

Notice: Use this form to request a **written response (on agency letterhead)** from the Department of Natural Resources (DNR) regarding technical assistance, a post-closure change to a site, a specialized agreement or liability clarification for Property with known or suspected environmental contamination. A fee will be required as is authorized by s. 292.55, Wis. Stats., and NR 749, Wis. Adm. Code., unless noted in the instructions below. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

Definitions

"Property" refers to the subject Property that is perceived to have been or has been impacted by the discharge of hazardous substances.

"Liability Clarification" refers to a written determination by the Department provided in response to a request made on this form. The response clarifies whether a person is or may become liable for the environmental contamination of a Property, as provided in s. 292.55, Wis. Stats.

"Technical Assistance" refers to the Department's assistance or comments on the planning and implementation of an environmental investigation or environmental cleanup on a Property in response to a request made on this form as provided in s. 292.55, Wis. Stats.

"Post-closure modification" refers to changes to Property boundaries and/or continuing obligations for Properties or sites that received closure letters for which continuing obligations have been applied or where contamination remains. Many, but not all, of these sites are included on the GIS Registry layer of RR Sites Map to provide public notice of residual contamination and continuing obligations.

Select the Correct Form

This form should be used to request the following from the DNR:

- Technical Assistance
- Liability Clarification
- Post-Closure Modifications
- Specialized Agreements (tax cancellation, negotiated agreements, etc.)

Do **not** use this form if one of the following applies:

- Request for an **off-site liability exemption or clarification** for Property that has been or is perceived to be contaminated by one or more hazardous substances that originated on another Property containing the source of the contamination. Use DNR's Off-Site Liability Exemption and Liability Clarification Application Form 4400-201.
- Submittal of an Environmental Assessment for the **Lender Liability Exemption**, s 292.21, Wis. Stats., **if no response or review by DNR is requested**. Use the Lender Liability Exemption Environmental Assessment Tracking Form 4400-196.
- Request for an **exemption to develop on a historic fill site** or licensed landfill. Use DNR's Form 4400-226 or 4400-226A.
- **Request for closure** for Property where the investigation and cleanup actions are completed. Use DNR's Case Closure - GIS Registry Form 4400-202.

All forms, publications and additional information are available on the internet at: dnr.wi.gov/topic/Brownfields/Pubs.html.

Instructions

1. Complete sections 1, 2, 6 and 7 for all requests. Be sure to provide adequate and complete information.
2. Select the type of assistance requested: Section 3 for technical assistance or post-closure modifications, Section 4 for a written determination or clarification of environmental liabilities; or Section 5 for a specialized agreement.
3. Include the fee payment that is listed in Section 3, 4, or 5, unless you are a "Voluntary Party" enrolled in the Voluntary Party Liability Exemption Program **and** the questions in Section 2 direct otherwise. Information on to whom and where to send the fee is found in Section 8 of this form.
4. Send the completed request, supporting materials and the fee to the appropriate DNR regional office where the Property is located. See the map on the last page of this form. A paper copy of the signed form and all reports and supporting materials shall be sent with an electronic copy of the form and supporting materials on a compact disk. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>

The time required for DNR's determination varies depending on the complexity of the site, and the clarity and completeness of the request and supporting documentation.

Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

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Section 1. Contact and Recipient Information

Requester Information

This is the person requesting technical assistance or a post-closure modification review, that his or her liability be clarified or a specialized agreement and is identified as the requester in Section 7. DNR will address its response letter to this person.

Last Name Nelson	First Denice	MI	Organization/ Business Name Tyco Fire Products LP
Mailing Address 2700 Industrial Parkway South		City Marinette	State WI
		ZIP Code 54143	
Phone # (include area code)	Fax # (include area code)	Email	

The requester listed above: (select all that apply)

- Is currently the owner
 Is considering selling the Property
 Is renting or leasing the Property
 Is considering acquiring the Property
 Is a lender with a mortgagee interest in the Property
 Other. Explain the status of the Property with respect to the applicant:

Contact Information (to be contacted with questions about this request)

Select if same as requester

Contact Last Name Ziska	First Jim	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (612) 339-9434	Fax # (include area code)	Email james.ziska@arcadis.com	

Environmental Consultant (if applicable)

Contact Last Name Ziska	First Jim	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (612) 339-9434	Fax # (include area code)	Email james.ziska@arcadis.com	

Section 2. Property Information

Property Name Tyco Fire Technology Center - PFCs		FID No. (if known) 438005590
BRRTS No. (if known) 0238580694	Parcel Identification Number	
Street Address 2700 Industrial Parkway South		City Marinette
		State WI
		ZIP Code 54143
County Marinette	Municipality where the Property is located <input checked="" type="radio"/> City <input type="radio"/> Town <input type="radio"/> Village of Marinette	Property is composed of: <input type="radio"/> Single tax parcel <input type="radio"/> Multiple tax parcels
		Property Size Acres 380

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1. Is a response needed by a specific date? (e.g., Property closing date) Note: Most requests are completed within 60 days. Please plan accordingly.

No Yes

Date requested by: _____

Reason: _____

2. Is the "Requester" enrolled as a Voluntary Party in the Voluntary Party Liability Exemption (VPLE) program?

No. **Include the fee that is required for your request in Section 3, 4 or 5.**

Yes. **Do not include a separate fee.** This request will be billed separately through the VPLE Program.

Fill out the information in Section 3, 4 or 5 which corresponds with the type of request:

Section 3. Technical Assistance or Post-Closure Modifications;

Section 4. Liability Clarification; or Section 5. Specialized Agreement.

Section 3. Request for Technical Assistance or Post-Closure Modification

Select the type of technical assistance requested: [Numbers in brackets are for WI DNR Use]

- No Further Action Letter (NFA) (Immediate Actions) - NR 708.09, [183] - **Include a fee of \$350.** Use for a written response to an immediate action after a discharge of a hazardous substance occurs. Generally, these are for a one-time spill event.
- Review of Site Investigation Work Plan - NR 716.09, [135] - **Include a fee of \$700.**
- Review of Site Investigation Report - NR 716.15, [137] - **Include a fee of \$1050.**
- Approval of a Site-Specific Soil Cleanup Standard - NR 720.10 or 12, [67] - **Include a fee of \$1050.**
- Review of a Remedial Action Options Report - NR 722.13, [143] - **Include a fee of \$1050.**
- Review of a Remedial Action Design Report - NR 724.09, [148] - **Include a fee of \$1050.**
- Review of a Remedial Action Documentation Report - NR 724.15, [152] - **Include a fee of \$350**
- Review of a Long-term Monitoring Plan - NR 724.17, [25] - **Include a fee of \$425.**
- Review of an Operation and Maintenance Plan - NR 724.13, [192] - **Include a fee of \$425.**

Other Technical Assistance - s. 292.55, Wis. Stats. [97] (For request to build on an abandoned landfill use Form 4400-226)

- Schedule a Technical Assistance Meeting - **Include a fee of \$700.**
- Hazardous Waste Determination - **Include a fee of \$700.**
- Other Technical Assistance - **Include a fee of \$700.** Explain your request in an attachment.

Post-Closure Modifications - NR 727, [181]

- Post-Closure Modifications: Modification to Property boundaries and/or continuing obligations of a closed site or Property; sites may be on the GIS Registry. This also includes removal of a site or Property from the GIS Registry. **Include a fee of \$1050, and:**
 - Include a fee of \$300 for sites with residual soil contamination; and
 - Include a fee of \$350 for sites with residual groundwater contamination, monitoring wells or for vapor intrusion continuing obligations.

Attach a description of the changes you are proposing, and documentation as to why the changes are needed (if the change to a Property, site or continuing obligation will result in revised maps, maintenance plans or photographs, those documents may be submitted later in the approval process, on a case-by-case basis).

Skip Sections 4 and 5 if the technical assistance you are requesting is listed above and complete Sections 6 and 7 of this form Section 6. Other Information Submitted

Identify all materials that are included with this request.

Send both a paper copy of the signed form and all reports and supporting materials, and an electronic copy of the form and all reports, including Environmental Site Assessment Reports, and supporting materials on a compact disk.

Include one copy of any document from any state agency files that you want the Department to review as part of this request. The person submitting this request is responsible for contacting other state agencies to obtain appropriate reports or information.

Phase I Environmental Site Assessment Report - Date: _____

Phase II Environmental Site Assessment Report - Date: _____

**Technical Assistance, Environmental Liability
Clarification or Post-Closure Modification Request**

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- Legal Description of Property (required for all liability requests and specialized agreements)
- Map of the Property (required for all liability requests and specialized agreements)

Analytical results of the following sampled media: Select all that apply and include date of collection.

- Groundwater
- Soil
- Sediment
- Other medium - Describe: _____

Date of Collection: _____

- A copy of the closure letter and submittal materials
- Draft tax cancellation agreement
- Draft agreement for assignment of tax foreclosure judgment
- Other report(s) or information - Describe: Ditch A Semi-Annual Operation, Maintenance, Optimization Progress Report

For Property with newly identified discharges of hazardous substances only: Has a notification of a discharge of a hazardous substance been sent to the DNR as required by s. NR 706.05(1)(b), Wis. Adm. Code?

- Yes - Date (if known): _____
- No

Note: The Notification for Hazardous Substance Discharge (non-emergency) form is available at:
dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf.

Section 7. Certification by the Person who completed this form

- I am the person submitting this request (requester)
- I prepared this request for: Denice Nelson
Requester Name

I certify that I am familiar with the information submitted on this request, and that the information on and included with this request is true, accurate and complete to the best of my knowledge. I also certify I have the legal authority and the applicant's permission to make this request.


Signature

10/31/2023
Date Signed

Senior Environmental Specialist
Title

(312) 575-3732
Telephone Number (include area code)

Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

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Section 8. DNR Contacts and Addresses for Request Submittals

Send or deliver one paper copy and one electronic copy on a compact disk of the completed request, supporting materials, and fee to the region where the property is located to the address below. Contact a [DNR regional brownfields specialist](#) with any questions about this form or a specific situation involving a contaminated property. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>.

DNR NORTHERN REGION

Attn: RR Program Assistant
Department of Natural Resources
223 E Steinfest Rd Antigo, WI 54409

DNR NORTHEAST REGION

Attn: RR Program Assistant
Department of Natural Resources
2984 Shawano Avenue
Green Bay WI 54313

DNR SOUTH CENTRAL REGION

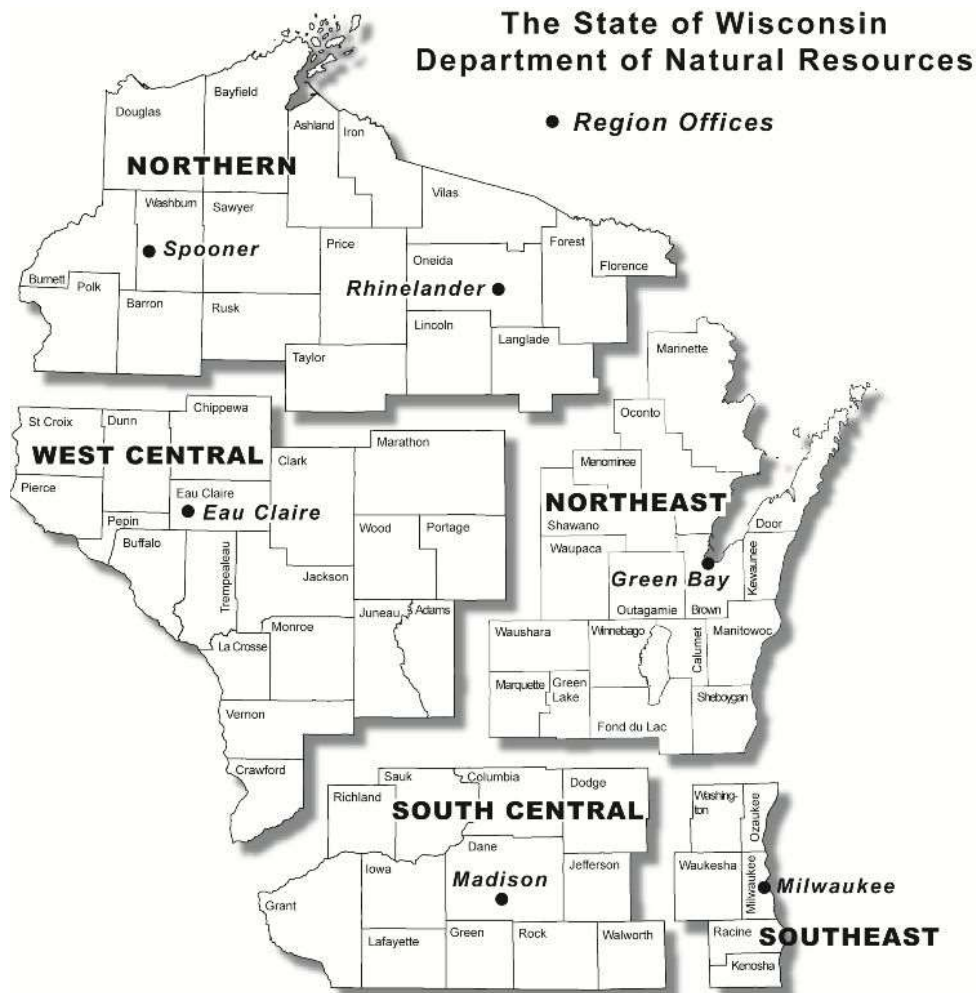
Attn: RR Program Assistant
Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg WI 53711

DNR SOUTHEAST REGION

Attn: RR Program Assistant
Department of Natural Resources
2300 North Martin Luther King Drive
Milwaukee WI 53212

DNR WEST CENTRAL REGION

Attn: RR Program Assistant
Department of Natural Resources
1300 Clairemont Ave.
Eau Claire WI 54702



Note: These are the Remediation and Redevelopment Program's designated regions. Other DNR program regional boundaries may be different.

DNR Use Only			
Date Received	Date Assigned	BRRTS Activity Code	BRRTS No. (if used)
DNR Reviewer		Comments	
Fee Enclosed? <input type="radio"/> Yes <input type="radio"/> No	Fee Amount \$	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		

Tyco Fire Products LP

Semi-Annual Operation, Maintenance, and Optimization Progress Report #9

Tyco Fire Technology Center
Ditch A Interim Action Treatment System
BRRTS# 02-38-580694
January 1, 2023 – June 30, 2023

October 2023

Semi-Annual Operation, Maintenance, and Optimization Progress Report #9
Tyco Fire Technology Center Ditch A Interim Action Treatment System
BRRTS# 02-38-580694

Semi-Annual Operation, Maintenance, and Optimization Progress Report #9

Tyco Fire Technology Center
Ditch A Interim Action Treatment System
BRRTS# 02-38-580694
January 1, 2023 – June 30, 2023

October 31, 2023

Prepared By:

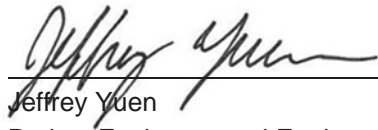
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Phone: 414 276 7742
Fax: 414 276 7603

Prepared For:

Tyco Fire Products LP
2700 Industrial Parkway South
Marinette
Wisconsin 54143

Our Ref.:

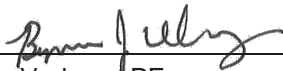
30171092.4.1.1



Jeffrey Yuen
Project Environmental Engineer



Joe Darby
Technical Expert - Engineer



Benjamin Verburg, PE
Principal Engineer

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Executive Summary

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance and Optimization Progress Report #9* (Progress Report #9) for the Tyco Fire Technology Center Ditch A Interim Action Treatment System (the Ditch A System) located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site), on behalf of Tyco Fire Products LP (Tyco) for the January 1, 2023 to June 30, 2023 reporting period. Progress Report #9 is submitted in accordance with S. NR 724.13(3), Wisconsin Administrative Code.

The Tyco Fire Technology Center has been a fire suppressant training, testing, research and development facility since the 1960s. Historically, aqueous film-forming foams have been used as part of the firefighting, development, and quality testing activities at the Site. Per Natural Resources Ch. 708.11 Wisconsin Administration Code, Tyco evaluated the on-Site surface water data and determined that an interim action was appropriate to limit the discharge of per- and polyfluoroalkyl substances (PFAS) in on-Site surface water to off-Site surface water. The interim action focuses on the removal of PFAS, which encompass both perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), in on-Site surface water using best available technology.

The treatment technology chosen to remediate PFAS in surface water from Ditch A is granular activated carbon (GAC). Water is pumped from Ditch A upstream of a check dam through an equalization tank, bag filters, and GAC vessels before being discharged to Ditch A downstream of the check dam.

The Ditch A System was operated throughout the reporting period with limited downtime for system maintenance activities and did not require operation for several months due to dry/frozen channel conditions in Ditch A. The Ditch A System operated a total of 92 days during the reporting period. During this reporting period, 11,731,980 gallons of surface water were treated and PFOA and PFOS were removed from the Ditch A influent at nearly 100% efficiency. The system removed approximately 0.071 pounds of PFOA and 0.031 pounds of PFOS during the reporting period, and approximately 0.89 pounds of PFOA and 0.46 pounds of PFOS since startup in January 2019.

Surface water flow in Ditch A was intermittent during the reporting period and overtopping of the check dam occurred periodically during the wet spring months on April 5 (5 hours), April 20 (0.75 hours), May 1 (29 hours), May 7 (46 hours), May 9 (15 hours), and May 10 (0.5 hours). No overtopping of the check dam occurred during the remainder of the reporting period. Dry and/or frozen conditions persisted in Ditch A throughout January, February, and the majority of March, 2023. PFOA and PFOS concentrations upstream of the Ditch A System have fluctuated since system sampling began in January 2019 and have largely been below baseline concentrations since August 2020. Surface water samples downstream of the Ditch A System were collected in March, April, May, and June, 2023. Elevated PFOA and PFOS concentrations were observed in the surface water samples collected in March, April, and May at SW-40; however, the Ditch A system discharge concentrations were consistently below the WPDES permit and applicable surface water limits for PFOA and PFOS over this timeframe. Per WDNR request, a second farther downstream sampling location (SW-26 as shown in **Figure 6**) was added to the sampling program and will be discussed during the next reporting period (Progress Report #10).

The Ditch A System was operated in accordance with the Operation, Maintenance, and Long-Term Monitoring Plan (submitted on July 22, 2021) during the reporting period. All discharges from the treatment system were in compliance with the applicable Wisconsin Pollutant Discharge Elimination System permit limits.

Overall, the Ditch A System is effective as an interim action and removes PFOA and PFOS efficiently from processed surface water. The Ditch A System is also effective at reducing the surface water concentrations of PFOA and PFOS to below the applicable surface water standards in Ditch A immediately downstream of the system under normal operating conditions.

1 Introduction

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance and Optimization Progress Report #9* (Progress Report #9) for the Tyco Fire Technology Center (FTC) Interim Action Treatment System (the Ditch A System) located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site), on behalf of Tyco Fire Products LP (Tyco). The system was started up in January 2019 to address per- and polyfluoroalkyl substances (PFAS) in Ditch A surface water. Progress Report #9 summarizes system design and construction details; operations, maintenance, and monitoring activities; and an evaluation of system performance over the reporting period (January 1, 2023 through June 30, 2023).

2 Site Background

The Site is located along the southern border of the City of Marinette, Marinette County, Wisconsin, depicted in **Figure 1**. The Site is a fire suppressant training, testing, research and development facility built in the 1960s. Historically, aqueous film-forming foams (AFFF) were used at the Site as part of research and development, quality testing and firefighting training activities. Site investigation activities have been conducted to define the nature and extent of PFAS related to the use of PFAS-containing AFFF.

The Ditch A System is located south of the Site and north of University Drive, also described as being in the SE1/4 of the NE1/4 of Section 13, Township 30 North, Range 23 East; and is within the Wisconsin Department of Natural Resources (WDNR) Northeast Region. The location of the Ditch A System and the Site plan are shown in **Figure 1** and **Figure 2**, respectively. The Ditch A System is continuously operated (except for dry or frozen conditions) and managed by Arcadis with operational support from Tyco's contractors.

The system discharge is regulated by the WDNR under Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-0046566-07-0 (the WPDES Permit) and the associated revised coverage letter issued by WDNR on June 4, 2021 (the Coverage Letter). The WDNR Bureau for Remediation and Redevelopment Tracking System identification number for the Site is 02-38-580694. Electronic discharge monitoring reports (eDMRs) are submitted to the WDNR monthly.

3 Site Specific Information

3.1 Relevant Contaminants

PFAS in surface water are the primary contaminants of concern treated by the Ditch A System. Additional compounds sampled on a quarterly basis as required by the WPDES Permit include oil and grease; total suspended solids (TSS); polycyclic aromatic hydrocarbons (PAHs); pH; total residual chlorine; and benzene, toluene, ethylbenzene, and xylene (BTEX).

3.2 Basis of Design and Ditch A System Overview

Arcadis completed a detailed Site review utilizing preliminary hydraulic data (e.g., stream gauging), desktop research, and select analytical modeling to evaluate base flow conditions. From this data set, the base flow during non-frozen conditions in Ditch A was estimated to be 100 gallons per minute (gpm). The Ditch A System was designed to treat flow rates up to base flow conditions. Seasonal variability in flow conditions were expected and initial estimates were made using United States Geological Survey Streamstats. Wetland and waterway boundaries within the project area were determined by conducting a wetland and waterbody delineation survey. The resulting boundaries were incorporated into engineering and design plans to minimize wetland and waterway impacts to the extent practicable while still accomplishing the engineering design objectives for the project (Arcadis 2018).

A permeable check dam was placed perpendicular to water flow in order to route surface water from Ditch A to the Ditch A System clear well (located adjacent to the ditch and installed to an invert elevation approximately 11 feet below the natural bottom of the ditch) without restricting surface water flow. Flow to the Ditch A System is regulated by a submersible pump installed in the clear well. The pump operates based on the level condition in the clear well; once the water level in the ditch reaches the programmed set point, the pump conveys water to the equalization tank (T-01).

Water from the equalization tank is conveyed to two identical treatment trains consisting of bag filters (F-01/F-02, F-03/F-04, F-05, and F-06) and three granular activated carbon vessels (GAC-101 through GAC-103 and GAC-201 through GAC-203) connected in series using a feed pump (P-01A/P-01B) controlled by a variable frequency drive, which allows operators to control the speed of the pump. Flow meters are also included downstream of the feed pump. The bag filters are in place to remove particulates in the influent water. Pressure gauges and transmitters are used to determine when bag filters need to be replaced and when the GAC vessels need to be backwashed. The treated water is discharged to Ditch A immediately downstream of the check dam.

Piping and instrumentation diagrams of the Ditch A System is included in **Appendix A**.

3.3 System Size and Remediation Method

The Ditch A Treatment System is primarily contained within three structures consisting of two 320-square foot (Container 1 and Container 3) and one 160-square foot (Container 2) Conex boxes. Additional system components are in the clear well, and valve vault, as shown in **Figure 2**.

The Ditch A System was designed to treat flow rates up to base flow conditions (100 gpm) in Ditch A. PFAS are removed from the process flow via adsorption onto GAC media in six 2,000-pound vessels that run concurrently in

two parallel treatment trains. GAC was selected as the treatment technology option due to advantages in ease of operation, ability to reactivate and regenerate carbon, flexibility to modify the system in the field, and the ability to add pre-treatment unit operations in the field if needed to address water chemistry.

3.4 System Modifications and Maintenance Activities

On December 28, 2022 (during the previous reporting period), three carbon vessels (GAC-101, GAC-102, and GAC-103) were removed and shipped to Resist-A-Line in Joliet, Illinois, for vessel inspection and maintenance. Larger pits were filled with weld by Fliteway Technologies, Inc, and smaller pits were filled with Dudick Scratch-Coat 800 by Resist-A-Line. Following pit filling, the tank interiors were sand blasted to remove the existing liner material and the tanks were relined with Carboline Plasite 4110 by Resist-A-Line. All work was completed while the Ditch A system was offline due to dry/frozen conditions in Ditch A; however, the other three vessels (GAC-201, GAC-202, and GAC-203) remained on-line during this time period to treat water in Ditch A if it became available. The repaired vessels were returned to the site and reinstalled on March 3, 2023.

On March 3, 2023, the other three carbon vessels (GAC-201, GAC-202, and GAC-203) were removed and shipped to Resist-A-Line in Joliet, Illinois, for vessel inspection and maintenance. Larger pits were filled with weld by Fliteway Technologies, Inc, and smaller pits were filled with Dudick Scratch-Coat 800 by Resist-A-Line. Following pit filling, the tank interiors were sand blasted to remove the existing liner material and the tanks were relined with Carboline Plasite 4110 by Resist-A-Line. All work was completed while the Ditch A system was offline due to dry/frozen conditions in Ditch A. The repaired vessels were returned to the site and reinstalled on March 30, 2023.

The designations of the 100-train and 200-train GAC vessels were exchanged in the field following the completion of these maintenance activities to more easily facilitate the vessel removal and reinstallation while keeping one train available for use in the event that flow was observed upstream of the Ditch A check dam.

On April 27, 2023, Tyco covered the Ditch A check dam with an 8-mil thick, ultraviolet radiation resistant plastic sheeting. A similar plastic sheeting was a component of the original check dam, and its reinstallation completed the maintenance activities conducted during the previous reporting period.

On May 23, 2023, approximately 1,600 gallons of material were removed from the decant tank (T-03) and stockpiled in the soil staging area at the FTC for future disposal.

On June 15, 2023, four carbon steel bag filter housings (F-01 through F-04) were replaced with stainless steel bag filter housings to address corrosion observed in the original vessels.

4 System Effectiveness Evaluation

4.1 Ditch A System Operation

The Ditch A System operational data and calculation details are presented in **Table 1**. The system was operated for 92 days over the reporting period and treated and discharged 11,731,980 gallons of water. System utilization over the reporting period, as calculated per WDNR Form 4400-194 daily, was 51%. Dry and/or frozen channel conditions were present during January, February, and March, 2023. The system operated for 92 days when surface water flow conditions were sufficient to support system operation. Therefore, the utilization rate accounting for days the system was operated and adequate stream flow conditions were present was 100%.

System utilization calculated on an hourly basis and accounting for adequate stream flow conditions in Ditch A was 97%. System downtime was primarily associated with planned maintenance (i.e., GAC changeouts), and bag filter replacements. All alarm-related shutdowns were responded to within one day.

The system was designed to operate at up to 100 gpm (144,000 gallons per day [gpd]). The average system flow rate, as calculated per WDNR Form 4400-194 daily, was 64,818 gpd. The average system flow rate, accounting for actual operating time, was 132,260 gpd. The system operated within the design specifications over the reporting period.

4.2 Ditch A Surface Water Levels

A level transmitter installed in a stilling well upstream of the Ditch A check dam continuously measures the water level in Ditch A. A high-level alarm is activated when the water level nears the top of the check dam. WDNR, Arcadis, and Tyco are notified via an automatically generated email. High-level events are generally caused by heavy precipitation. Water levels recorded during the reporting period upstream of the check dam are presented in **Figure 3**. The water level in Ditch A overtopped the check dam following heavy precipitation during the wet spring months on April 5 (5 hours), April 20 (0.75 hours), May 1 (29 hours), May 7/8 (46 hours), May 9 (15 hours), and May 10 (0.5 hours) during the reporting period, as shown in **Figure 3** and **Table 5**. No overtopping of the check dam occurred during the remainder of the reporting period.

Ditch A was dry/frozen from January 1, 2023 through March 30, 2023 during the reporting period.

4.3 Treatment System Sampling

4.3.1 Sample Collection

Weekly PFAS samples and quarterly oil and grease, TSS, BTEX, and PAHs samples are collected at the effluent sampling port, V-900-A, in accordance with the WPDES Permit and Coverage Letter. The results for the reporting periods were submitted to WDNR in monthly eDMRs.

The pH is measured quarterly in the field using a calibrated pH meter. Total residual chlorine measurements are collected in the field quarterly with a calibrated meter when chlorine tablets are added to the system. All other WPDES sampling parameters are collected directly into clean, laboratory provided sample containers and immediately stored on ice in preparation of shipment to a WDNR-certified laboratory for analysis.

4.3.2 Laboratory Analytical Methods

WPDES Discharge compliance samples were analyzed for the following analytes and methods:

- PFAS using United States Environmental Protection Agency (U.S. EPA) Method 537 Modified
- Oil and Grease using U.S. EPA Method 1664
- TSS using Standard Methods 2540D
- BTEX using U.S. EPA Method 624
- PAHs using U.S. EPA Method 625.

Samples were submitted to the following laboratories under standard chain-of-custody procedures:

- Oil and Grease/TSS/BTEX/PAHs: Eurofins TestAmerica in University Park, Illinois (TestAmerica Chicago).
- PFAS: Eurofins TestAmerica in West Sacramento, California (TestAmerica Sacramento).

4.3.3 WPDES Permit Exceedances and Sampling Omissions

Laboratory analytical results for WPDES samples are presented in **Table 2** and compared to the system effluent limitations per the Coverage Letter. Laboratory analytical reports are included as **Appendix B**.

There were no WPDES Permit exceedance or sampling omissions during the reporting period.

4.4 Quantity of Contaminants Treated and System Efficiency

As shown in **Figure 4** and **Table 3**, the system removed approximately 0.071 pounds of PFOA and 0.031 pounds of perfluorooctanesulfonic acid (PFOS) over the reporting period. The system has removed approximately 0.89 pounds of PFOA and 0.46 pounds of PFOS since startup in January 2019. On average, the system removed PFOA and PFOS at near 100% efficiency from the Ditch A System influent over the reporting period, as shown in **Table 4**.

All discharge from the treatment system contained concentrations below applicable WPDES permit limits.

A comparison of the weekly Ditch A system discharge volume (since startup in January 2019) and weekly Ditch A stream flow volume (since tracking began in July 2021) is presented in **Table 5**. The Ditch A stream flow volumes were estimated per the methods outlined in **Appendix C**.

5 Ditch A Surface Water PFAS Trend Evaluation

5.1 Upstream of Treatment System

Baseline PFOA and PFOS concentrations were collected from Ditch A near the then proposed Ditch A System location in May 2018 and July 2018 (prior to system startup). PFOA concentrations in samples collected from location SW-27 ranged from 2,200 ng/L in May 2018 to 990 ng/L in July 2018 (Arcadis 2018). PFOS concentrations in samples collected from location SW-27 ranged from 570 ng/L in May 2018 to 1,100 ng/L in July 2018. The PFOA and PFOS concentration from samples collected from the Ditch A System influent from startup (January 2019) through the end of the reporting period (June 2022) are shown in **Figure 5** in comparison to baseline samples.

Ditch A is a surface water body and is subject to a variety of intermittent inputs (rainfall, snowmelt, stormwater discharge, surface runoff, etc.) and groundwater seepage that impact the PFAS concentrations in the Ditch A surface water. The interconnected nature of these factors is expected to result in varying PFAS concentrations in Ditch A surface water. For example, during normal baseflow conditions, the PFAS concentration is primarily driven by groundwater entering the ditch from the bottom and sides. However, during periods of high flow generated by storm events, the hydraulic pressure of the increased surface water loading minimizes groundwater seepage and the PFAS concentration is driven primarily by the various non-groundwater sources. As shown in **Figure 5**, PFOA and PFOS concentrations in Ditch A have fluctuated since system sampling began in January 2019, with PFOA and PFOS largely below baseline concentrations in Ditch A since August 2020.

5.2 Downstream of Treatment System

Monthly surface water sample collection downstream of the Ditch A System began in August 2021. During the reporting period, monthly samples were collected on March 31, April 10, April 24, May 17, and June 8, 2023 at SW-40 (**Figure 6**). No natural flow was observed in Ditch A throughout January and February 2023; therefore, no downstream samples were collected. Samples were collected directly into clean, laboratory provided sample containers and immediately stored on ice in preparation of shipment to TestAmerica Sacramento under standard chain-of-custody procedures for analysis of PFAS by U.S. EPA Method 537 Modified. Analytical results of the downstream surface water samples collected during the reporting period are presented in **Table 6** and **Figure 7**. Laboratory analytical reports are included in **Appendix D**.

Monthly surface water sample results were compared to the following surface water standards (per NR 102.04 (8d), effective August 1, 2022):

- PFOA: The surface water standard is 20 ng/L in waters classified as public water supplies under ch. NR 104, and 95 ng/L for other surface waters. Tributaries to the Menominee River or Green Bay are not included in the list of sources subject to the public water supply standard under NR 104.07, therefore the surface water standard applicable to PFOA in Ditch A is 95 ng/L.
- PFOS: The surface water standard is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.

The PFOA surface water standard of 95 ng/L was exceeded downstream of the Ditch A System in the samples collected on March 31, April 10, and May 17, 2023. The PFOS surface water standard of 8 ng/L was exceeded

downstream of the Ditch A System in the samples collected on March 31, April 10, April 24, and May 17, 2023. As shown in **Table 2**, PFOA and PFOS were not detected above their respective WPDES permit limits or the corresponding surface water standards on any of the dates in which elevated downstream surface water concentrations were observed. In a letter dated June 12, 2023, WDNR requested that Tyco begin monitoring PFAS surface water concentrations in Ditch A at an additional downstream location (SW-26) to evaluate other potential PFAS transport pathways to Ditch A downstream of the treatment system. This sampling location was added to the sampling program and will be included in the next semi-annual report (Progress Report #10).

5.3 Upstream and Downstream Analytical Results

A summary of monthly surface water PFAS analytical results from samples collected upstream and downstream of the Ditch A system are presented in **Table 7**. The upstream results were calculated as the average of the weekly samples collected from the Ditch A System influent, per the Ditch A System OM&M Plan submitted on July 22, 2021. The monthly upstream and downstream analytical results support the system effectiveness evaluation presented in this Progress Report #9, as discussed in Sections 4.4, 5.1 and 5.2. Overall, the Ditch A System is effective as an interim action and removes PFOA and PFOS efficiently from processed surface water. The Ditch A System is also effective at reducing the surface water concentrations of PFOA and PFOS in Ditch A to below the applicable surface water standards immediately downstream of the system under normal operating conditions.

6 Waste Management

PFAS-impacted materials generated by the Ditch A System include bag filters, sediments/solids generated from backwashing the GAC vessels, and spent GAC. These materials are managed per the Ditch A System OM&M Plan submitted in July 2021 and additional details are provided below.

6.1 Bag Filters

Used bag filters are containerized in 55-gallon drums and staged at the FTC prior to transport by Endpoint Solutions Corporation (Endpoint) to their waste transfer facility located in Hartford, Wisconsin. The drum contents are consolidated with similar material generated by the Ditch B system at Endpoint's facility for more efficient transportation and disposal. Manifests documenting transport from the FTC to Endpoint's facility and from Endpoint's facility to the final hazardous waste disposal facility (Chemical Waste Management, Inc. in Arlington, Oregon) are included in **Appendix E**.

6.2 Sediment and Solids

On May 23, 2023, approximately 1,600 gallons of material were removed from the decant tank (T-03) and stockpiled in the soil staging area at the FTC for future disposal.

6.3 Spent GAC

Spent GAC removed from the Ditch A System is consolidated with similar material from the Ditch B System and transported to Tetrasolv Filtration, Inc. for reactivation at a facility operated by Norit Activated Carbon in Pryor, Oklahoma. Certificates of recycling confirming proper re-activation of spent carbon generated by the Ditch A and Ditch B systems are included in **Appendix E**. During the reporting period, 436,000 pounds of spent GAC generated from the Ditch A and Ditch B systems were re-activated for re-use in the Ditch A and Ditch B Systems.

7 Summary

The Ditch A System was operated throughout the reporting period with limited downtime for system maintenance activities. Over the reporting period, the Ditch A System operated a total of 92 days and treated 11,731,980 gallons of surface water while removing PFOA and PFOS from the Ditch A influent at nearly 100% efficiency. The system removed approximately 0.071 pounds of PFOA and 0.031 pounds of PFOS over the reporting period. The system has removed approximately 0.89 pounds of PFOA and 0.46 pounds of PFOS since startup in January 2019.

Surface water flow in Ditch A was intermittent during the reporting period and overtopping of the check dam occurred periodically during the wet spring months on April 5 (5 hours), April 20 (0.75 hours), May 1 (29 hours), May 7 (46 hours), May 9 (15 hours), and May 10 (0.5 hours). No overtopping of the check dam occurred during the remainder of the reporting period. Higher than average precipitation accumulation was observed for the Marinette area from March 31 through May 31, 2023, per the National Oceanic and Atmospheric Administration's online weather database (NOWData). Dry and/or frozen conditions persisted in Ditch A throughout January, February, and the majority of March, 2023. PFOA and PFOS concentrations upstream of the Ditch A System have fluctuated since system sampling began in January 2019 and have largely been below baseline concentrations since August 2020. Surface water samples downstream of the Ditch A System were collected in March, April, May, and June, 2023. Elevated PFOA and PFOS concentrations were observed in the surface water samples collected in March, April, and May at SW-40; however, the Ditch A system discharge concentrations were consistently below the WPDES permit and applicable surface water limits for PFOA and PFOS over this timeframe. Per WDNR request, a second farther downstream sampling location (SW-26) was added to the sampling program and will be discussed during the next reporting period (Progress Report #10).

The Ditch A System operated per the OM&M Plan during the reporting period and no exceedances of the WPDES permit were observed.

Overall, the Ditch A System is effective as an interim action and removes PFOA and PFOS efficiently from processed surface water. The Ditch A System is also effective at reducing the surface water concentrations of PFOA and PFOS to below the applicable surface water standards in Ditch A immediately downstream of the system under normal operating conditions.

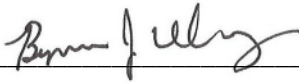
Semi-Annual Operation, Maintenance, and Optimization Progress Report #9
Tyco Fire Technology Center Ditch A Interim Action Treatment System
BRRTS# 02-38-580694

8 References

Arcadis. 2018. Discharge Management Plan for WPDES Permit No. WI-0046566-07-0. August 2018.

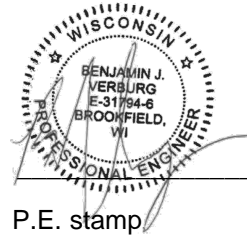
9 Professional Certification

I, Benjamin Verburg, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Principal Engineer, 31794

Signature, title, and P.E. number



P.E. stamp

Tables

Table 1
Ditch A System Operational Data
Tyco Fire Fire Products LP
Marinette, Wisconsin



Month-Year	Total Volume of Treated Water Discharged (gallons)	Days in Period	Potential Operating Days (with Adequate Stream Flow Conditions) ¹	Potential Operating Hours (with Adequate Stream Flow Conditions) ²	Reporting Statistics					Operational Statistics			Comments
					Actual Operating Days ³	Utilization (Days in Period) ⁴	Utilization (Operating Days) ⁵	Average System Flow Rate (Days in Period) ⁶ [GPD]	Average System Flow Rate (Actual Operating Days) ⁷ [GPD]	Actual Operating Hours	Utilization (Operating Hours with Adequate Stream Flow Conditions) ⁸	Average System Flow Rate (Actual Operating Hours) ⁹ [GPD]	
Jan-23	0	31	0	0	0	0%	0%	0	0	0	0%	0	The system was offline 1/1/23 - 1/31/23 due to dry/frozen conditions in Ditch A.
Feb-23	0	28	0	0	0	0%	0%	0	0	0	0%	0	The system was offline 2/1/23 - 2/28/23 due to dry/frozen conditions in Ditch A.
Mar-23	74,690	31	1	13	1	3%	100%	2,409	74,690	13	100%	137,889	The system was offline 3/1/23 - 3/30/23 due to dry/frozen conditions in Ditch A.
Apr-23	4,207,200	30	30	720	30	100%	100%	140,240	140,240	716	99%	140,984	--
May-23	3,993,150	31	31	744	31	100%	100%	128,811	128,811	715	96%	134,092	--
Jun-23	3,456,940	30	30	720	30	100%	100%	115,231	115,231	685	95%	121,119	--
Total:	11,731,980	181	92	2,197	92	51%	100%	64,818	127,522	2,129	97%	132,260	

Notes:

- 1 = Days in period during which weather and flow conditions in Ditch A could support system operation
- 2 = Hours in period during which weather and flow conditions in Ditch A could support system operation
- 3 = Days during which system operation occurred
- 4 = Utilization (Days in Period) = Actual Operating Days / Days in Period (per WDNR form 4400-194)
- 5 = Utilization (Operating Days) = Actual Days of Operation / Potential Operating Days (with Adequate Stream Flow Conditions)
- 6 = Average Flow Rate (Days in Period) = Volume Discharged / Days in Period (per WDNR form 4400-194)
- 7 = Average Flow Rate (Actual Operating Days) = Volume Discharged / Actual Operating Days
- 8 = Utilization (Operating Hours) = Actual Operating Hours / Potential Operating Hours with Adequate Stream Flow Conditions
- 9 = Average Flow Rate (Actual Operating Hours) = Volume Discharged / ([Actual Operating Hours] * 24)

Abbreviations:

- eDMR = electronic discharge monitoring report
- GPD = gallons per day
- NA = not available
- WDNR = Wisconsin Department of Natural Resources

Table 2
Ditch A System WPDES Laboratory Analytical Results
Tyco Fire Fire Products LP
Marinette, Wisconsin



		Total Suspended Solids (TSS)	Oil & Grease	BTEX, total		PAH, total		Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)	pH		Chlorine, Total Residual	
Units:		mg/L	mg/L	µg/L		µg/L		µg/L	µg/L	s.u.		µg/L	
Effluent Limitations:		40	10	750	0.1	0.011	0.42	6	9	19			
Location	Sample Date	Daily Max	Daily Max								Monthly Average	Monthly Average	Monthly Average
V-900-A	3/31/2023	< 1.9 U	< 1.3 U	< 0.4	0.0000	< 0.37	0.0000	< 0.00049 U	0.0000	< 0.00077 U	0.0000	7.03	X
V-900-A	4/5/2023	< 1.9 U	< 1.3 U	< 0.4	0.0000	< 0.39	0.0011 J	0.0010	< 0.00078 U	0.0028	7.11	X	
V-900-A	4/10/2023	NS	NS	NS		NS	0.0021		0.0048		NS	X	
V-900-A	4/18/2023	NS	NS	NS		NS	0.0009 J		0.001 J		NS	X	
V-900-A	4/24/2023	NS	NS	NS		NS	< 0.00047 UB		0.0053		NS	X	
V-900-A	5/1/2023	NS	NS	NS		NS	0.0018 J		0.019		NS	X	
V-900-A	5/12/2023	NS	NS	NS	NS	< 0.00049 U	0.0004	< 0.00077 U	0.0038	NS	X		
V-900-A	5/17/2023	NS	NS	NS		NS		< 0.00051 U		< 0.0008 U	NS	X	
V-900-A	5/22/2023	NS	NS	NS		NS		< 0.00050 U		< 0.00079 U	NS	X	
V-900-A	5/30/2023	NS	NS	NS		NS		< 0.00046 U		< 0.00072 U	NS	X	
V-900-A	6/8/2023	NS	NS	NS		NS		< 0.00048 U		< 0.00075 U	NS	X	
V-900-A	6/15/2023	NS	NS	NS	NS	< 0.00046 U	0.0000	< 0.00073 U	0.0000	NS	X		
V-900-A	6/19/2023	NS	NS	NS		NS		< 0.00052 U		< 0.00082 U	NS	X	
V-900-A	6/26/2023	NS	NS	NS		NS		< 0.00052 U		< 0.00082 U	NS	X	

Notes:

B = Compound was found in blank and sample

Bold and Yellow = Result exceeds effluent limitation

BTEX = Benzene, ethylbenzene, toluene, and xylenes

J = Result is less than the reporting limit (RL) and greater than the MDL. The result is estimated.

µg/L = micrograms per liter

mg/L = milligrams per liter

NA = not available

ng/L = nanograms per liter

NS = not sampled

PAH = Polycyclic aromatic hydrocarbons

s.u. = standard units

U = Result is less than the method detection limit (MDL)

X = Chlorine not added to system

V-900-A is the Ditch A System WPDES discharge sampling location.

Effluent Limitations per Coverage Letter dated June 4, 2021 (under WPDES General Permit No. WI-0046566-07-0).

Per the coverage letter dated June 4, 2021, TSS, oil & grease, BTEX, PAH, pH, and total residual chlorine samples are collected quarterly.

Table 3
Ditch A System PFOA and PFOS Mass Removal
Tyco Fire Products LP
Marinette, Wisconsin



Month-Year	Ditch A Treatment System PFOA and PFOS Mass Removal			
	Monthly		Cumulative	
	PFOS	PFOA	PFOS	PFOA
	lbs	lbs	lbs	lbs
Jan-19	0.0003	0.0007	0.0003	0.0007
Feb-19	0.0000	0.0000	0.0003	0.0007
Mar-19	0.0030	0.0044	0.0033	0.0051
Apr-19	0.0099	0.0220	0.0132	0.0270
May-19	0.0122	0.0327	0.0254	0.0598
Jun-19	0.0144	0.0339	0.0398	0.0937
Jul-19	0.0175	0.0318	0.0573	0.1255
Aug-19	0.0132	0.0189	0.0705	0.1443
Sep-19	0.0184	0.0285	0.0889	0.1728
Oct-19	0.0242	0.0422	0.1131	0.2150
Nov-19	0.0217	0.0474	0.1347	0.2623
Dec-19	0.0252	0.0494	0.1600	0.3118
Jan-20	0.0216	0.0417	0.1816	0.3535
Feb-20	0.0138	0.0327	0.1954	0.3862
Mar-20	0.0280	0.0518	0.2234	0.4381
Apr-20	0.0168	0.0327	0.2402	0.4708
May-20	0.0205	0.0359	0.2606	0.5067
Jun-20	0.0246	0.0424	0.2852	0.5491
Jul-20	0.0327	0.0561	0.3179	0.6053
Aug-20	0.0119	0.0219	0.3299	0.6272
Sep-20	0.0026	0.0031	0.3325	0.6303
Oct-20	0.0016	0.0015	0.3341	0.6317
Nov-20	0.0057	0.0077	0.3398	0.6394
Dec-20	0.0024	0.0033	0.3422	0.6427
Jan-21	0.0001	0.0001	0.3424	0.6428
Feb-21	0.0000	0.0000	0.3424	0.6428
Mar-21	0.0037	0.0042	0.3461	0.6470
Apr-21	0.0128	0.0219	0.3589	0.6689
May-21	0.0061	0.0108	0.3650	0.6797
Jun-21	0.0004	0.0005	0.3653	0.6802
Jul-21	0.0170	0.0279	0.3823	0.7081
Aug-21	0.0070	0.0111	0.3893	0.7192
Sep-21	0.0000	0.0000	0.3893	0.7192
Oct-21	0.0000	0.0000	0.3893	0.7192
Nov-21	0.0000	0.0000	0.3893	0.7192
Dec-21	0.0001	0.0047	0.3894	0.7239
Jan-22	0.0003	0.0030	0.3897	0.7269

Table 3
Ditch A System PFOA and PFOS Mass Removal
Tyco Fire Products LP
Marinette, Wisconsin



Month-Year	Ditch A Treatment System PFOA and PFOS Mass Removal			
	Monthly		Cumulative	
	PFOS	PFOA	PFOS	PFOA
	lbs	lbs	lbs	lbs
Feb-22	0.0001	0.0013	0.3898	0.7282
Mar-22	0.0018	0.0045	0.3916	0.7326
Apr-22	0.0122	0.0238	0.4038	0.7564
May-22	0.0127	0.0284	0.4166	0.7848
Jun-22	0.0085	0.0262	0.4251	0.8110
Jul-22	0.0013	0.0039	0.4264	0.8149
Aug-22	0.0011	0.0017	0.4275	0.8166
Sep-22	0.0000	0.0000	0.4275	0.8166
Oct-22	0.0000	0.0000	0.4275	0.8166
Nov-22	0.0000	0.0000	0.4275	0.8166
Dec-22	0.0000	0.0000	0.4275	0.8166
Jan-23	0.0000	0.0000	0.4275	0.8166
Feb-23	0.0000	0.0000	0.4275	0.8166
Mar-23	0.0002	0.0005	0.4277	0.8170
Apr-23	0.0169	0.0292	0.4446	0.8462
May-23	0.0117	0.0359	0.4563	0.8821
Jun-23	0.0021	0.0057	0.4584	0.8879

Abbreviations:

-- = Not Quantified

lbs = Pounds

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctane sulfonic acid

Table 4
Ditch A System PFAS Treatment Efficiency
Tyco Fire Products LP
Marinette, Wisconsin



Date	PFOS			PFOA		
	Influent	Effluent	Efficiency	Influent	Effluent	Efficiency
	(µg/L)	(µg/L)	(%)	(µg/L)	(µg/L)	(%)
3/31/2023	0.31	< 0.00049 U	100.0	0.79	< 0.00077 U	100.0
Average:			100.0	Average:		
4/5/2023	0.47 D	0.0011 J	99.8	0.63 D	< 0.00078 U	100.0
4/10/2023	0.45 D	0.0021	99.5	0.74 D	0.0048	99.4
4/18/2023	0.56 D	0.0009 J	99.8	0.79 D	0.0010 J	99.9
4/24/2023	0.47 D	< 0.00047 UB	100.0	1.1 D	0.0053	99.5
Average:			99.8	Average:		
5/1/2023	0.53 D	0.0018 J	99.7	1.3 D	0.019	98.5
5/12/2023	0.41 D	< 0.00049 U	100.0	1.3 D	< 0.00077 U	100.0
5/17/2023	0.39 D	< 0.00051 U	100.0	1.3 D	< 0.00080 U	100.0
5/22/2023	0.24	< 0.00050 U	100.0	0.73 D	< 0.00079 U	100.0
5/30/2023	0.14	< 0.00046 U	100.0	0.65 D	< 0.00072 U	100.0
Average:			99.9	Average:		
6/8/2023	0.028	< 0.00048 U	100.0	0.085	< 0.00075 U	100.0
6/15/2023	0.12	< 0.00046 U	100.0	0.27	< 0.00073 U	100.0
6/19/2023	0.02	< 0.00052 U	100.0	0.039	< 0.00082 U	100.0
6/26/2023	0.13	< 0.00052 U	100.0	0.3	< 0.00082 U	100.0
Average:			100.0	Average:		
Overall Average:			99.9	Overall Average:		
				Overall Average:		
				99.8		

Notes:

- = The associated numerical value is expected to have a negative or low bias

< = Result is less than the method detection limit (MDL)

Abbreviations:

µg/L = Micrograms per liter

NA = Not Available

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

U = Result is less than the method detection limit (MDL)

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 13, 2019	Saturday, January 19, 2019	746,980	Not Quantified	--
Sunday, January 20, 2019	Saturday, January 26, 2019	975,180	Not Quantified	--
Sunday, January 27, 2019	Saturday, February 2, 2019	444,670	Not Quantified	--
Sunday, February 3, 2019	Saturday, February 9, 2019	0	Not Quantified	--
Sunday, February 10, 2019	Saturday, February 16, 2019	0	Not Quantified	--
Sunday, February 17, 2019	Saturday, February 23, 2019	0	Not Quantified	--
Sunday, February 24, 2019	Saturday, March 2, 2019	0	Not Quantified	--
Sunday, March 3, 2019	Saturday, March 9, 2019	0	Not Quantified	--
Sunday, March 10, 2019	Saturday, March 16, 2019	496,070	Not Quantified	--
Sunday, March 17, 2019	Saturday, March 23, 2019	954,830	Not Quantified	--
Sunday, March 24, 2019	Saturday, March 30, 2019	908,290	Not Quantified	--
Sunday, March 31, 2019	Saturday, April 6, 2019	747,220	Not Quantified	--
Sunday, April 7, 2019	Saturday, April 13, 2019	958,080	Not Quantified	--
Sunday, April 14, 2019	Saturday, April 20, 2019	796,100	Not Quantified	--
Sunday, April 21, 2019	Saturday, April 27, 2019	765,820	Not Quantified	--
Sunday, April 28, 2019	Saturday, May 4, 2019	626,240	Not Quantified	--
Sunday, May 5, 2019	Saturday, May 11, 2019	710,160	Not Quantified	--
Sunday, May 12, 2019	Saturday, May 18, 2019	769,040	Not Quantified	--
Sunday, May 19, 2019	Saturday, May 25, 2019	748,130	Not Quantified	--
Sunday, May 26, 2019	Saturday, June 1, 2019	588,420	Not Quantified	--
Sunday, June 2, 2019	Saturday, June 8, 2019	400,460	Not Quantified	--
Sunday, June 9, 2019	Saturday, June 15, 2019	651,820	Not Quantified	--
Sunday, June 16, 2019	Saturday, June 22, 2019	566,290	Not Quantified	--
Sunday, June 23, 2019	Saturday, June 29, 2019	560,850	Not Quantified	--
Sunday, June 30, 2019	Saturday, July 6, 2019	694,990	Not Quantified	--
Sunday, July 7, 2019	Saturday, July 13, 2019	741,820	Not Quantified	--
Sunday, July 14, 2019	Saturday, July 20, 2019	562,290	Not Quantified	--
Sunday, July 21, 2019	Saturday, July 27, 2019	671,110	Not Quantified	--
Sunday, July 28, 2019	Saturday, August 3, 2019	672,540	Not Quantified	--
Sunday, August 4, 2019	Saturday, August 10, 2019	732,500	Not Quantified	--
Sunday, August 11, 2019	Saturday, August 17, 2019	675,020	Not Quantified	--
Sunday, August 18, 2019	Saturday, August 24, 2019	590,400	Not Quantified	--
Sunday, August 25, 2019	Saturday, August 31, 2019	785,670	Not Quantified	--
Sunday, September 1, 2019	Saturday, September 7, 2019	778,040	Not Quantified	--
Sunday, September 8, 2019	Saturday, September 14, 2019	757,080	Not Quantified	--
Sunday, September 15, 2019	Saturday, September 21, 2019	643,670	Not Quantified	--
Sunday, September 22, 2019	Saturday, September 28, 2019	568,370	Not Quantified	--
Sunday, September 29, 2019	Saturday, October 5, 2019	774,090	Not Quantified	--
Sunday, October 6, 2019	Saturday, October 12, 2019	682,050	Not Quantified	--
Sunday, October 13, 2019	Saturday, October 19, 2019	705,380	Not Quantified	--
Sunday, October 20, 2019	Saturday, October 26, 2019	425,900	Not Quantified	--
Sunday, October 27, 2019	Saturday, November 2, 2019	511,360	Not Quantified	--
Sunday, November 3, 2019	Saturday, November 9, 2019	691,000	Not Quantified	--
Sunday, November 10, 2019	Saturday, November 16, 2019	741,510	Not Quantified	--
Sunday, November 17, 2019	Saturday, November 23, 2019	572,690	Not Quantified	--
Sunday, November 24, 2019	Saturday, November 30, 2019	776,610	Not Quantified	--
Sunday, December 1, 2019	Saturday, December 7, 2019	923,570	Not Quantified	--
Sunday, December 8, 2019	Saturday, December 14, 2019	966,260	Not Quantified	--
Sunday, December 15, 2019	Saturday, December 21, 2019	646,910	Not Quantified	--
Sunday, December 22, 2019	Saturday, December 28, 2019	862,980	Not Quantified	--
Sunday, December 29, 2019	Saturday, January 4, 2020	940,640	Not Quantified	--
Sunday, January 5, 2020	Saturday, January 11, 2020	935,890	Not Quantified	--
Sunday, January 12, 2020	Saturday, January 18, 2020	924,470	Not Quantified	--
Sunday, January 19, 2020	Saturday, January 25, 2020	605,560	Not Quantified	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 26, 2020	Saturday, February 1, 2020	653,510	Not Quantified	--
Sunday, February 2, 2020	Saturday, February 8, 2020	925,610	Not Quantified	--
Sunday, February 9, 2020	Saturday, February 15, 2020	954,610	Not Quantified	--
Sunday, February 16, 2020	Saturday, February 22, 2020	972,220	Not Quantified	--
Sunday, February 23, 2020	Saturday, February 29, 2020	830,470	Not Quantified	--
Sunday, March 1, 2020	Saturday, March 7, 2020	948,410	Not Quantified	--
Sunday, March 8, 2020	Saturday, March 14, 2020	954,390	Not Quantified	--
Sunday, March 15, 2020	Saturday, March 21, 2020	930,780	Not Quantified	--
Sunday, March 22, 2020	Saturday, March 28, 2020	703,260	Not Quantified	--
Sunday, March 29, 2020	Saturday, April 4, 2020	861,640	Not Quantified	--
Sunday, April 5, 2020	Saturday, April 11, 2020	766,820	Not Quantified	--
Sunday, April 12, 2020	Saturday, April 18, 2020	383,520	Not Quantified	--
Sunday, April 19, 2020	Saturday, April 25, 2020	271,890	Not Quantified	--
Sunday, April 26, 2020	Saturday, May 2, 2020	218,510	Not Quantified	--
Sunday, May 3, 2020	Saturday, May 9, 2020	246,820	Not Quantified	--
Sunday, May 10, 2020	Saturday, May 16, 2020	775,230	Not Quantified	--
Sunday, May 17, 2020	Saturday, May 23, 2020	590,680	Not Quantified	--
Sunday, May 24, 2020	Saturday, May 30, 2020	651,170	Not Quantified	--
Sunday, May 31, 2020	Saturday, June 6, 2020	784,660	Not Quantified	--
Sunday, June 7, 2020	Saturday, June 13, 2020	690,470	Not Quantified	--
Sunday, June 14, 2020	Saturday, June 20, 2020	613,140	Not Quantified	--
Sunday, June 21, 2020	Saturday, June 27, 2020	580,250	Not Quantified	--
Sunday, June 28, 2020	Saturday, July 4, 2020	941,070	Not Quantified	--
Sunday, July 5, 2020	Saturday, July 11, 2020	812,520	Not Quantified	--
Sunday, July 12, 2020	Saturday, July 18, 2020	749,320	Not Quantified	--
Sunday, July 19, 2020	Saturday, July 25, 2020	749,480	Not Quantified	--
Sunday, July 26, 2020	Saturday, August 1, 2020	860,940	Not Quantified	--
Sunday, August 2, 2020	Saturday, August 8, 2020	935,600	Not Quantified	--
Sunday, August 9, 2020	Saturday, August 15, 2020	911,510	Not Quantified	--
Sunday, August 16, 2020	Saturday, August 22, 2020	879,620	Not Quantified	--
Sunday, August 23, 2020	Saturday, August 29, 2020	988,730	Not Quantified	--
Sunday, August 30, 2020	Saturday, September 5, 2020	980,170	Not Quantified	--
Sunday, September 6, 2020	Saturday, September 12, 2020	379,840	Not Quantified	--
Sunday, September 13, 2020	Saturday, September 19, 2020	612,690	Not Quantified	--
Sunday, September 20, 2020	Saturday, September 26, 2020	187,340	Not Quantified	--
Sunday, September 27, 2020	Saturday, October 3, 2020	0	Not Quantified	--
Sunday, October 4, 2020	Saturday, October 10, 2020	0	Not Quantified	--
Sunday, October 11, 2020	Saturday, October 17, 2020	0	Not Quantified	--
Sunday, October 18, 2020	Saturday, October 24, 2020	226,530	Not Quantified	--
Sunday, October 25, 2020	Saturday, October 31, 2020	1,008,160	Not Quantified	--
Sunday, November 1, 2020	Saturday, November 7, 2020	807,250	Not Quantified	--
Sunday, November 8, 2020	Saturday, November 14, 2020	617,810	Not Quantified	--
Sunday, November 15, 2020	Saturday, November 21, 2020	961,220	Not Quantified	--
Sunday, November 22, 2020	Saturday, November 28, 2020	980,480	Not Quantified	--
Sunday, November 29, 2020	Saturday, December 5, 2020	983,120	Not Quantified	--
Sunday, December 6, 2020	Saturday, December 12, 2020	1,013,640	Not Quantified	--
Sunday, December 13, 2020	Saturday, December 19, 2020	1,023,290	Not Quantified	--
Sunday, December 20, 2020	Saturday, December 26, 2020	982,810	Not Quantified	--
Sunday, December 27, 2020	Saturday, January 2, 2021	882,610	Not Quantified	--
Sunday, January 3, 2021	Saturday, January 9, 2021	723,000	Not Quantified	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 10, 2021	Saturday, January 16, 2021	0	Not Quantified	--
Sunday, January 17, 2021	Saturday, January 23, 2021	640,290	Not Quantified	--
Sunday, January 24, 2021	Saturday, January 30, 2021	0	Not Quantified	--
Sunday, January 31, 2021	Saturday, February 6, 2021	0	Not Quantified	--
Sunday, February 7, 2021	Saturday, February 13, 2021	0	Not Quantified	--
Sunday, February 14, 2021	Saturday, February 20, 2021	0	Not Quantified	--
Sunday, February 21, 2021	Saturday, February 27, 2021	0	Not Quantified	--
Sunday, February 28, 2021	Saturday, March 6, 2021	0	Not Quantified	--
Sunday, March 7, 2021	Saturday, March 13, 2021	458,650	Not Quantified	--
Sunday, March 14, 2021	Saturday, March 20, 2021	957,470	Not Quantified	--
Sunday, March 21, 2021	Saturday, March 27, 2021	996,610	Not Quantified	--
Sunday, March 28, 2021	Saturday, April 3, 2021	896,360	Not Quantified	--
Sunday, April 4, 2021	Saturday, April 10, 2021	989,920	Not Quantified	--
Sunday, April 11, 2021	Saturday, April 17, 2021	968,470	Not Quantified	--
Sunday, April 18, 2021	Saturday, April 24, 2021	980,120	Not Quantified	--
Sunday, April 25, 2021	Saturday, May 1, 2021	892,050	Not Quantified	--
Sunday, May 2, 2021	Saturday, May 8, 2021	760,720	Not Quantified	--
Sunday, May 9, 2021	Saturday, May 15, 2021	750,480	Not Quantified	--
Sunday, May 16, 2021	Saturday, May 22, 2021	895,230	Not Quantified	--
Sunday, May 23, 2021	Saturday, May 29, 2021	976,040	Not Quantified	--
Sunday, May 30, 2021	Saturday, June 5, 2021	945,780	Not Quantified	--
Sunday, June 6, 2021	Saturday, June 12, 2021	515,150	Not Quantified	--
Sunday, June 13, 2021	Saturday, June 19, 2021	0	Not Quantified	--
Sunday, June 20, 2021	Saturday, June 26, 2021	0	Not Quantified	--
Sunday, June 27, 2021	Saturday, July 3, 2021	470,400	470,400	--
Sunday, July 4, 2021	Saturday, July 10, 2021	923,960	923,960	--
Sunday, July 11, 2021	Saturday, July 17, 2021	849,050	849,050	--
Sunday, July 18, 2021	Saturday, July 24, 2021	862,210	862,210	--
Sunday, July 25, 2021	Saturday, July 31, 2021	806,590	806,590	--
Sunday, August 1, 2021	Saturday, August 7, 2021	1,002,360	1,002,360	--
Sunday, August 8, 2021	Saturday, August 14, 2021	965,060	965,060	--
Sunday, August 15, 2021	Saturday, August 21, 2021	906,250	906,250	--
Sunday, August 22, 2021	Saturday, August 28, 2021	256,440	256,440	--
Sunday, August 29, 2021	Saturday, September 4, 2021	934,260	934,260	--
Sunday, September 5, 2021	Saturday, September 11, 2021	0	0	--
Sunday, September 12, 2021	Saturday, September 18, 2021	0	0	--
Sunday, September 19, 2021	Saturday, September 25, 2021	0	0	--
Sunday, September 26, 2021	Saturday, October 2, 2021	0	0	--
Sunday, October 3, 2021	Saturday, October 9, 2021	0	0	--
Sunday, October 10, 2021	Saturday, October 16, 2021	0	0	--
Sunday, October 17, 2021	Saturday, October 23, 2021	0	0	--
Sunday, October 24, 2021	Saturday, October 30, 2021	0	0	--
Sunday, October 31, 2021	Saturday, November 6, 2021	0	0	--
Sunday, November 7, 2021	Saturday, November 13, 2021	0	0	--
Sunday, November 14, 2021	Saturday, November 20, 2021	0	0	--
Sunday, November 21, 2021	Saturday, November 27, 2021	0	0	--
Sunday, November 28, 2021	Saturday, December 4, 2021	0	0	--
Sunday, December 5, 2021	Saturday, December 11, 2021	0	0	--
Sunday, December 12, 2021	Saturday, December 18, 2021	0	0	--
Sunday, December 19, 2021	Saturday, December 25, 2021	46,720	0	Additional system flow due to processing construction dewatering water.
Sunday, December 26, 2021	Saturday, January 1, 2022	0	0	--
Sunday, January 2, 2022	Saturday, January 8, 2022	0	0	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, January 9, 2022	Saturday, January 15, 2022	123,800	0	Additional system flow due to processing construction dewatering water.
Sunday, January 16, 2022	Saturday, January 22, 2022	135,880	0	Additional system flow due to processing construction dewatering water.
Sunday, January 23, 2022	Saturday, January 29, 2022	54,700	0	Additional system flow due to processing construction dewatering water.
Sunday, January 30, 2022	Saturday, February 5, 2022	111,000	0	Additional system flow due to processing construction dewatering water.
Sunday, February 6, 2022	Saturday, February 12, 2022	0	0	--
Sunday, February 13, 2022	Saturday, February 19, 2022	0	0	--
Sunday, February 20, 2022	Saturday, February 26, 2022	0	0	--
Sunday, February 27, 2022	Saturday, March 5, 2022	0	0	--
Sunday, March 6, 2022	Saturday, March 12, 2022	0	0	--
Sunday, March 13, 2022	Saturday, March 19, 2022	0	0	--
Sunday, March 20, 2022	Saturday, March 26, 2022	532,910	515,220	Additional system flow due to processing construction dewatering water.
Sunday, March 27, 2022	Saturday, April 2, 2022	839,860	839,860	--
Sunday, April 3, 2022	Saturday, April 9, 2022	971,490	> 971,490	Check dam overtop on 4/6/22
Sunday, April 10, 2022	Saturday, April 16, 2022	991,800	991,800	--
Sunday, April 17, 2022	Saturday, April 23, 2022	995,510	995,510	--
Sunday, April 24, 2022	Saturday, April 30, 2022	854,650	854,650	--
Sunday, May 1, 2022	Saturday, May 7, 2022	1,012,040	1,012,040	--
Sunday, May 8, 2022	Saturday, May 14, 2022	982,480	> 982,480	Check dam overtop on 5/12/22
Sunday, May 15, 2022	Saturday, May 21, 2022	757,610	> 757,610	Check dam overtop on 5/20/22
Sunday, May 22, 2022	Saturday, May 28, 2022	722,340	> 722,340	Check dam overtop on 5/25/22
Sunday, May 29, 2022	Saturday, June 4, 2022	965,620	965,620	--
Sunday, June 5, 2022	Saturday, June 11, 2022	979,620	979,620	--
Sunday, June 12, 2022	Saturday, June 18, 2022	966,200	966,200	--
Sunday, June 19, 2022	Saturday, June 25, 2022	971,800	971,800	--
Sunday, June 26, 2022	Saturday, July 2, 2022	782,400	782,400	--
Sunday, July 3, 2022	Saturday, July 9, 2022	943,830	943,830	--
Sunday, July 10, 2022	Saturday, July 16, 2022	402,080	402,080	--
Sunday, July 17, 2022	Saturday, July 23, 2022	0	0	--
Sunday, July 24, 2022	Saturday, July 30, 2022	0	0	--
Sunday, July 31, 2022	Saturday, August 6, 2022	208,280	208,280	--
Sunday, August 7, 2022	Saturday, August 13, 2022	0	0	--
Sunday, August 14, 2022	Saturday, August 20, 2022	735,570	735,570	--
Sunday, August 21, 2022	Saturday, August 27, 2022	944,460	944,460	--
Sunday, August 28, 2022	Saturday, September 3, 2022	182,390	182,390	--
Sunday, September 4, 2022	Saturday, September 10, 2022	0	0	--
Sunday, September 11, 2022	Saturday, September 17, 2022	0	0	--
Sunday, September 18, 2022	Saturday, September 24, 2022	0	0	--
Sunday, September 25, 2022	Saturday, October 1, 2022	0	0	--
Sunday, October 2, 2022	Saturday, October 8, 2022	0	0	--
Sunday, October 9, 2022	Saturday, October 15, 2022	0	0	--
Sunday, October 16, 2022	Saturday, October 22, 2022	0	0	--
Sunday, October 23, 2022	Saturday, October 29, 2022	0	0	--
Sunday, October 30, 2022	Saturday, November 5, 2022	0	0	--
Sunday, November 6, 2022	Saturday, November 12, 2022	0	0	--
Sunday, November 13, 2022	Saturday, November 19, 2022	0	0	--
Sunday, November 20, 2022	Saturday, November 26, 2022	0	0	--
Sunday, November 27, 2022	Saturday, December 3, 2022	0	0	--
Sunday, December 4, 2022	Saturday, December 10, 2022	0	0	--

Table 5
Weekly Ditch A Treatment System and Stream Flow Volumes
Tyco Fire Products LP
Marinette, Wisconsin



Week Start Date	Week End Date	Ditch A Treatment System Discharge Volume	Ditch A Stream Flow Volume	Comments
		gallons	gallons	
Sunday, December 11, 2022	Saturday, December 17, 2022	0	0	--
Sunday, December 18, 2022	Saturday, December 24, 2022	0	0	--
Sunday, December 25, 2022	Saturday, December 31, 2022	0	0	--
Sunday, January 1, 2023	Saturday, January 7, 2023	0	0	--
Sunday, January 8, 2023	Saturday, January 14, 2023	0	0	--
Sunday, January 15, 2023	Saturday, January 21, 2023	0	0	--
Sunday, January 22, 2023	Saturday, January 28, 2023	0	0	--
Sunday, January 29, 2023	Saturday, February 4, 2023	0	0	--
Sunday, February 5, 2023	Saturday, February 11, 2023	0	0	--
Sunday, February 12, 2023	Saturday, February 18, 2023	0	0	--
Sunday, February 19, 2023	Saturday, February 25, 2023	0	0	--
Sunday, February 26, 2023	Saturday, March 4, 2023	0	0	--
Sunday, March 5, 2023	Saturday, March 11, 2023	0	0	--
Sunday, March 12, 2023	Saturday, March 18, 2023	0	0	--
Sunday, March 19, 2023	Saturday, March 25, 2023	0	0	--
Sunday, March 26, 2023	Saturday, April 1, 2023	202,760	202,760	--
Sunday, April 2, 2023	Saturday, April 8, 2023	976,020	> 976,020	Check dam overtop on 4/5/23 (5 hrs)
Sunday, April 9, 2023	Saturday, April 15, 2023	979,000	979,000	--
Sunday, April 16, 2023	Saturday, April 22, 2023	985,410	> 985,410	Check dam overtop on 4/20/23 (0.75 hrs)
Sunday, April 23, 2023	Saturday, April 29, 2023	1,003,760	1,003,760	--
Sunday, April 30, 2023	Saturday, May 6, 2023	960,520	> 960,520	Check dam overtop on 5/1/23 (29 hrs)
Sunday, May 7, 2023	Saturday, May 13, 2023	823,270	> 823,270	Check dam overtop on 5/7/23 (46 hrs), 5/9/23 (15 hrs), and 5/10/23 (0.5 hrs)
Sunday, May 14, 2023	Saturday, May 20, 2023	869,560	869,560	--
Sunday, May 21, 2023	Saturday, May 27, 2023	940,340	940,340	--
Sunday, May 28, 2023	Saturday, June 3, 2023	822,310	822,310	--
Sunday, June 4, 2023	Saturday, June 10, 2023	932,060	932,060	--
Sunday, June 11, 2023	Saturday, June 17, 2023	829,090	829,090	--
Sunday, June 18, 2023	Saturday, June 24, 2023	859,900	859,900	--
Sunday, June 25, 2023	Saturday, July 1, 2023	592,700	592,700	--

Table 6
Ditch A Downstream Surface Water Laboratory Analytical Results
Tyco Fire Products LP
Marinette, Wisconsin



Location	Surface Water Standard - Other Water Bodies ⁽¹⁾⁽²⁾	Surface Water Standard - All Waters with Exception ⁽¹⁾⁽³⁾	SW-40									
			SW-40 (3-31-23)	DUP-01-A (3-31-23)	SW-40 (4-10-23)	DUP-01-A (4-10-23)	SW-40 (4-24-23)	DUP-01-A (4-24-23)	SW-40 (5-17-23)	DUP-01-A (5-17-23)	SW-40 (6-8-23)	DUP-01-A (6-8-23)
Sample ID			3/31/2023	3/31/2023	4/10/2023	4/10/2023	4/24/2023	4/24/2023	5/17/2023	5/17/2023	6/8/2023	6/8/2023
Sample Date												
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
Per- and Polyfluoroalkyl Substances												
PFBA	--	--	49	50	120	130	91	92	28	30	15	16
PFPeA	--	--	160	170	540 D	510 D	120	140	120	110	3.7	3.8
PFHxA	--	--	100	110	280	280	47	53	81	81	< 1.8 U	< 1.9 U
PFHpA	--	--	99	87	210	220	25	24	45	45	< 1.8 U	< 1.9 U
PFOA	95	--	150	150	340	350	55	61	130	120	< 1.8 U	< 1.9 U
PFNA	--	--	24	22	57	58	5.3	5.0	11	11	< 1.8 U	< 1.9 U
PFDA	--	--	16	15	38	39	3.4	3.4	5.7	4.9	< 1.8 U	< 1.9 U
PFUdA	--	--	5.3	5.5	15	14	1.7	1.6 J	2.0	1.9	< 1.8 U	< 1.9 U
PFDoA	--	--	0.89 J	0.89 J	1.1 J	1.3 J	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFTrDA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFTeDA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFHxDA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFODA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFBS	--	--	2.2	1.9	9.3	9.6	0.63 J	0.64 J	1.0 J	1.0 J	< 1.8 U	< 1.9 U
PFPeS	--	--	1.2 J	1.0 J	3.1	3.2	< 1.7 U	< 1.8 U	0.68 J	0.59 J	< 1.8 U	< 1.9 U
PFHxS	--	--	29	27	66	68	5.5	5.8	11	11	< 1.8 U	< 1.9 U
PFHpS	--	--	0.78 J	0.83 J	2.4	2.5	< 1.7 U	0.23 J	0.59 J	0.58 J	< 1.8 U	< 1.9 U
PFOS	--	8	62	56	220	230	21	24	45	41	< 1.8 U	< 1.9 U
PFNS	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFDS	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
PFDOS	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
4:2 FTS	--	--	1.6 J	1.4 J	3.5	3.5	0.33 J	0.38 J	1.4 J	1.1 J	< 1.8 U	< 1.9 U
6:2 FTS	--	--	220	200	530 D	590 D	51	57	130	120	< 4.5 U	< 4.7 U
8:2 FTS	--	--	56	54	410 D	440 D	40	45	87	94	< 1.8 U	< 1.9 U
10:2 FTS	--	--	9.6	8.9	22	19	3.8	3.5	4.3	4.3	< 1.8 U	0.64 J
FOSA	--	--	1.4 J	1.4 J	4.7	4.7	0.92 J	< 1.8 U	1.2 J	1.2 J	< 1.8 U	< 1.9 U
N-MeFOSA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
N-EtFOSA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
MeFOSAA	--	--	< 4.5 U	< 4.4 U	< 4.3 U	< 4.4 U	< 4.4 U	< 4.4 U	< 4.5 U	< 4.5 U	< 4.5 U	< 4.7 U
EtFOSAA	--	--	< 4.5 U	< 4.4 U	2.8 J	3.2 J	< 4.4 U	< 4.4 U	< 4.5 U	< 4.5 U	< 4.5 U	< 4.7 U
N-MeFOSE	--	--	< 3.6 U	< 3.5 U	< 3.5 U	< 3.5 U	< 3.5 U	< 3.5 U	< 3.6 U	< 3.6 U	< 3.6 U	< 3.8 U
N-EtFOSE	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
HFPO-DA	--	--	< 3.6 U	< 3.5 U	< 3.5 U	< 3.5 U	< 3.5 U	< 3.5 U	< 3.6 U	< 3.6 U	< 3.6 U	< 3.8 U
DONA	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
F-53 Major	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U
F-53B Minor	--	--	< 1.8 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.9 U

Notes:

-- = No Standard

< = Compound not detected at method detection limit

ng/L = Nanograms per liter

SW-40 is located downstream of the Ditch A System discharge

(1) = Surface water standards approved by the Wisconsin Legislature Joint Committee for Review of Administrative Rules (creation of NR 102.04 (8d) per WDNR proposal WY-23-19)

(2) = The PFOA surface water standard is 95 ng/L in Other Water Bodies (waters not classified as public water supplies) under ch. NR 104.07.

(3) = The PFOS surface water standard is 8 ng/L for all waters except those that cannot naturally support fish and do not have downstream waters that support fish.

Formatting Key:

Yellow Highlight = Value exceeds proposed surface water quality criteria (Other Water Bodies)

Bold = Value exceeds proposed surface water quality criteria (All Waters With Exception)

Data Qualifiers:

U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Analyte Abbreviations:

PFBA	Perfluorobutanoic acid	PFDOS	Perfluorododecane sulfonic acid
PFPeA	Perfluoropentanoic acid	4:2 FTS	4:2 Fluorotelomer sulfonate
PFHxA	Perfluorohexanoic acid	6:2 FTS	6:2 Fluorotelomer sulfonic acid
PFHpA	Perfluoroheptanoic acid	8:2 FTS	8:2 Fluorotelomer sulfonic acid
PFOA	Perfluorooctanoic acid	10:2 FTS	10:2 Fluorotelomer sulfonic acid
PFNA	Perfluorononanoic acid	FOSA	Perfluorooctane sulfonamide
PFDA	Perfluorodecanoic acid	N-MeFOSA	N-Methyl perfluorooctane sulfonamide
PFUdA	Perfluoroundecanoic acid	N-EtFOSA	N-Ethyl perfluorooctane sulfonamide
PFDoA	Perfluorododecanoic acid	MeFOSAA	N-Methylperfluorooctane sulfonamidoacetic acid
PFTTrDA	Perfluorotridecanoic acid	EtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid
PFTeDA	Perfluorotetradecanoic acid	N-MeFOSE	N-Methyl perfluorooctane sulfonamidoethanol
PFHxDA	Perfluorohexadecanoic acid	N-EtFOSE	N-Ethyl perfluorooctane sulfonamide ethanol
PFODA	Perfluorooctadecanoic acid	HFPO-DA	2,3,3,3-Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
PFBS	Perfluorobutane sulfonic acid	DONA	4,8-Dioxa-3H-perfluorononanoic acid
PFPeS	Perfluoropentane sulfonic acid	F-53 Major	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
PFHxS	Perfluorohexane sulfonic acid	F-53B Minor	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
PFHpS	Perfluoroheptane sulfonic acid		
PFOS	Perfluorooctane sulfonic acid		
PFNS	Perfluorononane sulfonic acid		
PFDS	Perfluorodecane sulfonic acid		

Table 7
Ditch A System Monthly Upstream and Downstream Analytical Results
Tyco Fire Products LP
Marinette, Wisconsin

Location: Analyte: Month-Year	Upstream of Ditch A Treatment System		Downstream of Ditch A Treatment System			Notes
	PFOS	PFOA	Sample Date	PFOS	PFOA	
	ng/L	ng/L		ng/L	ng/L	
Jan-23	NS	NS	NS	NS	NS	The system was offline from 1/1/23-1/30/23 due to dry/frozen conditions in Ditch A. No samples were collected.
Feb-23	NS	NS	NS	NS	NS	The system was offline from 2/1/23-2/28/23 due to dry/frozen conditions in Ditch A. No samples were collected.
Mar-23	310	790	3/31/2023	62	150	The system was offline from 3/1/23-3/30/23 due to dry conditions in Ditch A. Samples collected on 3/31/23 following system restart.
Apr-23	487.5	815	4/10/2023	230	350	--
			4/24/2023	24	61	--
May-23	342	1056	5/17/2023	45	130	--
Jun-23	74.5	173.5	6/8/2023	< 1.9 U	< 1.9 U	--

Abbreviations:

ng/L = nanograms per liter

NS = Not Sampled

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctane sulfonic acid

U = Result is less than the method detection limit (MDL)

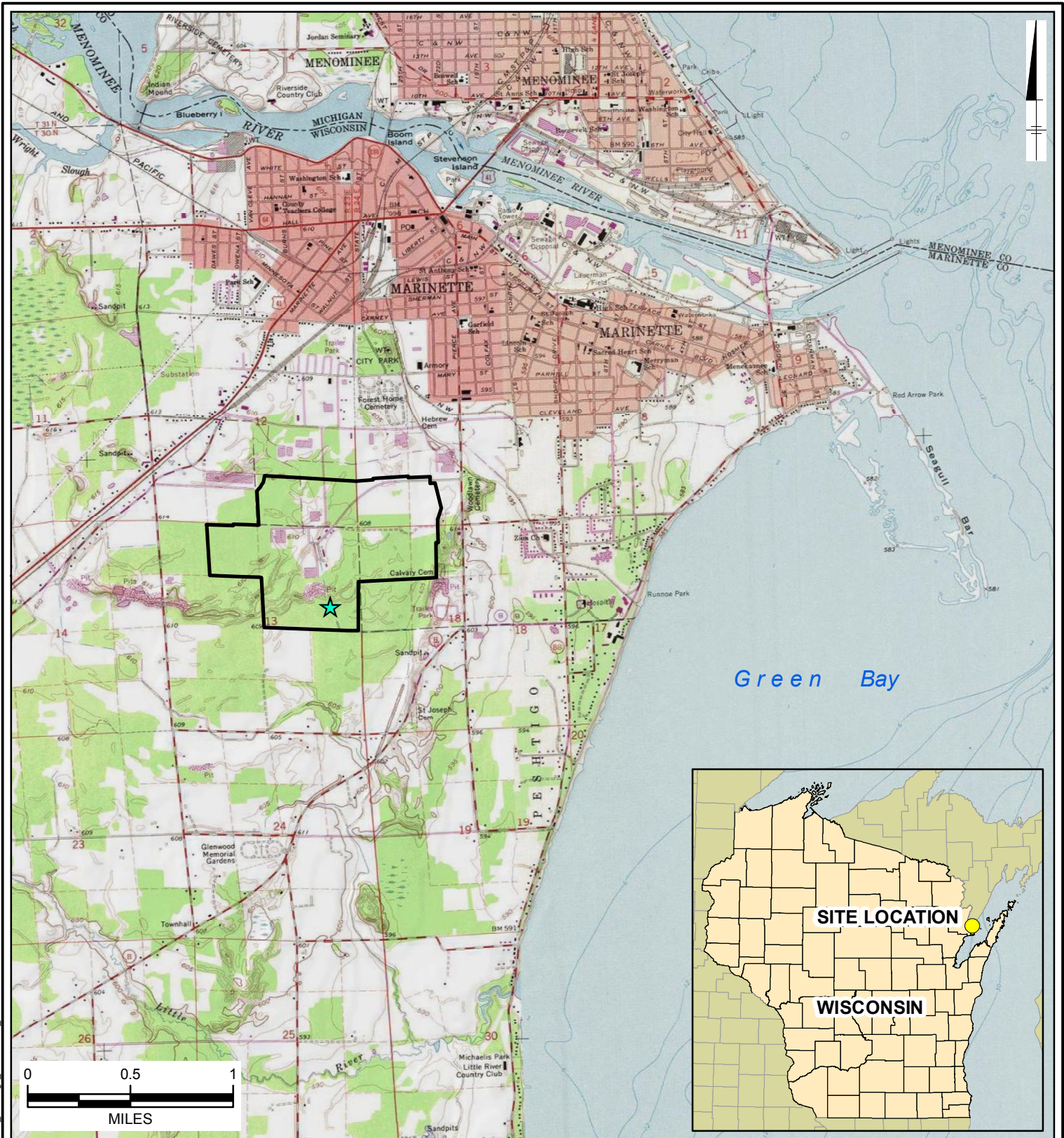
Notes:

Monthly upstream values are calculated as the average of the weekly permit-required Ditch A System influent samples during periods in which natural stream flow is present.

Downstream samples are collected monthly, when natural flow is observed in Ditch A, from SW-40.



The higher value is shown when duplicate samples were collected.

Figures



City: Minneapolis/Clark Div/Group: IMDVC Created By: Last Saved By: alens
 TYCO Marinette WI
 Z:\GIS\Projects_ENVT\TYCO_Marinette_WI\MapXD\2018-03\Work_Plan\Fig1_Sitelocation_DitchA.mxd 2/10/2020 1:11:34 PM

LEGEND:

-  APPROXIMATE SITE PROPERTY BOUNDARY
-  APPROXIMATE LOCATION OF DITCH A SYSTEM

NOTES:

1. TOPOGRAPHIC MAP SOURCE: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED, ACCESSED FEBRUARY, 2020.

TYCO FIRE PRODUCTS LP MARINETTE, WISCONSIN
SITE LOCATION
 FIGURE 1

User: MWASLEWSKI, Spec: AUS-NSNSOOD File: C:\USERS\MWASLEWSKI\DRIVE - ARCADIS\BIM360 - ONE DRIVE SYNC LOCATION\AUS-TYCO-FIRE TECHNOLOGY CTR\MARINETTE WISCONSIN\PROJECT FILES\2020\01-IN PROGRESS\01-DWG\01-DITCH_A_F02 - SITE PLAN.DWG Scale: 1:1 Saved Date: 2/19/2022 Time: 17:10 Plot Date: Wasilewski, Matt 02/19/2022 17:00 Layout: C2



NOTES:
 1. AERIAL IMAGE, DITCH EXTENTS, AND EQUIPMENT ASSOCIATED WITH THE TREATMENT SYSTEM ARE IN APPROXIMATE LOCATIONS.

LEGEND:

- PROPERTY LINE
- RIGHT OF WAY
- ☐ CHECK DAM
- SW-40 ⊕ SURFACE WATER SAMPLE LOCATION
- ⊙ WELL LOCATION



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 ENGINEERING SERVICES, INC.
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NO.	DATE	ISSUED FOR	BY	SEALS
4	08/26/22	REMOVAL OF TEMPORARY DEWATERING SYSTEM	MW	
3	02/03/22	TEMPORARY DEWATERING WATER TREATMENT ADDITION	MW	
2	02/07/20	SITE PLAN UPDATE	DA	
1	09/03/19	DITCH A SYSTEM AREA	DA	
0	02/11/19	ISSUED FOR REVIEW - DRAFT	EE	

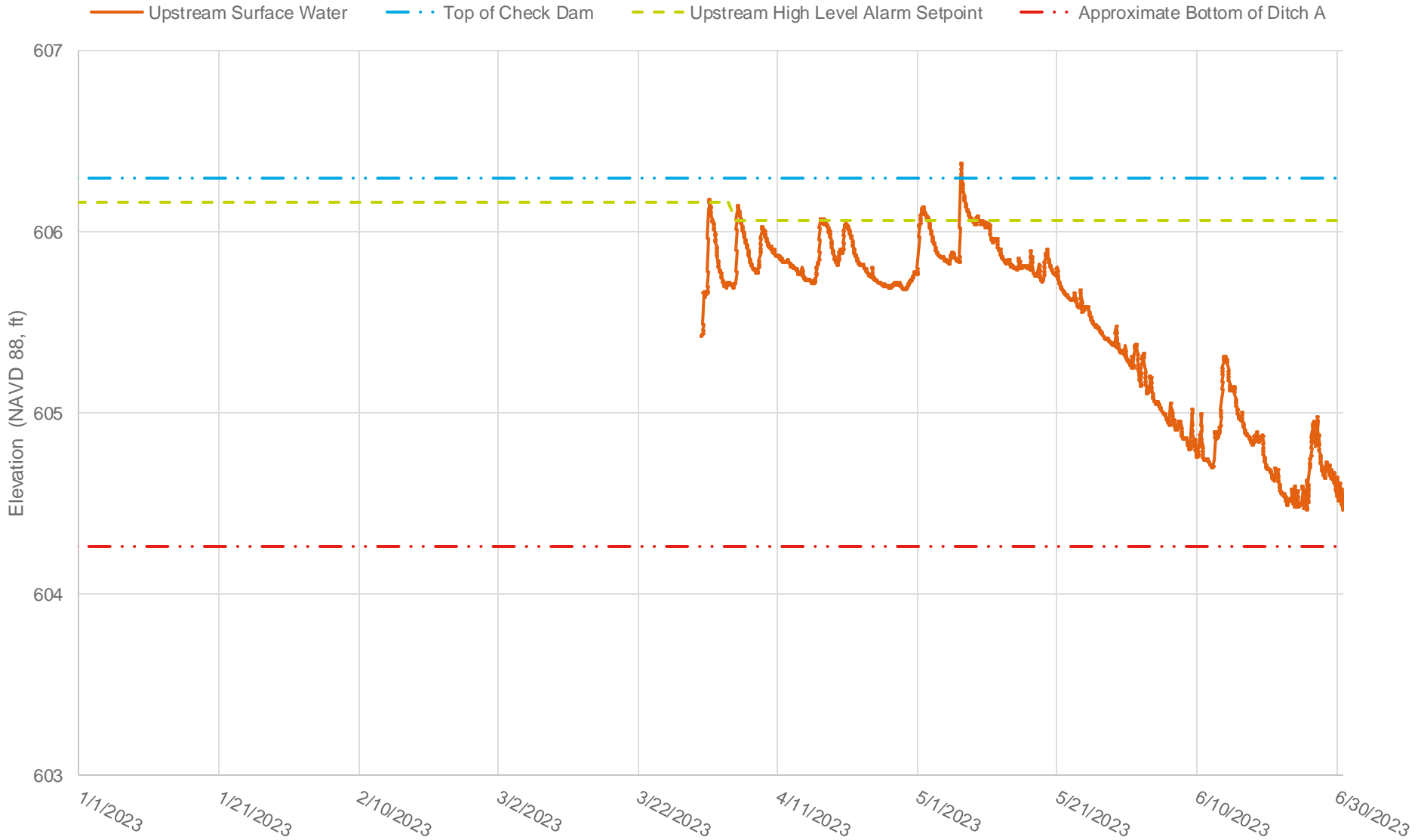
NO.	DATE	ISSUED FOR	BY	SEALS
4	08/26/22	REMOVAL OF TEMPORARY DEWATERING SYSTEM	MW	
3	02/03/22	TEMPORARY DEWATERING WATER TREATMENT ADDITION	MW	
2	02/07/20	SITE PLAN UPDATE	DA	
1	09/03/19	DITCH A SYSTEM AREA	DA	
0	02/11/19	ISSUED FOR REVIEW - DRAFT	EE	

DATE: 05/30/19
 PROJECT NO.: 30015296.00003
 FILE NAME: DITCH_A_F02 - SITE PLAN
 DESIGNED BY: JY
 DRAWN BY: EE
 CHECKED BY: TK

2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN 54143
 215-362-0700
ANSUL FTC SITE
DITCH INTERIM ACTION DESIGN
DITCH A
 ARCADIS PROJ. NO. 30015296.00003

SHEET TITLE: **DITCH A SITE PLAN**

SCALE: 1" = 20'
FIGURE 2
 SHEET 1 OF 1



Abbreviations:

ft = Feet

NAVD = North American Vertical Datum

Ditch A Dry/Frozen:

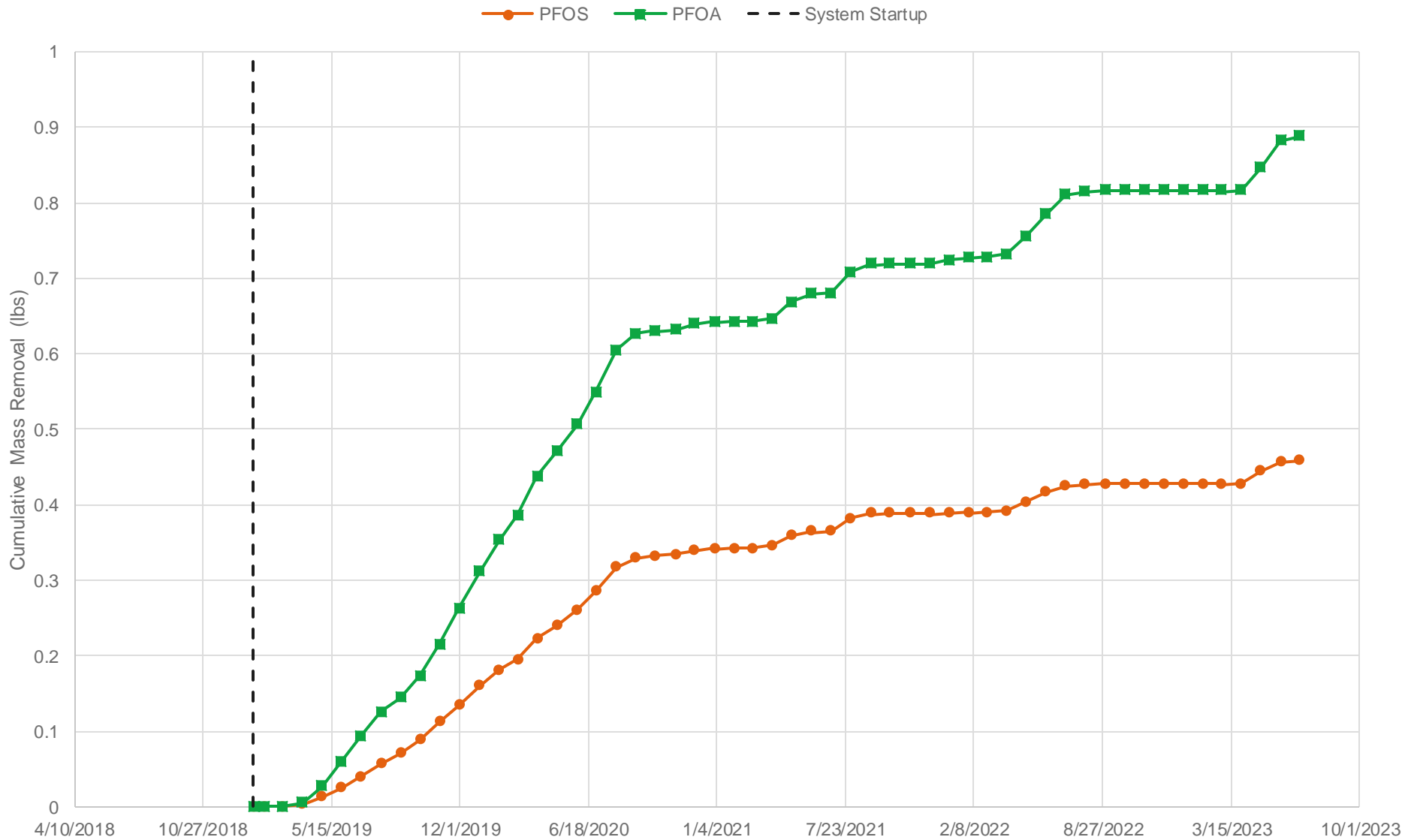
1/1/23 – 3/30/23

Notes:

1. Check dam maintenance completed on 10/20/22.
2. Elevations based on survey conducted by Coleman Engineering on 10/20/22.
3. The Ditch A bottom elevation is variable. An approximate value upstream of the check dam is shown for reference.

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A SYSTEM UPSTREAM SURFACE
 WATER ELEVATION (1/1/23 – 6/30/23)



Abbreviations:

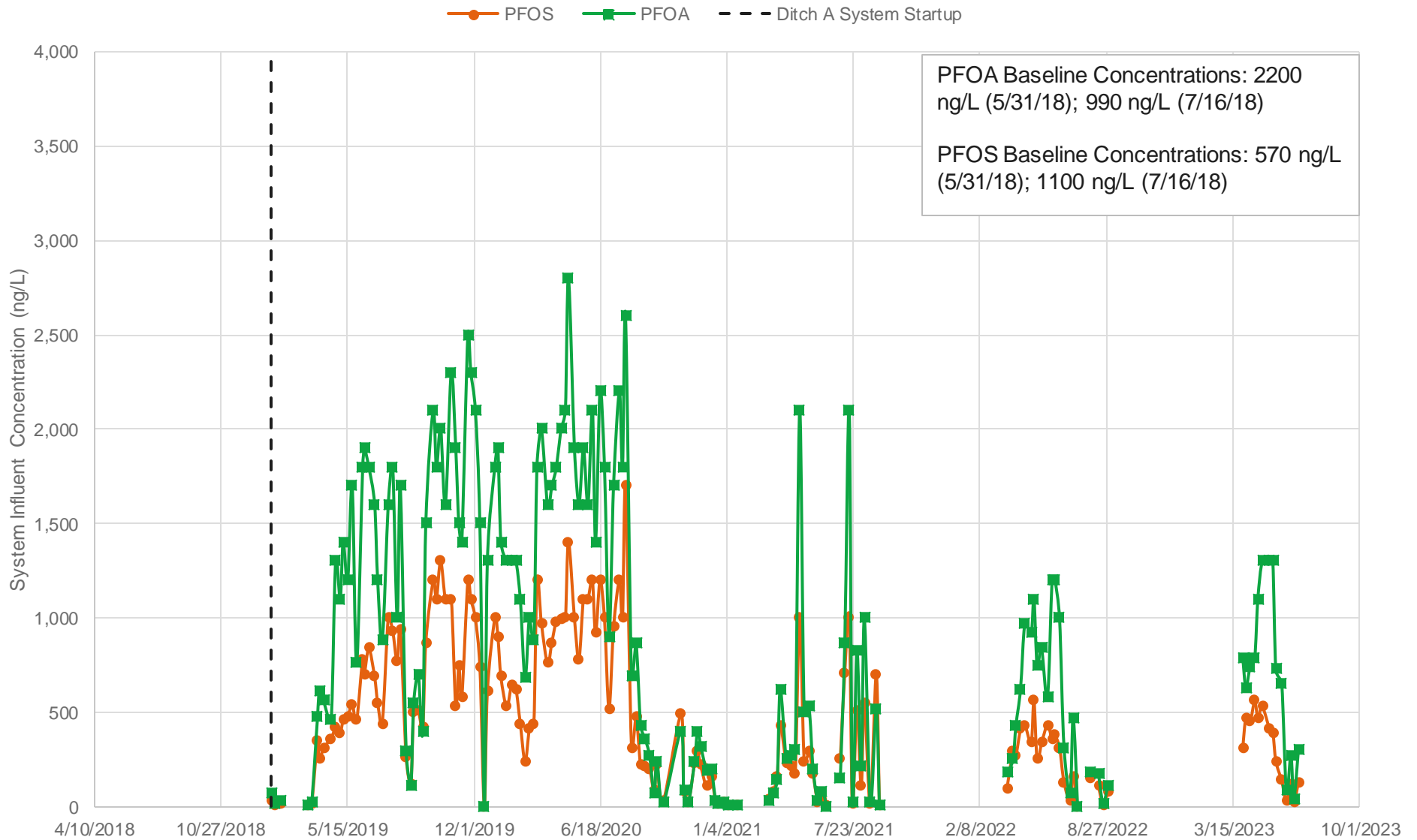
PFOA = Perfluorooctanesulfonic Acid
 PFOS = Perfluorooctanesulfonic Acid
 lbs = Pounds

Note:

Data presented on a monthly basis

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A SYSTEM TREATMENT SYSTEM
 CUMULATIVE PFAS MASS REMOVAL



Abbreviations:

PFOA = Perfluorooctanesulfonic Acid

PFOS = Perfluorooctanoic Acid

ng/L = Nanograms per Liter

Note:

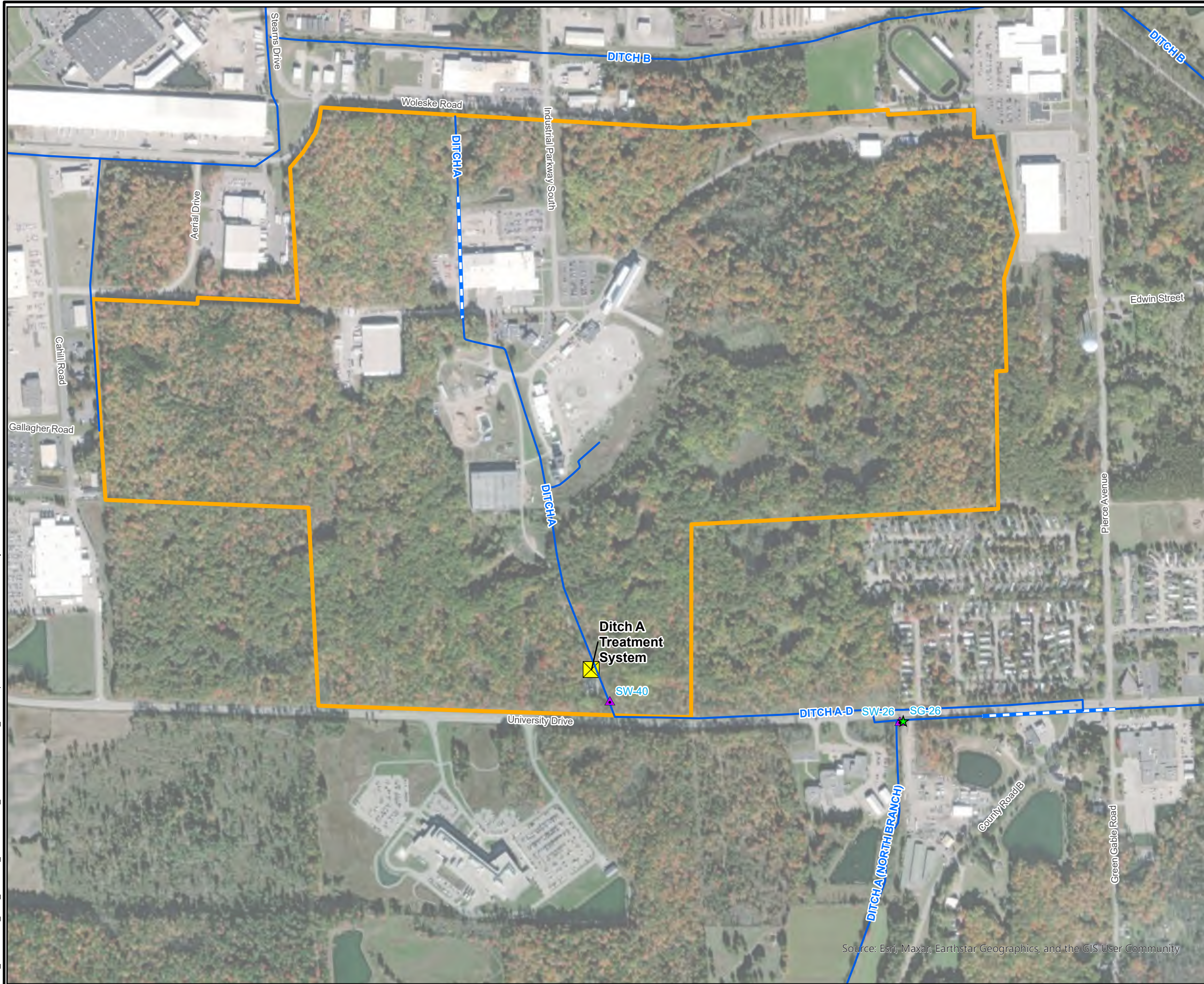
Baseline concentrations collected from sample location SW-27 on 5/31/18 and 7/16/18.

TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

 DITCH A SYSTEM TREATMENT SYSTEM
 INFLUENT CONCENTRATIONS



T:\ENV\TYCO\PRO_REPORT_FIGURES\FTC_DITCHES\FTC_DITCHES.aprx 7/19/2023 8:32 AM Last Saved By: MEstifanos

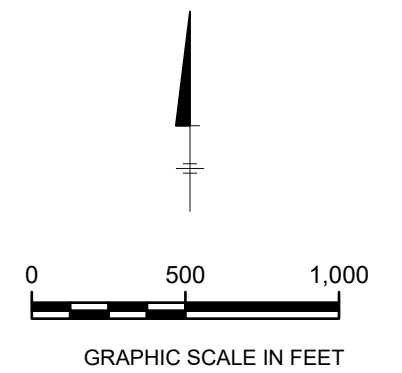


Legend

- ▲ Surface Water Sample
- ★ Staff Gauge
- Ditches or Stream
- Culvert
- Approximate Site Property Boundary
- ⊠ Surface Water Treatment System

Notes

1. Sampling at SW-26 to begin in August 2023 pending the observation of flow.



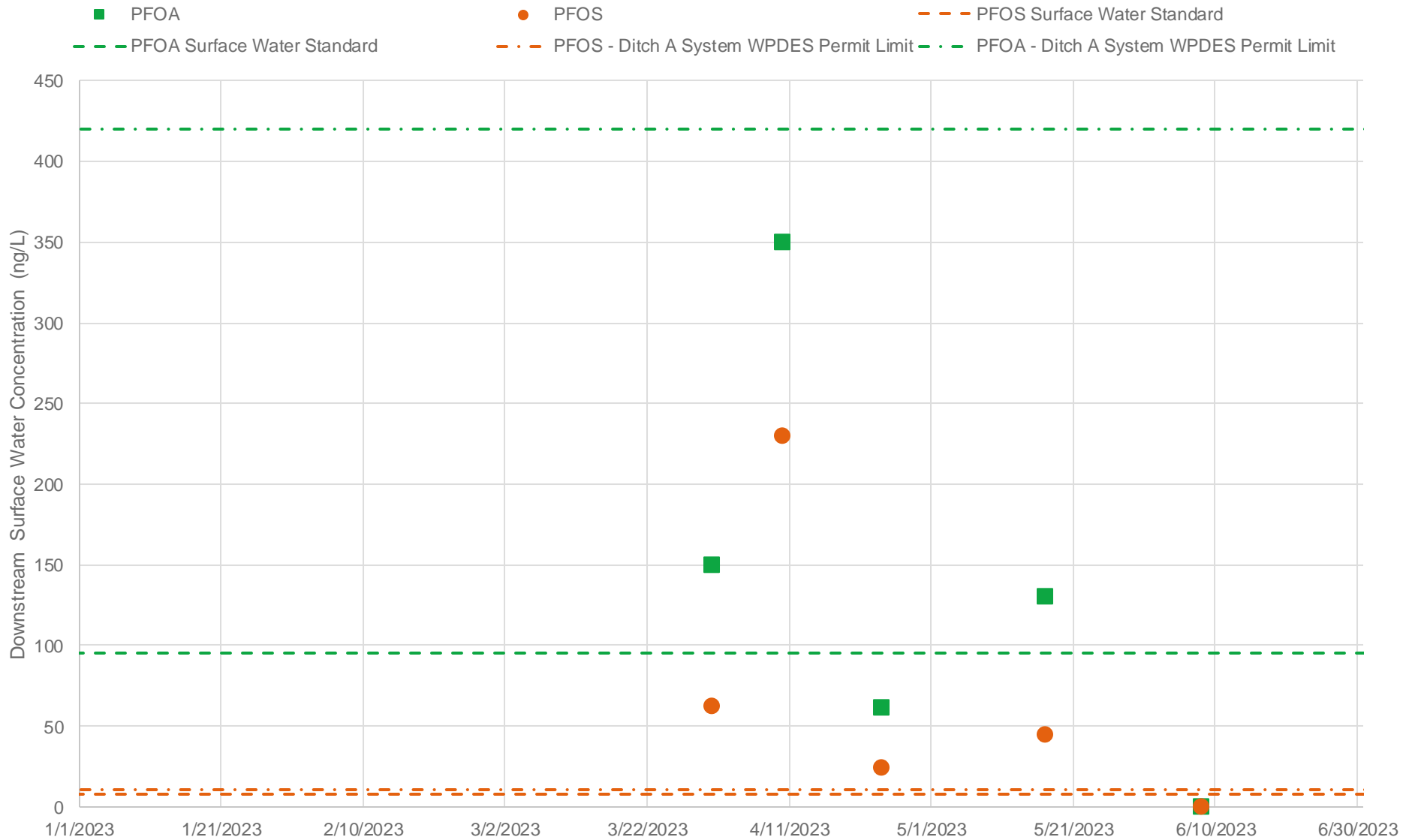
TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

**DITCH A DOWNSTREAM SURFACE WATER
SAMPLING LOCATIONS**



FIGURE
6

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Abbreviations:

PFOA = Perfluorooctanesulfonic Acid
 PFOS = Perfluorooctanoic Acid
 ng/L = Nanograms per Liter

Ditch Dry/Frozen (No Sample Collected):

1/2023, 2/2023

Notes:

1. Downstream surface water samples collected from SW-40 (downstream of Ditch A System).
2. Downstream sample collection began in August 2021.
3. When duplicate samples were collected, the higher result is shown.
4. Surface water standard for PFOS of 8 ng/L based on water except those that cannot naturally support fish and do not have downstream waters that support fish per NR 102.04 (8d).
5. Surface water standard for PFOA of 95 ng/L based on non-drinking water bodies per NR 102.04 (8d).

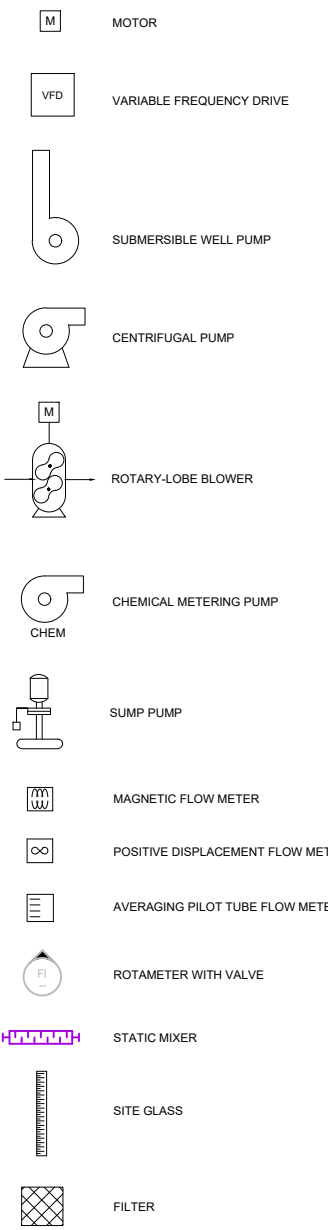
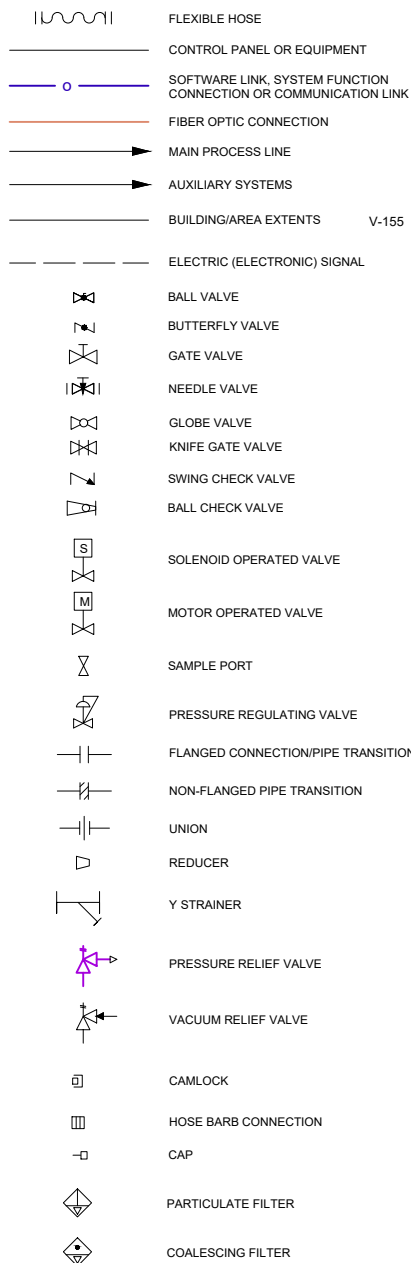
TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

DITCH A DOWNSTREAM SURFACE WATER CONCENTRATIONS

Appendix A

Ditch A System Piping and Instrumentation Diagram

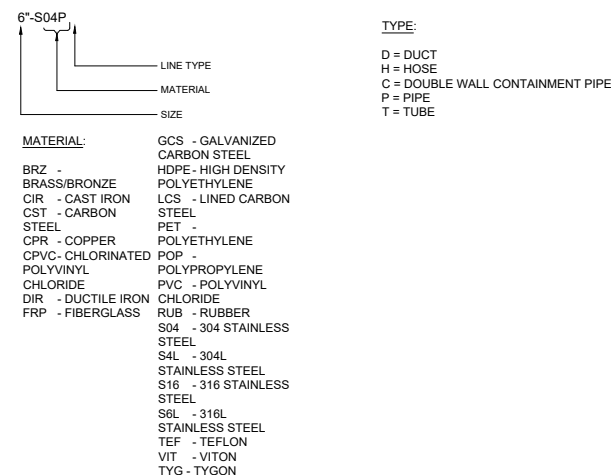
LEGEND



INSTRUMENT SYMBOLS

	PRIMARY CONTROL PANEL NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY PANEL OR RACK NORMALLY ACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS			
SHARED DISPLAY, SHARED CONTROL			
COMPUTER FUNCTION INCLUDING DISTRIB. CNTL. SYS.			
PROGRAMMABLE LOGIC CONTROLLER FUNCTION			

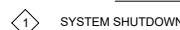
PIPELINE DESIGNATION



ALARMS:

1. AN ALARM THAT DISABLES ALL OR ANY PART OF THE SYSTEM WILL SEND A NOTIFICATION TO THE OPERATOR VIA THE SCADA SYSTEM.

INTERLOCKS:



INSTRUMENT IDENTIFICATION LETTERS

FIRST LETTER		SUCCEEDING LETTERS		
MEASURE OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A = ANALYSIS		ALARM		
B = BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C = USER'S CHOICE			CONTROL, CLOSED	
D = USER'S CHOICE	DIFFERENTIAL			
E = VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F = FLOW RATE	RATIO (FRACTION)			
G = USER'S CHOICE		GLASS, VIEWING DEVICE		
H = HAND				HIGH
I = CURRENT (ELECTRICAL)		INDICATE		
J = POWER	SCAN			
K = TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L = LEVEL		LIGHT		LOW
M = USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N = USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O = USER'S CHOICE		ORIFICE, RESTRICTION	OPEN	
P = PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q = QUANTITY	INTEGRATE, TOTALIZE			
R = RADIATION		RECORD	RUN	
S = SPEED, FREQUENCY	SAFETY	SWITCH	STOP	
T = TEMPERATURE			TRANSMIT	
U = MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V = VIBRATION, MECH. ANALYSIS			VALVE, DAMPER, LOUVER	
W = WEIGHT, FORCE		WELL		
X = UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y = EVENT, STATUS OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z = POSITION, DIMENSION	Z AXIS	UNCLASSIFIED	DRIVE, ACTUATOR, FINAL CONTROL ELEMENT	

ABBREVIATIONS:

AC AIR COMPRESSOR
AD AIR DRYER
AI pH INDICATOR
AIT pH INDICATOR TRANSMITTER
AR AIR RECEIVER TANK
AS ANTI-SCALEANT
C CENTER LINE
CAH CONDUCTIVITY ALARM HIGH
CFM CUBIC FEET PER MINUTE
CI CONDUCTIVITY INDICATOR
CIP CLEAN IN PLACE
CIT CONDUCTIVITY INDICATOR TRANSMITTER
CO CLEAN OUT
CTE CONDUCTIVITY TEMPERATURE ELEMENT
CY CUBIC YARDS
°C DEGREES CELSIUS
DPAL DIFFERENTIAL PRESSURE ALARM LOW
DPAH DIFFERENTIAL PRESSURE ALARM HIGH
DPIT DIFFERENTIAL PRESSURE INDICATOR TRANSMITTER
DPI DIFFERENTIAL PRESSURE INDICATOR ELECTRIC ACTUATOR
ECIP ELECTRODE CLEAN IN PLACE
EM ENVIRONMENTAL MEDIA
ELEV ELEVATION
F FILTER
FE FLOW ELEMENT
FI FLOW INDICATOR
FIT FLOW INDICATING TRANSMITTER
FMO FLOW MONITOR
FQ FLOW TOTALIZER
FT FOOT/ FEET
FV FLOW TRANSMITTER
FV FLOW VALVE
GAC GRANULATED ACTIVATED CARBON
GAL GALLONS
GPD GALLONS PER DAY
HAZ HAZARDOUS
HDPE HIGH DENSITY POLYETHYLENE
HOA HAND/ OFF/ AUTO
HR HOUR
HS HAND SWITCH
IN. INCHES
kg KILOGRAMS
KV TIMER VALVE
L LITER
LAH LEVEL ALARM HIGH
LAHH LEVEL ALARM HIGH HIGH
LAL LEVEL ALARM LOW
LE LEVEL ELEMENT
LP LIQUID PHASE
LS LEVEL SWITCH
LT LEVEL TRANSMITTER
M MOTOR
MAX MAXIMUM
µM MICROMETER
mg MILLIMETER
MIN MINIMUM
MMF MULTIMEDIA FILTER
NA NOT APPLICABLE
NC NORMALLY CLOSED
NO NORMALLY OPEN
NPT NATIONAL PIPE THREAD
% PERCENT
LB POUNDS
PAH PRESSURE ALARM HIGH
PAL PRESSURE ALARM LOW
PI PRESSURE INDICATOR
PIT PRESSURE INDICATOR TRANSMITTER
PSIG PRESSURE PER SQUARE FOOT GAUGE
PR PRESSURE RELIEF VALVE
PRV PRESSURE REGULATING VALVE
PSV PRESSURE SAFETY VALVE
PVR PRESSURE VACUUM RELIEF
QAPP QUALITY ASSURANCE PROJECTION PLAN
NaOH SODIUM HYDROXIDE
SP SAMPLE PORT
T TANK
TAH TEMPERATURE ALARM HIGH
TAHH TEMPERATURE ALARM HIGH HIGH
TI TEMPERATURE INDICATOR
TIT TEMPERATURE INDICATOR TRANSMITTER
TYP TYPICAL
TWV THREE WAY VALVE
V VALVE
VAH VACUUM ALARM HIGH
VAL VACUUM ALARM LOW
VE VACUUM ELEMENT
VIT VACUUM INDICATING TRANSMITTER
XLPE CROSS LINKED POLYETHYLENE
YI STATUS INDICATOR
ZX POSITION INDICATOR

NOTES:

- 1. ANY FIRST LETTER COMBINED WITH A MODIFIER REPRESENTS A NEW AND SEPARATE MEASURED VARIABLE. EXAMPLES: DP= DIFFERENTIAL PRESSURE; FQ= TOTALIZED OR INTEGRATED FLOW. EXCEPTION IS THE MODIFIER "J" FOR MULTIPOINT SCANNING.
- 2. FOR ANALYSIS NOT IDENTIFIED BY A SPECIFIC LETTER IN THE TABLE, USE FIRST LETTER "A" NEAR THE INSTRUMENT SYMBOL. SPECIFY THAT NATURE OF THE ANALYSIS. EXAMPLE: pH
- 3. MEANING OF A "USER'S CHOICE" LETTER SHALL BE CONSISTENT THROUGHOUT A PROJECT, AND SHALL BE SPECIFIED IN THE DRAWING LEGEND.

GENERAL NOTES:

- 1. ALL ANALOG SET POINTS SHALL BE FIELD ADJUSTED BY OPERATOR AT HMI INTERFACE.
- 2. ALARMS THAT SHUT DOWN TREATMENT EQUIPMENT MUST BE CLEARED BY OPERATOR BEFORE BEING RESTARTED.
- 3. THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

NOT FOR CONSTRUCTION

REV.	ISSUED DATE	DESCRIPTION	BY	CK'D
3	02/04/2020	ISSUED FOR CUSTOMER REVIEW	PAP	MPS
2	10/1/2019	ISSUED FOR CUSTOMER REVIEW	PAP	MPS

SEAL				
------	--	--	--	--

Prepared for:

Arcadis U.S., Inc.
126 N Jefferson St., Suite 400
Milwaukee, WI 53202
Tel: (414)-276-7742
www.arcadis.com

Prepared by:

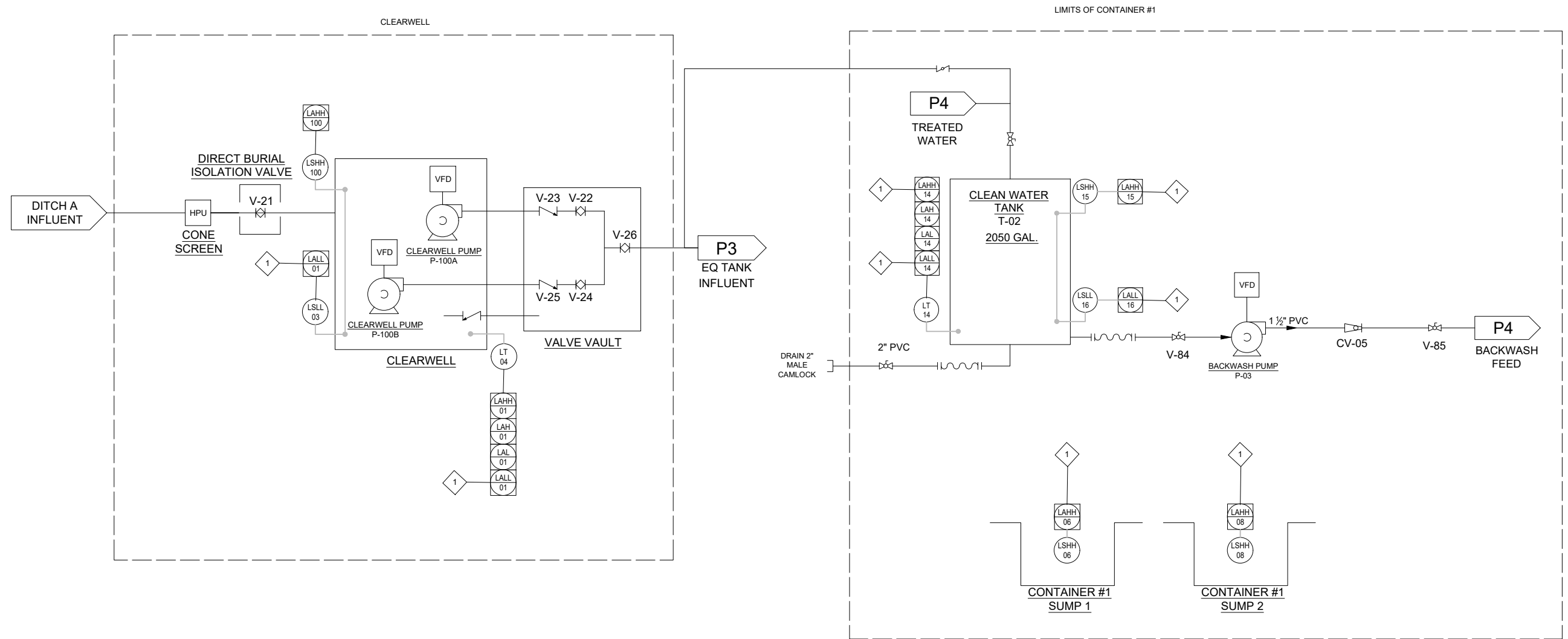
Presidio Systems, Inc.
2129 E. Birchwood Ave.
Cudahy, WI 53110
Tel: (414) 483-5600 Fax: (414) 483-1957
www.presidiosystems.com

**DITCH INTERIM ACTION-DITCH A
MARINETTE, WI**

SHEET TITLE	TYCO DITCH-A P&ID LEGEND SHEET
APPROVED BY	MPS
DESIGNED BY	PAP
PROJECT NUMBER	Q14949
CHECKED BY	MPS
DRAWN BY	PAP
DRAWING NUMBER	P-01
SHEET	1 OF 5

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM



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2	10/1/2019	ISSUED FOR CUSTOMER REVIEW	PAP	MPS

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 Cudahy, WI 53110
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DITCH INTERIM ACTION-DITCH A
 MARINETTE, WI

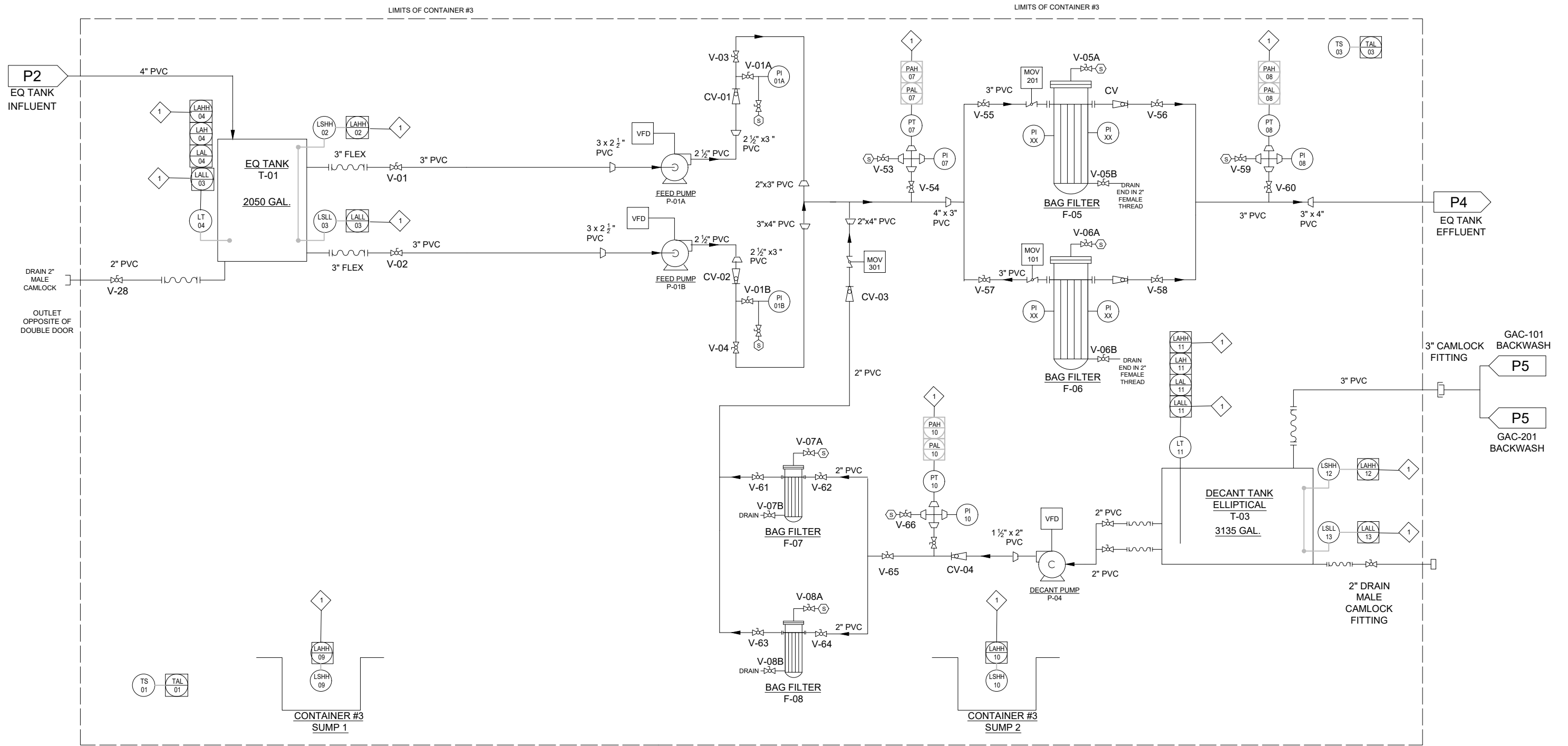
SHEET TITLE
**TYCO DITCH-A SYSTEM
 P&ID SHEET 1**

APPROVED BY
MPS
 DESIGNED BY
PAP
 PROJECT NUMBER
Q14949

CHECKED BY
MPS
 DRAWN BY
PAP
 DRAWING NUMBER
P-02
 SHEET 2 OF 5

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM



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Prepared by:

Presidio Systems, Inc.
 Presidio Systems, Inc.
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 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
 www.presidiosystems.com

DITCH INTERIM ACTION-DITCH A
 MARINETTE, WI

SHEET TITLE
**TYCO DITCH-A SYSTEM
 P&ID SHEET 2**

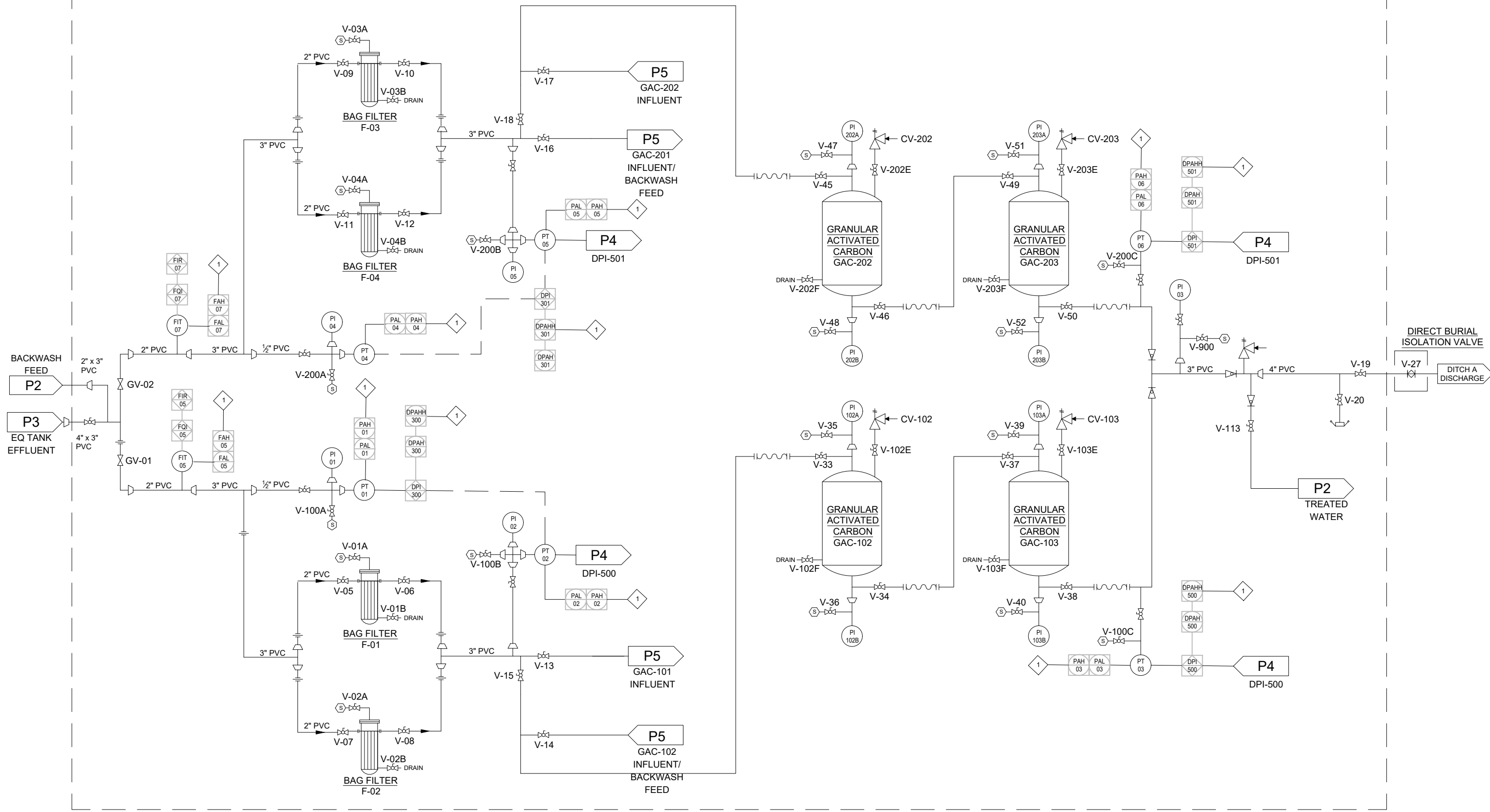
APPROVED BY MPS	CHECKED BY MPS
DESIGNED BY PAP	DRAWN BY PAP
PROJECT NUMBER Q14949	DRAWING NUMBER P-03
	SHEET 3 OF 5

INTERLOCK SCHEDULE

1 SHUT DOWN SYSTEM

LIMITS OF CONTAINER #1

LIMITS OF CONTAINER #1



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 126 N Jefferson St., Suite 400
 Milwaukee, WI 53202
 Tel: (414)-276-7742
 www.arcadis.com

Prepared by:

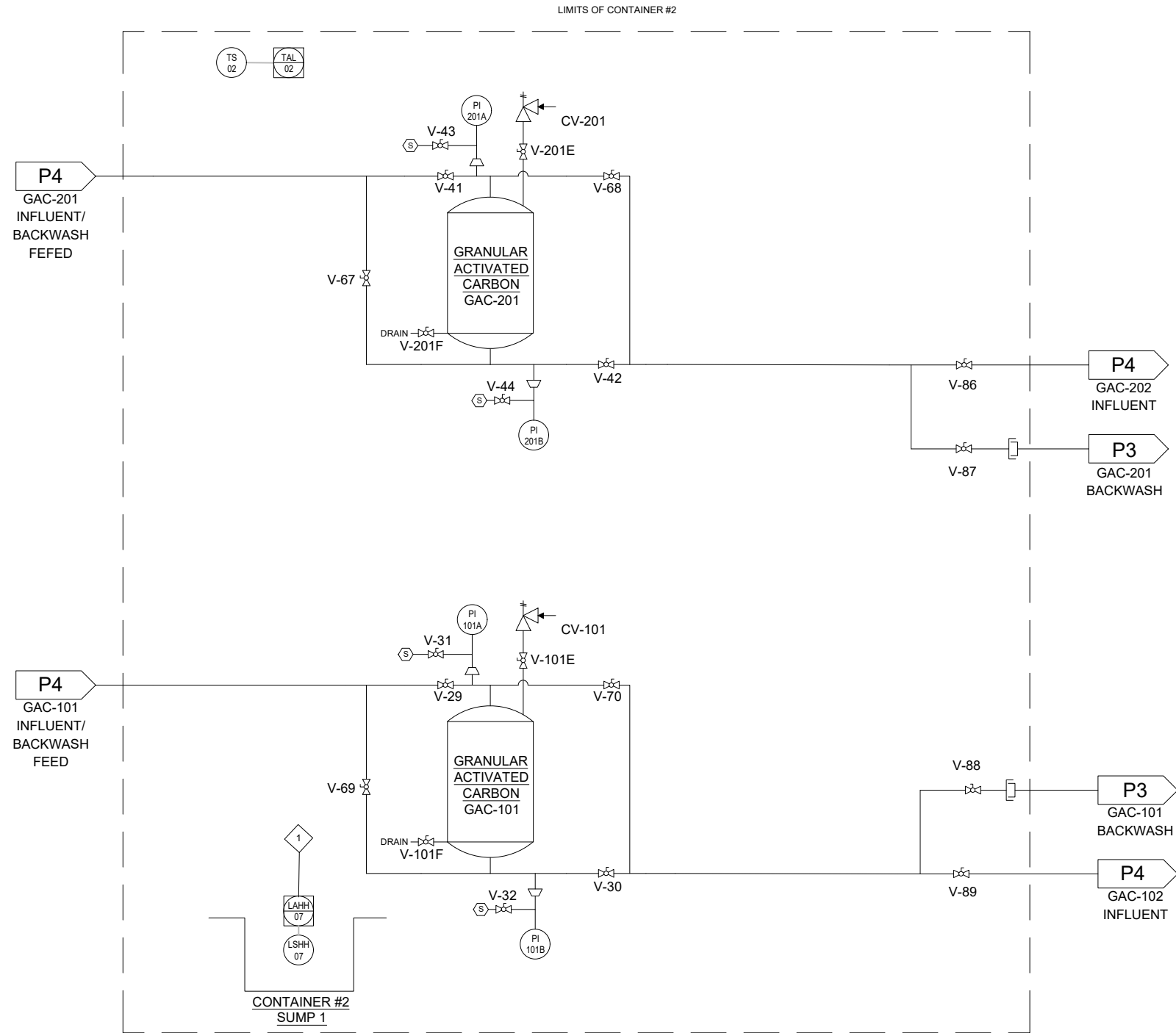
 Presidio Systems, Inc.
 2129 E. Birchwood Ave.
 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
 www.presidiosystems.com

DITCH INTERIM ACTION-DITCH A
 MARINETTE, WI

SHEET TITLE
**TYCO DITCH-A SYSTEM
 P&ID SHEET 3**

APPROVED BY
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PAP
 PROJECT NUMBER
Q14949

CHECKED BY
MPS
 DRAWN BY
PAP
 DRAWING NUMBER
P-04
 SHEET 4 OF 5



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2	10/1/2019	ISSUED FOR CUSTOMER REVIEW	PAP	MPS

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 126 N Jefferson St., Suite 400
 Milwaukee, WI 53202
 Tel: (414)-276-7742
 www.arcadis.com

Prepared by:

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 2129 E. Birchwood Ave.
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 www.presidiosystems.com

DITCH INTERIM ACTION-DITCH A
 MARINETTE, WI

SHEET TITLE
**TYCO DITCH-A SYSTEM
 P&ID SHEET 4**

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MPS
 DESIGNED BY
PAP
 PROJECT NUMBER
Q14949

CHECKED BY
MPS
 DRAWN BY
PAP
 DRAWING NUMBER
P-05
 SHEET 5 OF 5

Appendix B

WPDES Laboratory Analytical Reports

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 4/10/2023 5:04:02 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-231569-1

Eurofins Chicago

Job Notes

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Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Job ID: 500-231569-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-231569-1

Comments

No additional comments.

Receipt

The samples were received on 4/1/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1° C.

GC/MS VOA

Method 624.1: The method blank ran after the sample. Generally the method blank is analyzed prior to the sample(s). The samples and reported method blank were all non detect for the requested analytes. MB 500-706256/33

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

GC/MS Semi VOA

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

General Chemistry

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

Organic Prep

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



Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	EPA	EET CHI
625.1	Semivolatile Organic Compounds (GC/MS)	EPA	EET CHI
1664B	HEM and SGT-HEM	1664B	EET CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	EET CHI
1664B	HEM and SGT-HEM (SPE)	1664B	EET CHI
625	Liquid-Liquid Extraction	EPA	EET CHI

Protocol References:

- 1664B = EPA-821-98-002
- EPA = US Environmental Protection Agency
- SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

- EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-231569-1	V-200-A	Water	03/31/23 10:35	04/01/23 10:00
500-231569-2	V-900-A	Water	03/31/23 11:00	04/01/23 10:00
500-231569-3	Trip Blank (3-31-23)	Water	03/31/23 00:00	04/01/23 10:00

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231569-1

Date Collected: 03/31/23 10:35

Matrix: Water

Date Received: 04/01/23 10:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			04/06/23 21:48	1
Toluene	<0.15		0.50	0.15	ug/L			04/06/23 21:48	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/06/23 21:48	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/06/23 21:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	93		70 - 130		04/06/23 21:48	1
4-Bromofluorobenzene (Surr)	101		70 - 130		04/06/23 21:48	1
1,2-Dichloroethane-d4 (Surr)	86		70 - 130		04/06/23 21:48	1
Dibromofluoromethane	98		70 - 130		04/06/23 21:48	1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.11		0.87	0.11	ug/L		04/04/23 08:11	04/06/23 16:57	1
Acenaphthylene	<0.12		0.87	0.12	ug/L		04/04/23 08:11	04/06/23 16:57	1
Anthracene	<0.16		0.87	0.16	ug/L		04/04/23 08:11	04/06/23 16:57	1
Benzo[a]anthracene	<0.057		0.87	0.057	ug/L		04/04/23 08:11	04/06/23 16:57	1
Benzo[a]pyrene	<0.066		0.87	0.066	ug/L		04/04/23 08:11	04/06/23 16:57	1
Benzo[b]fluoranthene	<0.071		0.87	0.071	ug/L		04/04/23 08:11	04/06/23 16:57	1
Benzo[g,h,i]perylene	<0.42		0.87	0.42	ug/L		04/04/23 08:11	04/06/23 16:57	1
Benzo[k]fluoranthene	<0.15		0.87	0.15	ug/L		04/04/23 08:11	04/06/23 16:57	1
Chrysene	<0.082		0.87	0.082	ug/L		04/04/23 08:11	04/06/23 16:57	1
Dibenz(a,h)anthracene	<0.099		0.87	0.099	ug/L		04/04/23 08:11	04/06/23 16:57	1
Fluoranthene	<0.18		0.87	0.18	ug/L		04/04/23 08:11	04/06/23 16:57	1
Fluorene	<0.15		0.87	0.15	ug/L		04/04/23 08:11	04/06/23 16:57	1
Indeno[1,2,3-cd]pyrene	<0.067		0.87	0.067	ug/L		04/04/23 08:11	04/06/23 16:57	1
1-Methylnaphthalene	<0.26		1.7	0.26	ug/L		04/04/23 08:11	04/06/23 16:57	1
2-Methylnaphthalene	<0.074		1.7	0.074	ug/L		04/04/23 08:11	04/06/23 16:57	1
Naphthalene	<0.14		0.87	0.14	ug/L		04/04/23 08:11	04/06/23 16:57	1
Phenanthrene	<0.18		0.87	0.18	ug/L		04/04/23 08:11	04/06/23 16:57	1
Pyrene	<0.20		0.87	0.20	ug/L		04/04/23 08:11	04/06/23 16:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	75		34 - 110	04/04/23 08:11	04/06/23 16:57	1
Nitrobenzene-d5	78		36 - 120	04/04/23 08:11	04/06/23 16:57	1
Terphenyl-d14	115		40 - 145	04/04/23 08:11	04/06/23 16:57	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease) (1664B)	1.3	J	5.0	1.3	mg/L		04/07/23 08:12	04/07/23 08:17	1
Total Suspended Solids (SM 2540D)	3.8	J	5.0	1.9	mg/L			04/06/23 14:53	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Client Sample ID: V-900-A

Lab Sample ID: 500-231569-2

Date Collected: 03/31/23 11:00

Matrix: Water

Date Received: 04/01/23 10:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			04/06/23 22:14	1
Toluene	<0.15		0.50	0.15	ug/L			04/06/23 22:14	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/06/23 22:14	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/06/23 22:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		70 - 130		04/06/23 22:14	1
4-Bromofluorobenzene (Surr)	102		70 - 130		04/06/23 22:14	1
1,2-Dichloroethane-d4 (Surr)	87		70 - 130		04/06/23 22:14	1
Dibromofluoromethane	98		70 - 130		04/06/23 22:14	1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.094		0.76	0.094	ug/L		04/04/23 08:11	04/06/23 17:22	1
Acenaphthylene	<0.10		0.76	0.10	ug/L		04/04/23 08:11	04/06/23 17:22	1
Anthracene	<0.14		0.76	0.14	ug/L		04/04/23 08:11	04/06/23 17:22	1
Benzo[a]anthracene	<0.050		0.76	0.050	ug/L		04/04/23 08:11	04/06/23 17:22	1
Benzo[a]pyrene	<0.058		0.76	0.058	ug/L		04/04/23 08:11	04/06/23 17:22	1
Benzo[b]fluoranthene	<0.062		0.76	0.062	ug/L		04/04/23 08:11	04/06/23 17:22	1
Benzo[g,h,i]perylene	<0.37		0.76	0.37	ug/L		04/04/23 08:11	04/06/23 17:22	1
Benzo[k]fluoranthene	<0.13		0.76	0.13	ug/L		04/04/23 08:11	04/06/23 17:22	1
Chrysene	<0.071		0.76	0.071	ug/L		04/04/23 08:11	04/06/23 17:22	1
Dibenz(a,h)anthracene	<0.086		0.76	0.086	ug/L		04/04/23 08:11	04/06/23 17:22	1
Fluoranthene	<0.16		0.76	0.16	ug/L		04/04/23 08:11	04/06/23 17:22	1
Fluorene	<0.13		0.76	0.13	ug/L		04/04/23 08:11	04/06/23 17:22	1
Indeno[1,2,3-cd]pyrene	<0.058		0.76	0.058	ug/L		04/04/23 08:11	04/06/23 17:22	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		04/04/23 08:11	04/06/23 17:22	1
2-Methylnaphthalene	<0.064		1.5	0.064	ug/L		04/04/23 08:11	04/06/23 17:22	1
Naphthalene	<0.12		0.76	0.12	ug/L		04/04/23 08:11	04/06/23 17:22	1
Phenanthrene	<0.16		0.76	0.16	ug/L		04/04/23 08:11	04/06/23 17:22	1
Pyrene	<0.17		0.76	0.17	ug/L		04/04/23 08:11	04/06/23 17:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	71		34 - 110	04/04/23 08:11	04/06/23 17:22	1
Nitrobenzene-d5	75		36 - 120	04/04/23 08:11	04/06/23 17:22	1
Terphenyl-d14	122		40 - 145	04/04/23 08:11	04/06/23 17:22	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease) (1664B)	<1.3		5.0	1.3	mg/L		04/07/23 08:12	04/07/23 08:17	1
Total Suspended Solids (SM 2540D)	<1.9		5.0	1.9	mg/L			04/06/23 14:56	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Client Sample ID: Trip Blank (3-31-23)

Lab Sample ID: 500-231569-3

Date Collected: 03/31/23 00:00

Matrix: Water

Date Received: 04/01/23 10:00

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			04/06/23 15:10	1
Toluene	<0.15		0.50	0.15	ug/L			04/06/23 15:10	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/06/23 15:10	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/06/23 15:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	96		70 - 130		04/06/23 15:10	1
<i>4-Bromofluorobenzene (Surr)</i>	101		70 - 130		04/06/23 15:10	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	83		70 - 130		04/06/23 15:10	1
<i>Dibromofluoromethane</i>	94		70 - 130		04/06/23 15:10	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL	BFB	DCA	DBFM
		(70-130)	(70-130)	(70-130)	(70-130)
500-231569-1	V-200-A	93	101	86	98
500-231569-2	V-900-A	94	102	87	98
500-231569-3	Trip Blank (3-31-23)	96	101	83	94
LCS 500-706256/5	Lab Control Sample	96	104	78	91
MB 500-706256/33	Method Blank	99	105	80	92

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

DBFM = Dibromofluoromethane

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	FBP	NBZ	TPHL
		(34-110)	(36-120)	(40-145)
500-231569-1	V-200-A	75	78	115
500-231569-2	V-900-A	71	75	122
LCS 500-705713/2-A	Lab Control Sample	85	85	112
LCSD 500-705713/3-A	Lab Control Sample Dup	76	77	100
MB 500-705713/1-A	Method Blank	79	70	111

Surrogate Legend

FBP = 2-Fluorobiphenyl

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-706256/33
Matrix: Water
Analysis Batch: 706256

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			04/06/23 16:10	1
Toluene	<0.15		0.50	0.15	ug/L			04/06/23 16:10	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/06/23 16:10	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/06/23 16:10	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	99		70 - 130		04/06/23 16:10	1
4-Bromofluorobenzene (Surr)	105		70 - 130		04/06/23 16:10	1
1,2-Dichloroethane-d4 (Surr)	80		70 - 130		04/06/23 16:10	1
Dibromofluoromethane	92		70 - 130		04/06/23 16:10	1

Lab Sample ID: LCS 500-706256/5
Matrix: Water
Analysis Batch: 706256

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Benzene	40.0	47.6		ug/L		119	65 - 135
Toluene	40.0	47.7		ug/L		119	70 - 130
Ethylbenzene	40.0	49.3		ug/L		123	60 - 140

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	96		70 - 130
4-Bromofluorobenzene (Surr)	104		70 - 130
1,2-Dichloroethane-d4 (Surr)	78		70 - 130
Dibromofluoromethane	91		70 - 130

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-705713/1-A
Matrix: Water
Analysis Batch: 706139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 705713

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		04/04/23 08:11	04/06/23 01:28	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		04/04/23 08:11	04/06/23 01:28	1
Anthracene	<0.15		0.80	0.15	ug/L		04/04/23 08:11	04/06/23 01:28	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		04/04/23 08:11	04/06/23 01:28	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		04/04/23 08:11	04/06/23 01:28	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		04/04/23 08:11	04/06/23 01:28	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		04/04/23 08:11	04/06/23 01:28	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		04/04/23 08:11	04/06/23 01:28	1
Chrysene	<0.075		0.80	0.075	ug/L		04/04/23 08:11	04/06/23 01:28	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		04/04/23 08:11	04/06/23 01:28	1
Fluoranthene	<0.16		0.80	0.16	ug/L		04/04/23 08:11	04/06/23 01:28	1
Fluorene	<0.13		0.80	0.13	ug/L		04/04/23 08:11	04/06/23 01:28	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		04/04/23 08:11	04/06/23 01:28	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		04/04/23 08:11	04/06/23 01:28	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		04/04/23 08:11	04/06/23 01:28	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-705713/1-A
Matrix: Water
Analysis Batch: 706139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 705713

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.12		0.80	0.12	ug/L		04/04/23 08:11	04/06/23 01:28	1
Phenanthrene	<0.17		0.80	0.17	ug/L		04/04/23 08:11	04/06/23 01:28	1
Pyrene	<0.18		0.80	0.18	ug/L		04/04/23 08:11	04/06/23 01:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	79		34 - 110	04/04/23 08:11	04/06/23 01:28	1
Nitrobenzene-d5	70		36 - 120	04/04/23 08:11	04/06/23 01:28	1
Terphenyl-d14	111		40 - 145	04/04/23 08:11	04/06/23 01:28	1

Lab Sample ID: LCS 500-705713/2-A
Matrix: Water
Analysis Batch: 706139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 705713

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	32.0	24.2		ug/L		76	47 - 145
Acenaphthylene	32.0	25.7		ug/L		80	33 - 145
Anthracene	32.0	33.2		ug/L		104	27 - 133
Benzo[a]anthracene	32.0	35.1		ug/L		110	33 - 143
Benzo[a]pyrene	32.0	37.4		ug/L		117	17 - 163
Benzo[b]fluoranthene	32.0	36.8		ug/L		115	24 - 159
Benzo[g,h,i]perylene	32.0	36.1		ug/L		113	10 - 219
Benzo[k]fluoranthene	32.0	38.0		ug/L		119	11 - 162
Chrysene	32.0	35.6		ug/L		111	17 - 168
Dibenz(a,h)anthracene	32.0	38.0		ug/L		119	10 - 227
Fluoranthene	32.0	35.7		ug/L		111	26 - 137
Fluorene	32.0	28.6		ug/L		89	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	35.3		ug/L		110	10 - 171
1-Methylnaphthalene	32.0	20.9		ug/L		65	
2-Methylnaphthalene	32.0	20.9		ug/L		65	
Naphthalene	32.0	20.4		ug/L		64	21 - 133
Phenanthrene	32.0	32.8		ug/L		103	54 - 120
Pyrene	32.0	34.9		ug/L		109	52 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	85		34 - 110
Nitrobenzene-d5	85		36 - 120
Terphenyl-d14	112		40 - 145

Lab Sample ID: LCSD 500-705713/3-A
Matrix: Water
Analysis Batch: 706139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 705713

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acenaphthene	32.0	21.3		ug/L		67	47 - 145	13	20
Acenaphthylene	32.0	22.3		ug/L		70	33 - 145	14	20
Anthracene	32.0	28.8		ug/L		90	27 - 133	14	20
Benzo[a]anthracene	32.0	29.7		ug/L		93	33 - 143	17	20
Benzo[a]pyrene	32.0	32.7		ug/L		102	17 - 163	13	20

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-705713/3-A
Matrix: Water
Analysis Batch: 706139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 705713

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	32.9		ug/L		103	24 - 159	11	20
Benzo[g,h,i]perylene	32.0	31.8		ug/L		99	10 - 219	13	20
Benzo[k]fluoranthene	32.0	32.6		ug/L		102	11 - 162	15	20
Chrysene	32.0	30.5		ug/L		95	17 - 168	16	20
Dibenz(a,h)anthracene	32.0	33.5		ug/L		105	10 - 227	13	20
Fluoranthene	32.0	30.6		ug/L		96	26 - 137	15	20
Fluorene	32.0	25.0		ug/L		78	59 - 121	14	20
Indeno[1,2,3-cd]pyrene	32.0	30.8		ug/L		96	10 - 171	14	20
1-Methylnaphthalene	32.0	17.5		ug/L		55		17	
2-Methylnaphthalene	32.0	17.5		ug/L		55		18	
Naphthalene	32.0	17.1		ug/L		53	21 - 133	17	20
Phenanthrene	32.0	27.9		ug/L		87	54 - 120	16	20
Pyrene	32.0	30.0		ug/L		94	52 - 120	15	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorobiphenyl	76		34 - 110
Nitrobenzene-d5	77		36 - 120
Terphenyl-d14	100		40 - 145

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-706509/1-A
Matrix: Water
Analysis Batch: 706511

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 706509

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		04/07/23 08:12	04/07/23 08:17	1

Lab Sample ID: LCS 500-706509/2-A
Matrix: Water
Analysis Batch: 706511

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 706509

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil & Grease)	40.0	34.70		mg/L		87	78 - 114

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 500-706384/2
Matrix: Water
Analysis Batch: 706384

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<1.9		5.0	1.9	mg/L			04/06/23 14:32	1

Lab Sample ID: LCS 500-706384/1
Matrix: Water
Analysis Batch: 706384

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	200	230.5		mg/L		115	80 - 120

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QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: 500-231569-2 MS
Matrix: Water
Analysis Batch: 706384

Client Sample ID: V-900-A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	<1.9		100	76.00		mg/L		76	75 - 125

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Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Client Sample ID: V-200-A
Date Collected: 03/31/23 10:35
Date Received: 04/01/23 10:00

Lab Sample ID: 500-231569-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	706256	W1T	EET CHI	04/06/23 21:48
Total/NA	Prep	625			705713	TS	EET CHI	04/04/23 08:11
Total/NA	Analysis	625.1		1	706224	JSB	EET CHI	04/06/23 16:57
Total/NA	Prep	1664B			706509	AM	EET CHI	04/07/23 08:12
Total/NA	Analysis	1664B		1	706511	AM	EET CHI	04/07/23 08:17
Total/NA	Analysis	SM 2540D		1	706384	MB	EET CHI	04/06/23 14:53 - 04/06/23 14:56 ¹

Client Sample ID: V-900-A
Date Collected: 03/31/23 11:00
Date Received: 04/01/23 10:00

Lab Sample ID: 500-231569-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	706256	W1T	EET CHI	04/06/23 22:14
Total/NA	Prep	625			705713	TS	EET CHI	04/04/23 08:11
Total/NA	Analysis	625.1		1	706224	JSB	EET CHI	04/06/23 17:22
Total/NA	Prep	1664B			706509	AM	EET CHI	04/07/23 08:12
Total/NA	Analysis	1664B		1	706511	AM	EET CHI	04/07/23 08:17
Total/NA	Analysis	SM 2540D		1	706384	MB	EET CHI	04/06/23 14:56 - 04/06/23 14:58 ¹

Client Sample ID: Trip Blank (3-31-23)
Date Collected: 03/31/23 00:00
Date Received: 04/01/23 10:00

Lab Sample ID: 500-231569-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	706256	W1T	EET CHI	04/06/23 15:10

¹ Completion dates and times are reported or not reported per method requirements or individual lab discretion.

Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231569-1

Laboratory: Eurofins Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-23

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Eurofins TestAmerica, Chicago
2417 Bond Street

University Park, IL 60484-3101
phone 708 534 5200 fax 708 534 5211

Ref: Date: 30Nov22
Dep: Wgt: 25.00 LBS
DV: 0.00

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

eurofins



Svcs PRIORITY OVERNIGHT Master 6155 6317 3908
TRCK 6155 6317 3988

as, Inc d/b/a Eurofins TestAmerica

Reg

Project Manager: Lisa Rutkowski

500-231569 COC

Client Contact		Email: N/A		Sampler: Jacob Namnger		Date: 3-31-23		COC No 1										
Arcadis U S , Inc		Tel/Fax: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		1 of 1 COCs										
126 North Jefferson Street, Suite 400		Analysis Turnaround Time																
Milwaukee, WI 53202		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <u>Standard</u> <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day																
Phone		<div style="display: flex; justify-content: space-around;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Filtered Sample (Y/N)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Perform MS / MSD (Y/N)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">BTEX Method 624</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Oil & Grease Method 1664</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TSS Method 2540D</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PAHs Method 625</div> </div>																
FAX																		
Project Name Marinette, WI																		
Site Marinette, WI																		
P O # 30171092 4 1 1 (WPDES)		Lab Project Number		50015522														
		500-231569		Sample Specific Notes														
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	BTEX Method 624	Oil & Grease Method 1664	TSS Method 2540D	PAHs Method 625						
V-200-A		3-31-23	10:35	G	W	8	N	N	X	X	X	X						System Influent
V-900-A		↓	11:00	G	W	8	N	N	X	X	X	X						System Effluent
Trip Blank (3-31-23)		↓	—	G	W	1	N	N	X									Trip Blank
<div style="display: flex; justify-content: space-between;"> Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2 3 - - </div>										Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months								
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown																		
Special Instructions/QC Requirements & Comments: 5 day-TAT V-200-A-PH = 7.19 V-900-A-PH = 7.03																		
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No				Custody Seal No				Cooler Temp (°C) Obs'd 1.7 Corr'd 2.1				Therm ID No						
Relinquished by Jacob Namnger				Company Barley Excavating				Date/Time 3-31-23/1300				Received by Fed Ex						
Relinquished by				Company				Date/Time				Received by						
Relinquished by				Company				Date/Time				Received in Laboratory by Stephanie Hernandez						

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-231569-1

Login Number: 231569

List Source: Eurofins Chicago

List Number: 1

Creator: Hernandez, Stephanie

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 4/11/2023 10:26:11 AM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-231579-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



Generated
4/11/2023 10:26:11 AM

Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Job ID: 500-231579-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-231579-1

Comments

No additional comments.

Receipt

The samples were received on 4/1/2023 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1° C.

LCMS

Method 537 (modified): The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: 500-231579-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The sample was diluted within calibration range, and both sets of data were reported.

Method 537 (modified): Results for sample 500-231579-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10X analysis is 88% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-665717 recovered below the lower control limit for Perfluoro-n-octadecanoic acid (PFODA). The samples associated with this CCV were non-detects for the affected analytes. The analyte is non-controlled/monitored by the client; therefore the data have been reported: 500-231579-1, 500-231579-2 and CCV 320-665717/13.

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

Organic Prep

Method 3535: The following sample in preparation batch 320-665309 was yellow in color following extraction. 500-231579-1 preparation batch 320-665309

Method: PFC_IDA_WI
Matrix: Aqueous

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-665309.

preparation batch 320-665309
Method: PFC_IDA_WI
Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-231579-1	V-200-A	Water	03/31/23 10:30	04/01/23 09:15
500-231579-2	V-900-A	Water	03/31/23 10:55	04/01/23 09:15

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231579-1

Date Collected: 03/31/23 10:30

Matrix: Water

Date Received: 04/01/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	220		4.3	2.1	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoropentanoic acid (PFPeA)	590	E	1.7	0.42	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorohexanoic acid (PFHxA)	360	E	1.7	0.50	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoroheptanoic acid (PFHpA)	390	E	1.7	0.21	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorooctanoic acid (PFOA)	560	E	1.7	0.73	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorononanoic acid (PFNA)	130		1.7	0.23	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorodecanoic acid (PFDA)	71		1.7	0.27	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoroundecanoic acid (PFUnA)	27		1.7	0.94	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorododecanoic acid (PFDoA)	2.9		1.7	0.47	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.81	^c	1.7	0.81	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorobutanesulfonic acid (PFBS)	11		1.7	0.17	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoropentanesulfonic acid (PFPeS)	6.5		1.7	0.26	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorohexanesulfonic acid (PFHxS)	150		1.7	0.49	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoroheptanesulfonic acid (PFHpS)	4.5		1.7	0.16	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorooctanesulfonic acid (PFOS)	310		1.7	0.46	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluoronanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		04/02/23 19:18	04/05/23 18:19	1
Perfluorooctanesulfonamide (FOSA)	5.2		1.7	0.84	ng/L		04/02/23 19:18	04/05/23 18:19	1
NEtFOSA	<0.75		1.7	0.75	ng/L		04/02/23 19:18	04/05/23 18:19	1
NMeFOSA	<0.37		1.7	0.37	ng/L		04/02/23 19:18	04/05/23 18:19	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		04/02/23 19:18	04/05/23 18:19	1
NEtFOSAA	2.4	J	4.3	1.1	ng/L		04/02/23 19:18	04/05/23 18:19	1
NMeFOSE	<1.2		3.4	1.2	ng/L		04/02/23 19:18	04/05/23 18:19	1
NEtFOSE	<0.73		1.7	0.73	ng/L		04/02/23 19:18	04/05/23 18:19	1
4:2 FTS	7.2		1.7	0.21	ng/L		04/02/23 19:18	04/05/23 18:19	1
6:2 FTS	960	E	4.3	2.1	ng/L		04/02/23 19:18	04/05/23 18:19	1
8:2 FTS	270		1.7	0.39	ng/L		04/02/23 19:18	04/05/23 18:19	1
10:2 FTS	43		1.7	0.57	ng/L		04/02/23 19:18	04/05/23 18:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		04/02/23 19:18	04/05/23 18:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		04/02/23 19:18	04/05/23 18:19	1
F-53B Major	<0.21		1.7	0.21	ng/L		04/02/23 19:18	04/05/23 18:19	1
F-53B Minor	<0.27		1.7	0.27	ng/L		04/02/23 19:18	04/05/23 18:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	80		25 - 150				04/02/23 19:18	04/05/23 18:19	1
13C5 PFPeA	93		25 - 150				04/02/23 19:18	04/05/23 18:19	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231579-1

Date Collected: 03/31/23 10:30

Matrix: Water

Date Received: 04/01/23 09:15

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C4 PFHpA	87		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C4 PFOA	88		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C5 PFNA	85		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C2 PFDA	85		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C2 PFUnA	83		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C2 PFDoA	87		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C2 PFTeDA	70		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C2 PFHxDA	53		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C3 PFBS	80		25 - 150	04/02/23 19:18	04/05/23 18:19	1
18O2 PFHxS	90		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C4 PFOS	90		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C8 FOSA	77		10 - 150	04/02/23 19:18	04/05/23 18:19	1
d3-NMeFOSAA	75		25 - 150	04/02/23 19:18	04/05/23 18:19	1
d5-NEtFOSAA	84		25 - 150	04/02/23 19:18	04/05/23 18:19	1
d-N-MeFOSA-M	71		10 - 150	04/02/23 19:18	04/05/23 18:19	1
d-N-EtFOSA-M	64		10 - 150	04/02/23 19:18	04/05/23 18:19	1
d7-N-MeFOSE-M	73		10 - 150	04/02/23 19:18	04/05/23 18:19	1
d9-N-EtFOSE-M	65		10 - 150	04/02/23 19:18	04/05/23 18:19	1
M2-4:2 FTS	75		25 - 150	04/02/23 19:18	04/05/23 18:19	1
M2-6:2 FTS	84		25 - 150	04/02/23 19:18	04/05/23 18:19	1
M2-8:2 FTS	85		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C3 HFPO-DA	102		25 - 150	04/02/23 19:18	04/05/23 18:19	1
13C2 10:2 FTS	85		25 - 150	04/02/23 19:18	04/05/23 18:19	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	240		43	21	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoropentanoic acid (PFPeA)	730		17	4.2	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorohexanoic acid (PFHxA)	430		17	5.0	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoroheptanoic acid (PFHpA)	410		17	2.1	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorooctanoic acid (PFOA)	790		17	7.3	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorononanoic acid (PFNA)	130		17	2.3	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorodecanoic acid (PFDA)	65		17	2.7	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoroundecanoic acid (PFUnA)	22		17	9.4	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorododecanoic acid (PFDoA)	<4.7		17	4.7	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorotridecanoic acid (PFTriA)	<11		17	11	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorotetradecanoic acid (PFTeA)	<6.3		17	6.3	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<7.6		17	7.6	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.1		17	8.1	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorobutanesulfonic acid (PFBS)	12 J		17	1.7	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoropentanesulfonic acid (PFPeS)	7.1 J		17	2.6	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorohexanesulfonic acid (PFHxS)	150		17	4.9	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluoroheptanesulfonic acid (PFHpS)	5.2 J		17	1.6	ng/L		04/02/23 19:18	04/07/23 01:36	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231579-1

Date Collected: 03/31/23 10:30

Matrix: Water

Date Received: 04/01/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	370		17	4.6	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorononanesulfonic acid (PFNS)	<3.2		17	3.2	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorodecanesulfonic acid (PFDS)	<2.7		17	2.7	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorododecanesulfonic acid (PFDoS)	<8.3		17	8.3	ng/L		04/02/23 19:18	04/07/23 01:36	10
Perfluorooctanesulfonamide (FOSA)	<8.4		17	8.4	ng/L		04/02/23 19:18	04/07/23 01:36	10
NEtFOSA	<7.5		17	7.5	ng/L		04/02/23 19:18	04/07/23 01:36	10
NMeFOSA	<3.7		17	3.7	ng/L		04/02/23 19:18	04/07/23 01:36	10
NMeFOSAA	<10		43	10	ng/L		04/02/23 19:18	04/07/23 01:36	10
NEtFOSAA	<11		43	11	ng/L		04/02/23 19:18	04/07/23 01:36	10
NMeFOSE	<12		34	12	ng/L		04/02/23 19:18	04/07/23 01:36	10
NEtFOSE	<7.3		17	7.3	ng/L		04/02/23 19:18	04/07/23 01:36	10
4:2 FTS	10	J	17	2.1	ng/L		04/02/23 19:18	04/07/23 01:36	10
6:2 FTS	1100		43	21	ng/L		04/02/23 19:18	04/07/23 01:36	10
8:2 FTS	270		17	3.9	ng/L		04/02/23 19:18	04/07/23 01:36	10
10:2 FTS	40		17	5.7	ng/L		04/02/23 19:18	04/07/23 01:36	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.4		17	3.4	ng/L		04/02/23 19:18	04/07/23 01:36	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<13		34	13	ng/L		04/02/23 19:18	04/07/23 01:36	10
F-53B Major	<2.1		17	2.1	ng/L		04/02/23 19:18	04/07/23 01:36	10
F-53B Minor	<2.7		17	2.7	ng/L		04/02/23 19:18	04/07/23 01:36	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	85		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C5 PFPeA	89		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 PFHxA	81		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C4 PFHpA	87		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C4 PFOA	87		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C5 PFNA	80		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 PFDA	81		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 PFUnA	82		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 PFDoA	74		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 PFTeDA	58		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 PFHxDA	40		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C3 PFBS	72		25 - 150	04/02/23 19:18	04/07/23 01:36	10
18O2 PFHxS	83		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C4 PFOS	77		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C8 FOSA	75		10 - 150	04/02/23 19:18	04/07/23 01:36	10
d3-NMeFOSAA	82		25 - 150	04/02/23 19:18	04/07/23 01:36	10
d5-NEtFOSAA	75		25 - 150	04/02/23 19:18	04/07/23 01:36	10
d-N-MeFOSA-M	58		10 - 150	04/02/23 19:18	04/07/23 01:36	10
d-N-EtFOSA-M	52		10 - 150	04/02/23 19:18	04/07/23 01:36	10
d7-N-MeFOSE-M	60		10 - 150	04/02/23 19:18	04/07/23 01:36	10
d9-N-EtFOSE-M	52		10 - 150	04/02/23 19:18	04/07/23 01:36	10
M2-4:2 FTS	78		25 - 150	04/02/23 19:18	04/07/23 01:36	10
M2-6:2 FTS	93		25 - 150	04/02/23 19:18	04/07/23 01:36	10
M2-8:2 FTS	81		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C3 HFPO-DA	79		25 - 150	04/02/23 19:18	04/07/23 01:36	10
13C2 10:2 FTS	65		25 - 150	04/02/23 19:18	04/07/23 01:36	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Client Sample ID: V-900-A

Lab Sample ID: 500-231579-2

Date Collected: 03/31/23 10:55

Matrix: Water

Date Received: 04/01/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.5	2.2	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoropentanoic acid (PFPeA)	<0.44		1.8	0.44	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorooctanoic acid (PFOA)	<0.77		1.8	0.77	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoroundecanoic acid (PFUnA)	<0.99		1.8	0.99	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorotetradecanoic acid (PFTeA)	<0.66		1.8	0.66	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.80		1.8	0.80	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.85	^c	1.8	0.85	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorooctanesulfonic acid (PFOS)	<0.49		1.8	0.49	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		04/02/23 19:18	04/05/23 18:30	1
Perfluorooctanesulfonamide (FOSA)	<0.88		1.8	0.88	ng/L		04/02/23 19:18	04/05/23 18:30	1
NEtFOSA	<0.78		1.8	0.78	ng/L		04/02/23 19:18	04/05/23 18:30	1
NMeFOSA	<0.39		1.8	0.39	ng/L		04/02/23 19:18	04/05/23 18:30	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		04/02/23 19:18	04/05/23 18:30	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		04/02/23 19:18	04/05/23 18:30	1
NMeFOSE	<1.3		3.6	1.3	ng/L		04/02/23 19:18	04/05/23 18:30	1
NEtFOSE	<0.77		1.8	0.77	ng/L		04/02/23 19:18	04/05/23 18:30	1
4:2 FTS	<0.22		1.8	0.22	ng/L		04/02/23 19:18	04/05/23 18:30	1
6:2 FTS	<2.3		4.5	2.3	ng/L		04/02/23 19:18	04/05/23 18:30	1
8:2 FTS	<0.41		1.8	0.41	ng/L		04/02/23 19:18	04/05/23 18:30	1
10:2 FTS	1.5	J	1.8	0.60	ng/L		04/02/23 19:18	04/05/23 18:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		04/02/23 19:18	04/05/23 18:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.6	1.4	ng/L		04/02/23 19:18	04/05/23 18:30	1
F-53B Major	<0.22		1.8	0.22	ng/L		04/02/23 19:18	04/05/23 18:30	1
F-53B Minor	<0.29		1.8	0.29	ng/L		04/02/23 19:18	04/05/23 18:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	102		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C5 PFPeA	115		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C2 PFHxA	97		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C4 PFHpA	109		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C4 PFOA	105		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C5 PFNA	106		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C2 PFDA	90		25 - 150	04/02/23 19:18	04/05/23 18:30	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Client Sample ID: V-900-A
Date Collected: 03/31/23 10:55
Date Received: 04/01/23 09:15

Lab Sample ID: 500-231579-2
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	86		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C2 PFlDoA	90		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C2 PFlTeDA	103		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C2 PFlHxDA	86		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C3 PFlBS	91		25 - 150	04/02/23 19:18	04/05/23 18:30	1
18O2 PFlHxS	98		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C4 PFlOS	97		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C8 FOSA	94		10 - 150	04/02/23 19:18	04/05/23 18:30	1
d3-NMeFOSAA	80		25 - 150	04/02/23 19:18	04/05/23 18:30	1
d5-NEtFOSAA	83		25 - 150	04/02/23 19:18	04/05/23 18:30	1
d-N-MeFOSA-M	84		10 - 150	04/02/23 19:18	04/05/23 18:30	1
d-N-EtFOSA-M	85		10 - 150	04/02/23 19:18	04/05/23 18:30	1
d7-N-MeFOSE-M	86		10 - 150	04/02/23 19:18	04/05/23 18:30	1
d9-N-EtFOSE-M	86		10 - 150	04/02/23 19:18	04/05/23 18:30	1
M2-4:2 FTS	69		25 - 150	04/02/23 19:18	04/05/23 18:30	1
M2-6:2 FTS	98		25 - 150	04/02/23 19:18	04/05/23 18:30	1
M2-8:2 FTS	88		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C3 HFPO-DA	102		25 - 150	04/02/23 19:18	04/05/23 18:30	1
13C2 10:2 FTS	93		25 - 150	04/02/23 19:18	04/05/23 18:30	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Qualifiers

LCMS

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-665309/1-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 665309

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		04/02/23 19:18	04/05/23 16:16	1
NEtFOSA	<0.87		2.0	0.87	ng/L		04/02/23 19:18	04/05/23 16:16	1
NMeFOSA	<0.43		2.0	0.43	ng/L		04/02/23 19:18	04/05/23 16:16	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		04/02/23 19:18	04/05/23 16:16	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		04/02/23 19:18	04/05/23 16:16	1
NMeFOSE	<1.4		4.0	1.4	ng/L		04/02/23 19:18	04/05/23 16:16	1
NEtFOSE	<0.85		2.0	0.85	ng/L		04/02/23 19:18	04/05/23 16:16	1
4:2 FTS	<0.24		2.0	0.24	ng/L		04/02/23 19:18	04/05/23 16:16	1
6:2 FTS	<2.5		5.0	2.5	ng/L		04/02/23 19:18	04/05/23 16:16	1
8:2 FTS	<0.46		2.0	0.46	ng/L		04/02/23 19:18	04/05/23 16:16	1
10:2 FTS	<0.67		2.0	0.67	ng/L		04/02/23 19:18	04/05/23 16:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		04/02/23 19:18	04/05/23 16:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		04/02/23 19:18	04/05/23 16:16	1
F-53B Major	<0.24		2.0	0.24	ng/L		04/02/23 19:18	04/05/23 16:16	1
F-53B Minor	<0.32		2.0	0.32	ng/L		04/02/23 19:18	04/05/23 16:16	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150				04/02/23 19:18	04/05/23 16:16	1
13C5 PFPeA	96		25 - 150				04/02/23 19:18	04/05/23 16:16	1
13C2 PFHxA	86		25 - 150				04/02/23 19:18	04/05/23 16:16	1
13C4 PFHpA	95		25 - 150				04/02/23 19:18	04/05/23 16:16	1
13C4 PFOA	95		25 - 150				04/02/23 19:18	04/05/23 16:16	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

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

Lab Sample ID: MB 320-665309/1-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 665309

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	97		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFDA	93		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFUnA	91		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFDoA	90		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFTeDA	98		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFHxDA	83		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C3 PFBS	83		25 - 150	04/02/23 19:18	04/05/23 16:16	1
18O2 PFHxS	95		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C4 PFOS	89		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C8 FOSA	82		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d3-NMeFOSAA	74		25 - 150	04/02/23 19:18	04/05/23 16:16	1
d5-NEtFOSAA	82		25 - 150	04/02/23 19:18	04/05/23 16:16	1
d-N-MeFOSA-M	81		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d-N-EtFOSA-M	75		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d7-N-MeFOSE-M	91		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d9-N-EtFOSE-M	91		10 - 150	04/02/23 19:18	04/05/23 16:16	1
M2-4:2 FTS	70		25 - 150	04/02/23 19:18	04/05/23 16:16	1
M2-6:2 FTS	84		25 - 150	04/02/23 19:18	04/05/23 16:16	1
M2-8:2 FTS	87		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C3 HFPO-DA	95		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 10:2 FTS	84		25 - 150	04/02/23 19:18	04/05/23 16:16	1

Lab Sample ID: LCS 320-665309/2-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	42.1		ng/L		105	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	44.5		ng/L		111	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.8		ng/L		109	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	43.9		ng/L		110	60 - 135
Perfluorononanoic acid (PFNA)	40.0	50.5		ng/L		126	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	47.7		ng/L		119	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	45.4		ng/L		114	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	46.5		ng/L		116	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	41.2		ng/L		103	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	47.0		ng/L		117	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.3		ng/L		98	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	37.3		ng/L		105	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	44.0		ng/L		117	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

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

Lab Sample ID: LCS 320-665309/2-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.3		ng/L		102	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.0		ng/L		107	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	35.5		ng/L		95	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.9		ng/L		106	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.5		ng/L		105	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	43.5		ng/L		112	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.9		ng/L		107	60 - 135
NEtFOSA	40.0	42.3		ng/L		106	60 - 135
NMeFOSA	40.0	40.3		ng/L		101	60 - 135
NMeFOSAA	40.0	42.7		ng/L		107	60 - 135
NEtFOSAA	40.0	40.1		ng/L		100	60 - 135
NMeFOSE	40.0	38.7		ng/L		97	60 - 135
NEtFOSE	40.0	42.4		ng/L		106	60 - 135
4:2 FTS	37.5	40.2		ng/L		107	60 - 135
6:2 FTS	38.1	42.2		ng/L		111	60 - 135
8:2 FTS	38.4	36.4		ng/L		95	60 - 135
10:2 FTS	38.6	48.6		ng/L		126	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.6		ng/L		107	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.1		ng/L		100	60 - 135
F-53B Major	37.4	37.2		ng/L		100	60 - 135
F-53B Minor	37.8	41.8		ng/L		111	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	97		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	88		25 - 150
13C4 PFHpA	96		25 - 150
13C4 PFOA	96		25 - 150
13C5 PFNA	86		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	110		25 - 150
13C2 PFHxDA	97		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	100		25 - 150
13C4 PFOS	97		25 - 150
13C8 FOSA	92		10 - 150
d3-NMeFOSAA	85		25 - 150
d5-NEtFOSAA	94		25 - 150
d-N-MeFOSA-M	91		10 - 150
d-N-EtFOSA-M	88		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

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

Lab Sample ID: LCS 320-665309/2-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665309

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	96		10 - 150
d9-N-EtFOSE-M	97		10 - 150
M2-4:2 FTS	70		25 - 150
M2-6:2 FTS	86		25 - 150
M2-8:2 FTS	98		25 - 150
13C3 HFPO-DA	100		25 - 150
13C2 10:2 FTS	93		25 - 150

Lab Sample ID: LCSD 320-665309/3-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	47.2		ng/L		118	60 - 135	5	30	
Perfluoropentanoic acid (PFPeA)	40.0	42.1		ng/L		105	60 - 135	0	30	
Perfluorohexanoic acid (PFHxA)	40.0	45.4		ng/L		114	60 - 135	2	30	
Perfluoroheptanoic acid (PFHpA)	40.0	43.3		ng/L		108	60 - 135	1	30	
Perfluorooctanoic acid (PFOA)	40.0	41.3		ng/L		103	60 - 135	6	30	
Perfluorononanoic acid (PFNA)	40.0	43.2		ng/L		108	60 - 135	16	30	
Perfluorodecanoic acid (PFDA)	40.0	45.4		ng/L		114	60 - 135	9	30	
Perfluoroundecanoic acid (PFUnA)	40.0	44.8		ng/L		112	60 - 135	6	30	
Perfluorododecanoic acid (PFDoA)	40.0	46.4		ng/L		116	60 - 135	2	30	
Perfluorotridecanoic acid (PFTriA)	40.0	43.0		ng/L		108	60 - 135	8	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	60 - 135	3	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.2		ng/L		105	60 - 135	11	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.3		ng/L		98	60 - 135	0	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	38.3		ng/L		108	60 - 135	3	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	41.5		ng/L		110	60 - 135	6	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.6		ng/L		98	60 - 135	5	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.5		ng/L		104	60 - 135	4	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	35.1		ng/L		94	60 - 135	1	30	
Perfluorononanesulfonic acid (PFNS)	38.5	41.4		ng/L		108	60 - 135	1	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	42.6		ng/L		110	60 - 135	5	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	44.2		ng/L		114	60 - 135	1	30	
Perfluorooctanesulfonamide (FOSA)	40.0	40.8		ng/L		102	60 - 135	5	30	
NEtFOSA	40.0	41.3		ng/L		103	60 - 135	2	30	
NMeFOSA	40.0	39.6		ng/L		99	60 - 135	2	30	
NMeFOSAA	40.0	41.9		ng/L		105	60 - 135	2	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

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

Lab Sample ID: LCSD 320-665309/3-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	39.3		ng/L		98	60 - 135	2	30
NMeFOSE	40.0	39.9		ng/L		100	60 - 135	3	30
NEtFOSE	40.0	41.7		ng/L		104	60 - 135	2	30
4:2 FTS	37.5	31.1		ng/L		83	60 - 135	25	30
6:2 FTS	38.1	36.1		ng/L		95	60 - 135	16	30
8:2 FTS	38.4	41.0		ng/L		107	60 - 135	12	30
10:2 FTS	38.6	38.6		ng/L		100	60 - 135	23	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.7		ng/L		113	60 - 135	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		106	60 - 135	5	30
F-53B Major	37.4	40.4		ng/L		108	60 - 135	8	30
F-53B Minor	37.8	39.2		ng/L		104	60 - 135	6	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	92		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	85		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	89		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	106		25 - 150
13C2 PFHxDA	93		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	90		10 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	92		25 - 150
d-N-MeFOSA-M	86		10 - 150
d-N-EtFOSA-M	81		10 - 150
d7-N-MeFOSE-M	94		10 - 150
d9-N-EtFOSE-M	92		10 - 150
M2-4:2 FTS	78		25 - 150
M2-6:2 FTS	89		25 - 150
M2-8:2 FTS	80		25 - 150
13C3 HFPO-DA	101		25 - 150
13C2 10:2 FTS	112		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Client Sample ID: V-200-A
Date Collected: 03/31/23 10:30
Date Received: 04/01/23 09:15

Lab Sample ID: 500-231579-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535	DL		665309	FX	EET SAC	04/02/23 19:18
Total/NA	Analysis	537 (modified)	DL	10	666133	S1M	EET SAC	04/07/23 01:36
Total/NA	Prep	3535			665309	FX	EET SAC	04/02/23 19:18
Total/NA	Analysis	537 (modified)		1	665717	RS1	EET SAC	04/05/23 18:19

Client Sample ID: V-900-A
Date Collected: 03/31/23 10:55
Date Received: 04/01/23 09:15

Lab Sample ID: 500-231579-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			665309	FX	EET SAC	04/02/23 19:18
Total/NA	Analysis	537 (modified)		1	665717	RS1	EET SAC	04/05/23 18:30

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____ Project Name: Marinette, WI Site: Marinette, WI P O # 30171092.4.1.1 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sampler: Jacob Dominger Lab Contact: Sandie Fredrick Date: 3-31-23 Carrier: FedEx COC No.: 1 of 1 COCs	
Sample Identification V-200-A V-900-A		Sample Date: 3-31-23 Sample Time: 10:30 Sample Type (C=Comp, G=G/ab): G Matrix: W # of Cont.: 2		Filtered Sample (Y/N): N Perform MS/MSD (Y/N): N EPA 537 Modified (36 Compounds): X Sample Specific Notes: System Influent System Effluent	
500-231579 Chain of Custody					
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.					
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7					
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: Jacob Dominger Relinquished by: _____ Relinquished by: _____		Custody Seal No.: 205191 Company: Barley Excavating Date/Time: 3-31-23/1105 Received by: Fred Ex Company: EESA Date/Time: 4/1/23-915			
Relinquished by: _____ Date/Time: _____		Received in Laboratory by: _____ Date/Time: _____			



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-231579-1

SDG Number:

Login Number: 231579

List Number: 2

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 04/03/23 01:34 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051191
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.1C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracking #: 5120-6510-6911

Job: _____

SO / PO / FO / ~~SAT~~ / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: L-10 Corr. Factor: (+/-) 0 °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 2051191

Cooler ID: _____

Temp Observed: 1.1 °C Corrected: 1.1 °C

From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Initials: JK Date: 4/1/23

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JD Date: 4-3-23

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: SD Date: 4-3-23

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-231579-1	V-200-A	80	93	90	87	88	85	85	83
500-231579-1 - DL	V-200-A	85	89	81	87	87	80	81	82
500-231579-2	V-900-A	102	115	97	109	105	106	90	86
LCS 320-665309/2-A	Lab Control Sample	97	98	88	96	96	86	97	92
LCSD 320-665309/3-A	Lab Control Sample Dup	92	93	85	99	103	96	89	94
MB 320-665309/1-A	Method Blank	89	96	86	95	95	97	93	91

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-231579-1	V-200-A	87	70	53	80	90	90	77	75
500-231579-1 - DL	V-200-A	74	58	40	72	83	77	75	82
500-231579-2	V-900-A	90	103	86	91	98	97	94	80
LCS 320-665309/2-A	Lab Control Sample	101	110	97	92	100	97	92	85
LCSD 320-665309/3-A	Lab Control Sample Dup	100	106	93	92	98	96	90	83
MB 320-665309/1-A	Method Blank	90	98	83	83	95	89	82	74

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-231579-1	V-200-A	84	71	64	73	65	75	84	85
500-231579-1 - DL	V-200-A	75	58	52	60	52	78	93	81
500-231579-2	V-900-A	83	84	85	86	86	69	98	88
LCS 320-665309/2-A	Lab Control Sample	94	91	88	96	97	70	86	98
LCSD 320-665309/3-A	Lab Control Sample Dup	92	86	81	94	92	78	89	80
MB 320-665309/1-A	Method Blank	82	81	75	91	91	70	84	87

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-231579-1	V-200-A	102	85
500-231579-1 - DL	V-200-A	79	65
500-231579-2	V-900-A	102	93
LCS 320-665309/2-A	Lab Control Sample	100	93
LCSD 320-665309/3-A	Lab Control Sample Dup	101	112
MB 320-665309/1-A	Method Blank	95	84

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231579-1

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

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JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-231803-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Job ID: 500-231803-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-231803-1

Comments

No additional comments.

Receipt

The samples were received on 4/6/2023 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.2° C and 2.1° C.

GC/MS VOA

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

GC/MS Semi VOA

Method 625.1: 1,4-Dichlorobenzene-d4 Internal standard (ISTD) response for the following sample was outside of acceptance limits: 500-231803-2. This internal standard is not associated to the reported analytes; therefore, re-analysis was not performed.

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

General Chemistry

Method 1664B: The matrix spike (MS) recovery for preparation batch 500-707514 and analytical batch 500-707537 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

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

Organic Prep

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



Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	EPA	EET CHI
625.1	Semivolatile Organic Compounds (GC/MS)	EPA	EET CHI
1664B	HEM and SGT-HEM	1664B	EET CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	EET CHI
1664B	HEM and SGT-HEM (SPE)	1664B	EET CHI
625	Liquid-Liquid Extraction	EPA	EET CHI

Protocol References:

- 1664B = EPA-821-98-002
- EPA = US Environmental Protection Agency
- SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

- EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-231803-1	V-200-A	Water	04/05/23 09:30	04/06/23 09:50
500-231803-2	V-900-A	Water	04/05/23 09:35	04/06/23 09:50
500-231803-3	Trip Blank (4-5-23)	Water	04/05/23 00:00	04/06/23 09:50

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231803-1

Date Collected: 04/05/23 09:30

Matrix: Water

Date Received: 04/06/23 09:50

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			04/11/23 13:39	1
Toluene	<0.15		0.50	0.15	ug/L			04/11/23 13:39	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/11/23 13:39	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/11/23 13:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	93		70 - 130		04/11/23 13:39	1
4-Bromofluorobenzene (Surr)	108		70 - 130		04/11/23 13:39	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		04/11/23 13:39	1
Dibromofluoromethane	100		70 - 130		04/11/23 13:39	1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.095		0.78	0.095	ug/L		04/10/23 07:31	04/11/23 14:50	1
Acenaphthylene	<0.10		0.78	0.10	ug/L		04/10/23 07:31	04/11/23 14:50	1
Anthracene	<0.14		0.78	0.14	ug/L		04/10/23 07:31	04/11/23 14:50	1
Benzo[a]anthracene	<0.051		0.78	0.051	ug/L		04/10/23 07:31	04/11/23 14:50	1
Benzo[a]pyrene	<0.059		0.78	0.059	ug/L		04/10/23 07:31	04/11/23 14:50	1
Benzo[b]fluoranthene	<0.063		0.78	0.063	ug/L		04/10/23 07:31	04/11/23 14:50	1
Benzo[g,h,i]perylene	<0.37		0.78	0.37	ug/L		04/10/23 07:31	04/11/23 14:50	1
Benzo[k]fluoranthene	<0.13		0.78	0.13	ug/L		04/10/23 07:31	04/11/23 14:50	1
Chrysene	<0.072		0.78	0.072	ug/L		04/10/23 07:31	04/11/23 14:50	1
Dibenz(a,h)anthracene	<0.088		0.78	0.088	ug/L		04/10/23 07:31	04/11/23 14:50	1
Fluoranthene	<0.16		0.78	0.16	ug/L		04/10/23 07:31	04/11/23 14:50	1
Fluorene	<0.13		0.78	0.13	ug/L		04/10/23 07:31	04/11/23 14:50	1
Indeno[1,2,3-cd]pyrene	<0.059		0.78	0.059	ug/L		04/10/23 07:31	04/11/23 14:50	1
1-Methylnaphthalene	<0.23		1.6	0.23	ug/L		04/10/23 07:31	04/11/23 14:50	1
2-Methylnaphthalene	<0.065		1.6	0.065	ug/L		04/10/23 07:31	04/11/23 14:50	1
Naphthalene	<0.12		0.78	0.12	ug/L		04/10/23 07:31	04/11/23 14:50	1
Phenanthrene	<0.16		0.78	0.16	ug/L		04/10/23 07:31	04/11/23 14:50	1
Pyrene	<0.18		0.78	0.18	ug/L		04/10/23 07:31	04/11/23 14:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	64		34 - 110	04/10/23 07:31	04/11/23 14:50	1
Nitrobenzene-d5	57		36 - 120	04/10/23 07:31	04/11/23 14:50	1
Terphenyl-d14	89		40 - 145	04/10/23 07:31	04/11/23 14:50	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease) (1664B)	<1.3	F1	5.0	1.3	mg/L		04/13/23 07:53	04/13/23 08:38	1
Total Suspended Solids (SM 2540D)	7.4		5.0	1.9	mg/L			04/11/23 11:29	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Client Sample ID: V-900-A

Lab Sample ID: 500-231803-2

Date Collected: 04/05/23 09:35

Matrix: Water

Date Received: 04/06/23 09:50

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			04/11/23 14:02	1
Toluene	<0.15		0.50	0.15	ug/L			04/11/23 14:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/11/23 14:02	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/11/23 14:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		70 - 130		04/11/23 14:02	1
4-Bromofluorobenzene (Surr)	106		70 - 130		04/11/23 14:02	1
1,2-Dichloroethane-d4 (Surr)	98		70 - 130		04/11/23 14:02	1
Dibromofluoromethane	103		70 - 130		04/11/23 14:02	1

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.10		0.82	0.10	ug/L		04/10/23 07:31	04/11/23 15:14	1
Acenaphthylene	<0.11		0.82	0.11	ug/L		04/10/23 07:31	04/11/23 15:14	1
Anthracene	<0.15		0.82	0.15	ug/L		04/10/23 07:31	04/11/23 15:14	1
Benzo[a]anthracene	<0.053		0.82	0.053	ug/L		04/10/23 07:31	04/11/23 15:14	1
Benzo[a]pyrene	<0.062		0.82	0.062	ug/L		04/10/23 07:31	04/11/23 15:14	1
Benzo[b]fluoranthene	<0.067		0.82	0.067	ug/L		04/10/23 07:31	04/11/23 15:14	1
Benzo[g,h,i]perylene	<0.39		0.82	0.39	ug/L		04/10/23 07:31	04/11/23 15:14	1
Benzo[k]fluoranthene	<0.14		0.82	0.14	ug/L		04/10/23 07:31	04/11/23 15:14	1
Chrysene	<0.076		0.82	0.076	ug/L		04/10/23 07:31	04/11/23 15:14	1
Dibenz(a,h)anthracene	<0.092		0.82	0.092	ug/L		04/10/23 07:31	04/11/23 15:14	1
Fluoranthene	<0.17		0.82	0.17	ug/L		04/10/23 07:31	04/11/23 15:14	1
Fluorene	<0.14		0.82	0.14	ug/L		04/10/23 07:31	04/11/23 15:14	1
Indeno[1,2,3-cd]pyrene	<0.063		0.82	0.063	ug/L		04/10/23 07:31	04/11/23 15:14	1
1-Methylnaphthalene	<0.25		1.6	0.25	ug/L		04/10/23 07:31	04/11/23 15:14	1
2-Methylnaphthalene	<0.069		1.6	0.069	ug/L		04/10/23 07:31	04/11/23 15:14	1
Naphthalene	<0.13		0.82	0.13	ug/L		04/10/23 07:31	04/11/23 15:14	1
Phenanthrene	<0.17		0.82	0.17	ug/L		04/10/23 07:31	04/11/23 15:14	1
Pyrene	<0.19		0.82	0.19	ug/L		04/10/23 07:31	04/11/23 15:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	61		34 - 110	04/10/23 07:31	04/11/23 15:14	1
Nitrobenzene-d5	65		36 - 120	04/10/23 07:31	04/11/23 15:14	1
Terphenyl-d14	96		40 - 145	04/10/23 07:31	04/11/23 15:14	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease) (1664B)	<1.3		5.1	1.3	mg/L		04/13/23 07:53	04/13/23 08:38	1
Total Suspended Solids (SM 2540D)	<1.9		5.0	1.9	mg/L			04/11/23 11:37	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Client Sample ID: Trip Blank (4-5-23)

Lab Sample ID: 500-231803-3

Date Collected: 04/05/23 00:00

Matrix: Water

Date Received: 04/06/23 09:50

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			04/11/23 10:51	1
Toluene	<0.15		0.50	0.15	ug/L			04/11/23 10:51	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/11/23 10:51	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/11/23 10:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		70 - 130		04/11/23 10:51	1
4-Bromofluorobenzene (Surr)	107		70 - 130		04/11/23 10:51	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 130		04/11/23 10:51	1
Dibromofluoromethane	100		70 - 130		04/11/23 10:51	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

Glossary

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

Surrogate Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL	BFB	DCA	DBFM
		(70-130)	(70-130)	(70-130)	(70-130)
500-231803-1	V-200-A	93	108	99	100
500-231803-2	V-900-A	92	106	98	103
500-231803-3	Trip Blank (4-5-23)	94	107	97	100
LCS 500-707008/4	Lab Control Sample	96	107	97	98
MB 500-707008/6	Method Blank	93	110	99	100

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

DBFM = Dibromofluoromethane

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	FBP	NBZ	TPHL
		(34-110)	(36-120)	(40-145)
500-231803-1	V-200-A	64	57	89
500-231803-2	V-900-A	61	65	96
LCS 500-706756/2-A	Lab Control Sample	60	62	84
LCSD 500-706756/3-A	Lab Control Sample Dup	58	54	80
MB 500-706756/1-A	Method Blank	61	55	89

Surrogate Legend

FBP = 2-Fluorobiphenyl

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-707008/6
Matrix: Water
Analysis Batch: 707008

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.15		0.50	0.15	ug/L			04/11/23 10:03	1
Toluene	<0.15		0.50	0.15	ug/L			04/11/23 10:03	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			04/11/23 10:03	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			04/11/23 10:03	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	93		70 - 130		04/11/23 10:03	1
4-Bromofluorobenzene (Surr)	110		70 - 130		04/11/23 10:03	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130		04/11/23 10:03	1
Dibromofluoromethane	100		70 - 130		04/11/23 10:03	1

Lab Sample ID: LCS 500-707008/4
Matrix: Water
Analysis Batch: 707008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Benzene	50.0	47.1		ug/L		94	65 - 135
Toluene	50.0	48.5		ug/L		97	70 - 130
Ethylbenzene	50.0	46.7		ug/L		93	60 - 140

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	96		70 - 130
4-Bromofluorobenzene (Surr)	107		70 - 130
1,2-Dichloroethane-d4 (Surr)	97		70 - 130
Dibromofluoromethane	98		70 - 130

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-706756/1-A
Matrix: Water
Analysis Batch: 706830

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 706756

Analyte	MB MB		LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		04/10/23 07:31	04/10/23 16:03	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		04/10/23 07:31	04/10/23 16:03	1
Anthracene	<0.15		0.80	0.15	ug/L		04/10/23 07:31	04/10/23 16:03	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		04/10/23 07:31	04/10/23 16:03	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		04/10/23 07:31	04/10/23 16:03	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		04/10/23 07:31	04/10/23 16:03	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		04/10/23 07:31	04/10/23 16:03	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		04/10/23 07:31	04/10/23 16:03	1
Chrysene	<0.075		0.80	0.075	ug/L		04/10/23 07:31	04/10/23 16:03	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		04/10/23 07:31	04/10/23 16:03	1
Fluoranthene	<0.16		0.80	0.16	ug/L		04/10/23 07:31	04/10/23 16:03	1
Fluorene	<0.13		0.80	0.13	ug/L		04/10/23 07:31	04/10/23 16:03	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		04/10/23 07:31	04/10/23 16:03	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		04/10/23 07:31	04/10/23 16:03	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		04/10/23 07:31	04/10/23 16:03	1

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-706756/1-A
Matrix: Water
Analysis Batch: 706830

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 706756

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	<0.12		0.80	0.12	ug/L		04/10/23 07:31	04/10/23 16:03	1
Phenanthrene	<0.17		0.80	0.17	ug/L		04/10/23 07:31	04/10/23 16:03	1
Pyrene	<0.18		0.80	0.18	ug/L		04/10/23 07:31	04/10/23 16:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	61		34 - 110	04/10/23 07:31	04/10/23 16:03	1
Nitrobenzene-d5	55		36 - 120	04/10/23 07:31	04/10/23 16:03	1
Terphenyl-d14	89		40 - 145	04/10/23 07:31	04/10/23 16:03	1

Lab Sample ID: LCS 500-706756/2-A
Matrix: Water
Analysis Batch: 706830

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 706756

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	32.0	19.3		ug/L		60	47 - 145
Acenaphthylene	32.0	20.5		ug/L		64	33 - 145
Anthracene	32.0	25.5		ug/L		80	27 - 133
Benzo[a]anthracene	32.0	26.6		ug/L		83	33 - 143
Benzo[a]pyrene	32.0	28.2		ug/L		88	17 - 163
Benzo[b]fluoranthene	32.0	27.1		ug/L		85	24 - 159
Benzo[g,h,i]perylene	32.0	27.6		ug/L		86	10 - 219
Benzo[k]fluoranthene	32.0	29.6		ug/L		93	11 - 162
Chrysene	32.0	27.4		ug/L		86	17 - 168
Dibenz(a,h)anthracene	32.0	29.1		ug/L		91	10 - 227
Fluoranthene	32.0	25.6		ug/L		80	26 - 137
Fluorene	32.0	22.1		ug/L		69	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	26.9		ug/L		84	10 - 171
1-Methylnaphthalene	32.0	15.4		ug/L		48	
2-Methylnaphthalene	32.0	15.1		ug/L		47	
Naphthalene	32.0	15.5		ug/L		48	21 - 133
Phenanthrene	32.0	24.9		ug/L		78	54 - 120
Pyrene	32.0	27.2		ug/L		85	52 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	60		34 - 110
Nitrobenzene-d5	62		36 - 120
Terphenyl-d14	84		40 - 145

Lab Sample ID: LCSD 500-706756/3-A
Matrix: Water
Analysis Batch: 706830

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 706756

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acenaphthene	32.0	18.9		ug/L		59	47 - 145	2	20
Acenaphthylene	32.0	20.0		ug/L		62	33 - 145	3	20
Anthracene	32.0	24.1		ug/L		75	27 - 133	5	20
Benzo[a]anthracene	32.0	25.5		ug/L		80	33 - 143	4	20
Benzo[a]pyrene	32.0	27.2		ug/L		85	17 - 163	3	20

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-706756/3-A
Matrix: Water
Analysis Batch: 706830

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 706756

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	26.1		ug/L		82	24 - 159	4	20
Benzo[g,h,i]perylene	32.0	26.7		ug/L		83	10 - 219	3	20
Benzo[k]fluoranthene	32.0	28.2		ug/L		88	11 - 162	5	20
Chrysene	32.0	26.2		ug/L		82	17 - 168	4	20
Dibenz(a,h)anthracene	32.0	28.0		ug/L		87	10 - 227	4	20
Fluoranthene	32.0	24.1		ug/L		75	26 - 137	6	20
Fluorene	32.0	21.4		ug/L		67	59 - 121	3	20
Indeno[1,2,3-cd]pyrene	32.0	26.1		ug/L		81	10 - 171	3	20
1-Methylnaphthalene	32.0	14.4		ug/L		45		7	
2-Methylnaphthalene	32.0	14.3		ug/L		45		6	
Naphthalene	32.0	14.1		ug/L		44	21 - 133	10	20
Phenanthrene	32.0	23.8		ug/L		74	54 - 120	4	20
Pyrene	32.0	26.0		ug/L		81	52 - 120	5	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorobiphenyl	58		34 - 110
Nitrobenzene-d5	54		36 - 120
Terphenyl-d14	80		40 - 145

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-707514/1-A
Matrix: Water
Analysis Batch: 707537

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 707514

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		04/13/23 07:53	04/13/23 08:38	1

Lab Sample ID: LCS 500-707514/2-A
Matrix: Water
Analysis Batch: 707537

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 707514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil & Grease)	40.0	33.40		mg/L		83	78 - 114

Lab Sample ID: 500-231803-1 MS
Matrix: Water
Analysis Batch: 707537

Client Sample ID: V-200-A
Prep Type: Total/NA
Prep Batch: 707514

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil & Grease)	<1.3	F1	39.3	30.45	F1	mg/L		77	78 - 114

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 500-707083/1
Matrix: Water
Analysis Batch: 707083

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<1.9		5.0	1.9	mg/L			04/11/23 09:47	1

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: LCS 500-707083/2
Matrix: Water
Analysis Batch: 707083

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	200	176.0		mg/L		88	80 - 120

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Client Sample ID: V-200-A
Date Collected: 04/05/23 09:30
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231803-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	707008	LMB	EET CHI	04/11/23 13:39
Total/NA	Prep	625			706756	TS	EET CHI	04/10/23 07:31
Total/NA	Analysis	625.1		1	707098	JSB	EET CHI	04/11/23 14:50
Total/NA	Prep	1664B			707514	AM	EET CHI	04/13/23 07:53
Total/NA	Analysis	1664B		1	707537	AM	EET CHI	04/13/23 08:38
Total/NA	Analysis	SM 2540D		1	707083	MB	EET CHI	04/11/23 11:29 - 04/11/23 11:37 ¹

Client Sample ID: V-900-A
Date Collected: 04/05/23 09:35
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231803-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	707008	LMB	EET CHI	04/11/23 14:02
Total/NA	Prep	625			706756	TS	EET CHI	04/10/23 07:31
Total/NA	Analysis	625.1		1	707098	JSB	EET CHI	04/11/23 15:14
Total/NA	Prep	1664B			707514	AM	EET CHI	04/13/23 07:53
Total/NA	Analysis	1664B		1	707537	AM	EET CHI	04/13/23 08:38
Total/NA	Analysis	SM 2540D		1	707083	MB	EET CHI	04/11/23 11:37 - 04/11/23 11:45 ¹

Client Sample ID: Trip Blank (4-5-23)
Date Collected: 04/05/23 00:00
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231803-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	707008	LMB	EET CHI	04/11/23 10:51

¹ Completion dates and times are reported or not reported per method requirements or individual lab discretion.

Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231803-1

Laboratory: Eurofins Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Chain of Custody Record

University Park, IL 60484-3101
phone 708 534 5200 fax 708 534 5211

Regulatory Program: DW NPDES RCRA Other

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Project Manager: Lisa Rutkowski

Client Contact Arcadis U S , Inc 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____	Email: N/A Tel/Fax: N/A	Sampler: Jacob Rominger Lab Contact: Sandie Fredrick Date: 4-5-23 Carrier: FedEx	COC No 1 1 of 1 COCs
Project Name Marinette, WI Site Marinette, WI P O # 30171092 4 1 1 (WPDES)	Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <u>Standard</u> <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day	For Lab Use Only: Walk-in Client Lab Sampling	Lab Project Number 50015522 500-231803

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	BTEX Method 624	Oil & Grease Method 1664	TSS Method 2540D	PAHs Method 625	Sample Specific Notes
V-200-A	4-5-23	9:30	G	W	8	N	N	X	X	X	X	System Influent
V-900-A	4-5-23	9:35	G	W	8	N	N	X	X	X	X	System Effluent
Trip Blank (4-5-23)	4-5-23		G	W	1	N	N	X				Trip Blank

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2 3 - -

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments:
5 day-TAT U-200-PH= 7.03 U-900-PH= 7.11 3.2 → dil 1/1.4 → 20c2

Custody Seals Intact <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No	Cooler Temp (°C), Obs'd _____ Cor'd _____	Therm ID No _____
Relinquished by <u>Jacob Rominger</u>	Company <u>Barley Excavating</u>	Date/Time <u>4-5-23 12.10</u>	Received by <u>Fed Ex</u>
Relinquished by _____	Company _____	Date/Time _____	Received by _____
Relinquished by _____	Company _____	Date/Time _____	Received in Laboratory by <u>Alvin Scott</u>
			Company <u>ERDA</u> Date/Time <u>4/6/23 0950</u>

ORIGIN ID:RRLA (262) 202-5955
CODYANN KOLP

SHIP DATE: 04NOV22
ACTWGT: 25.00 LB MAN
CAD: 0269688/CAFE3616

2700 INDUSTRIAL PARKWAY
BUILDING 143
MARINETTE, WI 54143
UNITED STATES US

TO **SAMPLE RECEIPT**
EUROFINS
2417 BOND ST.



UNIVERSITY PARK IL 60484

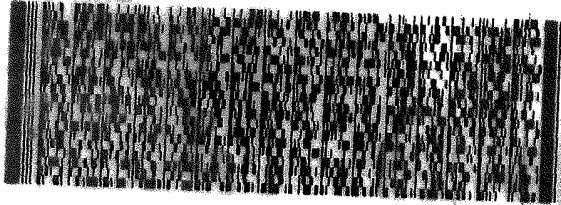
500 231803 Waybl

(262) 202-5955
REF: INVT
PO:

REF:

DEPT:

RMA: ||| ||| |||



FedEx
Express



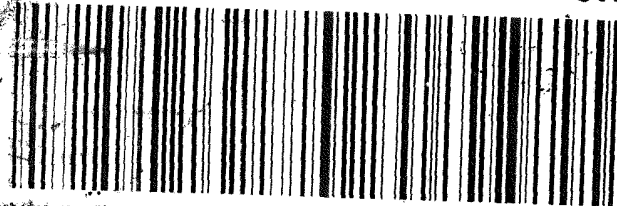
J222022022801 HY

THU 06 APR AA
PRIORITY OVERNIGHT

TRK# 6155 6316 9963
0221

XN JOTA

60484
IL-US
ORD



3604346 05Apr2023 GRBA 581G3/78CF/C088

ORIGIN ID:RRLA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING
1824 10TH AVE
MENOMINEE, MI 49858
UNITED STATES US

SHIP DATE: 30NOV22
ACTWGT: 25.00 LB MAN
CAD: 0269688/CAFE3616

TO **SAMPLE RECEIPT**
EUROFINS
2417 BOND ST.

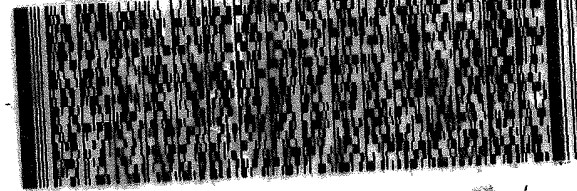
UNIVERSITY PARK IL 60484

(262) 202-5955
REF: INVT
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RMA: ||| ||| |||



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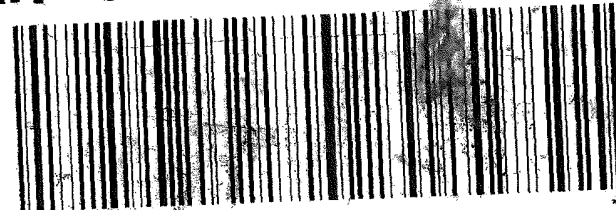
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3604346 05Apr2023 GRBA 581G3/78CF/C088

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Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-231803-1

SDG Number:

Login Number: 231803

List Number: 1

Creator: Scott, Sherri L

List Source: Eurofins Chicago

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1,0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202
Generated 4/13/2023 5:22:00 PM Revision 1

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-231842-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



Generated
4/13/2023 5:22:00 PM
Revision 1

Authorized for release by
Sandie Fredrick, Project Manager II
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(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Job ID: 500-231842-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-231842-1

Comments

No additional comments.

Revision

The report being provided is a revision of the original report sent on 4/13/2023. The report (revision 1) is being revised due to: Revised report to correct mismatched sample IDs.

Receipt

The samples were received on 4/6/2023 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8° C.

LCMS

Method 537 (modified): The closing continuing calibration verification (CCV) associated with batch 320-666569 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported: 500-231842-1, 500-231842-2 and CCV 320-666569/34.

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-231842-2. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): Results for sample 500-231842-2 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10x analysis is 130% after the dilution factor was applied to the labeled internal standard area count.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-666117.

Method: 3535_PFC_28D

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-231842-1	V-900-A	Water	04/05/23 09:00	04/06/23 09:50
500-231842-2	V-200-A	Water	04/05/23 09:05	04/06/23 09:50

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-900-A

Lab Sample ID: 500-231842-1

Date Collected: 04/05/23 09:00

Matrix: Water

Date Received: 04/06/23 09:50

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.6	2.2	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoropentanoic acid (PFPeA)	<0.45		1.8	0.45	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorohexanoic acid (PFHxA)	<0.53		1.8	0.53	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorooctanoic acid (PFOA)	<0.78		1.8	0.78	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorononanoic acid (PFNA)	<0.25		1.8	0.25	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorodecanoic acid (PFDA)	<0.29		1.8	0.29	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.8	1.0	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.8	0.51	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorotetradecanoic acid (PFTeA)	<0.67		1.8	0.67	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.82		1.8	0.82	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87	^c	1.8	0.87	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.8	0.28	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorohexanesulfonic acid (PFHxS)	<0.53		1.8	0.53	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.8	0.18	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.8	0.50	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.8	0.34	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorododecanesulfonic acid (PFDoS)	<0.89		1.8	0.89	ng/L		04/07/23 07:14	04/10/23 15:06	1
Perfluorooctanesulfonamide (FOSA)	<0.90		1.8	0.90	ng/L		04/07/23 07:14	04/10/23 15:06	1
NEtFOSA	<0.80		1.8	0.80	ng/L		04/07/23 07:14	04/10/23 15:06	1
NMeFOSA	<0.40		1.8	0.40	ng/L		04/07/23 07:14	04/10/23 15:06	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		04/07/23 07:14	04/10/23 15:06	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		04/07/23 07:14	04/10/23 15:06	1
NMeFOSE	<1.3		3.7	1.3	ng/L		04/07/23 07:14	04/10/23 15:06	1
NEtFOSE	<0.78		1.8	0.78	ng/L		04/07/23 07:14	04/10/23 15:06	1
4:2 FTS	<0.22		1.8	0.22	ng/L		04/07/23 07:14	04/10/23 15:06	1
6:2 FTS	<2.3		4.6	2.3	ng/L		04/07/23 07:14	04/10/23 15:06	1
8:2 FTS	1.2	J	1.8	0.42	ng/L		04/07/23 07:14	04/10/23 15:06	1
10:2 FTS	4.2		1.8	0.62	ng/L		04/07/23 07:14	04/10/23 15:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.8	0.37	ng/L		04/07/23 07:14	04/10/23 15:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		04/07/23 07:14	04/10/23 15:06	1
F-53B Major	<0.22		1.8	0.22	ng/L		04/07/23 07:14	04/10/23 15:06	1
F-53B Minor	<0.29		1.8	0.29	ng/L		04/07/23 07:14	04/10/23 15:06	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	103		25 - 150				04/07/23 07:14	04/10/23 15:06	1
13C5 PFPeA	108		25 - 150				04/07/23 07:14	04/10/23 15:06	1
13C2 PFHxA	103		25 - 150				04/07/23 07:14	04/10/23 15:06	1
13C4 PFHpA	106		25 - 150				04/07/23 07:14	04/10/23 15:06	1
13C4 PFOA	102		25 - 150				04/07/23 07:14	04/10/23 15:06	1
13C5 PFNA	102		25 - 150				04/07/23 07:14	04/10/23 15:06	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-900-A
Date Collected: 04/05/23 09:00
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231842-1
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDA	99		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C2 PFUnA	95		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C2 PFDoA	86		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C2 PFTeDA	72		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C2 PFHxDA	58		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C3 PFBS	91		25 - 150	04/07/23 07:14	04/10/23 15:06	1
18O2 PFHxS	90		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C4 PFOS	90		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C8 FOSA	92		10 - 150	04/07/23 07:14	04/10/23 15:06	1
d3-NMeFOSAA	95		25 - 150	04/07/23 07:14	04/10/23 15:06	1
d5-NEtFOSAA	98		25 - 150	04/07/23 07:14	04/10/23 15:06	1
d-N-MeFOSA-M	82		10 - 150	04/07/23 07:14	04/10/23 15:06	1
d-N-EtFOSA-M	75		10 - 150	04/07/23 07:14	04/10/23 15:06	1
d7-N-MeFOSE-M	75		10 - 150	04/07/23 07:14	04/10/23 15:06	1
d9-N-EtFOSE-M	76		10 - 150	04/07/23 07:14	04/10/23 15:06	1
M2-4:2 FTS	115		25 - 150	04/07/23 07:14	04/10/23 15:06	1
M2-6:2 FTS	114		25 - 150	04/07/23 07:14	04/10/23 15:06	1
M2-8:2 FTS	108		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C3 HFPO-DA	100		25 - 150	04/07/23 07:14	04/10/23 15:06	1
13C2 10:2 FTS	87		25 - 150	04/07/23 07:14	04/10/23 15:06	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231842-2

Date Collected: 04/05/23 09:05

Matrix: Water

Date Received: 04/06/23 09:50

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	170		4.6	2.2	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoropentanoic acid (PFPeA)	480	E	1.9	0.46	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorohexanoic acid (PFHxA)	270		1.9	0.54	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoroheptanoic acid (PFHpA)	320		1.9	0.23	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorooctanoic acid (PFOA)	530	E	1.9	0.79	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorononanoic acid (PFNA)	130		1.9	0.25	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorodecanoic acid (PFDA)	98		1.9	0.29	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoroundecanoic acid (PFUnA)	41		1.9	1.0	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorododecanoic acid (PFDoA)	4.1		1.9	0.51	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorotridecanoic acid (PFTriA)	1.7	J	1.9	1.2	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorotetradecanoic acid (PFTeA)	0.82	J	1.9	0.68	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.83		1.9	0.83	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87	^c	1.9	0.87	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorobutanesulfonic acid (PFBS)	10		1.9	0.19	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoropentanesulfonic acid (PFPeS)	3.9		1.9	0.28	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorohexanesulfonic acid (PFHxS)	110		1.9	0.53	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluoroheptanesulfonic acid (PFHpS)	5.1		1.9	0.18	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorooctanesulfonic acid (PFOS)	470	E	1.9	0.50	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorononanesulfonic acid (PFNS)	0.67	J	1.9	0.34	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.9	0.90	ng/L		04/07/23 07:14	04/10/23 15:16	1
Perfluorooctanesulfonamide (FOSA)	9.7		1.9	0.91	ng/L		04/07/23 07:14	04/10/23 15:16	1
NEtFOSA	<0.81		1.9	0.81	ng/L		04/07/23 07:14	04/10/23 15:16	1
NMeFOSA	<0.40		1.9	0.40	ng/L		04/07/23 07:14	04/10/23 15:16	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		04/07/23 07:14	04/10/23 15:16	1
NEtFOSAA	15		4.6	1.2	ng/L		04/07/23 07:14	04/10/23 15:16	1
NMeFOSE	<1.3		3.7	1.3	ng/L		04/07/23 07:14	04/10/23 15:16	1
NEtFOSE	<0.79		1.9	0.79	ng/L		04/07/23 07:14	04/10/23 15:16	1
4:2 FTS	4.1		1.9	0.22	ng/L		04/07/23 07:14	04/10/23 15:16	1
6:2 FTS	760	E	4.6	2.3	ng/L		04/07/23 07:14	04/10/23 15:16	1
8:2 FTS	680	E	1.9	0.43	ng/L		04/07/23 07:14	04/10/23 15:16	1
10:2 FTS	65		1.9	0.62	ng/L		04/07/23 07:14	04/10/23 15:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		04/07/23 07:14	04/10/23 15:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		04/07/23 07:14	04/10/23 15:16	1
F-53B Major	<0.22		1.9	0.22	ng/L		04/07/23 07:14	04/10/23 15:16	1
F-53B Minor	<0.30		1.9	0.30	ng/L		04/07/23 07:14	04/10/23 15:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	79		25 - 150				04/07/23 07:14	04/10/23 15:16	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231842-2

Date Collected: 04/05/23 09:05

Matrix: Water

Date Received: 04/06/23 09:50

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	98		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 PFHxA	102		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C4 PFHpA	99		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C4 PFOA	102		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C5 PFNA	93		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 PFDA	92		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 PFUnA	82		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 PFDoA	65		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 PFTeDA	57		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 PFHxDA	57		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C3 PFBS	85		25 - 150	04/07/23 07:14	04/10/23 15:16	1
18O2 PFHxS	90		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C4 PFOS	89		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C8 FOSA	80		10 - 150	04/07/23 07:14	04/10/23 15:16	1
d3-NMeFOSAA	81		25 - 150	04/07/23 07:14	04/10/23 15:16	1
d5-NEtFOSAA	75		25 - 150	04/07/23 07:14	04/10/23 15:16	1
d-N-MeFOSA-M	59		10 - 150	04/07/23 07:14	04/10/23 15:16	1
d-N-EtFOSA-M	59		10 - 150	04/07/23 07:14	04/10/23 15:16	1
d7-N-MeFOSE-M	52		10 - 150	04/07/23 07:14	04/10/23 15:16	1
d9-N-EtFOSE-M	52		10 - 150	04/07/23 07:14	04/10/23 15:16	1
M2-4:2 FTS	131		25 - 150	04/07/23 07:14	04/10/23 15:16	1
M2-6:2 FTS	119		25 - 150	04/07/23 07:14	04/10/23 15:16	1
M2-8:2 FTS	123		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C3 HFPO-DA	82		25 - 150	04/07/23 07:14	04/10/23 15:16	1
13C2 10:2 FTS	70		25 - 150	04/07/23 07:14	04/10/23 15:16	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	180		46	22	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluoropentanoic acid (PFPeA)	560		19	4.6	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorohexanoic acid (PFHxA)	310		19	5.4	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluoroheptanoic acid (PFHpA)	350		19	2.3	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorooctanoic acid (PFOA)	630		19	7.9	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorononanoic acid (PFNA)	130		19	2.5	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorodecanoic acid (PFDA)	91		19	2.9	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluoroundecanoic acid (PFUnA)	44		19	10	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorododecanoic acid (PFDoA)	<5.1		19	5.1	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorotetradecanoic acid (PFTeA)	<6.8		19	6.8	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.3		19	8.3	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.7		19	8.7	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorobutanesulfonic acid (PFBS)	9.1 J		19	1.9	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluoropentanesulfonic acid (PFPeS)	4.9 J		19	2.8	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorohexanesulfonic acid (PFHxS)	110		19	5.3	ng/L		04/07/23 07:14	04/12/23 00:18	10

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-200-A

Lab Sample ID: 500-231842-2

Date Collected: 04/05/23 09:05

Matrix: Water

Date Received: 04/06/23 09:50

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic acid (PFHpS)	5.2	J	19	1.8	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorooctanesulfonic acid (PFOS)	470		19	5.0	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorononanesulfonic acid (PFNS)	<3.4		19	3.4	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorodecanesulfonic acid (PFDS)	<3.0		19	3.0	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorododecanesulfonic acid (PFDoS)	<9.0		19	9.0	ng/L		04/07/23 07:14	04/12/23 00:18	10
Perfluorooctanesulfonamide (FOSA)	9.9	J	19	9.1	ng/L		04/07/23 07:14	04/12/23 00:18	10
NEtFOSA	<8.1		19	8.1	ng/L		04/07/23 07:14	04/12/23 00:18	10
NMeFOSA	<4.0		19	4.0	ng/L		04/07/23 07:14	04/12/23 00:18	10
NMeFOSAA	<11		46	11	ng/L		04/07/23 07:14	04/12/23 00:18	10
NEtFOSAA	19	J	46	12	ng/L		04/07/23 07:14	04/12/23 00:18	10
NMeFOSE	<13		37	13	ng/L		04/07/23 07:14	04/12/23 00:18	10
NEtFOSE	<7.9		19	7.9	ng/L		04/07/23 07:14	04/12/23 00:18	10
4:2 FTS	3.7	J	19	2.2	ng/L		04/07/23 07:14	04/12/23 00:18	10
6:2 FTS	910		46	23	ng/L		04/07/23 07:14	04/12/23 00:18	10
8:2 FTS	820		19	4.3	ng/L		04/07/23 07:14	04/12/23 00:18	10
10:2 FTS	73		19	6.2	ng/L		04/07/23 07:14	04/12/23 00:18	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.7		19	3.7	ng/L		04/07/23 07:14	04/12/23 00:18	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<14		37	14	ng/L		04/07/23 07:14	04/12/23 00:18	10
F-53B Major	<2.2		19	2.2	ng/L		04/07/23 07:14	04/12/23 00:18	10
F-53B Minor	<3.0		19	3.0	ng/L		04/07/23 07:14	04/12/23 00:18	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C5 PFPeA	94		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 PFHxA	91		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C4 PFHpA	95		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C4 PFOA	99		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C5 PFNA	89		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 PFDA	91		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 PFUnA	80		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 PFDoA	71		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 PFTeDA	62		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 PFHxDA	62		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C3 PFBS	84		25 - 150	04/07/23 07:14	04/12/23 00:18	10
18O2 PFHxS	86		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C4 PFOS	88		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C8 FOSA	86		10 - 150	04/07/23 07:14	04/12/23 00:18	10
d3-NMeFOSAA	86		25 - 150	04/07/23 07:14	04/12/23 00:18	10
d5-NEtFOSAA	77		25 - 150	04/07/23 07:14	04/12/23 00:18	10
d-N-MeFOSA-M	69		10 - 150	04/07/23 07:14	04/12/23 00:18	10
d-N-EtFOSA-M	61		10 - 150	04/07/23 07:14	04/12/23 00:18	10
d7-N-MeFOSE-M	55		10 - 150	04/07/23 07:14	04/12/23 00:18	10
d9-N-EtFOSE-M	52		10 - 150	04/07/23 07:14	04/12/23 00:18	10
M2-4:2 FTS	106		25 - 150	04/07/23 07:14	04/12/23 00:18	10
M2-6:2 FTS	130		25 - 150	04/07/23 07:14	04/12/23 00:18	10
M2-8:2 FTS	110		25 - 150	04/07/23 07:14	04/12/23 00:18	10

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-200-A
Date Collected: 04/05/23 09:05
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231842-2
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	78		25 - 150	04/07/23 07:14	04/12/23 00:18	10
13C2 10:2 FTS	66		25 - 150	04/07/23 07:14	04/12/23 00:18	10

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Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Qualifiers

LCMS

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-666117/1-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 666117

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		04/07/23 07:14	04/10/23 10:32	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		04/07/23 07:14	04/10/23 10:32	1
NEtFOSA	<0.87		2.0	0.87	ng/L		04/07/23 07:14	04/10/23 10:32	1
NMeFOSA	<0.43		2.0	0.43	ng/L		04/07/23 07:14	04/10/23 10:32	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		04/07/23 07:14	04/10/23 10:32	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		04/07/23 07:14	04/10/23 10:32	1
NMeFOSE	<1.4		4.0	1.4	ng/L		04/07/23 07:14	04/10/23 10:32	1
NEtFOSE	<0.85		2.0	0.85	ng/L		04/07/23 07:14	04/10/23 10:32	1
4:2 FTS	<0.24		2.0	0.24	ng/L		04/07/23 07:14	04/10/23 10:32	1
6:2 FTS	<2.5		5.0	2.5	ng/L		04/07/23 07:14	04/10/23 10:32	1
8:2 FTS	<0.46		2.0	0.46	ng/L		04/07/23 07:14	04/10/23 10:32	1
10:2 FTS	<0.67		2.0	0.67	ng/L		04/07/23 07:14	04/10/23 10:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		04/07/23 07:14	04/10/23 10:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		04/07/23 07:14	04/10/23 10:32	1
F-53B Major	<0.24		2.0	0.24	ng/L		04/07/23 07:14	04/10/23 10:32	1
F-53B Minor	<0.32		2.0	0.32	ng/L		04/07/23 07:14	04/10/23 10:32	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	100		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C5 PFPeA	101		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 PFHxA	100		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C4 PFHpA	103		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C4 PFOA	103		25 - 150	04/07/23 07:14	04/10/23 10:32	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

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

Lab Sample ID: MB 320-666117/1-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 666117

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	103		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 PFDA	105		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 PFUnA	103		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 PFDoA	96		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 PFTeDA	95		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 PFHxDA	99		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C3 PFBS	96		25 - 150	04/07/23 07:14	04/10/23 10:32	1
18O2 PFHxS	96		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C4 PFOS	99		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C8 FOSA	98		10 - 150	04/07/23 07:14	04/10/23 10:32	1
d3-NMeFOSAA	101		25 - 150	04/07/23 07:14	04/10/23 10:32	1
d5-NEtFOSAA	105		25 - 150	04/07/23 07:14	04/10/23 10:32	1
d-N-MeFOSA-M	90		10 - 150	04/07/23 07:14	04/10/23 10:32	1
d-N-EtFOSA-M	87		10 - 150	04/07/23 07:14	04/10/23 10:32	1
d7-N-MeFOSE-M	91		10 - 150	04/07/23 07:14	04/10/23 10:32	1
d9-N-EtFOSE-M	86		10 - 150	04/07/23 07:14	04/10/23 10:32	1
M2-4:2 FTS	115		25 - 150	04/07/23 07:14	04/10/23 10:32	1
M2-6:2 FTS	125		25 - 150	04/07/23 07:14	04/10/23 10:32	1
M2-8:2 FTS	121		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C3 HFPO-DA	95		25 - 150	04/07/23 07:14	04/10/23 10:32	1
13C2 10:2 FTS	109		25 - 150	04/07/23 07:14	04/10/23 10:32	1

Lab Sample ID: LCS 320-666117/2-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 666117

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.0		ng/L		107	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	45.9		ng/L		115	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	46.4		ng/L		116	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	45.8		ng/L		115	60 - 135
Perfluorononanoic acid (PFNA)	40.0	48.3		ng/L		121	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	45.7		ng/L		114	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	45.5		ng/L		114	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	46.4		ng/L		116	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	45.3		ng/L		113	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.9		ng/L		110	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.2		ng/L		115	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	49.1		ng/L		123	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	42.2		ng/L		119	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.5		ng/L		116	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

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

Lab Sample ID: LCS 320-666117/2-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 666117

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	41.0		ng/L		112	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	42.5		ng/L		111	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	41.3		ng/L		111	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	41.7		ng/L		108	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.5		ng/L		102	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	37.0		ng/L		95	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	46.1		ng/L		115	60 - 135
NEtFOSA	40.0	46.0		ng/L		115	60 - 135
NMeFOSA	40.0	47.9		ng/L		120	60 - 135
NMeFOSAA	40.0	46.2		ng/L		115	60 - 135
NEtFOSAA	40.0	42.8		ng/L		107	60 - 135
NMeFOSE	40.0	44.6		ng/L		112	60 - 135
NEtFOSE	40.0	44.4		ng/L		111	60 - 135
4:2 FTS	37.5	46.3		ng/L		123	60 - 135
6:2 FTS	38.1	42.9		ng/L		113	60 - 135
8:2 FTS	38.4	42.6		ng/L		111	60 - 135
10:2 FTS	38.6	41.5		ng/L		107	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.4		ng/L		125	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	44.5		ng/L		111	60 - 135
F-53B Major	37.4	43.1		ng/L		115	60 - 135
F-53B Minor	37.8	39.6		ng/L		105	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	99		25 - 150
13C5 PFPeA	103		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	101		25 - 150
13C2 PFDA	103		25 - 150
13C2 PFUnA	95		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	88		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	95		25 - 150
18O2 PFHxS	96		25 - 150
13C4 PFOS	97		25 - 150
13C8 FOSA	93		10 - 150
d3-NMeFOSAA	98		25 - 150
d5-NEtFOSAA	95		25 - 150
d-N-MeFOSA-M	79		10 - 150
d-N-EtFOSA-M	78		10 - 150

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

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

Lab Sample ID: LCS 320-666117/2-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 666117

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	80		10 - 150
d9-N-EtFOSE-M	80		10 - 150
M2-4:2 FTS	117		25 - 150
M2-6:2 FTS	130		25 - 150
M2-8:2 FTS	119		25 - 150
13C3 HFPO-DA	95		25 - 150
13C2 10:2 FTS	102		25 - 150

Lab Sample ID: LCSD 320-666117/3-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 666117

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	44.0		ng/L		110	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)	40.0	42.6		ng/L		107	60 - 135	1	30
Perfluorohexanoic acid (PFHxA)	40.0	43.9		ng/L		110	60 - 135	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.9		ng/L		115	60 - 135	1	30
Perfluorooctanoic acid (PFOA)	40.0	45.5		ng/L		114	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	47.8		ng/L		120	60 - 135	1	30
Perfluorodecanoic acid (PFDA)	40.0	46.7		ng/L		117	60 - 135	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	44.1		ng/L		110	60 - 135	3	30
Perfluorododecanoic acid (PFDoA)	40.0	43.8		ng/L		109	60 - 135	6	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.0		ng/L		110	60 - 135	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.1		ng/L		103	60 - 135	6	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.2		ng/L		115	60 - 135	0	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	53.4		ng/L		133	60 - 135	8	30
Perfluorobutanesulfonic acid (PFBS)	35.5	41.3		ng/L		116	60 - 135	2	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	46.2		ng/L		123	60 - 135	6	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.2		ng/L		110	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.2		ng/L		113	60 - 135	2	30
Perfluorooctanesulfonic acid (PFOS)	37.2	41.2		ng/L		111	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.8		ng/L		111	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)	38.6	39.9		ng/L		104	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.9		ng/L		105	60 - 135	10	30
Perfluorooctanesulfonamide (FOSA)	40.0	44.0		ng/L		110	60 - 135	5	30
NEtFOSA	40.0	44.1		ng/L		110	60 - 135	4	30
NMeFOSA	40.0	42.3		ng/L		106	60 - 135	12	30
NMeFOSAA	40.0	48.0		ng/L		120	60 - 135	4	30

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

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

Lab Sample ID: LCSD 320-666117/3-A
Matrix: Water
Analysis Batch: 666569

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 666117

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	42.9		ng/L		107	60 - 135	0	30
NMeFOSE	40.0	42.1		ng/L		105	60 - 135	6	30
NEtFOSE	40.0	42.5		ng/L		106	60 - 135	4	30
4:2 FTS	37.5	44.3		ng/L		118	60 - 135	4	30
6:2 FTS	38.1	44.4		ng/L		117	60 - 135	4	30
8:2 FTS	38.4	43.2		ng/L		113	60 - 135	1	30
10:2 FTS	38.6	39.7		ng/L		103	60 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.9		ng/L		127	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	60 - 135	7	30
F-53B Major	37.4	43.0		ng/L		115	60 - 135	0	30
F-53B Minor	37.8	41.3		ng/L		109	60 - 135	4	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	98		25 - 150
13C5 PFPeA	105		25 - 150
13C2 PFHxA	104		25 - 150
13C4 PFHpA	100		25 - 150
13C4 PFOA	101		25 - 150
13C5 PFNA	99		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	98		25 - 150
13C2 PFDoA	97		25 - 150
13C2 PFTeDA	96		25 - 150
13C2 PFHxDA	101		25 - 150
13C3 PFBS	93		25 - 150
18O2 PFHxS	95		25 - 150
13C4 PFOS	94		25 - 150
13C8 FOSA	95		10 - 150
d3-NMeFOSAA	94		25 - 150
d5-NEtFOSAA	102		25 - 150
d-N-MeFOSA-M	83		10 - 150
d-N-EtFOSA-M	79		10 - 150
d7-N-MeFOSE-M	82		10 - 150
d9-N-EtFOSE-M	82		10 - 150
M2-4:2 FTS	119		25 - 150
M2-6:2 FTS	123		25 - 150
M2-8:2 FTS	116		25 - 150
13C3 HFPO-DA	98		25 - 150
13C2 10:2 FTS	105		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Client Sample ID: V-900-A
Date Collected: 04/05/23 09:00
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231842-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			666117	EJR	EET SAC	04/07/23 07:14
Total/NA	Analysis	537 (modified)		1	666569	RS1	EET SAC	04/10/23 15:06

Client Sample ID: V-200-A
Date Collected: 04/05/23 09:05
Date Received: 04/06/23 09:50

Lab Sample ID: 500-231842-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			666117	EJR	EET SAC	04/07/23 07:14
Total/NA	Analysis	537 (modified)		1	666569	RS1	EET SAC	04/10/23 15:16
Total/NA	Prep	3535	DL		666117	EJR	EET SAC	04/07/23 07:14
Total/NA	Analysis	537 (modified)	DL	10	666859	VPM	EET SAC	04/12/23 00:18

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

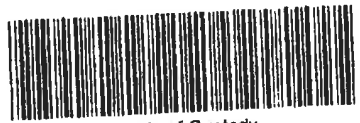
Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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- 12
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- 14

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____ Project Name: Marinette, WI Site: Marinette, WI P O # 30171092.4.1.1 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sampler: Jacobs Hornmeyer Lab Contact: Sandle Fredrick Date: 4-5-23 Carrier: FedEx		COC No: 1 of 1 COCs For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Lab Project Number 50015522			
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (36 Compounds)	Sample Specific Notes:
V-900-A V-900-A	4-5-23	9:00	G	W	2	N	N	X	System Influent
V-900-A V-200-A	4-5-23	9:05	G	W	2	N	N	X	System Effluent
Page 21 of 25 500-231842 Chain of Custody 									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months				
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 5 day - TAT									
Custody Seals Intact: <input type="checkbox"/> yes <input type="checkbox"/> No		Custody Seal No.: 1051905		Cooler Temp. (°C): Obs'd: 2.5 Cor'd: 2.8		Therm ID No.: L10			
Relinquished by: Jacobs Hornmeyer		Company: Barley Excavating		Date/Time: 4-5-23/12:05		Received by: Fred Ex		Company: _____ Date/Time: _____	
Relinquished by: _____		Company: _____		Date/Time: _____		Received by: _____		Company: EKT SCL Date/Time: 4/16/23 9:50	
Relinquished by: _____		Company: _____		Date/Time: _____		Received in Laboratory by: _____		Company: _____ Date/Time: _____	

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica


Regulatory Program: DW NPDES RCRA Other:

Client Contact
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee, WI 53202
Phone
FAX
Project Name: Marinette, WI
Site: Marinette, WI
P O # 30171092.4.1.1 (WPDES)

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below _____
 2 weeks
 1 week
 2 days
 1 day

Sampler: Jacob Reminger
Lab Contact: Sandie Fredrick
Date: 4-5-23
Carrier: FedEx
COC No.: 1 of 1 COCs

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 537 Modified (36 Compounds)
V-200-A	4-5-23	9:00	G	W	2	N	N	X
V-900-A	4-5-23	9:05	G	W	2	N	N	X
 500-231842 Chain of Custody								
Sample Specific Notes: System Influent System Effluent								

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
Possible Hazard Identification:
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
 7-Dav TAT Max or Prelim Report by Dav 7
 5 day-TAT

Cooler Temp. (°C): Obs'd: 2.8
Received by: Fred Ex
Received by: [Signature]
Received in Laboratory by: [Signature]

Company: Barley Excavating
Company: [Signature]
Company: [Signature]

Date/Time: 4-5-23/12:05
Date/Time: [Signature]
Date/Time: [Signature]

Therm ID No.: 60
Company: [Signature]
Company: [Signature]

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-231842-1

SDG Number:

Login Number: 231842

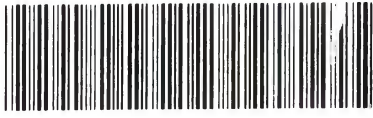
List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 04/06/23 06:25 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051805
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.8C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Job: _____ 500-231842 Field Sheet _____

Tracking #: 6155 6317 3624

SO / ~~PO~~ / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: <u>C16</u> Corr. Factor: (+/-) _____ °C	Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____																				
Ice _____ Wet _____ Gel _____ Other _____																					
Cooler Custody Seal: <u>2051845</u>																					
Cooler ID: _____																					
Temp Observed: <u>2.8</u> °C Corrected: <u>2.8</u> °C																					
From: Temp Blank <input type="checkbox"/> Sample <input checked="" type="checkbox"/>																					
Opening/Processing The Shipment Yes No NA																					
Cooler compromised/tampered with? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Cooler Temperature is acceptable? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Frozen samples show signs of thaw? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Initials: <u>JF</u> Date: <u>4/6/23</u>																					
Unpacking/Labeling The Samples Yes No NA	Trizma Lot #(s): _____ _____ _____																				
COC is complete w/o discrepancies? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Samples compromised/tampered with? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Containers are not broken or leaking? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample custody seal? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Sample containers have legible labels? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample date/times are provided? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Appropriate containers are used? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample bottles are completely filled? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample preservatives verified? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Is the Field Sampler's name on COC? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<table border="1"> <tr> <td>Login Completion</td> <td>Yes</td> <td>No</td> <td>NA</td> </tr> <tr> <td>Receipt Temperature on COC?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Samples received within hold time?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>NCM Filed?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Log Release checked in TALS?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Login Completion	Yes	No	NA	Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Login Completion		Yes	No	NA																	
Receipt Temperature on COC?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
Samples received within hold time?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
NCM Filed?		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																	
Log Release checked in TALS?		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																	
Samples require splitting/compositing? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Samples w/o discrepancies? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Zero headspace?* <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Alkalinity has no headspace? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Perchlorate has headspace? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
(Methods 314, 331, 6850)																					
Multiphasic samples are not present? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Initials: <u>SO</u> Date: <u>4/6/23</u>	Initials: <u>SO</u> Date: <u>4-6-23</u>																				

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WR3-120

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-231842-1	V-900-A	103	108	103	106	102	102	99	95
500-231842-2	V-200-A	79	98	102	99	102	93	92	82
500-231842-2 - DL	V-200-A	88	94	91	95	99	89	91	80
LCS 320-666117/2-A	Lab Control Sample	99	103	99	102	103	101	103	95
LCSD 320-666117/3-A	Lab Control Sample Dup	98	105	104	100	101	99	98	98
MB 320-666117/1-A	Method Blank	100	101	100	103	103	103	105	103

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-231842-1	V-900-A	86	72	58	91	90	90	92	95
500-231842-2	V-200-A	65	57	57	85	90	89	80	81
500-231842-2 - DL	V-200-A	71	62	62	84	86	88	86	86
LCS 320-666117/2-A	Lab Control Sample	92	88	95	95	96	97	93	98
LCSD 320-666117/3-A	Lab Control Sample Dup	97	96	101	93	95	94	95	94
MB 320-666117/1-A	Method Blank	96	95	99	96	96	99	98	101

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-231842-1	V-900-A	98	82	75	75	76	115	114	108
500-231842-2	V-200-A	75	59	59	52	52	131	119	123
500-231842-2 - DL	V-200-A	77	69	61	55	52	106	130	110
LCS 320-666117/2-A	Lab Control Sample	95	79	78	80	80	117	130	119
LCSD 320-666117/3-A	Lab Control Sample Dup	102	83	79	82	82	119	123	116
MB 320-666117/1-A	Method Blank	105	90	87	91	86	115	125	121

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-231842-1	V-900-A	100	87
500-231842-2	V-200-A	82	70
500-231842-2 - DL	V-200-A	78	66
LCS 320-666117/2-A	Lab Control Sample	95	102
LCSD 320-666117/3-A	Lab Control Sample Dup	98	105
MB 320-666117/1-A	Method Blank	95	109

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

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Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-231842-1

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

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JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-232038-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Job ID: 500-232038-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-232038-1

Receipt

The samples were received on 4/11/2023 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3° C.

LCMS

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-667358 and analytical batch 320-667694 recovered outside control limits for the following analyte: Perfluoro-n-octadecanoic acid (PFODA). This analyte was biased high in the LCS and was not detected in the associated samples. Furthermore, this analyte is no longer regulated by the state of Wisconsin; therefore, the data have been reported.

Method 537 (modified): The concentration of analytes associated with the following samples exceeded the instrument calibration range: 500-232038-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): Results for sample 500-232038-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

The percent recovery for the internal standard in the 10X analysis is 92% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The CCB for 320-668377 contained 6:2 FTS above a half of reporting limit (1/2RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the CCB.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-667358.

Method: PFC_IDA_WI

Matrix: Aqueous

320-667358

Method 3535: The following samples in preparation batch 320-667358 were yellow in color prior to extraction. 500-232038-1 and 500-232038-2

Method: PFC_IDA_WI

Matrix: Aqueous

320-667358

Method 3535: The following samples in preparation batch 320-667358 were yellow in color following concentration. 500-232038-1

Method: PFC_IDA_WI

Matrix: Aqueous

320-667358

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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



Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-232038-1	V-200-A	Water	04/10/23 11:30	04/11/23 09:25
500-232038-2	V-900-A	Water	04/10/23 11:35	04/11/23 09:25

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232038-1

Date Collected: 04/10/23 11:30

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	220		4.4	2.1	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoropentanoic acid (PFPeA)	680	E	1.8	0.43	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorohexanoic acid (PFHxA)	460	E	1.8	0.51	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoroheptanoic acid (PFHpA)	360	E	1.8	0.22	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorooctanoic acid (PFOA)	590	E	1.8	0.75	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorononanoic acid (PFNA)	100		1.8	0.24	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorodecanoic acid (PFDA)	77		1.8	0.27	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoroundecanoic acid (PFUnA)	30		1.8	0.96	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorododecanoic acid (PFDoA)	2.2		1.8	0.48	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82 *		1.8	0.82	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorobutanesulfonic acid (PFBS)	19		1.8	0.18	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoropentanesulfonic acid (PFPeS)	6.5		1.8	0.26	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorohexanesulfonic acid (PFHxS)	120		1.8	0.50	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoroheptanesulfonic acid (PFHpS)	5.2		1.8	0.17	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorooctanesulfonic acid (PFOS)	420	E	1.8	0.47	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluoronanesulfonic acid (PFNS)	<0.32		1.8	0.32	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		04/13/23 05:51	04/18/23 15:31	1
Perfluorooctanesulfonamide (FOSA)	8.1		1.8	0.86	ng/L		04/13/23 05:51	04/18/23 15:31	1
NEtFOSA	<0.76		1.8	0.76	ng/L		04/13/23 05:51	04/18/23 15:31	1
NMeFOSA	<0.38		1.8	0.38	ng/L		04/13/23 05:51	04/18/23 15:31	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		04/13/23 05:51	04/18/23 15:31	1
NEtFOSAA	5.4		4.4	1.1	ng/L		04/13/23 05:51	04/18/23 15:31	1
NMeFOSE	<1.2		3.5	1.2	ng/L		04/13/23 05:51	04/18/23 15:31	1
NEtFOSE	<0.75		1.8	0.75	ng/L		04/13/23 05:51	04/18/23 15:31	1
4:2 FTS	6.2		1.8	0.21	ng/L		04/13/23 05:51	04/18/23 15:31	1
6:2 FTS	740	E	4.4	2.2	ng/L		04/13/23 05:51	04/18/23 15:31	1
8:2 FTS	610	E	1.8	0.40	ng/L		04/13/23 05:51	04/18/23 15:31	1
10:2 FTS	36		1.8	0.59	ng/L		04/13/23 05:51	04/18/23 15:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		04/13/23 05:51	04/18/23 15:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		04/13/23 05:51	04/18/23 15:31	1
F-53B Major	<0.21		1.8	0.21	ng/L		04/13/23 05:51	04/18/23 15:31	1
F-53B Minor	<0.28		1.8	0.28	ng/L		04/13/23 05:51	04/18/23 15:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	53		25 - 150				04/13/23 05:51	04/18/23 15:31	1
13C5 PFPeA	84		25 - 150				04/13/23 05:51	04/18/23 15:31	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232038-1

Date Collected: 04/10/23 11:30

Matrix: Water

Date Received: 04/11/23 09:25

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C4 PFHpA	95		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C4 PFOA	93		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C5 PFNA	88		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C2 PFDA	86		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C2 PFUnA	80		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C2 PFDoA	74		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C2 PFTeDA	59		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C2 PFHxDA	48		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C3 PFBS	79		25 - 150	04/13/23 05:51	04/18/23 15:31	1
18O2 PFHxS	91		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C4 PFOS	91		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C8 FOSA	80		10 - 150	04/13/23 05:51	04/18/23 15:31	1
d3-NMeFOSAA	80		25 - 150	04/13/23 05:51	04/18/23 15:31	1
d5-NEtFOSAA	86		25 - 150	04/13/23 05:51	04/18/23 15:31	1
d-N-MeFOSA-M	67		10 - 150	04/13/23 05:51	04/18/23 15:31	1
d-N-EtFOSA-M	66		10 - 150	04/13/23 05:51	04/18/23 15:31	1
d7-N-MeFOSE-M	64		10 - 150	04/13/23 05:51	04/18/23 15:31	1
d9-N-EtFOSE-M	62		10 - 150	04/13/23 05:51	04/18/23 15:31	1
M2-4:2 FTS	111		25 - 150	04/13/23 05:51	04/18/23 15:31	1
M2-6:2 FTS	116		25 - 150	04/13/23 05:51	04/18/23 15:31	1
M2-8:2 FTS	120		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C3 HFPO-DA	73		25 - 150	04/13/23 05:51	04/18/23 15:31	1
13C2 10:2 FTS	91		25 - 150	04/13/23 05:51	04/18/23 15:31	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	280		44	21	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoropentanoic acid (PFPeA)	890		18	4.3	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorohexanoic acid (PFHxA)	610		18	5.1	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoroheptanoic acid (PFHpA)	490		18	2.2	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorooctanoic acid (PFOA)	740		18	7.5	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorononanoic acid (PFNA)	110		18	2.4	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorodecanoic acid (PFDA)	74		18	2.7	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoroundecanoic acid (PFUnA)	25		18	9.6	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorododecanoic acid (PFDoA)	<4.8		18	4.8	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorotridecanoic acid (PFTriA)	<11		18	11	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorotetradecanoic acid (PFTeA)	<6.4		18	6.4	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<7.8		18	7.8	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.2 *		18	8.2	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorobutanesulfonic acid (PFBS)	22		18	1.8	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoropentanesulfonic acid (PFPeS)	6.3 J		18	2.6	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorohexanesulfonic acid (PFHxS)	120		18	5.0	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluoroheptanesulfonic acid (PFHpS)	6.8 J		18	1.7	ng/L		04/13/23 05:51	04/18/23 14:30	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232038-1

Date Collected: 04/10/23 11:30

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	450		18	4.7	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorononanesulfonic acid (PFNS)	<3.2		18	3.2	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorodecanesulfonic acid (PFDS)	<2.8		18	2.8	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorododecanesulfonic acid (PFDoS)	<8.5		18	8.5	ng/L		04/13/23 05:51	04/18/23 14:30	10
Perfluorooctanesulfonamide (FOSA)	<8.6		18	8.6	ng/L		04/13/23 05:51	04/18/23 14:30	10
NEtFOSA	<7.6		18	7.6	ng/L		04/13/23 05:51	04/18/23 14:30	10
NMeFOSA	<3.8		18	3.8	ng/L		04/13/23 05:51	04/18/23 14:30	10
NMeFOSAA	<11		44	11	ng/L		04/13/23 05:51	04/18/23 14:30	10
NEtFOSAA	<11		44	11	ng/L		04/13/23 05:51	04/18/23 14:30	10
NMeFOSE	<12		35	12	ng/L		04/13/23 05:51	04/18/23 14:30	10
NEtFOSE	<7.5		18	7.5	ng/L		04/13/23 05:51	04/18/23 14:30	10
4:2 FTS	8.0 J		18	2.1	ng/L		04/13/23 05:51	04/18/23 14:30	10
6:2 FTS	980		44	22	ng/L		04/13/23 05:51	04/18/23 14:30	10
8:2 FTS	760		18	4.0	ng/L		04/13/23 05:51	04/18/23 14:30	10
10:2 FTS	34		18	5.9	ng/L		04/13/23 05:51	04/18/23 14:30	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.5		18	3.5	ng/L		04/13/23 05:51	04/18/23 14:30	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<13		35	13	ng/L		04/13/23 05:51	04/18/23 14:30	10
F-53B Major	<2.1		18	2.1	ng/L		04/13/23 05:51	04/18/23 14:30	10
F-53B Minor	<2.8		18	2.8	ng/L		04/13/23 05:51	04/18/23 14:30	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	85		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C5 PFPeA	91		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 PFHxA	88		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C4 PFHpA	83		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C4 PFOA	90		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C5 PFNA	81		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 PFDA	82		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 PFUnA	75		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 PFDoA	78		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 PFTeDA	56		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 PFHxDA	42		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C3 PFBS	73		25 - 150				04/13/23 05:51	04/18/23 14:30	10
18O2 PFHxS	83		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C4 PFOS	82		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C8 FOSA	77		10 - 150				04/13/23 05:51	04/18/23 14:30	10
d3-NMeFOSAA	72		25 - 150				04/13/23 05:51	04/18/23 14:30	10
d5-NEtFOSAA	86		25 - 150				04/13/23 05:51	04/18/23 14:30	10
d-N-MeFOSA-M	67		10 - 150				04/13/23 05:51	04/18/23 14:30	10
d-N-EtFOSA-M	60		10 - 150				04/13/23 05:51	04/18/23 14:30	10
d7-N-MeFOSE-M	60		10 - 150				04/13/23 05:51	04/18/23 14:30	10
d9-N-EtFOSE-M	58		10 - 150				04/13/23 05:51	04/18/23 14:30	10
M2-4:2 FTS	103		25 - 150				04/13/23 05:51	04/18/23 14:30	10
M2-6:2 FTS	108		25 - 150				04/13/23 05:51	04/18/23 14:30	10
M2-8:2 FTS	100		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C3 HFPO-DA	77		25 - 150				04/13/23 05:51	04/18/23 14:30	10
13C2 10:2 FTS	87		25 - 150				04/13/23 05:51	04/18/23 14:30	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Client Sample ID: V-900-A

Lab Sample ID: 500-232038-2

Date Collected: 04/10/23 11:35

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	7.5		4.6	2.2	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoropentanoic acid (PFPeA)	11		1.9	0.45	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorohexanoic acid (PFHxA)	5.4		1.9	0.54	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoroheptanoic acid (PFHpA)	3.2		1.9	0.23	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorooctanoic acid (PFOA)	4.8		1.9	0.79	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorononanoic acid (PFNA)	0.70	J	1.9	0.25	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorodecanoic acid (PFDA)	0.50	J	1.9	0.29	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.9	0.51	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.82		1.9	0.82	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87	*	1.9	0.87	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.9	0.28	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.59	J	1.9	0.53	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorooctanesulfonic acid (PFOS)	2.1		1.9	0.50	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.9	0.34	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.9	0.90	ng/L		04/13/23 05:51	04/17/23 23:27	1
Perfluorooctanesulfonamide (FOSA)	<0.91		1.9	0.91	ng/L		04/13/23 05:51	04/17/23 23:27	1
NEtFOSA	<0.81		1.9	0.81	ng/L		04/13/23 05:51	04/17/23 23:27	1
NMeFOSA	<0.40		1.9	0.40	ng/L		04/13/23 05:51	04/17/23 23:27	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		04/13/23 05:51	04/17/23 23:27	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		04/13/23 05:51	04/17/23 23:27	1
NMeFOSE	<1.3		3.7	1.3	ng/L		04/13/23 05:51	04/17/23 23:27	1
NEtFOSE	<0.79		1.9	0.79	ng/L		04/13/23 05:51	04/17/23 23:27	1
4:2 FTS	<0.22		1.9	0.22	ng/L		04/13/23 05:51	04/17/23 23:27	1
6:2 FTS	6.3		4.6	2.3	ng/L		04/13/23 05:51	04/17/23 23:27	1
8:2 FTS	5.6		1.9	0.43	ng/L		04/13/23 05:51	04/17/23 23:27	1
10:2 FTS	4.5		1.9	0.62	ng/L		04/13/23 05:51	04/17/23 23:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		04/13/23 05:51	04/17/23 23:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		04/13/23 05:51	04/17/23 23:27	1
F-53B Major	<0.22		1.9	0.22	ng/L		04/13/23 05:51	04/17/23 23:27	1
F-53B Minor	<0.30		1.9	0.30	ng/L		04/13/23 05:51	04/17/23 23:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	90		25 - 150				04/13/23 05:51	04/17/23 23:27	1
13C5 PFPeA	106		25 - 150				04/13/23 05:51	04/17/23 23:27	1
13C2 PFHxA	106		25 - 150				04/13/23 05:51	04/17/23 23:27	1
13C4 PFHpA	101		25 - 150				04/13/23 05:51	04/17/23 23:27	1
13C4 PFOA	97		25 - 150				04/13/23 05:51	04/17/23 23:27	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Client Sample ID: V-900-A
Date Collected: 04/10/23 11:35
Date Received: 04/11/23 09:25

Lab Sample ID: 500-232038-2
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C5 PFNA	95		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C2 PFDA	99		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C2 PFUnA	92		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C2 PFDoA	96		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C2 PFTeDA	72		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C2 PFHxDA	58		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C3 PFBS	89		25 - 150	04/13/23 05:51	04/17/23 23:27	1
18O2 PFHxS	84		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C4 PFOS	88		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C8 FOSA	89		10 - 150	04/13/23 05:51	04/17/23 23:27	1
d3-NMeFOSAA	94		25 - 150	04/13/23 05:51	04/17/23 23:27	1
d5-NEtFOSAA	100		25 - 150	04/13/23 05:51	04/17/23 23:27	1
d-N-MeFOSA-M	79		10 - 150	04/13/23 05:51	04/17/23 23:27	1
d-N-EtFOSA-M	78		10 - 150	04/13/23 05:51	04/17/23 23:27	1
d7-N-MeFOSE-M	84		10 - 150	04/13/23 05:51	04/17/23 23:27	1
d9-N-EtFOSE-M	87		10 - 150	04/13/23 05:51	04/17/23 23:27	1
M2-4:2 FTS	109		25 - 150	04/13/23 05:51	04/17/23 23:27	1
M2-6:2 FTS	86		25 - 150	04/13/23 05:51	04/17/23 23:27	1
M2-8:2 FTS	100		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C3 HFPO-DA	98		25 - 150	04/13/23 05:51	04/17/23 23:27	1
13C2 10:2 FTS	104		25 - 150	04/13/23 05:51	04/17/23 23:27	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-667358/1-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 667358

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		04/13/23 05:51	04/14/23 10:34	1
NEtFOSA	<0.87		2.0	0.87	ng/L		04/13/23 05:51	04/14/23 10:34	1
NMeFOSA	<0.43		2.0	0.43	ng/L		04/13/23 05:51	04/14/23 10:34	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		04/13/23 05:51	04/14/23 10:34	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		04/13/23 05:51	04/14/23 10:34	1
NMeFOSE	<1.4		4.0	1.4	ng/L		04/13/23 05:51	04/14/23 10:34	1
NEtFOSE	<0.85		2.0	0.85	ng/L		04/13/23 05:51	04/14/23 10:34	1
4:2 FTS	<0.24		2.0	0.24	ng/L		04/13/23 05:51	04/14/23 10:34	1
6:2 FTS	<2.5		5.0	2.5	ng/L		04/13/23 05:51	04/14/23 10:34	1
8:2 FTS	<0.46		2.0	0.46	ng/L		04/13/23 05:51	04/14/23 10:34	1
10:2 FTS	<0.67		2.0	0.67	ng/L		04/13/23 05:51	04/14/23 10:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		04/13/23 05:51	04/14/23 10:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		04/13/23 05:51	04/14/23 10:34	1
F-53B Major	<0.24		2.0	0.24	ng/L		04/13/23 05:51	04/14/23 10:34	1
F-53B Minor	<0.32		2.0	0.32	ng/L		04/13/23 05:51	04/14/23 10:34	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C5 PFPeA	99		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C2 PFHxA	99		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C4 PFHpA	99		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C4 PFOA	103		25 - 150				04/13/23 05:51	04/14/23 10:34	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

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

Lab Sample ID: MB 320-667358/1-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 667358

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	97		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFDA	104		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFUnA	103		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFDoA	100		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFTeDA	100		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFHxDA	95		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C3 PFBS	94		25 - 150	04/13/23 05:51	04/14/23 10:34	1
18O2 PFHxS	92		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C4 PFOS	92		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C8 FOSA	95		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d3-NMeFOSAA	104		25 - 150	04/13/23 05:51	04/14/23 10:34	1
d5-NEtFOSAA	103		25 - 150	04/13/23 05:51	04/14/23 10:34	1
d-N-MeFOSA-M	77		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d-N-EtFOSA-M	77		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d7-N-MeFOSE-M	86		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d9-N-EtFOSE-M	88		10 - 150	04/13/23 05:51	04/14/23 10:34	1
M2-4:2 FTS	122		25 - 150	04/13/23 05:51	04/14/23 10:34	1
M2-6:2 FTS	117		25 - 150	04/13/23 05:51	04/14/23 10:34	1
M2-8:2 FTS	112		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C3 HFPO-DA	91		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 10:2 FTS	112		25 - 150	04/13/23 05:51	04/14/23 10:34	1

Lab Sample ID: LCS 320-667358/2-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	40.0	43.4		ng/L		108	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	45.0		ng/L		113	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.8		ng/L		104	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	47.6		ng/L		119	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	45.0		ng/L		112	60 - 135
Perfluorononanoic acid (PFNA)	40.0	45.6		ng/L		114	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	47.5		ng/L		119	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	47.4		ng/L		119	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	44.8		ng/L		112	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	42.7		ng/L		107	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.9		ng/L		110	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.3		ng/L		113	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	54.9 *		ng/L		137	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	41.7		ng/L		117	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	44.2		ng/L		118	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

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

Lab Sample ID: LCS 320-667358/2-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.9		ng/L		112	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	45.0		ng/L		118	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	41.3		ng/L		111	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.8		ng/L		106	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	41.7		ng/L		108	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.8		ng/L		100	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	46.1		ng/L		115	60 - 135
NEtFOSA	40.0	47.6		ng/L		119	60 - 135
NMeFOSA	40.0	43.9		ng/L		110	60 - 135
NMeFOSAA	40.0	43.5		ng/L		109	60 - 135
NEtFOSAA	40.0	46.3		ng/L		116	60 - 135
NMeFOSE	40.0	41.1		ng/L		103	60 - 135
NEtFOSE	40.0	44.1		ng/L		110	60 - 135
4:2 FTS	37.5	44.1		ng/L		118	60 - 135
6:2 FTS	38.1	43.3		ng/L		114	60 - 135
8:2 FTS	38.4	43.8		ng/L		114	60 - 135
10:2 FTS	38.6	40.3		ng/L		104	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	48.5		ng/L		129	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	46.9		ng/L		117	60 - 135
F-53B Major	37.4	44.4		ng/L		119	60 - 135
F-53B Minor	37.8	43.8		ng/L		116	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	91		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	95		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	93		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	96		25 - 150
13C2 PFTeDA	98		25 - 150
13C2 PFHxDA	102		25 - 150
13C3 PFBS	89		25 - 150
18O2 PFHxS	89		25 - 150
13C4 PFOS	88		25 - 150
13C8 FOSA	88		10 - 150
d3-NMeFOSAA	98		25 - 150
d5-NEtFOSAA	97		25 - 150
d-N-MeFOSA-M	89		10 - 150
d-N-EtFOSA-M	80		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

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

Lab Sample ID: LCS 320-667358/2-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667358

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	87		10 - 150
d9-N-EtFOSE-M	87		10 - 150
M2-4:2 FTS	123		25 - 150
M2-6:2 FTS	116		25 - 150
M2-8:2 FTS	105		25 - 150
13C3 HFPO-DA	89		25 - 150
13C2 10:2 FTS	106		25 - 150

Lab Sample ID: LCSD 320-667358/3-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 667358

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	40.0	43.6		ng/L		109	60 - 135	0	30
Perfluoropentanoic acid (PFPeA)	40.0	45.9		ng/L		115	60 - 135	2	30
Perfluorohexanoic acid (PFHxA)	40.0	42.1		ng/L		105	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135	6	30
Perfluorooctanoic acid (PFOA)	40.0	42.5		ng/L		106	60 - 135	6	30
Perfluorononanoic acid (PFNA)	40.0	46.6		ng/L		117	60 - 135	2	30
Perfluorodecanoic acid (PFDA)	40.0	45.8		ng/L		115	60 - 135	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	47.7		ng/L		119	60 - 135	0	30
Perfluorododecanoic acid (PFDoA)	40.0	43.1		ng/L		108	60 - 135	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.9		ng/L		107	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	45.7		ng/L		114	60 - 135	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.5		ng/L		114	60 - 135	1	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	53.7		ng/L		134	60 - 135	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	41.6		ng/L		117	60 - 135	0	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.8		ng/L		116	60 - 135	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.3		ng/L		110	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.5		ng/L		114	60 - 135	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	42.4		ng/L		114	60 - 135	3	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.4		ng/L		110	60 - 135	4	30
Perfluorodecanesulfonic acid (PFDS)	38.6	39.8		ng/L		103	60 - 135	5	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.5		ng/L		104	60 - 135	4	30
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		111	60 - 135	3	30
NEtFOSA	40.0	44.1		ng/L		110	60 - 135	8	30
NMeFOSA	40.0	49.3		ng/L		123	60 - 135	12	30
NMeFOSAA	40.0	47.3		ng/L		118	60 - 135	8	30

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

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

Lab Sample ID: LCSD 320-667358/3-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 667358

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	48.7		ng/L		122	60 - 135	5	30
NMeFOSE	40.0	42.7		ng/L		107	60 - 135	4	30
NEtFOSE	40.0	43.6		ng/L		109	60 - 135	1	30
4:2 FTS	37.5	43.2		ng/L		115	60 - 135	2	30
6:2 FTS	38.1	42.7		ng/L		112	60 - 135	1	30
8:2 FTS	38.4	47.9		ng/L		125	60 - 135	9	30
10:2 FTS	38.6	41.9		ng/L		108	60 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	49.6		ng/L		131	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.4		ng/L		113	60 - 135	3	30
F-53B Major	37.4	45.9		ng/L		123	60 - 135	3	30
F-53B Minor	37.8	41.9		ng/L		111	60 - 135	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	98		25 - 150
13C5 PFPeA	97		25 - 150
13C2 PFHxA	98		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFUnA	99		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	98		25 - 150
13C2 PFHxDA	99		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	90		25 - 150
13C8 FOSA	94		10 - 150
d3-NMeFOSAA	101		25 - 150
d5-NEtFOSAA	96		25 - 150
d-N-MeFOSA-M	78		10 - 150
d-N-EtFOSA-M	84		10 - 150
d7-N-MeFOSE-M	87		10 - 150
d9-N-EtFOSE-M	88		10 - 150
M2-4:2 FTS	131		25 - 150
M2-6:2 FTS	120		25 - 150
M2-8:2 FTS	108		25 - 150
13C3 HFPO-DA	91		25 - 150
13C2 10:2 FTS	107		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Client Sample ID: V-200-A

Date Collected: 04/10/23 11:30

Date Received: 04/11/23 09:25

Lab Sample ID: 500-232038-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535	DL		667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)	DL	10	668377	S1M	EET SAC	04/18/23 14:30
Total/NA	Prep	3535			667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)		1	668377	S1M	EET SAC	04/18/23 15:31

Client Sample ID: V-900-A

Date Collected: 04/10/23 11:35

Date Received: 04/11/23 09:25

Lab Sample ID: 500-232038-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)		1	668199	K1S	EET SAC	04/17/23 23:27

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Client Contact			Project Manager: Lisa Rutkowski			Sampler: Jacob Leminger			Date: 4-16-23		
Arcadis U.S., Inc.			Email: N/A			Lab Contact: Sandie Fredrick			COC No: 1 of 1 COCs		
126 North Jefferson Street, Suite 400			Tel/Fax: N/A			Carrier: FedEx			For Lab Use Only:		
Milwaukee, WI 53202			<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS			Analysis Turnaround Time			Walk-in Client:		
Project Name: Marinette, WI			TAT if different from Below			2 weeks			Lab Sampling:		
Site: Marinette, WI			<input checked="" type="checkbox"/> 1 week			1 day			Lab Project Number		
P O # 30171092.4.1.1 (WPDES)			<input type="checkbox"/> 2 days			2 days			50015522		
Phone			<input type="checkbox"/> 1 day						Sample Specific Notes:		
FAX									System Influent		
									System Effluent		
Sample Identification			Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 537 Modified (36 Compounds)	
V-200-A			4-10-23	11:30	G	W	2	N	N	X	
V-900-A			4-11-23	11:35	G	W	2	N	N	X	



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:

Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Special Instructions/QC Requirements & Comments:

7-Day TAT Max or Prelim Report by Day 7

Custody Seals Intact: Yes No

Relinquished by: Jacob Leminger

Custody Seal No.: 255 (P2)

Company: Barley Excavating

Date/Time: 4-10-23/1:30

Date/Time:

Date/Time:

Received by: Fed Ex

Company:

Date/Time:

Date/Time:

Date/Time:

Received by: [Signature]

Company:

Date/Time:

Date/Time:

Date/Time:

Received by: [Signature]

Company:

Date/Time:

Date/Time:

Date/Time:

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-232038-1

SDG Number:

Login Number: 232038

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 04/11/23 05:32 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051803
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.3C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



500-232038 Field Sheet

Job: _____

Tracking #:

6155 0317 3646

SO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: U10 Corr. Factor: (+/-) _____ °C
 Ice _____ Wet _____ Gel _____ Other _____
 Cooler Custody Seal: 2051803
 Cooler ID: _____
 Temp Observed: 1.3 °C Corrected: 1.3 °C
 From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: JF Date: 4/11/23

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: J Date: 4-11-23

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: JD Date: 4-11-23

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-232038-1 - DL	V-200-A	85	91	88	83	90	81	82	75
500-232038-1	V-200-A	53	84	96	95	93	88	86	80
500-232038-2	V-900-A	90	106	106	101	97	95	99	92
LCS 320-667358/2-A	Lab Control Sample	91	94	95	93	98	93	97	96
LCSD 320-667358/3-A	Lab Control Sample Dup	98	97	98	101	105	97	105	99
MB 320-667358/1-A	Method Blank	96	99	99	99	103	97	104	103

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-232038-1 - DL	V-200-A	78	56	42	73	83	82	77	72
500-232038-1	V-200-A	74	59	48	79	91	91	80	80
500-232038-2	V-900-A	96	72	58	89	84	88	89	94
LCS 320-667358/2-A	Lab Control Sample	96	98	102	89	89	88	88	98
LCSD 320-667358/3-A	Lab Control Sample Dup	101	98	99	92	92	90	94	101
MB 320-667358/1-A	Method Blank	100	100	95	94	92	92	95	104

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-232038-1 - DL	V-200-A	86	67	60	60	58	103	108	100
500-232038-1	V-200-A	86	67	66	64	62	111	116	120
500-232038-2	V-900-A	100	79	78	84	87	109	86	100
LCS 320-667358/2-A	Lab Control Sample	97	89	80	87	87	123	116	105
LCSD 320-667358/3-A	Lab Control Sample Dup	96	78	84	87	88	131	120	108
MB 320-667358/1-A	Method Blank	103	77	77	86	88	122	117	112

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-232038-1 - DL	V-200-A	77	87
500-232038-1	V-200-A	73	91
500-232038-2	V-900-A	98	104
LCS 320-667358/2-A	Lab Control Sample	89	106
LCSD 320-667358/3-A	Lab Control Sample Dup	91	107
MB 320-667358/1-A	Method Blank	91	112

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232038-1

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

1

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13

14

ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 4/27/2023 7:42:15 AM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-232491-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Job ID: 500-232491-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-232491-1

Comments

No additional comments.

Receipt

The samples were received on 4/19/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8° C.

LCMS

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-668851 and analytical batch 320-669777 recovered outside control limits for the following analytes: Perfluoro-n-octadecanoic acid (PFODA) and 4,8-Dioxa-3H-perfluorononanoic acid (ADONA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The concentration of several analytes associated with the following samples exceeded the instrument calibration range: 500-232491-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): The transition mass ratio was outside the established ratio limit for Perfluoroundecanoic acid (PFUnA) associated to this data set. This is indicated by the "R" flag in the raw data. As the flagged data is in control in the CCVL, there is no adverse impact to the data.

CCVL 320-669777/5

Method 537 (modified): Results for sample 500-232491-1 was reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10x analysis is 148% after the dilution factor was applied to the labeled internal standard area count.

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

Organic Prep

Method 3535: The following samples in preparation batch 320-668851 were observed to have particulates present at the bottom of the bottle prior to extraction. 500-232491-1

preparation batch 320-668851

Method: 3535_PFC_28D

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-232491-1	V-200-A	Water	04/18/23 11:00	04/19/23 09:30
500-232491-2	V-900-A	Water	04/18/23 11:05	04/19/23 09:30

- 1
- 2
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- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232491-1

Date Collected: 04/18/23 11:00

Matrix: Water

Date Received: 04/19/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	200		4.6	2.2	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoropentanoic acid (PFPeA)	650	E	1.8	0.45	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorohexanoic acid (PFHxA)	420	E	1.8	0.53	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoroheptanoic acid (PFHpA)	340		1.8	0.23	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorooctanoic acid (PFOA)	630	E	1.8	0.78	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorononanoic acid (PFNA)	98		1.8	0.25	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorodecanoic acid (PFDA)	73		1.8	0.29	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoroundecanoic acid (PFUnA)	28		1.8	1.0	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorododecanoic acid (PFDoA)	2.5		1.8	0.51	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorotetradecanoic acid (PFTeA)	<0.67		1.8	0.67	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.82		1.8	0.82	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87 *		1.8	0.87	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorobutanesulfonic acid (PFBS)	15		1.8	0.18	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoropentanesulfonic acid (PFPeS)	6.6		1.8	0.28	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorohexanesulfonic acid (PFHxS)	120		1.8	0.53	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluoroheptanesulfonic acid (PFHpS)	5.0		1.8	0.18	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorooctanesulfonic acid (PFOS)	420	E	1.8	0.50	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorononanesulfonic acid (PFNS)	0.50	J	1.8	0.34	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.8	0.30	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorododecanesulfonic acid (PFDoS)	<0.89		1.8	0.89	ng/L		04/20/23 05:47	04/25/23 00:04	1
Perfluorooctanesulfonamide (FOSA)	9.5		1.8	0.90	ng/L		04/20/23 05:47	04/25/23 00:04	1
NEtFOSA	<0.80		1.8	0.80	ng/L		04/20/23 05:47	04/25/23 00:04	1
NMeFOSA	<0.40		1.8	0.40	ng/L		04/20/23 05:47	04/25/23 00:04	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		04/20/23 05:47	04/25/23 00:04	1
NEtFOSAA	7.6		4.6	1.2	ng/L		04/20/23 05:47	04/25/23 00:04	1
NMeFOSE	<1.3		3.7	1.3	ng/L		04/20/23 05:47	04/25/23 00:04	1
NEtFOSE	<0.78		1.8	0.78	ng/L		04/20/23 05:47	04/25/23 00:04	1
4:2 FTS	6.9		1.8	0.22	ng/L		04/20/23 05:47	04/25/23 00:04	1
6:2 FTS	750	E	4.6	2.3	ng/L		04/20/23 05:47	04/25/23 00:04	1
8:2 FTS	650	E	1.8	0.42	ng/L		04/20/23 05:47	04/25/23 00:04	1
10:2 FTS	43		1.8	0.62	ng/L		04/20/23 05:47	04/25/23 00:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37 *		1.8	0.37	ng/L		04/20/23 05:47	04/25/23 00:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		04/20/23 05:47	04/25/23 00:04	1
F-53B Major	<0.22		1.8	0.22	ng/L		04/20/23 05:47	04/25/23 00:04	1
F-53B Minor	<0.30		1.8	0.30	ng/L		04/20/23 05:47	04/25/23 00:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	79		25 - 150				04/20/23 05:47	04/25/23 00:04	1
13C5 PFPeA	92		25 - 150				04/20/23 05:47	04/25/23 00:04	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232491-1

Date Collected: 04/18/23 11:00

Matrix: Water

Date Received: 04/19/23 09:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C4 PFHpA	100		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C4 PFOA	94		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C5 PFNA	90		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C2 PFDA	93		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C2 PFUnA	82		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C2 PFDoA	74		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C2 PFTeDA	64		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C2 PFHxDA	51		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C3 PFBS	79		25 - 150	04/20/23 05:47	04/25/23 00:04	1
18O2 PFHxS	89		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C4 PFOS	93		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C8 FOSA	82		10 - 150	04/20/23 05:47	04/25/23 00:04	1
d3-NMeFOSAA	83		25 - 150	04/20/23 05:47	04/25/23 00:04	1
d5-NEtFOSAA	87		25 - 150	04/20/23 05:47	04/25/23 00:04	1
d-N-MeFOSA-M	72		10 - 150	04/20/23 05:47	04/25/23 00:04	1
d-N-EtFOSA-M	65		10 - 150	04/20/23 05:47	04/25/23 00:04	1
d7-N-MeFOSE-M	66		10 - 150	04/20/23 05:47	04/25/23 00:04	1
d9-N-EtFOSE-M	60		10 - 150	04/20/23 05:47	04/25/23 00:04	1
M2-4:2 FTS	86		25 - 150	04/20/23 05:47	04/25/23 00:04	1
M2-6:2 FTS	94		25 - 150	04/20/23 05:47	04/25/23 00:04	1
M2-8:2 FTS	109		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C3 HFPO-DA	81		25 - 150	04/20/23 05:47	04/25/23 00:04	1
13C2 10:2 FTS	75		25 - 150	04/20/23 05:47	04/25/23 00:04	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	240		46	22	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoropentanoic acid (PFPeA)	800		18	4.5	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorohexanoic acid (PFHxA)	530		18	5.3	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoroheptanoic acid (PFHpA)	400		18	2.3	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorooctanoic acid (PFOA)	790		18	7.8	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorononanoic acid (PFNA)	110		18	2.5	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorodecanoic acid (PFDA)	68		18	2.9	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoroundecanoic acid (PFUnA)	25		18	10	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorododecanoic acid (PFDoA)	<5.1		18	5.1	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorotridecanoic acid (PFTriA)	<12		18	12	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorotetradecanoic acid (PFTeA)	<6.7		18	6.7	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.2		18	8.2	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.7 *		18	8.7	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorobutanesulfonic acid (PFBS)	16 J		18	1.8	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoropentanesulfonic acid (PFPeS)	6.3 J		18	2.8	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorohexanesulfonic acid (PFHxS)	130		18	5.3	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluoroheptanesulfonic acid (PFHpS)	5.9 J		18	1.8	ng/L		04/20/23 05:47	04/26/23 13:57	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232491-1

Date Collected: 04/18/23 11:00

Matrix: Water

Date Received: 04/19/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	560		18	5.0	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorononanesulfonic acid (PFNS)	<3.4		18	3.4	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorodecanesulfonic acid (PFDS)	<3.0		18	3.0	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorododecanesulfonic acid (PFDoS)	<8.9		18	8.9	ng/L		04/20/23 05:47	04/26/23 13:57	10
Perfluorooctanesulfonamide (FOSA)	<9.0		18	9.0	ng/L		04/20/23 05:47	04/26/23 13:57	10
NEtFOSA	<8.0		18	8.0	ng/L		04/20/23 05:47	04/26/23 13:57	10
NMeFOSA	<4.0		18	4.0	ng/L		04/20/23 05:47	04/26/23 13:57	10
NMeFOSAA	<11		46	11	ng/L		04/20/23 05:47	04/26/23 13:57	10
NEtFOSAA	<12		46	12	ng/L		04/20/23 05:47	04/26/23 13:57	10
NMeFOSE	<13		37	13	ng/L		04/20/23 05:47	04/26/23 13:57	10
NEtFOSE	<7.8		18	7.8	ng/L		04/20/23 05:47	04/26/23 13:57	10
4:2 FTS	5.2 J		18	2.2	ng/L		04/20/23 05:47	04/26/23 13:57	10
6:2 FTS	950		46	23	ng/L		04/20/23 05:47	04/26/23 13:57	10
8:2 FTS	850		18	4.2	ng/L		04/20/23 05:47	04/26/23 13:57	10
10:2 FTS	40		18	6.2	ng/L		04/20/23 05:47	04/26/23 13:57	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.7 *		18	3.7	ng/L		04/20/23 05:47	04/26/23 13:57	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<14		37	14	ng/L		04/20/23 05:47	04/26/23 13:57	10
F-53B Major	<2.2		18	2.2	ng/L		04/20/23 05:47	04/26/23 13:57	10
F-53B Minor	<3.0		18	3.0	ng/L		04/20/23 05:47	04/26/23 13:57	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	90		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C5 PFPeA	99		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 PFHxA	96		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C4 PFHpA	100		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C4 PFOA	95		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C5 PFNA	91		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 PFDA	92		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 PFUnA	82		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 PFDoA	78		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 PFTeDA	59		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 PFHxDA	46		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C3 PFBS	79		25 - 150				04/20/23 05:47	04/26/23 13:57	10
18O2 PFHxS	81		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C4 PFOS	71		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C8 FOSA	90		10 - 150				04/20/23 05:47	04/26/23 13:57	10
d3-NMeFOSAA	82		25 - 150				04/20/23 05:47	04/26/23 13:57	10
d5-NEtFOSAA	89		25 - 150				04/20/23 05:47	04/26/23 13:57	10
d-N-MeFOSA-M	71		10 - 150				04/20/23 05:47	04/26/23 13:57	10
d-N-EtFOSA-M	64		10 - 150				04/20/23 05:47	04/26/23 13:57	10
d7-N-MeFOSE-M	68		10 - 150				04/20/23 05:47	04/26/23 13:57	10
d9-N-EtFOSE-M	63		10 - 150				04/20/23 05:47	04/26/23 13:57	10
M2-4:2 FTS	87		25 - 150				04/20/23 05:47	04/26/23 13:57	10
M2-6:2 FTS	97		25 - 150				04/20/23 05:47	04/26/23 13:57	10
M2-8:2 FTS	90		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C3 HFPO-DA	77		25 - 150				04/20/23 05:47	04/26/23 13:57	10
13C2 10:2 FTS	79		25 - 150				04/20/23 05:47	04/26/23 13:57	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Client Sample ID: V-900-A

Lab Sample ID: 500-232491-2

Date Collected: 04/18/23 11:05

Matrix: Water

Date Received: 04/19/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	27		4.8	2.3	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoropentanoic acid (PFPeA)	16		1.9	0.47	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorohexanoic acid (PFHxA)	2.0		1.9	0.55	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoroheptanoic acid (PFHpA)	0.55	J	1.9	0.24	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorooctanoic acid (PFOA)	1.0	J	1.9	0.81	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.85		1.9	0.85	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.90	*	1.9	0.90	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoropentanesulfonic acid (PFPeS)	<0.29		1.9	0.29	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorohexanesulfonic acid (PFHxS)	<0.54		1.9	0.54	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorooctanesulfonic acid (PFOS)	0.90	J	1.9	0.52	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorododecanesulfonic acid (PFDoS)	<0.93		1.9	0.93	ng/L		04/20/23 05:47	04/25/23 00:14	1
Perfluorooctanesulfonamide (FOSA)	<0.94		1.9	0.94	ng/L		04/20/23 05:47	04/25/23 00:14	1
NEtFOSA	<0.83		1.9	0.83	ng/L		04/20/23 05:47	04/25/23 00:14	1
NMeFOSA	<0.41		1.9	0.41	ng/L		04/20/23 05:47	04/25/23 00:14	1
NMeFOSAA	<1.1		4.8	1.1	ng/L		04/20/23 05:47	04/25/23 00:14	1
NEtFOSAA	<1.2		4.8	1.2	ng/L		04/20/23 05:47	04/25/23 00:14	1
NMeFOSE	<1.3		3.8	1.3	ng/L		04/20/23 05:47	04/25/23 00:14	1
NEtFOSE	<0.81		1.9	0.81	ng/L		04/20/23 05:47	04/25/23 00:14	1
4:2 FTS	<0.23		1.9	0.23	ng/L		04/20/23 05:47	04/25/23 00:14	1
6:2 FTS	<2.4		4.8	2.4	ng/L		04/20/23 05:47	04/25/23 00:14	1
8:2 FTS	4.5		1.9	0.44	ng/L		04/20/23 05:47	04/25/23 00:14	1
10:2 FTS	4.1		1.9	0.64	ng/L		04/20/23 05:47	04/25/23 00:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38	*	1.9	0.38	ng/L		04/20/23 05:47	04/25/23 00:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		04/20/23 05:47	04/25/23 00:14	1
F-53B Major	<0.23		1.9	0.23	ng/L		04/20/23 05:47	04/25/23 00:14	1
F-53B Minor	<0.31		1.9	0.31	ng/L		04/20/23 05:47	04/25/23 00:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	110		25 - 150				04/20/23 05:47	04/25/23 00:14	1
13C5 PFPeA	105		25 - 150				04/20/23 05:47	04/25/23 00:14	1
13C2 PFHxA	94		25 - 150				04/20/23 05:47	04/25/23 00:14	1
13C4 PFHpA	96		25 - 150				04/20/23 05:47	04/25/23 00:14	1
13C4 PFOA	102		25 - 150				04/20/23 05:47	04/25/23 00:14	1
13C5 PFNA	98		25 - 150				04/20/23 05:47	04/25/23 00:14	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Client Sample ID: V-900-A

Lab Sample ID: 500-232491-2

Date Collected: 04/18/23 11:05

Matrix: Water

Date Received: 04/19/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDA	104		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C2 PFUnA	97		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C2 PFDoA	86		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C2 PFTeDA	74		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C2 PFHxDA	47		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C3 PFBS	93		25 - 150	04/20/23 05:47	04/25/23 00:14	1
18O2 PFHxS	92		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C4 PFOS	90		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C8 FOSA	99		10 - 150	04/20/23 05:47	04/25/23 00:14	1
d3-NMeFOSAA	95		25 - 150	04/20/23 05:47	04/25/23 00:14	1
d5-NEtFOSAA	98		25 - 150	04/20/23 05:47	04/25/23 00:14	1
d-N-MeFOSA-M	84		10 - 150	04/20/23 05:47	04/25/23 00:14	1
d-N-EtFOSA-M	76		10 - 150	04/20/23 05:47	04/25/23 00:14	1
d7-N-MeFOSE-M	77		10 - 150	04/20/23 05:47	04/25/23 00:14	1
d9-N-EtFOSE-M	70		10 - 150	04/20/23 05:47	04/25/23 00:14	1
M2-4:2 FTS	92		25 - 150	04/20/23 05:47	04/25/23 00:14	1
M2-6:2 FTS	91		25 - 150	04/20/23 05:47	04/25/23 00:14	1
M2-8:2 FTS	107		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C3 HFPO-DA	92		25 - 150	04/20/23 05:47	04/25/23 00:14	1
13C2 10:2 FTS	85		25 - 150	04/20/23 05:47	04/25/23 00:14	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-668851/1-A
Matrix: Water
Analysis Batch: 669777

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 668851

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		04/20/23 05:47	04/24/23 23:04	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		04/20/23 05:47	04/24/23 23:04	1
NEtFOSA	<0.87		2.0	0.87	ng/L		04/20/23 05:47	04/24/23 23:04	1
NMeFOSA	<0.43		2.0	0.43	ng/L		04/20/23 05:47	04/24/23 23:04	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		04/20/23 05:47	04/24/23 23:04	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		04/20/23 05:47	04/24/23 23:04	1
NMeFOSE	<1.4		4.0	1.4	ng/L		04/20/23 05:47	04/24/23 23:04	1
NEtFOSE	<0.85		2.0	0.85	ng/L		04/20/23 05:47	04/24/23 23:04	1
4:2 FTS	<0.24		2.0	0.24	ng/L		04/20/23 05:47	04/24/23 23:04	1
6:2 FTS	<2.5		5.0	2.5	ng/L		04/20/23 05:47	04/24/23 23:04	1
8:2 FTS	<0.46		2.0	0.46	ng/L		04/20/23 05:47	04/24/23 23:04	1
10:2 FTS	<0.67		2.0	0.67	ng/L		04/20/23 05:47	04/24/23 23:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		04/20/23 05:47	04/24/23 23:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		04/20/23 05:47	04/24/23 23:04	1
F-53B Major	<0.24		2.0	0.24	ng/L		04/20/23 05:47	04/24/23 23:04	1
F-53B Minor	<0.32		2.0	0.32	ng/L		04/20/23 05:47	04/24/23 23:04	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	95		25 - 150				04/20/23 05:47	04/24/23 23:04	1
13C5 PFPeA	98		25 - 150				04/20/23 05:47	04/24/23 23:04	1
13C2 PFHxA	99		25 - 150				04/20/23 05:47	04/24/23 23:04	1
13C4 PFHpA	96		25 - 150				04/20/23 05:47	04/24/23 23:04	1
13C4 PFOA	99		25 - 150				04/20/23 05:47	04/24/23 23:04	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

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

Lab Sample ID: MB 320-668851/1-A
Matrix: Water
Analysis Batch: 669777

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 668851

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	98		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C2 PFDA	109		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C2 PFUnA	102		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C2 PFDoA	93		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C2 PFTeDA	109		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C2 PFHxDA	85		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C3 PFBS	89		25 - 150	04/20/23 05:47	04/24/23 23:04	1
18O2 PFHxS	91		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C4 PFOS	92		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C8 FOSA	89		10 - 150	04/20/23 05:47	04/24/23 23:04	1
d3-NMeFOSAA	95		25 - 150	04/20/23 05:47	04/24/23 23:04	1
d5-NEtFOSAA	108		25 - 150	04/20/23 05:47	04/24/23 23:04	1
d-N-MeFOSA-M	84		10 - 150	04/20/23 05:47	04/24/23 23:04	1
d-N-EtFOSA-M	79		10 - 150	04/20/23 05:47	04/24/23 23:04	1
d7-N-MeFOSE-M	85		10 - 150	04/20/23 05:47	04/24/23 23:04	1
d9-N-EtFOSE-M	83		10 - 150	04/20/23 05:47	04/24/23 23:04	1
M2-4:2 FTS	101		25 - 150	04/20/23 05:47	04/24/23 23:04	1
M2-6:2 FTS	100		25 - 150	04/20/23 05:47	04/24/23 23:04	1
M2-8:2 FTS	100		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C3 HFPO-DA	92		25 - 150	04/20/23 05:47	04/24/23 23:04	1
13C2 10:2 FTS	94		25 - 150	04/20/23 05:47	04/24/23 23:04	1

Lab Sample ID: LCS 320-668851/2-A
Matrix: Water
Analysis Batch: 669777

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 668851

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	46.1		ng/L		115	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	43.0		ng/L		107	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	45.4		ng/L		113	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	46.4		ng/L		116	60 - 135
Perfluorononanoic acid (PFNA)	40.0	47.5		ng/L		119	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	49.3		ng/L		123	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	47.8		ng/L		120	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	46.1		ng/L		115	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	45.6		ng/L		114	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.9		ng/L		102	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.8		ng/L		117	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	60.3	*	ng/L		151	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	40.6		ng/L		114	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	47.9		ng/L		127	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

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

Lab Sample ID: LCS 320-668851/2-A
Matrix: Water
Analysis Batch: 669777

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 668851

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	39.7		ng/L		109	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	46.9		ng/L		123	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	43.0		ng/L		116	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	45.0		ng/L		117	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	47.0		ng/L		122	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.8		ng/L		100	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	47.3		ng/L		118	60 - 135
NEtFOSA	40.0	47.2		ng/L		118	60 - 135
NMeFOSA	40.0	43.9		ng/L		110	60 - 135
NMeFOSAA	40.0	44.4		ng/L		111	60 - 135
NEtFOSAA	40.0	47.4		ng/L		119	60 - 135
NMeFOSE	40.0	47.6		ng/L		119	60 - 135
NEtFOSE	40.0	48.3		ng/L		121	60 - 135
4:2 FTS	37.5	45.5		ng/L		121	60 - 135
6:2 FTS	38.1	45.8		ng/L		120	60 - 135
8:2 FTS	38.4	46.6		ng/L		121	60 - 135
10:2 FTS	38.6	39.8		ng/L		103	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	53.9 *		ng/L		143	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	49.8		ng/L		125	60 - 135
F-53B Major	37.4	46.7		ng/L		125	60 - 135
F-53B Minor	37.8	48.1		ng/L		127	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	95		25 - 150
13C5 PFPeA	101		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	109		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	106		25 - 150
13C2 PFTeDA	114		25 - 150
13C2 PFHxDA	125		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	95		25 - 150
13C4 PFOS	91		25 - 150
13C8 FOSA	91		10 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	103		25 - 150
d-N-MeFOSA-M	84		10 - 150
d-N-EtFOSA-M	79		10 - 150

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

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

Lab Sample ID: LCS 320-668851/2-A

Matrix: Water

Analysis Batch: 669777

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 668851

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d7-N-MeFOSE-M</i>	85		10 - 150
<i>d9-N-EtFOSE-M</i>	83		10 - 150
<i>M2-4:2 FTS</i>	100		25 - 150
<i>M2-6:2 FTS</i>	104		25 - 150
<i>M2-8:2 FTS</i>	113		25 - 150
<i>13C3 HFPO-DA</i>	88		25 - 150
<i>13C2 10:2 FTS</i>	103		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Client Sample ID: V-200-A
Date Collected: 04/18/23 11:00
Date Received: 04/19/23 09:30

Lab Sample ID: 500-232491-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			668851	EFG	EET SAC	04/20/23 05:47
Total/NA	Analysis	537 (modified)		1	669777	K1S	EET SAC	04/25/23 00:04
Total/NA	Prep	3535	DL		668851	EFG	EET SAC	04/20/23 05:47
Total/NA	Analysis	537 (modified)	DL	10	670277	AEC	EET SAC	04/26/23 13:57

Client Sample ID: V-900-A
Date Collected: 04/18/23 11:05
Date Received: 04/19/23 09:30

Lab Sample ID: 500-232491-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			668851	EFG	EET SAC	04/20/23 05:47
Total/NA	Analysis	537 (modified)		1	669777	K1S	EET SAC	04/25/23 00:14

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski		Email: N/A		Sampler: Jack Haminger		Date: 4-18-23		COC No: 1 of 1 COCs	
Tel/Fax: N/A		Analysis Turnaround Time		Lab Contact: Sandie Fredrick		Carrier: FedEx			
<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Date		Sample Time		Sample Type (C=Comp, G=Grab)		# of Cont.	
Project Name: Marinette, WI Site: Marinette, WI P O # 30171092.4.1.1 (WPDES)		V-200-A		11:00		G		W 2	
		V-900-A		11:05		G		W 2	
Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone FAX		Sample Identification V-200-A V-900-A		Sample Specific Notes: System Influent System Effluent		For Lab Use Only: Walk-in Client: Lab Sampling:		Lab Project Number 50015522	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Non-Hazard <input checked="" type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/>		Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> Archive for <input type="checkbox"/> Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 Soday-TAT		Custody Seal No.: 2051998 Company: Barley Excavating Date/Time: 4-18-23/12:00		Received by: Jack Ex Company:		Cooler Temp. (°C): Obs'd: 0-8 Corr'd: 0-8 Therm ID No: 500			
Relinquished by: Jack Haminger		Relinquished by:		Received by: Jack Ex Company:		Date/Time: 4/18/23 930			
Relinquished by:		Relinquished by:		Received in Laboratory by:		Date/Time:			



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-232491-1

SDG Number:

Login Number: 232491

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

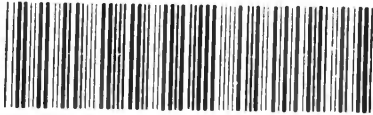
List Creation: 04/19/23 07:35 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051798
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environment Testing
TestAmerica

Sacramento Sample Receiving Notes



500-232491 Field Sheet

Tracking #: 6155 6317 3668

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: C10 Corr. Factor: (+/-) _____ °C

Ice Wet _____ Gel _____ Other _____

Cooler Custody Seal: 2051798

Cooler ID: _____

Temp Observed: 0.8 °C Corrected: 0.8 °C
From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: JF Date: 4/19/23

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: So Date: 4/19/23

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: So Date: 4/19/23

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Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-232491-1	V-200-A	79	92	98	100	94	90	93	82
500-232491-1 - DL	V-200-A	90	99	96	100	95	91	92	82
500-232491-2	V-900-A	110	105	94	96	102	98	104	97
LCS 320-668851/2-A	Lab Control Sample	95	101	99	101	103	97	109	100
MB 320-668851/1-A	Method Blank	95	98	99	96	99	98	109	102

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-232491-1	V-200-A	74	64	51	79	89	93	82	83
500-232491-1 - DL	V-200-A	78	59	46	79	81	71	90	82
500-232491-2	V-900-A	86	74	47	93	92	90	99	95
LCS 320-668851/2-A	Lab Control Sample	106	114	125	92	95	91	91	99
MB 320-668851/1-A	Method Blank	93	109	85	89	91	92	89	95

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-232491-1	V-200-A	87	72	65	66	60	86	94	109
500-232491-1 - DL	V-200-A	89	71	64	68	63	87	97	90
500-232491-2	V-900-A	98	84	76	77	70	92	91	107
LCS 320-668851/2-A	Lab Control Sample	103	84	79	85	83	100	104	113
MB 320-668851/1-A	Method Blank	108	84	79	85	83	101	100	100

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-232491-1	V-200-A	81	75
500-232491-1 - DL	V-200-A	77	79
500-232491-2	V-900-A	92	85
LCS 320-668851/2-A	Lab Control Sample	88	103
MB 320-668851/1-A	Method Blank	92	94

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232491-1

dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 5/8/2023 8:46:34 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-232725-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Job ID: 500-232725-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-232725-1

Comments

No additional comments.

Receipt

The samples were received on 4/25/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1° C.

LCMS

Method 537 (modified): The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 320-671567 and analytical batch 320-671771 recovered outside control limits for the following analyte: Perfluoro-n-octadecanoic acid (PFODA). This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-232725-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-671771 recovered above the upper control limit for Perfluorononanesulfonic acid (PFNS). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-232725-1. These analytes have been qualified; however, the peak did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range. The sample was diluted within the calibration range, both sets of data have been reported.

Method 537 (modified): The method blank for preparation batch 320-670244 and 320-670244 contained Perfluorooctanesulfonic acid (PFOS) above the reporting limit (RL). The samples associated with this method blank contained the target compound and were re-extracted. Per client request, all runs have been reported. The following samples were impacted: 500-232725-1, 500-232725-2 and MB 320-670244/1-A

Method 537 (modified): Results for sample 500-232725-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10X analysis is 100% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): Results for sample 500-232725-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10X analysis is 112% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-672551 recovered below the lower control limit for Perfluoro-n-octadecanoic acid (PFODA). This target analyte is no longer regulated by the state of WI; therefore, the data have been reported. The associated samples are impacted: 500-232725-1 and CCV 320-672551/1.

Method 537 (modified): The low level continuing calibration verification (CCVL) associated with batch 320-672539 recovered below the lower control limit for Perfluoro-n-octadecanoic acid (PFODA). This analyte is no longer regulated by the state of WI; therefore, the data have been reported.

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

Organic Prep

Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Job ID: 500-232725-1 (Continued)

Laboratory: Eurofins Chicago (Continued)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-670244.

3535 PFC
Water
320-670244

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-671567.

3535 PFC
Water
320-671567

Method 3535: The following samples in preparation batch 320-671567 were light brown in color prior to extraction. 500-232725-1 and 500-232725-2

3535 PFC
Water
320-671567

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



Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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



Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-232725-1	V-200-A	Water	04/24/23 11:00	04/25/23 09:40
500-232725-2	V-900-A	Water	04/24/23 11:05	04/25/23 09:40

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	250		4.4	2.1	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoropentanoic acid (PFPeA)	810	E	1.8	0.43	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorohexanoic acid (PFHxA)	540	E	1.8	0.51	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoroheptanoic acid (PFHpA)	370	E	1.8	0.22	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorooctanoic acid (PFOA)	840	E	1.8	0.74	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorononanoic acid (PFNA)	100	B	1.8	0.24	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorodecanoic acid (PFDA)	70		1.8	0.27	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoroundecanoic acid (PFUnA)	27		1.8	0.96	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorododecanoic acid (PFDoA)	1.9		1.8	0.48	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.8	0.82	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorobutanesulfonic acid (PFBS)	16		1.8	0.18	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoropentanesulfonic acid (PFPeS)	8.1		1.8	0.26	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorohexanesulfonic acid (PFHxS)	130		1.8	0.50	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoroheptanesulfonic acid (PFHpS)	5.5		1.8	0.17	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorooctanesulfonic acid (PFOS)	400	E B	1.8	0.47	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluoronanesulfonic acid (PFNS)	<0.32		1.8	0.32	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		04/26/23 10:11	04/27/23 11:44	1
Perfluorooctanesulfonamide (FOSA)	9.4		1.8	0.86	ng/L		04/26/23 10:11	04/27/23 11:44	1
NEtFOSA	<0.76		1.8	0.76	ng/L		04/26/23 10:11	04/27/23 11:44	1
NMeFOSA	<0.38		1.8	0.38	ng/L		04/26/23 10:11	04/27/23 11:44	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		04/26/23 10:11	04/27/23 11:44	1
NEtFOSAA	5.2		4.4	1.1	ng/L		04/26/23 10:11	04/27/23 11:44	1
NMeFOSE	<1.2		3.5	1.2	ng/L		04/26/23 10:11	04/27/23 11:44	1
NEtFOSE	<0.74		1.8	0.74	ng/L		04/26/23 10:11	04/27/23 11:44	1
4:2 FTS	11		1.8	0.21	ng/L		04/26/23 10:11	04/27/23 11:44	1
6:2 FTS	900	E	4.4	2.2	ng/L		04/26/23 10:11	04/27/23 11:44	1
8:2 FTS	680	E	1.8	0.40	ng/L		04/26/23 10:11	04/27/23 11:44	1
10:2 FTS	22		1.8	0.59	ng/L		04/26/23 10:11	04/27/23 11:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		04/26/23 10:11	04/27/23 11:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		04/26/23 10:11	04/27/23 11:44	1
F-53B Major	<0.21		1.8	0.21	ng/L		04/26/23 10:11	04/27/23 11:44	1
F-53B Minor	<0.28		1.8	0.28	ng/L		04/26/23 10:11	04/27/23 11:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	67		25 - 150				04/26/23 10:11	04/27/23 11:44	1
13C5 PFPeA	85		25 - 150				04/26/23 10:11	04/27/23 11:44	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C4 PFHpA	96		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C4 PFOA	85		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C5 PFNA	84		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C2 PFDA	86		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C2 PFUnA	81		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C2 PFDoA	73		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C2 PFTeDA	71		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C2 PFHxDA	66		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C3 PFBS	70		25 - 150	04/26/23 10:11	04/27/23 11:44	1
18O2 PFHxS	78		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C4 PFOS	80		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C8 FOSA	74		10 - 150	04/26/23 10:11	04/27/23 11:44	1
d3-NMeFOSAA	74		25 - 150	04/26/23 10:11	04/27/23 11:44	1
d5-NEtFOSAA	75		25 - 150	04/26/23 10:11	04/27/23 11:44	1
d-N-MeFOSA-M	70		10 - 150	04/26/23 10:11	04/27/23 11:44	1
d-N-EtFOSA-M	62		10 - 150	04/26/23 10:11	04/27/23 11:44	1
d7-N-MeFOSE-M	67		10 - 150	04/26/23 10:11	04/27/23 11:44	1
d9-N-EtFOSE-M	61		10 - 150	04/26/23 10:11	04/27/23 11:44	1
M2-4:2 FTS	84		25 - 150	04/26/23 10:11	04/27/23 11:44	1
M2-6:2 FTS	79		25 - 150	04/26/23 10:11	04/27/23 11:44	1
M2-8:2 FTS	97		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C3 HFPO-DA	69		25 - 150	04/26/23 10:11	04/27/23 11:44	1
13C2 10:2 FTS	73		25 - 150	04/26/23 10:11	04/27/23 11:44	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	300		44	21	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoropentanoic acid (PFPeA)	1000		18	4.3	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorohexanoic acid (PFHxA)	680		18	5.1	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoroheptanoic acid (PFHpA)	490		18	2.2	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorooctanoic acid (PFOA)	1100		18	7.4	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorononanoic acid (PFNA)	110	B	18	2.4	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorodecanoic acid (PFDA)	66		18	2.7	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoroundecanoic acid (PFUnA)	25		18	9.6	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorododecanoic acid (PFDoA)	<4.8		18	4.8	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorotridecanoic acid (PFTriA)	<11		18	11	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorotetradecanoic acid (PFTeA)	<6.4		18	6.4	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<7.8		18	7.8	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.2		18	8.2	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorobutanesulfonic acid (PFBS)	16	J	18	1.8	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoropentanesulfonic acid (PFPeS)	8.5	J	18	2.6	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorohexanesulfonic acid (PFHxS)	140		18	5.0	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluoroheptanesulfonic acid (PFHpS)	5.3	J	18	1.7	ng/L		04/26/23 10:11	04/27/23 18:20	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	470	B	18	4.7	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorononanesulfonic acid (PFNS)	<3.2		18	3.2	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorodecanesulfonic acid (PFDS)	<2.8		18	2.8	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorododecanesulfonic acid (PFDoS)	<8.5		18	8.5	ng/L		04/26/23 10:11	04/27/23 18:20	10
Perfluorooctanesulfonamide (FOSA)	8.9	J	18	8.6	ng/L		04/26/23 10:11	04/27/23 18:20	10
NEtFOSA	<7.6		18	7.6	ng/L		04/26/23 10:11	04/27/23 18:20	10
NMeFOSA	<3.8		18	3.8	ng/L		04/26/23 10:11	04/27/23 18:20	10
NMeFOSAA	<11		44	11	ng/L		04/26/23 10:11	04/27/23 18:20	10
NEtFOSAA	<11		44	11	ng/L		04/26/23 10:11	04/27/23 18:20	10
NMeFOSE	<12		35	12	ng/L		04/26/23 10:11	04/27/23 18:20	10
NEtFOSE	<7.4		18	7.4	ng/L		04/26/23 10:11	04/27/23 18:20	10
4:2 FTS	12	J	18	2.1	ng/L		04/26/23 10:11	04/27/23 18:20	10
6:2 FTS	1100		44	22	ng/L		04/26/23 10:11	04/27/23 18:20	10
8:2 FTS	810		18	4.0	ng/L		04/26/23 10:11	04/27/23 18:20	10
10:2 FTS	19		18	5.9	ng/L		04/26/23 10:11	04/27/23 18:20	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.5		18	3.5	ng/L		04/26/23 10:11	04/27/23 18:20	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<13		35	13	ng/L		04/26/23 10:11	04/27/23 18:20	10
F-53B Major	<2.1		18	2.1	ng/L		04/26/23 10:11	04/27/23 18:20	10
F-53B Minor	<2.8		18	2.8	ng/L		04/26/23 10:11	04/27/23 18:20	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	79		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C5 PFPeA	88		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C2 PFHxA	89		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C4 PFHpA	86		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C4 PFOA	86		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C5 PFNA	82		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C2 PFDA	85		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C2 PFOA	74		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C2 PFDoA	73		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C2 PFTeDA	67		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C2 PFHxDA	54		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C3 PFBS	69		25 - 150				04/26/23 10:11	04/27/23 18:20	10
18O2 PFHxS	68		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C4 PFOS	65		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C8 FOSA	79		10 - 150				04/26/23 10:11	04/27/23 18:20	10
d3-NMeFOSAA	64		25 - 150				04/26/23 10:11	04/27/23 18:20	10
d5-NEtFOSAA	65		25 - 150				04/26/23 10:11	04/27/23 18:20	10
d-N-MeFOSA-M	61		10 - 150				04/26/23 10:11	04/27/23 18:20	10
d-N-EtFOSA-M	62		10 - 150				04/26/23 10:11	04/27/23 18:20	10
d7-N-MeFOSE-M	61		10 - 150				04/26/23 10:11	04/27/23 18:20	10
d9-N-EtFOSE-M	59		10 - 150				04/26/23 10:11	04/27/23 18:20	10
M2-4:2 FTS	65		25 - 150				04/26/23 10:11	04/27/23 18:20	10
M2-6:2 FTS	87		25 - 150				04/26/23 10:11	04/27/23 18:20	10
M2-8:2 FTS	85		25 - 150				04/26/23 10:11	04/27/23 18:20	10
13C3 HFPO-DA	74		25 - 150				04/26/23 10:11	04/27/23 18:20	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	81		25 - 150	04/26/23 10:11	04/27/23 18:20	10

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - RE

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	370	E	4.4	2.1	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoropentanoic acid (PFPeA)	880	E	1.8	0.43	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorohexanoic acid (PFHxA)	590	E	1.8	0.51	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoroheptanoic acid (PFHpA)	380	E	1.8	0.22	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorooctanoic acid (PFOA)	840	E	1.8	0.75	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorononanoic acid (PFNA)	110		1.8	0.24	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorodecanoic acid (PFDA)	63		1.8	0.27	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoroundecanoic acid (PFUnA)	28		1.8	0.97	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorododecanoic acid (PFDoA)	1.8		1.8	0.49	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83 *		1.8	0.83	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorobutanesulfonic acid (PFBS)	15		1.8	0.18	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoropentanesulfonic acid (PFPeS)	5.1		1.8	0.26	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorohexanesulfonic acid (PFHxS)	140		1.8	0.50	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluoroheptanesulfonic acid (PFHpS)	5.4		1.8	0.17	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorooctanesulfonic acid (PFOS)	480	E	1.8	0.48	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorononanesulfonic acid (PFNS)	<0.33 ^{hc}		1.8	0.33	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		05/02/23 09:21	05/02/23 18:18	1
Perfluorooctanesulfonamide (FOSA)	8.6		1.8	0.86	ng/L		05/02/23 09:21	05/02/23 18:18	1
NEtFOSA	<0.77		1.8	0.77	ng/L		05/02/23 09:21	05/02/23 18:18	1
NMeFOSA	<0.38		1.8	0.38	ng/L		05/02/23 09:21	05/02/23 18:18	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		05/02/23 09:21	05/02/23 18:18	1
NEtFOSAA	5.1		4.4	1.1	ng/L		05/02/23 09:21	05/02/23 18:18	1
NMeFOSE	<1.2		3.5	1.2	ng/L		05/02/23 09:21	05/02/23 18:18	1
NEtFOSE	<0.75		1.8	0.75	ng/L		05/02/23 09:21	05/02/23 18:18	1
4:2 FTS	8.8		1.8	0.21	ng/L		05/02/23 09:21	05/02/23 18:18	1
6:2 FTS	940	E	4.4	2.2	ng/L		05/02/23 09:21	05/02/23 18:18	1
8:2 FTS	780	E	1.8	0.41	ng/L		05/02/23 09:21	05/02/23 18:18	1
10:2 FTS	22		1.8	0.59	ng/L		05/02/23 09:21	05/02/23 18:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		05/02/23 09:21	05/02/23 18:18	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		05/02/23 09:21	05/02/23 18:18	1
F-53B Major	<0.21		1.8	0.21	ng/L		05/02/23 09:21	05/02/23 18:18	1
F-53B Minor	<0.28		1.8	0.28	ng/L		05/02/23 09:21	05/02/23 18:18	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	63		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C5 PFPeA	89		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 PFHxA	82		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C4 PFHpA	98		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C4 PFOA	75		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C5 PFNA	72		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 PFDA	80		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 PFUnA	87		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 PFDoA	80		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 PFTeDA	65		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 PFHxDA	68		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C3 PFBS	102		25 - 150	05/02/23 09:21	05/02/23 18:18	1
18O2 PFHxS	85		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C4 PFOS	79		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C8 FOSA	68		10 - 150	05/02/23 09:21	05/02/23 18:18	1
d3-NMeFOSAA	101		25 - 150	05/02/23 09:21	05/02/23 18:18	1
d5-NEtFOSAA	98		25 - 150	05/02/23 09:21	05/02/23 18:18	1
d-N-MeFOSA-M	63		10 - 150	05/02/23 09:21	05/02/23 18:18	1
d-N-EtFOSA-M	59		10 - 150	05/02/23 09:21	05/02/23 18:18	1
d7-N-MeFOSE-M	54		10 - 150	05/02/23 09:21	05/02/23 18:18	1
d9-N-EtFOSE-M	51		10 - 150	05/02/23 09:21	05/02/23 18:18	1
M2-4:2 FTS	103		25 - 150	05/02/23 09:21	05/02/23 18:18	1
M2-6:2 FTS	82		25 - 150	05/02/23 09:21	05/02/23 18:18	1
M2-8:2 FTS	89		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C3 HFPO-DA	104		25 - 150	05/02/23 09:21	05/02/23 18:18	1
13C2 10:2 FTS	71		25 - 150	05/02/23 09:21	05/02/23 18:18	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - REDL

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	300		44	21	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluoropentanoic acid (PFPeA)	1200		18	4.3	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorohexanoic acid (PFHxA)	820		18	5.1	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluoroheptanoic acid (PFHpA)	510		18	2.2	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorooctanoic acid (PFOA)	1100		18	7.5	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorononanoic acid (PFNA)	110		18	2.4	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorodecanoic acid (PFDA)	63		18	2.7	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluoroundecanoic acid (PFUnA)	24		18	9.7	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorododecanoic acid (PFDoA)	<4.9		18	4.9	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorotridecanoic acid (PFTriA)	<11		18	11	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorotetradecanoic acid (PFTeA)	<6.4		18	6.4	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<7.8		18	7.8	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.3	^c *	18	8.3	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorobutanesulfonic acid (PFBS)	15	J	18	1.8	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluoropentanesulfonic acid (PFPeS)	8.1	J	18	2.6	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorohexanesulfonic acid (PFHxS)	140		18	5.0	ng/L		05/02/23 09:21	05/05/23 10:37	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - REDL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic acid (PFHpS)	6.5	J	18	1.7	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorooctanesulfonic acid (PFOS)	470		18	4.8	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorononanesulfonic acid (PFNS)	<3.3		18	3.3	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorodecanesulfonic acid (PFDS)	<2.8		18	2.8	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorododecanesulfonic acid (PFDoS)	<8.6		18	8.6	ng/L		05/02/23 09:21	05/05/23 10:37	10
Perfluorooctanesulfonamide (FOSA)	9.2	J	18	8.6	ng/L		05/02/23 09:21	05/05/23 10:37	10
NEtFOSA	<7.7		18	7.7	ng/L		05/02/23 09:21	05/05/23 10:37	10
NMeFOSA	<3.8		18	3.8	ng/L		05/02/23 09:21	05/05/23 10:37	10
NMeFOSAA	<11		44	11	ng/L		05/02/23 09:21	05/05/23 10:37	10
NEtFOSAA	<11		44	11	ng/L		05/02/23 09:21	05/05/23 10:37	10
NMeFOSE	<12		35	12	ng/L		05/02/23 09:21	05/05/23 10:37	10
NEtFOSE	<7.5		18	7.5	ng/L		05/02/23 09:21	05/05/23 10:37	10
4:2 FTS	9.4	J	18	2.1	ng/L		05/02/23 09:21	05/05/23 10:37	10
6:2 FTS	1100		44	22	ng/L		05/02/23 09:21	05/05/23 10:37	10
8:2 FTS	900		18	4.1	ng/L		05/02/23 09:21	05/05/23 10:37	10
10:2 FTS	25		18	5.9	ng/L		05/02/23 09:21	05/05/23 10:37	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.5		18	3.5	ng/L		05/02/23 09:21	05/05/23 10:37	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<13		35	13	ng/L		05/02/23 09:21	05/05/23 10:37	10
F-53B Major	<2.1		18	2.1	ng/L		05/02/23 09:21	05/05/23 10:37	10
F-53B Minor	<2.8		18	2.8	ng/L		05/02/23 09:21	05/05/23 10:37	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	81		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C5 PFPeA	74		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 PFHxA	77		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C4 PFHpA	75		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C4 PFOA	75		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C5 PFNA	71		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 PFDA	74		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 PFUnA	71		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 PFDoA	67		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 PFTeDA	48		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 PFHxDA	38		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C3 PFBS	72		25 - 150	05/02/23 09:21	05/05/23 10:37	10
18O2 PFHxS	71		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C4 PFOS	74		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C8 FOSA	80		10 - 150	05/02/23 09:21	05/05/23 10:37	10
d3-NMeFOSAA	86		25 - 150	05/02/23 09:21	05/05/23 10:37	10
d5-NEtFOSAA	73		25 - 150	05/02/23 09:21	05/05/23 10:37	10
d-N-MeFOSA-M	64		10 - 150	05/02/23 09:21	05/05/23 10:37	10
d-N-EtFOSA-M	59		10 - 150	05/02/23 09:21	05/05/23 10:37	10
d7-N-MeFOSE-M	63		10 - 150	05/02/23 09:21	05/05/23 10:37	10
d9-N-EtFOSE-M	58		10 - 150	05/02/23 09:21	05/05/23 10:37	10
M2-4:2 FTS	54		25 - 150	05/02/23 09:21	05/05/23 10:37	10
M2-6:2 FTS	72		25 - 150	05/02/23 09:21	05/05/23 10:37	10
M2-8:2 FTS	72		25 - 150	05/02/23 09:21	05/05/23 10:37	10

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A
Date Collected: 04/24/23 11:00
Date Received: 04/25/23 09:40

Lab Sample ID: 500-232725-1
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - REDL (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	73		25 - 150	05/02/23 09:21	05/05/23 10:37	10
13C2 10:2 FTS	65		25 - 150	05/02/23 09:21	05/05/23 10:37	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-900-A

Lab Sample ID: 500-232725-2

Date Collected: 04/24/23 11:05

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	60		4.4	2.1	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoropentanoic acid (PFPeA)	68		1.7	0.43	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorohexanoic acid (PFHxA)	13		1.7	0.51	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoroheptanoic acid (PFHpA)	3.3		1.7	0.22	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorooctanoic acid (PFOA)	5.3		1.7	0.74	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorononanoic acid (PFNA)	0.25	J B	1.7	0.24	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.7	0.96	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.7	0.64	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.7	0.78	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.82		1.7	0.82	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.7	0.50	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.7	0.17	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorooctanesulfonic acid (PFOS)	1.0	J B	1.7	0.47	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.7	0.85	ng/L		04/26/23 10:11	04/27/23 11:55	1
Perfluorooctanesulfonamide (FOSA)	<0.86		1.7	0.86	ng/L		04/26/23 10:11	04/27/23 11:55	1
NEtFOSA	<0.76		1.7	0.76	ng/L		04/26/23 10:11	04/27/23 11:55	1
NMeFOSA	<0.38		1.7	0.38	ng/L		04/26/23 10:11	04/27/23 11:55	1
NMeFOSAA	<1.0		4.4	1.0	ng/L		04/26/23 10:11	04/27/23 11:55	1
NEtFOSAA	<1.1		4.4	1.1	ng/L		04/26/23 10:11	04/27/23 11:55	1
NMeFOSE	<1.2		3.5	1.2	ng/L		04/26/23 10:11	04/27/23 11:55	1
NEtFOSE	<0.74		1.7	0.74	ng/L		04/26/23 10:11	04/27/23 11:55	1
4:2 FTS	<0.21		1.7	0.21	ng/L		04/26/23 10:11	04/27/23 11:55	1
6:2 FTS	<2.2		4.4	2.2	ng/L		04/26/23 10:11	04/27/23 11:55	1
8:2 FTS	1.7		1.7	0.40	ng/L		04/26/23 10:11	04/27/23 11:55	1
10:2 FTS	2.6		1.7	0.59	ng/L		04/26/23 10:11	04/27/23 11:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.7	0.35	ng/L		04/26/23 10:11	04/27/23 11:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		04/26/23 10:11	04/27/23 11:55	1
F-53B Major	<0.21		1.7	0.21	ng/L		04/26/23 10:11	04/27/23 11:55	1
F-53B Minor	<0.28		1.7	0.28	ng/L		04/26/23 10:11	04/27/23 11:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	106		25 - 150				04/26/23 10:11	04/27/23 11:55	1
13C5 PFPeA	103		25 - 150				04/26/23 10:11	04/27/23 11:55	1
13C2 PFHxA	99		25 - 150				04/26/23 10:11	04/27/23 11:55	1
13C4 PFHpA	98		25 - 150				04/26/23 10:11	04/27/23 11:55	1
13C4 PFOA	100		25 - 150				04/26/23 10:11	04/27/23 11:55	1
13C5 PFNA	94		25 - 150				04/26/23 10:11	04/27/23 11:55	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-900-A

Lab Sample ID: 500-232725-2

Date Collected: 04/24/23 11:05

Matrix: Water

Date Received: 04/25/23 09:40

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	104		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C2 PFUnA	97		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C2 PFDoA	87		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C2 PFTeDA	86		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C2 PFHxDA	85		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C3 PFBS	85		25 - 150	04/26/23 10:11	04/27/23 11:55	1
18O2 PFHxS	82		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C4 PFOS	81		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C8 FOSA	89		10 - 150	04/26/23 10:11	04/27/23 11:55	1
d3-NMeFOSAA	87		25 - 150	04/26/23 10:11	04/27/23 11:55	1
d5-NEtFOSAA	87		25 - 150	04/26/23 10:11	04/27/23 11:55	1
d-N-MeFOSA-M	82		10 - 150	04/26/23 10:11	04/27/23 11:55	1
d-N-EtFOSA-M	70		10 - 150	04/26/23 10:11	04/27/23 11:55	1
d7-N-MeFOSE-M	72		10 - 150	04/26/23 10:11	04/27/23 11:55	1
d9-N-EtFOSE-M	71		10 - 150	04/26/23 10:11	04/27/23 11:55	1
M2-4:2 FTS	91		25 - 150	04/26/23 10:11	04/27/23 11:55	1
M2-6:2 FTS	84		25 - 150	04/26/23 10:11	04/27/23 11:55	1
M2-8:2 FTS	86		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C3 HFPO-DA	87		25 - 150	04/26/23 10:11	04/27/23 11:55	1
13C2 10:2 FTS	84		25 - 150	04/26/23 10:11	04/27/23 11:55	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - RE

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	82		4.5	2.1	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoropentanoic acid (PFPeA)	69		1.8	0.44	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorohexanoic acid (PFHxA)	13		1.8	0.52	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoroheptanoic acid (PFHpA)	3.1		1.8	0.22	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorooctanoic acid (PFOA)	5.3		1.8	0.76	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorononanoic acid (PFNA)	0.38	J	1.8	0.24	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorodecanoic acid (PFDA)	0.28	J	1.8	0.28	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.80		1.8	0.80	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.84	*	1.8	0.84	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.8	0.48	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorononanesulfonic acid (PFNS)	<0.33	^c	1.8	0.33	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		05/02/23 09:21	05/02/23 18:28	1
Perfluorooctanesulfonamide (FOSA)	<0.88		1.8	0.88	ng/L		05/02/23 09:21	05/02/23 18:28	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-900-A

Lab Sample ID: 500-232725-2

Date Collected: 04/24/23 11:05

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - RE (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSA	<0.78		1.8	0.78	ng/L		05/02/23 09:21	05/02/23 18:28	1
NMeFOSA	<0.38		1.8	0.38	ng/L		05/02/23 09:21	05/02/23 18:28	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		05/02/23 09:21	05/02/23 18:28	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		05/02/23 09:21	05/02/23 18:28	1
NMeFOSE	<1.3		3.6	1.3	ng/L		05/02/23 09:21	05/02/23 18:28	1
NEtFOSE	<0.76		1.8	0.76	ng/L		05/02/23 09:21	05/02/23 18:28	1
4:2 FTS	<0.21		1.8	0.21	ng/L		05/02/23 09:21	05/02/23 18:28	1
6:2 FTS	<2.2		4.5	2.2	ng/L		05/02/23 09:21	05/02/23 18:28	1
8:2 FTS	1.8		1.8	0.41	ng/L		05/02/23 09:21	05/02/23 18:28	1
10:2 FTS	2.3		1.8	0.60	ng/L		05/02/23 09:21	05/02/23 18:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		05/02/23 09:21	05/02/23 18:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.6	1.3	ng/L		05/02/23 09:21	05/02/23 18:28	1
F-53B Major	<0.21		1.8	0.21	ng/L		05/02/23 09:21	05/02/23 18:28	1
F-53B Minor	<0.29		1.8	0.29	ng/L		05/02/23 09:21	05/02/23 18:28	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	69		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C5 PFPeA	83		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 PFHxA	73		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C4 PFHpA	78		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C4 PFOA	69		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C5 PFNA	57		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 PFDA	63		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 PFUnA	70		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 PFDoA	57		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 PFTeDA	45		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 PFHxDA	27		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C3 PFBS	84		25 - 150				05/02/23 09:21	05/02/23 18:28	1
18O2 PFHxS	69		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C4 PFOS	53		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C8 FOSA	58		10 - 150				05/02/23 09:21	05/02/23 18:28	1
d3-NMeFOSAA	77		25 - 150				05/02/23 09:21	05/02/23 18:28	1
d5-NEtFOSAA	73		25 - 150				05/02/23 09:21	05/02/23 18:28	1
d-N-MeFOSA-M	47		10 - 150				05/02/23 09:21	05/02/23 18:28	1
d-N-EtFOSA-M	46		10 - 150				05/02/23 09:21	05/02/23 18:28	1
d7-N-MeFOSE-M	37		10 - 150				05/02/23 09:21	05/02/23 18:28	1
d9-N-EtFOSE-M	34		10 - 150				05/02/23 09:21	05/02/23 18:28	1
M2-4:2 FTS	72		25 - 150				05/02/23 09:21	05/02/23 18:28	1
M2-6:2 FTS	67		25 - 150				05/02/23 09:21	05/02/23 18:28	1
M2-8:2 FTS	61		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C3 HFPO-DA	83		25 - 150				05/02/23 09:21	05/02/23 18:28	1
13C2 10:2 FTS	47		25 - 150				05/02/23 09:21	05/02/23 18:28	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
^c	CCV Recovery is outside acceptance limits.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-670244/1-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 670244

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorononanoic acid (PFNA)	0.716	J	2.0	0.27	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorooctanesulfonic acid (PFOS)	12.7		2.0	0.54	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		04/26/23 10:11	04/27/23 09:23	1
NEtFOSA	<0.87		2.0	0.87	ng/L		04/26/23 10:11	04/27/23 09:23	1
NMeFOSA	<0.43		2.0	0.43	ng/L		04/26/23 10:11	04/27/23 09:23	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		04/26/23 10:11	04/27/23 09:23	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		04/26/23 10:11	04/27/23 09:23	1
NMeFOSE	<1.4		4.0	1.4	ng/L		04/26/23 10:11	04/27/23 09:23	1
NEtFOSE	<0.85		2.0	0.85	ng/L		04/26/23 10:11	04/27/23 09:23	1
4:2 FTS	<0.24		2.0	0.24	ng/L		04/26/23 10:11	04/27/23 09:23	1
6:2 FTS	<2.5		5.0	2.5	ng/L		04/26/23 10:11	04/27/23 09:23	1
8:2 FTS	<0.46		2.0	0.46	ng/L		04/26/23 10:11	04/27/23 09:23	1
10:2 FTS	<0.67		2.0	0.67	ng/L		04/26/23 10:11	04/27/23 09:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		04/26/23 10:11	04/27/23 09:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		04/26/23 10:11	04/27/23 09:23	1
F-53B Major	<0.24		2.0	0.24	ng/L		04/26/23 10:11	04/27/23 09:23	1
F-53B Minor	<0.32		2.0	0.32	ng/L		04/26/23 10:11	04/27/23 09:23	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C5 PFPeA	93		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C2 PFHxA	96		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C4 PFHpA	97		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C4 PFOA	90		25 - 150				04/26/23 10:11	04/27/23 09:23	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: MB 320-670244/1-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 670244

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	92		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFDA	106		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFUnA	103		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFDoA	100		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFTeDA	107		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFHxDA	102		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C3 PFBS	84		25 - 150	04/26/23 10:11	04/27/23 09:23	1
18O2 PFHxS	87		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C4 PFOS	90		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C8 FOSA	92		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d3-NMeFOSAA	101		25 - 150	04/26/23 10:11	04/27/23 09:23	1
d5-NEtFOSAA	99		25 - 150	04/26/23 10:11	04/27/23 09:23	1
d-N-MeFOSA-M	83		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d-N-EtFOSA-M	77		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d7-N-MeFOSE-M	89		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d9-N-EtFOSE-M	88		10 - 150	04/26/23 10:11	04/27/23 09:23	1
M2-4:2 FTS	94		25 - 150	04/26/23 10:11	04/27/23 09:23	1
M2-6:2 FTS	86		25 - 150	04/26/23 10:11	04/27/23 09:23	1
M2-8:2 FTS	97		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C3 HFPO-DA	89		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 10:2 FTS	106		25 - 150	04/26/23 10:11	04/27/23 09:23	1

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.3		ng/L		108	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	38.7		ng/L		97	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	41.8		ng/L		104	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	44.5		ng/L		111	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	43.8		ng/L		110	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.9		ng/L		107	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.3		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	36.9		ng/L		92	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.0		ng/L		105	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	38.9		ng/L		110	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	45.6		ng/L		121	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	39.6		ng/L		109	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.6		ng/L		109	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	37.7		ng/L		101	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.2		ng/L		110	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	45.6		ng/L		118	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.1		ng/L		103	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	45.0		ng/L		112	60 - 135
NEtFOSA	40.0	40.5		ng/L		101	60 - 135
NMeFOSA	40.0	40.3		ng/L		101	60 - 135
NMeFOSAA	40.0	42.2		ng/L		105	60 - 135
NEtFOSAA	40.0	42.4		ng/L		106	60 - 135
NMeFOSE	40.0	41.4		ng/L		103	60 - 135
NEtFOSE	40.0	42.4		ng/L		106	60 - 135
4:2 FTS	37.5	43.5		ng/L		116	60 - 135
6:2 FTS	38.1	43.5		ng/L		114	60 - 135
8:2 FTS	38.4	41.3		ng/L		107	60 - 135
10:2 FTS	38.6	39.4		ng/L		102	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	48.4		ng/L		128	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	60 - 135
F-53B Major	37.4	45.5		ng/L		122	60 - 135
F-53B Minor	37.8	47.6		ng/L		126	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	84		25 - 150
13C5 PFPeA	80		25 - 150
13C2 PFHxA	85		25 - 150
13C4 PFHpA	85		25 - 150
13C4 PFOA	86		25 - 150
13C5 PFNA	83		25 - 150
13C2 PFDA	93		25 - 150
13C2 PFUnA	89		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	95		25 - 150
13C2 PFHxDA	98		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	79		25 - 150
13C4 PFOS	77		25 - 150
13C8 FOSA	80		10 - 150
d3-NMeFOSAA	82		25 - 150
d5-NEtFOSAA	87		25 - 150
d-N-MeFOSA-M	69		10 - 150
d-N-EtFOSA-M	67		10 - 150
d7-N-MeFOSE-M	75		10 - 150
d9-N-EtFOSE-M	77		10 - 150

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	84		25 - 150
M2-6:2 FTS	84		25 - 150
M2-8:2 FTS	86		25 - 150
13C3 HFPO-DA	75		25 - 150
13C2 10:2 FTS	88		25 - 150

Lab Sample ID: LCSD 320-670244/3-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	43.5		ng/L		109	60 - 135	6	30	
Perfluoropentanoic acid (PFPeA)	40.0	43.5		ng/L		109	60 - 135	0	30	
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		103	60 - 135	6	30	
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	60 - 135	4	30	
Perfluorooctanoic acid (PFOA)	40.0	43.4		ng/L		108	60 - 135	4	30	
Perfluorononanoic acid (PFNA)	40.0	46.4		ng/L		116	60 - 135	7	30	
Perfluorodecanoic acid (PFDA)	40.0	46.9		ng/L		117	60 - 135	5	30	
Perfluoroundecanoic acid (PFUnA)	40.0	46.6		ng/L		117	60 - 135	6	30	
Perfluorododecanoic acid (PFDoA)	40.0	44.3		ng/L		111	60 - 135	3	30	
Perfluorotridecanoic acid (PFTriA)	40.0	43.2		ng/L		108	60 - 135	4	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	39.4		ng/L		98	60 - 135	7	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.5		ng/L		109	60 - 135	3	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	39.4		ng/L		111	60 - 135	1	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	45.9		ng/L		122	60 - 135	1	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.4		ng/L		111	60 - 135	2	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	42.2		ng/L		111	60 - 135	1	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	38.9		ng/L		104	60 - 135	3	30	
Perfluorononanesulfonic acid (PFNS)	38.5	42.5		ng/L		110	60 - 135	1	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	43.4		ng/L		113	60 - 135	5	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.6		ng/L		94	60 - 135	9	30	
Perfluorooctanesulfonamide (FOSA)	40.0	47.0		ng/L		118	60 - 135	4	30	
NEtFOSA	40.0	44.3		ng/L		111	60 - 135	9	30	
NMeFOSA	40.0	42.7		ng/L		107	60 - 135	6	30	
NMeFOSAA	40.0	43.4		ng/L		108	60 - 135	3	30	
NEtFOSAA	40.0	41.8		ng/L		105	60 - 135	1	30	
NMeFOSE	40.0	42.3		ng/L		106	60 - 135	2	30	
NEtFOSE	40.0	45.7		ng/L		114	60 - 135	7	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCSD 320-670244/3-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4:2 FTS	37.5	45.1		ng/L		120	60 - 135	3	30
6:2 FTS	38.1	48.3		ng/L		127	60 - 135	10	30
8:2 FTS	38.4	43.5		ng/L		113	60 - 135	5	30
10:2 FTS	38.6	40.8		ng/L		106	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	50.2		ng/L		133	60 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.6		ng/L		109	60 - 135	3	30
F-53B Major	37.4	47.0		ng/L		126	60 - 135	3	30
F-53B Minor	37.8	47.0		ng/L		125	60 - 135	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	79		25 - 150
13C5 PFPeA	84		25 - 150
13C2 PFHxA	84		25 - 150
13C4 PFHpA	86		25 - 150
13C4 PFOA	87		25 - 150
13C5 PFNA	82		25 - 150
13C2 PFDA	90		25 - 150
13C2 PFUnA	88		25 - 150
13C2 PFDoA	88		25 - 150
13C2 PFTeDA	93		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	74		25 - 150
13C4 PFOS	76		25 - 150
13C8 FOSA	74		10 - 150
d3-NMeFOSAA	79		25 - 150
d5-NEtFOSAA	86		25 - 150
d-N-MeFOSA-M	63		10 - 150
d-N-EtFOSA-M	62		10 - 150
d7-N-MeFOSE-M	72		10 - 150
d9-N-EtFOSE-M	71		10 - 150
M2-4:2 FTS	87		25 - 150
M2-6:2 FTS	79		25 - 150
M2-8:2 FTS	82		25 - 150
13C3 HFPO-DA	78		25 - 150
13C2 10:2 FTS	83		25 - 150

Lab Sample ID: MB 320-671567/1-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671567

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		05/02/23 09:21	05/02/23 16:04	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: MB 320-671567/1-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671567

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		05/02/23 09:21	05/02/23 16:04	1
NEtFOSA	<0.87		2.0	0.87	ng/L		05/02/23 09:21	05/02/23 16:04	1
NMeFOSA	<0.43		2.0	0.43	ng/L		05/02/23 09:21	05/02/23 16:04	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		05/02/23 09:21	05/02/23 16:04	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		05/02/23 09:21	05/02/23 16:04	1
NMeFOSE	<1.4		4.0	1.4	ng/L		05/02/23 09:21	05/02/23 16:04	1
NEtFOSE	<0.85		2.0	0.85	ng/L		05/02/23 09:21	05/02/23 16:04	1
4:2 FTS	<0.24		2.0	0.24	ng/L		05/02/23 09:21	05/02/23 16:04	1
6:2 FTS	<2.5		5.0	2.5	ng/L		05/02/23 09:21	05/02/23 16:04	1
8:2 FTS	<0.46		2.0	0.46	ng/L		05/02/23 09:21	05/02/23 16:04	1
10:2 FTS	<0.67		2.0	0.67	ng/L		05/02/23 09:21	05/02/23 16:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		05/02/23 09:21	05/02/23 16:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		05/02/23 09:21	05/02/23 16:04	1
F-53B Major	<0.24		2.0	0.24	ng/L		05/02/23 09:21	05/02/23 16:04	1
F-53B Minor	<0.32		2.0	0.32	ng/L		05/02/23 09:21	05/02/23 16:04	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	99		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C5 PFPeA	110		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFHxA	118		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C4 PFHpA	111		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C4 PFOA	100		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C5 PFNA	86		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFDA	94		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFUnA	120		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFDoA	102		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFTeDA	96		25 - 150	05/02/23 09:21	05/02/23 16:04	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: MB 320-671567/1-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671567

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxDA	117		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C3 PFBS	126		25 - 150	05/02/23 09:21	05/02/23 16:04	1
18O2 PFHxS	110		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C4 PFOS	87		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C8 FOSA	86		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d3-NMeFOSAA	122		25 - 150	05/02/23 09:21	05/02/23 16:04	1
d5-NEtFOSAA	123		25 - 150	05/02/23 09:21	05/02/23 16:04	1
d-N-MeFOSA-M	74		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d-N-EtFOSA-M	76		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d7-N-MeFOSE-M	75		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d9-N-EtFOSE-M	77		10 - 150	05/02/23 09:21	05/02/23 16:04	1
M2-4:2 FTS	106		25 - 150	05/02/23 09:21	05/02/23 16:04	1
M2-6:2 FTS	96		25 - 150	05/02/23 09:21	05/02/23 16:04	1
M2-8:2 FTS	95		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C3 HFPO-DA	123		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 10:2 FTS	93		25 - 150	05/02/23 09:21	05/02/23 16:04	1

Lab Sample ID: LCS 320-671567/2-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorobutanoic acid (PFBA)	40.0	53.5		ng/L		134	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	38.7		ng/L		97	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	37.8		ng/L		94	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	38.6		ng/L		96	60 - 135
Perfluorononanoic acid (PFNA)	40.0	45.8		ng/L		114	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	46.1		ng/L		115	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	42.7		ng/L		107	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.9		ng/L		110	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.7		ng/L		102	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		100	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.8		ng/L		112	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	66.9 *		ng/L		167	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	39.5		ng/L		111	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	33.3		ng/L		89	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.1		ng/L		102	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	44.8		ng/L		117	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	38.9		ng/L		105	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCS 320-671567/2-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanesulfonic acid (PFNS)	38.5	51.9		ng/L		135	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	46.0		ng/L		119	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	34.2		ng/L		88	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	46.2		ng/L		116	60 - 135
NEtFOSA	40.0	40.1		ng/L		100	60 - 135
NMeFOSA	40.0	39.8		ng/L		99	60 - 135
NMeFOSAA	40.0	42.6		ng/L		106	60 - 135
NEtFOSAA	40.0	44.6		ng/L		111	60 - 135
NMeFOSE	40.0	41.8		ng/L		105	60 - 135
NEtFOSE	40.0	42.6		ng/L		107	60 - 135
4:2 FTS	37.5	38.1		ng/L		102	60 - 135
6:2 FTS	38.1	38.3		ng/L		101	60 - 135
8:2 FTS	38.4	43.0		ng/L		112	60 - 135
10:2 FTS	38.6	37.4		ng/L		97	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	48.3		ng/L		128	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.8		ng/L		104	60 - 135
F-53B Major	37.4	44.4		ng/L		119	60 - 135
F-53B Minor	37.8	40.3		ng/L		107	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	85		25 - 150
13C5 PFPeA	111		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	87		25 - 150
13C4 PFOA	89		25 - 150
13C5 PFNA	69		25 - 150
13C2 PFDA	83		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	86		25 - 150
13C2 PFTeDA	77		25 - 150
13C2 PFHxDA	96		25 - 150
13C3 PFBS	106		25 - 150
18O2 PFHxS	95		25 - 150
13C4 PFOS	78		25 - 150
13C8 FOSA	70		10 - 150
d3-NMeFOSAA	112		25 - 150
d5-NEtFOSAA	104		25 - 150
d-N-MeFOSA-M	65		10 - 150
d-N-EtFOSA-M	64		10 - 150
d7-N-MeFOSE-M	60		10 - 150
d9-N-EtFOSE-M	65		10 - 150
M2-4:2 FTS	87		25 - 150
M2-6:2 FTS	94		25 - 150
M2-8:2 FTS	79		25 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCS 320-671567/2-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671567

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	103		25 - 150
13C2 10:2 FTS	75		25 - 150

Lab Sample ID: LCSD 320-671567/3-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	50.6		ng/L		126	60 - 135	6	30	
Perfluoropentanoic acid (PFPeA)	40.0	48.2		ng/L		121	60 - 135	22	30	
Perfluorohexanoic acid (PFHxA)	40.0	46.2		ng/L		115	60 - 135	20	30	
Perfluoroheptanoic acid (PFHpA)	40.0	43.5		ng/L		109	60 - 135	3	30	
Perfluorooctanoic acid (PFOA)	40.0	43.6		ng/L		109	60 - 135	12	30	
Perfluorononanoic acid (PFNA)	40.0	46.9		ng/L		117	60 - 135	2	30	
Perfluorodecanoic acid (PFDA)	40.0	47.1		ng/L		118	60 - 135	2	30	
Perfluoroundecanoic acid (PFUnA)	40.0	45.6		ng/L		114	60 - 135	7	30	
Perfluorododecanoic acid (PFDoA)	40.0	49.6		ng/L		124	60 - 135	12	30	
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	60 - 135	6	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		102	60 - 135	2	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.9		ng/L		107	60 - 135	4	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	65.2 *		ng/L		163	60 - 135	3	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	38.6		ng/L		109	60 - 135	2	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	34.4		ng/L		92	60 - 135	3	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.1		ng/L		102	60 - 135	0	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.2		ng/L		105	60 - 135	11	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	39.9		ng/L		107	60 - 135	3	30	
Perfluorononanesulfonic acid (PFNS)	38.5	50.0		ng/L		130	60 - 135	4	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	41.0		ng/L		106	60 - 135	11	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	33.2		ng/L		85	60 - 135	3	30	
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		111	60 - 135	4	30	
NEtFOSA	40.0	38.3		ng/L		96	60 - 135	4	30	
NMeFOSA	40.0	39.3		ng/L		98	60 - 135	1	30	
NMeFOSAA	40.0	45.4		ng/L		114	60 - 135	6	30	
NEtFOSAA	40.0	44.8		ng/L		112	60 - 135	0	30	
NMeFOSE	40.0	44.3		ng/L		111	60 - 135	6	30	
NEtFOSE	40.0	40.2		ng/L		101	60 - 135	6	30	
4:2 FTS	37.5	40.1		ng/L		107	60 - 135	5	30	
6:2 FTS	38.1	39.1		ng/L		103	60 - 135	2	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCSD 320-671567/3-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
8:2 FTS	38.4	39.8		ng/L		104	60 - 135	8	30
10:2 FTS	38.6	39.2		ng/L		101	60 - 135	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.8		ng/L		119	60 - 135	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	60 - 135	1	30
F-53B Major	37.4	39.1		ng/L		105	60 - 135	13	30
F-53B Minor	37.8	36.2		ng/L		96	60 - 135	11	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	71		25 - 150
13C5 PFPeA	78		25 - 150
13C2 PFHxA	73		25 - 150
13C4 PFHpA	72		25 - 150
13C4 PFOA	67		25 - 150
13C5 PFNA	59		25 - 150
13C2 PFDA	69		25 - 150
13C2 PFUnA	75		25 - 150
13C2 PFDoA	66		25 - 150
13C2 PFTeDA	67		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	86		25 - 150
18O2 PFHxS	77		25 - 150
13C4 PFOS	69		25 - 150
13C8 FOSA	60		10 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	88		25 - 150
d-N-MeFOSA-M	53		10 - 150
d-N-EtFOSA-M	55		10 - 150
d7-N-MeFOSE-M	52		10 - 150
d9-N-EtFOSE-M	56		10 - 150
M2-4:2 FTS	75		25 - 150
M2-6:2 FTS	70		25 - 150
M2-8:2 FTS	70		25 - 150
13C3 HFPO-DA	83		25 - 150
13C2 10:2 FTS	62		25 - 150

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

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-n-octadecanoic acid (PFODA) - RA	40.0	39.5		ng/L		99	60 - 135

Isotope Dilution	LCS %Recovery	LCS Qualifier	LCS Limits
13C2 PFHxDA - RA	92		25 - 150

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Lab Sample ID: LCSD 320-670244/3-A

Matrix: Water

Analysis Batch: 670838

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 670244

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD Limit
							Limits	RPD	
Perfluoro-n-octadecanoic acid (PFODA) - RA	40.0	38.1		ng/L		95	60 - 135	3	30
		<i>LCSD</i>	<i>LCSD</i>						
<i>Isotope Dilution</i>		<i>%Recovery</i>	<i>Qualifier</i>						<i>Limits</i>
13C2 PFHxDA - RA		88							25 - 150

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Client Sample ID: V-200-A

Lab Sample ID: 500-232725-1

Date Collected: 04/24/23 11:00

Matrix: Water

Date Received: 04/25/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			670244	VP	EET SAC	04/26/23 10:11
Total/NA	Analysis	537 (modified)		1	670342	K1S	EET SAC	04/27/23 11:44
Total/NA	Prep	3535	DL		670244	VP	EET SAC	04/26/23 10:11
Total/NA	Analysis	537 (modified)	DL	10	670605	K1S	EET SAC	04/27/23 18:20
Total/NA	Prep	3535	REDL		671567	VP	EET SAC	05/02/23 09:21
Total/NA	Analysis	537 (modified)	REDL	10	672551	S1M	EET SAC	05/05/23 10:37
Total/NA	Prep	3535	RE		671567	VP	EET SAC	05/02/23 09:21
Total/NA	Analysis	537 (modified)	RE	1	671771	RS1	EET SAC	05/02/23 18:18

Client Sample ID: V-900-A

Lab Sample ID: 500-232725-2

Date Collected: 04/24/23 11:05

Matrix: Water

Date Received: 04/25/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			670244	VP	EET SAC	04/26/23 10:11
Total/NA	Analysis	537 (modified)		1	670342	K1S	EET SAC	04/27/23 11:55
Total/NA	Prep	3535	RE		671567	VP	EET SAC	05/02/23 09:21
Total/NA	Analysis	537 (modified)	RE	1	671771	RS1	EET SAC	05/02/23 18:28

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23


- 1
- 2
- 3
- 4
- 5
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- 8
- 9
- 10
- 11
- 12
- 13
- 14

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski		Sampler: <u>Jacob Ramirez</u>		Date: <u>4-24-23</u>		COC No: <u>1</u> of <u>1</u> COCs	
Email: N/A		Lab Contact: <u>Sandle Fredrick</u>		Carrier: <u>FedEx</u>		For Lab Use Only: Walk-in Client: Lab Sampling:	
Tell/Fax: N/A		Analysis Turnaround Time		EPA 537 Modified (36 Compounds)		Lab Project Number <u>50015522</u>	
<input type="checkbox"/> CALENDAR DAYS		<input checked="" type="checkbox"/> WORKING DAYS		Filtered Sample (Y/N)		Sample Specific Notes:	
TAT if different from Below		Sample Type (C=Comp, G=Grab)		Perform MS/MSD (Y/N)		System Influent	
<input type="checkbox"/> 2 weeks		G		N		System Effluent	
<input checked="" type="checkbox"/> 1 week		W		N			
<input type="checkbox"/> 2 days		W		N			
<input type="checkbox"/> 1 day		G		N			
Sample Date		Sample Time		Matrix			
<u>4-24-23</u>		<u>11:00</u>		<u>W</u>			
<u>✓</u>		<u>11:05</u>		<u>W</u>			
Sample Identification		# of Cont.					
V-200-A		2					
V-900-A		2					



500-232725 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Unknown

Special Instructions/QC Requirements & Comments: 5 day - TAT

7-Day TAT Max or Prelim Report by Day 7

Custody Seal No. <u>2051500</u>	Cooler Temp. (°C): Obs'd: <u>1</u>	Corr'd: <u>1</u>	Therm ID No.: <u>103</u>
Relinquished by: <u>Jacob Ramirez</u>	Company: <u>Barley Excavating</u>	Received by: <u>Fed Ex</u>	Company:
Date/Time: <u>4-24-23 11:05</u>	Company:	Received by: <u>SSB</u>	Company: <u>4125113 0940</u>
Relinquished by:	Company:	Received in Laboratory by:	Company:



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-232725-1

SDG Number:

Login Number: 232725

List Number: 1

Creator: Pratali, Sandra A

List Source: Eurofins Sacramento

List Creation: 04/25/23 09:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051800
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Job: _____
500-232725 Field Sheet

Tracking #: 6155 6317 3680

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: <u>123</u> Corr. Factor: (+/-) <u>N/A</u> °C	Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
Ice <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Gel _____ Other _____	
Cooler Custody Seal: <u>2051800</u>	
Cooler ID: _____	
Temp Observed: <u>1.1</u> °C Corrected: <u>1.1</u> °C	
From: Temp Blank <input checked="" type="checkbox"/> Sample <input type="checkbox"/>	
Opening/Processing The Shipment	
Cooler compromised/tampered with? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	
Cooler Temperature is acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Frozen samples show signs of thaw? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
Initials: <u>So</u> Date: <u>4/25/23</u>	
Unpacking/Labeling The Samples	
COC is complete w/o discrepancies? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Samples compromised/tampered with? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	
Containers are not broken or leaking? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Sample custody seal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	
Sample containers have legible labels? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Sample date/times are provided? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Appropriate containers are used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Sample bottles are completely filled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Sample preservatives verified? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	
Is the Field Sampler's name on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Samples require splitting/compositing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	
Samples w/o discrepancies? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Zero headspace?* <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
Alkalinity has no headspace? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
Perchlorate has headspace? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA (Methods 314, 331, 6850)	
Multiphasic samples are not present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")	
Initials: <u>SP</u> Date: <u>4-25-23</u>	Trizma Lot #(s): _____ _____ _____
Login Completion	
Receipt Temperature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Samples received within hold time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
NCM Filed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
Log Release checked in TALS? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Initials: <u>SP</u> Date: <u>4-25-23</u>	<u>WR 3,05C</u>

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-232725-1	V-200-A	67	85	92	96	85	84	86	81
500-232725-1 - DL	V-200-A	79	88	89	86	86	82	85	74
500-232725-1 - RE	V-200-A	63	89	82	98	75	72	80	87
500-232725-1 - REDL	V-200-A	81	74	77	75	75	71	74	71
500-232725-2	V-900-A	106	103	99	98	100	94	104	97
500-232725-2 - RE	V-900-A	69	83	73	78	69	57	63	70
LCS 320-670244/2-A	Lab Control Sample	84	80	85	85	86	83	93	89
LCS 320-670244/2-A - RA	Lab Control Sample								
LCS 320-671567/2-A	Lab Control Sample	85	111	99	87	89	69	83	96
LCSD 320-670244/3-A	Lab Control Sample Dup	79	84	84	86	87	82	90	88
LCSD 320-670244/3-A - RA	Lab Control Sample Dup								
LCSD 320-671567/3-A	Lab Control Sample Dup	71	78	73	72	67	59	69	75
MB 320-670244/1-A	Method Blank	89	93	96	97	90	92	106	103
MB 320-671567/1-A	Method Blank	99	110	118	111	100	86	94	120

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-232725-1	V-200-A	73	71	66	70	78	80	74	74
500-232725-1 - DL	V-200-A	73	67	54	69	68	65	79	64
500-232725-1 - RE	V-200-A	80	65	68	102	85	79	68	101
500-232725-1 - REDL	V-200-A	67	48	38	72	71	74	80	86
500-232725-2	V-900-A	87	86	85	85	82	81	89	87
500-232725-2 - RE	V-900-A	57	45	27	84	69	53	58	77
LCS 320-670244/2-A	Lab Control Sample	92	95	98	75	79	77	80	82
LCS 320-670244/2-A - RA	Lab Control Sample			92					
LCS 320-671567/2-A	Lab Control Sample	86	77	96	106	95	78	70	112
LCSD 320-670244/3-A	Lab Control Sample Dup	88	93	95	75	74	76	74	79
LCSD 320-670244/3-A - RA	Lab Control Sample Dup			88					
LCSD 320-671567/3-A	Lab Control Sample Dup	66	67	79	86	77	69	60	83
MB 320-670244/1-A	Method Blank	100	107	102	84	87	90	92	101
MB 320-671567/1-A	Method Blank	102	96	117	126	110	87	86	122

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-232725-1	V-200-A	75	70	62	67	61	84	79	97
500-232725-1 - DL	V-200-A	65	61	62	61	59	65	87	85
500-232725-1 - RE	V-200-A	98	63	59	54	51	103	82	89
500-232725-1 - REDL	V-200-A	73	64	59	63	58	54	72	72
500-232725-2	V-900-A	87	82	70	72	71	91	84	86
500-232725-2 - RE	V-900-A	73	47	46	37	34	72	67	61
LCS 320-670244/2-A	Lab Control Sample	87	69	67	75	77	84	84	86
LCS 320-670244/2-A - RA	Lab Control Sample								
LCS 320-671567/2-A	Lab Control Sample	104	65	64	60	65	87	94	79
LCSD 320-670244/3-A	Lab Control Sample Dup	86	63	62	72	71	87	79	82
LCSD 320-670244/3-A - RA	Lab Control Sample Dup								
LCSD 320-671567/3-A	Lab Control Sample Dup	88	53	55	52	56	75	70	70
MB 320-670244/1-A	Method Blank	99	83	77	89	88	94	86	97
MB 320-671567/1-A	Method Blank	123	74	76	75	77	106	96	95

Eurofins Chicago

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-232725-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA (25-150)	M102FTS (25-150)
500-232725-1	V-200-A	69	73
500-232725-1 - DL	V-200-A	74	81
500-232725-1 - RE	V-200-A	104	71
500-232725-1 - REDL	V-200-A	73	65
500-232725-2	V-900-A	87	84
500-232725-2 - RE	V-900-A	83	47
LCS 320-670244/2-A	Lab Control Sample	75	88
LCS 320-670244/2-A - RA	Lab Control Sample		
LCS 320-671567/2-A	Lab Control Sample	103	75
LCSD 320-670244/3-A	Lab Control Sample Dup	78	83
LCSD 320-670244/3-A - RA	Lab Control Sample Dup		
LCSD 320-671567/3-A	Lab Control Sample Dup	83	62
MB 320-670244/1-A	Method Blank	89	106
MB 320-671567/1-A	Method Blank	123	93

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M
- dEtFOSA = d-N-EtFOSA-M
- NMFM = d7-N-MeFOSE-M
- NEFM = d9-N-EtFOSE-M
- M242FTS = M2-4:2 FTS
- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- HFPODA = 13C3 HFPO-DA
- M102FTS = 13C2 10:2 FTS

ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 5/9/2023 5:27:03 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-233168-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Authorized for release by
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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Job ID: 500-233168-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-233168-1

Receipt

The samples were received on 5/2/2023 9:20 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.5° C.

LCMS

Method 537 (modified): Results for sample 500-233168-1 was reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10X analysis is 128% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: 500-233168-1. These analytes have been qualified; however, the peak did not saturate the instrument detector. The samples were diluted to within calibration and both sets of data reported..

Method 537 (modified): The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-671821 and analytical batch 320-672521 recovered outside control limits for the following analytes: Perfluoro-n-octadecanoic acid (PFODA).

Method 537 (modified): The low level continuing calibration verification, (CCVL) and the continuing calibration verification (CCVIS) failed low for Perfluoro-n-octadecanoic acid (PFODA) . The analyte is a monitoring analyte of concern but is not a controlled analyte for this client, therefore the data has been reported. CCV 320-672521/1, CCV 320-672521/16, CCVIS 320-672515/6 and CCVL 320-672515/5

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-671821.

Method: 3535_PFC_28D

Matrix: Aqueous

Method 3535: The following samples in preparation batch 320-671821 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. 500-233168-1

Method: 3535_PFC_28D

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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



Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-233168-1	V-200-A	Water	05/01/23 09:00	05/02/23 09:20
500-233168-2	V-900-A	Water	05/01/23 09:05	05/02/23 09:20

1

2

3

4

5

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9

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11

12

13

14

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Client Sample ID: V-200-A

Lab Sample ID: 500-233168-1

Date Collected: 05/01/23 09:00

Matrix: Water

Date Received: 05/02/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	250		4.8	2.3	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoropentanoic acid (PFPeA)	750	E	1.9	0.47	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorohexanoic acid (PFHxA)	530	E	1.9	0.56	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoroheptanoic acid (PFHpA)	370		1.9	0.24	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorooctanoic acid (PFOA)	1000	E	1.9	0.82	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorononanoic acid (PFNA)	110		1.9	0.26	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorodecanoic acid (PFDA)	71		1.9	0.30	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoroundecanoic acid (PFUnA)	32		1.9	1.1	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorododecanoic acid (PFDoA)	2.3		1.9	0.53	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.85		1.9	0.85	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.90	^c *	1.9	0.90	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorobutanesulfonic acid (PFBS)	17		1.9	0.19	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoropentanesulfonic acid (PFPeS)	6.8		1.9	0.29	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorohexanesulfonic acid (PFHxS)	130		1.9	0.55	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluoroheptanesulfonic acid (PFHpS)	5.6		1.9	0.18	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorooctanesulfonic acid (PFOS)	460	E	1.9	0.52	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorononanesulfonic acid (PFNS)	0.44	J	1.9	0.35	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorododecanesulfonic acid (PFDoS)	<0.93		1.9	0.93	ng/L		05/03/23 04:58	05/04/23 21:53	1
Perfluorooctanesulfonamide (FOSA)	9.1		1.9	0.94	ng/L		05/03/23 04:58	05/04/23 21:53	1
NEtFOSA	<0.83		1.9	0.83	ng/L		05/03/23 04:58	05/04/23 21:53	1
NMeFOSA	<0.41		1.9	0.41	ng/L		05/03/23 04:58	05/04/23 21:53	1
NMeFOSAA	<1.2		4.8	1.2	ng/L		05/03/23 04:58	05/04/23 21:53	1
NEtFOSAA	3.9	J	4.8	1.2	ng/L		05/03/23 04:58	05/04/23 21:53	1
NMeFOSE	<1.3		3.8	1.3	ng/L		05/03/23 04:58	05/04/23 21:53	1
NEtFOSE	<0.82		1.9	0.82	ng/L		05/03/23 04:58	05/04/23 21:53	1
4:2 FTS	11		1.9	0.23	ng/L		05/03/23 04:58	05/04/23 21:53	1
6:2 FTS	810	E	4.8	2.4	ng/L		05/03/23 04:58	05/04/23 21:53	1
8:2 FTS	800	E	1.9	0.44	ng/L		05/03/23 04:58	05/04/23 21:53	1
10:2 FTS	34		1.9	0.64	ng/L		05/03/23 04:58	05/04/23 21:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		05/03/23 04:58	05/04/23 21:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		05/03/23 04:58	05/04/23 21:53	1
F-53B Major	<0.23		1.9	0.23	ng/L		05/03/23 04:58	05/04/23 21:53	1
F-53B Minor	<0.31		1.9	0.31	ng/L		05/03/23 04:58	05/04/23 21:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	80		25 - 150				05/03/23 04:58	05/04/23 21:53	1
13C5 PFPeA	100		25 - 150				05/03/23 04:58	05/04/23 21:53	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Client Sample ID: V-200-A

Lab Sample ID: 500-233168-1

Date Collected: 05/01/23 09:00

Matrix: Water

Date Received: 05/02/23 09:20

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C4 PFHpA	113		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C4 PFOA	100		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C5 PFNA	108		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C2 PFDA	101		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C2 PFUnA	97		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C2 PFDoA	82		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C2 PFTeDA	64		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C2 PFHxDA	36		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C3 PFBS	94		25 - 150	05/03/23 04:58	05/04/23 21:53	1
18O2 PFHxS	103		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C4 PFOS	110		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C8 FOSA	97		10 - 150	05/03/23 04:58	05/04/23 21:53	1
d3-NMeFOSAA	96		25 - 150	05/03/23 04:58	05/04/23 21:53	1
d5-NEtFOSAA	101		25 - 150	05/03/23 04:58	05/04/23 21:53	1
d-N-MeFOSA-M	87		10 - 150	05/03/23 04:58	05/04/23 21:53	1
d-N-EtFOSA-M	77		10 - 150	05/03/23 04:58	05/04/23 21:53	1
d7-N-MeFOSE-M	80		10 - 150	05/03/23 04:58	05/04/23 21:53	1
d9-N-EtFOSE-M	75		10 - 150	05/03/23 04:58	05/04/23 21:53	1
M2-4:2 FTS	92		25 - 150	05/03/23 04:58	05/04/23 21:53	1
M2-6:2 FTS	93		25 - 150	05/03/23 04:58	05/04/23 21:53	1
M2-8:2 FTS	106		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C3 HFPO-DA	89		25 - 150	05/03/23 04:58	05/04/23 21:53	1
13C2 10:2 FTS	80		25 - 150	05/03/23 04:58	05/04/23 21:53	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	280		48	23	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoropentanoic acid (PFPeA)	990		19	4.7	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorohexanoic acid (PFHxA)	780		19	5.6	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoroheptanoic acid (PFHpA)	490		19	2.4	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorooctanoic acid (PFOA)	1300		19	8.2	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorononanoic acid (PFNA)	120		19	2.6	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorodecanoic acid (PFDA)	65		19	3.0	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoroundecanoic acid (PFUnA)	30		19	11	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorododecanoic acid (PFDoA)	<5.3		19	5.3	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorotetradecanoic acid (PFTeA)	<7.0		19	7.0	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.5		19	8.5	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoro-n-octadecanoic acid (PFODA)	<9.0 *		19	9.0	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorobutanesulfonic acid (PFBS)	15 J		19	1.9	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoropentanesulfonic acid (PFPeS)	7.6 J		19	2.9	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorohexanesulfonic acid (PFHxS)	130		19	5.5	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluoroheptanesulfonic acid (PFHpS)	5.7 J		19	1.8	ng/L		05/03/23 04:58	05/07/23 10:02	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Client Sample ID: V-200-A

Lab Sample ID: 500-233168-1

Date Collected: 05/01/23 09:00

Matrix: Water

Date Received: 05/02/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	530		19	5.2	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorononanesulfonic acid (PFNS)	<3.5		19	3.5	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorodecanesulfonic acid (PFDS)	<3.1		19	3.1	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorododecanesulfonic acid (PFDoS)	<9.3		19	9.3	ng/L		05/03/23 04:58	05/07/23 10:02	10
Perfluorooctanesulfonamide (FOSA)	<9.4		19	9.4	ng/L		05/03/23 04:58	05/07/23 10:02	10
NEtFOSA	<8.3		19	8.3	ng/L		05/03/23 04:58	05/07/23 10:02	10
NMeFOSA	<4.1		19	4.1	ng/L		05/03/23 04:58	05/07/23 10:02	10
NMeFOSAA	<12		48	12	ng/L		05/03/23 04:58	05/07/23 10:02	10
NEtFOSAA	<12		48	12	ng/L		05/03/23 04:58	05/07/23 10:02	10
NMeFOSE	<13		38	13	ng/L		05/03/23 04:58	05/07/23 10:02	10
NEtFOSE	<8.2		19	8.2	ng/L		05/03/23 04:58	05/07/23 10:02	10
4:2 FTS	9.1 J		19	2.3	ng/L		05/03/23 04:58	05/07/23 10:02	10
6:2 FTS	1100		48	24	ng/L		05/03/23 04:58	05/07/23 10:02	10
8:2 FTS	940		19	4.4	ng/L		05/03/23 04:58	05/07/23 10:02	10
10:2 FTS	33		19	6.4	ng/L		05/03/23 04:58	05/07/23 10:02	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.8		19	3.8	ng/L		05/03/23 04:58	05/07/23 10:02	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<14		38	14	ng/L		05/03/23 04:58	05/07/23 10:02	10
F-53B Major	<2.3		19	2.3	ng/L		05/03/23 04:58	05/07/23 10:02	10
F-53B Minor	<3.1		19	3.1	ng/L		05/03/23 04:58	05/07/23 10:02	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	95		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C5 PFPeA	98		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 PFHxA	91		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C4 PFHpA	96		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C4 PFOA	97		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C5 PFNA	92		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 PFDA	91		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 PFUnA	87		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 PFDoA	82		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 PFTeDA	61		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 PFHxDA	30		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C3 PFBS	89		25 - 150				05/03/23 04:58	05/07/23 10:02	10
18O2 PFHxS	94		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C4 PFOS	96		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C8 FOSA	108		10 - 150				05/03/23 04:58	05/07/23 10:02	10
d3-NMeFOSAA	115		25 - 150				05/03/23 04:58	05/07/23 10:02	10
d5-NEtFOSAA	112		25 - 150				05/03/23 04:58	05/07/23 10:02	10
d-N-MeFOSA-M	84		10 - 150				05/03/23 04:58	05/07/23 10:02	10
d-N-EtFOSA-M	79		10 - 150				05/03/23 04:58	05/07/23 10:02	10
d7-N-MeFOSE-M	73		10 - 150				05/03/23 04:58	05/07/23 10:02	10
d9-N-EtFOSE-M	73		10 - 150				05/03/23 04:58	05/07/23 10:02	10
M2-4:2 FTS	74		25 - 150				05/03/23 04:58	05/07/23 10:02	10
M2-6:2 FTS	76		25 - 150				05/03/23 04:58	05/07/23 10:02	10
M2-8:2 FTS	87		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C3 HFPO-DA	84		25 - 150				05/03/23 04:58	05/07/23 10:02	10
13C2 10:2 FTS	70		25 - 150				05/03/23 04:58	05/07/23 10:02	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Client Sample ID: V-900-A

Lab Sample ID: 500-233168-2

Date Collected: 05/01/23 09:05

Matrix: Water

Date Received: 05/02/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	110		5.0	2.4	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoropentanoic acid (PFPeA)	140		2.0	0.49	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorohexanoic acid (PFHxA)	39		2.0	0.58	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoroheptanoic acid (PFHpA)	9.5		2.0	0.25	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorooctanoic acid (PFOA)	19		2.0	0.85	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorononanoic acid (PFNA)	0.77	J	2.0	0.27	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorodecanoic acid (PFDA)	0.37	J	2.0	0.31	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94	^c *	2.0	0.94	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorohexanesulfonic acid (PFHxS)	0.60	J	2.0	0.57	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorooctanesulfonic acid (PFOS)	1.8	J	2.0	0.54	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		05/03/23 04:58	05/04/23 22:23	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		05/03/23 04:58	05/04/23 22:23	1
NEtFOSA	<0.87		2.0	0.87	ng/L		05/03/23 04:58	05/04/23 22:23	1
NMeFOSA	<0.43		2.0	0.43	ng/L		05/03/23 04:58	05/04/23 22:23	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		05/03/23 04:58	05/04/23 22:23	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		05/03/23 04:58	05/04/23 22:23	1
NMeFOSE	<1.4		4.0	1.4	ng/L		05/03/23 04:58	05/04/23 22:23	1
NEtFOSE	<0.85		2.0	0.85	ng/L		05/03/23 04:58	05/04/23 22:23	1
4:2 FTS	<0.24		2.0	0.24	ng/L		05/03/23 04:58	05/04/23 22:23	1
6:2 FTS	3.5	J	5.0	2.5	ng/L		05/03/23 04:58	05/04/23 22:23	1
8:2 FTS	2.2		2.0	0.46	ng/L		05/03/23 04:58	05/04/23 22:23	1
10:2 FTS	1.6	J	2.0	0.67	ng/L		05/03/23 04:58	05/04/23 22:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		05/03/23 04:58	05/04/23 22:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		05/03/23 04:58	05/04/23 22:23	1
F-53B Major	<0.24		2.0	0.24	ng/L		05/03/23 04:58	05/04/23 22:23	1
F-53B Minor	<0.32		2.0	0.32	ng/L		05/03/23 04:58	05/04/23 22:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	125		25 - 150				05/03/23 04:58	05/04/23 22:23	1
13C5 PFPeA	117		25 - 150				05/03/23 04:58	05/04/23 22:23	1
13C2 PFHxA	101		25 - 150				05/03/23 04:58	05/04/23 22:23	1
13C4 PFHpA	107		25 - 150				05/03/23 04:58	05/04/23 22:23	1
13C4 PFOA	98		25 - 150				05/03/23 04:58	05/04/23 22:23	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Client Sample ID: V-900-A

Lab Sample ID: 500-233168-2

Date Collected: 05/01/23 09:05

Matrix: Water

Date Received: 05/02/23 09:20

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C5 PFNA	103		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C2 PFDA	107		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C2 PFUnA	101		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C2 PFDoA	90		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C2 PFTeDA	85		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C2 PFHxDA	60		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C3 PFBS	101		25 - 150	05/03/23 04:58	05/04/23 22:23	1
18O2 PFHxS	97		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C4 PFOS	101		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C8 FOSA	106		10 - 150	05/03/23 04:58	05/04/23 22:23	1
d3-NMeFOSAA	117		25 - 150	05/03/23 04:58	05/04/23 22:23	1
d5-NEtFOSAA	104		25 - 150	05/03/23 04:58	05/04/23 22:23	1
d-N-MeFOSA-M	91		10 - 150	05/03/23 04:58	05/04/23 22:23	1
d-N-EtFOSA-M	86		10 - 150	05/03/23 04:58	05/04/23 22:23	1
d7-N-MeFOSE-M	89		10 - 150	05/03/23 04:58	05/04/23 22:23	1
d9-N-EtFOSE-M	85		10 - 150	05/03/23 04:58	05/04/23 22:23	1
M2-4:2 FTS	86		25 - 150	05/03/23 04:58	05/04/23 22:23	1
M2-6:2 FTS	90		25 - 150	05/03/23 04:58	05/04/23 22:23	1
M2-8:2 FTS	97		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C3 HFPO-DA	100		25 - 150	05/03/23 04:58	05/04/23 22:23	1
13C2 10:2 FTS	86		25 - 150	05/03/23 04:58	05/04/23 22:23	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
^c	CCV Recovery is outside acceptance limits.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-671821/1-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671821

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		05/03/23 04:58	05/04/23 20:21	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		05/03/23 04:58	05/04/23 20:21	1
NEtFOSA	<0.87		2.0	0.87	ng/L		05/03/23 04:58	05/04/23 20:21	1
NMeFOSA	<0.43		2.0	0.43	ng/L		05/03/23 04:58	05/04/23 20:21	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		05/03/23 04:58	05/04/23 20:21	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		05/03/23 04:58	05/04/23 20:21	1
NMeFOSE	<1.4		4.0	1.4	ng/L		05/03/23 04:58	05/04/23 20:21	1
NEtFOSE	<0.85		2.0	0.85	ng/L		05/03/23 04:58	05/04/23 20:21	1
4:2 FTS	<0.24		2.0	0.24	ng/L		05/03/23 04:58	05/04/23 20:21	1
6:2 FTS	<2.5		5.0	2.5	ng/L		05/03/23 04:58	05/04/23 20:21	1
8:2 FTS	<0.46		2.0	0.46	ng/L		05/03/23 04:58	05/04/23 20:21	1
10:2 FTS	<0.67		2.0	0.67	ng/L		05/03/23 04:58	05/04/23 20:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		05/03/23 04:58	05/04/23 20:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		05/03/23 04:58	05/04/23 20:21	1
F-53B Major	<0.24		2.0	0.24	ng/L		05/03/23 04:58	05/04/23 20:21	1
F-53B Minor	<0.32		2.0	0.32	ng/L		05/03/23 04:58	05/04/23 20:21	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150				05/03/23 04:58	05/04/23 20:21	1
13C5 PFPeA	96		25 - 150				05/03/23 04:58	05/04/23 20:21	1
13C2 PFHxA	99		25 - 150				05/03/23 04:58	05/04/23 20:21	1
13C4 PFHpA	107		25 - 150				05/03/23 04:58	05/04/23 20:21	1
13C4 PFOA	97		25 - 150				05/03/23 04:58	05/04/23 20:21	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

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

Lab Sample ID: MB 320-671821/1-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671821

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	101		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C2 PFDA	103		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C2 PFUnA	104		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C2 PFDoA	95		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C2 PFTeDA	94		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C2 PFHxDA	95		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C3 PFBS	93		25 - 150	05/03/23 04:58	05/04/23 20:21	1
18O2 PFHxS	94		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C4 PFOS	99		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C8 FOSA	97		10 - 150	05/03/23 04:58	05/04/23 20:21	1
d3-NMeFOSAA	106		25 - 150	05/03/23 04:58	05/04/23 20:21	1
d5-NEtFOSAA	105		25 - 150	05/03/23 04:58	05/04/23 20:21	1
d-N-MeFOSA-M	88		10 - 150	05/03/23 04:58	05/04/23 20:21	1
d-N-EtFOSA-M	88		10 - 150	05/03/23 04:58	05/04/23 20:21	1
d7-N-MeFOSE-M	96		10 - 150	05/03/23 04:58	05/04/23 20:21	1
d9-N-EtFOSE-M	88		10 - 150	05/03/23 04:58	05/04/23 20:21	1
M2-4:2 FTS	91		25 - 150	05/03/23 04:58	05/04/23 20:21	1
M2-6:2 FTS	91		25 - 150	05/03/23 04:58	05/04/23 20:21	1
M2-8:2 FTS	98		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C3 HFPO-DA	100		25 - 150	05/03/23 04:58	05/04/23 20:21	1
13C2 10:2 FTS	94		25 - 150	05/03/23 04:58	05/04/23 20:21	1

Lab Sample ID: LCS 320-671821/2-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671821

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	44.3		ng/L		111	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	46.4		ng/L		116	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	44.8		ng/L		112	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	44.1		ng/L		110	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	43.8		ng/L		110	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	43.7		ng/L		109	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.4		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.6		ng/L		102	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.8		ng/L		117	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	25.5		ng/L		64	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	40.2		ng/L		113	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.0		ng/L		114	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

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

Lab Sample ID: LCS 320-671821/2-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671821

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.6		ng/L		111	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	42.6		ng/L		112	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	39.3		ng/L		106	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	43.7		ng/L		113	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.3		ng/L		105	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	37.2		ng/L		96	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	47.3		ng/L		118	60 - 135
NEtFOSA	40.0	45.1		ng/L		113	60 - 135
NMeFOSA	40.0	43.4		ng/L		109	60 - 135
NMeFOSAA	40.0	43.2		ng/L		108	60 - 135
NEtFOSAA	40.0	43.1		ng/L		108	60 - 135
NMeFOSE	40.0	43.0		ng/L		107	60 - 135
NEtFOSE	40.0	46.0		ng/L		115	60 - 135
4:2 FTS	37.5	42.8		ng/L		114	60 - 135
6:2 FTS	38.1	42.9		ng/L		113	60 - 135
8:2 FTS	38.4	47.4		ng/L		124	60 - 135
10:2 FTS	38.6	41.6		ng/L		108	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.5		ng/L		126	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.1		ng/L		103	60 - 135
F-53B Major	37.4	44.8		ng/L		120	60 - 135
F-53B Minor	37.8	39.2		ng/L		104	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	109		25 - 150
13C5 PFPeA	104		25 - 150
13C2 PFHxA	106		25 - 150
13C4 PFHpA	111		25 - 150
13C4 PFOA	110		25 - 150
13C5 PFNA	107		25 - 150
13C2 PFDA	110		25 - 150
13C2 PFUnA	105		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	90		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	101		25 - 150
18O2 PFHxS	99		25 - 150
13C4 PFOS	104		25 - 150
13C8 FOSA	99		10 - 150
d3-NMeFOSAA	109		25 - 150
d5-NEtFOSAA	103		25 - 150
d-N-MeFOSA-M	89		10 - 150
d-N-EtFOSA-M	88		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

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

Lab Sample ID: LCS 320-671821/2-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671821

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	95		10 - 150
d9-N-EtFOSE-M	89		10 - 150
M2-4:2 FTS	100		25 - 150
M2-6:2 FTS	106		25 - 150
M2-8:2 FTS	104		25 - 150
13C3 HFPO-DA	106		25 - 150
13C2 10:2 FTS	96		25 - 150

Lab Sample ID: LCSD 320-671821/3-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 671821

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	42.8		ng/L		107	60 - 135	6	30
Perfluoropentanoic acid (PFPeA)	40.0	43.2		ng/L		108	60 - 135	2	30
Perfluorohexanoic acid (PFHxA)	40.0	44.9		ng/L		112	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.6		ng/L		107	60 - 135	5	30
Perfluorooctanoic acid (PFOA)	40.0	43.8		ng/L		109	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	43.3		ng/L		108	60 - 135	1	30
Perfluorodecanoic acid (PFDA)	40.0	43.9		ng/L		110	60 - 135	0	30
Perfluoroundecanoic acid (PFUnA)	40.0	42.6		ng/L		107	60 - 135	3	30
Perfluorododecanoic acid (PFDoA)	40.0	43.9		ng/L		110	60 - 135	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.3		ng/L		108	60 - 135	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.1		ng/L		98	60 - 135	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.3		ng/L		113	60 - 135	3	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	46.0 *		ng/L		115	60 - 135	57	30
Perfluorobutanesulfonic acid (PFBS)	35.5	40.1		ng/L		113	60 - 135	0	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.8		ng/L		116	60 - 135	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	39.6		ng/L		109	60 - 135	3	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.7		ng/L		107	60 - 135	5	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.0		ng/L		102	60 - 135	3	30
Perfluorononanesulfonic acid (PFNS)	38.5	40.8		ng/L		106	60 - 135	7	30
Perfluorodecanesulfonic acid (PFDS)	38.6	40.1		ng/L		104	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.4		ng/L		99	60 - 135	3	30
Perfluorooctanesulfonamide (FOSA)	40.0	45.4		ng/L		114	60 - 135	4	30
NEtFOSA	40.0	42.2		ng/L		106	60 - 135	7	30
NMeFOSA	40.0	39.2		ng/L		98	60 - 135	10	30
NMeFOSAA	40.0	44.5		ng/L		111	60 - 135	3	30

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

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

Lab Sample ID: LCSD 320-671821/3-A
Matrix: Water
Analysis Batch: 672521

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 671821

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	44.0		ng/L		110	60 - 135	2	30
NMeFOSE	40.0	43.2		ng/L		108	60 - 135	1	30
NEtFOSE	40.0	44.7		ng/L		112	60 - 135	3	30
4:2 FTS	37.5	44.6		ng/L		119	60 - 135	4	30
6:2 FTS	38.1	46.8		ng/L		123	60 - 135	9	30
8:2 FTS	38.4	42.1		ng/L		110	60 - 135	12	30
10:2 FTS	38.6	39.6		ng/L		102	60 - 135	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	47.2		ng/L		125	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.6		ng/L		104	60 - 135	1	30
F-53B Major	37.4	43.0		ng/L		115	60 - 135	4	30
F-53B Minor	37.8	39.8		ng/L		105	60 - 135	2	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	109		25 - 150
13C5 PFPeA	101		25 - 150
13C2 PFHxA	103		25 - 150
13C4 PFHpA	112		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	108		25 - 150
13C2 PFUnA	105		25 - 150
13C2 PFDoA	102		25 - 150
13C2 PFTeDA	96		25 - 150
13C2 PFHxDA	105		25 - 150
13C3 PFBS	96		25 - 150
18O2 PFHxS	100		25 - 150
13C4 PFOS	103		25 - 150
13C8 FOSA	98		10 - 150
d3-NMeFOSAA	110		25 - 150
d5-NEtFOSAA	102		25 - 150
d-N-MeFOSA-M	89		10 - 150
d-N-EtFOSA-M	83		10 - 150
d7-N-MeFOSE-M	92		10 - 150
d9-N-EtFOSE-M	89		10 - 150
M2-4:2 FTS	96		25 - 150
M2-6:2 FTS	97		25 - 150
M2-8:2 FTS	109		25 - 150
13C3 HFPO-DA	104		25 - 150
13C2 10:2 FTS	101		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Client Sample ID: V-200-A
Date Collected: 05/01/23 09:00
Date Received: 05/02/23 09:20

Lab Sample ID: 500-233168-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			671821	RLT	EET SAC	05/03/23 04:58
Total/NA	Analysis	537 (modified)		1	672521	S1M	EET SAC	05/04/23 21:53
Total/NA	Prep	3535	DL		671821	RLT	EET SAC	05/03/23 04:58
Total/NA	Analysis	537 (modified)	DL	10	672813	RS1	EET SAC	05/07/23 10:02

Client Sample ID: V-900-A
Date Collected: 05/01/23 09:05
Date Received: 05/02/23 09:20

Lab Sample ID: 500-233168-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			671821	RLT	EET SAC	05/03/23 04:58
Total/NA	Analysis	537 (modified)		1	672521	S1M	EET SAC	05/04/23 22:23

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
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- 14

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone FAX Project Name: Marinette, WI Site: Marinette, WI P O # 30171092.4.1.1 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Regulatory Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sampler: <u>Jack Ramirez</u> Date: <u>5-1-23</u> Carrier: <u>FedEx</u> Lab Contact: <u>Sandle Fredrick</u> Date: <u>5-1-23</u> of <u>1</u> COCs		COC No: <u>1</u> For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number: 50015522	
Sample Identification V-200-A V-900-A		Perform MS/MSD (Y/N) Filtered Sample (Y/N) EPA 537 Modified (36 Compounds) System Influent System Effluent		Date: <u>5-1-23</u> Carrier: <u>FedEx</u> Date: <u>5-1-23</u> of <u>1</u> COCs		For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number: 50015522		Sample Specific Notes: System Influent System Effluent	
Sample Date: <u>5-1-23</u> Sample Time: <u>9:00</u> Sample Type (C=Comp, G=Grab): <u>G</u> Matrix: <u>W</u> # of Cont.: <u>2</u>		Sample Date: <u>5-1-23</u> Sample Time: <u>9:05</u> Sample Type (C=Comp, G=Grab): <u>G</u> Matrix: <u>W</u> # of Cont.: <u>2</u>		Date: <u>5-1-23</u> Carrier: <u>FedEx</u> Date: <u>5-1-23</u> of <u>1</u> COCs		For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number: 50015522		Sample Specific Notes: System Influent System Effluent	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7		Date: <u>5-1-23</u> Carrier: <u>FedEx</u> Date: <u>5-1-23</u> of <u>1</u> COCs		For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number: 50015522		Sample Specific Notes: System Influent System Effluent	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: <u>Jack Ramirez</u> Relinquished by: <u>5/1/23</u> Relinquished by: <u>5/1/23</u>		Custody Seal No.: <u>2110733</u> Company: <u>Barley Excavating</u> Company: <u>5-1-23/10:45</u> Company: <u>5/1/23</u>		Date: <u>5-1-23</u> Carrier: <u>FedEx</u> Date: <u>5-1-23</u> of <u>1</u> COCs		For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number: 50015522		Sample Specific Notes: System Influent System Effluent	



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-233168-1

SDG Number:

Login Number: 233168

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 05/02/23 04:46 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2110773
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



500-233168 Field Sheet

Tracking #: 6155 6317 3750

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: <u>C10</u>	Corr. Factor: (+ / -) _____ °C	Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
Ice <u>-</u>	Wet _____ Gel _____ Other _____	
Cooler Custody Seal: <u>2110773</u>	_____	
Cooler ID: _____	_____	
Temp Observed: <u>0.5</u> °C	Corrected: <u>0.5</u> °C	
From: Temp Blank <input checked="" type="checkbox"/> Sample <input type="checkbox"/>		
Opening/Processing The Shipment	Yes No NA	
Cooler compromised/tampered with?	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Frozen samples show signs of thaw?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Initials: <u>JF</u>	Date: <u>5/2/23</u>	
Unpacking/Labeling The Samples	Yes No NA	
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Samples compromised/tampered with?	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	
Containers are not broken or leaking?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Sample custody seal?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Sample containers have legible labels?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Sample date/times are provided?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Appropriate containers are used?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Sample bottles are completely filled?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Sample preservatives verified?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Samples require splitting/compositing?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Samples w/o discrepancies?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Zero headspace?*	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Alkalinity has no headspace?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Multiphasic samples are not present?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")		
Initials: <u>JD</u>	Date: <u>5/2/23</u>	Trizma Lot #(s): _____ _____ _____
Login Completion		Yes No NA
Receipt Temperature on COC?		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Samples received within hold time?		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
NCM Filed?		<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Log Release checked in TALS?		<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Initials: <u>JD</u>		Date: <u>5/2/23</u>



Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-233168-1	V-200-A	80	100	113	113	100	108	101	97
500-233168-1 - DL	V-200-A	95	98	91	96	97	92	91	87
500-233168-2	V-900-A	125	117	101	107	98	103	107	101
LCS 320-671821/2-A	Lab Control Sample	109	104	106	111	110	107	110	105
LCSD 320-671821/3-A	Lab Control Sample Dup	109	101	103	112	105	105	108	105
MB 320-671821/1-A	Method Blank	98	96	99	107	97	101	103	104

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFS (25-150)
500-233168-1	V-200-A	82	64	36	94	103	110	97	96
500-233168-1 - DL	V-200-A	82	61	30	89	94	96	108	115
500-233168-2	V-900-A	90	85	60	101	97	101	106	117
LCS 320-671821/2-A	Lab Control Sample	101	90	95	101	99	104	99	109
LCSD 320-671821/3-A	Lab Control Sample Dup	102	96	105	96	100	103	98	110
MB 320-671821/1-A	Method Blank	95	94	95	93	94	99	97	106

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-233168-1	V-200-A	101	87	77	80	75	92	93	106
500-233168-1 - DL	V-200-A	112	84	79	73	73	74	76	87
500-233168-2	V-900-A	104	91	86	89	85	86	90	97
LCS 320-671821/2-A	Lab Control Sample	103	89	88	95	89	100	106	104
LCSD 320-671821/3-A	Lab Control Sample Dup	102	89	83	92	89	96	97	109
MB 320-671821/1-A	Method Blank	105	88	88	96	88	91	91	98

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-233168-1	V-200-A	89	80
500-233168-1 - DL	V-200-A	84	70
500-233168-2	V-900-A	100	86
LCS 320-671821/2-A	Lab Control Sample	106	96
LCSD 320-671821/3-A	Lab Control Sample Dup	104	101
MB 320-671821/1-A	Method Blank	100	94

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233168-1

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 5/22/2023 9:39:09 AM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-233800-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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5/22/2023 9:39:09 AM

Authorized for release by
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(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Job ID: 500-233800-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-233800-1

Receipt

The samples were received on 5/13/2023 12:40 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.7° C.

LCMS

Method 537 (modified): Results for sample 500-233800-1 were reported from the analysis of a diluted extract due to high concentration of the matrix in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10X analysis is 94% after the dilution factor was applied to the labeled internal standard area count.

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

Organic Prep

Method 3535: The following samples in preparation batch 320-675026 were observed to be light yellow in color prior to extraction.
500-233800-1
preparation batch 320-675026
Method: 3535_PFC_28D
Matrix: Aqueous

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



Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-233800-1	V-200-A	Water	05/12/23 08:00	05/13/23 12:40
500-233800-2	V-900-A	Water	05/12/23 08:05	05/13/23 12:40

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Client Sample ID: V-200-A

Lab Sample ID: 500-233800-1

Date Collected: 05/12/23 08:00

Matrix: Water

Date Received: 05/13/23 12:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	260		4.7	2.3	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoropentanoic acid (PFPeA)	960 E		1.9	0.46	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorohexanoic acid (PFHxA)	740 E		1.9	0.55	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoroheptanoic acid (PFHpA)	380 E		1.9	0.24	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorooctanoic acid (PFOA)	1300 E		1.9	0.80	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorononanoic acid (PFNA)	100		1.9	0.25	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorodecanoic acid (PFDA)	60		1.9	0.29	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoroundecanoic acid (PFUnA)	24		1.9	1.0	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorododecanoic acid (PFDoA)	1.7 J		1.9	0.52	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorotetradecanoic acid (PFTeA)	<0.69		1.9	0.69	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.84		1.9	0.84	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.88		1.9	0.88	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.19	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoropentanesulfonic acid (PFPeS)	6.1		1.9	0.28	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorohexanesulfonic acid (PFHxS)	120		1.9	0.54	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoroheptanesulfonic acid (PFHpS)	4.7		1.9	0.18	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorooctanesulfonic acid (PFOS)	430 E		1.9	0.51	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluoronanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorododecanesulfonic acid (PFDoS)	<0.91		1.9	0.91	ng/L		05/16/23 05:21	05/16/23 18:19	1
Perfluorooctanesulfonamide (FOSA)	8.6		1.9	0.92	ng/L		05/16/23 05:21	05/16/23 18:19	1
NEtFOSA	<0.82		1.9	0.82	ng/L		05/16/23 05:21	05/16/23 18:19	1
NMeFOSA	<0.40		1.9	0.40	ng/L		05/16/23 05:21	05/16/23 18:19	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		05/16/23 05:21	05/16/23 18:19	1
NEtFOSAA	4.5 J		4.7	1.2	ng/L		05/16/23 05:21	05/16/23 18:19	1
NMeFOSE	<1.3		3.8	1.3	ng/L		05/16/23 05:21	05/16/23 18:19	1
NEtFOSE	<0.80		1.9	0.80	ng/L		05/16/23 05:21	05/16/23 18:19	1
4:2 FTS	12		1.9	0.23	ng/L		05/16/23 05:21	05/16/23 18:19	1
6:2 FTS	1200 E		4.7	2.4	ng/L		05/16/23 05:21	05/16/23 18:19	1
8:2 FTS	920 E		1.9	0.43	ng/L		05/16/23 05:21	05/16/23 18:19	1
10:2 FTS	28		1.9	0.63	ng/L		05/16/23 05:21	05/16/23 18:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		05/16/23 05:21	05/16/23 18:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		05/16/23 05:21	05/16/23 18:19	1
F-53B Major	<0.23		1.9	0.23	ng/L		05/16/23 05:21	05/16/23 18:19	1
F-53B Minor	<0.30		1.9	0.30	ng/L		05/16/23 05:21	05/16/23 18:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	85		25 - 150				05/16/23 05:21	05/16/23 18:19	1
13C5 PFPeA	103		25 - 150				05/16/23 05:21	05/16/23 18:19	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Client Sample ID: V-200-A

Lab Sample ID: 500-233800-1

Date Collected: 05/12/23 08:00

Matrix: Water

Date Received: 05/13/23 12:40

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C4 PFHpA	129		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C4 PFOA	97		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C5 PFNA	120		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C2 PFDA	128		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C2 PFUnA	122		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C2 PFDoA	121		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C2 PFTeDA	93		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C2 PFHxDA	89		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C3 PFBS	102		25 - 150	05/16/23 05:21	05/16/23 18:19	1
18O2 PFHxS	110		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C4 PFOS	108		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C8 FOSA	103		10 - 150	05/16/23 05:21	05/16/23 18:19	1
d3-NMeFOSAA	88		25 - 150	05/16/23 05:21	05/16/23 18:19	1
d5-NEtFOSAA	92		25 - 150	05/16/23 05:21	05/16/23 18:19	1
d-N-MeFOSA-M	88		10 - 150	05/16/23 05:21	05/16/23 18:19	1
d-N-EtFOSA-M	72		10 - 150	05/16/23 05:21	05/16/23 18:19	1
d7-N-MeFOSE-M	64		10 - 150	05/16/23 05:21	05/16/23 18:19	1
d9-N-EtFOSE-M	57		10 - 150	05/16/23 05:21	05/16/23 18:19	1
M2-4:2 FTS	124		25 - 150	05/16/23 05:21	05/16/23 18:19	1
M2-6:2 FTS	96		25 - 150	05/16/23 05:21	05/16/23 18:19	1
M2-8:2 FTS	121		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C3 HFPO-DA	141		25 - 150	05/16/23 05:21	05/16/23 18:19	1
13C2 10:2 FTS	138		25 - 150	05/16/23 05:21	05/16/23 18:19	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	280		47	23	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoropentanoic acid (PFPeA)	1100		19	4.6	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorohexanoic acid (PFHxA)	700		19	5.5	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoroheptanoic acid (PFHpA)	430		19	2.4	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorooctanoic acid (PFOA)	1300		19	8.0	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorononanoic acid (PFNA)	100		19	2.5	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorodecanoic acid (PFDA)	56		19	2.9	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoroundecanoic acid (PFUnA)	21		19	10	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorododecanoic acid (PFDoA)	<5.2		19	5.2	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorotetradecanoic acid (PFTeA)	<6.9		19	6.9	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.4		19	8.4	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.8		19	8.8	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorobutanesulfonic acid (PFBS)	11 J		19	1.9	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoropentanesulfonic acid (PFPeS)	6.6 J		19	2.8	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorohexanesulfonic acid (PFHxS)	120		19	5.4	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluoroheptanesulfonic acid (PFHpS)	6.1 J		19	1.8	ng/L		05/16/23 05:21	05/18/23 22:17	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Client Sample ID: V-200-A

Lab Sample ID: 500-233800-1

Date Collected: 05/12/23 08:00

Matrix: Water

Date Received: 05/13/23 12:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	410		19	5.1	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorononanesulfonic acid (PFNS)	<3.5		19	3.5	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorodecanesulfonic acid (PFDS)	<3.0		19	3.0	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorododecanesulfonic acid (PFDoS)	<9.1		19	9.1	ng/L		05/16/23 05:21	05/18/23 22:17	10
Perfluorooctanesulfonamide (FOSA)	<9.2		19	9.2	ng/L		05/16/23 05:21	05/18/23 22:17	10
NEtFOSA	<8.2		19	8.2	ng/L		05/16/23 05:21	05/18/23 22:17	10
NMeFOSA	<4.0		19	4.0	ng/L		05/16/23 05:21	05/18/23 22:17	10
NMeFOSAA	<11		47	11	ng/L		05/16/23 05:21	05/18/23 22:17	10
NEtFOSAA	<12		47	12	ng/L		05/16/23 05:21	05/18/23 22:17	10
NMeFOSE	<13		38	13	ng/L		05/16/23 05:21	05/18/23 22:17	10
NEtFOSE	<8.0		19	8.0	ng/L		05/16/23 05:21	05/18/23 22:17	10
4:2 FTS	9.6 J		19	2.3	ng/L		05/16/23 05:21	05/18/23 22:17	10
6:2 FTS	1300		47	24	ng/L		05/16/23 05:21	05/18/23 22:17	10
8:2 FTS	990		19	4.3	ng/L		05/16/23 05:21	05/18/23 22:17	10
10:2 FTS	28		19	6.3	ng/L		05/16/23 05:21	05/18/23 22:17	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.8		19	3.8	ng/L		05/16/23 05:21	05/18/23 22:17	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<14		38	14	ng/L		05/16/23 05:21	05/18/23 22:17	10
F-53B Major	<2.3		19	2.3	ng/L		05/16/23 05:21	05/18/23 22:17	10
F-53B Minor	<3.0		19	3.0	ng/L		05/16/23 05:21	05/18/23 22:17	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C5 PFPeA	87		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 PFHxA	103		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C4 PFHpA	102		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C4 PFOA	101		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C5 PFNA	107		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 PFDA	106		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 PFUnA	104		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 PFDoA	95		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 PFTeDA	80		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 PFHxDA	66		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C3 PFBS	92		25 - 150	05/16/23 05:21	05/18/23 22:17	10
18O2 PFHxS	98		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C4 PFOS	106		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C8 FOSA	93		10 - 150	05/16/23 05:21	05/18/23 22:17	10
d3-NMeFOSAA	100		25 - 150	05/16/23 05:21	05/18/23 22:17	10
d5-NEtFOSAA	105		25 - 150	05/16/23 05:21	05/18/23 22:17	10
d-N-MeFOSA-M	72		10 - 150	05/16/23 05:21	05/18/23 22:17	10
d-N-EtFOSA-M	56		10 - 150	05/16/23 05:21	05/18/23 22:17	10
d7-N-MeFOSE-M	52		10 - 150	05/16/23 05:21	05/18/23 22:17	10
d9-N-EtFOSE-M	48		10 - 150	05/16/23 05:21	05/18/23 22:17	10
M2-4:2 FTS	106		25 - 150	05/16/23 05:21	05/18/23 22:17	10
M2-6:2 FTS	113		25 - 150	05/16/23 05:21	05/18/23 22:17	10
M2-8:2 FTS	124		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C3 HFPO-DA	93		25 - 150	05/16/23 05:21	05/18/23 22:17	10
13C2 10:2 FTS	124		25 - 150	05/16/23 05:21	05/18/23 22:17	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Client Sample ID: V-900-A

Lab Sample ID: 500-233800-2

Date Collected: 05/12/23 08:05

Matrix: Water

Date Received: 05/13/23 12:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.5	2.2	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoropentanoic acid (PFPeA)	<0.44		1.8	0.44	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorooctanoic acid (PFOA)	<0.77		1.8	0.77	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoroundecanoic acid (PFUnA)	<0.99		1.8	0.99	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorotetradecanoic acid (PFTeA)	<0.66		1.8	0.66	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.80		1.8	0.80	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.85		1.8	0.85	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorooctanesulfonic acid (PFOS)	<0.49		1.8	0.49	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		05/16/23 05:21	05/16/23 18:30	1
Perfluorooctanesulfonamide (FOSA)	<0.88		1.8	0.88	ng/L		05/16/23 05:21	05/16/23 18:30	1
NEtFOSA	<0.78		1.8	0.78	ng/L		05/16/23 05:21	05/16/23 18:30	1
NMeFOSA	<0.39		1.8	0.39	ng/L		05/16/23 05:21	05/16/23 18:30	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		05/16/23 05:21	05/16/23 18:30	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		05/16/23 05:21	05/16/23 18:30	1
NMeFOSE	<1.3		3.6	1.3	ng/L		05/16/23 05:21	05/16/23 18:30	1
NEtFOSE	<0.77		1.8	0.77	ng/L		05/16/23 05:21	05/16/23 18:30	1
4:2 FTS	<0.22		1.8	0.22	ng/L		05/16/23 05:21	05/16/23 18:30	1
6:2 FTS	<2.3		4.5	2.3	ng/L		05/16/23 05:21	05/16/23 18:30	1
8:2 FTS	1.4	J	1.8	0.41	ng/L		05/16/23 05:21	05/16/23 18:30	1
10:2 FTS	3.1		1.8	0.60	ng/L		05/16/23 05:21	05/16/23 18:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		05/16/23 05:21	05/16/23 18:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.6	1.4	ng/L		05/16/23 05:21	05/16/23 18:30	1
F-53B Major	<0.22		1.8	0.22	ng/L		05/16/23 05:21	05/16/23 18:30	1
F-53B Minor	<0.29		1.8	0.29	ng/L		05/16/23 05:21	05/16/23 18:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	95		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C5 PFPeA	100		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C2 PFHxA	102		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C4 PFHpA	109		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C4 PFOA	103		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C5 PFNA	105		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C2 PFDA	102		25 - 150	05/16/23 05:21	05/16/23 18:30	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Client Sample ID: V-900-A

Lab Sample ID: 500-233800-2

Date Collected: 05/12/23 08:05

Matrix: Water

Date Received: 05/13/23 12:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	96		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C2 PFlDoA	90		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C2 PFlTeDA	77		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C2 PFlHxDA	75		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C3 PFlBS	94		25 - 150	05/16/23 05:21	05/16/23 18:30	1
18O2 PFlHxS	95		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C4 PFlOS	93		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C8 FOSA	86		10 - 150	05/16/23 05:21	05/16/23 18:30	1
d3-NMeFOSA	72		25 - 150	05/16/23 05:21	05/16/23 18:30	1
d5-NEtFOSA	72		25 - 150	05/16/23 05:21	05/16/23 18:30	1
d-N-MeFOSA-M	68		10 - 150	05/16/23 05:21	05/16/23 18:30	1
d-N-EtFOSA-M	64		10 - 150	05/16/23 05:21	05/16/23 18:30	1
d7-N-MeFOSE-M	54		10 - 150	05/16/23 05:21	05/16/23 18:30	1
d9-N-EtFOSE-M	50		10 - 150	05/16/23 05:21	05/16/23 18:30	1
M2-4:2 FTS	76		25 - 150	05/16/23 05:21	05/16/23 18:30	1
M2-6:2 FTS	94		25 - 150	05/16/23 05:21	05/16/23 18:30	1
M2-8:2 FTS	99		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C3 HFPO-DA	125		25 - 150	05/16/23 05:21	05/16/23 18:30	1
13C2 10:2 FTS	106		25 - 150	05/16/23 05:21	05/16/23 18:30	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-675026/1-A
Matrix: Water
Analysis Batch: 675123

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 675026

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		05/16/23 05:21	05/16/23 15:32	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		05/16/23 05:21	05/16/23 15:32	1
NEtFOSA	<0.87		2.0	0.87	ng/L		05/16/23 05:21	05/16/23 15:32	1
NMeFOSA	<0.43		2.0	0.43	ng/L		05/16/23 05:21	05/16/23 15:32	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		05/16/23 05:21	05/16/23 15:32	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		05/16/23 05:21	05/16/23 15:32	1
NMeFOSE	<1.4		4.0	1.4	ng/L		05/16/23 05:21	05/16/23 15:32	1
NEtFOSE	<0.85		2.0	0.85	ng/L		05/16/23 05:21	05/16/23 15:32	1
4:2 FTS	<0.24		2.0	0.24	ng/L		05/16/23 05:21	05/16/23 15:32	1
6:2 FTS	<2.5		5.0	2.5	ng/L		05/16/23 05:21	05/16/23 15:32	1
8:2 FTS	<0.46		2.0	0.46	ng/L		05/16/23 05:21	05/16/23 15:32	1
10:2 FTS	<0.67		2.0	0.67	ng/L		05/16/23 05:21	05/16/23 15:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		05/16/23 05:21	05/16/23 15:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		05/16/23 05:21	05/16/23 15:32	1
F-53B Major	<0.24		2.0	0.24	ng/L		05/16/23 05:21	05/16/23 15:32	1
F-53B Minor	<0.32		2.0	0.32	ng/L		05/16/23 05:21	05/16/23 15:32	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	92		25 - 150				05/16/23 05:21	05/16/23 15:32	1
13C5 PFPeA	99		25 - 150				05/16/23 05:21	05/16/23 15:32	1
13C2 PFHxA	102		25 - 150				05/16/23 05:21	05/16/23 15:32	1
13C4 PFHpA	105		25 - 150				05/16/23 05:21	05/16/23 15:32	1
13C4 PFOA	100		25 - 150				05/16/23 05:21	05/16/23 15:32	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

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

Lab Sample ID: MB 320-675026/1-A
Matrix: Water
Analysis Batch: 675123

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 675026

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	102		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C2 PFDA	104		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C2 PFUnA	101		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C2 PFDoA	100		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C2 PFTeDA	94		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C2 PFHxDA	91		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C3 PFBS	88		25 - 150	05/16/23 05:21	05/16/23 15:32	1
18O2 PFHxS	92		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C4 PFOS	93		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C8 FOSA	80		10 - 150	05/16/23 05:21	05/16/23 15:32	1
d3-NMeFOSAA	76		25 - 150	05/16/23 05:21	05/16/23 15:32	1
d5-NEtFOSAA	81		25 - 150	05/16/23 05:21	05/16/23 15:32	1
d-N-MeFOSA-M	69		10 - 150	05/16/23 05:21	05/16/23 15:32	1
d-N-EtFOSA-M	65		10 - 150	05/16/23 05:21	05/16/23 15:32	1
d7-N-MeFOSE-M	55		10 - 150	05/16/23 05:21	05/16/23 15:32	1
d9-N-EtFOSE-M	56		10 - 150	05/16/23 05:21	05/16/23 15:32	1
M2-4:2 FTS	88		25 - 150	05/16/23 05:21	05/16/23 15:32	1
M2-6:2 FTS	97		25 - 150	05/16/23 05:21	05/16/23 15:32	1
M2-8:2 FTS	117		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C3 HFPO-DA	109		25 - 150	05/16/23 05:21	05/16/23 15:32	1
13C2 10:2 FTS	122		25 - 150	05/16/23 05:21	05/16/23 15:32	1

Lab Sample ID: LCS 320-675026/2-A
Matrix: Water
Analysis Batch: 675123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 675026

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	41.2		ng/L		103	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.9		ng/L		100	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	40.8		ng/L		102	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	60 - 135
Perfluorononanoic acid (PFNA)	40.0	44.7		ng/L		112	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	47.1		ng/L		118	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	39.9		ng/L		100	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	41.9		ng/L		105	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.1		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	41.6		ng/L		104	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	41.8		ng/L		105	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	45.9		ng/L		115	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	38.0		ng/L		107	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	40.7		ng/L		108	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

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

Lab Sample ID: LCS 320-675026/2-A
Matrix: Water
Analysis Batch: 675123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 675026

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.4		ng/L		103	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.3		ng/L		108	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.8		ng/L		99	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	39.9		ng/L		104	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.2		ng/L		104	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.1		ng/L		98	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	41.8		ng/L		105	60 - 135
NEtFOSA	40.0	42.0		ng/L		105	60 - 135
NMeFOSA	40.0	42.5		ng/L		106	60 - 135
NMeFOSAA	40.0	40.1		ng/L		100	60 - 135
NEtFOSAA	40.0	42.9		ng/L		107	60 - 135
NMeFOSE	40.0	43.2		ng/L		108	60 - 135
NEtFOSE	40.0	40.8		ng/L		102	60 - 135
4:2 FTS	37.5	40.8		ng/L		109	60 - 135
6:2 FTS	38.1	41.3		ng/L		108	60 - 135
8:2 FTS	38.4	40.5		ng/L		105	60 - 135
10:2 FTS	38.6	34.8		ng/L		90	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.4		ng/L		115	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.0		ng/L		100	60 - 135
F-53B Major	37.4	42.3		ng/L		113	60 - 135
F-53B Minor	37.8	38.6		ng/L		102	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	99		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	102		25 - 150
13C4 PFHpA	109		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFUnA	107		25 - 150
13C2 PFDoA	104		25 - 150
13C2 PFTeDA	97		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	97		25 - 150
13C4 PFOS	92		25 - 150
13C8 FOSA	86		10 - 150
d3-NMeFOSAA	81		25 - 150
d5-NEtFOSAA	77		25 - 150
d-N-MeFOSA-M	69		10 - 150
d-N-EtFOSA-M	65		10 - 150

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

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

Lab Sample ID: LCS 320-675026/2-A
Matrix: Water
Analysis Batch: 675123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 675026

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d7-N-MeFOSE-M</i>	58		10 - 150
<i>d9-N-EtFOSE-M</i>	57		10 - 150
<i>M2-4:2 FTS</i>	89		25 - 150
<i>M2-6:2 FTS</i>	103		25 - 150
<i>M2-8:2 FTS</i>	106		25 - 150
<i>13C3 HFPO-DA</i>	116		25 - 150
<i>13C2 10:2 FTS</i>	124		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Client Sample ID: V-200-A

Date Collected: 05/12/23 08:00

Date Received: 05/13/23 12:40

Lab Sample ID: 500-233800-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			675026	EFG	EET SAC	05/16/23 05:21
Total/NA	Analysis	537 (modified)		1	675123	S1M	EET SAC	05/16/23 18:19
Total/NA	Prep	3535	DL		675026	EFG	EET SAC	05/16/23 05:21
Total/NA	Analysis	537 (modified)	DL	10	675899	K1S	EET SAC	05/18/23 22:17

Client Sample ID: V-900-A

Date Collected: 05/12/23 08:05

Date Received: 05/13/23 12:40

Lab Sample ID: 500-233800-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			675026	EFG	EET SAC	05/16/23 05:21
Total/NA	Analysis	537 (modified)		1	675123	S1M	EET SAC	05/16/23 18:30

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Client Contact
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee, WI 53202

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS

Phone
FAX

Sampler: *Teresa Naminger*
Lab Contact: Sandie Fredrick
Date: 5-12-23
Carrier: FedEx

Project Name: Marinette, WI
Site: Marinette, WI
P O # 30171092.4.1.1 (WPDES)

COG No: 1 of 1 COCs
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Lab Project Number
50015522

TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

Sample Identification
V-200-A
V-900-A

Sample Date 5-12-23
Sample Time 8:00
Sample Type (C=Comp, G=Grab) G
Matrix W
of Cont. 2

Filtered Sample (Y/N)
Perform MS/MSD (Y/N)
EPA 537 Modified (36 Compounds)

System Influent
System Effluent



Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Return to Client Disposal by Lab Archive for _____ Months

Non-Hazard Flammable Skin Irritant Poison B Unknown

7-Day TAT Max or Prelim Report by Day 7

5 day - TAT

Custody Seals Intact: Yes No

Custody Seal No.: 1955990

Telinquished by: *Teresa Naminger*

Received by: *Rob EX*
Company: *PECCAC*

Date/Time: 5-12-23/12:46

Date/Time: 5/13/23 12:46

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-233800-1

SDG Number:

Login Number: 233800

List Number: 1

Creator: Fisher, Jamyiah L

List Source: Eurofins Sacramento

List Creation: 05/15/23 11:00 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1955440
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Job: 500-233800 Field Sheet

Tracking #: 6155-6317-3705

SO / PG / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations
File in the job folder with the COC.

Therm. ID: L-03 Corr. Factor: (+/-) 0 °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 1955440

Cooler ID: _____

Temp Observed: 2.7 °C Corrected: 2.7 °C
From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Initials: JK Date: 5/13/23

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JF Date: 5/15/23

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Log Release checked in TALS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: JF Date: 5/15/23

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-233800-1	V-200-A	85	103	113	129	97	120	128	122
500-233800-1 - DL	V-200-A	94	87	103	102	101	107	106	104
500-233800-2	V-900-A	95	100	102	109	103	105	102	96
LCS 320-675026/2-A	Lab Control Sample	99	93	102	109	102	96	105	107
MB 320-675026/1-A	Method Blank	92	99	102	105	100	102	104	101

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-233800-1	V-200-A	121	93	89	102	110	108	103	88
500-233800-1 - DL	V-200-A	95	80	66	92	98	106	93	100
500-233800-2	V-900-A	90	77	75	94	95	93	86	72
LCS 320-675026/2-A	Lab Control Sample	104	97	95	94	97	92	86	81
MB 320-675026/1-A	Method Blank	100	94	91	88	92	93	80	76

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-233800-1	V-200-A	92	88	72	64	57	124	96	121
500-233800-1 - DL	V-200-A	105	72	56	52	48	106	113	124
500-233800-2	V-900-A	72	68	64	54	50	76	94	99
LCS 320-675026/2-A	Lab Control Sample	77	69	65	58	57	89	103	106
MB 320-675026/1-A	Method Blank	81	69	65	55	56	88	97	117

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-233800-1	V-200-A	141	138
500-233800-1 - DL	V-200-A	93	124
500-233800-2	V-900-A	125	106
LCS 320-675026/2-A	Lab Control Sample	116	124
MB 320-675026/1-A	Method Blank	109	122

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-233800-1

dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 5/31/2023 5:29:59 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-234045-1

Eurofins Chicago

Job Notes

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Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Job ID: 500-234045-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-234045-1

Receipt

The samples were received on 5/18/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.2° C.

LCMS

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: 320-100547-A-3-A and 320-100547-A-3-C MSD. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-234045-1, 320-100547-A-3-A, 320-100547-A-3-B MS and 320-100547-A-3-C MSD. These analytes have been qualified; however, the peak did not saturate the instrument detector. The samples were diluted within the calibration range and both sets of data have been reported.

Method 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-676920 and analytical batch 320-677950 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-677427 recovered above the upper control limit for M2-4:2 FTS an isotope dilution analyte (IDA) used to quantitate the concentration of the associated native analyte 4:2 FTS. This native analyte is in control in the associated CCVIS, CCVL, LCS and other CCV samples in the batch, indicating no adverse impact on target analyte quantitation. Consequently, the associated sample results have been reported. CCV 320-677427/1

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: 320-100547-A-3-A and 320-100547-A-3-B MS. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Results for sample 500-234045-1 was reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 10X analysis is 109% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was below the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte. 320-100547-A-3-A

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: CCB 320-677427/2. The target analyte associated with this IDA is non-detect (ND); Therefore there is no affect on the data. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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

Organic Prep

Method 3535: During the solid phase extraction process, the following samples contained a small amount of sediment at the bottom of the bottle which clogged the solid phase extraction column: 500-234045-1.

preparation batch 320-676920

Method: 3535_PFC_28D

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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



Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-234045-1	V-200-A	Water	05/17/23 09:00	05/18/23 09:40
500-234045-2	V-900-A	Water	05/17/23 09:05	05/18/23 09:40

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234045-1

Date Collected: 05/17/23 09:00

Matrix: Water

Date Received: 05/18/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	290		4.7	2.2	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoropentanoic acid (PFPeA)	1000	E	1.9	0.46	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorohexanoic acid (PFHxA)	750	E	1.9	0.54	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoroheptanoic acid (PFHpA)	410	E	1.9	0.23	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorooctanoic acid (PFOA)	1300	E	1.9	0.79	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorononanoic acid (PFNA)	110		1.9	0.25	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorodecanoic acid (PFDA)	54		1.9	0.29	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoroundecanoic acid (PFUnA)	20		1.9	1.0	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorododecanoic acid (PFDoA)	1.5	J	1.9	0.51	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.83		1.9	0.83	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.88		1.9	0.88	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.19	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoropentanesulfonic acid (PFPeS)	5.7		1.9	0.28	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorohexanesulfonic acid (PFHxS)	110		1.9	0.53	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoroheptanesulfonic acid (PFHpS)	4.4		1.9	0.18	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorooctanesulfonic acid (PFOS)	410	E	1.9	0.50	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluoronanesulfonic acid (PFNS)	<0.34		1.9	0.34	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.9	0.90	ng/L		05/23/23 05:13	05/26/23 12:14	1
Perfluorooctanesulfonamide (FOSA)	8.5		1.9	0.91	ng/L		05/23/23 05:13	05/26/23 12:14	1
NEtFOSA	<0.81		1.9	0.81	ng/L		05/23/23 05:13	05/26/23 12:14	1
NMeFOSA	<0.40		1.9	0.40	ng/L		05/23/23 05:13	05/26/23 12:14	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		05/23/23 05:13	05/26/23 12:14	1
NEtFOSAA	3.2	J	4.7	1.2	ng/L		05/23/23 05:13	05/26/23 12:14	1
NMeFOSE	<1.3		3.7	1.3	ng/L		05/23/23 05:13	05/26/23 12:14	1
NEtFOSE	<0.79		1.9	0.79	ng/L		05/23/23 05:13	05/26/23 12:14	1
4:2 FTS	13		1.9	0.22	ng/L		05/23/23 05:13	05/26/23 12:14	1
6:2 FTS	1100	E	4.7	2.3	ng/L		05/23/23 05:13	05/26/23 12:14	1
8:2 FTS	810	E	1.9	0.43	ng/L		05/23/23 05:13	05/26/23 12:14	1
10:2 FTS	23		1.9	0.62	ng/L		05/23/23 05:13	05/26/23 12:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		05/23/23 05:13	05/26/23 12:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		05/23/23 05:13	05/26/23 12:14	1
F-53B Major	<0.22		1.9	0.22	ng/L		05/23/23 05:13	05/26/23 12:14	1
F-53B Minor	<0.30		1.9	0.30	ng/L		05/23/23 05:13	05/26/23 12:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	78		25 - 150				05/23/23 05:13	05/26/23 12:14	1
13C5 PFPeA	93		25 - 150				05/23/23 05:13	05/26/23 12:14	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234045-1

Date Collected: 05/17/23 09:00

Matrix: Water

Date Received: 05/18/23 09:40

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C4 PFHpA	100		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C4 PFOA	83		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C5 PFNA	99		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C2 PFDA	101		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C2 PFUnA	97		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C2 PFDoA	91		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C2 PFTeDA	73		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C2 PFHxDA	72		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C3 PFBS	106		25 - 150	05/23/23 05:13	05/26/23 12:14	1
18O2 PFHxS	110		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C4 PFOS	104		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C8 FOSA	92		10 - 150	05/23/23 05:13	05/26/23 12:14	1
d3-NMeFOSAA	90		25 - 150	05/23/23 05:13	05/26/23 12:14	1
d5-NEtFOSAA	92		25 - 150	05/23/23 05:13	05/26/23 12:14	1
d-N-MeFOSA-M	71		10 - 150	05/23/23 05:13	05/26/23 12:14	1
d-N-EtFOSA-M	63		10 - 150	05/23/23 05:13	05/26/23 12:14	1
d7-N-MeFOSE-M	60		10 - 150	05/23/23 05:13	05/26/23 12:14	1
d9-N-EtFOSE-M	58		10 - 150	05/23/23 05:13	05/26/23 12:14	1
M2-4:2 FTS	111		25 - 150	05/23/23 05:13	05/26/23 12:14	1
M2-6:2 FTS	83		25 - 150	05/23/23 05:13	05/26/23 12:14	1
M2-8:2 FTS	112		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C3 HFPO-DA	94		25 - 150	05/23/23 05:13	05/26/23 12:14	1
13C2 10:2 FTS	94		25 - 150	05/23/23 05:13	05/26/23 12:14	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	260		47	22	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoropentanoic acid (PFPeA)	1000		19	4.6	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorohexanoic acid (PFHxA)	760		19	5.4	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoroheptanoic acid (PFHpA)	450		19	2.3	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorooctanoic acid (PFOA)	1300		19	7.9	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorononanoic acid (PFNA)	100		19	2.5	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorodecanoic acid (PFDA)	48		19	2.9	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoroundecanoic acid (PFUnA)	22		19	10	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorododecanoic acid (PFDoA)	<5.1		19	5.1	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorotetradecanoic acid (PFTeA)	<6.8		19	6.8	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.3		19	8.3	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoro-n-octadecanoic acid (PFODA)	<8.8		19	8.8	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorobutanesulfonic acid (PFBS)	11 J		19	1.9	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoropentanesulfonic acid (PFPeS)	5.0 J		19	2.8	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorohexanesulfonic acid (PFHxS)	110		19	5.3	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluoroheptanesulfonic acid (PFHpS)	4.8 J		19	1.8	ng/L		05/23/23 05:13	05/25/23 05:44	10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234045-1

Date Collected: 05/17/23 09:00

Matrix: Water

Date Received: 05/18/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	390		19	5.0	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorononanesulfonic acid (PFNS)	<3.4		19	3.4	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorodecanesulfonic acid (PFDS)	<3.0		19	3.0	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorododecanesulfonic acid (PFDoS)	<9.0		19	9.0	ng/L		05/23/23 05:13	05/25/23 05:44	10
Perfluorooctanesulfonamide (FOSA)	9.3 J		19	9.1	ng/L		05/23/23 05:13	05/25/23 05:44	10
NEtFOSA	<8.1		19	8.1	ng/L		05/23/23 05:13	05/25/23 05:44	10
NMeFOSA	<4.0		19	4.0	ng/L		05/23/23 05:13	05/25/23 05:44	10
NMeFOSAA	<11		47	11	ng/L		05/23/23 05:13	05/25/23 05:44	10
NEtFOSAA	<12		47	12	ng/L		05/23/23 05:13	05/25/23 05:44	10
NMeFOSE	<13		37	13	ng/L		05/23/23 05:13	05/25/23 05:44	10
NEtFOSE	<7.9		19	7.9	ng/L		05/23/23 05:13	05/25/23 05:44	10
4:2 FTS	14 J		19	2.2	ng/L		05/23/23 05:13	05/25/23 05:44	10
6:2 FTS	1000		47	23	ng/L		05/23/23 05:13	05/25/23 05:44	10
8:2 FTS	810		19	4.3	ng/L		05/23/23 05:13	05/25/23 05:44	10
10:2 FTS	24		19	6.2	ng/L		05/23/23 05:13	05/25/23 05:44	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.7		19	3.7	ng/L		05/23/23 05:13	05/25/23 05:44	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<14		37	14	ng/L		05/23/23 05:13	05/25/23 05:44	10
F-53B Major	<2.2		19	2.2	ng/L		05/23/23 05:13	05/25/23 05:44	10
F-53B Minor	<3.0		19	3.0	ng/L		05/23/23 05:13	05/25/23 05:44	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	84		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C5 PFPeA	88		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C2 PFHxA	80		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C4 PFHpA	84		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C4 PFOA	84		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C5 PFNA	81		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C2 PFDA	83		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C2 PFUnA	73		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C2 PFDoA	68		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C2 PFTeDA	53		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C2 PFHxDA	50		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C3 PFBS	84		25 - 150				05/23/23 05:13	05/25/23 05:44	10
18O2 PFHxS	77		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C4 PFOS	77		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C8 FOSA	74		10 - 150				05/23/23 05:13	05/25/23 05:44	10
d3-NMeFOSAA	75		25 - 150				05/23/23 05:13	05/25/23 05:44	10
d5-NEtFOSAA	79		25 - 150				05/23/23 05:13	05/25/23 05:44	10
d-N-MeFOSA-M	55		10 - 150				05/23/23 05:13	05/25/23 05:44	10
d-N-EtFOSA-M	51		10 - 150				05/23/23 05:13	05/25/23 05:44	10
d7-N-MeFOSE-M	59		10 - 150				05/23/23 05:13	05/25/23 05:44	10
d9-N-EtFOSE-M	57		10 - 150				05/23/23 05:13	05/25/23 05:44	10
M2-4:2 FTS	76		25 - 150				05/23/23 05:13	05/25/23 05:44	10
M2-6:2 FTS	81		25 - 150				05/23/23 05:13	05/25/23 05:44	10
M2-8:2 FTS	84		25 - 150				05/23/23 05:13	05/25/23 05:44	10
13C3 HFPO-DA	79		25 - 150				05/23/23 05:13	05/25/23 05:44	10

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-200-A
Date Collected: 05/17/23 09:00
Date Received: 05/18/23 09:40

Lab Sample ID: 500-234045-1
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 10:2 FTS	64		25 - 150	05/23/23 05:13	05/25/23 05:44	10

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-900-A

Lab Sample ID: 500-234045-2

Date Collected: 05/17/23 09:05

Matrix: Water

Date Received: 05/18/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.3		4.7	2.3	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoropentanoic acid (PFPeA)	<0.46		1.9	0.46	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorohexanoic acid (PFHxA)	<0.55		1.9	0.55	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorooctanoic acid (PFOA)	<0.80		1.9	0.80	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorotetradecanoic acid (PFTeA)	<0.69		1.9	0.69	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.84		1.9	0.84	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.89		1.9	0.89	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.9	0.28	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorohexanesulfonic acid (PFHxS)	<0.54		1.9	0.54	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorooctanesulfonic acid (PFOS)	<0.51		1.9	0.51	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorododecanesulfonic acid (PFDoS)	<0.92		1.9	0.92	ng/L		05/23/23 05:13	05/26/23 12:25	1
Perfluorooctanesulfonamide (FOSA)	<0.93		1.9	0.93	ng/L		05/23/23 05:13	05/26/23 12:25	1
NEtFOSA	<0.82		1.9	0.82	ng/L		05/23/23 05:13	05/26/23 12:25	1
NMeFOSA	<0.41		1.9	0.41	ng/L		05/23/23 05:13	05/26/23 12:25	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		05/23/23 05:13	05/26/23 12:25	1
NEtFOSAA	<1.2		4.7	1.2	ng/L		05/23/23 05:13	05/26/23 12:25	1
NMeFOSE	<1.3		3.8	1.3	ng/L		05/23/23 05:13	05/26/23 12:25	1
NEtFOSE	<0.80		1.9	0.80	ng/L		05/23/23 05:13	05/26/23 12:25	1
4:2 FTS	<0.23		1.9	0.23	ng/L		05/23/23 05:13	05/26/23 12:25	1
6:2 FTS	<2.4		4.7	2.4	ng/L		05/23/23 05:13	05/26/23 12:25	1
8:2 FTS	0.72	J	1.9	0.43	ng/L		05/23/23 05:13	05/26/23 12:25	1
10:2 FTS	1.9		1.9	0.63	ng/L		05/23/23 05:13	05/26/23 12:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		05/23/23 05:13	05/26/23 12:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		05/23/23 05:13	05/26/23 12:25	1
F-53B Major	<0.23		1.9	0.23	ng/L		05/23/23 05:13	05/26/23 12:25	1
F-53B Minor	<0.30		1.9	0.30	ng/L		05/23/23 05:13	05/26/23 12:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	100		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C5 PFPeA	100		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C2 PFHxA	101		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C4 PFHpA	99		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C4 PFOA	98		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C5 PFNA	96		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C2 PFDA	99		25 - 150	05/23/23 05:13	05/26/23 12:25	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-900-A

Lab Sample ID: 500-234045-2

Date Collected: 05/17/23 09:05

Matrix: Water

Date Received: 05/18/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	94		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C2 PFluA	81		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C2 PFluDA	67		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C2 PFluDA	42		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C3 PFBS	104		25 - 150	05/23/23 05:13	05/26/23 12:25	1
18O2 PFluS	105		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C4 PFOS	100		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C8 FOSA	95		10 - 150	05/23/23 05:13	05/26/23 12:25	1
d3-NMeFOSAA	86		25 - 150	05/23/23 05:13	05/26/23 12:25	1
d5-NEtFOSAA	86		25 - 150	05/23/23 05:13	05/26/23 12:25	1
d-N-MeFOSA-M	63		10 - 150	05/23/23 05:13	05/26/23 12:25	1
d-N-EtFOSA-M	58		10 - 150	05/23/23 05:13	05/26/23 12:25	1
d7-N-MeFOSE-M	63		10 - 150	05/23/23 05:13	05/26/23 12:25	1
d9-N-EtFOSE-M	58		10 - 150	05/23/23 05:13	05/26/23 12:25	1
M2-4:2 FTS	89		25 - 150	05/23/23 05:13	05/26/23 12:25	1
M2-6:2 FTS	89		25 - 150	05/23/23 05:13	05/26/23 12:25	1
M2-8:2 FTS	104		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C3 HFPO-DA	103		25 - 150	05/23/23 05:13	05/26/23 12:25	1
13C2 10:2 FTS	83		25 - 150	05/23/23 05:13	05/26/23 12:25	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-676920/1-A
Matrix: Water
Analysis Batch: 677950

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 676920

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		05/23/23 05:12	05/26/23 09:04	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		05/23/23 05:12	05/26/23 09:04	1
NEtFOSA	<0.87		2.0	0.87	ng/L		05/23/23 05:12	05/26/23 09:04	1
NMeFOSA	<0.43		2.0	0.43	ng/L		05/23/23 05:12	05/26/23 09:04	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		05/23/23 05:12	05/26/23 09:04	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		05/23/23 05:12	05/26/23 09:04	1
NMeFOSE	<1.4		4.0	1.4	ng/L		05/23/23 05:12	05/26/23 09:04	1
NEtFOSE	<0.85		2.0	0.85	ng/L		05/23/23 05:12	05/26/23 09:04	1
4:2 FTS	<0.24		2.0	0.24	ng/L		05/23/23 05:12	05/26/23 09:04	1
6:2 FTS	<2.5		5.0	2.5	ng/L		05/23/23 05:12	05/26/23 09:04	1
8:2 FTS	<0.46		2.0	0.46	ng/L		05/23/23 05:12	05/26/23 09:04	1
10:2 FTS	<0.67		2.0	0.67	ng/L		05/23/23 05:12	05/26/23 09:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		05/23/23 05:12	05/26/23 09:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		05/23/23 05:12	05/26/23 09:04	1
F-53B Major	<0.24		2.0	0.24	ng/L		05/23/23 05:12	05/26/23 09:04	1
F-53B Minor	<0.32		2.0	0.32	ng/L		05/23/23 05:12	05/26/23 09:04	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	100		25 - 150				05/23/23 05:12	05/26/23 09:04	1
13C5 PFPeA	100		25 - 150				05/23/23 05:12	05/26/23 09:04	1
13C2 PFHxA	102		25 - 150				05/23/23 05:12	05/26/23 09:04	1
13C4 PFHpA	101		25 - 150				05/23/23 05:12	05/26/23 09:04	1
13C4 PFOA	105		25 - 150				05/23/23 05:12	05/26/23 09:04	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

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

Lab Sample ID: MB 320-676920/1-A
Matrix: Water
Analysis Batch: 677950

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 676920

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	100		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C2 PFDA	104		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C2 PFUnA	98		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C2 PFDoA	98		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C2 PFTeDA	95		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C2 PFHxDA	91		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C3 PFBS	107		25 - 150	05/23/23 05:12	05/26/23 09:04	1
18O2 PFHxS	104		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C4 PFOS	101		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C8 FOSA	92		10 - 150	05/23/23 05:12	05/26/23 09:04	1
d3-NMeFOSAA	89		25 - 150	05/23/23 05:12	05/26/23 09:04	1
d5-NEtFOSAA	91		25 - 150	05/23/23 05:12	05/26/23 09:04	1
d-N-MeFOSA-M	70		10 - 150	05/23/23 05:12	05/26/23 09:04	1
d-N-EtFOSA-M	68		10 - 150	05/23/23 05:12	05/26/23 09:04	1
d7-N-MeFOSE-M	69		10 - 150	05/23/23 05:12	05/26/23 09:04	1
d9-N-EtFOSE-M	73		10 - 150	05/23/23 05:12	05/26/23 09:04	1
M2-4:2 FTS	107		25 - 150	05/23/23 05:12	05/26/23 09:04	1
M2-6:2 FTS	105		25 - 150	05/23/23 05:12	05/26/23 09:04	1
M2-8:2 FTS	113		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C3 HFPO-DA	91		25 - 150	05/23/23 05:12	05/26/23 09:04	1
13C2 10:2 FTS	105		25 - 150	05/23/23 05:12	05/26/23 09:04	1

Lab Sample ID: LCS 320-676920/2-A
Matrix: Water
Analysis Batch: 677950

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 676920

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	42.3		ng/L		106	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	36.9		ng/L		92	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	40.9		ng/L		102	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	37.4		ng/L		93	60 - 135
Perfluorononanoic acid (PFNA)	40.0	41.0		ng/L		102	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	41.9		ng/L		105	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.6		ng/L		101	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	37.5		ng/L		94	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	38.1		ng/L		95	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	39.7		ng/L		99	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	32.4		ng/L		81	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	35.7		ng/L		100	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	38.7		ng/L		103	60 - 135

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

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

Lab Sample ID: LCS 320-676920/2-A
Matrix: Water
Analysis Batch: 677950

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 676920

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.1		ng/L		96	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	37.7		ng/L		99	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.1		ng/L		97	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	37.3		ng/L		97	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	35.7		ng/L		93	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.0		ng/L		90	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.3		ng/L		101	60 - 135
NEtFOSA	40.0	41.7		ng/L		104	60 - 135
NMeFOSA	40.0	41.0		ng/L		103	60 - 135
NMeFOSAA	40.0	38.7		ng/L		97	60 - 135
NEtFOSAA	40.0	35.2		ng/L		88	60 - 135
NMeFOSE	40.0	40.2		ng/L		100	60 - 135
NEtFOSE	40.0	40.4		ng/L		101	60 - 135
4:2 FTS	37.5	35.9		ng/L		96	60 - 135
6:2 FTS	38.1	37.3		ng/L		98	60 - 135
8:2 FTS	38.4	36.7		ng/L		96	60 - 135
10:2 FTS	38.6	32.9		ng/L		85	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	35.8		ng/L		95	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	38.8		ng/L		97	60 - 135
F-53B Major	37.4	35.1		ng/L		94	60 - 135
F-53B Minor	37.8	33.6		ng/L		89	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	102		25 - 150
13C5 PFPeA	103		25 - 150
13C2 PFHxA	105		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	106		25 - 150
13C2 PFDA	104		25 - 150
13C2 PFUnA	97		25 - 150
13C2 PFDoA	98		25 - 150
13C2 PFTeDA	91		25 - 150
13C2 PFHxDA	85		25 - 150
13C3 PFBS	110		25 - 150
18O2 PFHxS	114		25 - 150
13C4 PFOS	109		25 - 150
13C8 FOSA	94		10 - 150
d3-NMeFOSAA	96		25 - 150
d5-NEtFOSAA	99		25 - 150
d-N-MeFOSA-M	66		10 - 150
d-N-EtFOSA-M	69		10 - 150

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

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

Lab Sample ID: LCS 320-676920/2-A

Matrix: Water

Analysis Batch: 677950

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 676920

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d7-N-MeFOSE-M</i>	74		10 - 150
<i>d9-N-EtFOSE-M</i>	70		10 - 150
<i>M2-4:2 FTS</i>	109		25 - 150
<i>M2-6:2 FTS</i>	114		25 - 150
<i>M2-8:2 FTS</i>	122		25 - 150
<i>13C3 HFPO-DA</i>	95		25 - 150
<i>13C2 10:2 FTS</i>	112		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Client Sample ID: V-200-A

Date Collected: 05/17/23 09:00

Date Received: 05/18/23 09:40

Lab Sample ID: 500-234045-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535	DL		676920	EFG	EET SAC	05/23/23 05:13
Total/NA	Analysis	537 (modified)	DL	10	677427	JRB	EET SAC	05/25/23 05:44
Total/NA	Prep	3535			676920	EFG	EET SAC	05/23/23 05:13
Total/NA	Analysis	537 (modified)		1	677950	JRB	EET SAC	05/26/23 12:14

Client Sample ID: V-900-A

Date Collected: 05/17/23 09:05

Date Received: 05/18/23 09:40

Lab Sample ID: 500-234045-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			676920	EFG	EET SAC	05/23/23 05:13
Total/NA	Analysis	537 (modified)		1	677950	JRB	EET SAC	05/26/23 12:25

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23


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West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski		Sampler: <u>Jacob Lamminger</u>		Date: <u>5-17-23</u>		COC No: <u>1</u> of <u>1</u> COCs	
Email: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____	
Tel/Fax: N/A		Analysis Turnaround Time		Perform MS / MSD (Y / N)		Lab Project Number <u>50015522</u>	
<input type="checkbox"/> CALENDAR DAYS		<input checked="" type="checkbox"/> WORKING DAYS		Titrated Sample (Y / N)		Sample Specific Notes:	
TAT if different from Below		Sample Type (e-Comp, G-Grab)		Matrix Cont.		System Influent	
<input type="checkbox"/> 2 weeks		G		W		System Effluent	
<input checked="" type="checkbox"/> 1 week		Sample Time		Sample Date			
<input type="checkbox"/> 2 days		9:00		5-17-23			
<input type="checkbox"/> 1 day		9:05		↓			
Sample Identification		V-200-A		V-900-A			
V-200-A							
V-900-A							



500-234045 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazardous Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
7-Dav TAT Max or Prelim Report by Dav 7 5 day-TAT

Custody Seal No.: 210358

Relinquished by: Jacob Lamminger Company: Barley Excavating Date/Time: 5-17-23 9:45

Relinquished by: _____ Company: _____ Date/Time: _____

Relinquished by: _____ Company: _____ Date/Time: _____

Received by: Fed Ex Company: _____ Date/Time: _____

Received by: _____ Company: _____ Date/Time: _____

Received in Laboratory by: _____ Company: _____ Date/Time: _____

Cooler Temp. (°C): Obs'd: 22 Corr'd: 22 Therm ID No.: U10

Return to Client Disposal by Lab Archive for _____ Months



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-234045-1

SDG Number:

Login Number: 234045

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 05/22/23 11:05 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2110358
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.2C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PfUnA (25-150)
500-234045-1 - DL	V-200-A	84	88	80	84	84	81	83	73
500-234045-1	V-200-A	78	93	101	100	83	99	101	97
500-234045-2	V-900-A	100	100	101	99	98	96	99	94
LCS 320-676920/2-A	Lab Control Sample	102	103	105	102	105	106	104	97
MB 320-676920/1-A	Method Blank	100	100	102	101	105	100	104	98

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-234045-1 - DL	V-200-A	68	53	50	84	77	77	74	75
500-234045-1	V-200-A	91	73	72	106	110	104	92	90
500-234045-2	V-900-A	81	67	42	104	105	100	95	86
LCS 320-676920/2-A	Lab Control Sample	98	91	85	110	114	109	94	96
MB 320-676920/1-A	Method Blank	98	95	91	107	104	101	92	89

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-234045-1 - DL	V-200-A	79	55	51	59	57	76	81	84
500-234045-1	V-200-A	92	71	63	60	58	111	83	112
500-234045-2	V-900-A	86	63	58	63	58	89	89	104
LCS 320-676920/2-A	Lab Control Sample	99	66	69	74	70	109	114	122
MB 320-676920/1-A	Method Blank	91	70	68	69	73	107	105	113

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-234045-1 - DL	V-200-A	79	64
500-234045-1	V-200-A	94	94
500-234045-2	V-900-A	103	83
LCS 320-676920/2-A	Lab Control Sample	95	112
MB 320-676920/1-A	Method Blank	91	105

Surrogate Legend

PFBA = 13C4 PFBA
 PFPeA = 13C5 PFPeA
 PFHxA = 13C2 PFHxA
 C4PFHA = 13C4 PFHpA
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDaA = 13C2 PFDaA
 PFTDA = 13C2 PFTeDA
 PFHxDA = 13C2 PFHxDA
 C3PFBS = 13C3 PFBS
 PFHxS = 18O2 PFHxS
 PFOS = 13C4 PFOS
 PFOSA = 13C8 FOSA
 d3NMFOS = d3-NMeFOSAA
 d5NEFOS = d5-NEtFOSAA
 dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234045-1

dEtFOSA = d-N-EtFOSA-M

NMFM = d7-N-MeFOSE-M

NEFM = d9-N-EtFOSE-M

M242FTS = M2-4:2 FTS

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

HFPODA = 13C3 HFPO-DA

M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

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JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-234249-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Job ID: 500-234249-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-234249-1

Receipt

The samples were received on 5/23/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8° C.

LCMS

Method 537 (modified): The concentration of one or more analyte associated with the following samples exceeded the instrument calibration range: 500-234249-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): The method blank for preparation batch 320-678381 contained 6:2 FTS above the method detection limit (MDL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): The method blank for preparation batch 320-678381 and analytical batch 320-678709 contained 6:2 FTS above the method detection limit (MDL). Associated samples were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 537 (modified): The continuing calibration verification (CCV) associated with the dilution analyses in batch 320-678850 recovered outside control limits for Perfluoro-n-octadecanoic acid (PFODA). This analyte was not over calibration range in the original analysis, therefore the data is reported. are not reported.

Method 537 (modified): Results for sample 500-234249-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 5X analysis is 141% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: 500-234249-2. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-678381.

Method: 3535_PFC

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-234249-1	V-200-A	Water	05/22/23 09:00	05/23/23 09:30
500-234249-2	V-900-A	Water	05/22/23 09:05	05/23/23 09:30

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- 11
- 12
- 13
- 14

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234249-1

Date Collected: 05/22/23 09:00

Matrix: Water

Date Received: 05/23/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	170		4.8	2.3	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoropentanoic acid (PFPeA)	590	E	1.9	0.47	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorohexanoic acid (PFHxA)	430	E	1.9	0.56	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoroheptanoic acid (PFHpA)	260		1.9	0.24	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorooctanoic acid (PFOA)	630	E	1.9	0.82	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorononanoic acid (PFNA)	62		1.9	0.26	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorodecanoic acid (PFDA)	37		1.9	0.30	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoroundecanoic acid (PFUnA)	16		1.9	1.1	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorododecanoic acid (PFDoA)	1.7	J	1.9	0.53	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.86		1.9	0.86	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.91		1.9	0.91	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorobutanesulfonic acid (PFBS)	7.9		1.9	0.19	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoropentanesulfonic acid (PFPeS)	4.2		1.9	0.29	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorohexanesulfonic acid (PFHxS)	70		1.9	0.55	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluoroheptanesulfonic acid (PFHpS)	3.3		1.9	0.18	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorooctanesulfonic acid (PFOS)	240		1.9	0.52	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorononanesulfonic acid (PFNS)	<0.36		1.9	0.36	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorododecanesulfonic acid (PFDoS)	<0.94		1.9	0.94	ng/L		05/27/23 07:26	05/30/23 13:08	1
Perfluorooctanesulfonamide (FOSA)	7.2		1.9	0.95	ng/L		05/27/23 07:26	05/30/23 13:08	1
NEtFOSA	<0.84		1.9	0.84	ng/L		05/27/23 07:26	05/30/23 13:08	1
NMeFOSA	<0.42		1.9	0.42	ng/L		05/27/23 07:26	05/30/23 13:08	1
NMeFOSAA	<1.2		4.8	1.2	ng/L		05/27/23 07:26	05/30/23 13:08	1
NEtFOSAA	2.4	J	4.8	1.3	ng/L		05/27/23 07:26	05/30/23 13:08	1
NMeFOSE	<1.4		3.9	1.4	ng/L		05/27/23 07:26	05/30/23 13:08	1
NEtFOSE	<0.82		1.9	0.82	ng/L		05/27/23 07:26	05/30/23 13:08	1
4:2 FTS	8.5		1.9	0.23	ng/L		05/27/23 07:26	05/30/23 13:08	1
6:2 FTS	640	E B	4.8	2.4	ng/L		05/27/23 07:26	05/30/23 13:08	1
8:2 FTS	530	E	1.9	0.44	ng/L		05/27/23 07:26	05/30/23 13:08	1
10:2 FTS	22		1.9	0.65	ng/L		05/27/23 07:26	05/30/23 13:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.39		1.9	0.39	ng/L		05/27/23 07:26	05/30/23 13:08	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.9	1.4	ng/L		05/27/23 07:26	05/30/23 13:08	1
F-53B Major	<0.23		1.9	0.23	ng/L		05/27/23 07:26	05/30/23 13:08	1
F-53B Minor	<0.31		1.9	0.31	ng/L		05/27/23 07:26	05/30/23 13:08	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	69		25 - 150				05/27/23 07:26	05/30/23 13:08	1
13C5 PFPeA	86		25 - 150				05/27/23 07:26	05/30/23 13:08	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234249-1

Date Collected: 05/22/23 09:00

Matrix: Water

Date Received: 05/23/23 09:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C4 PFHpA	93		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C4 PFOA	91		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C5 PFNA	92		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C2 PFDA	81		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C2 PFUnA	75		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C2 PFDoA	66		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C2 PFTeDA	59		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C2 PFHxDA	50		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C3 PFBS	79		25 - 150	05/27/23 07:26	05/30/23 13:08	1
18O2 PFHxS	88		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C4 PFOS	88		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C8 FOSA	84		10 - 150	05/27/23 07:26	05/30/23 13:08	1
d3-NMeFOSAA	74		25 - 150	05/27/23 07:26	05/30/23 13:08	1
d5-NEtFOSAA	78		25 - 150	05/27/23 07:26	05/30/23 13:08	1
d-N-MeFOSA-M	64		10 - 150	05/27/23 07:26	05/30/23 13:08	1
d-N-EtFOSA-M	61		10 - 150	05/27/23 07:26	05/30/23 13:08	1
d7-N-MeFOSE-M	62		10 - 150	05/27/23 07:26	05/30/23 13:08	1
d9-N-EtFOSE-M	62		10 - 150	05/27/23 07:26	05/30/23 13:08	1
M2-4:2 FTS	77		25 - 150	05/27/23 07:26	05/30/23 13:08	1
M2-6:2 FTS	70		25 - 150	05/27/23 07:26	05/30/23 13:08	1
M2-8:2 FTS	74		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C3 HFPO-DA	78		25 - 150	05/27/23 07:26	05/30/23 13:08	1
13C2 10:2 FTS	68		25 - 150	05/27/23 07:26	05/30/23 13:08	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	190		24	12	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoropentanoic acid (PFPeA)	690		9.7	2.4	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorohexanoic acid (PFHxA)	490		9.7	2.8	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoroheptanoic acid (PFHpA)	300		9.7	1.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorooctanoic acid (PFOA)	730		9.7	4.1	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorononanoic acid (PFNA)	64		9.7	1.3	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorodecanoic acid (PFDA)	34		9.7	1.5	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoroundecanoic acid (PFUnA)	15		9.7	5.3	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorododecanoic acid (PFDoA)	<2.7		9.7	2.7	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorotridecanoic acid (PFTriA)	<6.3		9.7	6.3	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorotetradecanoic acid (PFTeA)	<3.5		9.7	3.5	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<4.3		9.7	4.3	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoro-n-octadecanoic acid (PFODA)	<4.5 ^c		9.7	4.5	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorobutanesulfonic acid (PFBS)	7.3 J		9.7	0.97	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoropentanesulfonic acid (PFPeS)	4.8 J		9.7	1.4	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorohexanesulfonic acid (PFHxS)	71		9.7	2.8	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluoroheptanesulfonic acid (PFHpS)	3.8 J		9.7	0.92	ng/L		05/27/23 07:26	05/31/23 03:15	5

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234249-1

Date Collected: 05/22/23 09:00

Matrix: Water

Date Received: 05/23/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	260		9.7	2.6	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorononanesulfonic acid (PFNS)	<1.8		9.7	1.8	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorodecanesulfonic acid (PFDS)	<1.5		9.7	1.5	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorododecanesulfonic acid (PFDoS)	<4.7		9.7	4.7	ng/L		05/27/23 07:26	05/31/23 03:15	5
Perfluorooctanesulfonamide (FOSA)	6.2 J		9.7	4.7	ng/L		05/27/23 07:26	05/31/23 03:15	5
NEtFOSA	<4.2		9.7	4.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
NMeFOSA	<2.1		9.7	2.1	ng/L		05/27/23 07:26	05/31/23 03:15	5
NMeFOSAA	<5.8		24	5.8	ng/L		05/27/23 07:26	05/31/23 03:15	5
NEtFOSAA	<6.3		24	6.3	ng/L		05/27/23 07:26	05/31/23 03:15	5
NMeFOSE	<6.8		19	6.8	ng/L		05/27/23 07:26	05/31/23 03:15	5
NEtFOSE	<4.1		9.7	4.1	ng/L		05/27/23 07:26	05/31/23 03:15	5
4:2 FTS	10		9.7	1.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
6:2 FTS	700 B		24	12	ng/L		05/27/23 07:26	05/31/23 03:15	5
8:2 FTS	590		9.7	2.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
10:2 FTS	22		9.7	3.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		9.7	1.9	ng/L		05/27/23 07:26	05/31/23 03:15	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<7.2		19	7.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
F-53B Major	<1.2		9.7	1.2	ng/L		05/27/23 07:26	05/31/23 03:15	5
F-53B Minor	<1.5		9.7	1.5	ng/L		05/27/23 07:26	05/31/23 03:15	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	83		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C5 PFPeA	92		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C2 PFHxA	88		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C4 PFHpA	85		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C4 PFOA	92		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C5 PFNA	84		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C2 PFDA	82		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C2 PFUnA	74		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C2 PFDoA	66		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C2 PFTeDA	52		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C2 PFHxDA	37		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C3 PFBS	76		25 - 150				05/27/23 07:26	05/31/23 03:15	5
18O2 PFHxS	80		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C4 PFOS	76		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C8 FOSA	87		10 - 150				05/27/23 07:26	05/31/23 03:15	5
d3-NMeFOSAA	76		25 - 150				05/27/23 07:26	05/31/23 03:15	5
d5-NEtFOSAA	82		25 - 150				05/27/23 07:26	05/31/23 03:15	5
d-N-MeFOSA-M	62		10 - 150				05/27/23 07:26	05/31/23 03:15	5
d-N-EtFOSA-M	58		10 - 150				05/27/23 07:26	05/31/23 03:15	5
d7-N-MeFOSE-M	60		10 - 150				05/27/23 07:26	05/31/23 03:15	5
d9-N-EtFOSE-M	60		10 - 150				05/27/23 07:26	05/31/23 03:15	5
M2-4:2 FTS	55		25 - 150				05/27/23 07:26	05/31/23 03:15	5
M2-6:2 FTS	67		25 - 150				05/27/23 07:26	05/31/23 03:15	5
M2-8:2 FTS	68		25 - 150				05/27/23 07:26	05/31/23 03:15	5
13C3 HFPO-DA	74		25 - 150				05/27/23 07:26	05/31/23 03:15	5

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-200-A
Date Collected: 05/22/23 09:00
Date Received: 05/23/23 09:30

Lab Sample ID: 500-234249-1
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 10:2 FTS	63		25 - 150	05/27/23 07:26	05/31/23 03:15	5

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-900-A

Lab Sample ID: 500-234249-2

Date Collected: 05/22/23 09:05

Matrix: Water

Date Received: 05/23/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.6	2.2	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoropentanoic acid (PFPeA)	<0.45		1.8	0.45	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorohexanoic acid (PFHxA)	<0.54		1.8	0.54	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorooctanoic acid (PFOA)	<0.79		1.8	0.79	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorononanoic acid (PFNA)	<0.25		1.8	0.25	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorodecanoic acid (PFDA)	<0.29		1.8	0.29	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.8	1.0	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.8	0.51	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.8	0.68	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.82		1.8	0.82	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.87		1.8	0.87	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoropentanesulfonic acid (PFPeS)	<0.28		1.8	0.28	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorohexanesulfonic acid (PFHxS)	<0.53		1.8	0.53	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.8	0.18	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		1.8	0.50	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.8	0.34	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.8	0.30	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.8	0.90	ng/L		05/27/23 07:26	05/30/23 13:39	1
Perfluorooctanesulfonamide (FOSA)	<0.91		1.8	0.91	ng/L		05/27/23 07:26	05/30/23 13:39	1
NEtFOSA	<0.80		1.8	0.80	ng/L		05/27/23 07:26	05/30/23 13:39	1
NMeFOSA	<0.40		1.8	0.40	ng/L		05/27/23 07:26	05/30/23 13:39	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		05/27/23 07:26	05/30/23 13:39	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		05/27/23 07:26	05/30/23 13:39	1
NMeFOSE	<1.3		3.7	1.3	ng/L		05/27/23 07:26	05/30/23 13:39	1
NEtFOSE	<0.79		1.8	0.79	ng/L		05/27/23 07:26	05/30/23 13:39	1
4:2 FTS	<0.22		1.8	0.22	ng/L		05/27/23 07:26	05/30/23 13:39	1
6:2 FTS	<2.3		4.6	2.3	ng/L		05/27/23 07:26	05/30/23 13:39	1
8:2 FTS	0.48	J	1.8	0.43	ng/L		05/27/23 07:26	05/30/23 13:39	1
10:2 FTS	1.5	J	1.8	0.62	ng/L		05/27/23 07:26	05/30/23 13:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.8	0.37	ng/L		05/27/23 07:26	05/30/23 13:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		05/27/23 07:26	05/30/23 13:39	1
F-53B Major	<0.22		1.8	0.22	ng/L		05/27/23 07:26	05/30/23 13:39	1
F-53B Minor	<0.30		1.8	0.30	ng/L		05/27/23 07:26	05/30/23 13:39	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	103		25 - 150				05/27/23 07:26	05/30/23 13:39	1
13C5 PFPeA	97		25 - 150				05/27/23 07:26	05/30/23 13:39	1
13C2 PFHxA	94		25 - 150				05/27/23 07:26	05/30/23 13:39	1
13C4 PFHpA	95		25 - 150				05/27/23 07:26	05/30/23 13:39	1
13C4 PFOA	97		25 - 150				05/27/23 07:26	05/30/23 13:39	1
13C5 PFNA	102		25 - 150				05/27/23 07:26	05/30/23 13:39	1
13C2 PFDA	88		25 - 150				05/27/23 07:26	05/30/23 13:39	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-900-A
Date Collected: 05/22/23 09:05
Date Received: 05/23/23 09:30

Lab Sample ID: 500-234249-2
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	82		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C2 PFlDoA	72		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C2 PFlTeDA	55		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C2 PFlHxDA	19 *		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C3 PFlBS	95		25 - 150	05/27/23 07:26	05/30/23 13:39	1
18O2 PFlHxS	93		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C4 PFlOS	88		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C8 FOSA	94		10 - 150	05/27/23 07:26	05/30/23 13:39	1
d3-NMeFOSAA	85		25 - 150	05/27/23 07:26	05/30/23 13:39	1
d5-NEtFOSAA	82		25 - 150	05/27/23 07:26	05/30/23 13:39	1
d-N-MeFOSA-M	66		10 - 150	05/27/23 07:26	05/30/23 13:39	1
d-N-EtFOSA-M	61		10 - 150	05/27/23 07:26	05/30/23 13:39	1
d7-N-MeFOSE-M	72		10 - 150	05/27/23 07:26	05/30/23 13:39	1
d9-N-EtFOSE-M	70		10 - 150	05/27/23 07:26	05/30/23 13:39	1
M2-4:2 FTS	65		25 - 150	05/27/23 07:26	05/30/23 13:39	1
M2-6:2 FTS	68		25 - 150	05/27/23 07:26	05/30/23 13:39	1
M2-8:2 FTS	71		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C3 HFPO-DA	99		25 - 150	05/27/23 07:26	05/30/23 13:39	1
13C2 10:2 FTS	63		25 - 150	05/27/23 07:26	05/30/23 13:39	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
^c	CCV Recovery is outside acceptance limits.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-678381/1-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 678381

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		05/27/23 07:26	05/30/23 11:37	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		05/27/23 07:26	05/30/23 11:37	1
NEtFOSA	<0.87		2.0	0.87	ng/L		05/27/23 07:26	05/30/23 11:37	1
NMeFOSA	<0.43		2.0	0.43	ng/L		05/27/23 07:26	05/30/23 11:37	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		05/27/23 07:26	05/30/23 11:37	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		05/27/23 07:26	05/30/23 11:37	1
NMeFOSE	<1.4		4.0	1.4	ng/L		05/27/23 07:26	05/30/23 11:37	1
NEtFOSE	<0.85		2.0	0.85	ng/L		05/27/23 07:26	05/30/23 11:37	1
4:2 FTS	<0.24		2.0	0.24	ng/L		05/27/23 07:26	05/30/23 11:37	1
6:2 FTS	2.84	J	5.0	2.5	ng/L		05/27/23 07:26	05/30/23 11:37	1
8:2 FTS	<0.46		2.0	0.46	ng/L		05/27/23 07:26	05/30/23 11:37	1
10:2 FTS	<0.67		2.0	0.67	ng/L		05/27/23 07:26	05/30/23 11:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		05/27/23 07:26	05/30/23 11:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		05/27/23 07:26	05/30/23 11:37	1
F-53B Major	<0.24		2.0	0.24	ng/L		05/27/23 07:26	05/30/23 11:37	1
F-53B Minor	<0.32		2.0	0.32	ng/L		05/27/23 07:26	05/30/23 11:37	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150				05/27/23 07:26	05/30/23 11:37	1
13C5 PFPeA	94		25 - 150				05/27/23 07:26	05/30/23 11:37	1
13C2 PFHxA	97		25 - 150				05/27/23 07:26	05/30/23 11:37	1
13C4 PFHpA	95		25 - 150				05/27/23 07:26	05/30/23 11:37	1
13C4 PFOA	98		25 - 150				05/27/23 07:26	05/30/23 11:37	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

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

Lab Sample ID: MB 320-678381/1-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 678381

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	103		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C2 PFDA	95		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C2 PFUnA	94		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C2 PFDoA	92		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C2 PFTeDA	95		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C2 PFHxDA	92		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C3 PFBS	94		25 - 150	05/27/23 07:26	05/30/23 11:37	1
18O2 PFHxS	100		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C4 PFOS	102		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C8 FOSA	96		10 - 150	05/27/23 07:26	05/30/23 11:37	1
d3-NMeFOSAA	94		25 - 150	05/27/23 07:26	05/30/23 11:37	1
d5-NEtFOSAA	104		25 - 150	05/27/23 07:26	05/30/23 11:37	1
d-N-MeFOSA-M	82		10 - 150	05/27/23 07:26	05/30/23 11:37	1
d-N-EtFOSA-M	80		10 - 150	05/27/23 07:26	05/30/23 11:37	1
d7-N-MeFOSE-M	92		10 - 150	05/27/23 07:26	05/30/23 11:37	1
d9-N-EtFOSE-M	96		10 - 150	05/27/23 07:26	05/30/23 11:37	1
M2-4:2 FTS	71		25 - 150	05/27/23 07:26	05/30/23 11:37	1
M2-6:2 FTS	72		25 - 150	05/27/23 07:26	05/30/23 11:37	1
M2-8:2 FTS	85		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C3 HFPO-DA	98		25 - 150	05/27/23 07:26	05/30/23 11:37	1
13C2 10:2 FTS	97		25 - 150	05/27/23 07:26	05/30/23 11:37	1

Lab Sample ID: LCS 320-678381/2-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 678381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.2		ng/L		108	60 - 135	
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		102	60 - 135	
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		103	60 - 135	
Perfluorooctanoic acid (PFOA)	40.0	39.3		ng/L		98	60 - 135	
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	60 - 135	
Perfluorodecanoic acid (PFDA)	40.0	42.3		ng/L		106	60 - 135	
Perfluoroundecanoic acid (PFUnA)	40.0	40.0		ng/L		100	60 - 135	
Perfluorododecanoic acid (PFDoA)	40.0	44.9		ng/L		112	60 - 135	
Perfluorotridecanoic acid (PFTriA)	40.0	38.0		ng/L		95	60 - 135	
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		100	60 - 135	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.7		ng/L		102	60 - 135	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	29.0		ng/L		72	60 - 135	
Perfluorobutanesulfonic acid (PFBS)	35.5	36.3		ng/L		102	60 - 135	
Perfluoropentanesulfonic acid (PFPeS)	37.6	37.0		ng/L		99	60 - 135	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

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

Lab Sample ID: LCS 320-678381/2-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 678381

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	34.9		ng/L		96	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	37.9		ng/L		99	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.4		ng/L		98	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	38.6		ng/L		100	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	36.5		ng/L		95	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	29.8		ng/L		77	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.6		ng/L		102	60 - 135
NEtFOSA	40.0	41.5		ng/L		104	60 - 135
NMeFOSA	40.0	45.5		ng/L		114	60 - 135
NMeFOSAA	40.0	40.9		ng/L		102	60 - 135
NEtFOSAA	40.0	45.1		ng/L		113	60 - 135
NMeFOSE	40.0	38.3		ng/L		96	60 - 135
NEtFOSE	40.0	41.0		ng/L		103	60 - 135
4:2 FTS	37.5	40.5		ng/L		108	60 - 135
6:2 FTS	38.1	40.9		ng/L		107	60 - 135
8:2 FTS	38.4	40.4		ng/L		105	60 - 135
10:2 FTS	38.6	34.7		ng/L		90	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.0		ng/L		103	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.9		ng/L		107	60 - 135
F-53B Major	37.4	36.3		ng/L		97	60 - 135
F-53B Minor	37.8	36.7		ng/L		97	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	103		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	96		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	103		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	94		25 - 150
13C2 PFHxDA	98		25 - 150
13C3 PFBS	102		25 - 150
18O2 PFHxS	106		25 - 150
13C4 PFOS	105		25 - 150
13C8 FOSA	97		10 - 150
d3-NMeFOSAA	94		25 - 150
d5-NEtFOSAA	97		25 - 150
d-N-MeFOSA-M	75		10 - 150
d-N-EtFOSA-M	75		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

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

Lab Sample ID: LCS 320-678381/2-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 678381

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	90		10 - 150
d9-N-EtFOSE-M	91		10 - 150
M2-4:2 FTS	73		25 - 150
M2-6:2 FTS	80		25 - 150
M2-8:2 FTS	85		25 - 150
13C3 HFPO-DA	97		25 - 150
13C2 10:2 FTS	100		25 - 150

Lab Sample ID: LCSD 320-678381/3-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 678381

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	37.6		ng/L		94	60 - 135	2	30	
Perfluoropentanoic acid (PFPeA)	40.0	41.2		ng/L		103	60 - 135	5	30	
Perfluorohexanoic acid (PFHxA)	40.0	41.9		ng/L		105	60 - 135	2	30	
Perfluoroheptanoic acid (PFHpA)	40.0	43.5		ng/L		109	60 - 135	5	30	
Perfluorooctanoic acid (PFOA)	40.0	39.3		ng/L		98	60 - 135	0	30	
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	60 - 135	1	30	
Perfluorodecanoic acid (PFDA)	40.0	43.7		ng/L		109	60 - 135	3	30	
Perfluoroundecanoic acid (PFUnA)	40.0	41.3		ng/L		103	60 - 135	3	30	
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	60 - 135	6	30	
Perfluorotridecanoic acid (PFTriA)	40.0	36.6		ng/L		91	60 - 135	4	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	39.0		ng/L		97	60 - 135	3	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.2		ng/L		101	60 - 135	1	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	29.5		ng/L		74	60 - 135	2	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	35.2		ng/L		99	60 - 135	3	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	38.3		ng/L		102	60 - 135	3	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	33.3		ng/L		91	60 - 135	5	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	37.4		ng/L		98	60 - 135	1	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	36.6		ng/L		98	60 - 135	1	30	
Perfluorononanesulfonic acid (PFNS)	38.5	38.3		ng/L		99	60 - 135	1	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	37.8		ng/L		98	60 - 135	3	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	31.8		ng/L		82	60 - 135	6	30	
Perfluorooctanesulfonamide (FOSA)	40.0	39.2		ng/L		98	60 - 135	3	30	
NEtFOSA	40.0	40.2		ng/L		100	60 - 135	3	30	
NMeFOSA	40.0	39.6		ng/L		99	60 - 135	14	30	
NMeFOSAA	40.0	38.8		ng/L		97	60 - 135	5	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

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

Lab Sample ID: LCSD 320-678381/3-A
Matrix: Water
Analysis Batch: 678709

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 678381

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	44.3		ng/L		111	60 - 135	2	30
NMeFOSE	40.0	40.2		ng/L		101	60 - 135	5	30
NEtFOSE	40.0	40.0		ng/L		100	60 - 135	2	30
4:2 FTS	37.5	34.1		ng/L		91	60 - 135	17	30
6:2 FTS	38.1	39.3		ng/L		103	60 - 135	4	30
8:2 FTS	38.4	38.5		ng/L		100	60 - 135	5	30
10:2 FTS	38.6	35.1		ng/L		91	60 - 135	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	39.7		ng/L		105	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.7		ng/L		102	60 - 135	5	30
F-53B Major	37.4	36.5		ng/L		98	60 - 135	0	30
F-53B Minor	37.8	36.7		ng/L		97	60 - 135	0	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	90		25 - 150
13C5 PFPeA	89		25 - 150
13C2 PFHxA	86		25 - 150
13C4 PFHpA	89		25 - 150
13C4 PFOA	94		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	88		25 - 150
13C2 PFUnA	88		25 - 150
13C2 PFDoA	89		25 - 150
13C2 PFTeDA	89		25 - 150
13C2 PFHxDA	87		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	99		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	92		10 - 150
d3-NMeFOSAA	88		25 - 150
d5-NEtFOSAA	90		25 - 150
d-N-MeFOSA-M	81		10 - 150
d-N-EtFOSA-M	76		10 - 150
d7-N-MeFOSE-M	82		10 - 150
d9-N-EtFOSE-M	89		10 - 150
M2-4:2 FTS	74		25 - 150
M2-6:2 FTS	75		25 - 150
M2-8:2 FTS	79		25 - 150
13C3 HFPO-DA	90		25 - 150
13C2 10:2 FTS	88		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Client Sample ID: V-200-A

Date Collected: 05/22/23 09:00

Date Received: 05/23/23 09:30

Lab Sample ID: 500-234249-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			678381	EJR	EET SAC	05/27/23 07:26
Total/NA	Analysis	537 (modified)		1	678709	K1S	EET SAC	05/30/23 13:08
Total/NA	Prep	3535	DL		678381	EJR	EET SAC	05/27/23 07:26
Total/NA	Analysis	537 (modified)	DL	5	678914	S1M	EET SAC	05/31/23 03:15

Client Sample ID: V-900-A

Date Collected: 05/22/23 09:05

Date Received: 05/23/23 09:30

Lab Sample ID: 500-234249-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			678381	EJR	EET SAC	05/27/23 07:26
Total/NA	Analysis	537 (modified)		1	678709	K1S	EET SAC	05/30/23 13:39

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

Client Contact
 Email: N/A
 Tel/Fax: N/A
 Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below
 2 weeks 1 week 2 days 1 day

Project Name: Marinette, WI
 Site: Marinette, WI
 P O # 30171092.4.1.1 (WPDES)

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp. G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 Modified (36 Compounds)
V-200-A	5-22-13	9:00	G	W	2	N	N	X
V-900-A	5-22-13	9:05	G	W	2	N	N	X



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
 Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazardous Flammable 5km Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
 7-Day TAT Max or Prelim Report by Day 7

Cooler Temp. (°C): Obs'd: 08 Cor'd: 08 Therm ID No: 610
 Received by: Jacob Rominger Date/Time: 5-22-13 10:45
 Received by: Fed Ex Date/Time: 5/22/13 9:30
 Received in Laboratory by: Date/Time:



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-234249-1

SDG Number:

Login Number: 234249

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 05/24/23 12:15 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2110359
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environment Testing
TestAmerica

Sacramento
Sample Receiving Notes



500-234249 Field Sheet

Tracking #: 5120 6510 6874

SO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Job: _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: <u>U10</u>	Corr. Factor: (+/-) _____ °C	Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____																				
Ice _____ Wet _____ Gel _____ Other _____																						
Cooler Custody Seal: <u>2110359</u>																						
Cooler ID: _____																						
Temp Observed: <u>0.8</u> °C	Corrected: <u>0.8</u> °C																					
From: Temp Blank <input type="checkbox"/>	Sample <input checked="" type="checkbox"/>																					
Opening/Processing The Shipment	Yes No NA																					
Cooler compromised/tampered with?	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Frozen samples show signs of thaw?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Initials: <u>JF</u>	Date: <u>5/23/23</u>																					
Unpacking/Labeling The Samples	Yes No NA	Trizma Lot #(s): _____ _____ _____																				
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Samples compromised/tampered with?	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Containers are not broken or leaking?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample custody seal?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Sample containers have legible labels?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample date/times are provided?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Appropriate containers are used?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample bottles are completely filled?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample preservatives verified?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Is the Field Sampler's name on COC?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Samples require splitting/compositing?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Samples w/o discrepancies?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Zero headspace?*	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Alkalinity has no headspace?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Multiphasic samples are not present?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")		Login Completion <table border="0"> <tr> <td></td> <td>Yes</td> <td>No</td> <td>NA</td> </tr> <tr> <td>Receipt Temperature on COC?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Samples received within hold time?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>NCM Filed?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Log Release checked in TALS?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>		Yes	No	NA	Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Yes		No	NA																		
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																			
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																			
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																			
Initials: <u>SO</u>	Date: <u>5/24/23</u>																					

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WMB-27C

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-234249-1	V-200-A	69	86	91	93	91	92	81	75
500-234249-1 - DL	V-200-A	83	92	88	85	92	84	82	74
500-234249-2	V-900-A	103	97	94	95	97	102	88	82
LCS 320-678381/2-A	Lab Control Sample	103	94	96	101	102	103	97	96
LCSD 320-678381/3-A	Lab Control Sample Dup	90	89	86	89	94	96	88	88
MB 320-678381/1-A	Method Blank	96	94	97	95	98	103	95	94

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-234249-1	V-200-A	66	59	50	79	88	88	84	74
500-234249-1 - DL	V-200-A	66	52	37	76	80	76	87	76
500-234249-2	V-900-A	72	55	19 *	95	93	88	94	85
LCS 320-678381/2-A	Lab Control Sample	92	94	98	102	106	105	97	94
LCSD 320-678381/3-A	Lab Control Sample Dup	89	89	87	92	99	96	92	88
MB 320-678381/1-A	Method Blank	92	95	92	94	100	102	96	94

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-234249-1	V-200-A	78	64	61	62	62	77	70	74
500-234249-1 - DL	V-200-A	82	62	58	60	60	55	67	68
500-234249-2	V-900-A	82	66	61	72	70	65	68	71
LCS 320-678381/2-A	Lab Control Sample	97	75	75	90	91	73	80	85
LCSD 320-678381/3-A	Lab Control Sample Dup	90	81	76	82	89	74	75	79
MB 320-678381/1-A	Method Blank	104	82	80	92	96	71	72	85

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-234249-1	V-200-A	78	68
500-234249-1 - DL	V-200-A	74	63
500-234249-2	V-900-A	99	63
LCS 320-678381/2-A	Lab Control Sample	97	100
LCSD 320-678381/3-A	Lab Control Sample Dup	90	88
MB 320-678381/1-A	Method Blank	98	97

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234249-1

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 6/12/2023 10:49:16 AM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-234583-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



Generated
6/12/2023 10:49:16 AM

Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Job ID: 500-234583-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-234583-1

Receipt

The samples were received on 5/31/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9° C.

LCMS

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-234583-1. These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted within calibration range, and both sets of data were reported.

Method 537 (modified): Results for sample 500-234583-1 were reported from the analysis of a diluted extract due to high concentration of the matrix in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 5X analysis is 125% after the dilution factor was applied to the labeled internal standard area count.

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

Organic Prep

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



Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
500-234583-1	V-200-A	Water	05/30/23 09:35	05/31/23 09:30
500-234583-2	V-900-A	Water	05/30/23 09:30	05/31/23 09:30

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234583-1

Date Collected: 05/30/23 09:35

Matrix: Water

Date Received: 05/31/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	120		4.3	2.1	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoropentanoic acid (PFPeA)	410	E	1.7	0.42	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorohexanoic acid (PFHxA)	310		1.7	0.50	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoroheptanoic acid (PFHpA)	170		1.7	0.22	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorooctanoic acid (PFOA)	440	E	1.7	0.74	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorononanoic acid (PFNA)	40		1.7	0.23	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorodecanoic acid (PFDA)	25		1.7	0.27	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoroundecanoic acid (PFUnA)	12		1.7	0.95	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorododecanoic acid (PFDoA)	1.2	J	1.7	0.48	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorotetradecanoic acid (PFTeA)	<0.63		1.7	0.63	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.77		1.7	0.77	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.81		1.7	0.81	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorobutanesulfonic acid (PFBS)	4.4		1.7	0.17	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoropentanesulfonic acid (PFPeS)	3.1		1.7	0.26	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorohexanesulfonic acid (PFHxS)	43		1.7	0.49	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoroheptanesulfonic acid (PFHpS)	1.9		1.7	0.16	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorooctanesulfonic acid (PFOS)	140		1.7	0.47	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluoronanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.7	0.28	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorododecanesulfonic acid (PFDoS)	<0.84		1.7	0.84	ng/L		06/02/23 10:20	06/03/23 22:09	1
Perfluorooctanesulfonamide (FOSA)	5.1		1.7	0.85	ng/L		06/02/23 10:20	06/03/23 22:09	1
NEtFOSA	<0.75		1.7	0.75	ng/L		06/02/23 10:20	06/03/23 22:09	1
NMeFOSA	<0.37		1.7	0.37	ng/L		06/02/23 10:20	06/03/23 22:09	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		06/02/23 10:20	06/03/23 22:09	1
NEtFOSAA	1.6	J	4.3	1.1	ng/L		06/02/23 10:20	06/03/23 22:09	1
NMeFOSE	<1.2		3.5	1.2	ng/L		06/02/23 10:20	06/03/23 22:09	1
NEtFOSE	<0.74		1.7	0.74	ng/L		06/02/23 10:20	06/03/23 22:09	1
4:2 FTS	7.2		1.7	0.21	ng/L		06/02/23 10:20	06/03/23 22:09	1
6:2 FTS	450	E	4.3	2.2	ng/L		06/02/23 10:20	06/03/23 22:09	1
8:2 FTS	350	E	1.7	0.40	ng/L		06/02/23 10:20	06/03/23 22:09	1
10:2 FTS	15		1.7	0.58	ng/L		06/02/23 10:20	06/03/23 22:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.7	0.35	ng/L		06/02/23 10:20	06/03/23 22:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		06/02/23 10:20	06/03/23 22:09	1
F-53B Major	<0.21		1.7	0.21	ng/L		06/02/23 10:20	06/03/23 22:09	1
F-53B Minor	<0.28		1.7	0.28	ng/L		06/02/23 10:20	06/03/23 22:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	76		25 - 150				06/02/23 10:20	06/03/23 22:09	1
13C5 PFPeA	85		25 - 150				06/02/23 10:20	06/03/23 22:09	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234583-1

Date Collected: 05/30/23 09:35

Matrix: Water

Date Received: 05/31/23 09:30

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C4 PFHpA	85		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C4 PFOA	83		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C5 PFNA	76		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C2 PFDA	72		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C2 PFUnA	62		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C2 PFDoA	53		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C2 PFTeDA	52		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C2 PFHxDA	49		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C3 PFBS	72		25 - 150	06/02/23 10:20	06/03/23 22:09	1
18O2 PFHxS	72		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C4 PFOS	70		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C8 FOSA	75		10 - 150	06/02/23 10:20	06/03/23 22:09	1
d3-NMeFOSAA	56		25 - 150	06/02/23 10:20	06/03/23 22:09	1
d5-NEtFOSAA	58		25 - 150	06/02/23 10:20	06/03/23 22:09	1
d-N-MeFOSA-M	51		10 - 150	06/02/23 10:20	06/03/23 22:09	1
d-N-EtFOSA-M	48		10 - 150	06/02/23 10:20	06/03/23 22:09	1
d7-N-MeFOSE-M	49		10 - 150	06/02/23 10:20	06/03/23 22:09	1
d9-N-EtFOSE-M	46		10 - 150	06/02/23 10:20	06/03/23 22:09	1
M2-4:2 FTS	52		25 - 150	06/02/23 10:20	06/03/23 22:09	1
M2-6:2 FTS	54		25 - 150	06/02/23 10:20	06/03/23 22:09	1
M2-8:2 FTS	63		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C3 HFPO-DA	71		25 - 150	06/02/23 10:20	06/03/23 22:09	1
13C2 10:2 FTS	58		25 - 150	06/02/23 10:20	06/03/23 22:09	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	170		22	10	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoropentanoic acid (PFPeA)	610		8.7	2.1	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorohexanoic acid (PFHxA)	400		8.7	2.5	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoroheptanoic acid (PFHpA)	210		8.7	1.1	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorooctanoic acid (PFOA)	650		8.7	3.7	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorononanoic acid (PFNA)	40		8.7	1.2	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorodecanoic acid (PFDA)	22		8.7	1.3	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoroundecanoic acid (PFUnA)	10		8.7	4.8	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorododecanoic acid (PFDoA)	<2.4		8.7	2.4	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorotridecanoic acid (PFTriA)	<5.6		8.7	5.6	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorotetradecanoic acid (PFTeA)	<3.2		8.7	3.2	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<3.8		8.7	3.8	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoro-n-octadecanoic acid (PFODA)	<4.1		8.7	4.1	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorobutanesulfonic acid (PFBS)	4.2 J		8.7	0.87	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoropentanesulfonic acid (PFPeS)	3.0 J		8.7	1.3	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorohexanesulfonic acid (PFHxS)	43		8.7	2.5	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluoroheptanesulfonic acid (PFHpS)	1.6 J		8.7	0.82	ng/L		06/02/23 10:20	06/08/23 18:13	5

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-200-A

Lab Sample ID: 500-234583-1

Date Collected: 05/30/23 09:35

Matrix: Water

Date Received: 05/31/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	150		8.7	2.3	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorononanesulfonic acid (PFNS)	<1.6		8.7	1.6	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorodecanesulfonic acid (PFDS)	<1.4		8.7	1.4	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorododecanesulfonic acid (PFDoS)	<4.2		8.7	4.2	ng/L		06/02/23 10:20	06/08/23 18:13	5
Perfluorooctanesulfonamide (FOSA)	5.1 J		8.7	4.2	ng/L		06/02/23 10:20	06/08/23 18:13	5
NEtFOSA	<3.8		8.7	3.8	ng/L		06/02/23 10:20	06/08/23 18:13	5
NMeFOSA	<1.9		8.7	1.9	ng/L		06/02/23 10:20	06/08/23 18:13	5
NMeFOSAA	<5.2		22	5.2	ng/L		06/02/23 10:20	06/08/23 18:13	5
NEtFOSAA	<5.6		22	5.6	ng/L		06/02/23 10:20	06/08/23 18:13	5
NMeFOSE	<6.1		17	6.1	ng/L		06/02/23 10:20	06/08/23 18:13	5
NEtFOSE	<3.7		8.7	3.7	ng/L		06/02/23 10:20	06/08/23 18:13	5
4:2 FTS	6.9 J		8.7	1.0	ng/L		06/02/23 10:20	06/08/23 18:13	5
6:2 FTS	510		22	11	ng/L		06/02/23 10:20	06/08/23 18:13	5
8:2 FTS	380		8.7	2.0	ng/L		06/02/23 10:20	06/08/23 18:13	5
10:2 FTS	19		8.7	2.9	ng/L		06/02/23 10:20	06/08/23 18:13	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		8.7	1.7	ng/L		06/02/23 10:20	06/08/23 18:13	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<6.5		17	6.5	ng/L		06/02/23 10:20	06/08/23 18:13	5
F-53B Major	<1.0		8.7	1.0	ng/L		06/02/23 10:20	06/08/23 18:13	5
F-53B Minor	<1.4		8.7	1.4	ng/L		06/02/23 10:20	06/08/23 18:13	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	87		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C5 PFPeA	91		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C2 PFHxA	91		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C4 PFHpA	89		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C4 PFOA	88		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C5 PFNA	89		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C2 PFDA	91		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C2 PFUnA	86		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C2 PFDoA	74		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C2 PFTeDA	73		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C2 PFHxDA	78		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C3 PFBS	85		25 - 150				06/02/23 10:20	06/08/23 18:13	5
18O2 PFHxS	81		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C4 PFOS	85		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C8 FOSA	90		10 - 150				06/02/23 10:20	06/08/23 18:13	5
d3-NMeFOSAA	80		25 - 150				06/02/23 10:20	06/08/23 18:13	5
d5-NEtFOSAA	81		25 - 150				06/02/23 10:20	06/08/23 18:13	5
d-N-MeFOSA-M	71		10 - 150				06/02/23 10:20	06/08/23 18:13	5
d-N-EtFOSA-M	65		10 - 150				06/02/23 10:20	06/08/23 18:13	5
d7-N-MeFOSE-M	67		10 - 150				06/02/23 10:20	06/08/23 18:13	5
d9-N-EtFOSE-M	67		10 - 150				06/02/23 10:20	06/08/23 18:13	5
M2-4:2 FTS	88		25 - 150				06/02/23 10:20	06/08/23 18:13	5
M2-6:2 FTS	96		25 - 150				06/02/23 10:20	06/08/23 18:13	5
M2-8:2 FTS	99		25 - 150				06/02/23 10:20	06/08/23 18:13	5
13C3 HFPO-DA	90		25 - 150				06/02/23 10:20	06/08/23 18:13	5

Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-200-A
Date Collected: 05/30/23 09:35
Date Received: 05/31/23 09:30

Lab Sample ID: 500-234583-1
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 10:2 FTS	82		25 - 150	06/02/23 10:20	06/08/23 18:13	5

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-900-A

Lab Sample ID: 500-234583-2

Date Collected: 05/30/23 09:30

Matrix: Water

Date Received: 05/31/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	12		4.2	2.0	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoropentanoic acid (PFPeA)	1.6	J	1.7	0.41	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorohexanoic acid (PFHxA)	<0.49		1.7	0.49	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorooctanoic acid (PFOA)	<0.72		1.7	0.72	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorodecanoic acid (PFDA)	0.32	J	1.7	0.26	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoroundecanoic acid (PFUnA)	<0.93		1.7	0.93	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorododecanoic acid (PFDoA)	0.55	J	1.7	0.46	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorotetradecanoic acid (PFTeA)	<0.62		1.7	0.62	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.75		1.7	0.75	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.79		1.7	0.79	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoropentanesulfonic acid (PFPeS)	<0.25		1.7	0.25	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorohexanesulfonic acid (PFHxS)	<0.48		1.7	0.48	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.16		1.7	0.16	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorononanesulfonic acid (PFNS)	<0.31		1.7	0.31	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorododecanesulfonic acid (PFDoS)	<0.82		1.7	0.82	ng/L		06/02/23 10:20	06/03/23 22:19	1
Perfluorooctanesulfonamide (FOSA)	<0.83		1.7	0.83	ng/L		06/02/23 10:20	06/03/23 22:19	1
NEtFOSA	<0.74		1.7	0.74	ng/L		06/02/23 10:20	06/03/23 22:19	1
NMeFOSA	<0.36		1.7	0.36	ng/L		06/02/23 10:20	06/03/23 22:19	1
NMeFOSAA	<1.0		4.2	1.0	ng/L		06/02/23 10:20	06/03/23 22:19	1
NEtFOSAA	<1.1		4.2	1.1	ng/L		06/02/23 10:20	06/03/23 22:19	1
NMeFOSE	<1.2		3.4	1.2	ng/L		06/02/23 10:20	06/03/23 22:19	1
NEtFOSE	<0.72		1.7	0.72	ng/L		06/02/23 10:20	06/03/23 22:19	1
4:2 FTS	<0.20		1.7	0.20	ng/L		06/02/23 10:20	06/03/23 22:19	1
6:2 FTS	<2.1		4.2	2.1	ng/L		06/02/23 10:20	06/03/23 22:19	1
8:2 FTS	<0.39		1.7	0.39	ng/L		06/02/23 10:20	06/03/23 22:19	1
10:2 FTS	1.2	J	1.7	0.57	ng/L		06/02/23 10:20	06/03/23 22:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		06/02/23 10:20	06/03/23 22:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		06/02/23 10:20	06/03/23 22:19	1
F-53B Major	0.31	J	1.7	0.20	ng/L		06/02/23 10:20	06/03/23 22:19	1
F-53B Minor	0.44	J	1.7	0.27	ng/L		06/02/23 10:20	06/03/23 22:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150				06/02/23 10:20	06/03/23 22:19	1
13C5 PFPeA	78		25 - 150				06/02/23 10:20	06/03/23 22:19	1
13C2 PFHxA	70		25 - 150				06/02/23 10:20	06/03/23 22:19	1
13C4 PFHpA	77		25 - 150				06/02/23 10:20	06/03/23 22:19	1
13C4 PFOA	74		25 - 150				06/02/23 10:20	06/03/23 22:19	1
13C5 PFNA	76		25 - 150				06/02/23 10:20	06/03/23 22:19	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-900-A

Lab Sample ID: 500-234583-2

Date Collected: 05/30/23 09:30

Matrix: Water

Date Received: 05/31/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDA	73		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C2 PFUnA	67		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C2 PFDoA	62		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C2 PFTeDA	61		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C2 PFHxDA	63		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C3 PFBS	74		25 - 150	06/02/23 10:20	06/03/23 22:19	1
18O2 PFHxS	75		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C4 PFOS	71		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C8 FOSA	83		10 - 150	06/02/23 10:20	06/03/23 22:19	1
d3-NMeFOSAA	63		25 - 150	06/02/23 10:20	06/03/23 22:19	1
d5-NEtFOSAA	67		25 - 150	06/02/23 10:20	06/03/23 22:19	1
d-N-MeFOSA-M	59		10 - 150	06/02/23 10:20	06/03/23 22:19	1
d-N-EtFOSA-M	54		10 - 150	06/02/23 10:20	06/03/23 22:19	1
d7-N-MeFOSE-M	58		10 - 150	06/02/23 10:20	06/03/23 22:19	1
d9-N-EtFOSE-M	54		10 - 150	06/02/23 10:20	06/03/23 22:19	1
M2-4:2 FTS	44		25 - 150	06/02/23 10:20	06/03/23 22:19	1
M2-6:2 FTS	48		25 - 150	06/02/23 10:20	06/03/23 22:19	1
M2-8:2 FTS	59		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C3 HFPO-DA	75		25 - 150	06/02/23 10:20	06/03/23 22:19	1
13C2 10:2 FTS	66		25 - 150	06/02/23 10:20	06/03/23 22:19	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Qualifiers

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-679715/1-A
Matrix: Water
Analysis Batch: 679948

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 679715

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		06/02/23 10:19	06/03/23 18:56	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		06/02/23 10:19	06/03/23 18:56	1
NEtFOSA	<0.87		2.0	0.87	ng/L		06/02/23 10:19	06/03/23 18:56	1
NMeFOSA	<0.43		2.0	0.43	ng/L		06/02/23 10:19	06/03/23 18:56	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		06/02/23 10:19	06/03/23 18:56	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		06/02/23 10:19	06/03/23 18:56	1
NMeFOSE	<1.4		4.0	1.4	ng/L		06/02/23 10:19	06/03/23 18:56	1
NEtFOSE	<0.85		2.0	0.85	ng/L		06/02/23 10:19	06/03/23 18:56	1
4:2 FTS	<0.24		2.0	0.24	ng/L		06/02/23 10:19	06/03/23 18:56	1
6:2 FTS	<2.5		5.0	2.5	ng/L		06/02/23 10:19	06/03/23 18:56	1
8:2 FTS	<0.46		2.0	0.46	ng/L		06/02/23 10:19	06/03/23 18:56	1
10:2 FTS	<0.67		2.0	0.67	ng/L		06/02/23 10:19	06/03/23 18:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		06/02/23 10:19	06/03/23 18:56	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		06/02/23 10:19	06/03/23 18:56	1
F-53B Major	<0.24		2.0	0.24	ng/L		06/02/23 10:19	06/03/23 18:56	1
F-53B Minor	<0.32		2.0	0.32	ng/L		06/02/23 10:19	06/03/23 18:56	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	86		25 - 150				06/02/23 10:19	06/03/23 18:56	1
13C5 PFPeA	86		25 - 150				06/02/23 10:19	06/03/23 18:56	1
13C2 PFHxA	83		25 - 150				06/02/23 10:19	06/03/23 18:56	1
13C4 PFHpA	91		25 - 150				06/02/23 10:19	06/03/23 18:56	1
13C4 PFOA	86		25 - 150				06/02/23 10:19	06/03/23 18:56	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

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

Lab Sample ID: MB 320-679715/1-A
Matrix: Water
Analysis Batch: 679948

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 679715

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	89		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C2 PFDA	87		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C2 PFUnA	81		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C2 PFDoA	79		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C2 PFTeDA	77		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C2 PFHxDA	67		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C3 PFBS	77		25 - 150	06/02/23 10:19	06/03/23 18:56	1
18O2 PFHxS	82		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C4 PFOS	82		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C8 FOSA	90		10 - 150	06/02/23 10:19	06/03/23 18:56	1
d3-NMeFOSAA	76		25 - 150	06/02/23 10:19	06/03/23 18:56	1
d5-NEtFOSAA	80		25 - 150	06/02/23 10:19	06/03/23 18:56	1
d-N-MeFOSA-M	65		10 - 150	06/02/23 10:19	06/03/23 18:56	1
d-N-EtFOSA-M	63		10 - 150	06/02/23 10:19	06/03/23 18:56	1
d7-N-MeFOSE-M	74		10 - 150	06/02/23 10:19	06/03/23 18:56	1
d9-N-EtFOSE-M	74		10 - 150	06/02/23 10:19	06/03/23 18:56	1
M2-4:2 FTS	57		25 - 150	06/02/23 10:19	06/03/23 18:56	1
M2-6:2 FTS	59		25 - 150	06/02/23 10:19	06/03/23 18:56	1
M2-8:2 FTS	70		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C3 HFPO-DA	96		25 - 150	06/02/23 10:19	06/03/23 18:56	1
13C2 10:2 FTS	93		25 - 150	06/02/23 10:19	06/03/23 18:56	1

Lab Sample ID: LCS 320-679715/2-A
Matrix: Water
Analysis Batch: 679948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 679715

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	41.6		ng/L		104	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	39.8		ng/L		99	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.4		ng/L		109	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	60 - 135
Perfluorononanoic acid (PFNA)	40.0	41.9		ng/L		105	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.9		ng/L		107	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	44.4		ng/L		111	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.5		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	35.4		ng/L		89	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.8		ng/L		107	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.9		ng/L		102	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	32.9		ng/L		82	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	36.6		ng/L		103	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	40.8		ng/L		108	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

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

Lab Sample ID: LCS 320-679715/2-A
Matrix: Water
Analysis Batch: 679948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 679715

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.1		ng/L		102	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	37.9		ng/L		99	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.1		ng/L		97	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	37.9		ng/L		99	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.6		ng/L		97	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	30.3		ng/L		78	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	39.1		ng/L		98	60 - 135
NEtFOSA	40.0	43.7		ng/L		109	60 - 135
NMeFOSA	40.0	43.2		ng/L		108	60 - 135
NMeFOSAA	40.0	43.6		ng/L		109	60 - 135
NEtFOSAA	40.0	46.4		ng/L		116	60 - 135
NMeFOSE	40.0	40.2		ng/L		101	60 - 135
NEtFOSE	40.0	43.0		ng/L		107	60 - 135
4:2 FTS	37.5	40.2		ng/L		107	60 - 135
6:2 FTS	38.1	39.8		ng/L		104	60 - 135
8:2 FTS	38.4	39.4		ng/L		103	60 - 135
10:2 FTS	38.6	32.6		ng/L		84	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.1		ng/L		119	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.6		ng/L		104	60 - 135
F-53B Major	37.4	40.3		ng/L		108	60 - 135
F-53B Minor	37.8	38.0		ng/L		101	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	99		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	95		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	94		25 - 150
13C2 PFUnA	84		25 - 150
13C2 PFDoA	86		25 - 150
13C2 PFTeDA	80		25 - 150
13C2 PFHxDA	72		25 - 150
13C3 PFBS	89		25 - 150
18O2 PFHxS	96		25 - 150
13C4 PFOS	93		25 - 150
13C8 FOSA	93		10 - 150
d3-NMeFOSAA	74		25 - 150
d5-NEtFOSAA	81		25 - 150
d-N-MeFOSA-M	68		10 - 150
d-N-EtFOSA-M	65		10 - 150

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

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

Lab Sample ID: LCS 320-679715/2-A
Matrix: Water
Analysis Batch: 679948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 679715

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d7-N-MeFOSE-M</i>	78		10 - 150
<i>d9-N-EtFOSE-M</i>	79		10 - 150
<i>M2-4:2 FTS</i>	66		25 - 150
<i>M2-6:2 FTS</i>	68		25 - 150
<i>M2-8:2 FTS</i>	96		25 - 150
<i>13C3 HFPO-DA</i>	103		25 - 150
<i>13C2 10:2 FTS</i>	99		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Client Sample ID: V-200-A
Date Collected: 05/30/23 09:35
Date Received: 05/31/23 09:30

Lab Sample ID: 500-234583-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			679715	VP	EET SAC	06/02/23 10:20
Total/NA	Analysis	537 (modified)		1	679948	RS1	EET SAC	06/03/23 22:09
Total/NA	Prep	3535	DL		679715	VP	EET SAC	06/02/23 10:20
Total/NA	Analysis	537 (modified)	DL	5	682011	RS1	EET SAC	06/08/23 18:13

Client Sample ID: V-900-A
Date Collected: 05/30/23 09:30
Date Received: 05/31/23 09:30

Lab Sample ID: 500-234583-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			679715	VP	EET SAC	06/02/23 10:20
Total/NA	Analysis	537 (modified)		1	679948	RS1	EET SAC	06/03/23 22:19

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone FAX Project Name: Marinette, WI Site: Marinette, WI P.O.# 30171092.4.1.1 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sampler: Jacob Remmer Lab Contact: Sandie Fredrick Date: 5-30-23 Carrier: FedEx COC No: 1 of 1 COCs	
Sample Identification V-200-A V-900-A		Filtered Sample (Y/N) N N Perform MS/MSD (Y/N) N N EPA 537 Modified (36 Compounds) X X Sample Specific Notes: System Influent System Effluent		For Lab Use Only: Walk-in Client Lab Sampling: Lab Project Number 50015522	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> Archive for _____ Months	
Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7 5 day TAT		Cooler Temp. (°C): Obs'd: 2.9 Therm ID No: 610	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Relinquished by: Jacob Remmer Date/Time: 5-30-23/11:00 Company: Barley Excavating		Received by: Fred Ex Date/Time: 5/31/23 9:30 Company:	



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-234583-1

SDG Number:

Login Number: 234583

List Number: 1

Creator: Fisher, Jamyiah L

List Source: Eurofins Sacramento

List Creation: 06/01/23 08:59 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2159028
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



500-234583 Field Sheet

Job: _____

Tracking # 6374 2028 9599

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: U10 Corr. Factor: (+ / -) _____ °C
Ice _____ Wet _____ Gel _____ Other _____
Cooler Custody Seal: 2159028
Cooler ID: _____
Temp Observed: 2.9 °C Corrected: 2.9 °C
From: Temp Blank Sample

Opening/Processing The Shipment Yes No NA
Cooler compromised/tampered with?
Cooler Temperature is acceptable?
Frozen samples show signs of thaw?
Initials: JF Date: 5/31/23

Unpacking/Labeling The Samples Yes No NA
COC is complete w/o discrepancies?
Samples compromised/tampered with?
Containers are not broken or leaking?
Sample custody seal?
Sample containers have legible labels?
Sample date/times are provided?
Appropriate containers are used?
Sample bottles are completely filled?
Sample preservatives verified?
Is the Field Sampler's name on COC?
Samples require splitting/compositing?
Samples w/o discrepancies?
Zero headspace?*
Alkalinity has no headspace?
Perchlorate has headspace?
(Methods 314, 331, 6850)
Multiphasic samples are not present?

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JF Date: 6/1/23

Notes: _____

Trizma Lot #(s): _____

Login Completion Yes No NA
Receipt Temperature on COC?
Samples received within hold time?
NCM Filed?
Log Release checked in TALS?

Initials: JF Date: 6/1/23

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PfUnA (25-150)
500-234583-1	V-200-A	76	85	80	85	83	76	72	62
500-234583-1 - DL	V-200-A	87	91	91	89	88	89	91	86
500-234583-2	V-900-A	82	78	70	77	74	76	73	67
LCS 320-679715/2-A	Lab Control Sample	99	94	95	99	98	96	94	84
MB 320-679715/1-A	Method Blank	86	86	83	91	86	89	87	81

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-234583-1	V-200-A	53	52	49	72	72	70	75	56
500-234583-1 - DL	V-200-A	74	73	78	85	81	85	90	80
500-234583-2	V-900-A	62	61	63	74	75	71	83	63
LCS 320-679715/2-A	Lab Control Sample	86	80	72	89	96	93	93	74
MB 320-679715/1-A	Method Blank	79	77	67	77	82	82	90	76

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-234583-1	V-200-A	58	51	48	49	46	52	54	63
500-234583-1 - DL	V-200-A	81	71	65	67	67	88	96	99
500-234583-2	V-900-A	67	59	54	58	54	44	48	59
LCS 320-679715/2-A	Lab Control Sample	81	68	65	78	79	66	68	96
MB 320-679715/1-A	Method Blank	80	65	63	74	74	57	59	70

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-234583-1	V-200-A	71	58
500-234583-1 - DL	V-200-A	90	82
500-234583-2	V-900-A	75	66
LCS 320-679715/2-A	Lab Control Sample	103	99
MB 320-679715/1-A	Method Blank	96	93

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-234583-1

dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

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JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-235075-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Job ID: 500-235075-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-235075-1

Receipt

The samples were received on 6/9/2023 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1° C.

LCMS

Method 537 (modified): The transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte.
500-235075-1

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

Organic Prep

Method 3535: The following samples in preparation batch 320-682260 were observed to be light yellow in color and contained floating particulates prior to extraction: 500-235075-1.
Method: 3535PFC
Matrix: Aqueous

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-682260.
Method: 3535PFC
Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-235075-1	V-200-A	Water	06/08/23 06:40	06/09/23 09:10
500-235075-2	V-900-A	Water	06/08/23 06:45	06/09/23 09:10

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Client Sample ID: V-200-A

Lab Sample ID: 500-235075-1

Date Collected: 06/08/23 06:40

Matrix: Water

Date Received: 06/09/23 09:10

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	48		4.3	2.0	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoropentanoic acid (PFPeA)	160		1.7	0.42	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorohexanoic acid (PFHxA)	120		1.7	0.49	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoroheptanoic acid (PFHpA)	50		1.7	0.21	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorooctanoic acid (PFOA)	85		1.7	0.72	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorononanoic acid (PFNA)	7.3		1.7	0.23	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorodecanoic acid (PFDA)	5.7		1.7	0.26	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoroundecanoic acid (PFUnA)	2.8		1.7	0.94	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorododecanoic acid (PFDoA)	0.48	J C	1.7	0.47	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorotetradecanoic acid (PFTeA)	<0.62		1.7	0.62	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.80		1.7	0.80	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.7	0.17	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoropentanesulfonic acid (PFPeS)	0.79	J	1.7	0.26	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorohexanesulfonic acid (PFHxS)	9.8		1.7	0.49	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluoroheptanesulfonic acid (PFHpS)	0.26	J	1.7	0.16	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorooctanesulfonic acid (PFOS)	28		1.7	0.46	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		06/12/23 04:53	06/14/23 03:57	1
Perfluorooctanesulfonamide (FOSA)	1.9		1.7	0.84	ng/L		06/12/23 04:53	06/14/23 03:57	1
NEtFOSA	<0.74		1.7	0.74	ng/L		06/12/23 04:53	06/14/23 03:57	1
NMeFOSA	<0.37		1.7	0.37	ng/L		06/12/23 04:53	06/14/23 03:57	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		06/12/23 04:53	06/14/23 03:57	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		06/12/23 04:53	06/14/23 03:57	1
NMeFOSE	<1.2		3.4	1.2	ng/L		06/12/23 04:53	06/14/23 03:57	1
NEtFOSE	<0.72		1.7	0.72	ng/L		06/12/23 04:53	06/14/23 03:57	1
4:2 FTS	1.8		1.7	0.20	ng/L		06/12/23 04:53	06/14/23 03:57	1
6:2 FTS	95		4.3	2.1	ng/L		06/12/23 04:53	06/14/23 03:57	1
8:2 FTS	65		1.7	0.39	ng/L		06/12/23 04:53	06/14/23 03:57	1
10:2 FTS	6.5		1.7	0.57	ng/L		06/12/23 04:53	06/14/23 03:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		06/12/23 04:53	06/14/23 03:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		06/12/23 04:53	06/14/23 03:57	1
F-53B Major	<0.20		1.7	0.20	ng/L		06/12/23 04:53	06/14/23 03:57	1
F-53B Minor	<0.27		1.7	0.27	ng/L		06/12/23 04:53	06/14/23 03:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	102		25 - 150				06/12/23 04:53	06/14/23 03:57	1
13C5 PFPeA	98		25 - 150				06/12/23 04:53	06/14/23 03:57	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Client Sample ID: V-200-A
Date Collected: 06/08/23 06:40
Date Received: 06/09/23 09:10

Lab Sample ID: 500-235075-1
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	98		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C4 PFHpA	96		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C4 PFOA	96		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C5 PFNA	92		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C2 PFDA	97		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C2 PFUnA	89		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C2 PFDoA	88		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C2 PFTeDA	89		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C2 PFHxDA	72		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C3 PFBS	87		25 - 150	06/12/23 04:53	06/14/23 03:57	1
18O2 PFHxS	91		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C4 PFOS	95		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C8 FOSA	100		10 - 150	06/12/23 04:53	06/14/23 03:57	1
d3-NMeFOSAA	94		25 - 150	06/12/23 04:53	06/14/23 03:57	1
d5-NEtFOSAA	97		25 - 150	06/12/23 04:53	06/14/23 03:57	1
d-N-MeFOSA-M	81		10 - 150	06/12/23 04:53	06/14/23 03:57	1
d-N-EtFOSA-M	79		10 - 150	06/12/23 04:53	06/14/23 03:57	1
d7-N-MeFOSE-M	75		10 - 150	06/12/23 04:53	06/14/23 03:57	1
d9-N-EtFOSE-M	75		10 - 150	06/12/23 04:53	06/14/23 03:57	1
M2-4:2 FTS	87		25 - 150	06/12/23 04:53	06/14/23 03:57	1
M2-6:2 FTS	91		25 - 150	06/12/23 04:53	06/14/23 03:57	1
M2-8:2 FTS	86		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C3 HFPO-DA	84		25 - 150	06/12/23 04:53	06/14/23 03:57	1
13C2 10:2 FTS	101		25 - 150	06/12/23 04:53	06/14/23 03:57	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Client Sample ID: V-900-A

Lab Sample ID: 500-235075-2

Date Collected: 06/08/23 06:45

Matrix: Water

Date Received: 06/09/23 09:10

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	13		4.4	2.1	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoropentanoic acid (PFPeA)	2.9		1.8	0.43	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorohexanoic acid (PFHxA)	<0.51		1.8	0.51	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorooctanoic acid (PFOA)	<0.75		1.8	0.75	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorodecanoic acid (PFDA)	<0.27		1.8	0.27	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoroundecanoic acid (PFUnA)	<0.97		1.8	0.97	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.8	0.48	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.8	1.1	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorotetradecanoic acid (PFTeA)	<0.64		1.8	0.64	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.78		1.8	0.78	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83		1.8	0.83	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.8	0.26	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorohexanesulfonic acid (PFHxS)	<0.50		1.8	0.50	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorododecanesulfonic acid (PFDoS)	<0.85		1.8	0.85	ng/L		06/12/23 04:53	06/14/23 04:07	1
Perfluorooctanesulfonamide (FOSA)	<0.86		1.8	0.86	ng/L		06/12/23 04:53	06/14/23 04:07	1
NEtFOSA	<0.77		1.8	0.77	ng/L		06/12/23 04:53	06/14/23 04:07	1
NMeFOSA	<0.38		1.8	0.38	ng/L		06/12/23 04:53	06/14/23 04:07	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		06/12/23 04:53	06/14/23 04:07	1
NEtFOSAA	<1.1		4.4	1.1	ng/L		06/12/23 04:53	06/14/23 04:07	1
NMeFOSE	<1.2		3.5	1.2	ng/L		06/12/23 04:53	06/14/23 04:07	1
NEtFOSE	<0.75		1.8	0.75	ng/L		06/12/23 04:53	06/14/23 04:07	1
4:2 FTS	<0.21		1.8	0.21	ng/L		06/12/23 04:53	06/14/23 04:07	1
6:2 FTS	<2.2		4.4	2.2	ng/L		06/12/23 04:53	06/14/23 04:07	1
8:2 FTS	<0.40		1.8	0.40	ng/L		06/12/23 04:53	06/14/23 04:07	1
10:2 FTS	<0.59		1.8	0.59	ng/L		06/12/23 04:53	06/14/23 04:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		06/12/23 04:53	06/14/23 04:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		06/12/23 04:53	06/14/23 04:07	1
F-53B Major	<0.21		1.8	0.21	ng/L		06/12/23 04:53	06/14/23 04:07	1
F-53B Minor	<0.28		1.8	0.28	ng/L		06/12/23 04:53	06/14/23 04:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	127		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C5 PFPeA	120		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C2 PFHxA	115		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C4 PFHpA	120		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C4 PFOA	115		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C5 PFNA	118		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C2 PFDA	124		25 - 150	06/12/23 04:53	06/14/23 04:07	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Client Sample ID: V-900-A
Date Collected: 06/08/23 06:45
Date Received: 06/09/23 09:10

Lab Sample ID: 500-235075-2
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	116		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C2 PFlDoA	111		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C2 PFlTeDA	111		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C2 PFlHxDA	100		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C3 PFlBS	110		25 - 150	06/12/23 04:53	06/14/23 04:07	1
18O2 PFlHS	117		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C4 PFlOS	114		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C8 FOSA	125		10 - 150	06/12/23 04:53	06/14/23 04:07	1
d3-NMeFOSAA	119		25 - 150	06/12/23 04:53	06/14/23 04:07	1
d5-NEtFOSAA	125		25 - 150	06/12/23 04:53	06/14/23 04:07	1
d-N-MeFOSA-M	102		10 - 150	06/12/23 04:53	06/14/23 04:07	1
d-N-EtFOSA-M	103		10 - 150	06/12/23 04:53	06/14/23 04:07	1
d7-N-MeFOSE-M	105		10 - 150	06/12/23 04:53	06/14/23 04:07	1
d9-N-EtFOSE-M	99		10 - 150	06/12/23 04:53	06/14/23 04:07	1
M2-4:2 FTS	113		25 - 150	06/12/23 04:53	06/14/23 04:07	1
M2-6:2 FTS	109		25 - 150	06/12/23 04:53	06/14/23 04:07	1
M2-8:2 FTS	109		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C3 HFPO-DA	113		25 - 150	06/12/23 04:53	06/14/23 04:07	1
13C2 10:2 FTS	132		25 - 150	06/12/23 04:53	06/14/23 04:07	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Qualifiers

LCMS

Qualifier	Qualifier Description
C	See Case Narrative
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-682260/1-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682260

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		06/12/23 04:53	06/14/23 00:54	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		06/12/23 04:53	06/14/23 00:54	1
NEtFOSA	<0.87		2.0	0.87	ng/L		06/12/23 04:53	06/14/23 00:54	1
NMeFOSA	<0.43		2.0	0.43	ng/L		06/12/23 04:53	06/14/23 00:54	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		06/12/23 04:53	06/14/23 00:54	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		06/12/23 04:53	06/14/23 00:54	1
NMeFOSE	<1.4		4.0	1.4	ng/L		06/12/23 04:53	06/14/23 00:54	1
NEtFOSE	<0.85		2.0	0.85	ng/L		06/12/23 04:53	06/14/23 00:54	1
4:2 FTS	<0.24		2.0	0.24	ng/L		06/12/23 04:53	06/14/23 00:54	1
6:2 FTS	<2.5		5.0	2.5	ng/L		06/12/23 04:53	06/14/23 00:54	1
8:2 FTS	<0.46		2.0	0.46	ng/L		06/12/23 04:53	06/14/23 00:54	1
10:2 FTS	<0.67		2.0	0.67	ng/L		06/12/23 04:53	06/14/23 00:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		06/12/23 04:53	06/14/23 00:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		06/12/23 04:53	06/14/23 00:54	1
F-53B Major	<0.24		2.0	0.24	ng/L		06/12/23 04:53	06/14/23 00:54	1
F-53B Minor	<0.32		2.0	0.32	ng/L		06/12/23 04:53	06/14/23 00:54	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	100		25 - 150				06/12/23 04:53	06/14/23 00:54	1
13C5 PFPeA	98		25 - 150				06/12/23 04:53	06/14/23 00:54	1
13C2 PFHxA	104		25 - 150				06/12/23 04:53	06/14/23 00:54	1
13C4 PFHpA	101		25 - 150				06/12/23 04:53	06/14/23 00:54	1
13C4 PFOA	102		25 - 150				06/12/23 04:53	06/14/23 00:54	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

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

Lab Sample ID: MB 320-682260/1-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682260

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	106		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C2 PFDA	113		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C2 PFUnA	106		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C2 PFDoA	102		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C2 PFTeDA	106		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C2 PFHxDA	93		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C3 PFBS	94		25 - 150	06/12/23 04:53	06/14/23 00:54	1
18O2 PFHxS	96		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C4 PFOS	101		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C8 FOSA	102		10 - 150	06/12/23 04:53	06/14/23 00:54	1
d3-NMeFOSAA	111		25 - 150	06/12/23 04:53	06/14/23 00:54	1
d5-NEtFOSAA	109		25 - 150	06/12/23 04:53	06/14/23 00:54	1
d-N-MeFOSA-M	90		10 - 150	06/12/23 04:53	06/14/23 00:54	1
d-N-EtFOSA-M	86		10 - 150	06/12/23 04:53	06/14/23 00:54	1
d7-N-MeFOSE-M	95		10 - 150	06/12/23 04:53	06/14/23 00:54	1
d9-N-EtFOSE-M	88		10 - 150	06/12/23 04:53	06/14/23 00:54	1
M2-4:2 FTS	102		25 - 150	06/12/23 04:53	06/14/23 00:54	1
M2-6:2 FTS	91		25 - 150	06/12/23 04:53	06/14/23 00:54	1
M2-8:2 FTS	92		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C3 HFPO-DA	97		25 - 150	06/12/23 04:53	06/14/23 00:54	1
13C2 10:2 FTS	117		25 - 150	06/12/23 04:53	06/14/23 00:54	1

Lab Sample ID: LCS 320-682260/2-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682260

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	41.9		ng/L		105	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.2		ng/L		108	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	41.3		ng/L		103	60 - 135
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.4		ng/L		99	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.2		ng/L		101	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.4		ng/L		106	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	39.8		ng/L		100	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	37.5		ng/L		94	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	41.3		ng/L		103	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	25.2		ng/L		63	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	37.3		ng/L		105	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	42.7		ng/L		114	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

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

Lab Sample ID: LCS 320-682260/2-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682260

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.5		ng/L		97	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.2		ng/L		103	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	37.8		ng/L		102	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.6		ng/L		106	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.6		ng/L		111	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	37.0		ng/L		95	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.6		ng/L		101	60 - 135
NEtFOSA	40.0	39.5		ng/L		99	60 - 135
NMeFOSA	40.0	40.6		ng/L		102	60 - 135
NMeFOSAA	40.0	42.5		ng/L		106	60 - 135
NEtFOSAA	40.0	40.3		ng/L		101	60 - 135
NMeFOSE	40.0	39.5		ng/L		99	60 - 135
NEtFOSE	40.0	44.2		ng/L		110	60 - 135
4:2 FTS	37.5	41.1		ng/L		109	60 - 135
6:2 FTS	38.1	39.6		ng/L		104	60 - 135
8:2 FTS	38.4	40.2		ng/L		105	60 - 135
10:2 FTS	38.6	38.8		ng/L		101	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.2		ng/L		117	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.4		ng/L		106	60 - 135
F-53B Major	37.4	40.4		ng/L		108	60 - 135
F-53B Minor	37.8	43.0		ng/L		114	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	105		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	102		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	103		25 - 150
13C2 PFDA	112		25 - 150
13C2 PFUnA	109		25 - 150
13C2 PFDoA	113		25 - 150
13C2 PFTeDA	111		25 - 150
13C2 PFHxDA	97		25 - 150
13C3 PFBS	91		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	99		25 - 150
13C8 FOSA	105		10 - 150
d3-NMeFOSAA	109		25 - 150
d5-NEtFOSAA	107		25 - 150
d-N-MeFOSA-M	86		10 - 150
d-N-EtFOSA-M	87		10 - 150

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

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

Lab Sample ID: LCS 320-682260/2-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682260

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	96		10 - 150
d9-N-EtFOSE-M	93		10 - 150
M2-4:2 FTS	94		25 - 150
M2-6:2 FTS	93		25 - 150
M2-8:2 FTS	99		25 - 150
13C3 HFPO-DA	91		25 - 150
13C2 10:2 FTS	122		25 - 150

Lab Sample ID: LCSD 320-682260/3-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 682260

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	38.5		ng/L		96	60 - 135	4	30	
Perfluoropentanoic acid (PFPeA)	40.0	41.8		ng/L		104	60 - 135	0	30	
Perfluorohexanoic acid (PFHxA)	40.0	42.2		ng/L		106	60 - 135	2	30	
Perfluoroheptanoic acid (PFHpA)	40.0	43.7		ng/L		109	60 - 135	1	30	
Perfluorooctanoic acid (PFOA)	40.0	42.1		ng/L		105	60 - 135	2	30	
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	60 - 135	1	30	
Perfluorodecanoic acid (PFDA)	40.0	41.3		ng/L		103	60 - 135	5	30	
Perfluoroundecanoic acid (PFUnA)	40.0	42.2		ng/L		106	60 - 135	5	30	
Perfluorododecanoic acid (PFDoA)	40.0	43.7		ng/L		109	60 - 135	3	30	
Perfluorotridecanoic acid (PFTriA)	40.0	41.5		ng/L		104	60 - 135	4	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	38.0		ng/L		95	60 - 135	1	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	40.7		ng/L		102	60 - 135	1	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	26.0		ng/L		65	60 - 135	3	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	36.6		ng/L		103	60 - 135	2	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	40.8		ng/L		108	60 - 135	5	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.2		ng/L		102	60 - 135	5	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	38.9		ng/L		102	60 - 135	1	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	37.2		ng/L		100	60 - 135	1	30	
Perfluorononanesulfonic acid (PFNS)	38.5	40.5		ng/L		105	60 - 135	0	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	40.2		ng/L		104	60 - 135	6	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	37.3		ng/L		96	60 - 135	1	30	
Perfluorooctanesulfonamide (FOSA)	40.0	41.4		ng/L		103	60 - 135	2	30	
NEtFOSA	40.0	42.6		ng/L		106	60 - 135	8	30	
NMeFOSA	40.0	39.8		ng/L		100	60 - 135	2	30	
NMeFOSAA	40.0	40.4		ng/L		101	60 - 135	5	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

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

Lab Sample ID: LCSD 320-682260/3-A
Matrix: Water
Analysis Batch: 682803

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 682260

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	41.7		ng/L		104	60 - 135	3	30
NMeFOSE	40.0	39.8		ng/L		99	60 - 135	1	30
NEtFOSE	40.0	42.5		ng/L		106	60 - 135	4	30
4:2 FTS	37.5	40.8		ng/L		109	60 - 135	1	30
6:2 FTS	38.1	36.8		ng/L		97	60 - 135	7	30
8:2 FTS	38.4	43.6		ng/L		113	60 - 135	8	30
10:2 FTS	38.6	38.2		ng/L		99	60 - 135	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.7		ng/L		113	60 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	39.8		ng/L		99	60 - 135	6	30
F-53B Major	37.4	38.4		ng/L		103	60 - 135	5	30
F-53B Minor	37.8	41.0		ng/L		109	60 - 135	5	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	97		25 - 150
13C5 PFPeA	91		25 - 150
13C2 PFHxA	95		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	99		25 - 150
13C2 PFDA	103		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	105		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	96		25 - 150
13C4 PFOS	97		25 - 150
13C8 FOSA	96		10 - 150
d3-NMeFOSAA	103		25 - 150
d5-NEtFOSAA	104		25 - 150
d-N-MeFOSA-M	85		10 - 150
d-N-EtFOSA-M	81		10 - 150
d7-N-MeFOSE-M	88		10 - 150
d9-N-EtFOSE-M	87		10 - 150
M2-4:2 FTS	91		25 - 150
M2-6:2 FTS	94		25 - 150
M2-8:2 FTS	90		25 - 150
13C3 HFPO-DA	88		25 - 150
13C2 10:2 FTS	112		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Client Sample ID: V-200-A
Date Collected: 06/08/23 06:40
Date Received: 06/09/23 09:10

Lab Sample ID: 500-235075-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			682260	HJA	EET SAC	06/12/23 04:53
Total/NA	Analysis	537 (modified)		1	682803	C1P	EET SAC	06/14/23 03:57

Client Sample ID: V-900-A
Date Collected: 06/08/23 06:45
Date Received: 06/09/23 09:10

Lab Sample ID: 500-235075-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			682260	HJA	EET SAC	06/12/23 04:53
Total/NA	Analysis	537 (modified)		1	682803	C1P	EET SAC	06/14/23 04:07

Laboratory References:

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

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Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

Client Contact
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee, WI 53202
Phone
FAX
Project Name: Marinette, WI
Site: Marinette, WI
P O # 30171092.4.1.1 (WPDES)

Email: N/A
Tel/Fax: N/A
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.
V-200-A	6-8-23	6:46	G	W	2
V-900-A	6:45		G	W	2

Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	EPA 537 Modified (36 Compounds)
N	N	X
N	N	X

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

Sample Specific Notes:
System Influent
System Effluent



7-Day TAT Max or Prelim Report by Day 7

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other
Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazardous Flammable Skin Irritant Unknown

Special Instructions/QC Requirements & Comments:
Custody Seals Intact: Yes No
Relinquished by: Jacob Loring
Relinquished by: Jacob Loring
Relinquished by: Jacob Loring

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-235075-1

SDG Number:

Login Number: 235075

List Number: 1

Creator: Fisher, Jamyiah L

List Source: Eurofins Sacramento

List Creation: 06/09/23 04:11 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2077446
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Job: 500-235075 Field Sheet

Tracking #: 6483 4032 4399

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: C10 Corr. Factor: (+ / -) °C

Ice Wet Gel Other

Cooler Custody Seal: 2077446

Cooler ID:

Temp Observed: 1.1 °C Corrected: 1.1 °C
From: Temp Blank Sample

Notes:

Opening/Processing The Shipment Yes No NA

Cooler compromised/tampered with?

Cooler Temperature is acceptable?

Frozen samples show signs of thaw?

Initials: JF Date: 6/9/23

Unpacking/Labeling The Samples Yes No NA

COC is complete w/o discrepancies?

Samples compromised/tampered with?

Containers are not broken or leaking?

Sample custody seal?

Sample containers have legible labels?

Sample date/times are provided?

Appropriate containers are used?

Sample bottles are completely filled?

Sample preservatives verified?

Is the Field Sampler's name on COC?

Samples require splitting/compositing?

Samples w/o discrepancies?

Zero headspace?*

Alkalinity has no headspace?

Perchlorate has headspace?
(Methods 314, 331, 6850)

Multiphasic samples are not present?

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JF Date: 6/9/23

Trizma Lot #(s):

Login Completion Yes No NA

Receipt Temperature on COC?

Samples received within hold time?

NCM Filed?

Log Release checked in TALS?

Initials: JF Date: 6/9/23

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-235075-1	V-200-A	102	98	98	96	96	92	97	89
500-235075-2	V-900-A	127	120	115	120	115	118	124	116
LCS 320-682260/2-A	Lab Control Sample	105	96	102	103	102	103	112	109
LCSD 320-682260/3-A	Lab Control Sample Dup	97	91	95	99	98	99	103	100
MB 320-682260/1-A	Method Blank	100	98	104	101	102	106	113	106

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-235075-1	V-200-A	88	89	72	87	91	95	100	94
500-235075-2	V-900-A	111	111	100	110	117	114	125	119
LCS 320-682260/2-A	Lab Control Sample	113	111	97	91	101	99	105	109
LCSD 320-682260/3-A	Lab Control Sample Dup	100	105	95	92	96	97	96	103
MB 320-682260/1-A	Method Blank	102	106	93	94	96	101	102	111

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-235075-1	V-200-A	97	81	79	75	75	87	91	86
500-235075-2	V-900-A	125	102	103	105	99	113	109	109
LCS 320-682260/2-A	Lab Control Sample	107	86	87	96	93	94	93	99
LCSD 320-682260/3-A	Lab Control Sample Dup	104	85	81	88	87	91	94	90
MB 320-682260/1-A	Method Blank	109	90	86	95	88	102	91	92

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-235075-1	V-200-A	84	101
500-235075-2	V-900-A	113	132
LCS 320-682260/2-A	Lab Control Sample	91	122
LCSD 320-682260/3-A	Lab Control Sample Dup	88	112
MB 320-682260/1-A	Method Blank	97	117

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235075-1

dEtFOSA = d-N-EtFOSA-M

NMFM = d7-N-MeFOSE-M

NEFM = d9-N-EtFOSE-M

M242FTS = M2-4:2 FTS

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

HFPODA = 13C3 HFPO-DA

M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 6/22/2023 5:53:25 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-235430-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Job ID: 500-235430-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-235430-1

Receipt

The samples were received on 6/16/2023 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.7° C.

LCMS

Method 537 (modified): The transition mass ratio was outside of the established ratio limit for Perfluorohexanoic acid (PFHxA) in CCVL 320-684485/5 associated to this data set. This is indicated by the "R" flag in the raw data. As the flagged data is in control in the CCVL, there is no adverse impact to the data.
CCVL 320-684485/5

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-684485 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 537 (modified): The continuing calibration verification internal standard (CCVIS) associated with batch 320-684485 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: CCVIS 320-684485/6.

Method 537 (modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-684110 and analytical batch 320-684485 recovered outside control limits for the following analytes: Perfluoro-n-octadecanoic acid (PFODA). These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-684110.

3535 PFC
Water
320-684110

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
500-235430-1	V-200-A	Water	06/15/23 14:00	06/16/23 09:15
500-235430-2	V-900-A	Water	06/15/23 14:05	06/16/23 09:15

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Client Sample ID: V-200-A

Lab Sample ID: 500-235430-1

Date Collected: 06/15/23 14:00

Matrix: Water

Date Received: 06/16/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	67		4.4	2.1	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoropentanoic acid (PFPeA)	220		1.8	0.43	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorohexanoic acid (PFHxA)	180		1.8	0.51	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoroheptanoic acid (PFHpA)	110		1.8	0.22	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorooctanoic acid (PFOA)	270		1.8	0.75	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorononanoic acid (PFNA)	33		1.8	0.24	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorodecanoic acid (PFDA)	20		1.8	0.27	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoroundecanoic acid (PFUnA)	8.5		1.8	0.97	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorododecanoic acid (PFDoA)	1.5 J		1.8	0.49	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorotetradecanoic acid (PFTeA)	0.88 J		1.8	0.65	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.79		1.8	0.79	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.83 * ^c		1.8	0.83	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorobutanesulfonic acid (PFBS)	3.4		1.8	0.18	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoropentanesulfonic acid (PFPeS)	1.5 J		1.8	0.27	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorohexanesulfonic acid (PFHxS)	22		1.8	0.51	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluoroheptanesulfonic acid (PFHpS)	1.0 J		1.8	0.17	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorooctanesulfonic acid (PFOS)	120		1.8	0.48	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorodecanesulfonic acid (PFDS)	<0.28		1.8	0.28	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorododecanesulfonic acid (PFDoS)	<0.86		1.8	0.86	ng/L		06/19/23 08:45	06/20/23 02:31	1
Perfluorooctanesulfonamide (FOSA)	5.0		1.8	0.87	ng/L		06/19/23 08:45	06/20/23 02:31	1
NEtFOSA	<0.77		1.8	0.77	ng/L		06/19/23 08:45	06/20/23 02:31	1
NMeFOSA	<0.38		1.8	0.38	ng/L		06/19/23 08:45	06/20/23 02:31	1
NMeFOSAA	<1.1		4.4	1.1	ng/L		06/19/23 08:45	06/20/23 02:31	1
NEtFOSAA	2.1 J		4.4	1.2	ng/L		06/19/23 08:45	06/20/23 02:31	1
NMeFOSE	<1.2		3.5	1.2	ng/L		06/19/23 08:45	06/20/23 02:31	1
NEtFOSE	<0.75		1.8	0.75	ng/L		06/19/23 08:45	06/20/23 02:31	1
4:2 FTS	2.0		1.8	0.21	ng/L		06/19/23 08:45	06/20/23 02:31	1
6:2 FTS	240		4.4	2.2	ng/L		06/19/23 08:45	06/20/23 02:31	1
8:2 FTS	340		1.8	0.41	ng/L		06/19/23 08:45	06/20/23 02:31	1
10:2 FTS	15		1.8	0.59	ng/L		06/19/23 08:45	06/20/23 02:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.35		1.8	0.35	ng/L		06/19/23 08:45	06/20/23 02:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.5	1.3	ng/L		06/19/23 08:45	06/20/23 02:31	1
F-53B Major	<0.21		1.8	0.21	ng/L		06/19/23 08:45	06/20/23 02:31	1
F-53B Minor	<0.28		1.8	0.28	ng/L		06/19/23 08:45	06/20/23 02:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	84		25 - 150				06/19/23 08:45	06/20/23 02:31	1
13C5 PFPeA	97		25 - 150				06/19/23 08:45	06/20/23 02:31	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Client Sample ID: V-200-A

Lab Sample ID: 500-235430-1

Date Collected: 06/15/23 14:00

Matrix: Water

Date Received: 06/16/23 09:15

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	90		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C4 PFHpA	90		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C4 PFOA	95		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C5 PFNA	88		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C2 PFDA	86		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C2 PFUnA	81		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C2 PFDoA	73		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C2 PFTeDA	63		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C2 PFHxDA	67		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C3 PFBS	79		25 - 150	06/19/23 08:45	06/20/23 02:31	1
18O2 PFHxS	82		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C4 PFOS	82		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C8 FOSA	92		10 - 150	06/19/23 08:45	06/20/23 02:31	1
d3-NMeFOSAA	82		25 - 150	06/19/23 08:45	06/20/23 02:31	1
d5-NEtFOSAA	78		25 - 150	06/19/23 08:45	06/20/23 02:31	1
d-N-MeFOSA-M	68		10 - 150	06/19/23 08:45	06/20/23 02:31	1
d-N-EtFOSA-M	58		10 - 150	06/19/23 08:45	06/20/23 02:31	1
d7-N-MeFOSE-M	69		10 - 150	06/19/23 08:45	06/20/23 02:31	1
d9-N-EtFOSE-M	62		10 - 150	06/19/23 08:45	06/20/23 02:31	1
M2-4:2 FTS	79		25 - 150	06/19/23 08:45	06/20/23 02:31	1
M2-6:2 FTS	84		25 - 150	06/19/23 08:45	06/20/23 02:31	1
M2-8:2 FTS	78		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C3 HFPO-DA	81		25 - 150	06/19/23 08:45	06/20/23 02:31	1
13C2 10:2 FTS	62		25 - 150	06/19/23 08:45	06/20/23 02:31	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Client Sample ID: V-900-A

Lab Sample ID: 500-235430-2

Date Collected: 06/15/23 14:05

Matrix: Water

Date Received: 06/16/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.3	J	4.3	2.1	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoropentanoic acid (PFPeA)	<0.42		1.7	0.42	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorooctanoic acid (PFOA)	<0.73		1.7	0.73	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorodecanoic acid (PFDA)	<0.26		1.7	0.26	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoroundecanoic acid (PFUnA)	<0.94		1.7	0.94	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorotetradecanoic acid (PFTeA)	<0.62		1.7	0.62	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.76		1.7	0.76	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.80	* ^c	1.7	0.80	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoropentanesulfonic acid (PFPeS)	<0.26		1.7	0.26	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorohexanesulfonic acid (PFHxS)	<0.49		1.7	0.49	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.16		1.7	0.16	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorononanesulfonic acid (PFNS)	<0.32		1.7	0.32	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorodecanesulfonic acid (PFDS)	<0.27		1.7	0.27	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorododecanesulfonic acid (PFDoS)	<0.83		1.7	0.83	ng/L		06/19/23 08:45	06/20/23 02:41	1
Perfluorooctanesulfonamide (FOSA)	<0.84		1.7	0.84	ng/L		06/19/23 08:45	06/20/23 02:41	1
NEtFOSA	<0.74		1.7	0.74	ng/L		06/19/23 08:45	06/20/23 02:41	1
NMeFOSA	<0.37		1.7	0.37	ng/L		06/19/23 08:45	06/20/23 02:41	1
NMeFOSAA	<1.0		4.3	1.0	ng/L		06/19/23 08:45	06/20/23 02:41	1
NEtFOSAA	<1.1		4.3	1.1	ng/L		06/19/23 08:45	06/20/23 02:41	1
NMeFOSE	<1.2		3.4	1.2	ng/L		06/19/23 08:45	06/20/23 02:41	1
NEtFOSE	<0.73		1.7	0.73	ng/L		06/19/23 08:45	06/20/23 02:41	1
4:2 FTS	<0.21		1.7	0.21	ng/L		06/19/23 08:45	06/20/23 02:41	1
6:2 FTS	<2.1		4.3	2.1	ng/L		06/19/23 08:45	06/20/23 02:41	1
8:2 FTS	0.44	J	1.7	0.39	ng/L		06/19/23 08:45	06/20/23 02:41	1
10:2 FTS	2.0		1.7	0.57	ng/L		06/19/23 08:45	06/20/23 02:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.34		1.7	0.34	ng/L		06/19/23 08:45	06/20/23 02:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.3		3.4	1.3	ng/L		06/19/23 08:45	06/20/23 02:41	1
F-53B Major	<0.21		1.7	0.21	ng/L		06/19/23 08:45	06/20/23 02:41	1
F-53B Minor	<0.27		1.7	0.27	ng/L		06/19/23 08:45	06/20/23 02:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C5 PFPeA	93		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C2 PFHxA	92		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C4 PFHpA	90		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C4 PFOA	92		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C5 PFNA	94		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C2 PFDA	90		25 - 150	06/19/23 08:45	06/20/23 02:41	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Client Sample ID: V-900-A
Date Collected: 06/15/23 14:05
Date Received: 06/16/23 09:15

Lab Sample ID: 500-235430-2
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	82		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C2 PFluA	72		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C2 PFluDA	61		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C2 PFluDA	50		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C3 PFBS	84		25 - 150	06/19/23 08:45	06/20/23 02:41	1
18O2 PFluS	88		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C4 PFOS	82		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C8 FOSA	98		10 - 150	06/19/23 08:45	06/20/23 02:41	1
d3-NMeFOSAA	82		25 - 150	06/19/23 08:45	06/20/23 02:41	1
d5-NEtFOSAA	78		25 - 150	06/19/23 08:45	06/20/23 02:41	1
d-N-MeFOSA-M	68		10 - 150	06/19/23 08:45	06/20/23 02:41	1
d-N-EtFOSA-M	62		10 - 150	06/19/23 08:45	06/20/23 02:41	1
d7-N-MeFOSE-M	77		10 - 150	06/19/23 08:45	06/20/23 02:41	1
d9-N-EtFOSE-M	70		10 - 150	06/19/23 08:45	06/20/23 02:41	1
M2-4:2 FTS	74		25 - 150	06/19/23 08:45	06/20/23 02:41	1
M2-6:2 FTS	74		25 - 150	06/19/23 08:45	06/20/23 02:41	1
M2-8:2 FTS	71		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C3 HFPO-DA	93		25 - 150	06/19/23 08:45	06/20/23 02:41	1
13C2 10:2 FTS	58		25 - 150	06/19/23 08:45	06/20/23 02:41	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
^c	CCV Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-684110/1-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 684110

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		06/19/23 08:45	06/19/23 23:59	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		06/19/23 08:45	06/19/23 23:59	1
NEtFOSA	<0.87		2.0	0.87	ng/L		06/19/23 08:45	06/19/23 23:59	1
NMeFOSA	<0.43		2.0	0.43	ng/L		06/19/23 08:45	06/19/23 23:59	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		06/19/23 08:45	06/19/23 23:59	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		06/19/23 08:45	06/19/23 23:59	1
NMeFOSE	<1.4		4.0	1.4	ng/L		06/19/23 08:45	06/19/23 23:59	1
NEtFOSE	<0.85		2.0	0.85	ng/L		06/19/23 08:45	06/19/23 23:59	1
4:2 FTS	<0.24		2.0	0.24	ng/L		06/19/23 08:45	06/19/23 23:59	1
6:2 FTS	<2.5		5.0	2.5	ng/L		06/19/23 08:45	06/19/23 23:59	1
8:2 FTS	<0.46		2.0	0.46	ng/L		06/19/23 08:45	06/19/23 23:59	1
10:2 FTS	<0.67		2.0	0.67	ng/L		06/19/23 08:45	06/19/23 23:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		06/19/23 08:45	06/19/23 23:59	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		06/19/23 08:45	06/19/23 23:59	1
F-53B Major	<0.24		2.0	0.24	ng/L		06/19/23 08:45	06/19/23 23:59	1
F-53B Minor	<0.32		2.0	0.32	ng/L		06/19/23 08:45	06/19/23 23:59	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	93		25 - 150				06/19/23 08:45	06/19/23 23:59	1
13C5 PFPeA	97		25 - 150				06/19/23 08:45	06/19/23 23:59	1
13C2 PFHxA	91		25 - 150				06/19/23 08:45	06/19/23 23:59	1
13C4 PFHpA	91		25 - 150				06/19/23 08:45	06/19/23 23:59	1
13C4 PFOA	92		25 - 150				06/19/23 08:45	06/19/23 23:59	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

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

Lab Sample ID: MB 320-684110/1-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 684110

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	96		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C2 PFDA	96		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C2 PFUnA	97		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C2 PFDoA	92		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C2 PFTeDA	86		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C2 PFHxDA	90		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C3 PFBS	83		25 - 150	06/19/23 08:45	06/19/23 23:59	1
18O2 PFHxS	90		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C4 PFOS	88		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C8 FOSA	98		10 - 150	06/19/23 08:45	06/19/23 23:59	1
d3-NMeFOSAA	100		25 - 150	06/19/23 08:45	06/19/23 23:59	1
d5-NEtFOSAA	97		25 - 150	06/19/23 08:45	06/19/23 23:59	1
d-N-MeFOSA-M	65		10 - 150	06/19/23 08:45	06/19/23 23:59	1
d-N-EtFOSA-M	63		10 - 150	06/19/23 08:45	06/19/23 23:59	1
d7-N-MeFOSE-M	91		10 - 150	06/19/23 08:45	06/19/23 23:59	1
d9-N-EtFOSE-M	86		10 - 150	06/19/23 08:45	06/19/23 23:59	1
M2-4:2 FTS	80		25 - 150	06/19/23 08:45	06/19/23 23:59	1
M2-6:2 FTS	80		25 - 150	06/19/23 08:45	06/19/23 23:59	1
M2-8:2 FTS	81		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C3 HFPO-DA	97		25 - 150	06/19/23 08:45	06/19/23 23:59	1
13C2 10:2 FTS	85		25 - 150	06/19/23 08:45	06/19/23 23:59	1

Lab Sample ID: LCS 320-684110/2-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 684110

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	44.2		ng/L		110	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	42.7		ng/L		107	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		103	60 - 135
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.0		ng/L		102	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	39.5		ng/L		99	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	44.5		ng/L		111	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	42.0		ng/L		105	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	38.3		ng/L		96	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.8		ng/L		112	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	51.8		ng/L		129	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	38.8		ng/L		109	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.4		ng/L		116	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

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

Lab Sample ID: LCS 320-684110/2-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 684110

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.5		ng/L		100	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.1		ng/L		102	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.8		ng/L		99	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.7		ng/L		106	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	36.0		ng/L		93	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	32.3		ng/L		83	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	43.3		ng/L		108	60 - 135
NEtFOSA	40.0	42.2		ng/L		106	60 - 135
NMeFOSA	40.0	40.7		ng/L		102	60 - 135
NMeFOSAA	40.0	42.9		ng/L		107	60 - 135
NEtFOSAA	40.0	43.3		ng/L		108	60 - 135
NMeFOSE	40.0	40.4		ng/L		101	60 - 135
NEtFOSE	40.0	42.2		ng/L		106	60 - 135
4:2 FTS	37.5	35.4		ng/L		94	60 - 135
6:2 FTS	38.1	40.5		ng/L		106	60 - 135
8:2 FTS	38.4	42.1		ng/L		110	60 - 135
10:2 FTS	38.6	37.1		ng/L		96	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.5		ng/L		118	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.8		ng/L		107	60 - 135
F-53B Major	37.4	39.2		ng/L		105	60 - 135
F-53B Minor	37.8	37.1		ng/L		98	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	92		25 - 150
13C5 PFPeA	88		25 - 150
13C2 PFHxA	92		25 - 150
13C4 PFHpA	94		25 - 150
13C4 PFOA	94		25 - 150
13C5 PFNA	92		25 - 150
13C2 PFDA	93		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	88		25 - 150
13C2 PFTeDA	84		25 - 150
13C2 PFHxDA	90		25 - 150
13C3 PFBS	83		25 - 150
18O2 PFHxS	88		25 - 150
13C4 PFOS	89		25 - 150
13C8 FOSA	91		10 - 150
d3-NMeFOSAA	91		25 - 150
d5-NEtFOSAA	89		25 - 150
d-N-MeFOSA-M	68		10 - 150
d-N-EtFOSA-M	64		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

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

Lab Sample ID: LCS 320-684110/2-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 684110

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	88		10 - 150
d9-N-EtFOSE-M	83		10 - 150
M2-4:2 FTS	87		25 - 150
M2-6:2 FTS	75		25 - 150
M2-8:2 FTS	77		25 - 150
13C3 HFPO-DA	93		25 - 150
13C2 10:2 FTS	77		25 - 150

Lab Sample ID: LCSD 320-684110/3-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 684110

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	43.0		ng/L		107	60 - 135	1	30	
Perfluoropentanoic acid (PFPeA)	40.0	42.6		ng/L		106	60 - 135	4	30	
Perfluorohexanoic acid (PFHxA)	40.0	43.8		ng/L		109	60 - 135	2	30	
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135	4	30	
Perfluorooctanoic acid (PFOA)	40.0	41.6		ng/L		104	60 - 135	1	30	
Perfluorononanoic acid (PFNA)	40.0	41.2		ng/L		103	60 - 135	2	30	
Perfluorodecanoic acid (PFDA)	40.0	42.7		ng/L		107	60 - 135	4	30	
Perfluoroundecanoic acid (PFUnA)	40.0	40.4		ng/L		101	60 - 135	2	30	
Perfluorododecanoic acid (PFDoA)	40.0	45.3		ng/L		113	60 - 135	2	30	
Perfluorotridecanoic acid (PFTriA)	40.0	42.1		ng/L		105	60 - 135	0	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	41.1		ng/L		103	60 - 135	7	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.2		ng/L		116	60 - 135	3	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	54.5 *		ng/L		136	60 - 135	5	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	38.0		ng/L		107	60 - 135	2	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	44.9		ng/L		119	60 - 135	3	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.3		ng/L		97	60 - 135	3	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	38.9		ng/L		102	60 - 135	1	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	38.8		ng/L		104	60 - 135	5	30	
Perfluorononanesulfonic acid (PFNS)	38.5	41.6		ng/L		108	60 - 135	2	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	38.3		ng/L		99	60 - 135	6	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	37.4		ng/L		96	60 - 135	15	30	
Perfluorooctanesulfonamide (FOSA)	40.0	42.4		ng/L		106	60 - 135	2	30	
NEtFOSA	40.0	43.5		ng/L		109	60 - 135	3	30	
NMeFOSA	40.0	42.6		ng/L		106	60 - 135	5	30	
NMeFOSAA	40.0	42.7		ng/L		107	60 - 135	0	30	

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

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

Lab Sample ID: LCSD 320-684110/3-A
Matrix: Water
Analysis Batch: 684485

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 684110

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	43.7		ng/L		109	60 - 135	1	30
NMeFOSE	40.0	40.3		ng/L		101	60 - 135	0	30
NEtFOSE	40.0	40.8		ng/L		102	60 - 135	3	30
4:2 FTS	37.5	41.6		ng/L		111	60 - 135	16	30
6:2 FTS	38.1	37.7		ng/L		99	60 - 135	7	30
8:2 FTS	38.4	41.8		ng/L		109	60 - 135	1	30
10:2 FTS	38.6	35.8		ng/L		93	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.0		ng/L		119	60 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.5		ng/L		109	60 - 135	2	30
F-53B Major	37.4	40.8		ng/L		109	60 - 135	4	30
F-53B Minor	37.8	38.4		ng/L		102	60 - 135	4	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	96		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	92		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	94		25 - 150
13C5 PFNA	94		25 - 150
13C2 PFDA	93		25 - 150
13C2 PFUnA	95		25 - 150
13C2 PFDoA	91		25 - 150
13C2 PFTeDA	86		25 - 150
13C2 PFHxDA	93		25 - 150
13C3 PFBS	85		25 - 150
18O2 PFHxS	91		25 - 150
13C4 PFOS	91		25 - 150
13C8 FOSA	97		10 - 150
d3-NMeFOSAA	96		25 - 150
d5-NEtFOSAA	97		25 - 150
d-N-MeFOSA-M	68		10 - 150
d-N-EtFOSA-M	62		10 - 150
d7-N-MeFOSE-M	86		10 - 150
d9-N-EtFOSE-M	85		10 - 150
M2-4:2 FTS	80		25 - 150
M2-6:2 FTS	83		25 - 150
M2-8:2 FTS	85		25 - 150
13C3 HFPO-DA	95		25 - 150
13C2 10:2 FTS	84		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Client Sample ID: V-200-A

Date Collected: 06/15/23 14:00

Date Received: 06/16/23 09:15

Lab Sample ID: 500-235430-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			684110	VP	EET SAC	06/19/23 08:45
Total/NA	Analysis	537 (modified)		1	684485	C1P	EET SAC	06/20/23 02:31

Client Sample ID: V-900-A

Date Collected: 06/15/23 14:05

Date Received: 06/16/23 09:15

Lab Sample ID: 500-235430-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			684110	VP	EET SAC	06/19/23 08:45
Total/NA	Analysis	537 (modified)		1	684485	C1P	EET SAC	06/20/23 02:41

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
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- 10
- 11
- 12
- 13
- 14



West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____ Project Name: Marinette, WI Site: Marinette, WI P O # 30171092.4.1.1 (WPDES)		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other: Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sampler: Jacob Haminger Date: 6-15-23 Carrier: FedEx Lab Contact: Sandie Fredrick Date: 6-15-23 Carrier: FedEx		COC No: 1 1 of 1 COCs	
Sample Identification V-200-A V-900-A		Sample Type (C=Comp, G=Grab) G W 2 G W 2		Matrix W W		# of Cont. 2 2		Filtered Sample (Y/N) N N EPA 537 Modified X X Perform MS/MSD (Y/N) N N	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Special Instructions/QC Requirements & Comments: 7-Day TAT Max or Prelim Report by Day 7		Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> Archive for _____ Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Sample Specific Notes: System Influent System Effluent	
Relinquished by: <u>Jacob Haminger</u> Date/Time: <u>6-15-23/1450</u>		Relinquished by: <u>Jacob Haminger</u> Date/Time: <u>6-15-23/1450</u>		Relinquished by: <u>Jacob Haminger</u> Date/Time: <u>6-15-23/1450</u>		Relinquished by: <u>Jacob Haminger</u> Date/Time: <u>6-15-23/1450</u>		Relinquished by: <u>Jacob Haminger</u> Date/Time: <u>6-15-23/1450</u>	



Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-235430-1

SDG Number:

Login Number: 235430

List Number: 1

Creator: Cahill, Nicholas P

List Source: Eurofins Sacramento

List Creation: 06/16/23 07:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2077444
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



500-235430 Field Sheet

Tracking #: 6483 4733 4415

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: <u>L10</u> Corr. Factor: (+ / -) _____ °C	Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____																				
Ice <u>—</u> Wet _____ Gel _____ Other _____																					
Cooler Custody Seal: <u>2077444</u>																					
Cooler ID: _____																					
Temp Observed: <u>1.7</u> °C Corrected: <u>1.7</u> °C																					
From: Temp Blank <input checked="" type="checkbox"/> Sample <input type="checkbox"/>																					
Opening/Processing The Shipment Yes No NA																					
Cooler compromised/tampered with? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Cooler Temperature is acceptable? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Frozen samples show signs of thaw? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Initials: <u>JF</u> Date: <u>6/16/23</u>																					
Unpacking/Labeling The Samples Yes No NA	Trizma Lot #(s): _____ _____ _____																				
COC is complete w/o discrepancies? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Samples compromised/tampered with? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Containers are not broken or leaking? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample custody seal? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Sample containers have legible labels? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample date/times are provided? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Appropriate containers are used? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample bottles are completely filled? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Sample preservatives verified? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Is the Field Sampler's name on COC? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<table border="0"> <tr> <td>Login Completion</td> <td>Yes</td> <td>No</td> <td>NA</td> </tr> <tr> <td>Receipt Temperature on COC?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Samples received within hold time?</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>NCM Filed?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Log Release checked in TALS?</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Login Completion	Yes	No	NA	Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Login Completion		Yes	No	NA																	
Receipt Temperature on COC?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
Samples received within hold time?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																	
NCM Filed?		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																	
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																		
Samples require splitting/compositing? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>																					
Samples w/o discrepancies? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																					
Zero headspace?* <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Alkalinity has no headspace? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
Perchlorate has headspace? <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>																					
(Methods 314, 331, 6850)																					
Multiphasic samples are not present? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Initials: <u>NC</u> Date: <u>6-16-23</u>																				

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WR3-33E

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-235430-1	V-200-A	84	97	90	90	95	88	86	81
500-235430-2	V-900-A	96	93	92	90	92	94	90	82
LCS 320-684110/2-A	Lab Control Sample	92	88	92	94	94	92	93	94
LCSD 320-684110/3-A	Lab Control Sample Dup	96	94	92	93	94	94	93	95
MB 320-684110/1-A	Method Blank	93	97	91	91	92	96	96	97

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-235430-1	V-200-A	73	63	67	79	82	82	92	82
500-235430-2	V-900-A	72	61	50	84	88	82	98	82
LCS 320-684110/2-A	Lab Control Sample	88	84	90	83	88	89	91	91
LCSD 320-684110/3-A	Lab Control Sample Dup	91	86	93	85	91	91	97	96
MB 320-684110/1-A	Method Blank	92	86	90	83	90	88	98	100

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-235430-1	V-200-A	78	68	58	69	62	79	84	78
500-235430-2	V-900-A	78	68	62	77	70	74	74	71
LCS 320-684110/2-A	Lab Control Sample	89	68	64	88	83	87	75	77
LCSD 320-684110/3-A	Lab Control Sample Dup	97	68	62	86	85	80	83	85
MB 320-684110/1-A	Method Blank	97	65	63	91	86	80	80	81

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-235430-1	V-200-A	81	62
500-235430-2	V-900-A	93	58
LCS 320-684110/2-A	Lab Control Sample	93	77
LCSD 320-684110/3-A	Lab Control Sample Dup	95	84
MB 320-684110/1-A	Method Blank	97	85

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

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Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235430-1

dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

1

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14

ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 6/27/2023 5:04:04 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-235510-1

Eurofins Chicago

Job Notes

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Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Job ID: 500-235510-1

Laboratory: Eurofins Chicago

Narrative

**Job Narrative
500-235510-1**

Receipt

The samples were received on 6/20/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8° C.

LCMS

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-685474 recovered above the upper control limit for Perfluoro-n-octadecanoic acid (PFODA). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-685044.

Method: 3535_PFC_28D

Matrix: Aqueous

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



Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
500-235510-1	V-200-A	Water	06/19/23 10:30	06/20/23 09:30
500-235510-2	V-900-A	Water	06/19/23 10:35	06/20/23 09:30

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Client Sample ID: V-200-A

Lab Sample ID: 500-235510-1

Date Collected: 06/19/23 10:30

Matrix: Water

Date Received: 06/20/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	24		4.7	2.2	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoropentanoic acid (PFPeA)	82		1.9	0.46	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorohexanoic acid (PFHxA)	54		1.9	0.54	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoroheptanoic acid (PFHpA)	22		1.9	0.23	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorooctanoic acid (PFOA)	39		1.9	0.80	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorononanoic acid (PFNA)	4.2		1.9	0.25	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorodecanoic acid (PFDA)	4.7		1.9	0.29	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoroundecanoic acid (PFUnA)	2.4		1.9	1.0	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.9	0.51	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.83		1.9	0.83	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.88	^c	1.9	0.88	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorobutanesulfonic acid (PFBS)	0.40	J	1.9	0.19	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoropentanesulfonic acid (PFPeS)	0.40	J	1.9	0.28	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorohexanesulfonic acid (PFHxS)	5.1		1.9	0.53	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorooctanesulfonic acid (PFOS)	20		1.9	0.51	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorododecanesulfonic acid (PFDoS)	<0.91		1.9	0.91	ng/L		06/22/23 04:56	06/23/23 15:17	1
Perfluorooctanesulfonamide (FOSA)	1.7	J	1.9	0.92	ng/L		06/22/23 04:56	06/23/23 15:17	1
NEtFOSA	<0.81		1.9	0.81	ng/L		06/22/23 04:56	06/23/23 15:17	1
NMeFOSA	<0.40		1.9	0.40	ng/L		06/22/23 04:56	06/23/23 15:17	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		06/22/23 04:56	06/23/23 15:17	1
NEtFOSAA	<1.2		4.7	1.2	ng/L		06/22/23 04:56	06/23/23 15:17	1
NMeFOSE	<1.3		3.7	1.3	ng/L		06/22/23 04:56	06/23/23 15:17	1
NEtFOSE	<0.80		1.9	0.80	ng/L		06/22/23 04:56	06/23/23 15:17	1
4:2 FTS	0.52	J	1.9	0.22	ng/L		06/22/23 04:56	06/23/23 15:17	1
6:2 FTS	48		4.7	2.3	ng/L		06/22/23 04:56	06/23/23 15:17	1
8:2 FTS	48		1.9	0.43	ng/L		06/22/23 04:56	06/23/23 15:17	1
10:2 FTS	5.2		1.9	0.63	ng/L		06/22/23 04:56	06/23/23 15:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		06/22/23 04:56	06/23/23 15:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.7	1.4	ng/L		06/22/23 04:56	06/23/23 15:17	1
F-53B Major	<0.22		1.9	0.22	ng/L		06/22/23 04:56	06/23/23 15:17	1
F-53B Minor	<0.30		1.9	0.30	ng/L		06/22/23 04:56	06/23/23 15:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	92		25 - 150				06/22/23 04:56	06/23/23 15:17	1
13C5 PFPeA	92		25 - 150				06/22/23 04:56	06/23/23 15:17	1
13C2 PFHxA	89		25 - 150				06/22/23 04:56	06/23/23 15:17	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Client Sample ID: V-200-A
Date Collected: 06/19/23 10:30
Date Received: 06/20/23 09:30

Lab Sample ID: 500-235510-1
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFHpA	100		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C4 PFOA	98		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C5 PFNA	103		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C2 PFDA	104		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C2 PFUnA	105		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C2 PFDoA	96		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C2 PFTeDA	93		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C2 PFHxDA	87		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C3 PFBS	95		25 - 150	06/22/23 04:56	06/23/23 15:17	1
18O2 PFHxS	94		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C4 PFOS	95		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C8 FOSA	103		10 - 150	06/22/23 04:56	06/23/23 15:17	1
d3-NMeFOSAA	82		25 - 150	06/22/23 04:56	06/23/23 15:17	1
d5-NEtFOSAA	90		25 - 150	06/22/23 04:56	06/23/23 15:17	1
d-N-MeFOSA-M	76		10 - 150	06/22/23 04:56	06/23/23 15:17	1
d-N-EtFOSA-M	74		10 - 150	06/22/23 04:56	06/23/23 15:17	1
d7-N-MeFOSE-M	67		10 - 150	06/22/23 04:56	06/23/23 15:17	1
d9-N-EtFOSE-M	71		10 - 150	06/22/23 04:56	06/23/23 15:17	1
M2-4:2 FTS	100		25 - 150	06/22/23 04:56	06/23/23 15:17	1
M2-6:2 FTS	102		25 - 150	06/22/23 04:56	06/23/23 15:17	1
M2-8:2 FTS	114		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C3 HFPO-DA	86		25 - 150	06/22/23 04:56	06/23/23 15:17	1
13C2 10:2 FTS	114		25 - 150	06/22/23 04:56	06/23/23 15:17	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Client Sample ID: V-900-A

Lab Sample ID: 500-235510-2

Date Collected: 06/19/23 10:35

Matrix: Water

Date Received: 06/20/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.0	J	4.8	2.3	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoropentanoic acid (PFPeA)	<0.47		1.9	0.47	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorooctanoic acid (PFOA)	<0.82		1.9	0.82	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.86		1.9	0.86	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.91	^c	1.9	0.91	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoropentanesulfonic acid (PFPeS)	<0.29		1.9	0.29	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorohexanesulfonic acid (PFHxS)	<0.55		1.9	0.55	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorooctanesulfonic acid (PFOS)	<0.52		1.9	0.52	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorononanesulfonic acid (PFNS)	<0.36		1.9	0.36	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorododecanesulfonic acid (PFDoS)	<0.94		1.9	0.94	ng/L		06/22/23 04:56	06/23/23 15:28	1
Perfluorooctanesulfonamide (FOSA)	<0.94		1.9	0.94	ng/L		06/22/23 04:56	06/23/23 15:28	1
NEtFOSA	<0.84		1.9	0.84	ng/L		06/22/23 04:56	06/23/23 15:28	1
NMeFOSA	<0.41		1.9	0.41	ng/L		06/22/23 04:56	06/23/23 15:28	1
NMeFOSAA	<1.2		4.8	1.2	ng/L		06/22/23 04:56	06/23/23 15:28	1
NEtFOSAA	<1.3		4.8	1.3	ng/L		06/22/23 04:56	06/23/23 15:28	1
NMeFOSE	<1.3		3.9	1.3	ng/L		06/22/23 04:56	06/23/23 15:28	1
NEtFOSE	<0.82		1.9	0.82	ng/L		06/22/23 04:56	06/23/23 15:28	1
4:2 FTS	<0.23		1.9	0.23	ng/L		06/22/23 04:56	06/23/23 15:28	1
6:2 FTS	<2.4		4.8	2.4	ng/L		06/22/23 04:56	06/23/23 15:28	1
8:2 FTS	<0.44		1.9	0.44	ng/L		06/22/23 04:56	06/23/23 15:28	1
10:2 FTS	<0.65		1.9	0.65	ng/L		06/22/23 04:56	06/23/23 15:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.39		1.9	0.39	ng/L		06/22/23 04:56	06/23/23 15:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.9	1.4	ng/L		06/22/23 04:56	06/23/23 15:28	1
F-53B Major	<0.23		1.9	0.23	ng/L		06/22/23 04:56	06/23/23 15:28	1
F-53B Minor	<0.31		1.9	0.31	ng/L		06/22/23 04:56	06/23/23 15:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150				06/22/23 04:56	06/23/23 15:28	1
13C5 PFPeA	98		25 - 150				06/22/23 04:56	06/23/23 15:28	1
13C2 PFHxA	98		25 - 150				06/22/23 04:56	06/23/23 15:28	1
13C4 PFHpA	99		25 - 150				06/22/23 04:56	06/23/23 15:28	1
13C4 PFOA	100		25 - 150				06/22/23 04:56	06/23/23 15:28	1
13C5 PFNA	99		25 - 150				06/22/23 04:56	06/23/23 15:28	1
13C2 PFDA	98		25 - 150				06/22/23 04:56	06/23/23 15:28	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Client Sample ID: V-900-A

Lab Sample ID: 500-235510-2

Date Collected: 06/19/23 10:35

Matrix: Water

Date Received: 06/20/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	99		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C2 PFlDoA	91		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C2 PFlTeDA	87		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C2 PFlHxDA	69		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C3 PFlBS	94		25 - 150	06/22/23 04:56	06/23/23 15:28	1
18O2 PFlHxS	94		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C4 PFlOS	95		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C8 FOSA	105		10 - 150	06/22/23 04:56	06/23/23 15:28	1
d3-NMeFOSA	79		25 - 150	06/22/23 04:56	06/23/23 15:28	1
d5-NEtFOSA	84		25 - 150	06/22/23 04:56	06/23/23 15:28	1
d-N-MeFOSA-M	74		10 - 150	06/22/23 04:56	06/23/23 15:28	1
d-N-EtFOSA-M	67		10 - 150	06/22/23 04:56	06/23/23 15:28	1
d7-N-MeFOSE-M	62		10 - 150	06/22/23 04:56	06/23/23 15:28	1
d9-N-EtFOSE-M	67		10 - 150	06/22/23 04:56	06/23/23 15:28	1
M2-4:2 FTS	93		25 - 150	06/22/23 04:56	06/23/23 15:28	1
M2-6:2 FTS	100		25 - 150	06/22/23 04:56	06/23/23 15:28	1
M2-8:2 FTS	114		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C3 HFPO-DA	90		25 - 150	06/22/23 04:56	06/23/23 15:28	1
13C2 10:2 FTS	106		25 - 150	06/22/23 04:56	06/23/23 15:28	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Qualifiers

LCMS

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-685044/1-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 685044

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		06/22/23 04:56	06/23/23 13:02	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		06/22/23 04:56	06/23/23 13:02	1
NEtFOSA	<0.87		2.0	0.87	ng/L		06/22/23 04:56	06/23/23 13:02	1
NMeFOSA	<0.43		2.0	0.43	ng/L		06/22/23 04:56	06/23/23 13:02	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		06/22/23 04:56	06/23/23 13:02	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		06/22/23 04:56	06/23/23 13:02	1
NMeFOSE	<1.4		4.0	1.4	ng/L		06/22/23 04:56	06/23/23 13:02	1
NEtFOSE	<0.85		2.0	0.85	ng/L		06/22/23 04:56	06/23/23 13:02	1
4:2 FTS	<0.24		2.0	0.24	ng/L		06/22/23 04:56	06/23/23 13:02	1
6:2 FTS	<2.5		5.0	2.5	ng/L		06/22/23 04:56	06/23/23 13:02	1
8:2 FTS	<0.46		2.0	0.46	ng/L		06/22/23 04:56	06/23/23 13:02	1
10:2 FTS	<0.67		2.0	0.67	ng/L		06/22/23 04:56	06/23/23 13:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		06/22/23 04:56	06/23/23 13:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		06/22/23 04:56	06/23/23 13:02	1
F-53B Major	<0.24		2.0	0.24	ng/L		06/22/23 04:56	06/23/23 13:02	1
F-53B Minor	<0.32		2.0	0.32	ng/L		06/22/23 04:56	06/23/23 13:02	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	94		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C5 PFPeA	99		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 PFHxA	97		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C4 PFHpA	100		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C4 PFOA	100		25 - 150	06/22/23 04:56	06/23/23 13:02	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

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

Lab Sample ID: MB 320-685044/1-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 685044

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	104		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 PFDA	108		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 PFUnA	111		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 PFDoA	101		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 PFTeDA	91		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 PFHxDA	99		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C3 PFBS	103		25 - 150	06/22/23 04:56	06/23/23 13:02	1
18O2 PFHxS	106		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C4 PFOS	109		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C8 FOSA	102		10 - 150	06/22/23 04:56	06/23/23 13:02	1
d3-NMeFOSAA	90		25 - 150	06/22/23 04:56	06/23/23 13:02	1
d5-NEtFOSAA	92		25 - 150	06/22/23 04:56	06/23/23 13:02	1
d-N-MeFOSA-M	75		10 - 150	06/22/23 04:56	06/23/23 13:02	1
d-N-EtFOSA-M	75		10 - 150	06/22/23 04:56	06/23/23 13:02	1
d7-N-MeFOSE-M	77		10 - 150	06/22/23 04:56	06/23/23 13:02	1
d9-N-EtFOSE-M	76		10 - 150	06/22/23 04:56	06/23/23 13:02	1
M2-4:2 FTS	101		25 - 150	06/22/23 04:56	06/23/23 13:02	1
M2-6:2 FTS	109		25 - 150	06/22/23 04:56	06/23/23 13:02	1
M2-8:2 FTS	134		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C3 HFPO-DA	91		25 - 150	06/22/23 04:56	06/23/23 13:02	1
13C2 10:2 FTS	128		25 - 150	06/22/23 04:56	06/23/23 13:02	1

Lab Sample ID: LCS 320-685044/2-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 685044

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	39.3		ng/L		98	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		103	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	38.0		ng/L		95	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.1		ng/L		100	60 - 135
Perfluorononanoic acid (PFNA)	40.0	42.5		ng/L		106	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.8		ng/L		104	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.2		ng/L		100	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.3		ng/L		101	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	39.2		ng/L		98	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.5		ng/L		109	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.5		ng/L		106	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	37.9		ng/L		95	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	35.9		ng/L		101	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	39.8		ng/L		106	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

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

Lab Sample ID: LCS 320-685044/2-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 685044

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.9		ng/L		107	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.4		ng/L		106	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	37.2		ng/L		100	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	39.0		ng/L		101	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	36.3		ng/L		94	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.7		ng/L		92	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.7		ng/L		102	60 - 135
NEtFOSA	40.0	41.5		ng/L		104	60 - 135
NMeFOSA	40.0	43.7		ng/L		109	60 - 135
NMeFOSAA	40.0	39.8		ng/L		99	60 - 135
NEtFOSAA	40.0	45.5		ng/L		114	60 - 135
NMeFOSE	40.0	44.4		ng/L		111	60 - 135
NEtFOSE	40.0	44.5		ng/L		111	60 - 135
4:2 FTS	37.5	44.0		ng/L		117	60 - 135
6:2 FTS	38.1	40.1		ng/L		105	60 - 135
8:2 FTS	38.4	40.8		ng/L		106	60 - 135
10:2 FTS	38.6	37.6		ng/L		97	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	37.3		ng/L		99	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.5		ng/L		101	60 - 135
F-53B Major	37.4	36.2		ng/L		97	60 - 135
F-53B Minor	37.8	34.9		ng/L		92	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	95		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	93		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	96		25 - 150
13C5 PFNA	100		25 - 150
13C2 PFDA	101		25 - 150
13C2 PFUnA	113		25 - 150
13C2 PFDoA	99		25 - 150
13C2 PFTeDA	94		25 - 150
13C2 PFHxDA	90		25 - 150
13C3 PFBS	101		25 - 150
18O2 PFHxS	96		25 - 150
13C4 PFOS	103		25 - 150
13C8 FOSA	100		10 - 150
d3-NMeFOSAA	88		25 - 150
d5-NEtFOSAA	88		25 - 150
d-N-MeFOSA-M	65		10 - 150
d-N-EtFOSA-M	71		10 - 150

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

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

Lab Sample ID: LCS 320-685044/2-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 685044

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	72		10 - 150
d9-N-EtFOSE-M	68		10 - 150
M2-4:2 FTS	92		25 - 150
M2-6:2 FTS	104		25 - 150
M2-8:2 FTS	111		25 - 150
13C3 HFPO-DA	83		25 - 150
13C2 10:2 FTS	114		25 - 150

Lab Sample ID: LCSD 320-685044/3-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 685044

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	40.0	47.0		ng/L		118	60 - 135	10	30
Perfluoropentanoic acid (PFPeA)	40.0	44.5		ng/L		111	60 - 135	12	30
Perfluorohexanoic acid (PFHxA)	40.0	38.3		ng/L		96	60 - 135	7	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.5		ng/L		101	60 - 135	6	30
Perfluorooctanoic acid (PFOA)	40.0	40.6		ng/L		101	60 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	42.3		ng/L		106	60 - 135	1	30
Perfluorodecanoic acid (PFDA)	40.0	42.0		ng/L		105	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.0		ng/L		97	60 - 135	3	30
Perfluorododecanoic acid (PFDoA)	40.0	44.6		ng/L		112	60 - 135	10	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.0		ng/L		103	60 - 135	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	43.1		ng/L		108	60 - 135	1	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	41.9		ng/L		105	60 - 135	2	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	36.6		ng/L		92	60 - 135	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	37.6		ng/L		106	60 - 135	5	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	38.2		ng/L		102	60 - 135	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.3		ng/L		100	60 - 135	7	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.1		ng/L		105	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.2		ng/L		100	60 - 135	0	30
Perfluorononanesulfonic acid (PFNS)	38.5	38.7		ng/L		101	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.2		ng/L		99	60 - 135	5	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	34.8		ng/L		90	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)	40.0	40.0		ng/L		100	60 - 135	2	30
NEtFOSA	40.0	43.1		ng/L		108	60 - 135	4	30
NMeFOSA	40.0	41.6		ng/L		104	60 - 135	5	30
NMeFOSAA	40.0	44.1		ng/L		110	60 - 135	10	30

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

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

Lab Sample ID: LCSD 320-685044/3-A
Matrix: Water
Analysis Batch: 685474

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 685044

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	46.5		ng/L		116	60 - 135	2	30
NMeFOSE	40.0	41.5		ng/L		104	60 - 135	7	30
NEtFOSE	40.0	44.2		ng/L		111	60 - 135	1	30
4:2 FTS	37.5	37.6		ng/L		100	60 - 135	15	30
6:2 FTS	38.1	42.1		ng/L		111	60 - 135	5	30
8:2 FTS	38.4	39.3		ng/L		102	60 - 135	4	30
10:2 FTS	38.6	33.2		ng/L		86	60 - 135	12	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	37.1		ng/L		98	60 - 135	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.2		ng/L		100	60 - 135	1	30
F-53B Major	37.4	38.2		ng/L		102	60 - 135	5	30
F-53B Minor	37.8	35.4		ng/L		94	60 - 135	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	90		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	96		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	100		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFUnA	111		25 - 150
13C2 PFDoA	103		25 - 150
13C2 PFTeDA	100		25 - 150
13C2 PFHxDA	96		25 - 150
13C3 PFBS	100		25 - 150
18O2 PFHxS	103		25 - 150
13C4 PFOS	103		25 - 150
13C8 FOSA	104		10 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	91		25 - 150
d-N-MeFOSA-M	59		10 - 150
d-N-EtFOSA-M	61		10 - 150
d7-N-MeFOSE-M	77		10 - 150
d9-N-EtFOSE-M	70		10 - 150
M2-4:2 FTS	111		25 - 150
M2-6:2 FTS	109		25 - 150
M2-8:2 FTS	125		25 - 150
13C3 HFPO-DA	92		25 - 150
13C2 10:2 FTS	135		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Client Sample ID: V-200-A
Date Collected: 06/19/23 10:30
Date Received: 06/20/23 09:30

Lab Sample ID: 500-235510-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			685044	GAT	EET SAC	06/22/23 04:56
Total/NA	Analysis	537 (modified)		1	685474	S1M	EET SAC	06/23/23 15:17

Client Sample ID: V-900-A
Date Collected: 06/19/23 10:35
Date Received: 06/20/23 09:30

Lab Sample ID: 500-235510-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			685044	GAT	EET SAC	06/22/23 04:56
Total/NA	Analysis	537 (modified)		1	685474	S1M	EET SAC	06/23/23 15:28

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-235510-1

SDG Number:

Login Number: 235510

List Number: 1

Creator: Fisher, Jamyiah L

List Source: Eurofins Sacramento

List Creation: 06/21/23 08:38 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2077447
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Environment Testing
TestAmerica

Sacramento
Sample Receiving Notes



500-235510 Field Sheet

Tracking #: 6374 2028 3260

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: L10 Corr. Factor: (+/-) _____ °C
Ice _____ Wet _____ Gel _____ Other _____
Cooler Custody Seal: 2077447
Cooler ID: _____
Temp Observed: 0.8 °C Corrected: 0.8 °C
From: Temp Blank Sample

Opening/Processing The Shipment **Yes** **No** **NA**
Cooler compromised/tampered with?
Cooler Temperature is acceptable?
Frozen samples show signs of thaw?
Initials: JF Date: 6/20/23

Unpacking/Labeling The Samples **Yes** **No** **NA**
COC is complete w/o discrepancies?
Samples compromised/tampered with?
Containers are not broken or leaking?
Sample custody seal?
Sample containers have legible labels?
Sample date/times are provided?
Appropriate containers are used?
Sample bottles are completely filled?
Sample preservatives verified?
Is the Field Sampler's name on COC?
Samples require splitting/compositing?
Samples w/o discrepancies?
Zero headspace?*
Alkalinity has no headspace?
Perchlorate has headspace?
(Methods 314, 331, 6850)
Multiphasic samples are not present?

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JF Date: 6/21/23

Notes: _____

Trizma Lot #(s): _____

Login Completion **Yes** **No** **NA**
Receipt Temperature on COC?
Samples received within hold time?
NCM Filed?
Log Release checked in TALS?

Initials: JF Date: 6/21/23



Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-235510-1	V-200-A	92	92	89	100	98	103	104	105
500-235510-2	V-900-A	94	98	98	99	100	99	98	99
LCS 320-685044/2-A	Lab Control Sample	95	93	93	102	96	100	101	113
LCSD 320-685044/3-A	Lab Control Sample Dup	90	93	96	99	100	105	105	111
MB 320-685044/1-A	Method Blank	94	99	97	100	100	104	108	111

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-235510-1	V-200-A	96	93	87	95	94	95	103	82
500-235510-2	V-900-A	91	87	69	94	94	95	105	79
LCS 320-685044/2-A	Lab Control Sample	99	94	90	101	96	103	100	88
LCSD 320-685044/3-A	Lab Control Sample Dup	103	100	96	100	103	103	104	83
MB 320-685044/1-A	Method Blank	101	91	99	103	106	109	102	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-235510-1	V-200-A	90	76	74	67	71	100	102	114
500-235510-2	V-900-A	84	74	67	62	67	93	100	114
LCS 320-685044/2-A	Lab Control Sample	88	65	71	72	68	92	104	111
LCSD 320-685044/3-A	Lab Control Sample Dup	91	59	61	77	70	111	109	125
MB 320-685044/1-A	Method Blank	92	75	75	77	76	101	109	134

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-235510-1	V-200-A	86	114
500-235510-2	V-900-A	90	106
LCS 320-685044/2-A	Lab Control Sample	83	114
LCSD 320-685044/3-A	Lab Control Sample Dup	92	135
MB 320-685044/1-A	Method Blank	91	128

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235510-1

dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 7/3/2023 5:03:00 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 WPDES

JOB NUMBER

500-235848-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Job ID: 500-235848-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-235848-1

Receipt

The samples were received on 6/27/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7° C.

LCMS

Method 537 (modified): The laboratory control sample and laboratory control sample duplicate (LCS/LCSD) for preparation batch 320-686673 and analytical batch 320-687139 recovered below the control limit for the following analyte: Perfluoro-n-octadecanoic acid (PFODA). This is a legacy analyte for the method and the state of Wisconsin is no longer concerned with its recovery; therefore, the data have been reported.

500-235848-1, 500-235848-2, LCS 320-686673/2-A and LCSD 320-686673/3-A

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

Organic Prep

Method 3535: The following sample was light yellow and observed to have floating particulates present in the sample bottle: 500-235848-1.

Method: 3535_PFC_28D

Matrix: Aqueous

preparation batch 320-686673

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-686673.

Method: 3535_PFC_28D

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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



Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-235848-1	V-200-A	Water	06/26/23 14:00	06/27/23 09:30
500-235848-2	V-900-A	Water	06/26/23 14:05	06/27/23 09:30

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Client Sample ID: V-200-A

Lab Sample ID: 500-235848-1

Date Collected: 06/26/23 14:00

Matrix: Water

Date Received: 06/27/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	67		4.8	2.3	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoropentanoic acid (PFPeA)	230		1.9	0.47	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorohexanoic acid (PFHxA)	180		1.9	0.56	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoroheptanoic acid (PFHpA)	110		1.9	0.24	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorooctanoic acid (PFOA)	300		1.9	0.82	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorononanoic acid (PFNA)	34		1.9	0.26	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorodecanoic acid (PFDA)	21		1.9	0.30	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoroundecanoic acid (PFUnA)	10		1.9	1.1	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorododecanoic acid (PFDoA)	1.5	J	1.9	0.53	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.85		1.9	0.85	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.90	*	1.9	0.90	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorobutanesulfonic acid (PFBS)	3.3		1.9	0.19	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoropentanesulfonic acid (PFPeS)	0.96	J	1.9	0.29	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorohexanesulfonic acid (PFHxS)	24		1.9	0.55	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	1.9	0.18	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorooctanesulfonic acid (PFOS)	130		1.9	0.52	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluoronanesulfonic acid (PFNS)	<0.36		1.9	0.36	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorododecanesulfonic acid (PFDoS)	<0.93		1.9	0.93	ng/L		06/28/23 11:41	06/30/23 03:01	1
Perfluorooctanesulfonamide (FOSA)	6.7		1.9	0.94	ng/L		06/28/23 11:41	06/30/23 03:01	1
NEtFOSA	<0.84		1.9	0.84	ng/L		06/28/23 11:41	06/30/23 03:01	1
NMeFOSA	<0.41		1.9	0.41	ng/L		06/28/23 11:41	06/30/23 03:01	1
NMeFOSAA	<1.2		4.8	1.2	ng/L		06/28/23 11:41	06/30/23 03:01	1
NEtFOSAA	1.5	J	4.8	1.2	ng/L		06/28/23 11:41	06/30/23 03:01	1
NMeFOSE	<1.3		3.8	1.3	ng/L		06/28/23 11:41	06/30/23 03:01	1
NEtFOSE	<0.82		1.9	0.82	ng/L		06/28/23 11:41	06/30/23 03:01	1
4:2 FTS	2.4		1.9	0.23	ng/L		06/28/23 11:41	06/30/23 03:01	1
6:2 FTS	310		4.8	2.4	ng/L		06/28/23 11:41	06/30/23 03:01	1
8:2 FTS	290		1.9	0.44	ng/L		06/28/23 11:41	06/30/23 03:01	1
10:2 FTS	24		1.9	0.64	ng/L		06/28/23 11:41	06/30/23 03:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		06/28/23 11:41	06/30/23 03:01	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.4		3.8	1.4	ng/L		06/28/23 11:41	06/30/23 03:01	1
F-53B Major	<0.23		1.9	0.23	ng/L		06/28/23 11:41	06/30/23 03:01	1
F-53B Minor	<0.31		1.9	0.31	ng/L		06/28/23 11:41	06/30/23 03:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150				06/28/23 11:41	06/30/23 03:01	1
13C5 PFPeA	97		25 - 150				06/28/23 11:41	06/30/23 03:01	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Client Sample ID: V-200-A

Lab Sample ID: 500-235848-1

Date Collected: 06/26/23 14:00

Matrix: Water

Date Received: 06/27/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	97		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C4 PFHpA	93		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C4 PFOA	95		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C5 PFNA	98		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C2 PFDA	92		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C2 PFUnA	82		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C2 PFDoA	72		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C2 PFTeDA	66		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C2 PFHxDA	65		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C3 PFBS	97		25 - 150	06/28/23 11:41	06/30/23 03:01	1
18O2 PFHxS	99		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C4 PFOS	99		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C8 FOSA	109		10 - 150	06/28/23 11:41	06/30/23 03:01	1
d3-NMeFOSAA	106		25 - 150	06/28/23 11:41	06/30/23 03:01	1
d5-NEtFOSAA	108		25 - 150	06/28/23 11:41	06/30/23 03:01	1
d-N-MeFOSA-M	70		10 - 150	06/28/23 11:41	06/30/23 03:01	1
d-N-EtFOSA-M	68		10 - 150	06/28/23 11:41	06/30/23 03:01	1
d7-N-MeFOSE-M	68		10 - 150	06/28/23 11:41	06/30/23 03:01	1
d9-N-EtFOSE-M	67		10 - 150	06/28/23 11:41	06/30/23 03:01	1
M2-4:2 FTS	88		25 - 150	06/28/23 11:41	06/30/23 03:01	1
M2-6:2 FTS	68		25 - 150	06/28/23 11:41	06/30/23 03:01	1
M2-8:2 FTS	76		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C3 HFPO-DA	90		25 - 150	06/28/23 11:41	06/30/23 03:01	1
13C2 10:2 FTS	59		25 - 150	06/28/23 11:41	06/30/23 03:01	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Client Sample ID: V-900-A

Lab Sample ID: 500-235848-2

Date Collected: 06/26/23 14:05

Matrix: Water

Date Received: 06/27/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.1	J	4.9	2.3	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoropentanoic acid (PFPeA)	<0.48		1.9	0.48	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorooctanoic acid (PFOA)	<0.82		1.9	0.82	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorotetradecanoic acid (PFTeA)	<0.71		1.9	0.71	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.86		1.9	0.86	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.91	*	1.9	0.91	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoropentanesulfonic acid (PFPeS)	<0.29		1.9	0.29	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorohexanesulfonic acid (PFHxS)	<0.55		1.9	0.55	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorooctanesulfonic acid (PFOS)	<0.52		1.9	0.52	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorononanesulfonic acid (PFNS)	<0.36		1.9	0.36	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorododecanesulfonic acid (PFDoS)	<0.94		1.9	0.94	ng/L		06/28/23 11:41	06/30/23 03:12	1
Perfluorooctanesulfonamide (FOSA)	<0.95		1.9	0.95	ng/L		06/28/23 11:41	06/30/23 03:12	1
NEtFOSA	<0.84		1.9	0.84	ng/L		06/28/23 11:41	06/30/23 03:12	1
NMeFOSA	<0.42		1.9	0.42	ng/L		06/28/23 11:41	06/30/23 03:12	1
NMeFOSAA	<1.2		4.9	1.2	ng/L		06/28/23 11:41	06/30/23 03:12	1
NEtFOSAA	<1.3		4.9	1.3	ng/L		06/28/23 11:41	06/30/23 03:12	1
NMeFOSE	<1.4		3.9	1.4	ng/L		06/28/23 11:41	06/30/23 03:12	1
NEtFOSE	<0.82		1.9	0.82	ng/L		06/28/23 11:41	06/30/23 03:12	1
4:2 FTS	<0.23		1.9	0.23	ng/L		06/28/23 11:41	06/30/23 03:12	1
6:2 FTS	<2.4		4.9	2.4	ng/L		06/28/23 11:41	06/30/23 03:12	1
8:2 FTS	<0.45		1.9	0.45	ng/L		06/28/23 11:41	06/30/23 03:12	1
10:2 FTS	1.2	J	1.9	0.65	ng/L		06/28/23 11:41	06/30/23 03:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.39		1.9	0.39	ng/L		06/28/23 11:41	06/30/23 03:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		3.9	1.5	ng/L		06/28/23 11:41	06/30/23 03:12	1
F-53B Major	<0.23		1.9	0.23	ng/L		06/28/23 11:41	06/30/23 03:12	1
F-53B Minor	<0.31		1.9	0.31	ng/L		06/28/23 11:41	06/30/23 03:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	97		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C5 PFPeA	98		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C2 PFHxA	93		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C4 PFHpA	95		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C4 PFOA	95		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C5 PFNA	95		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C2 PFDA	89		25 - 150	06/28/23 11:41	06/30/23 03:12	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Client Sample ID: V-900-A
Date Collected: 06/26/23 14:05
Date Received: 06/27/23 09:30

Lab Sample ID: 500-235848-2
Matrix: Water

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	86		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C2 PFlDoA	80		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C2 PFlTeDA	72		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C2 PFlHxDA	61		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C3 PFlBS	89		25 - 150	06/28/23 11:41	06/30/23 03:12	1
18O2 PFlHS	95		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C4 PFlOS	91		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C8 FOSA	105		10 - 150	06/28/23 11:41	06/30/23 03:12	1
d3-NMeFOSA	99		25 - 150	06/28/23 11:41	06/30/23 03:12	1
d5-NEtFOSA	112		25 - 150	06/28/23 11:41	06/30/23 03:12	1
d-N-MeFOSA-M	72		10 - 150	06/28/23 11:41	06/30/23 03:12	1
d-N-EtFOSA-M	73		10 - 150	06/28/23 11:41	06/30/23 03:12	1
d7-N-MeFOSE-M	77		10 - 150	06/28/23 11:41	06/30/23 03:12	1
d9-N-EtFOSE-M	79		10 - 150	06/28/23 11:41	06/30/23 03:12	1
M2-4:2 FTS	75		25 - 150	06/28/23 11:41	06/30/23 03:12	1
M2-6:2 FTS	71		25 - 150	06/28/23 11:41	06/30/23 03:12	1
M2-8:2 FTS	74		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C3 HFPO-DA	88		25 - 150	06/28/23 11:41	06/30/23 03:12	1
13C2 10:2 FTS	72		25 - 150	06/28/23 11:41	06/30/23 03:12	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-686673/1-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 686673

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<0.89		2.0	0.89	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoro-n-octadecanoic acid (PFODA)	<0.94		2.0	0.94	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		06/28/23 11:41	06/29/23 23:40	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		06/28/23 11:41	06/29/23 23:40	1
NEtFOSA	<0.87		2.0	0.87	ng/L		06/28/23 11:41	06/29/23 23:40	1
NMeFOSA	<0.43		2.0	0.43	ng/L		06/28/23 11:41	06/29/23 23:40	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		06/28/23 11:41	06/29/23 23:40	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		06/28/23 11:41	06/29/23 23:40	1
NMeFOSE	<1.4		4.0	1.4	ng/L		06/28/23 11:41	06/29/23 23:40	1
NEtFOSE	<0.85		2.0	0.85	ng/L		06/28/23 11:41	06/29/23 23:40	1
4:2 FTS	<0.24		2.0	0.24	ng/L		06/28/23 11:41	06/29/23 23:40	1
6:2 FTS	<2.5		5.0	2.5	ng/L		06/28/23 11:41	06/29/23 23:40	1
8:2 FTS	<0.46		2.0	0.46	ng/L		06/28/23 11:41	06/29/23 23:40	1
10:2 FTS	<0.67		2.0	0.67	ng/L		06/28/23 11:41	06/29/23 23:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		06/28/23 11:41	06/29/23 23:40	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<1.5		4.0	1.5	ng/L		06/28/23 11:41	06/29/23 23:40	1
F-53B Major	<0.24		2.0	0.24	ng/L		06/28/23 11:41	06/29/23 23:40	1
F-53B Minor	<0.32		2.0	0.32	ng/L		06/28/23 11:41	06/29/23 23:40	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	93		25 - 150				06/28/23 11:41	06/29/23 23:40	1
13C5 PFPeA	95		25 - 150				06/28/23 11:41	06/29/23 23:40	1
13C2 PFHxA	90		25 - 150				06/28/23 11:41	06/29/23 23:40	1
13C4 PFHpA	92		25 - 150				06/28/23 11:41	06/29/23 23:40	1
13C4 PFOA	94		25 - 150				06/28/23 11:41	06/29/23 23:40	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

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

Lab Sample ID: MB 320-686673/1-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 686673

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	95		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C2 PFDA	92		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C2 PFUnA	91		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C2 PFDoA	89		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C2 PFTeDA	88		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C2 PFHxDA	83		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C3 PFBS	88		25 - 150	06/28/23 11:41	06/29/23 23:40	1
18O2 PFHxS	83		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C4 PFOS	90		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C8 FOSA	94		10 - 150	06/28/23 11:41	06/29/23 23:40	1
d3-NMeFOSAA	102		25 - 150	06/28/23 11:41	06/29/23 23:40	1
d5-NEtFOSAA	111		25 - 150	06/28/23 11:41	06/29/23 23:40	1
d-N-MeFOSA-M	66		10 - 150	06/28/23 11:41	06/29/23 23:40	1
d-N-EtFOSA-M	68		10 - 150	06/28/23 11:41	06/29/23 23:40	1
d7-N-MeFOSE-M	84		10 - 150	06/28/23 11:41	06/29/23 23:40	1
d9-N-EtFOSE-M	76		10 - 150	06/28/23 11:41	06/29/23 23:40	1
M2-4:2 FTS	81		25 - 150	06/28/23 11:41	06/29/23 23:40	1
M2-6:2 FTS	71		25 - 150	06/28/23 11:41	06/29/23 23:40	1
M2-8:2 FTS	83		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C3 HFPO-DA	89		25 - 150	06/28/23 11:41	06/29/23 23:40	1
13C2 10:2 FTS	78		25 - 150	06/28/23 11:41	06/29/23 23:40	1

Lab Sample ID: LCS 320-686673/2-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 686673

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	Limits
Perfluoropentanoic acid (PFPeA)	40.0	39.6		ng/L		99	60 - 135	
Perfluorohexanoic acid (PFHxA)	40.0	42.3		ng/L		106	60 - 135	
Perfluoroheptanoic acid (PFHpA)	40.0	39.3		ng/L		98	60 - 135	
Perfluorooctanoic acid (PFOA)	40.0	42.8		ng/L		107	60 - 135	
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	60 - 135	
Perfluorodecanoic acid (PFDA)	40.0	40.4		ng/L		101	60 - 135	
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		104	60 - 135	
Perfluorododecanoic acid (PFDoA)	40.0	42.0		ng/L		105	60 - 135	
Perfluorotridecanoic acid (PFTriA)	40.0	41.5		ng/L		104	60 - 135	
Perfluorotetradecanoic acid (PFTeA)	40.0	41.1		ng/L		103	60 - 135	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	41.4		ng/L		104	60 - 135	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	20.9	*	ng/L		52	60 - 135	
Perfluorobutanesulfonic acid (PFBS)	35.5	35.9		ng/L		101	60 - 135	
Perfluoropentanesulfonic acid (PFPeS)	37.6	37.8		ng/L		101	60 - 135	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

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

Lab Sample ID: LCS 320-686673/2-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 686673

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.0		ng/L		101	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	37.9		ng/L		99	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	36.0		ng/L		97	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	37.8		ng/L		98	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.3		ng/L		97	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.0		ng/L		90	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	39.3		ng/L		98	60 - 135
NEtFOSA	40.0	42.4		ng/L		106	60 - 135
NMeFOSA	40.0	43.2		ng/L		108	60 - 135
NMeFOSAA	40.0	43.2		ng/L		108	60 - 135
NEtFOSAA	40.0	38.8		ng/L		97	60 - 135
NMeFOSE	40.0	40.9		ng/L		102	60 - 135
NEtFOSE	40.0	42.9		ng/L		107	60 - 135
4:2 FTS	37.5	36.9		ng/L		98	60 - 135
6:2 FTS	38.1	39.6		ng/L		104	60 - 135
8:2 FTS	38.4	41.7		ng/L		109	60 - 135
10:2 FTS	38.6	35.6		ng/L		92	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.5		ng/L		110	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	60 - 135
F-53B Major	37.4	34.6		ng/L		93	60 - 135
F-53B Minor	37.8	33.8		ng/L		89	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	96		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	91		25 - 150
13C4 PFHpA	100		25 - 150
13C4 PFOA	88		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	93		25 - 150
13C2 PFUnA	88		25 - 150
13C2 PFDoA	89		25 - 150
13C2 PFTeDA	86		25 - 150
13C2 PFHxDA	83		25 - 150
13C3 PFBS	94		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	95		25 - 150
13C8 FOSA	93		10 - 150
d3-NMeFOSAA	106		25 - 150
d5-NEtFOSAA	114		25 - 150
d-N-MeFOSA-M	73		10 - 150
d-N-EtFOSA-M	69		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

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

Lab Sample ID: LCS 320-686673/2-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 686673

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	82		10 - 150
d9-N-EtFOSE-M	77		10 - 150
M2-4:2 FTS	82		25 - 150
M2-6:2 FTS	79		25 - 150
M2-8:2 FTS	76		25 - 150
13C3 HFPO-DA	85		25 - 150
13C2 10:2 FTS	81		25 - 150

Lab Sample ID: LCSD 320-686673/3-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 686673

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	40.0	42.5		ng/L		106	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)	40.0	38.5		ng/L		96	60 - 135	3	30
Perfluorohexanoic acid (PFHxA)	40.0	43.7		ng/L		109	60 - 135	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.2		ng/L		103	60 - 135	5	30
Perfluorooctanoic acid (PFOA)	40.0	40.2		ng/L		101	60 - 135	6	30
Perfluorononanoic acid (PFNA)	40.0	40.5		ng/L		101	60 - 135	3	30
Perfluorodecanoic acid (PFDA)	40.0	39.7		ng/L		99	60 - 135	2	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.5		ng/L		99	60 - 135	5	30
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	60 - 135	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.5		ng/L		104	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	41.4		ng/L		104	60 - 135	1	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	39.9		ng/L		100	60 - 135	4	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	21.6	*	ng/L		54	60 - 135	3	30
Perfluorobutanesulfonic acid (PFBS)	35.5	37.1		ng/L		104	60 - 135	3	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	37.4		ng/L		99	60 - 135	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	32.7		ng/L		90	60 - 135	12	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	36.0		ng/L		94	60 - 135	5	30
Perfluorooctanesulfonic acid (PFOS)	37.2	34.7		ng/L		93	60 - 135	4	30
Perfluorononanesulfonic acid (PFNS)	38.5	38.0		ng/L		99	60 - 135	0	30
Perfluorodecanesulfonic acid (PFDS)	38.6	35.3		ng/L		92	60 - 135	5	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	35.9		ng/L		92	60 - 135	2	30
Perfluorooctanesulfonamide (FOSA)	40.0	38.3		ng/L		96	60 - 135	3	30
NEtFOSA	40.0	39.5		ng/L		99	60 - 135	7	30
NMeFOSA	40.0	41.2		ng/L		103	60 - 135	5	30
NMeFOSAA	40.0	42.0		ng/L		105	60 - 135	3	30

Eurofins Chicago

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

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

Lab Sample ID: LCSD 320-686673/3-A
Matrix: Water
Analysis Batch: 687139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 686673

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	38.9		ng/L		97	60 - 135	0	30
NMeFOSE	40.0	39.7		ng/L		99	60 - 135	3	30
NEtFOSE	40.0	38.4		ng/L		96	60 - 135	11	30
4:2 FTS	37.5	31.7		ng/L		84	60 - 135	15	30
6:2 FTS	38.1	40.9		ng/L		108	60 - 135	3	30
8:2 FTS	38.4	36.4		ng/L		95	60 - 135	14	30
10:2 FTS	38.6	34.7		ng/L		90	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.8		ng/L		108	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.4		ng/L		101	60 - 135	4	30
F-53B Major	37.4	34.7		ng/L		93	60 - 135	0	30
F-53B Minor	37.8	33.8		ng/L		89	60 - 135	0	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	95		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	88		25 - 150
13C4 PFHpA	94		25 - 150
13C4 PFOA	91		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	90		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	88		25 - 150
13C2 PFTeDA	84		25 - 150
13C2 PFHxDA	82		25 - 150
13C3 PFBS	90		25 - 150
18O2 PFHxS	96		25 - 150
13C4 PFOS	94		25 - 150
13C8 FOSA	97		10 - 150
d3-NMeFOSAA	108		25 - 150
d5-NEtFOSAA	109		25 - 150
d-N-MeFOSA-M	76		10 - 150
d-N-EtFOSA-M	77		10 - 150
d7-N-MeFOSE-M	82		10 - 150
d9-N-EtFOSE-M	83		10 - 150
M2-4:2 FTS	85		25 - 150
M2-6:2 FTS	76		25 - 150
M2-8:2 FTS	81		25 - 150
13C3 HFPO-DA	81		25 - 150
13C2 10:2 FTS	82		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Client Sample ID: V-200-A
Date Collected: 06/26/23 14:00
Date Received: 06/27/23 09:30

Lab Sample ID: 500-235848-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			686673	SEY	EET SAC	06/28/23 11:41
Total/NA	Analysis	537 (modified)		1	687139	C1P	EET SAC	06/30/23 03:01

Client Sample ID: V-900-A
Date Collected: 06/26/23 14:05
Date Received: 06/27/23 09:30

Lab Sample ID: 500-235848-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			686673	SEY	EET SAC	06/28/23 11:41
Total/NA	Analysis	537 (modified)		1	687139	C1P	EET SAC	06/30/23 03:12

Laboratory References:

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



Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

Client Contact	Email: N/A	Project Manager: Lisa Rutkowski
Arcadis U.S., Inc.	Tel/Fax: N/A	Sampler: Jacob Ramsey
126 North Jefferson Street, Suite 400		Lab Contact: Sandle Fredrick
Milwaukee, WI 53202		Date: 6-26-23
Phone		Carrier: FedEx
FAX		COC No.: 1 of 1 COCs

Analysis Turnaround Time

CALENDAR DAYS WORKING DAYS

TAT if different from Below _____

2 weeks

1 week

2 days

1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform MS / MSD (Y/N)		EPA 537 Modified (36 Compounds)		Sample Specific Notes:
						Y	N	Y	N	Y	N	
V-200-A	6-26-23	1400	G	W	2	N	N	N	N	X	X	System Influent
V-900-A	6-26-23	1405	G	W	2	N	N	N	N	X	X	System Effluent



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:

7-Day TAT Max or Prelim Report by Day 7

5 day - TAT

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Custody Seal No.:	Cooler Temp. (°C): Obs'd: 3.7	Therm ID No.: 610
Relinquished by: Jacob Ramsey	Received by: Sandle Fredrick	Date/Time: 6-26-23/1400
Relinquished by:	Received by:	Date/Time: 6/27/23 930
Relinquished by:	Received in Laboratory by:	Date/Time:

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-235848-1

SDG Number:

Login Number: 235848

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 06/27/23 07:35 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2159420
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.7C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-235848-1	V-200-A	88	97	97	93	95	98	92	82
500-235848-2	V-900-A	97	98	93	95	95	95	89	86
LCS 320-686673/2-A	Lab Control Sample	96	98	91	100	88	96	93	88
LCSD 320-686673/3-A	Lab Control Sample Dup	95	96	88	94	91	97	90	96
MB 320-686673/1-A	Method Blank	93	95	90	92	94	95	92	91

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-235848-1	V-200-A	72	66	65	97	99	99	109	106
500-235848-2	V-900-A	80	72	61	89	95	91	105	99
LCS 320-686673/2-A	Lab Control Sample	89	86	83	94	92	95	93	106
LCSD 320-686673/3-A	Lab Control Sample Dup	88	84	82	90	96	94	97	108
MB 320-686673/1-A	Method Blank	89	88	83	88	83	90	94	102

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-235848-1	V-200-A	108	70	68	68	67	88	68	76
500-235848-2	V-900-A	112	72	73	77	79	75	71	74
LCS 320-686673/2-A	Lab Control Sample	114	73	69	82	77	82	79	76
LCSD 320-686673/3-A	Lab Control Sample Dup	109	76	77	82	83	85	76	81
MB 320-686673/1-A	Method Blank	111	66	68	84	76	81	71	83

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-235848-1	V-200-A	90	59
500-235848-2	V-900-A	88	72
LCS 320-686673/2-A	Lab Control Sample	85	81
LCSD 320-686673/3-A	Lab Control Sample Dup	81	82
MB 320-686673/1-A	Method Blank	89	78

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 WPDES

Job ID: 500-235848-1

dEtFOSA = d-N-EtFOSA-M

NMFM = d7-N-MeFOSE-M

NEFM = d9-N-EtFOSE-M

M242FTS = M2-4:2 FTS

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

HFPODA = 13C3 HFPO-DA

M102FTS = 13C2 10:2 FTS

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Appendix C

Ditch A Flow Monitoring and Reporting Methods

Ditch A Flow Monitoring and Reporting Methods – Revised October 2023

Background

Per the Wisconsin Department of Natural Resources' (WDNR's) request in a letter dated April 20, 2021, Tyco Fire Products LP (Tyco) will collect the data outlined below as part of the Operation, Maintenance, and Long-Term Monitoring Plan (OM&M Plan). Calculation methods for each parameter are provided herein.

- Record or estimate the stream flow in Ditch A during each weekly monitoring event.
- Record or estimate the duration of Ditch A check dam overtopping events and the depth of flow above the check dam.
- Collect a per- and polyfluoroalkyl substances (PFAS) sample from the surface water in Ditch A at location downstream of the treatment system at least once per month. Use the 36 PFAS analyte list Tyco is required to report.

Tyco submitted the OM&M Plan for the Ditch A treatment system on July 19, 2021. Revisions to Appendix B: Ditch A Flow Monitoring and Reporting Methods were requested by WDNR in a letter dated October 29, 2021. The requested revisions were incorporated into a submittal dated November 18, 2021. Subsequent revisions made to the data tabulated in the Semi-Annual Operation, Maintenance, and Optimization Progress Reports (October 2022 revision) and flow descriptions (April 2023 and September 2023 revisions) are included herein. This document serves as a replacement for Appendix B of the Ditch A treatment system OM&M Plan.

Ditch A Treatment System Flow Rate

Electromagnetic flow meters FIT-05 and FIT-07 are installed immediately upstream of the two granular activated carbon (GAC) treatment trains (herein referred to as the 100-train and 200-train, respectively) that serve as the primary method of PFAS removal in the Ditch A Treatment System. The flow rates and totalizer readings from these flow meters are recorded by the supervisory control and data acquisition (SCADA) system on an hourly basis. The Ditch A treatment system flow rate calculation is described by Equation 1, where V_{System} is the total daily volume processed by the Ditch A treatment system in gallons, V_{100} is the daily totalized volume recorded by FIT-05 in gallons, and V_{200} is the daily totalized volume recorded by FIT-07 in gallons. The daily values will be summed and reported on a weekly basis in the Semi-Annual Operation, Maintenance, and Optimization Progress Reports. The flow rate will be reported on a daily basis in the monthly electronic discharge monitoring reports (eDMRs).

$$V_{System} = V_{100} + V_{200} \quad (1)$$

Ditch A Stream Flow Rate

A permeable check dam constructed of Wisconsin Department of Transportation heavy rip rap ($D_{50} = 1.33$ feet) and sandbags to create a uniform elevation along the top is installed in Ditch A between the system intake and outfall. Pressure transducers installed in stilling wells located upstream and downstream of the check dam record surface water levels on an hourly basis by the SCADA system. The Ditch A stream flow rate will be estimated as

described below. The daily values will be summed and reported on a weekly basis in the Semi-Annual Operation, Maintenance, and Optimization Progress Reports.

Condition 1: Normal Operation (No Overtopping of Check Dam)

The Ditch A treatment system operates at 100 gallons per minute under normal operating conditions. However, the system may be operated at lower flow rates during low flow or freezing conditions. While the upstream surface water level is below the height of the check dam (as measured by the upstream stilling well), the Ditch A stream flow rate will be estimated to be equal to the system operating flow rate. This relationship is described by Equation 2, where V_{Stream} is the estimated Ditch A daily stream flow volume in gallons and V_{System} is as described in Equation 1.

$$V_{Stream} = V_{System} \quad (2)$$

Condition 2: Overtopping of Check Dam

Overtopping of the Ditch A check dam occurs infrequently throughout the year (seven occurrences in 2020) and is typically resolved within 24 hours. In the event that the upstream surface water level rises above the height of the check dam and the downstream surface water level elevation (as indicated by the levels in the stilling wells), the duration of the overtopping event and the depth of flow above the check dam will be recorded. Overtopping events have historically been infrequent and for short durations. Therefore, flow estimates will be recorded as greater than the Ditch A treatment system flow rate, as described by Equation 3, where V_{Stream} is the estimated Ditch A daily stream flow volume in gallons and V_{System} is as described in Equation 1.

$$V_{Stream} > V_{System} \quad (3)$$

Low Flow Adjustments

The treatment system flow rate will be decreased as necessary during low flow conditions to maintain continuous operation of the treatment system. In the event that Ditch A is dewatered to the extent that continuous operation cannot be maintained, the treatment system will be disabled via the human-machine interface (HMI). Water levels will be monitored on a daily basis and the treatment system will be re-enabled once sufficient flow is present to resume normal operation.

Appendix D

Ditch A Downstream Surface Water Analytical Results

ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 4/11/2023 10:19:01 AM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 Ditch A SW

JOB NUMBER

500-231577-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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4/11/2023 10:19:01 AM

Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Job ID: 500-231577-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-231577-1

Comments

No additional comments.

Receipt

The samples were received on 4/1/2023 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): 500-231577-3. Sample 3, both containers have ID as Field Blank (3-31-23).

LCMS

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-665717 recovered below the low control limit for Perfluoro-n-octadecanoic acid (PFODA). The samples associated with this CCV were non-detects for the affected analytes. The analyte is non-controlled/monitored by the client; therefore the data have been reported: 500-231577-1, 500-231577-2, 500-231577-3 and CCV 320-665717/13.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-665309.

preparation batch 320-665309

Method: PFC_IDA_WI

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-231577-1	SW-40 (3-31-23)	Water	03/31/23 11:40	04/01/23 09:15
500-231577-2	DUP-01-A (3-31-23)	Water	03/31/23 00:00	04/01/23 09:15
500-231577-3	FIELD BLANK-A (3-31-23)	Water	03/31/23 11:50	04/01/23 09:15

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: SW-40 (3-31-23)

Lab Sample ID: 500-231577-1

Date Collected: 03/31/23 11:40

Matrix: Water

Date Received: 04/01/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	49		4.5	2.2	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoropentanoic acid (PFPeA)	160		1.8	0.44	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorohexanoic acid (PFHxA)	100		1.8	0.52	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoroheptanoic acid (PFHpA)	99		1.8	0.22	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorooctanoic acid (PFOA)	150		1.8	0.76	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorononanoic acid (PFNA)	24		1.8	0.24	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorodecanoic acid (PFDA)	16		1.8	0.28	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoroundecanoic acid (PFUnA)	5.3		1.8	0.99	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorododecanoic acid (PFDoA)	0.89	J	1.8	0.49	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.80	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoropentanesulfonic acid (PFPeS)	1.2	J	1.8	0.27	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorohexanesulfonic acid (PFHxS)	29		1.8	0.51	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoroheptanesulfonic acid (PFHpS)	0.78	J	1.8	0.17	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorooctanesulfonic acid (PFOS)	62		1.8	0.48	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluoronanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		04/02/23 19:18	04/05/23 16:47	1
Perfluorooctanesulfonamide (FOSA)	1.4	J	1.8	0.88	ng/L		04/02/23 19:18	04/05/23 16:47	1
NEtFOSA	<1.8		1.8	0.78	ng/L		04/02/23 19:18	04/05/23 16:47	1
NMeFOSA	<1.8		1.8	0.39	ng/L		04/02/23 19:18	04/05/23 16:47	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		04/02/23 19:18	04/05/23 16:47	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		04/02/23 19:18	04/05/23 16:47	1
NMeFOSE	<3.6		3.6	1.3	ng/L		04/02/23 19:18	04/05/23 16:47	1
NEtFOSE	<1.8		1.8	0.76	ng/L		04/02/23 19:18	04/05/23 16:47	1
4:2 FTS	1.6	J	1.8	0.22	ng/L		04/02/23 19:18	04/05/23 16:47	1
6:2 FTS	220		4.5	2.2	ng/L		04/02/23 19:18	04/05/23 16:47	1
8:2 FTS	56		1.8	0.41	ng/L		04/02/23 19:18	04/05/23 16:47	1
10:2 FTS	9.6		1.8	0.60	ng/L		04/02/23 19:18	04/05/23 16:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		04/02/23 19:18	04/05/23 16:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.3	ng/L		04/02/23 19:18	04/05/23 16:47	1
F-53B Major	<1.8		1.8	0.22	ng/L		04/02/23 19:18	04/05/23 16:47	1
F-53B Minor	<1.8		1.8	0.29	ng/L		04/02/23 19:18	04/05/23 16:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	101		25 - 150				04/02/23 19:18	04/05/23 16:47	1
13C5 PFPeA	99		25 - 150				04/02/23 19:18	04/05/23 16:47	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: SW-40 (3-31-23)

Lab Sample ID: 500-231577-1

Date Collected: 03/31/23 11:40

Matrix: Water

Date Received: 04/01/23 09:15

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	97		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C4 PFHpA	96		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C4 PFOA	101		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C5 PFNA	101		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C2 PFDA	91		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C2 PFUnA	95		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C2 PFDoA	103		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C2 PFTeDA	94		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C2 PFHxDA	75		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C3 PFBS	92		25 - 150	04/02/23 19:18	04/05/23 16:47	1
18O2 PFHxS	96		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C4 PFOS	91		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C8 FOSA	96		10 - 150	04/02/23 19:18	04/05/23 16:47	1
d3-NMeFOSAA	77		25 - 150	04/02/23 19:18	04/05/23 16:47	1
d5-NEtFOSAA	89		25 - 150	04/02/23 19:18	04/05/23 16:47	1
d-N-MeFOSA-M	86		10 - 150	04/02/23 19:18	04/05/23 16:47	1
d-N-EtFOSA-M	86		10 - 150	04/02/23 19:18	04/05/23 16:47	1
d7-N-MeFOSE-M	89		10 - 150	04/02/23 19:18	04/05/23 16:47	1
d9-N-EtFOSE-M	87		10 - 150	04/02/23 19:18	04/05/23 16:47	1
M2-4:2 FTS	73		25 - 150	04/02/23 19:18	04/05/23 16:47	1
M2-6:2 FTS	76		25 - 150	04/02/23 19:18	04/05/23 16:47	1
M2-8:2 FTS	100		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C3 HFPO-DA	108		25 - 150	04/02/23 19:18	04/05/23 16:47	1
13C2 10:2 FTS	98		25 - 150	04/02/23 19:18	04/05/23 16:47	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: DUP-01-A (3-31-23)

Lab Sample ID: 500-231577-2

Date Collected: 03/31/23 00:00

Matrix: Water

Date Received: 04/01/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	50		4.4	2.1	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoropentanoic acid (PFPeA)	170		1.8	0.43	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorohexanoic acid (PFHxA)	110		1.8	0.51	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoroheptanoic acid (PFHpA)	87		1.8	0.22	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorooctanoic acid (PFOA)	150		1.8	0.74	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorononanoic acid (PFNA)	22		1.8	0.24	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorodecanoic acid (PFDA)	15		1.8	0.27	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoroundecanoic acid (PFUnA)	5.5		1.8	0.96	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorododecanoic acid (PFDoA)	0.89	J	1.8	0.48	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.1	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.64	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.78	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.82	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorobutanesulfonic acid (PFBS)	1.9		1.8	0.18	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoropentanesulfonic acid (PFPeS)	1.0	J	1.8	0.26	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorohexanesulfonic acid (PFHxS)	27		1.8	0.50	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoroheptanesulfonic acid (PFHpS)	0.83	J	1.8	0.17	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorooctanesulfonic acid (PFOS)	56		1.8	0.47	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluoronanesulfonic acid (PFNS)	<1.8		1.8	0.32	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.85	ng/L		04/02/23 19:18	04/05/23 16:57	1
Perfluorooctanesulfonamide (FOSA)	1.4	J	1.8	0.86	ng/L		04/02/23 19:18	04/05/23 16:57	1
NEtFOSA	<1.8		1.8	0.76	ng/L		04/02/23 19:18	04/05/23 16:57	1
NMeFOSA	<1.8		1.8	0.38	ng/L		04/02/23 19:18	04/05/23 16:57	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		04/02/23 19:18	04/05/23 16:57	1
NEtFOSAA	<4.4		4.4	1.1	ng/L		04/02/23 19:18	04/05/23 16:57	1
NMeFOSE	<3.5		3.5	1.2	ng/L		04/02/23 19:18	04/05/23 16:57	1
NEtFOSE	<1.8		1.8	0.74	ng/L		04/02/23 19:18	04/05/23 16:57	1
4:2 FTS	1.4	J	1.8	0.21	ng/L		04/02/23 19:18	04/05/23 16:57	1
6:2 FTS	200		4.4	2.2	ng/L		04/02/23 19:18	04/05/23 16:57	1
8:2 FTS	54		1.8	0.40	ng/L		04/02/23 19:18	04/05/23 16:57	1
10:2 FTS	8.9		1.8	0.59	ng/L		04/02/23 19:18	04/05/23 16:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.35	ng/L		04/02/23 19:18	04/05/23 16:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		04/02/23 19:18	04/05/23 16:57	1
F-53B Major	<1.8		1.8	0.21	ng/L		04/02/23 19:18	04/05/23 16:57	1
F-53B Minor	<1.8		1.8	0.28	ng/L		04/02/23 19:18	04/05/23 16:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150				04/02/23 19:18	04/05/23 16:57	1
13C5 PFPeA	102		25 - 150				04/02/23 19:18	04/05/23 16:57	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: DUP-01-A (3-31-23)

Lab Sample ID: 500-231577-2

Date Collected: 03/31/23 00:00

Matrix: Water

Date Received: 04/01/23 09:15

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	97		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C4 PFHpA	103		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C4 PFOA	97		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C5 PFNA	100		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C2 PFDA	97		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C2 PFUnA	88		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C2 PFDoA	96		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C2 PFTeDA	89		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C2 PFHxDA	73		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C3 PFBS	101		25 - 150	04/02/23 19:18	04/05/23 16:57	1
18O2 PFHxS	91		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C4 PFOS	93		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C8 FOSA	93		10 - 150	04/02/23 19:18	04/05/23 16:57	1
d3-NMeFOSAA	80		25 - 150	04/02/23 19:18	04/05/23 16:57	1
d5-NEtFOSAA	87		25 - 150	04/02/23 19:18	04/05/23 16:57	1
d-N-MeFOSA-M	80		10 - 150	04/02/23 19:18	04/05/23 16:57	1
d-N-EtFOSA-M	78		10 - 150	04/02/23 19:18	04/05/23 16:57	1
d7-N-MeFOSE-M	84		10 - 150	04/02/23 19:18	04/05/23 16:57	1
d9-N-EtFOSE-M	84		10 - 150	04/02/23 19:18	04/05/23 16:57	1
M2-4:2 FTS	86		25 - 150	04/02/23 19:18	04/05/23 16:57	1
M2-6:2 FTS	82		25 - 150	04/02/23 19:18	04/05/23 16:57	1
M2-8:2 FTS	87		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C3 HFPO-DA	102		25 - 150	04/02/23 19:18	04/05/23 16:57	1
13C2 10:2 FTS	103		25 - 150	04/02/23 19:18	04/05/23 16:57	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: FIELD BLANK-A (3-31-23)

Lab Sample ID: 500-231577-3

Date Collected: 03/31/23 11:50

Matrix: Water

Date Received: 04/01/23 09:15

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.2		4.2	2.0	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoropentanoic acid (PFPeA)	<1.7		1.7	0.41	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorohexanoic acid (PFHxA)	<1.7		1.7	0.49	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoroheptanoic acid (PFHpA)	<1.7		1.7	0.21	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorooctanoic acid (PFOA)	<1.7		1.7	0.72	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorononanoic acid (PFNA)	<1.7		1.7	0.23	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorodecanoic acid (PFDA)	<1.7		1.7	0.26	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoroundecanoic acid (PFUnA)	<1.7		1.7	0.93	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.46	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.62	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.75	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7		1.7	0.79	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorobutanesulfonic acid (PFBS)	<1.7		1.7	0.17	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.25	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorohexanesulfonic acid (PFHxS)	<1.7		1.7	0.48	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.16	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorooctanesulfonic acid (PFOS)	<1.7		1.7	0.46	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.31	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.27	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.82	ng/L		04/02/23 19:18	04/05/23 17:07	1
Perfluorooctanesulfonamide (FOSA)	<1.7		1.7	0.83	ng/L		04/02/23 19:18	04/05/23 17:07	1
NEtFOSA	<1.7		1.7	0.73	ng/L		04/02/23 19:18	04/05/23 17:07	1
NMeFOSA	<1.7		1.7	0.36	ng/L		04/02/23 19:18	04/05/23 17:07	1
NMeFOSAA	<4.2		4.2	1.0	ng/L		04/02/23 19:18	04/05/23 17:07	1
NEtFOSAA	<4.2		4.2	1.1	ng/L		04/02/23 19:18	04/05/23 17:07	1
NMeFOSE	<3.4		3.4	1.2	ng/L		04/02/23 19:18	04/05/23 17:07	1
NEtFOSE	<1.7		1.7	0.72	ng/L		04/02/23 19:18	04/05/23 17:07	1
4:2 FTS	<1.7		1.7	0.20	ng/L		04/02/23 19:18	04/05/23 17:07	1
6:2 FTS	<4.2		4.2	2.1	ng/L		04/02/23 19:18	04/05/23 17:07	1
8:2 FTS	<1.7		1.7	0.39	ng/L		04/02/23 19:18	04/05/23 17:07	1
10:2 FTS	<1.7		1.7	0.57	ng/L		04/02/23 19:18	04/05/23 17:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.34	ng/L		04/02/23 19:18	04/05/23 17:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.4		3.4	1.3	ng/L		04/02/23 19:18	04/05/23 17:07	1
F-53B Major	<1.7		1.7	0.20	ng/L		04/02/23 19:18	04/05/23 17:07	1
F-53B Minor	<1.7		1.7	0.27	ng/L		04/02/23 19:18	04/05/23 17:07	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	96		25 - 150				04/02/23 19:18	04/05/23 17:07	1
13C5 PFPeA	98		25 - 150				04/02/23 19:18	04/05/23 17:07	1
13C2 PFHxA	95		25 - 150				04/02/23 19:18	04/05/23 17:07	1
13C4 PFHpA	93		25 - 150				04/02/23 19:18	04/05/23 17:07	1
13C4 PFOA	93		25 - 150				04/02/23 19:18	04/05/23 17:07	1
13C5 PFNA	98		25 - 150				04/02/23 19:18	04/05/23 17:07	1
13C2 PFDA	90		25 - 150				04/02/23 19:18	04/05/23 17:07	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: FIELD BLANK-A (3-31-23)

Lab Sample ID: 500-231577-3

Date Collected: 03/31/23 11:50

Matrix: Water

Date Received: 04/01/23 09:15

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	87		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C2 PFlDoA	92		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C2 PFlTeDA	96		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C2 PFlHxDA	81		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C3 PFlBS	94		25 - 150	04/02/23 19:18	04/05/23 17:07	1
18O2 PFlHxS	95		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C4 PFlOS	92		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C8 FOSA	82		10 - 150	04/02/23 19:18	04/05/23 17:07	1
d3-NMeFOSAA	72		25 - 150	04/02/23 19:18	04/05/23 17:07	1
d5-NEtFOSAA	87		25 - 150	04/02/23 19:18	04/05/23 17:07	1
d-N-MeFOSA-M	79		10 - 150	04/02/23 19:18	04/05/23 17:07	1
d-N-EtFOSA-M	74		10 - 150	04/02/23 19:18	04/05/23 17:07	1
d7-N-MeFOSE-M	82		10 - 150	04/02/23 19:18	04/05/23 17:07	1
d9-N-EtFOSE-M	86		10 - 150	04/02/23 19:18	04/05/23 17:07	1
M2-4:2 FTS	67		25 - 150	04/02/23 19:18	04/05/23 17:07	1
M2-6:2 FTS	68		25 - 150	04/02/23 19:18	04/05/23 17:07	1
M2-8:2 FTS	89		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C3 HFPO-DA	97		25 - 150	04/02/23 19:18	04/05/23 17:07	1
13C2 10:2 FTS	99		25 - 150	04/02/23 19:18	04/05/23 17:07	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-665309/1-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 665309

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		04/02/23 19:18	04/05/23 16:16	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		04/02/23 19:18	04/05/23 16:16	1
NEtFOSA	<2.0		2.0	0.87	ng/L		04/02/23 19:18	04/05/23 16:16	1
NMeFOSA	<2.0		2.0	0.43	ng/L		04/02/23 19:18	04/05/23 16:16	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		04/02/23 19:18	04/05/23 16:16	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		04/02/23 19:18	04/05/23 16:16	1
NMeFOSE	<4.0		4.0	1.4	ng/L		04/02/23 19:18	04/05/23 16:16	1
NEtFOSE	<2.0		2.0	0.85	ng/L		04/02/23 19:18	04/05/23 16:16	1
4:2 FTS	<2.0		2.0	0.24	ng/L		04/02/23 19:18	04/05/23 16:16	1
6:2 FTS	<5.0		5.0	2.5	ng/L		04/02/23 19:18	04/05/23 16:16	1
8:2 FTS	<2.0		2.0	0.46	ng/L		04/02/23 19:18	04/05/23 16:16	1
10:2 FTS	<2.0		2.0	0.67	ng/L		04/02/23 19:18	04/05/23 16:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		04/02/23 19:18	04/05/23 16:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		04/02/23 19:18	04/05/23 16:16	1
F-53B Major	<2.0		2.0	0.24	ng/L		04/02/23 19:18	04/05/23 16:16	1
F-53B Minor	<2.0		2.0	0.32	ng/L		04/02/23 19:18	04/05/23 16:16	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C5 PFPeA	96		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFHxA	86		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C4 PFHpA	95		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C4 PFOA	95		25 - 150	04/02/23 19:18	04/05/23 16:16	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

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

Lab Sample ID: MB 320-665309/1-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 665309

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	97		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFDA	93		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFUnA	91		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFDoA	90		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFTeDA	98		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 PFHxDA	83		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C3 PFBS	83		25 - 150	04/02/23 19:18	04/05/23 16:16	1
18O2 PFHxS	95		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C4 PFOS	89		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C8 FOSA	82		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d3-NMeFOSAA	74		25 - 150	04/02/23 19:18	04/05/23 16:16	1
d5-NEtFOSAA	82		25 - 150	04/02/23 19:18	04/05/23 16:16	1
d-N-MeFOSA-M	81		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d-N-EtFOSA-M	75		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d7-N-MeFOSE-M	91		10 - 150	04/02/23 19:18	04/05/23 16:16	1
d9-N-EtFOSE-M	91		10 - 150	04/02/23 19:18	04/05/23 16:16	1
M2-4:2 FTS	70		25 - 150	04/02/23 19:18	04/05/23 16:16	1
M2-6:2 FTS	84		25 - 150	04/02/23 19:18	04/05/23 16:16	1
M2-8:2 FTS	87		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C3 HFPO-DA	95		25 - 150	04/02/23 19:18	04/05/23 16:16	1
13C2 10:2 FTS	84		25 - 150	04/02/23 19:18	04/05/23 16:16	1

Lab Sample ID: LCS 320-665309/2-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	Limits
Perfluoropentanoic acid (PFPeA)	40.0	42.1		ng/L		105	60 - 135	
Perfluorohexanoic acid (PFHxA)	40.0	44.5		ng/L		111	60 - 135	
Perfluoroheptanoic acid (PFHpA)	40.0	43.8		ng/L		109	60 - 135	
Perfluorooctanoic acid (PFOA)	40.0	43.9		ng/L		110	60 - 135	
Perfluorononanoic acid (PFNA)	40.0	50.5		ng/L		126	60 - 135	
Perfluorodecanoic acid (PFDA)	40.0	41.5		ng/L		104	60 - 135	
Perfluoroundecanoic acid (PFUnA)	40.0	47.7		ng/L		119	60 - 135	
Perfluorododecanoic acid (PFDoA)	40.0	45.4		ng/L		114	60 - 135	
Perfluorotridecanoic acid (PFTriA)	40.0	46.5		ng/L		116	60 - 135	
Perfluorotetradecanoic acid (PFTeA)	40.0	41.2		ng/L		103	60 - 135	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	47.0		ng/L		117	60 - 135	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.3		ng/L		98	60 - 135	
Perfluorobutanesulfonic acid (PFBS)	35.5	37.3		ng/L		105	60 - 135	
Perfluoropentanesulfonic acid (PFPeS)	37.6	44.0		ng/L		117	60 - 135	

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

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

Lab Sample ID: LCS 320-665309/2-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.3		ng/L		102	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.0		ng/L		107	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	35.5		ng/L		95	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.9		ng/L		106	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	40.5		ng/L		105	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	43.5		ng/L		112	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.9		ng/L		107	60 - 135
NEtFOSA	40.0	42.3		ng/L		106	60 - 135
NMeFOSA	40.0	40.3		ng/L		101	60 - 135
NMeFOSAA	40.0	42.7		ng/L		107	60 - 135
NEtFOSAA	40.0	40.1		ng/L		100	60 - 135
NMeFOSE	40.0	38.7		ng/L		97	60 - 135
NEtFOSE	40.0	42.4		ng/L		106	60 - 135
4:2 FTS	37.5	40.2		ng/L		107	60 - 135
6:2 FTS	38.1	42.2		ng/L		111	60 - 135
8:2 FTS	38.4	36.4		ng/L		95	60 - 135
10:2 FTS	38.6	48.6		ng/L		126	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.6		ng/L		107	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.1		ng/L		100	60 - 135
F-53B Major	37.4	37.2		ng/L		100	60 - 135
F-53B Minor	37.8	41.8		ng/L		111	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	97		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	88		25 - 150
13C4 PFHpA	96		25 - 150
13C4 PFOA	96		25 - 150
13C5 PFNA	86		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	110		25 - 150
13C2 PFHxDA	97		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	100		25 - 150
13C4 PFOS	97		25 - 150
13C8 FOSA	92		10 - 150
d3-NMeFOSAA	85		25 - 150
d5-NEtFOSAA	94		25 - 150
d-N-MeFOSA-M	91		10 - 150
d-N-EtFOSA-M	88		10 - 150

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

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

Lab Sample ID: LCS 320-665309/2-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 665309

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d7-N-MeFOSE-M	96		10 - 150
d9-N-EtFOSE-M	97		10 - 150
M2-4:2 FTS	70		25 - 150
M2-6:2 FTS	86		25 - 150
M2-8:2 FTS	98		25 - 150
13C3 HFPO-DA	100		25 - 150
13C2 10:2 FTS	93		25 - 150

Lab Sample ID: LCSD 320-665309/3-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	47.2		ng/L		118	60 - 135	5	30	
Perfluoropentanoic acid (PFPeA)	40.0	42.1		ng/L		105	60 - 135	0	30	
Perfluorohexanoic acid (PFHxA)	40.0	45.4		ng/L		114	60 - 135	2	30	
Perfluoroheptanoic acid (PFHpA)	40.0	43.3		ng/L		108	60 - 135	1	30	
Perfluorooctanoic acid (PFOA)	40.0	41.3		ng/L		103	60 - 135	6	30	
Perfluorononanoic acid (PFNA)	40.0	43.2		ng/L		108	60 - 135	16	30	
Perfluorodecanoic acid (PFDA)	40.0	45.4		ng/L		114	60 - 135	9	30	
Perfluoroundecanoic acid (PFUnA)	40.0	44.8		ng/L		112	60 - 135	6	30	
Perfluorododecanoic acid (PFDoA)	40.0	46.4		ng/L		116	60 - 135	2	30	
Perfluorotridecanoic acid (PFTriA)	40.0	43.0		ng/L		108	60 - 135	8	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	60 - 135	3	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.2		ng/L		105	60 - 135	11	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.3		ng/L		98	60 - 135	0	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	38.3		ng/L		108	60 - 135	3	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	41.5		ng/L		110	60 - 135	6	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.6		ng/L		98	60 - 135	5	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.5		ng/L		104	60 - 135	4	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	35.1		ng/L		94	60 - 135	1	30	
Perfluorononanesulfonic acid (PFNS)	38.5	41.4		ng/L		108	60 - 135	1	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	42.6		ng/L		110	60 - 135	5	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	44.2		ng/L		114	60 - 135	1	30	
Perfluorooctanesulfonamide (FOSA)	40.0	40.8		ng/L		102	60 - 135	5	30	
NEtFOSA	40.0	41.3		ng/L		103	60 - 135	2	30	
NMeFOSA	40.0	39.6		ng/L		99	60 - 135	2	30	
NMeFOSAA	40.0	41.9		ng/L		105	60 - 135	2	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

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

Lab Sample ID: LCSD 320-665309/3-A
Matrix: Water
Analysis Batch: 665717

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 665309

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	39.3		ng/L		98	60 - 135	2	30
NMeFOSE	40.0	39.9		ng/L		100	60 - 135	3	30
NEtFOSE	40.0	41.7		ng/L		104	60 - 135	2	30
4:2 FTS	37.5	31.1		ng/L		83	60 - 135	25	30
6:2 FTS	38.1	36.1		ng/L		95	60 - 135	16	30
8:2 FTS	38.4	41.0		ng/L		107	60 - 135	12	30
10:2 FTS	38.6	38.6		ng/L		100	60 - 135	23	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	42.7		ng/L		113	60 - 135	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		106	60 - 135	5	30
F-53B Major	37.4	40.4		ng/L		108	60 - 135	8	30
F-53B Minor	37.8	39.2		ng/L		104	60 - 135	6	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	92		25 - 150
13C5 PFPeA	93		25 - 150
13C2 PFHxA	85		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	89		25 - 150
13C2 PFUnA	94		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	106		25 - 150
13C2 PFHxDA	93		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	90		10 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	92		25 - 150
d-N-MeFOSA-M	86		10 - 150
d-N-EtFOSA-M	81		10 - 150
d7-N-MeFOSE-M	94		10 - 150
d9-N-EtFOSE-M	92		10 - 150
M2-4:2 FTS	78		25 - 150
M2-6:2 FTS	89		25 - 150
M2-8:2 FTS	80		25 - 150
13C3 HFPO-DA	101		25 - 150
13C2 10:2 FTS	112		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Client Sample ID: SW-40 (3-31-23)

Date Collected: 03/31/23 11:40

Date Received: 04/01/23 09:15

Lab Sample ID: 500-231577-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			665309	FX	EET SAC	04/02/23 19:18
Total/NA	Analysis	537 (modified)		1	665717	RS1	EET SAC	04/05/23 16:47

Client Sample ID: DUP-01-A (3-31-23)

Date Collected: 03/31/23 00:00

Date Received: 04/01/23 09:15

Lab Sample ID: 500-231577-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			665309	FX	EET SAC	04/02/23 19:18
Total/NA	Analysis	537 (modified)		1	665717	RS1	EET SAC	04/05/23 16:57

Client Sample ID: FIELD BLANK-A (3-31-23)

Date Collected: 03/31/23 11:50

Date Received: 04/01/23 09:15

Lab Sample ID: 500-231577-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			665309	FX	EET SAC	04/02/23 19:18
Total/NA	Analysis	537 (modified)		1	665717	RS1	EET SAC	04/05/23 17:07

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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- 14



Environment Testing
TestAmerica

Sves: PRIORITY OVERNIGHT
Master: 5120 6510 6819
TRK: 5120 6510 6911


TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A

Client Contact
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee, WI 53202
Phone
FAX
Project Name: Ditch A Surface Water
Site: Marinette, WI
P O # 30171092.4.1.1

Site Contact:
Lab Contact: Sandie Fredrick
Date: 3-31-23
Carrier: Fed Ex
COC No: 1 of 1 COCs
TALS Project #: 50019256

Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:
SW-40 (3-31-23)	3-31-23	11:40	G	W	2	N	X	Downsteam
DUP-01-A (3-31-23)	↓	—	G	W	2	N	X	Duplicate
Field Blank-A (3-31-23)	↓	11:50	G	W	2	N	X	Field Blank
 500-231577 Chain of Custody								

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
Possible Hazard Identification: _____
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazard
 Flammable
 Skin Irritant
 Poison B
 Unknown
 Return to Client
 Disposal by Lab
 Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Questions call Lisa Rutkowski, Liz Hover
Custody Seal No.: 605191
Company: Barley Excavating
Relinquished by: Jacob Hominger
Relinquished by: _____
Relinquished by: _____
Cooler Temp. (°C): Obs'd: 11
Corrd: 11
Therm ID No.: 60
Received by: Fed Ex
Received by: _____
Received in Laboratory by: _____
Date/Time: 3/31/23
Date/Time: _____
Date/Time: _____
Company: _____
Company: _____
Company: _____

③ ID Field Blank (3-31-23) S0413163

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-231577-1

SDG Number:

Login Number: 231577

List Number: 2

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 04/03/23 01:34 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051191
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.1C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



500-231577 Field Sheet

Job: _____

Tracking #: 5120-6510-6911

SO / PO / FO / ~~SAT~~ / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: L-10 Corr. Factor: (+/-) 0 °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 2051291

Cooler ID: _____

Temp Observed: 1.1 °C Corrected: 1.1 °C
From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Initials: <u>JL</u> Date: <u>4/11/23</u>			

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: SD Date: 4/13/23

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: SD Date: 4/13/23



Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-231577-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-231577-1	SW-40 (3-31-23)	101	99	97	96	101	101	91	95
500-231577-2	DUP-01-A (3-31-23)	96	102	97	103	97	100	97	88
500-231577-3	FIELD BLANK-A (3-31-23)	96	98	95	93	93	98	90	87
LCS 320-665309/2-A	Lab Control Sample	97	98	88	96	96	86	97	92
LCSD 320-665309/3-A	Lab Control Sample Dup	92	93	85	99	103	96	89	94
MB 320-665309/1-A	Method Blank	89	96	86	95	95	97	93	91

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFS (25-150)
500-231577-1	SW-40 (3-31-23)	103	94	75	92	96	91	96	77
500-231577-2	DUP-01-A (3-31-23)	96	89	73	101	91	93	93	80
500-231577-3	FIELD BLANK-A (3-31-23)	92	96	81	94	95	92	82	72
LCS 320-665309/2-A	Lab Control Sample	101	110	97	92	100	97	92	85
LCSD 320-665309/3-A	Lab Control Sample Dup	100	106	93	92	98	96	90	83
MB 320-665309/1-A	Method Blank	90	98	83	83	95	89	82	74

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-231577-1	SW-40 (3-31-23)	89	86	86	89	87	73	76	100
500-231577-2	DUP-01-A (3-31-23)	87	80	78	84	84	86	82	87
500-231577-3	FIELD BLANK-A (3-31-23)	87	79	74	82	86	67	68	89
LCS 320-665309/2-A	Lab Control Sample	94	91	88	96	97	70	86	98
LCSD 320-665309/3-A	Lab Control Sample Dup	92	86	81	94	92	78	89	80
MB 320-665309/1-A	Method Blank	82	81	75	91	91	70	84	87

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-231577-1	SW-40 (3-31-23)	108	98
500-231577-2	DUP-01-A (3-31-23)	102	103
500-231577-3	FIELD BLANK-A (3-31-23)	97	99
LCS 320-665309/2-A	Lab Control Sample	100	93
LCSD 320-665309/3-A	Lab Control Sample Dup	101	112
MB 320-665309/1-A	Method Blank	95	84

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS US Inc

Job ID: 500-231577-1

Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 4/18/2023 2:11:51 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 Ditch A SW

JOB NUMBER

500-232037-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Job ID: 500-232037-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-232037-1

Receipt

The samples were received on 4/11/2023 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.3° C.

LCMS

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-667358 and analytical batch 320-667694 recovered outside control limits for the following analyte: Perfluoro-n-octadecanoic acid (PFODA). This analyte was biased high in the LCS and was not detected in the associated samples. Furthermore, this analyte is no longer regulated by the state of Wisconsin; therefore, the data have been reported.

Method 537 (modified): The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: 500-232037-1 and 500-232037-2. These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. The samples were re-analyzed at a dilution and both sets of data were reported.

Method 537 (modified): Results for sample 500-232037-1 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 5X analysis is 130% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): Results for sample 500-232037-2 were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits. The percent recovery for the internal standard in the 5X analysis is 113% after the dilution factor was applied to the labeled internal standard area count.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-667358.

Method: PFC_IDA_WI
Matrix: Aqueous
320-667358

Method 3535: The following samples in preparation batch 320-667358 were yellow in color prior to extraction. 500-232037-1 and 500-232037-2

Method: PFC_IDA_WI
Matrix: Aqueous
320-667358

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-232037-1	SW-40 (4-10-23)	Water	04/10/23 12:00	04/11/23 09:25
500-232037-2	DUP-01-A (4-10-23)	Water	04/10/23 00:00	04/11/23 09:25
500-232037-3	FIELD BLANK-A (4-10-23)	Water	04/10/23 12:05	04/11/23 09:25

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: SW-40 (4-10-23)

Lab Sample ID: 500-232037-1

Date Collected: 04/10/23 12:00

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	120		4.3	2.1	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoropentanoic acid (PFPeA)	420	E	1.7	0.43	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorohexanoic acid (PFHxA)	280		1.7	0.50	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoroheptanoic acid (PFHpA)	210		1.7	0.22	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorooctanoic acid (PFOA)	340		1.7	0.74	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorononanoic acid (PFNA)	57		1.7	0.23	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorodecanoic acid (PFDA)	38		1.7	0.27	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoroundecanoic acid (PFUnA)	15		1.7	0.95	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorododecanoic acid (PFDoA)	1.1	J	1.7	0.48	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.63	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.77	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7	**	1.7	0.82	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorobutanesulfonic acid (PFBS)	9.3		1.7	0.17	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoropentanesulfonic acid (PFPeS)	3.1		1.7	0.26	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorohexanesulfonic acid (PFHxS)	66		1.7	0.49	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoroheptanesulfonic acid (PFHpS)	2.4		1.7	0.16	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorooctanesulfonic acid (PFOS)	220		1.7	0.47	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluoronanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.28	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.84	ng/L		04/13/23 05:51	04/14/23 11:45	1
Perfluorooctanesulfonamide (FOSA)	4.7		1.7	0.85	ng/L		04/13/23 05:51	04/14/23 11:45	1
NEtFOSA	<1.7		1.7	0.75	ng/L		04/13/23 05:51	04/14/23 11:45	1
NMeFOSA	<1.7		1.7	0.37	ng/L		04/13/23 05:51	04/14/23 11:45	1
NMeFOSAA	<4.3		4.3	1.0	ng/L		04/13/23 05:51	04/14/23 11:45	1
NEtFOSAA	2.8	J	4.3	1.1	ng/L		04/13/23 05:51	04/14/23 11:45	1
NMeFOSE	<3.5		3.5	1.2	ng/L		04/13/23 05:51	04/14/23 11:45	1
NEtFOSE	<1.7		1.7	0.74	ng/L		04/13/23 05:51	04/14/23 11:45	1
4:2 FTS	3.5		1.7	0.21	ng/L		04/13/23 05:51	04/14/23 11:45	1
6:2 FTS	490	E	4.3	2.2	ng/L		04/13/23 05:51	04/14/23 11:45	1
8:2 FTS	380	E	1.7	0.40	ng/L		04/13/23 05:51	04/14/23 11:45	1
10:2 FTS	22		1.7	0.58	ng/L		04/13/23 05:51	04/14/23 11:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.35	ng/L		04/13/23 05:51	04/14/23 11:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		04/13/23 05:51	04/14/23 11:45	1
F-53B Major	<1.7		1.7	0.21	ng/L		04/13/23 05:51	04/14/23 11:45	1
F-53B Minor	<1.7		1.7	0.28	ng/L		04/13/23 05:51	04/14/23 11:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	85		25 - 150				04/13/23 05:51	04/14/23 11:45	1
13C5 PFPeA	95		25 - 150				04/13/23 05:51	04/14/23 11:45	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: SW-40 (4-10-23)

Lab Sample ID: 500-232037-1

Date Collected: 04/10/23 12:00

Matrix: Water

Date Received: 04/11/23 09:25

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C4 PFHpA	96		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C4 PFOA	100		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C5 PFNA	85		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C2 PFDA	86		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C2 PFUnA	79		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C2 PFDoA	75		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C2 PFTeDA	62		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C2 PFHxDA	53		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C3 PFBS	83		25 - 150	04/13/23 05:51	04/14/23 11:45	1
18O2 PFHxS	84		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C4 PFOS	88		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C8 FOSA	84		10 - 150	04/13/23 05:51	04/14/23 11:45	1
d3-NMeFOSAA	83		25 - 150	04/13/23 05:51	04/14/23 11:45	1
d5-NEtFOSAA	81		25 - 150	04/13/23 05:51	04/14/23 11:45	1
d-N-MeFOSA-M	67		10 - 150	04/13/23 05:51	04/14/23 11:45	1
d-N-EtFOSA-M	62		10 - 150	04/13/23 05:51	04/14/23 11:45	1
d7-N-MeFOSE-M	61		10 - 150	04/13/23 05:51	04/14/23 11:45	1
d9-N-EtFOSE-M	63		10 - 150	04/13/23 05:51	04/14/23 11:45	1
M2-4:2 FTS	102		25 - 150	04/13/23 05:51	04/14/23 11:45	1
M2-6:2 FTS	103		25 - 150	04/13/23 05:51	04/14/23 11:45	1
M2-8:2 FTS	100		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C3 HFPO-DA	78		25 - 150	04/13/23 05:51	04/14/23 11:45	1
13C2 10:2 FTS	73		25 - 150	04/13/23 05:51	04/14/23 11:45	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	160		22	10	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoropentanoic acid (PFPeA)	540		8.7	2.1	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorohexanoic acid (PFHxA)	350		8.7	2.5	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoroheptanoic acid (PFHpA)	280		8.7	1.1	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorooctanoic acid (PFOA)	390		8.7	3.7	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorononanoic acid (PFNA)	49		8.7	1.2	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorodecanoic acid (PFDA)	37		8.7	1.3	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoroundecanoic acid (PFUnA)	13		8.7	4.8	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorododecanoic acid (PFDoA)	<8.7		8.7	2.4	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorotridecanoic acid (PFTriA)	<8.7		8.7	5.6	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorotetradecanoic acid (PFTeA)	<8.7		8.7	3.2	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.7		8.7	3.9	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoro-n-octadecanoic acid (PFODA)	<8.7	+	8.7	4.1	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorobutanesulfonic acid (PFBS)	9.1		8.7	0.87	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoropentanesulfonic acid (PFPeS)	2.6	J	8.7	1.3	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorohexanesulfonic acid (PFHxS)	65		8.7	2.5	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluoroheptanesulfonic acid (PFHpS)	2.0	J	8.7	0.82	ng/L		04/13/23 05:51	04/18/23 00:29	5

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: SW-40 (4-10-23)

Lab Sample ID: 500-232037-1

Date Collected: 04/10/23 12:00

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	230		8.7	2.3	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorononanesulfonic acid (PFNS)	<8.7		8.7	1.6	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorodecanesulfonic acid (PFDS)	<8.7		8.7	1.4	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorododecanesulfonic acid (PFDoS)	<8.7		8.7	4.2	ng/L		04/13/23 05:51	04/18/23 00:29	5
Perfluorooctanesulfonamide (FOSA)	4.3 J		8.7	4.3	ng/L		04/13/23 05:51	04/18/23 00:29	5
NEtFOSA	<8.7		8.7	3.8	ng/L		04/13/23 05:51	04/18/23 00:29	5
NMeFOSA	<8.7		8.7	1.9	ng/L		04/13/23 05:51	04/18/23 00:29	5
NMeFOSAA	<22		22	5.2	ng/L		04/13/23 05:51	04/18/23 00:29	5
NEtFOSAA	<22		22	5.6	ng/L		04/13/23 05:51	04/18/23 00:29	5
NMeFOSE	<17		17	6.1	ng/L		04/13/23 05:51	04/18/23 00:29	5
NEtFOSE	<8.7		8.7	3.7	ng/L		04/13/23 05:51	04/18/23 00:29	5
4:2 FTS	3.2 J		8.7	1.0	ng/L		04/13/23 05:51	04/18/23 00:29	5
6:2 FTS	530		22	11	ng/L		04/13/23 05:51	04/18/23 00:29	5
8:2 FTS	410		8.7	2.0	ng/L		04/13/23 05:51	04/18/23 00:29	5
10:2 FTS	21		8.7	2.9	ng/L		04/13/23 05:51	04/18/23 00:29	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<8.7		8.7	1.7	ng/L		04/13/23 05:51	04/18/23 00:29	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<17		17	6.5	ng/L		04/13/23 05:51	04/18/23 00:29	5
F-53B Major	<8.7		8.7	1.0	ng/L		04/13/23 05:51	04/18/23 00:29	5
F-53B Minor	<8.7		8.7	1.4	ng/L		04/13/23 05:51	04/18/23 00:29	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	90		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C5 PFPeA	96		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C2 PFHxA	110		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C4 PFHpA	98		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C4 PFOA	100		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C5 PFNA	101		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C2 PFDA	103		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C2 PFUnA	108		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C2 PFDoA	99		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C2 PFTeDA	78		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C2 PFHxDA	62		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C3 PFBS	89		25 - 150				04/13/23 05:51	04/18/23 00:29	5
18O2 PFHxS	80		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C4 PFOS	91		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C8 FOSA	103		10 - 150				04/13/23 05:51	04/18/23 00:29	5
d3-NMeFOSAA	101		25 - 150				04/13/23 05:51	04/18/23 00:29	5
d5-NEtFOSAA	112		25 - 150				04/13/23 05:51	04/18/23 00:29	5
d-N-MeFOSA-M	89		10 - 150				04/13/23 05:51	04/18/23 00:29	5
d-N-EtFOSA-M	83		10 - 150				04/13/23 05:51	04/18/23 00:29	5
d7-N-MeFOSE-M	87		10 - 150				04/13/23 05:51	04/18/23 00:29	5
d9-N-EtFOSE-M	87		10 - 150				04/13/23 05:51	04/18/23 00:29	5
M2-4:2 FTS	120		25 - 150				04/13/23 05:51	04/18/23 00:29	5
M2-6:2 FTS	99		25 - 150				04/13/23 05:51	04/18/23 00:29	5
M2-8:2 FTS	99		25 - 150				04/13/23 05:51	04/18/23 00:29	5
13C3 HFPO-DA	101		25 - 150				04/13/23 05:51	04/18/23 00:29	5

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: SW-40 (4-10-23)

Lab Sample ID: 500-232037-1

Date Collected: 04/10/23 12:00

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 10:2 FTS	102		25 - 150	04/13/23 05:51	04/18/23 00:29	5

- 1
- 2
- 3
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- 12
- 13
- 14

Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: DUP-01-A (4-10-23)

Lab Sample ID: 500-232037-2

Date Collected: 04/10/23 00:00

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	130		4.4	2.1	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoropentanoic acid (PFPeA)	430	E	1.8	0.43	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorohexanoic acid (PFHxA)	280		1.8	0.51	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoroheptanoic acid (PFHpA)	220		1.8	0.22	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorooctanoic acid (PFOA)	350		1.8	0.75	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorononanoic acid (PFNA)	58		1.8	0.24	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorodecanoic acid (PFDA)	39		1.8	0.27	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoroundecanoic acid (PFUnA)	14		1.8	0.97	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorododecanoic acid (PFDoA)	1.3	J	1.8	0.49	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.1	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.64	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.79	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8	**	1.8	0.83	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorobutanesulfonic acid (PFBS)	9.6		1.8	0.18	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoropentanesulfonic acid (PFPeS)	3.2		1.8	0.26	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorohexanesulfonic acid (PFHxS)	68		1.8	0.50	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluoroheptanesulfonic acid (PFHpS)	2.5		1.8	0.17	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorooctanesulfonic acid (PFOS)	230		1.8	0.48	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.86	ng/L		04/13/23 05:51	04/14/23 11:55	1
Perfluorooctanesulfonamide (FOSA)	4.7		1.8	0.86	ng/L		04/13/23 05:51	04/14/23 11:55	1
NEtFOSA	<1.8		1.8	0.77	ng/L		04/13/23 05:51	04/14/23 11:55	1
NMeFOSA	<1.8		1.8	0.38	ng/L		04/13/23 05:51	04/14/23 11:55	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		04/13/23 05:51	04/14/23 11:55	1
NEtFOSAA	3.2	J	4.4	1.1	ng/L		04/13/23 05:51	04/14/23 11:55	1
NMeFOSE	<3.5		3.5	1.2	ng/L		04/13/23 05:51	04/14/23 11:55	1
NEtFOSE	<1.8		1.8	0.75	ng/L		04/13/23 05:51	04/14/23 11:55	1
4:2 FTS	3.5		1.8	0.21	ng/L		04/13/23 05:51	04/14/23 11:55	1
6:2 FTS	480	E	4.4	2.2	ng/L		04/13/23 05:51	04/14/23 11:55	1
8:2 FTS	390	E	1.8	0.41	ng/L		04/13/23 05:51	04/14/23 11:55	1
10:2 FTS	19		1.8	0.59	ng/L		04/13/23 05:51	04/14/23 11:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.35	ng/L		04/13/23 05:51	04/14/23 11:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		04/13/23 05:51	04/14/23 11:55	1
F-53B Major	<1.8		1.8	0.21	ng/L		04/13/23 05:51	04/14/23 11:55	1
F-53B Minor	<1.8		1.8	0.28	ng/L		04/13/23 05:51	04/14/23 11:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	79		25 - 150				04/13/23 05:51	04/14/23 11:55	1
13C5 PFPeA	90		25 - 150				04/13/23 05:51	04/14/23 11:55	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: DUP-01-A (4-10-23)

Lab Sample ID: 500-232037-2

Date Collected: 04/10/23 00:00

Matrix: Water

Date Received: 04/11/23 09:25

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C4 PFHpA	95		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C4 PFOA	94		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C5 PFNA	83		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C2 PFDA	82		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C2 PFUnA	80		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C2 PFDoA	71		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C2 PFTeDA	56		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C2 PFHxDA	43		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C3 PFBS	78		25 - 150	04/13/23 05:51	04/14/23 11:55	1
18O2 PFHxS	82		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C4 PFOS	83		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C8 FOSA	81		10 - 150	04/13/23 05:51	04/14/23 11:55	1
d3-NMeFOSAA	78		25 - 150	04/13/23 05:51	04/14/23 11:55	1
d5-NEtFOSAA	80		25 - 150	04/13/23 05:51	04/14/23 11:55	1
d-N-MeFOSA-M	65		10 - 150	04/13/23 05:51	04/14/23 11:55	1
d-N-EtFOSA-M	65		10 - 150	04/13/23 05:51	04/14/23 11:55	1
d7-N-MeFOSE-M	60		10 - 150	04/13/23 05:51	04/14/23 11:55	1
d9-N-EtFOSE-M	60		10 - 150	04/13/23 05:51	04/14/23 11:55	1
M2-4:2 FTS	115		25 - 150	04/13/23 05:51	04/14/23 11:55	1
M2-6:2 FTS	102		25 - 150	04/13/23 05:51	04/14/23 11:55	1
M2-8:2 FTS	99		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C3 HFPO-DA	72		25 - 150	04/13/23 05:51	04/14/23 11:55	1
13C2 10:2 FTS	79		25 - 150	04/13/23 05:51	04/14/23 11:55	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	150		22	11	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoropentanoic acid (PFPeA)	510		8.8	2.2	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorohexanoic acid (PFHxA)	380		8.8	2.6	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoroheptanoic acid (PFHpA)	270		8.8	1.1	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorooctanoic acid (PFOA)	410		8.8	3.8	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorononanoic acid (PFNA)	59		8.8	1.2	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorodecanoic acid (PFDA)	38		8.8	1.4	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoroundecanoic acid (PFUnA)	15		8.8	4.9	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorododecanoic acid (PFDoA)	<8.8		8.8	2.4	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorotridecanoic acid (PFTriA)	<8.8		8.8	5.7	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorotetradecanoic acid (PFTeA)	<8.8		8.8	3.2	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoro-n-hexadecanoic acid (PFHxDA)	<8.8		8.8	3.9	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoro-n-octadecanoic acid (PFODA)	<8.8	+	8.8	4.1	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorobutanesulfonic acid (PFBS)	8.9		8.8	0.88	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoropentanesulfonic acid (PFPeS)	2.6	J	8.8	1.3	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorohexanesulfonic acid (PFHxS)	64		8.8	2.5	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluoroheptanesulfonic acid (PFHpS)	2.6	J	8.8	0.84	ng/L		04/13/23 05:51	04/18/23 00:39	5

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: DUP-01-A (4-10-23)

Lab Sample ID: 500-232037-2

Date Collected: 04/10/23 00:00

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	250		8.8	2.4	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorononanesulfonic acid (PFNS)	<8.8		8.8	1.6	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorodecanesulfonic acid (PFDS)	<8.8		8.8	1.4	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorododecanesulfonic acid (PFDoS)	<8.8		8.8	4.3	ng/L		04/13/23 05:51	04/18/23 00:39	5
Perfluorooctanesulfonamide (FOSA)	4.9 J		8.8	4.3	ng/L		04/13/23 05:51	04/18/23 00:39	5
NEtFOSA	<8.8		8.8	3.8	ng/L		04/13/23 05:51	04/18/23 00:39	5
NMeFOSA	<8.8		8.8	1.9	ng/L		04/13/23 05:51	04/18/23 00:39	5
NMeFOSAA	<22		22	5.3	ng/L		04/13/23 05:51	04/18/23 00:39	5
NEtFOSAA	<22		22	5.7	ng/L		04/13/23 05:51	04/18/23 00:39	5
NMeFOSE	<18		18	6.2	ng/L		04/13/23 05:51	04/18/23 00:39	5
NEtFOSE	<8.8		8.8	3.8	ng/L		04/13/23 05:51	04/18/23 00:39	5
4:2 FTS	3.6 J		8.8	1.1	ng/L		04/13/23 05:51	04/18/23 00:39	5
6:2 FTS	590		22	11	ng/L		04/13/23 05:51	04/18/23 00:39	5
8:2 FTS	440		8.8	2.0	ng/L		04/13/23 05:51	04/18/23 00:39	5
10:2 FTS	20		8.8	3.0	ng/L		04/13/23 05:51	04/18/23 00:39	5
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<8.8		8.8	1.8	ng/L		04/13/23 05:51	04/18/23 00:39	5
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<18		18	6.6	ng/L		04/13/23 05:51	04/18/23 00:39	5
F-53B Major	<8.8		8.8	1.1	ng/L		04/13/23 05:51	04/18/23 00:39	5
F-53B Minor	<8.8		8.8	1.4	ng/L		04/13/23 05:51	04/18/23 00:39	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	93		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C5 PFPeA	95		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C2 PFHxA	96		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C4 PFHpA	106		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C4 PFOA	95		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C5 PFNA	90		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C2 PFDA	100		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C2 PFUnA	99		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C2 PFDoA	103		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C2 PFTeDA	75		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C2 PFHxDA	54		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C3 PFBS	93		25 - 150				04/13/23 05:51	04/18/23 00:39	5
18O2 PFHxS	85		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C4 PFOS	86		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C8 FOSA	91		10 - 150				04/13/23 05:51	04/18/23 00:39	5
d3-NMeFOSAA	100		25 - 150				04/13/23 05:51	04/18/23 00:39	5
d5-NEtFOSAA	104		25 - 150				04/13/23 05:51	04/18/23 00:39	5
d-N-MeFOSA-M	87		10 - 150				04/13/23 05:51	04/18/23 00:39	5
d-N-EtFOSA-M	81		10 - 150				04/13/23 05:51	04/18/23 00:39	5
d7-N-MeFOSE-M	87		10 - 150				04/13/23 05:51	04/18/23 00:39	5
d9-N-EtFOSE-M	89		10 - 150				04/13/23 05:51	04/18/23 00:39	5
M2-4:2 FTS	108		25 - 150				04/13/23 05:51	04/18/23 00:39	5
M2-6:2 FTS	88		25 - 150				04/13/23 05:51	04/18/23 00:39	5
M2-8:2 FTS	93		25 - 150				04/13/23 05:51	04/18/23 00:39	5
13C3 HFPO-DA	98		25 - 150				04/13/23 05:51	04/18/23 00:39	5

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Client Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: DUP-01-A (4-10-23)

Lab Sample ID: 500-232037-2

Date Collected: 04/10/23 00:00

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

<u>Isotope Dilution</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
13C2 10:2 FTS	110		25 - 150	04/13/23 05:51	04/18/23 00:39	5

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: FIELD BLANK-A (4-10-23)

Lab Sample ID: 500-232037-3

Date Collected: 04/10/23 12:05

Matrix: Water

Date Received: 04/11/23 09:25

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.7		4.7	2.3	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoropentanoic acid (PFPeA)	<1.9		1.9	0.46	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.55	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.24	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.80	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.25	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.29	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.0	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.52	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.2	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.69	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.84	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9	+	1.9	0.89	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.28	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.54	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9	0.18	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.51	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.35	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.91	ng/L		04/13/23 05:51	04/14/23 12:05	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.92	ng/L		04/13/23 05:51	04/14/23 12:05	1
NEtFOSA	<1.9		1.9	0.82	ng/L		04/13/23 05:51	04/14/23 12:05	1
NMeFOSA	<1.9		1.9	0.41	ng/L		04/13/23 05:51	04/14/23 12:05	1
NMeFOSAA	<4.7		4.7	1.1	ng/L		04/13/23 05:51	04/14/23 12:05	1
NEtFOSAA	<4.7		4.7	1.2	ng/L		04/13/23 05:51	04/14/23 12:05	1
NMeFOSE	<3.8		3.8	1.3	ng/L		04/13/23 05:51	04/14/23 12:05	1
NEtFOSE	<1.9		1.9	0.80	ng/L		04/13/23 05:51	04/14/23 12:05	1
4:2 FTS	<1.9		1.9	0.23	ng/L		04/13/23 05:51	04/14/23 12:05	1
6:2 FTS	<4.7		4.7	2.4	ng/L		04/13/23 05:51	04/14/23 12:05	1
8:2 FTS	<1.9		1.9	0.43	ng/L		04/13/23 05:51	04/14/23 12:05	1
10:2 FTS	<1.9		1.9	0.63	ng/L		04/13/23 05:51	04/14/23 12:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.38	ng/L		04/13/23 05:51	04/14/23 12:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.8		3.8	1.4	ng/L		04/13/23 05:51	04/14/23 12:05	1
F-53B Major	<1.9		1.9	0.23	ng/L		04/13/23 05:51	04/14/23 12:05	1
F-53B Minor	<1.9		1.9	0.30	ng/L		04/13/23 05:51	04/14/23 12:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	102		25 - 150				04/13/23 05:51	04/14/23 12:05	1
13C5 PFPeA	106		25 - 150				04/13/23 05:51	04/14/23 12:05	1
13C2 PFHxA	106		25 - 150				04/13/23 05:51	04/14/23 12:05	1
13C4 PFHpA	104		25 - 150				04/13/23 05:51	04/14/23 12:05	1
13C4 PFOA	108		25 - 150				04/13/23 05:51	04/14/23 12:05	1
13C5 PFNA	104		25 - 150				04/13/23 05:51	04/14/23 12:05	1
13C2 PFDA	108		25 - 150				04/13/23 05:51	04/14/23 12:05	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: FIELD BLANK-A (4-10-23)

Lab Sample ID: 500-232037-3

Date Collected: 04/10/23 12:05

Matrix: Water

Date Received: 04/11/23 09:25

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PUnA	103		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C2 PFDaA	103		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C2 PFTeDA	101		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C2 PFHxDA	92		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C3 PFBS	98		25 - 150	04/13/23 05:51	04/14/23 12:05	1
18O2 PFHxS	100		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C4 PFOS	100		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C8 FOSA	103		10 - 150	04/13/23 05:51	04/14/23 12:05	1
d3-NMeFOSAA	105		25 - 150	04/13/23 05:51	04/14/23 12:05	1
d5-NEtFOSAA	112		25 - 150	04/13/23 05:51	04/14/23 12:05	1
d-N-MeFOSA-M	89		10 - 150	04/13/23 05:51	04/14/23 12:05	1
d-N-EtFOSA-M	89		10 - 150	04/13/23 05:51	04/14/23 12:05	1
d7-N-MeFOSE-M	95		10 - 150	04/13/23 05:51	04/14/23 12:05	1
d9-N-EtFOSE-M	92		10 - 150	04/13/23 05:51	04/14/23 12:05	1
M2-4:2 FTS	135		25 - 150	04/13/23 05:51	04/14/23 12:05	1
M2-6:2 FTS	118		25 - 150	04/13/23 05:51	04/14/23 12:05	1
M2-8:2 FTS	119		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C3 HFPO-DA	96		25 - 150	04/13/23 05:51	04/14/23 12:05	1
13C2 10:2 FTS	118		25 - 150	04/13/23 05:51	04/14/23 12:05	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-667358/1-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 667358

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		04/13/23 05:51	04/14/23 10:34	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		04/13/23 05:51	04/14/23 10:34	1
NEtFOSA	<2.0		2.0	0.87	ng/L		04/13/23 05:51	04/14/23 10:34	1
NMeFOSA	<2.0		2.0	0.43	ng/L		04/13/23 05:51	04/14/23 10:34	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		04/13/23 05:51	04/14/23 10:34	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		04/13/23 05:51	04/14/23 10:34	1
NMeFOSE	<4.0		4.0	1.4	ng/L		04/13/23 05:51	04/14/23 10:34	1
NEtFOSE	<2.0		2.0	0.85	ng/L		04/13/23 05:51	04/14/23 10:34	1
4:2 FTS	<2.0		2.0	0.24	ng/L		04/13/23 05:51	04/14/23 10:34	1
6:2 FTS	<5.0		5.0	2.5	ng/L		04/13/23 05:51	04/14/23 10:34	1
8:2 FTS	<2.0		2.0	0.46	ng/L		04/13/23 05:51	04/14/23 10:34	1
10:2 FTS	<2.0		2.0	0.67	ng/L		04/13/23 05:51	04/14/23 10:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		04/13/23 05:51	04/14/23 10:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		04/13/23 05:51	04/14/23 10:34	1
F-53B Major	<2.0		2.0	0.24	ng/L		04/13/23 05:51	04/14/23 10:34	1
F-53B Minor	<2.0		2.0	0.32	ng/L		04/13/23 05:51	04/14/23 10:34	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	96		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C5 PFPeA	99		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C2 PFHxA	99		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C4 PFHpA	99		25 - 150				04/13/23 05:51	04/14/23 10:34	1
13C4 PFOA	103		25 - 150				04/13/23 05:51	04/14/23 10:34	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

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

Lab Sample ID: MB 320-667358/1-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 667358

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	97		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFDA	104		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFUnA	103		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFDoA	100		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFTeDA	100		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 PFHxDA	95		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C3 PFBS	94		25 - 150	04/13/23 05:51	04/14/23 10:34	1
18O2 PFHxS	92		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C4 PFOS	92		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C8 FOSA	95		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d3-NMeFOSAA	104		25 - 150	04/13/23 05:51	04/14/23 10:34	1
d5-NEtFOSAA	103		25 - 150	04/13/23 05:51	04/14/23 10:34	1
d-N-MeFOSA-M	77		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d-N-EtFOSA-M	77		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d7-N-MeFOSE-M	86		10 - 150	04/13/23 05:51	04/14/23 10:34	1
d9-N-EtFOSE-M	88		10 - 150	04/13/23 05:51	04/14/23 10:34	1
M2-4:2 FTS	122		25 - 150	04/13/23 05:51	04/14/23 10:34	1
M2-6:2 FTS	117		25 - 150	04/13/23 05:51	04/14/23 10:34	1
M2-8:2 FTS	112		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C3 HFPO-DA	91		25 - 150	04/13/23 05:51	04/14/23 10:34	1
13C2 10:2 FTS	112		25 - 150	04/13/23 05:51	04/14/23 10:34	1

Lab Sample ID: LCS 320-667358/2-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	45.0		ng/L		113	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.8		ng/L		104	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	47.6		ng/L		119	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	45.0		ng/L		112	60 - 135
Perfluorononanoic acid (PFNA)	40.0	45.6		ng/L		114	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	47.5		ng/L		119	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	47.4		ng/L		119	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	44.8		ng/L		112	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	42.7		ng/L		107	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.9		ng/L		110	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.3		ng/L		113	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	54.9	*+	ng/L		137	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	41.7		ng/L		117	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	44.2		ng/L		118	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

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

Lab Sample ID: LCS 320-667358/2-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.9		ng/L		112	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	45.0		ng/L		118	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	41.3		ng/L		111	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.8		ng/L		106	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	41.7		ng/L		108	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	38.8		ng/L		100	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	46.1		ng/L		115	60 - 135
NEtFOSA	40.0	47.6		ng/L		119	60 - 135
NMeFOSA	40.0	43.9		ng/L		110	60 - 135
NMeFOSAA	40.0	43.5		ng/L		109	60 - 135
NEtFOSAA	40.0	46.3		ng/L		116	60 - 135
NMeFOSE	40.0	41.1		ng/L		103	60 - 135
NEtFOSE	40.0	44.1		ng/L		110	60 - 135
4:2 FTS	37.5	44.1		ng/L		118	60 - 135
6:2 FTS	38.1	43.3		ng/L		114	60 - 135
8:2 FTS	38.4	43.8		ng/L		114	60 - 135
10:2 FTS	38.6	40.3		ng/L		104	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	48.5		ng/L		129	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	46.9		ng/L		117	60 - 135
F-53B Major	37.4	44.4		ng/L		119	60 - 135
F-53B Minor	37.8	43.8		ng/L		116	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	91		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	95		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	93		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	96		25 - 150
13C2 PFTeDA	98		25 - 150
13C2 PFHxDA	102		25 - 150
13C3 PFBS	89		25 - 150
18O2 PFHxS	89		25 - 150
13C4 PFOS	88		25 - 150
13C8 FOSA	88		10 - 150
d3-NMeFOSAA	98		25 - 150
d5-NEtFOSAA	97		25 - 150
d-N-MeFOSA-M	89		10 - 150
d-N-EtFOSA-M	80		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

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

Lab Sample ID: LCS 320-667358/2-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667358

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	87		10 - 150
d9-N-EtFOSE-M	87		10 - 150
M2-4:2 FTS	123		25 - 150
M2-6:2 FTS	116		25 - 150
M2-8:2 FTS	105		25 - 150
13C3 HFPO-DA	89		25 - 150
13C2 10:2 FTS	106		25 - 150

Lab Sample ID: LCSD 320-667358/3-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 667358

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	40.0	43.6		ng/L		109	60 - 135	0	30
Perfluoropentanoic acid (PFPeA)	40.0	45.9		ng/L		115	60 - 135	2	30
Perfluorohexanoic acid (PFHxA)	40.0	42.1		ng/L		105	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135	6	30
Perfluorooctanoic acid (PFOA)	40.0	42.5		ng/L		106	60 - 135	6	30
Perfluorononanoic acid (PFNA)	40.0	46.6		ng/L		117	60 - 135	2	30
Perfluorodecanoic acid (PFDA)	40.0	45.8		ng/L		115	60 - 135	4	30
Perfluoroundecanoic acid (PFUnA)	40.0	47.7		ng/L		119	60 - 135	0	30
Perfluorododecanoic acid (PFDoA)	40.0	43.1		ng/L		108	60 - 135	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.9		ng/L		107	60 - 135	0	30
Perfluorotetradecanoic acid (PFTeA)	40.0	45.7		ng/L		114	60 - 135	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.5		ng/L		114	60 - 135	1	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	53.7		ng/L		134	60 - 135	2	30
Perfluorobutanesulfonic acid (PFBS)	35.5	41.6		ng/L		117	60 - 135	0	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.8		ng/L		116	60 - 135	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.3		ng/L		110	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.5		ng/L		114	60 - 135	3	30
Perfluorooctanesulfonic acid (PFOS)	37.2	42.4		ng/L		114	60 - 135	3	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.4		ng/L		110	60 - 135	4	30
Perfluorodecanesulfonic acid (PFDS)	38.6	39.8		ng/L		103	60 - 135	5	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.5		ng/L		104	60 - 135	4	30
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		111	60 - 135	3	30
NEtFOSA	40.0	44.1		ng/L		110	60 - 135	8	30
NMeFOSA	40.0	49.3		ng/L		123	60 - 135	12	30
NMeFOSAA	40.0	47.3		ng/L		118	60 - 135	8	30

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

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

Lab Sample ID: LCSD 320-667358/3-A
Matrix: Water
Analysis Batch: 667694

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 667358

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	48.7		ng/L		122	60 - 135	5	30
NMeFOSE	40.0	42.7		ng/L		107	60 - 135	4	30
NEtFOSE	40.0	43.6		ng/L		109	60 - 135	1	30
4:2 FTS	37.5	43.2		ng/L		115	60 - 135	2	30
6:2 FTS	38.1	42.7		ng/L		112	60 - 135	1	30
8:2 FTS	38.4	47.9		ng/L		125	60 - 135	9	30
10:2 FTS	38.6	41.9		ng/L		108	60 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	49.6		ng/L		131	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	45.4		ng/L		113	60 - 135	3	30
F-53B Major	37.4	45.9		ng/L		123	60 - 135	3	30
F-53B Minor	37.8	41.9		ng/L		111	60 - 135	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	98		25 - 150
13C5 PFPeA	97		25 - 150
13C2 PFHxA	98		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFUnA	99		25 - 150
13C2 PFDoA	101		25 - 150
13C2 PFTeDA	98		25 - 150
13C2 PFHxDA	99		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	90		25 - 150
13C8 FOSA	94		10 - 150
d3-NMeFOSAA	101		25 - 150
d5-NEtFOSAA	96		25 - 150
d-N-MeFOSA-M	78		10 - 150
d-N-EtFOSA-M	84		10 - 150
d7-N-MeFOSE-M	87		10 - 150
d9-N-EtFOSE-M	88		10 - 150
M2-4:2 FTS	131		25 - 150
M2-6:2 FTS	120		25 - 150
M2-8:2 FTS	108		25 - 150
13C3 HFPO-DA	91		25 - 150
13C2 10:2 FTS	107		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Client Sample ID: SW-40 (4-10-23)
Date Collected: 04/10/23 12:00
Date Received: 04/11/23 09:25

Lab Sample ID: 500-232037-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)		1	667694	RS1	EET SAC	04/14/23 11:45
Total/NA	Prep	3535	DL		667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)	DL	5	668199	K1S	EET SAC	04/18/23 00:29

Client Sample ID: DUP-01-A (4-10-23)
Date Collected: 04/10/23 00:00
Date Received: 04/11/23 09:25

Lab Sample ID: 500-232037-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)		1	667694	RS1	EET SAC	04/14/23 11:55
Total/NA	Prep	3535	DL		667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)	DL	5	668199	K1S	EET SAC	04/18/23 00:39

Client Sample ID: FIELD BLANK-A (4-10-23)
Date Collected: 04/10/23 12:05
Date Received: 04/11/23 09:25

Lab Sample ID: 500-232037-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			667358	HJA	EET SAC	04/13/23 05:51
Total/NA	Analysis	537 (modified)		1	667694	RS1	EET SAC	04/14/23 12:05

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

Client Contact
 Arcadis U.S., Inc.
 126 North Jefferson Street, Suite 400
 Milwaukee, WI 53202
 Phone _____
 FAX _____
 Project Name: Ditch A Surface Water
 Site: Marinette, WI
 P O # 30171092.4.1.1

Site Contact: Sandie Fredrick
Lab Contact: Sandie Fredrick
Date: 4-10-23
Carrier: FedEx
TALS Project #: 50019256
Sampler:
For Lab Use Only:
 Walk-in Client:
 Lab Sampling:
 Job / SDG No.:

Regulatory Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below Extended
 2 weeks
 1 week
 2 days
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:
SW-40 (4-10-23)	4-10-23	12:00	G	W	2	N	X	Downstream
DUP-01-A (4-10-23)	↓	—	G	W	2	N	X	Duplicate
Field Blank-A (4-10-23)	↓	12:05	G	W	2	N	X	Field Blank



500-232037 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification:
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
 Questions call Lisa Rutkowski, Liz Hover
 5 day-TAT

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

Custody Seal No.: 7057803
 Company: Bailey Excavating
 Received by: Feed Ex
 Date/Time: 4-10-23/1315
 Relinquished by: Jacob Hammer
 Date/Time: _____
 Relinquished by: _____
 Date/Time: _____

Therm ID No.: 603
 Corrid: 603
 Received by: Feed Ex
 Date/Time: 4/10/23 925
 Relinquished by: _____
 Date/Time: _____

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-232037-1

SDG Number:

Login Number: 232037

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 04/11/23 05:32 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051803
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.3C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232037-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-232037-1	SW-40 (4-10-23)	85	95	99	96	100	85	86	79
500-232037-1 - DL	SW-40 (4-10-23)	90	96	110	98	100	101	103	108
500-232037-2	DUP-01-A (4-10-23)	79	90	96	95	94	83	82	80
500-232037-2 - DL	DUP-01-A (4-10-23)	93	95	96	106	95	90	100	99
500-232037-3	FIELD BLANK-A (4-10-23)	102	106	106	104	108	104	108	103
LCS 320-667358/2-A	Lab Control Sample	91	94	95	93	98	93	97	96
LCSD 320-667358/3-A	Lab Control Sample Dup	98	97	98	101	105	97	105	99
MB 320-667358/1-A	Method Blank	96	99	99	99	103	97	104	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-232037-1	SW-40 (4-10-23)	75	62	53	83	84	88	84	83
500-232037-1 - DL	SW-40 (4-10-23)	99	78	62	89	80	91	103	101
500-232037-2	DUP-01-A (4-10-23)	71	56	43	78	82	83	81	78
500-232037-2 - DL	DUP-01-A (4-10-23)	103	75	54	93	85	86	91	100
500-232037-3	FIELD BLANK-A (4-10-23)	103	101	92	98	100	100	103	105
LCS 320-667358/2-A	Lab Control Sample	96	98	102	89	89	88	88	98
LCSD 320-667358/3-A	Lab Control Sample Dup	101	98	99	92	92	90	94	101
MB 320-667358/1-A	Method Blank	100	100	95	94	92	92	95	104

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-232037-1	SW-40 (4-10-23)	81	67	62	61	63	102	103	100
500-232037-1 - DL	SW-40 (4-10-23)	112	89	83	87	87	120	99	99
500-232037-2	DUP-01-A (4-10-23)	80	65	65	60	60	115	102	99
500-232037-2 - DL	DUP-01-A (4-10-23)	104	87	81	87	89	108	88	93
500-232037-3	FIELD BLANK-A (4-10-23)	112	89	89	95	92	135	118	119
LCS 320-667358/2-A	Lab Control Sample	97	89	80	87	87	123	116	105
LCSD 320-667358/3-A	Lab Control Sample Dup	96	78	84	87	88	131	120	108
MB 320-667358/1-A	Method Blank	103	77	77	86	88	122	117	112

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-232037-1	SW-40 (4-10-23)	78	73
500-232037-1 - DL	SW-40 (4-10-23)	101	102
500-232037-2	DUP-01-A (4-10-23)	72	79
500-232037-2 - DL	DUP-01-A (4-10-23)	98	110
500-232037-3	FIELD BLANK-A (4-10-23)	96	118
LCS 320-667358/2-A	Lab Control Sample	89	106
LCSD 320-667358/3-A	Lab Control Sample Dup	91	107
MB 320-667358/1-A	Method Blank	91	112

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA

Isotope Dilution Summary

Client: ARCADIS US Inc

Job ID: 500-232037-1

Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

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JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 Ditch A SW

JOB NUMBER

500-232726-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

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Authorization



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Job ID: 500-232726-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-232726-1

Comments

No additional comments.

Receipt

The samples were received on 4/25/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1° C.

LCMS

Method 537 (modified): The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 320-671567 and analytical batch 320-671771 recovered outside control limits for the following analytes: Perfluoro-n-octadecanoic acid (PFODA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-671771 recovered above the upper control limit for Perfluorononanesulfonic acid (PFNS). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 320-670244 and analytical batch 320-670342 recovered outside control limits for the following analytes: Perfluoro-n-octadecanoic acid (PFODA). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-670244 contained Perfluorooctanesulfonic acid (PFOS) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-670244.

3535 PFC
Water
320-670244

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-671567.

3535 PFC
Water
320-671567

Method 3535: The following samples in preparation batch 320-671567 were light brown in color prior to extraction. 500-232726-1 and 500-232726-2

3535 PFC
Water
320-671567

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-232726-1	SW-40(4-24-23)	Water	04/24/23 11:35	04/25/23 09:40
500-232726-2	DUP-01-A(4-24-23)	Water	04/24/23 00:00	04/25/23 09:40
500-232726-3	Field Blank-A(4-24-23)	Water	04/24/23 11:40	04/25/23 09:40

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: SW-40(4-24-23)

Lab Sample ID: 500-232726-1

Date Collected: 04/24/23 11:35

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	91		4.4	2.1	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoropentanoic acid (PFPeA)	120		1.7	0.43	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorohexanoic acid (PFHxA)	47		1.7	0.51	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoroheptanoic acid (PFHpA)	25		1.7	0.22	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorooctanoic acid (PFOA)	55		1.7	0.74	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorononanoic acid (PFNA)	5.3		1.7	0.24	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorodecanoic acid (PFDA)	3.4		1.7	0.27	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoroundecanoic acid (PFUnA)	1.7		1.7	0.96	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorododecanoic acid (PFDoA)	<1.7		1.7	0.48	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorotridecanoic acid (PFTriA)	<1.7		1.7	1.1	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorotetradecanoic acid (PFTeA)	<1.7		1.7	0.64	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.7		1.7	0.78	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.7	+	1.7	0.82	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorobutanesulfonic acid (PFBS)	0.63	J	1.7	0.17	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoropentanesulfonic acid (PFPeS)	<1.7		1.7	0.26	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorohexanesulfonic acid (PFHxS)	5.5		1.7	0.50	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.7		1.7	0.17	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorooctanesulfonic acid (PFOS)	21		1.7	0.47	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorononanesulfonic acid (PFNS)	<1.7		1.7	0.32	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorodecanesulfonic acid (PFDS)	<1.7		1.7	0.28	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorododecanesulfonic acid (PFDoS)	<1.7		1.7	0.85	ng/L		05/02/23 09:21	05/02/23 18:38	1
Perfluorooctanesulfonamide (FOSA)	0.92	J	1.7	0.86	ng/L		05/02/23 09:21	05/02/23 18:38	1
NEtFOSA	<1.7		1.7	0.76	ng/L		05/02/23 09:21	05/02/23 18:38	1
NMeFOSA	<1.7		1.7	0.38	ng/L		05/02/23 09:21	05/02/23 18:38	1
NMeFOSAA	<4.4		4.4	1.0	ng/L		05/02/23 09:21	05/02/23 18:38	1
NEtFOSAA	<4.4		4.4	1.1	ng/L		05/02/23 09:21	05/02/23 18:38	1
NMeFOSE	<3.5		3.5	1.2	ng/L		05/02/23 09:21	05/02/23 18:38	1
NEtFOSE	<1.7		1.7	0.74	ng/L		05/02/23 09:21	05/02/23 18:38	1
4:2 FTS	0.33	J	1.7	0.21	ng/L		05/02/23 09:21	05/02/23 18:38	1
6:2 FTS	51		4.4	2.2	ng/L		05/02/23 09:21	05/02/23 18:38	1
8:2 FTS	40		1.7	0.40	ng/L		05/02/23 09:21	05/02/23 18:38	1
10:2 FTS	3.8		1.7	0.59	ng/L		05/02/23 09:21	05/02/23 18:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.7		1.7	0.35	ng/L		05/02/23 09:21	05/02/23 18:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		05/02/23 09:21	05/02/23 18:38	1
F-53B Major	<1.7		1.7	0.21	ng/L		05/02/23 09:21	05/02/23 18:38	1
F-53B Minor	<1.7		1.7	0.28	ng/L		05/02/23 09:21	05/02/23 18:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150				05/02/23 09:21	05/02/23 18:38	1
13C5 PFPeA	107		25 - 150				05/02/23 09:21	05/02/23 18:38	1
13C2 PFHxA	103		25 - 150				05/02/23 09:21	05/02/23 18:38	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: SW-40(4-24-23)

Lab Sample ID: 500-232726-1

Date Collected: 04/24/23 11:35

Matrix: Water

Date Received: 04/25/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFHpA	101		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C4 PFOA	89		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C5 PFNA	81		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C2 PFDA	87		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C2 PFUnA	95		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C2 PFDoA	77		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C2 PFTeDA	64		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C2 PFHxDA	66		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C3 PFBS	109		25 - 150	05/02/23 09:21	05/02/23 18:38	1
18O2 PFHxS	94		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C4 PFOS	78		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C8 FOSA	75		10 - 150	05/02/23 09:21	05/02/23 18:38	1
d3-NMeFOSAA	114		25 - 150	05/02/23 09:21	05/02/23 18:38	1
d5-NEtFOSAA	107		25 - 150	05/02/23 09:21	05/02/23 18:38	1
d-N-MeFOSA-M	65		10 - 150	05/02/23 09:21	05/02/23 18:38	1
d-N-EtFOSA-M	65		10 - 150	05/02/23 09:21	05/02/23 18:38	1
d7-N-MeFOSE-M	56		10 - 150	05/02/23 09:21	05/02/23 18:38	1
d9-N-EtFOSE-M	51		10 - 150	05/02/23 09:21	05/02/23 18:38	1
M2-4:2 FTS	113		25 - 150	05/02/23 09:21	05/02/23 18:38	1
M2-6:2 FTS	95		25 - 150	05/02/23 09:21	05/02/23 18:38	1
M2-8:2 FTS	88		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C3 HFPO-DA	112		25 - 150	05/02/23 09:21	05/02/23 18:38	1
13C2 10:2 FTS	69		25 - 150	05/02/23 09:21	05/02/23 18:38	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: DUP-01-A(4-24-23)

Lab Sample ID: 500-232726-2

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	92		4.4	2.1	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoropentanoic acid (PFPeA)	140		1.8	0.43	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorohexanoic acid (PFHxA)	53		1.8	0.51	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoroheptanoic acid (PFHpA)	24		1.8	0.22	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorooctanoic acid (PFOA)	61		1.8	0.74	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorononanoic acid (PFNA)	5.0		1.8	0.24	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorodecanoic acid (PFDA)	3.4		1.8	0.27	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoroundecanoic acid (PFUnA)	1.6	J	1.8	0.96	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.48	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.1	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.64	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.78	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8	+	1.8	0.82	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorobutanesulfonic acid (PFBS)	0.64	J	1.8	0.18	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.26	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorohexanesulfonic acid (PFHxS)	5.8		1.8	0.50	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluoroheptanesulfonic acid (PFHpS)	0.23	J	1.8	0.17	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorooctanesulfonic acid (PFOS)	24		1.8	0.47	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.32	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.28	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.85	ng/L		05/02/23 09:21	05/02/23 18:49	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.86	ng/L		05/02/23 09:21	05/02/23 18:49	1
NEtFOSA	<1.8		1.8	0.76	ng/L		05/02/23 09:21	05/02/23 18:49	1
NMeFOSA	<1.8		1.8	0.38	ng/L		05/02/23 09:21	05/02/23 18:49	1
NMeFOSAA	<4.4		4.4	1.1	ng/L		05/02/23 09:21	05/02/23 18:49	1
NEtFOSAA	<4.4		4.4	1.1	ng/L		05/02/23 09:21	05/02/23 18:49	1
NMeFOSE	<3.5		3.5	1.2	ng/L		05/02/23 09:21	05/02/23 18:49	1
NEtFOSE	<1.8		1.8	0.74	ng/L		05/02/23 09:21	05/02/23 18:49	1
4:2 FTS	0.38	J	1.8	0.21	ng/L		05/02/23 09:21	05/02/23 18:49	1
6:2 FTS	57		4.4	2.2	ng/L		05/02/23 09:21	05/02/23 18:49	1
8:2 FTS	45		1.8	0.40	ng/L		05/02/23 09:21	05/02/23 18:49	1
10:2 FTS	3.5		1.8	0.59	ng/L		05/02/23 09:21	05/02/23 18:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.35	ng/L		05/02/23 09:21	05/02/23 18:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.5		3.5	1.3	ng/L		05/02/23 09:21	05/02/23 18:49	1
F-53B Major	<1.8		1.8	0.21	ng/L		05/02/23 09:21	05/02/23 18:49	1
F-53B Minor	<1.8		1.8	0.28	ng/L		05/02/23 09:21	05/02/23 18:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150				05/02/23 09:21	05/02/23 18:49	1
13C5 PFPeA	95		25 - 150				05/02/23 09:21	05/02/23 18:49	1
13C2 PFHxA	85		25 - 150				05/02/23 09:21	05/02/23 18:49	1
13C4 PFHpA	93		25 - 150				05/02/23 09:21	05/02/23 18:49	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: DUP-01-A(4-24-23)

Lab Sample ID: 500-232726-2

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOA	83		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C5 PFNA	76		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C2 PFDA	85		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C2 PFUnA	89		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C2 PFDoA	80		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C2 PFTeDA	70		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C2 PFHxDA	75		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C3 PFBS	107		25 - 150	05/02/23 09:21	05/02/23 18:49	1
18O2 PFHxS	90		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C4 PFOS	70		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C8 FOSA	72		10 - 150	05/02/23 09:21	05/02/23 18:49	1
d3-NMeFOSAA	105		25 - 150	05/02/23 09:21	05/02/23 18:49	1
d5-NEtFOSAA	104		25 - 150	05/02/23 09:21	05/02/23 18:49	1
d-N-MeFOSA-M	68		10 - 150	05/02/23 09:21	05/02/23 18:49	1
d-N-EtFOSA-M	61		10 - 150	05/02/23 09:21	05/02/23 18:49	1
d7-N-MeFOSE-M	53		10 - 150	05/02/23 09:21	05/02/23 18:49	1
d9-N-EtFOSE-M	50		10 - 150	05/02/23 09:21	05/02/23 18:49	1
M2-4:2 FTS	109		25 - 150	05/02/23 09:21	05/02/23 18:49	1
M2-6:2 FTS	86		25 - 150	05/02/23 09:21	05/02/23 18:49	1
M2-8:2 FTS	88		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C3 HFPO-DA	102		25 - 150	05/02/23 09:21	05/02/23 18:49	1
13C2 10:2 FTS	84		25 - 150	05/02/23 09:21	05/02/23 18:49	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: Field Blank-A(4-24-23)

Lab Sample ID: 500-232726-3

Date Collected: 04/24/23 11:40

Matrix: Water

Date Received: 04/25/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.3		5.3	2.5	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoropentanoic acid (PFPeA)	<2.1		2.1	0.51	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorohexanoic acid (PFHxA)	<2.1		2.1	0.61	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoroheptanoic acid (PFHpA)	<2.1		2.1	0.26	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorooctanoic acid (PFOA)	<2.1		2.1	0.89	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorononanoic acid (PFNA)	<2.1		2.1	0.28	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorodecanoic acid (PFDA)	<2.1		2.1	0.33	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoroundecanoic acid (PFUnA)	<2.1		2.1	1.2	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorododecanoic acid (PFDoA)	<2.1		2.1	0.58	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorotridecanoic acid (PFTriA)	<2.1		2.1	1.4	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorotetradecanoic acid (PFTeA)	<2.1		2.1	0.77	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.1		2.1	0.93	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.1		2.1	0.99	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorobutanesulfonic acid (PFBS)	<2.1		2.1	0.21	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoropentanesulfonic acid (PFPeS)	<2.1		2.1	0.32	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorohexanesulfonic acid (PFHxS)	<2.1		2.1	0.60	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.1		2.1	0.20	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorooctanesulfonic acid (PFOS)	<2.1		2.1	0.57	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorononanesulfonic acid (PFNS)	<2.1		2.1	0.39	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorodecanesulfonic acid (PFDS)	<2.1		2.1	0.34	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorododecanesulfonic acid (PFDoS)	<2.1		2.1	1.0	ng/L		04/26/23 10:11	04/27/23 12:25	1
Perfluorooctanesulfonamide (FOSA)	<2.1		2.1	1.0	ng/L		04/26/23 10:11	04/27/23 12:25	1
NEtFOSA	<2.1		2.1	0.91	ng/L		04/26/23 10:11	04/27/23 12:25	1
NMeFOSA	<2.1		2.1	0.45	ng/L		04/26/23 10:11	04/27/23 12:25	1
NMeFOSAA	<5.3		5.3	1.3	ng/L		04/26/23 10:11	04/27/23 12:25	1
NEtFOSAA	<5.3		5.3	1.4	ng/L		04/26/23 10:11	04/27/23 12:25	1
NMeFOSE	<4.2		4.2	1.5	ng/L		04/26/23 10:11	04/27/23 12:25	1
NEtFOSE	<2.1		2.1	0.89	ng/L		04/26/23 10:11	04/27/23 12:25	1
4:2 FTS	<2.1		2.1	0.25	ng/L		04/26/23 10:11	04/27/23 12:25	1
6:2 FTS	<5.3		5.3	2.6	ng/L		04/26/23 10:11	04/27/23 12:25	1
8:2 FTS	<2.1		2.1	0.48	ng/L		04/26/23 10:11	04/27/23 12:25	1
10:2 FTS	<2.1		2.1	0.70	ng/L		04/26/23 10:11	04/27/23 12:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.1		2.1	0.42	ng/L		04/26/23 10:11	04/27/23 12:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.2		4.2	1.6	ng/L		04/26/23 10:11	04/27/23 12:25	1
F-53B Major	<2.1		2.1	0.25	ng/L		04/26/23 10:11	04/27/23 12:25	1
F-53B Minor	<2.1		2.1	0.34	ng/L		04/26/23 10:11	04/27/23 12:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	114		25 - 150				04/26/23 10:11	04/27/23 12:25	1
13C5 PFPeA	120		25 - 150				04/26/23 10:11	04/27/23 12:25	1
13C2 PFHxA	122		25 - 150				04/26/23 10:11	04/27/23 12:25	1
13C4 PFHpA	124		25 - 150				04/26/23 10:11	04/27/23 12:25	1
13C4 PFOA	118		25 - 150				04/26/23 10:11	04/27/23 12:25	1
13C5 PFNA	115		25 - 150				04/26/23 10:11	04/27/23 12:25	1
13C2 PFDA	125		25 - 150				04/26/23 10:11	04/27/23 12:25	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: Field Blank-A(4-24-23)

Lab Sample ID: 500-232726-3

Date Collected: 04/24/23 11:40

Matrix: Water

Date Received: 04/25/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	118		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C2 PFlDoA	114		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C2 PFlTeDA	114		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C2 PFlHxDA	104		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C3 PFlBS	108		25 - 150	04/26/23 10:11	04/27/23 12:25	1
18O2 PFlHxS	106		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C4 PFlOS	108		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C8 FOSA	109		10 - 150	04/26/23 10:11	04/27/23 12:25	1
d3-NMeFOSAA	107		25 - 150	04/26/23 10:11	04/27/23 12:25	1
d5-NEtFOSAA	113		25 - 150	04/26/23 10:11	04/27/23 12:25	1
d-N-MeFOSA-M	96		10 - 150	04/26/23 10:11	04/27/23 12:25	1
d-N-EtFOSA-M	87		10 - 150	04/26/23 10:11	04/27/23 12:25	1
d7-N-MeFOSE-M	94		10 - 150	04/26/23 10:11	04/27/23 12:25	1
d9-N-EtFOSE-M	100		10 - 150	04/26/23 10:11	04/27/23 12:25	1
M2-4:2 FTS	117		25 - 150	04/26/23 10:11	04/27/23 12:25	1
M2-6:2 FTS	111		25 - 150	04/26/23 10:11	04/27/23 12:25	1
M2-8:2 FTS	121		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C3 HFPO-DA	113		25 - 150	04/26/23 10:11	04/27/23 12:25	1
13C2 10:2 FTS	114		25 - 150	04/26/23 10:11	04/27/23 12:25	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-670244/1-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 670244

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorononanoic acid (PFNA)	0.716	J	2.0	0.27	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorooctanesulfonic acid (PFOS)	12.7		2.0	0.54	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		04/26/23 10:11	04/27/23 09:23	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		04/26/23 10:11	04/27/23 09:23	1
NEtFOSA	<2.0		2.0	0.87	ng/L		04/26/23 10:11	04/27/23 09:23	1
NMeFOSA	<2.0		2.0	0.43	ng/L		04/26/23 10:11	04/27/23 09:23	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		04/26/23 10:11	04/27/23 09:23	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		04/26/23 10:11	04/27/23 09:23	1
NMeFOSE	<4.0		4.0	1.4	ng/L		04/26/23 10:11	04/27/23 09:23	1
NEtFOSE	<2.0		2.0	0.85	ng/L		04/26/23 10:11	04/27/23 09:23	1
4:2 FTS	<2.0		2.0	0.24	ng/L		04/26/23 10:11	04/27/23 09:23	1
6:2 FTS	<5.0		5.0	2.5	ng/L		04/26/23 10:11	04/27/23 09:23	1
8:2 FTS	<2.0		2.0	0.46	ng/L		04/26/23 10:11	04/27/23 09:23	1
10:2 FTS	<2.0		2.0	0.67	ng/L		04/26/23 10:11	04/27/23 09:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		04/26/23 10:11	04/27/23 09:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		04/26/23 10:11	04/27/23 09:23	1
F-53B Major	<2.0		2.0	0.24	ng/L		04/26/23 10:11	04/27/23 09:23	1
F-53B Minor	<2.0		2.0	0.32	ng/L		04/26/23 10:11	04/27/23 09:23	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C5 PFPeA	93		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C2 PFHxA	96		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C4 PFHpA	97		25 - 150				04/26/23 10:11	04/27/23 09:23	1
13C4 PFOA	90		25 - 150				04/26/23 10:11	04/27/23 09:23	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: MB 320-670244/1-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 670244

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	92		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFDA	106		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFUnA	103		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFDoA	100		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFTeDA	107		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 PFHxDA	102		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C3 PFBS	84		25 - 150	04/26/23 10:11	04/27/23 09:23	1
18O2 PFHxS	87		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C4 PFOS	90		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C8 FOSA	92		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d3-NMeFOSAA	101		25 - 150	04/26/23 10:11	04/27/23 09:23	1
d5-NEtFOSAA	99		25 - 150	04/26/23 10:11	04/27/23 09:23	1
d-N-MeFOSA-M	83		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d-N-EtFOSA-M	77		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d7-N-MeFOSE-M	89		10 - 150	04/26/23 10:11	04/27/23 09:23	1
d9-N-EtFOSE-M	88		10 - 150	04/26/23 10:11	04/27/23 09:23	1
M2-4:2 FTS	94		25 - 150	04/26/23 10:11	04/27/23 09:23	1
M2-6:2 FTS	86		25 - 150	04/26/23 10:11	04/27/23 09:23	1
M2-8:2 FTS	97		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C3 HFPO-DA	89		25 - 150	04/26/23 10:11	04/27/23 09:23	1
13C2 10:2 FTS	106		25 - 150	04/26/23 10:11	04/27/23 09:23	1

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	43.3		ng/L		108	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	38.7		ng/L		97	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	41.8		ng/L		104	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	44.5		ng/L		111	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	43.8		ng/L		110	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	42.9		ng/L		107	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.3		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	36.9		ng/L		92	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.0		ng/L		105	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	54.9	*+	ng/L		137	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	38.9		ng/L		110	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	45.6		ng/L		121	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	39.6		ng/L		109	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	41.6		ng/L		109	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	37.7		ng/L		101	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.2		ng/L		110	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	45.6		ng/L		118	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	40.1		ng/L		103	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	45.0		ng/L		112	60 - 135
NEtFOSA	40.0	40.5		ng/L		101	60 - 135
NMeFOSA	40.0	40.3		ng/L		101	60 - 135
NMeFOSAA	40.0	42.2		ng/L		105	60 - 135
NEtFOSAA	40.0	42.4		ng/L		106	60 - 135
NMeFOSE	40.0	41.4		ng/L		103	60 - 135
NEtFOSE	40.0	42.4		ng/L		106	60 - 135
4:2 FTS	37.5	43.5		ng/L		116	60 - 135
6:2 FTS	38.1	43.5		ng/L		114	60 - 135
8:2 FTS	38.4	41.3		ng/L		107	60 - 135
10:2 FTS	38.6	39.4		ng/L		102	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	48.4		ng/L		128	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	42.2		ng/L		105	60 - 135
F-53B Major	37.4	45.5		ng/L		122	60 - 135
F-53B Minor	37.8	47.6		ng/L		126	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	84		25 - 150
13C5 PFPeA	80		25 - 150
13C2 PFHxA	85		25 - 150
13C4 PFHpA	85		25 - 150
13C4 PFOA	86		25 - 150
13C5 PFNA	83		25 - 150
13C2 PFDA	93		25 - 150
13C2 PFUnA	89		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	95		25 - 150
13C2 PFHxDA	98		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	79		25 - 150
13C4 PFOS	77		25 - 150
13C8 FOSA	80		10 - 150
d3-NMeFOSAA	82		25 - 150
d5-NEtFOSAA	87		25 - 150
d-N-MeFOSA-M	69		10 - 150
d-N-EtFOSA-M	67		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: LCS 320-670244/2-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 670244

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	75		10 - 150
d9-N-EtFOSE-M	77		10 - 150
M2-4:2 FTS	84		25 - 150
M2-6:2 FTS	84		25 - 150
M2-8:2 FTS	86		25 - 150
13C3 HFPO-DA	75		25 - 150
13C2 10:2 FTS	88		25 - 150

Lab Sample ID: LCSD 320-670244/3-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	43.5		ng/L		109	60 - 135	6	30
Perfluoropentanoic acid (PFPeA)	40.0	43.5		ng/L		109	60 - 135	0	30
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		103	60 - 135	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	60 - 135	4	30
Perfluorooctanoic acid (PFOA)	40.0	43.4		ng/L		108	60 - 135	4	30
Perfluorononanoic acid (PFNA)	40.0	46.4		ng/L		116	60 - 135	7	30
Perfluorodecanoic acid (PFDA)	40.0	46.9		ng/L		117	60 - 135	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	46.6		ng/L		117	60 - 135	6	30
Perfluorododecanoic acid (PFDoA)	40.0	44.3		ng/L		111	60 - 135	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	43.2		ng/L		108	60 - 135	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.4		ng/L		98	60 - 135	7	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.5		ng/L		109	60 - 135	3	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	54.3	*+	ng/L		136	60 - 135	1	30
Perfluorobutanesulfonic acid (PFBS)	35.5	39.4		ng/L		111	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	45.9		ng/L		122	60 - 135	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	40.4		ng/L		111	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	42.2		ng/L		111	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.2	38.9		ng/L		104	60 - 135	3	30
Perfluorononanesulfonic acid (PFNS)	38.5	42.5		ng/L		110	60 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	43.4		ng/L		113	60 - 135	5	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.6		ng/L		94	60 - 135	9	30
Perfluorooctanesulfonamide (FOSA)	40.0	47.0		ng/L		118	60 - 135	4	30
NEtFOSA	40.0	44.3		ng/L		111	60 - 135	9	30
NMeFOSA	40.0	42.7		ng/L		107	60 - 135	6	30
NMeFOSAA	40.0	43.4		ng/L		108	60 - 135	3	30

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: LCSD 320-670244/3-A
Matrix: Water
Analysis Batch: 670342

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 670244

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	41.8		ng/L		105	60 - 135	1	30
NMeFOSE	40.0	42.3		ng/L		106	60 - 135	2	30
NEtFOSE	40.0	45.7		ng/L		114	60 - 135	7	30
4:2 FTS	37.5	45.1		ng/L		120	60 - 135	3	30
6:2 FTS	38.1	48.3		ng/L		127	60 - 135	10	30
8:2 FTS	38.4	43.5		ng/L		113	60 - 135	5	30
10:2 FTS	38.6	40.8		ng/L		106	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	50.2		ng/L		133	60 - 135	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.6		ng/L		109	60 - 135	3	30
F-53B Major	37.4	47.0		ng/L		126	60 - 135	3	30
F-53B Minor	37.8	47.0		ng/L		125	60 - 135	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	79		25 - 150
13C5 PFPeA	84		25 - 150
13C2 PFHxA	84		25 - 150
13C4 PFHpA	86		25 - 150
13C4 PFOA	87		25 - 150
13C5 PFNA	82		25 - 150
13C2 PFDA	90		25 - 150
13C2 PFUnA	88		25 - 150
13C2 PFDoA	88		25 - 150
13C2 PFTeDA	93		25 - 150
13C2 PFHxDA	95		25 - 150
13C3 PFBS	75		25 - 150
18O2 PFHxS	74		25 - 150
13C4 PFOS	76		25 - 150
13C8 FOSA	74		10 - 150
d3-NMeFOSAA	79		25 - 150
d5-NEtFOSAA	86		25 - 150
d-N-MeFOSA-M	63		10 - 150
d-N-EtFOSA-M	62		10 - 150
d7-N-MeFOSE-M	72		10 - 150
d9-N-EtFOSE-M	71		10 - 150
M2-4:2 FTS	87		25 - 150
M2-6:2 FTS	79		25 - 150
M2-8:2 FTS	82		25 - 150
13C3 HFPO-DA	78		25 - 150
13C2 10:2 FTS	83		25 - 150

Lab Sample ID: MB 320-671567/1-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		05/02/23 09:21	05/02/23 16:04	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: MB 320-671567/1-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		05/02/23 09:21	05/02/23 16:04	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		05/02/23 09:21	05/02/23 16:04	1
NEtFOSA	<2.0		2.0	0.87	ng/L		05/02/23 09:21	05/02/23 16:04	1
NMeFOSA	<2.0		2.0	0.43	ng/L		05/02/23 09:21	05/02/23 16:04	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		05/02/23 09:21	05/02/23 16:04	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		05/02/23 09:21	05/02/23 16:04	1
NMeFOSE	<4.0		4.0	1.4	ng/L		05/02/23 09:21	05/02/23 16:04	1
NEtFOSE	<2.0		2.0	0.85	ng/L		05/02/23 09:21	05/02/23 16:04	1
4:2 FTS	<2.0		2.0	0.24	ng/L		05/02/23 09:21	05/02/23 16:04	1
6:2 FTS	<5.0		5.0	2.5	ng/L		05/02/23 09:21	05/02/23 16:04	1
8:2 FTS	<2.0		2.0	0.46	ng/L		05/02/23 09:21	05/02/23 16:04	1
10:2 FTS	<2.0		2.0	0.67	ng/L		05/02/23 09:21	05/02/23 16:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		05/02/23 09:21	05/02/23 16:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		05/02/23 09:21	05/02/23 16:04	1
F-53B Major	<2.0		2.0	0.24	ng/L		05/02/23 09:21	05/02/23 16:04	1
F-53B Minor	<2.0		2.0	0.32	ng/L		05/02/23 09:21	05/02/23 16:04	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C5 PFPeA	110		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFHxA	118		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C4 PFHpA	111		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C4 PFOA	100		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C5 PFNA	86		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFDA	94		25 - 150	05/02/23 09:21	05/02/23 16:04	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: MB 320-671567/1-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 671567

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFUnA	120		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFDoA	102		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFTeDA	96		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 PFHxDA	117		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C3 PFBS	126		25 - 150	05/02/23 09:21	05/02/23 16:04	1
18O2 PFHxS	110		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C4 PFOS	87		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C8 FOSA	86		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d3-NMeFOSAA	122		25 - 150	05/02/23 09:21	05/02/23 16:04	1
d5-NEtFOSAA	123		25 - 150	05/02/23 09:21	05/02/23 16:04	1
d-N-MeFOSA-M	74		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d-N-EtFOSA-M	76		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d7-N-MeFOSE-M	75		10 - 150	05/02/23 09:21	05/02/23 16:04	1
d9-N-EtFOSE-M	77		10 - 150	05/02/23 09:21	05/02/23 16:04	1
M2-4:2 FTS	106		25 - 150	05/02/23 09:21	05/02/23 16:04	1
M2-6:2 FTS	96		25 - 150	05/02/23 09:21	05/02/23 16:04	1
M2-8:2 FTS	95		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C3 HFPO-DA	123		25 - 150	05/02/23 09:21	05/02/23 16:04	1
13C2 10:2 FTS	93		25 - 150	05/02/23 09:21	05/02/23 16:04	1

Lab Sample ID: LCS 320-671567/2-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	38.7		ng/L		97	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	37.8		ng/L		94	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	38.6		ng/L		96	60 - 135
Perfluorononanoic acid (PFNA)	40.0	45.8		ng/L		114	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	46.1		ng/L		115	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	42.7		ng/L		107	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.9		ng/L		110	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.7		ng/L		102	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.2		ng/L		100	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.8		ng/L		112	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	66.9	*+	ng/L		167	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	39.5		ng/L		111	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	33.3		ng/L		89	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.1		ng/L		102	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: LCS 320-671567/2-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	38.2	44.8		ng/L		117	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	38.9		ng/L		105	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	51.9		ng/L		135	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	46.0		ng/L		119	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	34.2		ng/L		88	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	46.2		ng/L		116	60 - 135
NEtFOSA	40.0	40.1		ng/L		100	60 - 135
NMeFOSA	40.0	39.8		ng/L		99	60 - 135
NMeFOSAA	40.0	42.6		ng/L		106	60 - 135
NEtFOSAA	40.0	44.6		ng/L		111	60 - 135
NMeFOSE	40.0	41.8		ng/L		105	60 - 135
NEtFOSE	40.0	42.6		ng/L		107	60 - 135
4:2 FTS	37.5	38.1		ng/L		102	60 - 135
6:2 FTS	38.1	38.3		ng/L		101	60 - 135
8:2 FTS	38.4	43.0		ng/L		112	60 - 135
10:2 FTS	38.6	37.4		ng/L		97	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	48.3		ng/L		128	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.8		ng/L		104	60 - 135
F-53B Major	37.4	44.4		ng/L		119	60 - 135
F-53B Minor	37.8	40.3		ng/L		107	60 - 135

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	85		25 - 150
13C5 PFPeA	111		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	87		25 - 150
13C4 PFOA	89		25 - 150
13C5 PFNA	69		25 - 150
13C2 PFDA	83		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	86		25 - 150
13C2 PFTeDA	77		25 - 150
13C2 PFHxDA	96		25 - 150
13C3 PFBS	106		25 - 150
18O2 PFHxS	95		25 - 150
13C4 PFOS	78		25 - 150
13C8 FOSA	70		10 - 150
d3-NMeFOSAA	112		25 - 150
d5-NEtFOSAA	104		25 - 150
d-N-MeFOSA-M	65		10 - 150
d-N-EtFOSA-M	64		10 - 150
d7-N-MeFOSE-M	60		10 - 150
d9-N-EtFOSE-M	65		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: LCS 320-671567/2-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 671567

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	87		25 - 150
M2-6:2 FTS	94		25 - 150
M2-8:2 FTS	79		25 - 150
13C3 HFPO-DA	103		25 - 150
13C2 10:2 FTS	75		25 - 150

Lab Sample ID: LCSD 320-671567/3-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Perfluorobutanoic acid (PFBA)	40.0	50.6		ng/L		126	60 - 135	6	30	
Perfluoropentanoic acid (PFPeA)	40.0	48.2		ng/L		121	60 - 135	22	30	
Perfluorohexanoic acid (PFHxA)	40.0	46.2		ng/L		115	60 - 135	20	30	
Perfluoroheptanoic acid (PFHpA)	40.0	43.5		ng/L		109	60 - 135	3	30	
Perfluorooctanoic acid (PFOA)	40.0	43.6		ng/L		109	60 - 135	12	30	
Perfluorononanoic acid (PFNA)	40.0	46.9		ng/L		117	60 - 135	2	30	
Perfluorodecanoic acid (PFDA)	40.0	47.1		ng/L		118	60 - 135	2	30	
Perfluoroundecanoic acid (PFUnA)	40.0	45.6		ng/L		114	60 - 135	7	30	
Perfluorododecanoic acid (PFDoA)	40.0	49.6		ng/L		124	60 - 135	12	30	
Perfluorotridecanoic acid (PFTriA)	40.0	43.1		ng/L		108	60 - 135	6	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		102	60 - 135	2	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.9		ng/L		107	60 - 135	4	30	
Perfluoro-n-octadecanoic acid (PFODA)	40.0	65.2	*+	ng/L		163	60 - 135	3	30	
Perfluorobutanesulfonic acid (PFBS)	35.5	38.6		ng/L		109	60 - 135	2	30	
Perfluoropentanesulfonic acid (PFPeS)	37.6	34.4		ng/L		92	60 - 135	3	30	
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.1		ng/L		102	60 - 135	0	30	
Perfluoroheptanesulfonic acid (PFHpS)	38.2	40.2		ng/L		105	60 - 135	11	30	
Perfluorooctanesulfonic acid (PFOS)	37.2	39.9		ng/L		107	60 - 135	3	30	
Perfluorononanesulfonic acid (PFNS)	38.5	50.0		ng/L		130	60 - 135	4	30	
Perfluorodecanesulfonic acid (PFDS)	38.6	41.0		ng/L		106	60 - 135	11	30	
Perfluorododecanesulfonic acid (PFDoS)	38.8	33.2		ng/L		85	60 - 135	3	30	
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		111	60 - 135	4	30	
NEtFOSA	40.0	38.3		ng/L		96	60 - 135	4	30	
NMeFOSA	40.0	39.3		ng/L		98	60 - 135	1	30	
NMeFOSAA	40.0	45.4		ng/L		114	60 - 135	6	30	
NEtFOSAA	40.0	44.8		ng/L		112	60 - 135	0	30	
NMeFOSE	40.0	44.3		ng/L		111	60 - 135	6	30	

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

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

Lab Sample ID: LCSD 320-671567/3-A
Matrix: Water
Analysis Batch: 671771

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 671567

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NETFOSE	40.0	40.2		ng/L		101	60 - 135	6	30
4:2 FTS	37.5	40.1		ng/L		107	60 - 135	5	30
6:2 FTS	38.1	39.1		ng/L		103	60 - 135	2	30
8:2 FTS	38.4	39.8		ng/L		104	60 - 135	8	30
10:2 FTS	38.6	39.2		ng/L		101	60 - 135	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	44.8		ng/L		119	60 - 135	7	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	41.3		ng/L		103	60 - 135	1	30
F-53B Major	37.4	39.1		ng/L		105	60 - 135	13	30
F-53B Minor	37.8	36.2		ng/L		96	60 - 135	11	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	71		25 - 150
13C5 PFPeA	78		25 - 150
13C2 PFHxA	73		25 - 150
13C4 PFHpA	72		25 - 150
13C4 PFOA	67		25 - 150
13C5 PFNA	59		25 - 150
13C2 PFDA	69		25 - 150
13C2 PFUnA	75		25 - 150
13C2 PFDoA	66		25 - 150
13C2 PFTeDA	67		25 - 150
13C2 PFHxDA	79		25 - 150
13C3 PFBS	86		25 - 150
18O2 PFHxS	77		25 - 150
13C4 PFOS	69		25 - 150
13C8 FOSA	60		10 - 150
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	88		25 - 150
d-N-MeFOSA-M	53		10 - 150
d-N-EtFOSA-M	55		10 - 150
d7-N-MeFOSE-M	52		10 - 150
d9-N-EtFOSE-M	56		10 - 150
M2-4:2 FTS	75		25 - 150
M2-6:2 FTS	70		25 - 150
M2-8:2 FTS	70		25 - 150
13C3 HFPO-DA	83		25 - 150
13C2 10:2 FTS	62		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Client Sample ID: SW-40(4-24-23)

Lab Sample ID: 500-232726-1

Date Collected: 04/24/23 11:35

Matrix: Water

Date Received: 04/25/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			671567	VP	EET SAC	05/02/23 09:21
Total/NA	Analysis	537 (modified)		1	671771	RS1	EET SAC	05/02/23 18:38

Client Sample ID: DUP-01-A(4-24-23)

Lab Sample ID: 500-232726-2

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			671567	VP	EET SAC	05/02/23 09:21
Total/NA	Analysis	537 (modified)		1	671771	RS1	EET SAC	05/02/23 18:49

Client Sample ID: Field Blank-A(4-24-23)

Lab Sample ID: 500-232726-3

Date Collected: 04/24/23 11:40

Matrix: Water

Date Received: 04/25/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			670244	VP	EET SAC	04/26/23 10:11
Total/NA	Analysis	537 (modified)		1	670342	K1S	EET SAC	04/27/23 12:25

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Regulatory Program: OW NPDES RCRA Other:

Project Manager: Lisa Rutkowski
Email: N/A
Tel/Fax: N/A
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below: _____ Standard
 2 weeks
 1 week
 2 days
 1 day

Client Contact
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee WI 53202
Phone
FAX
Project Name: Ditch A Surface Water
Site: Marinette, WI
P O # 30171092.4.1.1

Site Contact: Sandie Fredrick
Lab Contact: Sandie Fredrick
Date: 4-24-23
Carrier: Fed Ex
COC No: 1 of 1
TALS Project #: 50019256
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (G-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
SW-40 (4-24-23)	4-24-23	11:35	G	W	2	N	N	Downstream
DUP-01-A (4-24-23)			G	W	2	N	N	Duplicate
Field Blank-A (4-24-23)		11:40	G	W	2	N	N	Field Blank



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown
Special Instructions/QC Requirements & Comments:
Questions call Lisa Rutkowski, Liz Hover

Custody Seal No.: 2-51800
Company: Barley Excavating
Date/Time: 4-24-23 11:30
Relinquished by: *Fredrick*
Company:
Date/Time:
Relinquished by:
Company:
Date/Time:

Received by: *Fredrick*
Company: *SEI*
Date/Time: *4/24/23 09:40*
Received in Laboratory by:
Company:
Date/Time:



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-232726-1

Login Number: 232726

List Number: 2

Creator: Pratali, Sandra A

List Source: Eurofins Sacramento

List Creation: 04/25/23 09:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051800
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-232726-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-232726-1	SW-40(4-24-23)	99	107	103	101	89	81	87	95
500-232726-2	DUP-01-A(4-24-23)	88	95	85	93	83	76	85	89
500-232726-3	Field Blank-A(4-24-23)	114	120	122	124	118	115	125	118
LCS 320-670244/2-A	Lab Control Sample	84	80	85	85	86	83	93	89
LCS 320-671567/2-A	Lab Control Sample	85	111	99	87	89	69	83	96
LCSD 320-670244/3-A	Lab Control Sample Dup	79	84	84	86	87	82	90	88
LCSD 320-671567/3-A	Lab Control Sample Dup	71	78	73	72	67	59	69	75
MB 320-670244/1-A	Method Blank	89	93	96	97	90	92	106	103
MB 320-671567/1-A	Method Blank	99	110	118	111	100	86	94	120

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFS (25-150)
500-232726-1	SW-40(4-24-23)	77	64	66	109	94	78	75	114
500-232726-2	DUP-01-A(4-24-23)	80	70	75	107	90	70	72	105
500-232726-3	Field Blank-A(4-24-23)	114	114	104	108	106	108	109	107
LCS 320-670244/2-A	Lab Control Sample	92	95	98	75	79	77	80	82
LCS 320-671567/2-A	Lab Control Sample	86	77	96	106	95	78	70	112
LCSD 320-670244/3-A	Lab Control Sample Dup	88	93	95	75	74	76	74	79
LCSD 320-671567/3-A	Lab Control Sample Dup	66	67	79	86	77	69	60	83
MB 320-670244/1-A	Method Blank	100	107	102	84	87	90	92	101
MB 320-671567/1-A	Method Blank	102	96	117	126	110	87	86	122

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-232726-1	SW-40(4-24-23)	107	65	65	56	51	113	95	88
500-232726-2	DUP-01-A(4-24-23)	104	68	61	53	50	109	86	88
500-232726-3	Field Blank-A(4-24-23)	113	96	87	94	100	117	111	121
LCS 320-670244/2-A	Lab Control Sample	87	69	67	75	77	84	84	86
LCS 320-671567/2-A	Lab Control Sample	104	65	64	60	65	87	94	79
LCSD 320-670244/3-A	Lab Control Sample Dup	86	63	62	72	71	87	79	82
LCSD 320-671567/3-A	Lab Control Sample Dup	88	53	55	52	56	75	70	70
MB 320-670244/1-A	Method Blank	99	83	77	89	88	94	86	97
MB 320-671567/1-A	Method Blank	123	74	76	75	77	106	96	95

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-232726-1	SW-40(4-24-23)	112	69
500-232726-2	DUP-01-A(4-24-23)	102	84
500-232726-3	Field Blank-A(4-24-23)	113	114
LCS 320-670244/2-A	Lab Control Sample	75	88
LCS 320-671567/2-A	Lab Control Sample	103	75
LCSD 320-670244/3-A	Lab Control Sample Dup	78	83
LCSD 320-671567/3-A	Lab Control Sample Dup	83	62
MB 320-670244/1-A	Method Blank	89	106
MB 320-671567/1-A	Method Blank	123	93

Surrogate Legend

PFBA = 13C4 PFBA

PFPeA = 13C5 PFPeA

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Isotope Dilution Summary

Client: ARCADIS US Inc

Job ID: 500-232726-1

Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

- 1
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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

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JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 Ditch A SW

JOB NUMBER

500-234125-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Authorized for release by
Sandie Fredrick, Project Manager II
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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Job ID: 500-234125-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative
500-234125-1

Comments

No additional comments.

Receipt

The samples were received on 5/20/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8° C.

LCMS

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

Organic Prep

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

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Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-234125-1	SW-40(5-17-23)	Water	05/17/23 09:30	05/20/23 09:30
500-234125-2	DUP-01-A(5-17-23)	Water	05/17/23 00:00	05/20/23 09:30
500-234125-3	Field Blank-A(5-17-23)	Water	05/17/23 09:35	05/20/23 09:30

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: SW-40(5-17-23)

Lab Sample ID: 500-234125-1

Date Collected: 05/17/23 09:30

Matrix: Water

Date Received: 05/20/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	28		4.5	2.2	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoropentanoic acid (PFPeA)	120		1.8	0.44	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorohexanoic acid (PFHxA)	81		1.8	0.52	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoroheptanoic acid (PFHpA)	45		1.8	0.23	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorooctanoic acid (PFOA)	130		1.8	0.77	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorononanoic acid (PFNA)	11		1.8	0.24	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorodecanoic acid (PFDA)	5.7		1.8	0.28	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoroundecanoic acid (PFUnA)	2.0		1.8	0.99	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.66	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.80	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.85	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorobutanesulfonic acid (PFBS)	1.0	J	1.8	0.18	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoropentanesulfonic acid (PFPeS)	0.68	J	1.8	0.27	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorohexanesulfonic acid (PFHxS)	11		1.8	0.52	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluoroheptanesulfonic acid (PFHpS)	0.59	J	1.8	0.17	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorooctanesulfonic acid (PFOS)	45		1.8	0.49	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.88	ng/L		05/23/23 05:24	05/25/23 09:16	1
Perfluorooctanesulfonamide (FOSA)	1.2	J	1.8	0.89	ng/L		05/23/23 05:24	05/25/23 09:16	1
NEtFOSA	<1.8		1.8	0.79	ng/L		05/23/23 05:24	05/25/23 09:16	1
NMeFOSA	<1.8		1.8	0.39	ng/L		05/23/23 05:24	05/25/23 09:16	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		05/23/23 05:24	05/25/23 09:16	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		05/23/23 05:24	05/25/23 09:16	1
NMeFOSE	<3.6		3.6	1.3	ng/L		05/23/23 05:24	05/25/23 09:16	1
NEtFOSE	<1.8		1.8	0.77	ng/L		05/23/23 05:24	05/25/23 09:16	1
4:2 FTS	1.4	J	1.8	0.22	ng/L		05/23/23 05:24	05/25/23 09:16	1
6:2 FTS	130		4.5	2.3	ng/L		05/23/23 05:24	05/25/23 09:16	1
8:2 FTS	87		1.8	0.42	ng/L		05/23/23 05:24	05/25/23 09:16	1
10:2 FTS	4.3		1.8	0.61	ng/L		05/23/23 05:24	05/25/23 09:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		05/23/23 05:24	05/25/23 09:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.4	ng/L		05/23/23 05:24	05/25/23 09:16	1
F-53B Major	<1.8		1.8	0.22	ng/L		05/23/23 05:24	05/25/23 09:16	1
F-53B Minor	<1.8		1.8	0.29	ng/L		05/23/23 05:24	05/25/23 09:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	100		25 - 150				05/23/23 05:24	05/25/23 09:16	1
13C5 PFPeA	93		25 - 150				05/23/23 05:24	05/25/23 09:16	1
13C2 PFHxA	100		25 - 150				05/23/23 05:24	05/25/23 09:16	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: SW-40(5-17-23)

Lab Sample ID: 500-234125-1

Date Collected: 05/17/23 09:30

Matrix: Water

Date Received: 05/20/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFHpA	99		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C4 PFOA	101		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C5 PFNA	92		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C2 PFDA	88		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C2 PFUnA	97		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C2 PFDoA	81		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C2 PFTeDA	72		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C2 PFHxDA	55		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C3 PFBS	88		25 - 150	05/23/23 05:24	05/25/23 09:16	1
18O2 PFHxS	93		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C4 PFOS	80		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C8 FOSA	84		10 - 150	05/23/23 05:24	05/25/23 09:16	1
d3-NMeFOSAA	88		25 - 150	05/23/23 05:24	05/25/23 09:16	1
d5-NEtFOSAA	90		25 - 150	05/23/23 05:24	05/25/23 09:16	1
d-N-MeFOSA-M	64		10 - 150	05/23/23 05:24	05/25/23 09:16	1
d-N-EtFOSA-M	67		10 - 150	05/23/23 05:24	05/25/23 09:16	1
d7-N-MeFOSE-M	77		10 - 150	05/23/23 05:24	05/25/23 09:16	1
d9-N-EtFOSE-M	73		10 - 150	05/23/23 05:24	05/25/23 09:16	1
M2-4:2 FTS	115		25 - 150	05/23/23 05:24	05/25/23 09:16	1
M2-6:2 FTS	103		25 - 150	05/23/23 05:24	05/25/23 09:16	1
M2-8:2 FTS	96		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C3 HFPO-DA	103		25 - 150	05/23/23 05:24	05/25/23 09:16	1
13C2 10:2 FTS	97		25 - 150	05/23/23 05:24	05/25/23 09:16	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: DUP-01-A(5-17-23)

Lab Sample ID: 500-234125-2

Date Collected: 05/17/23 00:00

Matrix: Water

Date Received: 05/20/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	30		4.5	2.2	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoropentanoic acid (PFPeA)	110		1.8	0.44	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorohexanoic acid (PFHxA)	81		1.8	0.53	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoroheptanoic acid (PFHpA)	45		1.8	0.23	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorooctanoic acid (PFOA)	120		1.8	0.77	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorononanoic acid (PFNA)	11		1.8	0.25	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorodecanoic acid (PFDA)	4.9		1.8	0.28	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoroundecanoic acid (PFUnA)	1.9		1.8	1.0	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.66	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.81	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.85	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorobutanesulfonic acid (PFBS)	1.0	J	1.8	0.18	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoropentanesulfonic acid (PFPeS)	0.59	J	1.8	0.27	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorohexanesulfonic acid (PFHxS)	11		1.8	0.52	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluoroheptanesulfonic acid (PFHpS)	0.58	J	1.8	0.17	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorooctanesulfonic acid (PFOS)	41		1.8	0.49	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.88	ng/L		05/23/23 05:24	05/25/23 09:26	1
Perfluorooctanesulfonamide (FOSA)	1.2	J	1.8	0.89	ng/L		05/23/23 05:24	05/25/23 09:26	1
NEtFOSA	<1.8		1.8	0.79	ng/L		05/23/23 05:24	05/25/23 09:26	1
NMeFOSA	<1.8		1.8	0.39	ng/L		05/23/23 05:24	05/25/23 09:26	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		05/23/23 05:24	05/25/23 09:26	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		05/23/23 05:24	05/25/23 09:26	1
NMeFOSE	<3.6		3.6	1.3	ng/L		05/23/23 05:24	05/25/23 09:26	1
NEtFOSE	<1.8		1.8	0.77	ng/L		05/23/23 05:24	05/25/23 09:26	1
4:2 FTS	1.1	J	1.8	0.22	ng/L		05/23/23 05:24	05/25/23 09:26	1
6:2 FTS	120		4.5	2.3	ng/L		05/23/23 05:24	05/25/23 09:26	1
8:2 FTS	94		1.8	0.42	ng/L		05/23/23 05:24	05/25/23 09:26	1
10:2 FTS	4.3		1.8	0.61	ng/L		05/23/23 05:24	05/25/23 09:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		05/23/23 05:24	05/25/23 09:26	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.4	ng/L		05/23/23 05:24	05/25/23 09:26	1
F-53B Major	<1.8		1.8	0.22	ng/L		05/23/23 05:24	05/25/23 09:26	1
F-53B Minor	<1.8		1.8	0.29	ng/L		05/23/23 05:24	05/25/23 09:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	117		25 - 150				05/23/23 05:24	05/25/23 09:26	1
13C5 PFPeA	95		25 - 150				05/23/23 05:24	05/25/23 09:26	1
13C2 PFHxA	111		25 - 150				05/23/23 05:24	05/25/23 09:26	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: DUP-01-A(5-17-23)

Lab Sample ID: 500-234125-2

Date Collected: 05/17/23 00:00

Matrix: Water

Date Received: 05/20/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFHpA	111		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C4 PFOA	109		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C5 PFNA	105		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C2 PFDA	104		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C2 PFUnA	96		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C2 PFDoA	93		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C2 PFTeDA	77		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C2 PFHxDA	74		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C3 PFBS	98		25 - 150	05/23/23 05:24	05/25/23 09:26	1
18O2 PFHxS	108		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C4 PFOS	94		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C8 FOSA	93		10 - 150	05/23/23 05:24	05/25/23 09:26	1
d3-NMeFOSAA	101		25 - 150	05/23/23 05:24	05/25/23 09:26	1
d5-NEtFOSAA	97		25 - 150	05/23/23 05:24	05/25/23 09:26	1
d-N-MeFOSA-M	67		10 - 150	05/23/23 05:24	05/25/23 09:26	1
d-N-EtFOSA-M	69		10 - 150	05/23/23 05:24	05/25/23 09:26	1
d7-N-MeFOSE-M	80		10 - 150	05/23/23 05:24	05/25/23 09:26	1
d9-N-EtFOSE-M	80		10 - 150	05/23/23 05:24	05/25/23 09:26	1
M2-4:2 FTS	125		25 - 150	05/23/23 05:24	05/25/23 09:26	1
M2-6:2 FTS	116		25 - 150	05/23/23 05:24	05/25/23 09:26	1
M2-8:2 FTS	108		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C3 HFPO-DA	112		25 - 150	05/23/23 05:24	05/25/23 09:26	1
13C2 10:2 FTS	107		25 - 150	05/23/23 05:24	05/25/23 09:26	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: Field Blank-A(5-17-23)

Lab Sample ID: 500-234125-3

Date Collected: 05/17/23 09:35

Matrix: Water

Date Received: 05/20/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.6		4.6	2.2	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.45	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.53	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.23	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.78	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.25	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	1.0	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.50	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.67	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.81	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.86	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.52	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.49	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.34	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.89	ng/L		05/23/23 05:24	05/25/23 09:37	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.90	ng/L		05/23/23 05:24	05/25/23 09:37	1
NEtFOSA	<1.8		1.8	0.80	ng/L		05/23/23 05:24	05/25/23 09:37	1
NMeFOSA	<1.8		1.8	0.39	ng/L		05/23/23 05:24	05/25/23 09:37	1
NMeFOSAA	<4.6		4.6	1.1	ng/L		05/23/23 05:24	05/25/23 09:37	1
NEtFOSAA	<4.6		4.6	1.2	ng/L		05/23/23 05:24	05/25/23 09:37	1
NMeFOSE	<3.7		3.7	1.3	ng/L		05/23/23 05:24	05/25/23 09:37	1
NEtFOSE	<1.8		1.8	0.78	ng/L		05/23/23 05:24	05/25/23 09:37	1
4:2 FTS	<1.8		1.8	0.22	ng/L		05/23/23 05:24	05/25/23 09:37	1
6:2 FTS	<4.6		4.6	2.3	ng/L		05/23/23 05:24	05/25/23 09:37	1
8:2 FTS	<1.8		1.8	0.42	ng/L		05/23/23 05:24	05/25/23 09:37	1
10:2 FTS	<1.8		1.8	0.61	ng/L		05/23/23 05:24	05/25/23 09:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.37	ng/L		05/23/23 05:24	05/25/23 09:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.7		3.7	1.4	ng/L		05/23/23 05:24	05/25/23 09:37	1
F-53B Major	<1.8		1.8	0.22	ng/L		05/23/23 05:24	05/25/23 09:37	1
F-53B Minor	<1.8		1.8	0.29	ng/L		05/23/23 05:24	05/25/23 09:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150				05/23/23 05:24	05/25/23 09:37	1
13C5 PFPeA	82		25 - 150				05/23/23 05:24	05/25/23 09:37	1
13C2 PFHxA	105		25 - 150				05/23/23 05:24	05/25/23 09:37	1
13C4 PFHpA	106		25 - 150				05/23/23 05:24	05/25/23 09:37	1
13C4 PFOA	94		25 - 150				05/23/23 05:24	05/25/23 09:37	1
13C5 PFNA	101		25 - 150				05/23/23 05:24	05/25/23 09:37	1
13C2 PFDA	95		25 - 150				05/23/23 05:24	05/25/23 09:37	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: Field Blank-A(5-17-23)

Lab Sample ID: 500-234125-3

Date Collected: 05/17/23 09:35

Matrix: Water

Date Received: 05/20/23 09:30

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	99		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C2 PFlDoA	92		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C2 PFlTeDA	88		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C2 PFlHxDA	71		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C3 PFlBS	92		25 - 150	05/23/23 05:24	05/25/23 09:37	1
18O2 PFlHxS	98		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C4 PFlOS	96		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C8 FOSA	95		10 - 150	05/23/23 05:24	05/25/23 09:37	1
d3-NMeFOSAA	101		25 - 150	05/23/23 05:24	05/25/23 09:37	1
d5-NEtFOSAA	102		25 - 150	05/23/23 05:24	05/25/23 09:37	1
d-N-MeFOSA-M	78		10 - 150	05/23/23 05:24	05/25/23 09:37	1
d-N-EtFOSA-M	77		10 - 150	05/23/23 05:24	05/25/23 09:37	1
d7-N-MeFOSE-M	82		10 - 150	05/23/23 05:24	05/25/23 09:37	1
d9-N-EtFOSE-M	88		10 - 150	05/23/23 05:24	05/25/23 09:37	1
M2-4:2 FTS	117		25 - 150	05/23/23 05:24	05/25/23 09:37	1
M2-6:2 FTS	105		25 - 150	05/23/23 05:24	05/25/23 09:37	1
M2-8:2 FTS	115		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C3 HFPO-DA	104		25 - 150	05/23/23 05:24	05/25/23 09:37	1
13C2 10:2 FTS	123		25 - 150	05/23/23 05:24	05/25/23 09:37	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-676925/1-A
Matrix: Water
Analysis Batch: 677552

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 676925

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		05/23/23 05:24	05/25/23 06:22	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		05/23/23 05:24	05/25/23 06:22	1
NEtFOSA	<2.0		2.0	0.87	ng/L		05/23/23 05:24	05/25/23 06:22	1
NMeFOSA	<2.0		2.0	0.43	ng/L		05/23/23 05:24	05/25/23 06:22	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		05/23/23 05:24	05/25/23 06:22	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		05/23/23 05:24	05/25/23 06:22	1
NMeFOSE	<4.0		4.0	1.4	ng/L		05/23/23 05:24	05/25/23 06:22	1
NEtFOSE	<2.0		2.0	0.85	ng/L		05/23/23 05:24	05/25/23 06:22	1
4:2 FTS	<2.0		2.0	0.24	ng/L		05/23/23 05:24	05/25/23 06:22	1
6:2 FTS	<5.0		5.0	2.5	ng/L		05/23/23 05:24	05/25/23 06:22	1
8:2 FTS	<2.0		2.0	0.46	ng/L		05/23/23 05:24	05/25/23 06:22	1
10:2 FTS	<2.0		2.0	0.67	ng/L		05/23/23 05:24	05/25/23 06:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		05/23/23 05:24	05/25/23 06:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		05/23/23 05:24	05/25/23 06:22	1
F-53B Major	<2.0		2.0	0.24	ng/L		05/23/23 05:24	05/25/23 06:22	1
F-53B Minor	<2.0		2.0	0.32	ng/L		05/23/23 05:24	05/25/23 06:22	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	95		25 - 150				05/23/23 05:24	05/25/23 06:22	1
13C5 PFPeA	95		25 - 150				05/23/23 05:24	05/25/23 06:22	1
13C2 PFHxA	99		25 - 150				05/23/23 05:24	05/25/23 06:22	1
13C4 PFHpA	91		25 - 150				05/23/23 05:24	05/25/23 06:22	1
13C4 PFOA	98		25 - 150				05/23/23 05:24	05/25/23 06:22	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

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

Lab Sample ID: MB 320-676925/1-A
Matrix: Water
Analysis Batch: 677552

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 676925

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	96		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C2 PFDA	99		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C2 PFUnA	103		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C2 PFDoA	96		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C2 PFTeDA	90		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C2 PFHxDA	80		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C3 PFBS	91		25 - 150	05/23/23 05:24	05/25/23 06:22	1
18O2 PFHxS	100		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C4 PFOS	92		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C8 FOSA	81		10 - 150	05/23/23 05:24	05/25/23 06:22	1
d3-NMeFOSAA	91		25 - 150	05/23/23 05:24	05/25/23 06:22	1
d5-NEtFOSAA	92		25 - 150	05/23/23 05:24	05/25/23 06:22	1
d-N-MeFOSA-M	66		10 - 150	05/23/23 05:24	05/25/23 06:22	1
d-N-EtFOSA-M	68		10 - 150	05/23/23 05:24	05/25/23 06:22	1
d7-N-MeFOSE-M	88		10 - 150	05/23/23 05:24	05/25/23 06:22	1
d9-N-EtFOSE-M	79		10 - 150	05/23/23 05:24	05/25/23 06:22	1
M2-4:2 FTS	114		25 - 150	05/23/23 05:24	05/25/23 06:22	1
M2-6:2 FTS	98		25 - 150	05/23/23 05:24	05/25/23 06:22	1
M2-8:2 FTS	109		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C3 HFPO-DA	94		25 - 150	05/23/23 05:24	05/25/23 06:22	1
13C2 10:2 FTS	109		25 - 150	05/23/23 05:24	05/25/23 06:22	1

Lab Sample ID: LCS 320-676925/2-A
Matrix: Water
Analysis Batch: 677552

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 676925

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	41.4		ng/L		104	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	37.4		ng/L		93	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	39.2		ng/L		98	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	38.1		ng/L		95	60 - 135
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.6		ng/L		101	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	36.0		ng/L		90	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	34.1		ng/L		85	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	43.2		ng/L		108	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	38.0		ng/L		95	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	29.0		ng/L		72	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	33.3		ng/L		94	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	38.9		ng/L		103	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

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

Lab Sample ID: LCS 320-676925/2-A
Matrix: Water
Analysis Batch: 677552

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 676925

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.0		ng/L		99	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.7		ng/L		104	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	37.6		ng/L		101	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.2		ng/L		105	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.1		ng/L		96	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	34.8		ng/L		90	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	39.2		ng/L		98	60 - 135
NEtFOSA	40.0	39.5		ng/L		99	60 - 135
NMeFOSA	40.0	40.3		ng/L		101	60 - 135
NMeFOSAA	40.0	39.0		ng/L		98	60 - 135
NEtFOSAA	40.0	37.7		ng/L		94	60 - 135
NMeFOSE	40.0	39.6		ng/L		99	60 - 135
NEtFOSE	40.0	39.6		ng/L		99	60 - 135
4:2 FTS	37.5	38.4		ng/L		102	60 - 135
6:2 FTS	38.1	33.7		ng/L		88	60 - 135
8:2 FTS	38.4	37.1		ng/L		97	60 - 135
10:2 FTS	38.6	36.0		ng/L		93	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	43.7		ng/L		116	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.6		ng/L		101	60 - 135
F-53B Major	37.4	36.5		ng/L		98	60 - 135
F-53B Minor	37.8	36.8		ng/L		98	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	107		25 - 150
13C5 PFPeA	100		25 - 150
13C2 PFHxA	103		25 - 150
13C4 PFHpA	107		25 - 150
13C4 PFOA	106		25 - 150
13C5 PFNA	99		25 - 150
13C2 PFDA	106		25 - 150
13C2 PFUnA	105		25 - 150
13C2 PFDoA	106		25 - 150
13C2 PFTeDA	90		25 - 150
13C2 PFHxDA	85		25 - 150
13C3 PFBS	100		25 - 150
18O2 PFHxS	99		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	95		10 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	94		25 - 150
d-N-MeFOSA-M	75		10 - 150
d-N-EtFOSA-M	76		10 - 150

QC Sample Results

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

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

Lab Sample ID: LCS 320-676925/2-A

Matrix: Water

Analysis Batch: 677552

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 676925

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d7-N-MeFOSE-M</i>	95		10 - 150
<i>d9-N-EtFOSE-M</i>	92		10 - 150
<i>M2-4:2 FTS</i>	113		25 - 150
<i>M2-6:2 FTS</i>	113		25 - 150
<i>M2-8:2 FTS</i>	110		25 - 150
<i>13C3 HFPO-DA</i>	101		25 - 150
<i>13C2 10:2 FTS</i>	117		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Client Sample ID: SW-40(5-17-23)

Lab Sample ID: 500-234125-1

Date Collected: 05/17/23 09:30

Matrix: Water

Date Received: 05/20/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			676925	EFG	EET SAC	05/23/23 05:24
Total/NA	Analysis	537 (modified)		1	677552	K1S	EET SAC	05/25/23 09:16

Client Sample ID: DUP-01-A(5-17-23)

Lab Sample ID: 500-234125-2

Date Collected: 05/17/23 00:00

Matrix: Water

Date Received: 05/20/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			676925	EFG	EET SAC	05/23/23 05:24
Total/NA	Analysis	537 (modified)		1	677552	K1S	EET SAC	05/25/23 09:26

Client Sample ID: Field Blank-A(5-17-23)

Lab Sample ID: 500-234125-3

Date Collected: 05/17/23 09:35

Matrix: Water

Date Received: 05/20/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			676925	EFG	EET SAC	05/23/23 05:24
Total/NA	Analysis	537 (modified)		1	677552	K1S	EET SAC	05/25/23 09:37

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.


Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski		Site Contact: Sandie Fredrick		Date: 5-17-23	COC No: 1 of 1 COCs
Email: N/A		Lab Contact: Sandie Fredrick		Carrier: Fed Ex	TALS Project #: 50019256
Tel/Fax: N/A		Analysis Turnaround Time		Sampler:	
<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below: Standard <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filled Sample (Y/N) Perform MS/MSD (Y/N)		For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:
5-17-23	9:30	G	W	2	Downstream
		G	W	2	Duplicate
	9:35	G	W	2	Field Blank
 500-234125 Chain-of-Custody					

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
Questions call Lisa Rutkowski, Liz Hover

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Custody Seal No.: 210360	Cooler Temp. (°C): 0.8	Cor'd: 0.8	Therm ID No.: LE04
Company: Barley Excavating	Received by: Fed Ex	Company:	Date/Time: 5-17-23 16:00
Company:	Received by: [Signature]	Company: [Signature]	Date/Time: 5-20-23 9:30
Company:	Received in Laboratory by:	Company:	Date/Time:



Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-234125-1

Login Number: 234125

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 05/22/23 11:23 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2110360
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Environment Testing
TestAmerica

Sacramento
Sample Receiving Notes



500-234125 Field Sheet

Tracking #: 512065106896

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Job: _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: L-04 Corr. Factor: (+/-) - °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 2110360

Cooler ID: _____

Temp Observed: 00 °C Corrected: 00 °C

From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: JS Date: 5/20/23

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: S Date: 5/22/23

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: S Date: 5/22/23

ORIGIN ID: BLUA (916) 373-5600
ATTN: JOE BAILEY
BAILEY EXCAVATING INC
1024 10TH AVE

SHIP DATE: 01NOV21
ACTWT: 10.00 LB MAN
CAD: 0575589/CAFE3507

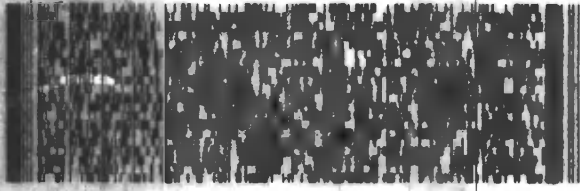
MARINETTE, HI 54143
USA

PEOPLE RECEIVING:
TESTAMERICA WEST SACRAMENTO
100 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605

(PH) 373-5600
FAX: 373-5604

RTGA: 01 001 01



FedEx
Express



2110360

eurofins
Environment Testing
TestAmerica

eurofins
Environment Testing
TestAmerica

210360

RETURNS MON - SAT
PRIORITY OVERNIGHT

SATURDAY 12:00P
PRIORITY OVERNIGHT

95605
CA-US
SMF

TRK/ 5120 6510 6896
0221

FedEx
5120 6510 6896

X0 BLUA



SIGNATURE

DATE

Custody Seal

5-19-23

[Handwritten Signature]

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Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFA (25-150)
500-234125-1	SW-40(5-17-23)	100	93	100	99	101	92	88	97
500-234125-2	DUP-01-A(5-17-23)	117	95	111	111	109	105	104	96
500-234125-3	Field Blank-A(5-17-23)	99	82	105	106	94	101	95	99
LCS 320-676925/2-A	Lab Control Sample	107	100	103	107	106	99	106	105
MB 320-676925/1-A	Method Blank	95	95	99	91	98	96	99	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)
500-234125-1	SW-40(5-17-23)	81	72	55	88	93	80	84	88
500-234125-2	DUP-01-A(5-17-23)	93	77	74	98	108	94	93	101
500-234125-3	Field Blank-A(5-17-23)	92	88	71	92	98	96	95	101
LCS 320-676925/2-A	Lab Control Sample	106	90	85	100	99	96	95	99
MB 320-676925/1-A	Method Blank	96	90	80	91	100	92	81	91

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-234125-1	SW-40(5-17-23)	90	64	67	77	73	115	103	96
500-234125-2	DUP-01-A(5-17-23)	97	67	69	80	80	125	116	108
500-234125-3	Field Blank-A(5-17-23)	102	78	77	82	88	117	105	115
LCS 320-676925/2-A	Lab Control Sample	94	75	76	95	92	113	113	110
MB 320-676925/1-A	Method Blank	92	66	68	88	79	114	98	109

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-234125-1	SW-40(5-17-23)	103	97
500-234125-2	DUP-01-A(5-17-23)	112	107
500-234125-3	Field Blank-A(5-17-23)	104	123
LCS 320-676925/2-A	Lab Control Sample	101	117
MB 320-676925/1-A	Method Blank	94	109

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFA = 13C2 PFA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- dMeFOSA = d-N-MeFOSA-M

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-234125-1

dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lisa Rutkowski
ARCADIS US Inc
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Generated 6/19/2023 4:40:28 PM

JOB DESCRIPTION

Marinette, WI 30171092.4.1.1 Ditch A SW

JOB NUMBER

500-235150-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



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Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660



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Case Narrative

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Job ID: 500-235150-1

Laboratory: Eurofins Chicago

Narrative

**Job Narrative
500-235150-1**

Receipt

The samples were received on 6/13/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.7° C.

LCMS

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

Organic Prep

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-683621.

Method: 3535_PFC_28D

Matrix: Aqueous

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

Method Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

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Sample Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-235150-1	SW-40(6-8-23)	Water	06/08/23 06:30	06/13/23 09:40
500-235150-2	DUP-01-A(6-8-23)	Water	06/08/23 00:00	06/13/23 09:40
500-235150-3	Field Blank-A(6-8-23)	Water	06/08/23 06:35	06/13/23 09:40

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: SW-40(6-8-23)

Lab Sample ID: 500-235150-1

Date Collected: 06/08/23 06:30

Matrix: Water

Date Received: 06/13/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	15		4.5	2.1	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoropentanoic acid (PFPeA)	3.7		1.8	0.44	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.52	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.22	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.76	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.98	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.49	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.79	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.48	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		06/16/23 05:17	06/16/23 22:57	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.87	ng/L		06/16/23 05:17	06/16/23 22:57	1
NEtFOSA	<1.8		1.8	0.78	ng/L		06/16/23 05:17	06/16/23 22:57	1
NMeFOSA	<1.8		1.8	0.38	ng/L		06/16/23 05:17	06/16/23 22:57	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		06/16/23 05:17	06/16/23 22:57	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		06/16/23 05:17	06/16/23 22:57	1
NMeFOSE	<3.6		3.6	1.2	ng/L		06/16/23 05:17	06/16/23 22:57	1
NEtFOSE	<1.8		1.8	0.76	ng/L		06/16/23 05:17	06/16/23 22:57	1
4:2 FTS	<1.8		1.8	0.21	ng/L		06/16/23 05:17	06/16/23 22:57	1
6:2 FTS	<4.5		4.5	2.2	ng/L		06/16/23 05:17	06/16/23 22:57	1
8:2 FTS	<1.8		1.8	0.41	ng/L		06/16/23 05:17	06/16/23 22:57	1
10:2 FTS	<1.8		1.8	0.60	ng/L		06/16/23 05:17	06/16/23 22:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		06/16/23 05:17	06/16/23 22:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.3	ng/L		06/16/23 05:17	06/16/23 22:57	1
F-53B Major	<1.8		1.8	0.21	ng/L		06/16/23 05:17	06/16/23 22:57	1
F-53B Minor	<1.8		1.8	0.29	ng/L		06/16/23 05:17	06/16/23 22:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	100		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C5 PFPeA	91		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C2 PFHxA	93		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C4 PFHpA	91		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C4 PFOA	99		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C5 PFNA	97		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C2 PFDA	100		25 - 150	06/16/23 05:17	06/16/23 22:57	1

Eurofins Chicago

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: SW-40(6-8-23)

Lab Sample ID: 500-235150-1

Date Collected: 06/08/23 06:30

Matrix: Water

Date Received: 06/13/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PUnA	99		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C2 PFDaA	94		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C2 PFTeDA	96		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C2 PFHxDA	78		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C3 PFBS	89		25 - 150	06/16/23 05:17	06/16/23 22:57	1
18O2 PFHxS	93		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C4 PFOS	98		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C8 FOSA	106		10 - 150	06/16/23 05:17	06/16/23 22:57	1
d3-NMeFOSAA	102		25 - 150	06/16/23 05:17	06/16/23 22:57	1
d5-NEtFOSAA	106		25 - 150	06/16/23 05:17	06/16/23 22:57	1
d-N-MeFOSA-M	73		10 - 150	06/16/23 05:17	06/16/23 22:57	1
d-N-EtFOSA-M	69		10 - 150	06/16/23 05:17	06/16/23 22:57	1
d7-N-MeFOSE-M	79		10 - 150	06/16/23 05:17	06/16/23 22:57	1
d9-N-EtFOSE-M	77		10 - 150	06/16/23 05:17	06/16/23 22:57	1
M2-4:2 FTS	91		25 - 150	06/16/23 05:17	06/16/23 22:57	1
M2-6:2 FTS	88		25 - 150	06/16/23 05:17	06/16/23 22:57	1
M2-8:2 FTS	88		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C3 HFPO-DA	87		25 - 150	06/16/23 05:17	06/16/23 22:57	1
13C2 10:2 FTS	123		25 - 150	06/16/23 05:17	06/16/23 22:57	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: DUP-01-A(6-8-23)

Lab Sample ID: 500-235150-2

Date Collected: 06/08/23 00:00

Matrix: Water

Date Received: 06/13/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	16		4.7	2.3	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoropentanoic acid (PFPeA)	3.8		1.9	0.46	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorohexanoic acid (PFHxA)	<1.9		1.9	0.55	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoroheptanoic acid (PFHpA)	<1.9		1.9	0.24	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorooctanoic acid (PFOA)	<1.9		1.9	0.81	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorononanoic acid (PFNA)	<1.9		1.9	0.26	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorodecanoic acid (PFDA)	<1.9		1.9	0.29	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoroundecanoic acid (PFUnA)	<1.9		1.9	1.0	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorododecanoic acid (PFDoA)	<1.9		1.9	0.52	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorotridecanoic acid (PFTriA)	<1.9		1.9	1.2	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorotetradecanoic acid (PFTeA)	<1.9		1.9	0.69	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.9		1.9	0.84	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.9		1.9	0.89	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorobutanesulfonic acid (PFBS)	<1.9		1.9	0.19	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoropentanesulfonic acid (PFPeS)	<1.9		1.9	0.28	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorohexanesulfonic acid (PFHxS)	<1.9		1.9	0.54	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.9		1.9	0.18	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorooctanesulfonic acid (PFOS)	<1.9		1.9	0.51	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorononanesulfonic acid (PFNS)	<1.9		1.9	0.35	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorodecanesulfonic acid (PFDS)	<1.9		1.9	0.30	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorododecanesulfonic acid (PFDoS)	<1.9		1.9	0.92	ng/L		06/16/23 05:17	06/16/23 23:27	1
Perfluorooctanesulfonamide (FOSA)	<1.9		1.9	0.93	ng/L		06/16/23 05:17	06/16/23 23:27	1
NEtFOSA	<1.9		1.9	0.82	ng/L		06/16/23 05:17	06/16/23 23:27	1
NMeFOSA	<1.9		1.9	0.41	ng/L		06/16/23 05:17	06/16/23 23:27	1
NMeFOSAA	<4.7		4.7	1.1	ng/L		06/16/23 05:17	06/16/23 23:27	1
NEtFOSAA	<4.7		4.7	1.2	ng/L		06/16/23 05:17	06/16/23 23:27	1
NMeFOSE	<3.8		3.8	1.3	ng/L		06/16/23 05:17	06/16/23 23:27	1
NEtFOSE	<1.9		1.9	0.81	ng/L		06/16/23 05:17	06/16/23 23:27	1
4:2 FTS	<1.9		1.9	0.23	ng/L		06/16/23 05:17	06/16/23 23:27	1
6:2 FTS	<4.7		4.7	2.4	ng/L		06/16/23 05:17	06/16/23 23:27	1
8:2 FTS	<1.9		1.9	0.44	ng/L		06/16/23 05:17	06/16/23 23:27	1
10:2 FTS	0.64 J		1.9	0.63	ng/L		06/16/23 05:17	06/16/23 23:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.9		1.9	0.38	ng/L		06/16/23 05:17	06/16/23 23:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.8		3.8	1.4	ng/L		06/16/23 05:17	06/16/23 23:27	1
F-53B Major	<1.9		1.9	0.23	ng/L		06/16/23 05:17	06/16/23 23:27	1
F-53B Minor	<1.9		1.9	0.30	ng/L		06/16/23 05:17	06/16/23 23:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C5 PFPeA	89		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C2 PFHxA	91		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C4 PFHpA	90		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C4 PFOA	92		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C5 PFNA	96		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C2 PFDA	98		25 - 150	06/16/23 05:17	06/16/23 23:27	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: DUP-01-A(6-8-23)

Lab Sample ID: 500-235150-2

Date Collected: 06/08/23 00:00

Matrix: Water

Date Received: 06/13/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PUnA	92		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C2 PFDa	84		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C2 PFTeDA	84		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C2 PFHxDA	68		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C3 PFBS	87		25 - 150	06/16/23 05:17	06/16/23 23:27	1
18O2 PFHxS	92		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C4 PFOS	91		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C8 FOSA	103		10 - 150	06/16/23 05:17	06/16/23 23:27	1
d3-NMeFOSAA	92		25 - 150	06/16/23 05:17	06/16/23 23:27	1
d5-NEtFOSAA	91		25 - 150	06/16/23 05:17	06/16/23 23:27	1
d-N-MeFOSA-M	68		10 - 150	06/16/23 05:17	06/16/23 23:27	1
d-N-EtFOSA-M	64		10 - 150	06/16/23 05:17	06/16/23 23:27	1
d7-N-MeFOSE-M	70		10 - 150	06/16/23 05:17	06/16/23 23:27	1
d9-N-EtFOSE-M	66		10 - 150	06/16/23 05:17	06/16/23 23:27	1
M2-4:2 FTS	83		25 - 150	06/16/23 05:17	06/16/23 23:27	1
M2-6:2 FTS	78		25 - 150	06/16/23 05:17	06/16/23 23:27	1
M2-8:2 FTS	85		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C3 HFPO-DA	85		25 - 150	06/16/23 05:17	06/16/23 23:27	1
13C2 10:2 FTS	106		25 - 150	06/16/23 05:17	06/16/23 23:27	1

Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: Field Blank-A(6-8-23)

Lab Sample ID: 500-235150-3

Date Collected: 06/08/23 06:35

Matrix: Water

Date Received: 06/13/23 09:40

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<4.5		4.5	2.2	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoropentanoic acid (PFPeA)	<1.8		1.8	0.44	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorohexanoic acid (PFHxA)	<1.8		1.8	0.52	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoroheptanoic acid (PFHpA)	<1.8		1.8	0.22	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorooctanoic acid (PFOA)	<1.8		1.8	0.76	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorononanoic acid (PFNA)	<1.8		1.8	0.24	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorodecanoic acid (PFDA)	<1.8		1.8	0.28	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoroundecanoic acid (PFUnA)	<1.8		1.8	0.99	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorododecanoic acid (PFDoA)	<1.8		1.8	0.49	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorotridecanoic acid (PFTriA)	<1.8		1.8	1.2	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorotetradecanoic acid (PFTeA)	<1.8		1.8	0.65	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<1.8		1.8	0.80	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoro-n-octadecanoic acid (PFODA)	<1.8		1.8	0.84	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorobutanesulfonic acid (PFBS)	<1.8		1.8	0.18	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoropentanesulfonic acid (PFPeS)	<1.8		1.8	0.27	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorohexanesulfonic acid (PFHxS)	<1.8		1.8	0.51	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<1.8		1.8	0.17	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorooctanesulfonic acid (PFOS)	<1.8		1.8	0.48	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorononanesulfonic acid (PFNS)	<1.8		1.8	0.33	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorodecanesulfonic acid (PFDS)	<1.8		1.8	0.29	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorododecanesulfonic acid (PFDoS)	<1.8		1.8	0.87	ng/L		06/16/23 05:17	06/16/23 23:37	1
Perfluorooctanesulfonamide (FOSA)	<1.8		1.8	0.88	ng/L		06/16/23 05:17	06/16/23 23:37	1
NEtFOSA	<1.8		1.8	0.78	ng/L		06/16/23 05:17	06/16/23 23:37	1
NMeFOSA	<1.8		1.8	0.39	ng/L		06/16/23 05:17	06/16/23 23:37	1
NMeFOSAA	<4.5		4.5	1.1	ng/L		06/16/23 05:17	06/16/23 23:37	1
NEtFOSAA	<4.5		4.5	1.2	ng/L		06/16/23 05:17	06/16/23 23:37	1
NMeFOSE	<3.6		3.6	1.3	ng/L		06/16/23 05:17	06/16/23 23:37	1
NEtFOSE	<1.8		1.8	0.76	ng/L		06/16/23 05:17	06/16/23 23:37	1
4:2 FTS	<1.8		1.8	0.22	ng/L		06/16/23 05:17	06/16/23 23:37	1
6:2 FTS	<4.5		4.5	2.2	ng/L		06/16/23 05:17	06/16/23 23:37	1
8:2 FTS	<1.8		1.8	0.41	ng/L		06/16/23 05:17	06/16/23 23:37	1
10:2 FTS	<1.8		1.8	0.60	ng/L		06/16/23 05:17	06/16/23 23:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<1.8		1.8	0.36	ng/L		06/16/23 05:17	06/16/23 23:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<3.6		3.6	1.3	ng/L		06/16/23 05:17	06/16/23 23:37	1
F-53B Major	<1.8		1.8	0.22	ng/L		06/16/23 05:17	06/16/23 23:37	1
F-53B Minor	<1.8		1.8	0.29	ng/L		06/16/23 05:17	06/16/23 23:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	89		25 - 150				06/16/23 05:17	06/16/23 23:37	1
13C5 PFPeA	89		25 - 150				06/16/23 05:17	06/16/23 23:37	1
13C2 PFHxA	90		25 - 150				06/16/23 05:17	06/16/23 23:37	1
13C4 PFHpA	92		25 - 150				06/16/23 05:17	06/16/23 23:37	1
13C4 PFOA	91		25 - 150				06/16/23 05:17	06/16/23 23:37	1
13C5 PFNA	95		25 - 150				06/16/23 05:17	06/16/23 23:37	1
13C2 PFDA	102		25 - 150				06/16/23 05:17	06/16/23 23:37	1

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Client Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: Field Blank-A(6-8-23)

Lab Sample ID: 500-235150-3

Date Collected: 06/08/23 06:35

Matrix: Water

Date Received: 06/13/23 09:40

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

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFluA	99		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C2 PFlDoA	94		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C2 PFlTeDA	97		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C2 PFlHxDA	89		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C3 PFlBS	87		25 - 150	06/16/23 05:17	06/16/23 23:37	1
18O2 PFlHxS	95		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C4 PFlOS	98		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C8 FOSA	104		10 - 150	06/16/23 05:17	06/16/23 23:37	1
d3-NMeFOSAA	102		25 - 150	06/16/23 05:17	06/16/23 23:37	1
d5-NEtFOSAA	108		25 - 150	06/16/23 05:17	06/16/23 23:37	1
d-N-MeFOSA-M	70		10 - 150	06/16/23 05:17	06/16/23 23:37	1
d-N-EtFOSA-M	62		10 - 150	06/16/23 05:17	06/16/23 23:37	1
d7-N-MeFOSE-M	80		10 - 150	06/16/23 05:17	06/16/23 23:37	1
d9-N-EtFOSE-M	75		10 - 150	06/16/23 05:17	06/16/23 23:37	1
M2-4:2 FTS	93		25 - 150	06/16/23 05:17	06/16/23 23:37	1
M2-6:2 FTS	93		25 - 150	06/16/23 05:17	06/16/23 23:37	1
M2-8:2 FTS	93		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C3 HFPO-DA	85		25 - 150	06/16/23 05:17	06/16/23 23:37	1
13C2 10:2 FTS	124		25 - 150	06/16/23 05:17	06/16/23 23:37	1

Definitions/Glossary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-683621/1-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 683621

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	0.19	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		06/16/23 05:17	06/16/23 21:25	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		06/16/23 05:17	06/16/23 21:25	1
NEtFOSA	<2.0		2.0	0.87	ng/L		06/16/23 05:17	06/16/23 21:25	1
NMeFOSA	<2.0		2.0	0.43	ng/L		06/16/23 05:17	06/16/23 21:25	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		06/16/23 05:17	06/16/23 21:25	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		06/16/23 05:17	06/16/23 21:25	1
NMeFOSE	<4.0		4.0	1.4	ng/L		06/16/23 05:17	06/16/23 21:25	1
NEtFOSE	<2.0		2.0	0.85	ng/L		06/16/23 05:17	06/16/23 21:25	1
4:2 FTS	<2.0		2.0	0.24	ng/L		06/16/23 05:17	06/16/23 21:25	1
6:2 FTS	<5.0		5.0	2.5	ng/L		06/16/23 05:17	06/16/23 21:25	1
8:2 FTS	<2.0		2.0	0.46	ng/L		06/16/23 05:17	06/16/23 21:25	1
10:2 FTS	<2.0		2.0	0.67	ng/L		06/16/23 05:17	06/16/23 21:25	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		06/16/23 05:17	06/16/23 21:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		06/16/23 05:17	06/16/23 21:25	1
F-53B Major	<2.0		2.0	0.24	ng/L		06/16/23 05:17	06/16/23 21:25	1
F-53B Minor	<2.0		2.0	0.32	ng/L		06/16/23 05:17	06/16/23 21:25	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	91		25 - 150				06/16/23 05:17	06/16/23 21:25	1
13C5 PFPeA	93		25 - 150				06/16/23 05:17	06/16/23 21:25	1
13C2 PFHxA	96		25 - 150				06/16/23 05:17	06/16/23 21:25	1
13C4 PFHpA	97		25 - 150				06/16/23 05:17	06/16/23 21:25	1
13C4 PFOA	100		25 - 150				06/16/23 05:17	06/16/23 21:25	1

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

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

Lab Sample ID: MB 320-683621/1-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 683621

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFNA	100		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C2 PFDA	108		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C2 PFUnA	108		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C2 PFDoA	104		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C2 PFTeDA	103		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C2 PFHxDA	92		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C3 PFBS	90		25 - 150	06/16/23 05:17	06/16/23 21:25	1
18O2 PFHxS	100		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C4 PFOS	102		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C8 FOSA	106		10 - 150	06/16/23 05:17	06/16/23 21:25	1
d3-NMeFOSAA	103		25 - 150	06/16/23 05:17	06/16/23 21:25	1
d5-NEtFOSAA	107		25 - 150	06/16/23 05:17	06/16/23 21:25	1
d-N-MeFOSA-M	82		10 - 150	06/16/23 05:17	06/16/23 21:25	1
d-N-EtFOSA-M	79		10 - 150	06/16/23 05:17	06/16/23 21:25	1
d7-N-MeFOSE-M	94		10 - 150	06/16/23 05:17	06/16/23 21:25	1
d9-N-EtFOSE-M	90		10 - 150	06/16/23 05:17	06/16/23 21:25	1
M2-4:2 FTS	93		25 - 150	06/16/23 05:17	06/16/23 21:25	1
M2-6:2 FTS	92		25 - 150	06/16/23 05:17	06/16/23 21:25	1
M2-8:2 FTS	96		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C3 HFPO-DA	90		25 - 150	06/16/23 05:17	06/16/23 21:25	1
13C2 10:2 FTS	128		25 - 150	06/16/23 05:17	06/16/23 21:25	1

Lab Sample ID: LCS 320-683621/2-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 683621

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	40.0	42.7		ng/L		107	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	41.6		ng/L		104	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	45.2		ng/L		113	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	43.8		ng/L		109	60 - 135
Perfluorononanoic acid (PFNA)	40.0	42.3		ng/L		106	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.1		ng/L		105	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	40.1		ng/L		100	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	44.1		ng/L		110	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	40.5		ng/L		101	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	37.0		ng/L		93	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.6		ng/L		106	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	29.9		ng/L		75	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	38.5		ng/L		108	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	44.2		ng/L		118	60 - 135

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

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

Lab Sample ID: LCS 320-683621/2-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 683621

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	36.5	38.8		ng/L		106	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.2		ng/L		103	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	38.1		ng/L		102	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	40.5		ng/L		105	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	38.8		ng/L		101	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	34.1		ng/L		88	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.6		ng/L		101	60 - 135
NEtFOSA	40.0	43.8		ng/L		110	60 - 135
NMeFOSA	40.0	43.8		ng/L		110	60 - 135
NMeFOSAA	40.0	39.3		ng/L		98	60 - 135
NEtFOSAA	40.0	42.9		ng/L		107	60 - 135
NMeFOSE	40.0	43.1		ng/L		108	60 - 135
NEtFOSE	40.0	42.9		ng/L		107	60 - 135
4:2 FTS	37.5	40.5		ng/L		108	60 - 135
6:2 FTS	38.1	35.7		ng/L		94	60 - 135
8:2 FTS	38.4	38.8		ng/L		101	60 - 135
10:2 FTS	38.6	35.3		ng/L		91	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	41.0		ng/L		109	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.4		ng/L		101	60 - 135
F-53B Major	37.4	39.6		ng/L		106	60 - 135
F-53B Minor	37.8	41.5		ng/L		110	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	91		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	98		25 - 150
13C4 PFHpA	94		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	99		25 - 150
13C2 PFDA	102		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	93		25 - 150
13C2 PFHxDA	89		25 - 150
13C3 PFBS	93		25 - 150
18O2 PFHxS	100		25 - 150
13C4 PFOS	102		25 - 150
13C8 FOSA	106		10 - 150
d3-NMeFOSAA	103		25 - 150
d5-NEtFOSAA	95		25 - 150
d-N-MeFOSA-M	72		10 - 150
d-N-EtFOSA-M	70		10 - 150

QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

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

Lab Sample ID: LCS 320-683621/2-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 683621

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d7-N-MeFOSE-M	85		10 - 150
d9-N-EtFOSE-M	84		10 - 150
M2-4:2 FTS	93		25 - 150
M2-6:2 FTS	91		25 - 150
M2-8:2 FTS	98		25 - 150
13C3 HFPO-DA	90		25 - 150
13C2 10:2 FTS	122		25 - 150

Lab Sample ID: LCSD 320-683621/3-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 683621

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	40.0	38.6		ng/L		97	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)	40.0	42.3		ng/L		106	60 - 135	1	30
Perfluorohexanoic acid (PFHxA)	40.0	41.8		ng/L		104	60 - 135	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	44.7		ng/L		112	60 - 135	1	30
Perfluorooctanoic acid (PFOA)	40.0	40.8		ng/L		102	60 - 135	7	30
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	60 - 135	0	30
Perfluorodecanoic acid (PFDA)	40.0	42.4		ng/L		106	60 - 135	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	38.7		ng/L		97	60 - 135	4	30
Perfluorododecanoic acid (PFDoA)	40.0	43.2		ng/L		108	60 - 135	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.7		ng/L		104	60 - 135	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	37.8		ng/L		94	60 - 135	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.4		ng/L		106	60 - 135	0	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	33.9		ng/L		85	60 - 135	13	30
Perfluorobutanesulfonic acid (PFBS)	35.5	38.1		ng/L		107	60 - 135	1	30
Perfluoropentanesulfonic acid (PFPeS)	37.6	43.3		ng/L		115	60 - 135	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.5	37.9		ng/L		104	60 - 135	2	30
Perfluoroheptanesulfonic acid (PFHpS)	38.2	39.3		ng/L		103	60 - 135	0	30
Perfluorooctanesulfonic acid (PFOS)	37.2	37.6		ng/L		101	60 - 135	1	30
Perfluorononanesulfonic acid (PFNS)	38.5	40.5		ng/L		105	60 - 135	0	30
Perfluorodecanesulfonic acid (PFDS)	38.6	42.2		ng/L		109	60 - 135	8	30
Perfluorododecanesulfonic acid (PFDoS)	38.8	36.4		ng/L		94	60 - 135	7	30
Perfluorooctanesulfonamide (FOSA)	40.0	41.6		ng/L		104	60 - 135	2	30
NEtFOSA	40.0	43.0		ng/L		108	60 - 135	2	30
NMeFOSA	40.0	41.8		ng/L		105	60 - 135	5	30
NMeFOSAA	40.0	41.9		ng/L		105	60 - 135	6	30

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QC Sample Results

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

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

Lab Sample ID: LCSD 320-683621/3-A
Matrix: Water
Analysis Batch: 683808

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 683621

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
NEtFOSAA	40.0	41.3		ng/L		103	60 - 135	4	30
NMeFOSE	40.0	42.7		ng/L		107	60 - 135	1	30
NEtFOSE	40.0	42.8		ng/L		107	60 - 135	0	30
4:2 FTS	37.5	39.4		ng/L		105	60 - 135	3	30
6:2 FTS	38.1	39.1		ng/L		103	60 - 135	9	30
8:2 FTS	38.4	42.7		ng/L		111	60 - 135	10	30
10:2 FTS	38.6	35.7		ng/L		92	60 - 135	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	40.4		ng/L		107	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	40.9		ng/L		102	60 - 135	1	30
F-53B Major	37.4	38.4		ng/L		103	60 - 135	3	30
F-53B Minor	37.8	42.1		ng/L		112	60 - 135	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C4 PFBA	93		25 - 150
13C5 PFPeA	91		25 - 150
13C2 PFHxA	94		25 - 150
13C4 PFHpA	93		25 - 150
13C4 PFOA	102		25 - 150
13C5 PFNA	98		25 - 150
13C2 PFDA	103		25 - 150
13C2 PFUnA	106		25 - 150
13C2 PFDoA	103		25 - 150
13C2 PFTeDA	103		25 - 150
13C2 PFHxDA	96		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	99		25 - 150
13C4 PFOS	101		25 - 150
13C8 FOSA	100		10 - 150
d3-NMeFOSAA	107		25 - 150
d5-NEtFOSAA	108		25 - 150
d-N-MeFOSA-M	81		10 - 150
d-N-EtFOSA-M	74		10 - 150
d7-N-MeFOSE-M	85		10 - 150
d9-N-EtFOSE-M	86		10 - 150
M2-4:2 FTS	101		25 - 150
M2-6:2 FTS	90		25 - 150
M2-8:2 FTS	91		25 - 150
13C3 HFPO-DA	88		25 - 150
13C2 10:2 FTS	128		25 - 150

Lab Chronicle

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Client Sample ID: SW-40(6-8-23)

Lab Sample ID: 500-235150-1

Date Collected: 06/08/23 06:30

Matrix: Water

Date Received: 06/13/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			683621	EJR	EET SAC	06/16/23 05:17
Total/NA	Analysis	537 (modified)		1	683808	S1M	EET SAC	06/16/23 22:57

Client Sample ID: DUP-01-A(6-8-23)

Lab Sample ID: 500-235150-2

Date Collected: 06/08/23 00:00

Matrix: Water

Date Received: 06/13/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			683621	EJR	EET SAC	06/16/23 05:17
Total/NA	Analysis	537 (modified)		1	683808	S1M	EET SAC	06/16/23 23:27

Client Sample ID: Field Blank-A(6-8-23)

Lab Sample ID: 500-235150-3

Date Collected: 06/08/23 06:35

Matrix: Water

Date Received: 06/13/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			683621	EJR	EET SAC	06/16/23 05:17
Total/NA	Analysis	537 (modified)		1	683808	S1M	EET SAC	06/16/23 23:37

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS US Inc
Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Login Sample Receipt Checklist

Client: ARCADIS US Inc

Job Number: 500-235150-1

Login Number: 235150

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 06/13/23 03:48 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2159026
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.7C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: ARCADIS US Inc
 Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-235150-1	SW-40(6-8-23)	100	91	93	91	99	97	100	99
500-235150-2	DUP-01-A(6-8-23)	94	89	91	90	92	96	98	92
500-235150-3	Field Blank-A(6-8-23)	89	89	90	92	91	95	102	99
LCS 320-683621/2-A	Lab Control Sample	91	94	98	94	97	99	102	100
LCSD 320-683621/3-A	Lab Control Sample Dup	93	91	94	93	102	98	103	106
MB 320-683621/1-A	Method Blank	91	93	96	97	100	100	108	108

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFS (25-150)
500-235150-1	SW-40(6-8-23)	94	96	78	89	93	98	106	102
500-235150-2	DUP-01-A(6-8-23)	84	84	68	87	92	91	103	92
500-235150-3	Field Blank-A(6-8-23)	94	97	89	87	95	98	104	102
LCS 320-683621/2-A	Lab Control Sample	95	93	89	93	100	102	106	103
LCSD 320-683621/3-A	Lab Control Sample Dup	103	103	96	92	99	101	100	107
MB 320-683621/1-A	Method Blank	104	103	92	90	100	102	106	103

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d5NEFOS (25-150)	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)
500-235150-1	SW-40(6-8-23)	106	73	69	79	77	91	88	88
500-235150-2	DUP-01-A(6-8-23)	91	68	64	70	66	83	78	85
500-235150-3	Field Blank-A(6-8-23)	108	70	62	80	75	93	93	93
LCS 320-683621/2-A	Lab Control Sample	95	72	70	85	84	93	91	98
LCSD 320-683621/3-A	Lab Control Sample Dup	108	81	74	85	86	101	90	91
MB 320-683621/1-A	Method Blank	107	82	79	94	90	93	92	96

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	HFPODA (25-150)	M102FTS (25-150)
500-235150-1	SW-40(6-8-23)	87	123
500-235150-2	DUP-01-A(6-8-23)	85	106
500-235150-3	Field Blank-A(6-8-23)	85	124
LCS 320-683621/2-A	Lab Control Sample	90	122
LCSD 320-683621/3-A	Lab Control Sample Dup	88	128
MB 320-683621/1-A	Method Blank	90	128

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- PFHxDA = 13C2 PFHxDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS

Isotope Dilution Summary

Client: ARCADIS US Inc

Project/Site: Marinette, WI 30171092.4.1.1 Ditch A SW

Job ID: 500-235150-1

PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

1

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Appendix E

Waste Management Documentation

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

WIT560011850

2. Page 1 of 1

3. Emergency Response Phone

(800)-424-9300

4. Waste Tracking Number

W026-003-14

5. Generator's Name and Mailing Address

JCI/Tyco
1 Stanton Street
Marinette WI 54143

Att: Ryan Suennen

Generator's Site Address (if different than mailing address)

JCI/Tyco
2700 Industrial Parkway S
Marinette WI 54143

Generator's Phone:

715 753-7411 Ext. 84025

6. Transporter 1 Company Name

Endpoint Waste Solutions Corp.

U.S. EPA ID Number

WIR000170027

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

Endpoint Waste Solutions Corp.
1024 Western Drive
Hartford WI 53027

U.S. EPA ID Number

Facility's Phone:

414 427-1200

License 4704

9. Waste Shipping Name and Description

10. Containers

No.

Type

11. Total Quantity

12. Unit Wt./Vol.

1. Non-RCRA, non-DOT

0048 DF 26% G

2. Non-RCRA, non-DOT

0 0 0 0

3. Non-RCRA, non-DOT

0 0 0 0

4.

13. Special Handling Instructions and Additional Information

- 1. Jute Filters and AFF Foam Profile# 05162022TIP-03-3H
- 2. Waste Flux Profile# 05162022TIP-04-3W
- 3. Steel Shot for Recycling Profile# 05162022TIP-02-RCY

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offorer's Printed/Typed Name

Signature

Month Day Year

Rick Koshman for Tyco

[Signature]

4 6 23

15. International Shipments

Import to U.S.

Export from U.S.

Port of entry/exit:

Transporter Signature (for exports only):

Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Signature

Month Day Year

Steven Bachtell

[Signature]

4 6 23

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Signature

Month Day Year

Fred J Ringle

[Signature]

04 06 23

GENERATOR

TRANSPORTER INT'L

TRANSPORTER

DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number W I T 5 8 0 0 1 1 8 5 0	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Waste Tracking Number W 0 2 8 - 0 0 3 - 1 6	
5. Generator's Name and Mailing Address JCI/Tyco 1 Stanton Street Marinette WI 54143 Generator's Phone: 715 753-7411 Ext 84025		Att: Ryan Suennen Generator's Site Address (if different than mailing address) JCI/Tyco 2700 Industrial Parkway S Marinette WI 54143			
6. Transporter 1 Company Name Endpoint Waste Solutions Corp.		U.S. EPA ID Number W I R 0 0 0 1 7 0 0 2 7			
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address Endpoint Waste Solutions Corp. 1024 Western Drive Hartford WI 53027 Facility's Phone: 414 427-1200		U.S. EPA ID Number L i c e n s e 4 7 0 4			
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1. Jute Filters and AFF Foam		0048	DF	19.200	LB
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information 1. Jute Filters and AFF Foam Profile# 05162022TIP-03-3H 2040 GALLON'S					
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					
Generator's/Offoror's Printed/Typed Name Ed Kosowski		Signature Ed Kosowski		Month 4	Day 17
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:		Year -03	
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Steven Bachtel		Signature Steven Bachtel		Month 4	Day 17
Transporter 2 Printed/Typed Name		Signature		Year 23	
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
17b. Alternate Facility (or Generator)		Manifest Reference Number:		U.S. EPA ID Number	
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)				Month	Day
				Year	
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Fred J Ringle		Signature Fred J Ringle		Month 04	Day 18
				Year 23	

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number
W I T 5 8 0 0 1 1 8 5 0

2. Page 1 of 1

3. Emergency Response Phone
(800)-424-9300

4. Waste Tracking Number **001-23-01**
W 0 2 8 - ~~0 0 3 1 8~~

5. Generator's Name and Mailing Address

JCI/Tyco
1 Stanton Street
Marinette WI 54143

Att. Ryan Suenner

Generator's Site Address (if different than mailing address)

JCI/Tyco
2700 Industrial Parkway S
Marinette WI 54143

Generator's Phone: 715 753-7411 Ext. 84025

6. Transporter 1 Company Name
Endpoint Waste Solutions Corp.

U.S. EPA ID Number
W I R 0 0 0 1 7 0 0 2 7

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Endpoint Waste Solutions Corp.
1024 Western Drive
Hartford WI 53027

U.S. EPA ID Number

Facility's Phone: 414 427-1200

L i c e n s e 4 7 0 4

9. Waste Shipping Name and Description

10. Containers

11. Total Quantity

12. Unit Wt./Vol.

No.

Type

1. Non-RCRA, non-DOT

0064 DF 19200 P

2.

3.

4.

13. Special Handling Instructions and Additional Information

1. Bag Filters/Jute Netting with AFF Foam Profile# 05162022TIP-03-3H

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name on behalf of JCI/Tyco
Fred J Ringle

Signature

Fred J Ringle

Month Day Year

06 09 23

15. International Shipments Import to U.S. Export from U.S.

Port of entry/extl:

Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Steven Bachtell

Signature

SB Bachtell

Month Day Year

06 09 23

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Fred J Ringle

Signature

Fred J Ringle

Month Day Year

06 12 23

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number W I T 5 8 0 0 1 1 8 5 0	2. Page 1 of 1	3. Emergency Response Phone (800)-424-9300	4. Waste Tracking Number 001-23-02 W028 003-17	
5. Generator's Name and Mailing Address JCI/Tyco 1 Stanton Street Marinette WI 54143 Generator's Phone: 715 753-7411 Ext. 84025		Att: Ryan Suennen Generator's Site Address (if different than mailing address) JCI/Tyco 2700 Industrial Parkway S Marinette WI 54143			
6. Transporter 1 Company Name Endpoint Waste Solutions Corp.			U.S. EPA ID Number W I R 0 0 0 1 7 0 0 2 7		
7. Transporter 2 Company Name			U.S. EPA ID Number		
8. Designated Facility Name and Site Address Endpoint Waste Solutions Corp. 1024 Western Drive Hartford WI 53027 Facility's Phone: 414 427-1200			U.S. EPA ID Number License 4704		
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1. Non-RCRA, non-DOT		0032	DF	11,200	P
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information 1. Bag Filters/Jute Netting with AFF Foam Profile# 05162022TIP-03-3H					
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					
Generator's/Offoror's Printed/Typed Name Fred J Ringle		Signature Fred J Ringle		Month 06	Day 09
15. International Shipments <input type="checkbox"/> Import to U.S.		<input type="checkbox"/> Export from U.S.		Year 23	
Transporter Signature (for exports only):		Port of entry/exit: Date leaving U.S.:			
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Mather Shan		Signature Mather Shan		Month 6	Day 9
Transporter 2 Printed/Typed Name		Signature		Year 23	
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
Manifest Reference Number:					
17b. Alternate Facility (or Generator)				U.S. EPA ID Number	
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)				Month	Day
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Fred J Ringle		Signature Fred J Ringle		Month 06	Day 12
				Year 23	

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number W I T 5 6 0 0 1 1 8 5 0	2. Page 1 of 1	3. Emergency Response Phone (800)-424-9300	4. Waste Tracking Number 001-23-04 W026-003-20		
5. Generator's Name and Mailing Address JCI/Tyco 1 Stanton Street Marinette WI 54143 Generator's Phone: 715 753-7411 Ext. 84025		Att: Ryan Suennen Generator's Site Address (if different than mailing address) JCI/Tyco 2700 Industrial Parkway S Marinette WI 54143				
6. Transporter 1 Company Name Endpoint Waste Solutions Corp.		U.S. EPA ID Number W I R 0 0 0 1 7 0 0 2 7				
7. Transporter 2 Company Name		U.S. EPA ID Number				
8. Designated Facility Name and Site Address Endpoint Waste Solutions Corp. 1024 Western Drive Hartford WI 53027 Facility's Phone: 414 427-1200		U.S. EPA ID Number License 4704				
GENERATOR	9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	
		No.	Type			
	1. Non-RCRA, non-DOT					
	2. Non-RCRA, non-DOT					
	3. Non-RCRA, non-DOT					
	4. Non-RCRA, Non-DOT					
13. Special Handling Instructions and Additional Information 1. Waste Flux Profile# 05162022TIP-04-SW 2. Steel Shot for Recycling Profile# 05162022TIP-02-RCY 3. Bag House Dust Profile# 05162022TIP-05-SW 4. Jute Filters and AFFF Foam Profile# 05162022TIP-03-SH						
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.						
Generator's/Offoror's Printed/Typed Name Matt Shew "for tyco"		Signature 		Month 06	Day 13	Year 23
TRANSPORTER INT'L	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:			
	16. Transporter Acknowledgment of Receipt of Materials					
	Transporter 1 Printed/Typed Name Steven Baartel	Signature 		Month 6	Day 13	Year 23
	Transporter 2 Printed/Typed Name	Signature		Month	Day	Year
DESIGNATED FACILITY	17. Discrepancy					
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
	17b. Alternate Facility (or Generator)		Manifest Reference Number: U.S. EPA ID Number			
	Facility's Phone: 17c. Signature of Alternate Facility (or Generator)		Month Day Year			
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a						
Printed/Typed Name Fred J Ringle		Signature 		Month 06	Day 13	Year 23



CERTIFICATE OF RECYCLING

This document certifies all materials from below listed site and service order designation has been re-activated for beneficial re-use in accordance with all applicable state and federal laws pertaining to handling and treatment of waste materials.

Site Location: TYCO ANSUL FTC Site 2700 Industrial Parkway South Marinette, WI 54143

Dates and dry volumes below: **Generator:** TYCO

DATE	TASK	Spent Carbon Shipped (lbs.)
8/9/2022	Delivery/Pick-up	20,000
8/23/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
9/13/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
10/4/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
10/27/2022	Delivery/Pick-up	20,000
11/8/2022	Delivery/Pick-up	20,000
12/5/2022	Delivery/Pick-up	20,000
	Pick-Up	20,000
1/3/2023	Delivery/Pick-up	20,000
1/4/2023	Pick-Up	20,000
1/18/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
2/8/2023	Delivery/Pick-up	16,000

Steve Jordan

2/27/2023

Signature

Date



CERTIFICATE OF RECYCLING

This document certifies all materials from below listed site and service order designation has been re-activated for beneficial re-use in accordance with all applicable state and federal laws pertaining to handling and treatment of waste materials.

Site Location: TYCO ANSUL FTC Site 2700 Industrial Parkway South Marinette, WI 54143

Dates and dry volumes below: **Generator:** TYCO

Date	Task	Spent Carbon Shipped (lbs)
2/21/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
3/7/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
3/21/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
4/4/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
4/18/2023	Delivery/Pick-up	20,000
5/11/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000
5/31/2023	Delivery/Pick-Up	20,000
	Pick-Up	20,000
6/14/2023	Delivery/Pick-Up	20,000
	Pick-Up	20,000
6/28/2023	Delivery/Pick-up	20,000
	Pick-Up	20,000

Steve Jordan

Signature

8/24/2023

Date

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Suite 400
Milwaukee, Wisconsin 53202
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