

April 8, 2021

New York American Water – Dykeer Operations District
PWS ID No. NY5920065
MCL Deferral for PFOA and PFOS
Quarterly Report – First Quarter 2021

Introduction

On behalf of New York American Water (NYAW), 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 NYAW's progress towards maintaining the highest quality of water for their customers and meeting the deadlines set forth in the deferral approval. Updated schedule for the project contained in **Attachment A**. Consistent with the deferral application submitted in November 2020, the start-up and testing period is planned for Q3 2021.

Corrective Action Plan Milestones

Dykeer GAC Treatment

The Dykeer GAC Treatment project is currently approaching the end of regulatory review. Regulatory milestones are outlined below.

NYAW submitted the application for Site Plan Approval to the Town of Somers in the second quarter of 2020. Subsequently, NYAW attended one zoning and five planning board meetings before receiving Conditional Site Plan Approval during the last quarter of 2020. The final condition to meet is obtaining Westchester County Department of Health (WCDOH) and NYSDOH Approval of Plans for Public Water Supply Improvement.

NYAW submitted their application to the WCDOH and NYSDOH for Approval of Plans in the last quarter of 2020, in line with the compliance timeline. Comments were received back in the first quarter of 2021 and draft responses were submitted in the same quarter. NYAW and Hazen participated in a comment review meeting with the WCDOH and NYSDOH in March 2021 and final responses will be submitted shortly.

NYAW submitted plans to the Town of Somers Building Department for review in Q1 of 2021. Building Permit from the Town of Somers is expected upon WCDOH and NYSDOH approval.

NYAW anticipates receiving all necessary regulatory approvals in April 2021. Once these approvals are received, project construction can commence, which is also expected in April 2021. Concurrently, NYAW has completed the competitive bid process, awarded the project, and is finalizing procurement of the prefabricated GAC treatment system for the facility. We believe this will allow an appropriate timeframe for completion of construction, startup, testing and receipt of regulatory approvals to operate by the end of December 2021, meeting the corrective action plan timeline.

Although granted a deferral, the Dykeer system was able to minimize the usage of the affected wells by continuing to truck in water to supplement the supply and blend down the contaminants at the system entry point.

Public Notification

In accordance with the terms of the deferral, NYAW notified the public of its MCL deferral in multiple ways. The public notification document provided by the NYSDOH was posted on NYAW’s website and a postcard with a URL link was sent out to all customers. In addition, a press release informing the public of the deferral was released to the local paper, as well as an ad placed in the local paper. Documentation of such contact 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 first quarter of 2021, are contained in the table below. Full laboratory reports for each sample are contained in **Attachment C**.

PFOA/PFOS (ng/l or ppt)
MCL = 10 ng/l

Location	Date Sampled	PFOA	PFOS
Well #1	1/7/2021	15.8	14.7
	1/21/2021	12.9	15.1
Well #3	1/7/2021	15.2	11.1
	1/21/2021	12.6	10.4
Well #4	1/7/2021	17.1	16
	1/21/2021	13.3	13.9
Well #6*	1/7/2021	31.1	31
	1/21/2021	32.5	30.4
Entry Point	1/7/2021	9.81	7.5
	1/21/2021	8.55	7.77

*Out of Service


Conclusion

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

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Should you have any questions, please contact me via email at 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)
L. DiMenna (NYAW)
J. Kilpatrick (NYAW)
C. Peters (NYAW)

ATTACHMENT A

Updated Project Schedule

ATTACHMENT B

Public Notifications

MEDIA CONTACT:

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External Affairs Manager

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Greg Gordon

631-830-2095

ggordon@zeccmail.com

New York American Water Receives Deferral from State As Company Pursues Treatment for Emerging Compounds

Dykeer, NY (January 29, 2021)—New York American Water (NYAW) has received a compliance deferral from the New York State Department of Health as the company pursues treatment for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) at its Dykeer Operations District. The compliance deferral is an agreement between NYAW and the Department of Health on a schedule and approach to install treatment improvements to meet new drinking water regulations. This deferral is only available to water providers who have an approved action plan for addressing the new regulations. On August 26, 2020, the New York State Department of Health finalized regulations establishing Maximum Contaminant Levels (MCLs) for 1,4-Dioxane at 1 part per billion (ppb) and perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) at 10 parts per trillion (ppt).

“New York American Water began developing the required treatment systems to combat PFOA and PFOS well before the State’s new regulations were finalized,” said New York American Water Director of Engineering John Kilpatrick. “The Granular Activated Carbon treatment system that will be constructed at our Dykeer system will allow us to meet New York State’s new regulations, which are some of the strictest in the country.”

According to the New York State Department of Health, “The MCLs are set well below levels known to cause health effects in animal studies. Therefore, consuming water with PFOA or PFOS at the level detected does not pose a significant health risk. Your water continues to be acceptable for all uses.”

NYAW’s water quality testing showed PFOA and PFOS levels in the groundwater wells at Dykeer at 18.0 and 18.5 ppt, which are well under the EPA’s required action level of 70 parts per trillion, but now above the new MCL of 10 ppt established by the state. 1,4-Dioxane was non-detect in the Dykeer system.

PFOA and PFOS are effectively removed from drinking water using Granular Activated Carbon (GAC) treatment. Large vessels are filled with activated carbon which attracts the contaminants as water passes through it. These vessels, which work very similar to your household carbon filter, hold approximately 2,350 pounds of carbon and are sampled frequently to ensure the systems are operating as expected.

Press Release



Residents interested in learning more about these emerging compounds, please visit www.nyamwater.com/emergingcompounds. To read the official notice from the Department of Health about the compliance deferral, please visit www.nyamwater.com/emergingcompounds/dykeer.

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New York American Water, a subsidiary of American Water (NYSE: AWK), is the largest investor-owned water company in New York, providing high-quality and reliable water and/or wastewater services to approximately 350,000 people.

With a history dating back to 1886, American Water is the largest and most geographically diverse U.S. publicly traded water and wastewater utility company. The company employs more than 7,100 dedicated professionals who provide regulated and market-based drinking water, wastewater and other related services to more than 14 million people in 46 states. American Water provides safe, clean, affordable and reliable water services to our customers to make sure we keep their lives flowing. For more information, visit nyamwater.com and follow New York American Water on Facebook and Twitter.

Nursing homes

Continued from Page 1A

and have only been exacerbated by the COVID-19 pandemic.”

The 76-page report provides insights into its potential ramifications for ongoing attempts to overhaul the nursing home industry.

How nursing home staff shortages fueled COVID-19 crisis

Investigators described how some nursing homes’ pre-pandemic low staffing model “simply snapped under the stress of the pandemic.”

While the report did not name specific nursing homes due to ongoing investigations, it revealed key factors that allowed the coronavirus to overwhelm facilities statewide, though much of the probe focused on downstate communities hit hardest during the initial wave of infections in the spring and summer.

Among the examples:

- A facility where the leadership was out ill or working remotely, leaving on-site management of the entire facility in the hands of just two nurse supervisors. Several weeks later, residents started dying from COVID-19, including 33 residents in one week, or 15% of all the patients in the facility.

- One employee alleged staff shortage prompted certified nursing aides, rather than nurses licensed to do so, were dispensing medications.

- A nursing supervisor alleged in mid-April that she had been working for 21 days straight, 14 hours per day, and described a facility stretched to the absolute limit to care for its residents.

Investigators noted the staffing failures “occurred at the same time that necessary visitation restrictions removed the supplemental caregiving provided pre-pandemic by many family visitors at low staff facilities.”

Further, some nursing homes pressured, knowingly permitted, or incentivized existing employees who were ill or met quarantine criteria to report to work and even work multiple consecutive shifts, in violation of infection control protocols, the report said.

The investigation also drew connections between poor staff ratings before the pandemic and higher rates of deaths.

Of the state’s 401 for-profit facilities, over two-thirds – a total of 280 – entered the COVID-19 pandemic with the lowest 1-Star or 2-Star staffing ratings by the Centers for Medicaid and Medicaid Services, investigators found.

As of Nov. 16, 3,487 COVID-19 resident deaths (over half of all deaths) occurred in the 280 low-rated facilities, the report noted.

“There were too many instances of employees being pressured to work while contagious to ensure higher staffing levels. This put all residents and employees of the nursing home at risk,” the report added.

The report also recommended a series of steps to improve regulation and oversight of nursing homes, and called for imposing mandated staffing ratios, citing various nurse and other staff minimums required in other states such as California, New Jersey and Ohio.

How legal immunity provisions impacted NY nursing homes

The investigation also raised questions about the potential far-reaching impacts of limited immunity provisions for health care providers relating to COVID-19, citing a law approved in March and amended slightly in July to narrow the scope of immunity.

“The intent was to support health care professionals making impossible health care decisions in good faith during this unprecedented crisis,” the re-



Emergency medical technicians transport a patient from a nursing home to an emergency room bed at St. Joseph’s Hospital in Yonkers. A grim blame game is breaking out over COVID-19 deaths among nursing home residents. JOHN MINCHILLO/AP FILE

port states, referring to the law.

But investigators found examples that “illustrate instances of facility decisions that relate to or affect resident care that are financially motivated, rather than clinically motivated,” the report added, noting investigations are ongoing related to those cases.

Much of the issue involved nursing home owners who potentially pressured staff to admit more residents to avoid losing money, despite staff shortages that left the facility incapable of providing adequate care.

In other words, investigators are digging into cases of nursing homes that may have put profits above resident and staff safety.

The report called on lawmakers and regulators to improve transparency and oversight of for-profit nursing home operators, citing the potential that resident admission decisions were made to improperly, and potentially illegally, sustain reimbursements from Medicaid, Medicare and other health insurance.

How New York nursing homes failed at infection control

Accounts of violations of infection-control and prevention practices are peppered throughout the Attorney General’s report.

Some of the findings included:

- Numerous nursing homes that failed to isolate residents infected with COVID-19, which may have allowed the virus to spread in communal dining rooms and living spaces for months.

- Nursing homes that reportedly did not properly screen staff members before allowing them to enter the facility to work with residents.

- Some staff allegedly avoided having their temperatures taken and answering a COVID-19 questionnaire when one facility’s front entrance screening station had no employees, or when staff entered the facility through a back entrance, avoiding the screening station altogether.

One nurse alleged a supervisor put out bins of masks and gowns just before

a safety inspection in an apparent attempt to misrepresent the facility’s personal protective equipment supply.

Inspectors later caught the facility violating rules, including the most severe “immediate jeopardy.”

What nursing home trade group says

Stephen Hanse, president and CEO of the Health Facilities Association in New York, noted the report underscored how state officials gave priority to hospitals over nursing homes when it came to addressing problems with everything from staffing and personal protective equipment shortages to financial challenges.

“The fundamental issue underlying

the findings of the Attorney General’s report is that policy makers uniformly failed to treat nursing homes equally as hospitals throughout the pandemic,” he said.

Hanse, however, disputed the report’s assertions that for-profit nursing homes, in general, put residents at higher risk than nonprofit or government-run facilities.

“To state that there was financial motives there’s not substance to that allegation in the report, and it will be interesting over time to see how that plays out,” he said.

David Robinson is the state health care reporter for the USA TODAY Network New York. He can be reached at drobinson@gannett.com and followed on Twitter: @DrobinsonLoHud

“There were too many instances of employees being pressured to work while contagious to ensure higher staffing levels. This put all residents and employees of the nursing home at risk.”

Report from state Attorney General’s Office

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AN IMPORTANT WATER TREATMENT UPDATE FROM NEW YORK AMERICAN WATER

New York State recently established new drinking water standards for emerging compounds, specifically 1,4-Dioxane, PFOA and PFOS. In preparation for the new standards, New York American Water proactively sampled all of our source water wells. Testing of the Dykeer Operations District produced sample results for PFOA and PFOS above the State’s new standards. New York American Water is taking action to remove PFOA and PFOS at the Dykeer facility.

LEARN MORE

Learn more about the actions New York American Water continues to take to address emerging compounds. Visit nyamwater.com/emergingcompounds/dykeer or call our Customer Service Center at 1-877-426-6999.



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LEARN MORE

Learn more about the actions New York American Water continues to take to address emerging compounds. Visit nyamwater.com/emergingcompounds/dykeer or call our Customer Service Center at 1-877-426-6999.

ATTACHMENT C

Laboratory Reports



ANALYTICAL REPORT

Lab Number:	L2100951
Client:	Environmental Consultants PO Box 3148 Pouchkeepsie, NY 12603
ATTN:	Stephen Landell
Phone:	(845) 486-1030
Project Name:	DYKEER
Project Number:	DYKEER
Report Date:	01/19/21

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



Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2100951-01	EP	DW	KRYSTAL DRIVE SOMERS, NY	01/07/21 11:30	01/07/21
L2100951-02	WELL 1	DW	KRYSTAL DRIVE SOMERS, NY	01/07/21 11:15	01/07/21
L2100951-03	WELL 3	DW	KRYSTAL DRIVE SOMERS, NY	01/07/21 11:20	01/07/21
L2100951-04	WELL 4	DW	KRYSTAL DRIVE SOMERS, NY	01/07/21 11:25	01/07/21
L2100951-05	WELL 6	DW	KRYSTAL DRIVE SOMERS, NY	01/07/21 11:10	01/07/21
L2100951-06	FIELD BLANK	DW	KRYSTAL DRIVE SOMERS, NY	01/07/21 11:00	01/07/21

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

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
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

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.

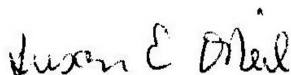
Perfluorinated Alkyl Acids

L2100951-01, -04, and -05: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

The WG1455082-2 LCS recoveries, associated with L2100951-04 and -05, are above the acceptance criteria for perfluorotridecanoic acid (pfrda) (133%) and perfluorotetradecanoic acid (pfta) (152%); however, the associated samples are non-detect to the RL for these target analyte. The results of the original analysis are reported.

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: 01/19/21

ORGANICS

SEMIVOLATILES

Project Name: DYKEER**Lab Number:** L2100951**Project Number:** DYKEER**Report Date:** 01/19/21**SAMPLE RESULTS**

Lab ID: L2100951-01
 Client ID: EP
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:30
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/15/21 03:02
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/09/21 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.156	0.156	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
1,4-Dioxane-d8			70		70-130	

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2100951-01 R
 Client ID: EP
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:30
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/14/21 12:03
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 01/12/21 09:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	5.04		ng/l	1.86	0.265	1
Perfluorohexanoic Acid (PFHxA)	6.38		ng/l	1.86	0.246	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.73	0.422	1
Perfluoroheptanoic Acid (PFHpA)	3.51		ng/l	1.86	0.242	1
Perfluorohexanesulfonic Acid (PFHxS)	1.79	J	ng/l	1.86	0.448	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.86	0.067	1
Perfluorooctanoic Acid (PFOA)	9.81		ng/l	1.86	0.582	1
Perfluorononanoic Acid (PFNA)	0.896	J	ng/l	1.86	0.444	1
Perfluorooctanesulfonic Acid (PFOS)	7.50		ng/l	1.86	0.459	1
Perfluorodecanoic Acid (PFDA)	0.672	J	ng/l	1.86	0.601	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.86	0.257	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.560	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.399	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.522	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.604	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.86	0.196	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.474	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.403	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	91		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	88		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		70-130

Project Name: DYKEER**Lab Number:** L2100951**Project Number:** DYKEER**Report Date:** 01/19/21**SAMPLE RESULTS**

Lab ID: L2100951-02
 Client ID: WELL 1
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:15
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/11/21 19:22
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/09/21 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.160	0.160	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
1,4-Dioxane-d8			75		70-130	

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2100951-02
 Client ID: WELL 1
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:15
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/13/21 21:08
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 01/12/21 09:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	9.49		ng/l	1.81	0.257	1
Perfluorohexanoic Acid (PFHxA)	9.09		ng/l	1.81	0.238	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.62	0.409	1
Perfluoroheptanoic Acid (PFHpA)	4.09		ng/l	1.81	0.236	1
Perfluorohexanesulfonic Acid (PFHxS)	2.86		ng/l	1.81	0.435	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.81	0.065	1
Perfluorooctanoic Acid (PFOA)	15.8		ng/l	1.81	0.565	1
Perfluorononanoic Acid (PFNA)	0.978	J	ng/l	1.81	0.431	1
Perfluorooctanesulfonic Acid (PFOS)	14.7		ng/l	1.81	0.446	1
Perfluorodecanoic Acid (PFDA)	0.652	J	ng/l	1.81	0.583	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	0.249	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.05	J	ng/l	1.81	0.543	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.388	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.85		ng/l	1.81	0.507	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.587	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	0.190	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.460	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.391	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	91		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	78		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	91		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		70-130

Project Name: DYKEER**Lab Number:** L2100951**Project Number:** DYKEER**Report Date:** 01/19/21**SAMPLE RESULTS**

Lab ID: L2100951-03
 Client ID: WELL 3
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:20
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/11/21 19:50
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/09/21 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.156	0.156	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	71		70-130

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2100951-03
 Client ID: WELL 3
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:20
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/13/21 21:17
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 01/12/21 09:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	7.53		ng/l	1.74	0.246	1
Perfluorohexanoic Acid (PFHxA)	9.93		ng/l	1.74	0.228	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.47	0.392	1
Perfluoroheptanoic Acid (PFHpA)	4.24		ng/l	1.74	0.226	1
Perfluorohexanesulfonic Acid (PFHxS)	2.53		ng/l	1.74	0.417	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.74	0.062	1
Perfluorooctanoic Acid (PFOA)	15.2		ng/l	1.74	0.542	1
Perfluorononanoic Acid (PFNA)	0.764	J	ng/l	1.74	0.413	1
Perfluorooctanesulfonic Acid (PFOS)	11.1		ng/l	1.74	0.427	1
Perfluorodecanoic Acid (PFDA)	0.625	J	ng/l	1.74	0.559	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.74	0.239	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.521	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.372	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.486	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.562	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.74	0.182	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.441	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.375	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	78		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	72		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	72		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		70-130

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2100951-04
 Client ID: WELL 4
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:25
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/11/21 20:17
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/09/21 04:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	ND		ug/l	0.156	0.156	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
1,4-Dioxane-d8			70		70-130	

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2100951-04 R
 Client ID: WELL 4
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:25
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/15/21 20:53
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 01/14/21 15:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	9.48		ng/l	1.90	0.269	1
Perfluorohexanoic Acid (PFHxA)	13.0		ng/l	1.90	0.249	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.79	0.428	1
Perfluoroheptanoic Acid (PFHpA)	5.99		ng/l	1.90	0.246	1
Perfluorohexanesulfonic Acid (PFHxS)	2.73		ng/l	1.90	0.455	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.068	1
Perfluorooctanoic Acid (PFOA)	17.1		ng/l	1.90	0.591	1
Perfluorononanoic Acid (PFNA)	1.40	J	ng/l	1.90	0.451	1
Perfluorooctanesulfonic Acid (PFOS)	16.0		ng/l	1.90	0.466	1
Perfluorodecanoic Acid (PFDA)	1.40	J	ng/l	1.90	0.610	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.90	0.261	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.569	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.406	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.531	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.614	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.90	0.199	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.90	0.481	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.409	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	78		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	83		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	81		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		70-130

Project Name: DYKEER**Lab Number:** L2100951**Project Number:** DYKEER**Report Date:** 01/19/21**SAMPLE RESULTS**

Lab ID: L2100951-05
 Client ID: WELL 6
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:10
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 120,522
 Analytical Date: 01/18/21 12:57
 Analyst: PS

Extraction Method: EPA 522
 Extraction Date: 01/15/21 05:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by EPA 522 - Mansfield Lab						
1,4-Dioxane	0.209		ug/l	0.150	0.150	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
1,4-Dioxane-d8			74		70-130	

Project Name: DYKEER**Lab Number:** L2100951**Project Number:** DYKEER**Report Date:** 01/19/21**SAMPLE RESULTS**

Lab ID: L2100951-05 R
 Client ID: WELL 6
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:10
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/15/21 21:01
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 01/14/21 15:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	16.0		ng/l	1.78	0.252	1
Perfluorohexanoic Acid (PFHxA)	21.3		ng/l	1.78	0.234	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.55	0.401	1
Perfluoroheptanoic Acid (PFHpA)	9.27		ng/l	1.78	0.231	1
Perfluorohexanesulfonic Acid (PFHxS)	4.40		ng/l	1.78	0.426	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.78	0.064	1
Perfluorooctanoic Acid (PFOA)	31.1		ng/l	1.78	0.554	1
Perfluorononanoic Acid (PFNA)	2.59		ng/l	1.78	0.423	1
Perfluorooctanesulfonic Acid (PFOS)	31.0		ng/l	1.78	0.437	1
Perfluorodecanoic Acid (PFDA)	3.62		ng/l	1.78	0.572	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.78	0.244	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.81		ng/l	1.78	0.533	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.380	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.85		ng/l	1.78	0.497	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.575	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.78	0.186	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.78	0.451	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.384	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	88		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	89		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	95		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		70-130

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2100951-06
 Client ID: FIELD BLANK
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/07/21 11:00
 Date Received: 01/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/13/21 21:26
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 01/12/21 09:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.268	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.248	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.77	0.426	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.245	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.453	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.89	0.068	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.589	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.449	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.464	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.608	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.89	0.260	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.566	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.404	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.528	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.611	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.89	0.198	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.479	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.408	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	99		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	88		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	102		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		70-130

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 120,522
Analytical Date: 01/13/21 12:36
Analyst: PS

Extraction Method: EPA 522
Extraction Date: 01/09/21 04:00

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by EPA 522 - Mansfield Lab for sample(s): 01-04 Batch: WG1453337-1					
1,4-Dioxane	ND		ug/l	0.150	0.150

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	80		70-130

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 01/13/21 20:42
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 01/12/21 09:27

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01-03,06 Batch: WG1453936-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.284
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.263
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	4.00	0.452
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.260
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.480
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.072
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.624
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.476
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.492
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.644
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.275
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.600
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.428
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.560
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.648
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.210
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.508
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.432

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	90		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	77		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	96		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		70-130

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 01/15/21 11:21
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 01/14/21 15:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 04-05 Batch: WG1455082-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.284
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.263
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	4.00	0.452
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.260
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.480
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.072
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.624
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.476
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.492
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.644
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.275
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.600
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.428
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.560
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.648
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.210
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.508
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.432

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	86		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	80		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	97		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		70-130

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 120,522
Analytical Date: 01/15/21 17:29
Analyst: PS

Extraction Method: EPA 522
Extraction Date: 01/15/21 05:30

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by EPA 522 - Mansfield Lab for sample(s): 05 Batch: WG1455475-1					
1,4-Dioxane	ND		ug/l	0.150	0.150

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	76		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by EPA 522 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1453337-2 WG1453337-3								
1,4-Dioxane	90		93		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	79		85		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-03,06 Batch: WG1453936-2								
Perfluorobutanesulfonic Acid (PFBS)	94		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	93		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	92		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	110		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	107		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	98		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	102		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	98		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	100		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	81		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	102		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	91		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	100		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	115		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2100951

Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-03,06 Batch: WG1453936-2								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	85				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	79				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	92				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87				70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 04-05 Batch: WG1455082-2								
Perfluorobutanesulfonic Acid (PFBS)	109		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	104		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	98		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	117		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	113		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	112		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	110		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	116		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	112		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	122		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	115		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	125		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	108		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	129		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	115		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	133	Q	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	152	Q	-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2100951

Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 04-05 Batch: WG1455082-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	90				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	83				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	102				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by EPA 522 - Mansfield Lab Associated sample(s): 05 Batch: WG1455475-2 WG1455475-3								
1,4-Dioxane	73		77		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	76		70		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Sample Associated sample(s): 01-03,06 QC Batch ID: WG1453936-3 QC Sample: L2101017-01 Client ID: MS												
Perfluorobutanesulfonic Acid (PFBS)	ND	31	29.0	93		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	35	31.5	90		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	35	28.8	82		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	35	36.4	104		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	32	33.5	105		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	33	34.3	104		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	35	36.5	104		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	35	34.9	100		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	32.4	30.4	94		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	35	34.6	99		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	32.6	30.4	93		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	35	34.5	99		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	35	32.8	94		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	35	30.7	88		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	35	33.8	97		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	33	27.7	84		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	35	33.9	97		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	35	37.1	106		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-03,06 QC Batch ID: WG1453936-3 QC Sample: L2101017-01 Client ID: MS Sample												

<i>Surrogate</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	77				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	85				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	84				70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Sample Associated sample(s): 04-05 QC Batch ID: WG1455082-3 QC Sample: L2101283-02 Client ID: MS												
Perfluorobutanesulfonic Acid (PFBS)	3.08	140	147	103		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	0.914J	158	138	87		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	158	145	92		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	0.647J	158	152	96		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.647J	144	126	87		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	149	159	107		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	1.90	158	147	92		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	158	150	95		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	2.17	146	144	97		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	158	198	125		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	147	137	93		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	158	144	91		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	158	165	105		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	158	161	102		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	158	166	105		-	-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	149	156	105		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	158	190	120		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	158	232	147	Q	-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2100951

Project Number: DYKEER

Report Date: 01/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 04-05 QC Batch ID: WG1455082-3 QC Sample: L2101283-02 Client ID: MS Sample

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	108				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	91				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	86				70-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2100951

Report Date: 01/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-03,06 QC Batch ID: WG1453936-4 QC Sample: L2101019-01 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	0.669J	0.687J	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)	0.315J	0.344J	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
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	ND	ND	ng/l	NC		30
PFAS, Total (5)	0.315J	0.344J	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-03,06 QC Batch ID: WG1453936-4 QC Sample: L2101019-01 Client ID: DUP Sample						
PFAS, Total (6)	ND	ND	ng/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	82		92		70-130
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		107		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	87		106		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		111		70-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2100951

Report Date: 01/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 04-05 QC Batch ID: WG1455082-4 QC Sample: L2101524-01 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	3.05	3.06	ng/l	0		30
Perfluorohexanoic Acid (PFHxA)	1.45J	1.47J	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)	0.690J	0.755J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.472J	0.504J	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	2.65	2.84	ng/l	7		30
Perfluorononanoic Acid (PFNA)	ND	0.432J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	2.32	2.52	ng/l	8		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	4.97	5.36	ng/l	8		30
PFAS, Total (5)	6.13J	7.05J	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 04-05 QC Batch ID: WG1455082-4 QC Sample: L2101524-01 Client ID: DUP Sample						
PFAS, Total (6)	4.97	5.36	ng/l	8		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	78		80		70-130
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	72		77		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	83		91		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		102		70-130

Project Name: DYKEER**Lab Number:** L2100951**Project Number:** DYKEER**Report Date:** 01/19/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2100951-01A	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-01B	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-01C	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-01D	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-02A	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-02B	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-02C	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-02D	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-03A	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-03B	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-03C	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-03D	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-04A	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-04B	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-04C	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-04D	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-05A	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-05B	Amber 500ml NaSulfite/NaHSO4 preserved	B	<4	<4	2.2	Y	Absent		A2-14DIOXANE-522(28)
L2100951-05C	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-05D	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)
L2100951-06C	Plastic 250ml Trizma preserved	C	NA		2.7	Y	Absent		A2-537.1(14)

Project Name: DYKEER

Project Number: DYKEER

Serial_No:01192114:02

Lab Number: L2100951

Report Date: 01/19/21

Container Information

Container ID Container Type

Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
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Project Name: DYKEER
Project Number: DYKEER

Serial_No:01192114:02
Lab Number: L2100951
Report Date: 01/19/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
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
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
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
FLUOROTELOMERS		
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
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
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
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
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
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
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
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

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
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

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 at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). 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
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

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.

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2100951
Report Date: 01/19/21

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.
- 133 Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537.1, EPA/600/R-18/352. Version 1.0, November 2018.

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

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

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.

EPA TO-12 Non-methane organics

EPA 3C Fixed gases

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, **LACHAT 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.

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.

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.



NEW YORK CHAIN OF CUSTODY

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

Service Centers

Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1

of 1

Date Rec'd in Lab

1/8/21

ALPHA Job #

L2100951

Project Information

Project Name: Dykeer
Project Location: Krystal Drive Somers, NY
Project #: Dykeer
(Use Project name as Project #)

Deliverables

ASP-A ASP-B
 EQulS (1 File) EQulS (4 File)
 Other

Billing Information

Same as Client Info
PO#

Client Information

Client: Environmental Consultants
Address: 4 Commerce Ste. 2A
Poughkeepsie, NY 12603
Phone: 845-486-1030
Fax:
Email: slandell@ecnewyork.com

Project Manager:
ALPHAQuote #:
Turn-Around Time
Standard Due Date:
Rush (only if pre approved) # of Days:

Regulatory Requirement

NY TOGS NY Part 375
 AWQ Standards NY CP-51
 NY Restricted Use Other
 NY Unrestricted Use
 NYC Sewer Discharge

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
 NJ NY
 Other: NA

These samples have been previously analyzed by Alpha

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

PFA-537- Full List	1,4 Dioxane-522										
X	X										

Sample Filtration

Done
 Lab to do
Preservation
 Lab to do

(Please Specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										Sample Specific Comments	
		Date	Time														
00951-01	EP	1/7/21	11:30	DW	BW	X	X										
-02	Well 1	1/7/21	11:15	DW	BW	X	X										4
-03	Well 3	1/7/21	11:20	DW	BW	X	X										4
-04	Well 4	1/7/21	11:25	DW	BW	X	X										4
-05	Well 6	1/7/21	11:10	DW	BW	X	X										4
-06	Field Blank	1/7/21	11:00	Lab H2O	BW	X											2

Preservative Code:

A = None
B = HCl
C = HNO₃
D = H₂SO₄
E = NaOH
F = MeOH
G = NaHSO₄
H = Na₂S₂O₃
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

P A

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Wendy Morency</i>	1/7/21 17:30	<i>[Signature]</i>	1/9/21 00:25
<i>Wendy Morency</i>	1/8/21 4:00	<i>[Signature]</i>	1/6/21 05:15
<i>T. Huddell</i>	1/8/21 05:15	<i>[Signature]</i>	1/8/21 05:15

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](#).



ANALYTICAL REPORT

Lab Number:	L2103262
Client:	Environmental Consultants PO Box 3148 Pouchkeepsie, NY 12603
ATTN:	Stephen Landell
Phone:	(845) 486-1030
Project Name:	DYKEER
Project Number:	DYKEER
Report Date:	01/26/21

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



Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2103262
Report Date: 01/26/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2103262-01	EP	DW	KRYSTAL DRIVE SOMERS, NY	01/21/21 11:45	01/21/21
L2103262-02	WELL 1	DW	KRYSTAL DRIVE SOMERS, NY	01/21/21 11:25	01/21/21
L2103262-03	WELL 3	DW	KRYSTAL DRIVE SOMERS, NY	01/21/21 11:30	01/21/21
L2103262-04	WELL 4	DW	KRYSTAL DRIVE SOMERS, NY	01/21/21 11:35	01/21/21
L2103262-05	WELL 6	DW	KRYSTAL DRIVE SOMERS, NY	01/21/21 11:40	01/21/21
L2103262-06	FIELD BLANK	DW	KRYSTAL DRIVE SOMERS, NY	01/21/21 11:45	01/21/21
L2103262-07	WELL 5		KRYSTAL DRIVE SOMERS, NY	01/21/21 11:45	01/21/21

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2103262
Report Date: 01/26/21

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
Project Number: DYKEER

Lab Number: L2103262
Report Date: 01/26/21

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

L2103262-07: A sample identified as "WELL 5" was received, but not listed on the Chain of Custody. At the client's request, this sample was not analyzed.

Perfluorinated Alkyl Acids

L2103262-01 and -05: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

L2103262-01: The surrogate recoveries were outside the acceptance criteria for perfluoro-n-[1,2-13c2]decanoic acid (13c-pfda) (68%); however, re-extraction could not be performed due to lack of additional sample. The results of the original analysis are reported; however, all associated compounds are considered to have a potential bias.

WG1458086-1, WG1458086-2, and WG1458086-3: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

WG1458086-1: The Method Blank, associated with L2103262-01 through -06, has concentrations below the reporting limits and "J" qualified. The J values are below 1/3 the reporting limits; therefore, no further action was taken.

WG1458086-1: The Method Blank, associated with L2103262-01 through -06, has a concentration above the reporting limit for N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA). Since the samples were non-detect to the RL for this target analyte, no further actions were taken.

WG1458086-3: The MS recovery, performed on L2103262-01, is outside the acceptance criteria for perfluoroheptanoic acid (pfhpa) (59%), perfluorodecanoic acid (pfda) (69%), perfluoroundecanoic acid (pfuna) (60%), perfluorododecanoic acid (pfdoa) (55%) and perfluorotridecanoic acid (pftrda) (63%). The MS recovery, although outside the acceptance criteria of 70-130%, is due to possible matrix interference. All other

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2103262
Report Date: 01/26/21

Case Narrative (continued)

supporting QC were within acceptable limits.

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:



Alycia Mogayzel

Title: Technical Director/Representative

Date: 01/26/21

ORGANICS

SEMIVOLATILES

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2103262-01 R
 Client ID: EP
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/21/21 11:45
 Date Received: 01/21/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/26/21 01:20
 Analyst: JW

Extraction Method: EPA 537.1
 Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	5.53		ng/l	1.87	0.265	1
Perfluorohexanoic Acid (PFHxA)	6.16		ng/l	1.87	0.246	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.73	0.422	1
Perfluoroheptanoic Acid (PFHpA)	2.39		ng/l	1.87	0.243	1
Perfluorohexanesulfonic Acid (PFHxS)	1.49	J	ng/l	1.87	0.448	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	0.067	1
Perfluorooctanoic Acid (PFOA)	8.55		ng/l	1.87	0.583	1
Perfluorononanoic Acid (PFNA)	0.859	J	ng/l	1.87	0.444	1
Perfluorooctanesulfonic Acid (PFOS)	7.77		ng/l	1.87	0.459	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	0.601	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.87	0.257	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.710	JB	ng/l	1.87	0.560	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.400	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	0.523	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.605	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.87	0.196	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.474	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	0.403	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	94		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	79		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	68	Q	70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88		70-130

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2103262-02
 Client ID: WELL 1
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/21/21 11:25
 Date Received: 01/21/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/25/21 21:00
 Analyst: JW

Extraction Method: EPA 537.1
 Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	10.0		ng/l	1.88	0.267	1
Perfluorohexanoic Acid (PFHxA)	9.03		ng/l	1.88	0.248	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.76	0.425	1
Perfluoroheptanoic Acid (PFHpA)	3.92		ng/l	1.88	0.245	1
Perfluorohexanesulfonic Acid (PFHxS)	2.94		ng/l	1.88	0.452	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.88	0.067	1
Perfluorooctanoic Acid (PFOA)	12.9		ng/l	1.88	0.587	1
Perfluorononanoic Acid (PFNA)	1.05	J	ng/l	1.88	0.448	1
Perfluorooctanesulfonic Acid (PFOS)	15.1		ng/l	1.88	0.463	1
Perfluorodecanoic Acid (PFDA)	0.866	J	ng/l	1.88	0.606	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.88	0.259	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.66	JB	ng/l	1.88	0.565	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.403	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.41		ng/l	1.88	0.527	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.610	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.88	0.198	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.478	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	0.406	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	101		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	100		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	82		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		70-130

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2103262-03
 Client ID: WELL 3
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/21/21 11:30
 Date Received: 01/21/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/25/21 21:17
 Analyst: JW

Extraction Method: EPA 537.1
 Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	7.07		ng/l	1.80	0.256	1
Perfluorohexanoic Acid (PFHxA)	10.3		ng/l	1.80	0.237	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.61	0.408	1
Perfluoroheptanoic Acid (PFHpA)	4.40		ng/l	1.80	0.235	1
Perfluorohexanesulfonic Acid (PFHxS)	2.49		ng/l	1.80	0.433	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.80	0.065	1
Perfluorooctanoic Acid (PFOA)	12.6		ng/l	1.80	0.563	1
Perfluorononanoic Acid (PFNA)	0.722	J	ng/l	1.80	0.430	1
Perfluorooctanesulfonic Acid (PFOS)	10.4		ng/l	1.80	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.581	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.80	0.248	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.541	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.386	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.505	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.585	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.80	0.189	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.80	0.458	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.390	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	102		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	103		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	76		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98		70-130

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2103262-04
 Client ID: WELL 4
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/21/21 11:35
 Date Received: 01/21/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/25/21 21:25
 Analyst: JW

Extraction Method: EPA 537.1
 Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	9.77		ng/l	1.90	0.270	1
Perfluorohexanoic Acid (PFHxA)	10.4		ng/l	1.90	0.250	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.80	0.430	1
Perfluoroheptanoic Acid (PFHpA)	4.75		ng/l	1.90	0.247	1
Perfluorohexanesulfonic Acid (PFHxS)	3.04		ng/l	1.90	0.456	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.068	1
Perfluorooctanoic Acid (PFOA)	13.3		ng/l	1.90	0.593	1
Perfluorononanoic Acid (PFNA)	0.913	J	ng/l	1.90	0.452	1
Perfluorooctanesulfonic Acid (PFOS)	13.9		ng/l	1.90	0.468	1
Perfluorodecanoic Acid (PFDA)	0.684	J	ng/l	1.90	0.612	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.90	0.262	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.570	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.407	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.570	J	ng/l	1.90	0.532	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.616	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.90	0.200	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.483	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.411	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	90		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	70		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		70-130

Project Name: DYKEER**Lab Number:** L2103262**Project Number:** DYKEER**Report Date:** 01/26/21**SAMPLE RESULTS**

Lab ID: L2103262-05 R
 Client ID: WELL 6
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/21/21 11:40
 Date Received: 01/21/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/26/21 01:37
 Analyst: JW

Extraction Method: EPA 537.1
 Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	18.0		ng/l	1.86	0.263	1
Perfluorohexanoic Acid (PFHxA)	24.8		ng/l	1.86	0.244	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.71	0.419	1
Perfluoroheptanoic Acid (PFHpA)	10.5		ng/l	1.86	0.241	1
Perfluorohexanesulfonic Acid (PFHxS)	5.23		ng/l	1.86	0.445	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.86	0.066	1
Perfluorooctanoic Acid (PFOA)	32.5		ng/l	1.86	0.579	1
Perfluorononanoic Acid (PFNA)	2.15		ng/l	1.86	0.442	1
Perfluorooctanesulfonic Acid (PFOS)	30.4		ng/l	1.86	0.456	1
Perfluorodecanoic Acid (PFDA)	2.30		ng/l	1.86	0.597	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.86	0.255	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.82	JB	ng/l	1.86	0.556	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.397	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.08		ng/l	1.86	0.519	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.601	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.86	0.195	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.471	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.401	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	87		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	72		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		70-130

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2103262-06
 Client ID: FIELD BLANK
 Sample Location: KRYSTAL DRIVE SOMERS, NY

Date Collected: 01/21/21 11:45
 Date Received: 01/21/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 01/25/21 21:43
 Analyst: JW

Extraction Method: EPA 537.1
 Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.258	1
Perfluorohexanoic Acid (PFHxA)	0.399	J	ng/l	1.82	0.239	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	3.63	0.410	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.236	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.436	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.82	0.065	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.566	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.432	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.447	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.585	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	0.250	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.545	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.388	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.508	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.588	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.82	0.191	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.461	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.392	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	92		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	96		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	72		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		70-130

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2103262
Report Date: 01/26/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 133,537.1
Analytical Date: 01/25/21 22:37
Analyst: JW

Extraction Method: EPA 537.1
Extraction Date: 01/24/21 11:53

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01-06 Batch: WG1458086-1 R					
Perfluorobutanesulfonic Acid (PFBS)	0.360	J	ng/l	2.00	0.284
Perfluorohexanoic Acid (PFHxA)	0.640	J	ng/l	2.00	0.263
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	4.00	0.452
Perfluoroheptanoic Acid (PFHpA)	0.560	J	ng/l	2.00	0.260
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.480
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	0.160	J	ng/l	2.00	0.072
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.624
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.476
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.492
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.644
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.275
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.16		ng/l	2.00	0.600
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.428
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.560
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.648
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.210
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.508
Perfluorotetradecanoic Acid (PFTA)	0.480	J	ng/l	2.00	0.432

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	83		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	90		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	73		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-06 Batch: WG1458086-2								
Perfluorobutanesulfonic Acid (PFBS)	86		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	82		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	87		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	80		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	79		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	81		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	80		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	72		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	93		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	72		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	72		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	72		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	72		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	96		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	78		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	128		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2103262

Report Date: 01/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-06 Batch: WG1458086-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	93				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	95				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	86				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87				70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1458086-3 QC Sample: L2103262-01 Client ID: EP												
Perfluorobutanesulfonic Acid (PFBS)	5.53	131	129	94		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	6.16	148	128	82		-	-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	148	109	74		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	2.39	148	89.6	59	Q	-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.49J	135	109	79		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	139	106	76		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	8.55	148	119	74		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	0.859J	148	111	75		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	7.77	137	119	81		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	148	102	69	Q	-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	138	108	78		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.710JB	148	119	81		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	148	88.1	60	Q	-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	148	109	74		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	148	80.8	55	Q	-	-		70-130	-		30
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	139	106	76		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	148	92.8	63	Q	-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	148	157	106		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: DYKEER

Lab Number: L2103262

Project Number: DYKEER

Report Date: 01/26/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1458086-3 QC Sample: L2103262-01 Client ID: EP

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	75				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	79				70-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2103262

Report Date: 01/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1458086-4 QC Sample: L2103262-02 Client ID: WELL 1						
Perfluorobutanesulfonic Acid (PFBS)	10.0	10.3	ng/l	3		30
Perfluorohexanoic Acid (PFHxA)	9.03	9.31	ng/l	3		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	3.92	4.08	ng/l	4		30
Perfluorohexanesulfonic Acid (PFHxS)	2.94	3.09	ng/l	5		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	12.9	13.3	ng/l	3		30
Perfluorononanoic Acid (PFNA)	1.05J	0.957J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	15.1	15.8	ng/l	5		30
Perfluorodecanoic Acid (PFDA)	0.866J	0.773J	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.66JB	1.29J	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.41	1.66J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: DYKEER

Project Number: DYKEER

Lab Number: L2103262

Report Date: 01/26/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1458086-4 QC Sample: L2103262-02 Client ID: WELL 1						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	101		104		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	100		97		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	82		83		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		87		70-130

Project Name: DYKEER

Project Number: DYKEER

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2103262-01A	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-01B	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-02A	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-02B	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-03A	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-03B	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-04A	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-04B	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-05A	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-05B	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-06A	Plastic 250ml Trizma preserved	A	NA		4.0	Y	Absent		A2-537.1(14)
L2103262-07A	Plastic 250ml unpreserved	A	NA		4.0	Y	Absent		DISPOSAL()

Project Name: DYKEER
Project Number: DYKEER

Serial_No:01262116:14
Lab Number: L2103262
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PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
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
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
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
FLUOROTELOMERS		
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
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
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
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
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
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
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
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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
Project Number: DYKEER

Lab Number: L2103262
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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 at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). 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



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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.

Project Name: DYKEER
Project Number: DYKEER

Lab Number: L2103262
Report Date: 01/26/21

REFERENCES

- 133 Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537.1, EPA/600/R-18/352. Version 1.0, November 2018.

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

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

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.

EPA TO-12 Non-methane organics

EPA 3C Fixed gases

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, **LACHAT 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.**

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.

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.

