1-21</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>			
<u>05</u>	<u>Field Blank</u>	<u>12-1-21</u>	<u>11:20</u>	<u>W</u>	<u>RAK</u>	<u>✓</u>	<u>✓</u>			
Preservative Code: A = None B = HCl C = HNO <sub>3</sub> D = H <sub>2</sub> SO <sub>4</sub> E = NaOH F = MeOH G = NaHSO <sub>4</sub> H = Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> K/E = Zn Ac/NaOH O = Other		Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type Preservative		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)		
		Relinquished By:		Date/Time		Received By:		Date/Time		
		<u>Richard Kane</u>		<u>12-6-21</u>		<u>[Signature]</u>		<u>12/7/21 11:50</u>		
		<u>[Signature]</u>		<u>12/6/21 13:59</u>		<u>[Signature]</u>		<u>12/7/21 01:50</u>		
		<u>[Signature]</u>		<u>12/7/21 4:15</u>		<u>[Signature]</u>		<u>12/7/21 4:45</u>		
		<u>[Signature]</u>		<u>12/7/21 5:45</u>		<u>[Signature]</u>		<u>12/7/21 5:45</u>		