Ms. Alyssa Sellwood, P.E.
Complex Sites Project Manager – Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
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PO Box 7921
Madison, WI 53707

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Date: August 16, 2021
BRRTS #: 02-38-580694
Subject: Sample Results Notification, Tyco Fire Technology Center PFAS
2700 Industrial Parkway South, Marinette, Wisconsin

Dear Ms. Sellwood,

On behalf of Tyco Fire Products LP (Tyco), Arcadis is providing this Sample Results Notification for waste characterization and disposal activities related to the Tyco Fire Technology Center (FTC) per- or polyfluoroalkyl substances (PFAS) site located at 2700 Industrial Parkway South in Marinette, Wisconsin (Site).

This Sample Results Notification is being provided to satisfy NR716.14(2) for waste characterization and disposal samples of foam collected from area ditches and stored no more than 90 days in leak proof, 55-gallon drums prior to disposal. The foam was collected from Ditch B in the City of Marinette between May 21 and July 20, 2021 consistent with the Revised Foam Monitoring Work Plan submitted to the Wisconsin Department of Natural Resources (WDNR) on April 14, 2021 by Arcadis. A sample of the liquid resulting from stored collapsed foam was tested at an accredited, independent laboratory. That testing is now complete, and the PFAS results are summarized in the attached table with sample locations depicted in the attached figure.

As previously stated in a June 18, 2021 correspondence with WDNR under the subject “Sample Results Notification, Tyco Fire Technology Center PFAS,”[1] Tyco has monitored area ditches daily since March 2021 consistent with the Revised Foam Monitoring Work Plan submitted in April 2021. Tyco will continue maintaining and monitoring booms in ditches at the approved frequency during the calendar year to capture and remove foam until seasonal winter weather conditions necessitate removal of the booms. Booms will be re-deployed in 2022 following the cessation of freezing conditions.

Between May 21, 2021 and July 20, 2021, a total of approximately 20 gallons of uncollapsed foam was skimmed from the surface water using a pool skimmer at the boom located in Ditch B. That foam was stored on Tyco property in a leak proof, 55-gallon drum where it collapsed to approximately 1.7 gallons of liquid. Waste characterization samples were analyzed for PFAS and the liquid from collapsed foam will be sent off site for disposal at a permitted facility outside the state of Wisconsin by August 19, 2021. Final documentation of disposal will be provided to the Wisconsin Department of Natural Resources (WDNR) when available.

[1] Arcadis to Wisconsin Department of Natural Resources, 2021. Sample Results Notification, Tyco Fire Technology Center PFAS. June 18, 2021.

Similar to the previous report, the cause of some PFAS in the collected foam is attributable to Tyco's historic operations at the FTC and the remainder is due to PFAS that is ubiquitous in the environment[2,3]. Investigation and modeling data demonstrate that PFAS is migrating through groundwater from the FTC to the east where it can upwell to surface water resulting in detectable concentrations within the surface water. Tyco has been monitoring the surface water in area ditches since 2018 as part of the site investigation process. The PFAS concentrations in foam are predictably higher than the concentrations in groundwater or surface water due to the physical properties of PFAS at the molecular level as discussed in the correspondence to WDNR dated June 18, 2021. In instances where PFAS are present in the water, the foam has been found to accumulate PFAS at higher concentrations than is present in the water. This effect has been demonstrated within the State of Wisconsin at Starkweather Creek[4] and in the City of Peshtigo at a dam within the Peshtigo River[5] where WDNR collected simultaneous samples of foam and surface water for PFAS analyses. In all instances, the concentration of PFAS in foam was amplified as compared to the concentrations of PFAS in the underlying surface water. However, the concentration of PFAS in surface water cannot be used to accurately estimate the concentration of PFAS in foam. As an example, PFOS concentrations were amplified by between 200 and 2,700 times in these reported samples compared to the concentrations of PFOS in the underlying surface water. The increase in concentrations has been observed to be even greater in similar studies conducted by the State of Michigan where the observed PFAS concentrations in surface water were compared to PFAS concentrations in foam[6].

The significance of the results includes:

1. Foam is naturally occurring in the environment
2. Some PFAS in the collected foam comes from historic FTC operations, the remainder is ubiquitous in the environment[2,3]
3. PFAS concentrations amplify in foam
4. Collecting and properly disposing of foams also removes PFAS from the environment because PFAS aggregates in foam

The results reported herein and other results referenced demonstrate the science underpinning some emerging PFAS remediation approaches. Specifically, recognizing the strong affinity of PFAS for foam, research groups and private industry are developing techniques to introduce bubbles and foaming agents to PFAS-impacted waters as a means of capturing and removing PFAS. This technology works due to the physical properties of PFAS as explained previously: therefore, the results presented indicating elevated concentrations of PFAS in foam are expected.

The Groundwater Extraction and Treatment System (GETS) is being constructed and implemented to improve surface water concentrations of PFAS in Ditch B and foam that is collected will continue to be monitored over time.

Tyco posted signs advising the public not to drink, play, or swim in the foam at multiple locations in the City of Marinette. Tyco also offered signs to homeowners with private ponds and select private property owners along

[2] https://www.epa.gov/sciencematters/understanding-pfas-environment
[3] Rankin, K., Mabury, S.A., Jenkins, T.M. and Washington, J.W., 2016. A North American and global survey of perfluoroalkyl substances in surface soils: Distribution patterns and mode of occurrence. Chemosphere, 161, pp.333-341
[4] DNR Confirms PFAS-Containing Foam Found at the Mouth of Starkweather Creek and Lake Monona News Release - Wisconsin DNR
[5] DNR Confirms PFAS-Containing Foam Found in Peshtigo Area Waterways News Release - Wisconsin DNR
[6] Surface Water Foam Study Report (michigan.gov)

area ditches. Tyco will work with WDNR to identify additional locations to augment the existing advisory sign network installed along the ditches as necessary.

Please do not hesitate to call us if you have any questions.

Sincerely,
Arcadis U.S., Inc.

Matthew Coleman
Project Communications Manager

Copies:
Bridget Kelly
Jeff Danko
Scott Wahl

Enclosures:

Table 1	Sample Results
Figure 1	Boom Deployment Locations
Attachment 1	Laboratory Report

Table 1
Sample Results

	Location	Collapsed SW Foam
	Sample ID	COLLAPSED SW FOAM (7-20-21)
	Sample Date	7/20/2021
	Sample Type	N
Chemical Name	Units	
PFOA	ng/l	220000 D
PFOS	ng/l	750000 EDJ
PFBS	ng/l	< 2.0 U
PFHpA	ng/l	1800
PFHxS	ng/l	1700 J+
PFNA	ng/l	240000 D
PFDA	ng/l	53000 D
PFDoA	ng/l	1100
PFHxA	ng/l	6200 D
PFTeA	ng/l	55
PFTriA	ng/l	180 JN
PFUnA	ng/l	18000 D
NEtFOSAA	ng/l	27000 D
NMeFOSAA	ng/l	1200 JN
PFBA	ng/l	240
PFPeA	ng/l	590
PFHxDA	ng/l	< 8.9 U
PFODA	ng/l	< 9.4 U
PFPeS	ng/l	5.1 J
PFHpS	ng/l	2700 D
PFNS	ng/l	< 3.7 U
PFDS	ng/l	1100
PFDoS	ng/l	< 9.7 U
FOSA	ng/l	99000 D
NEtFOSA	ng/l	< 8.7 U
NMeFOSA	ng/l	46
NMeFOSE	ng/l	< 14 U
NEtFOSE	ng/l	210 J+
4:2 FTS	ng/l	94
6:2 FTS	ng/l	66000 DJ+
8:2 FTS	ng/l	73000 DJ+
10:2 FTS	ng/l	2500 J+
DONA	ng/l	< 4.0 U
GenX	ng/l	< 15 U
F-53B Major	ng/l	12 J
F-53B Minor	ng/l	< 3.2 U

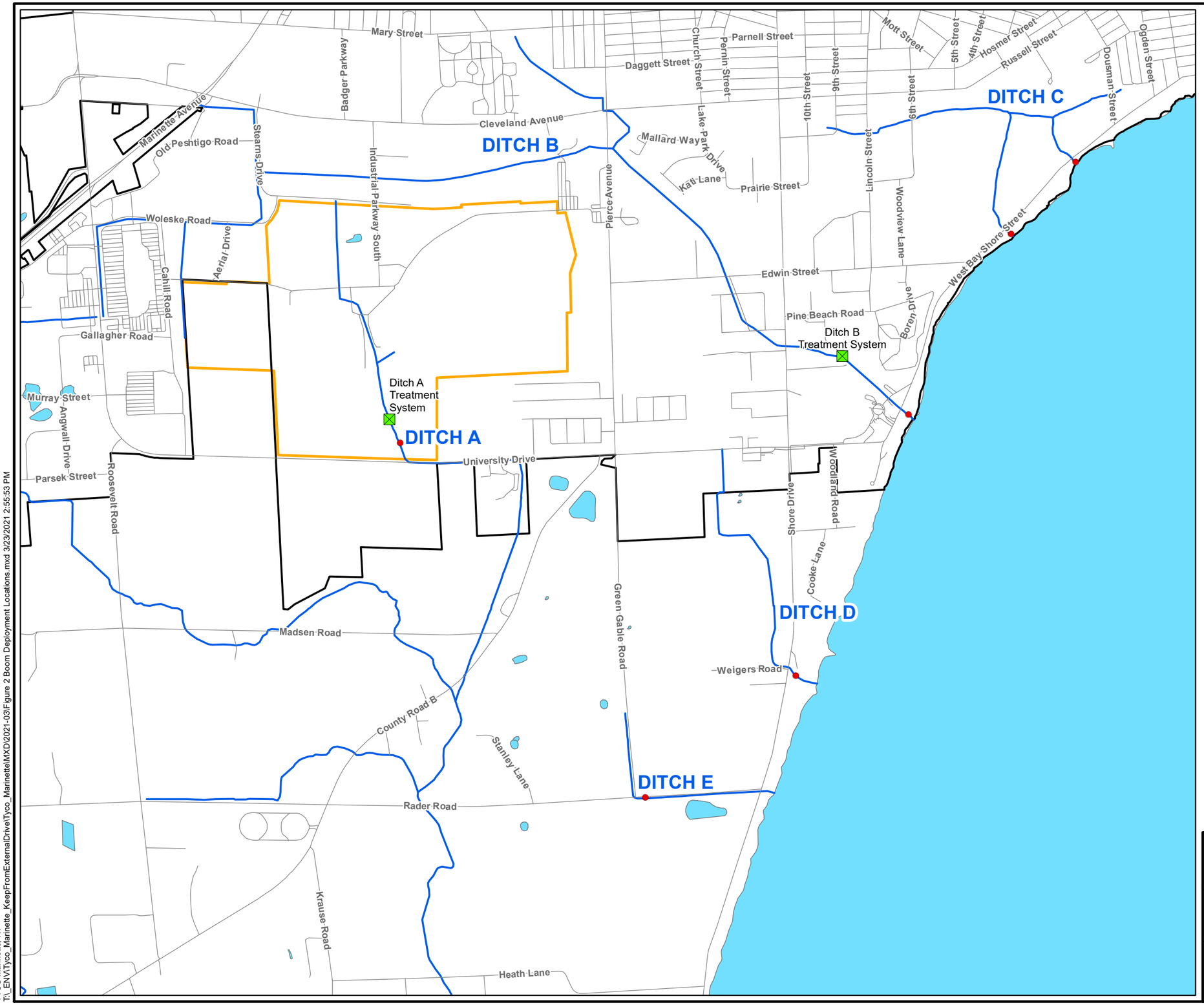
Table 1
Sample Results

Notes:

< = Compound not detected at method detection limit.
(1) = Combined criteria for FOSA, NEtFOSE, NEtFOSA, NetFOSAA, PFOS, and PFOA
-- = No standard
N = Normal sample
ng/l = nanograms per liter

Data Qualifier:
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.
D = Dilution required for sample analysis.
J- = The result is an estimated quantity. The associated numerical value is expected to have a negative or low bias.
J+ = The result is an estimated quantity. The associated numerical value is expected to have a positive or high bias.
JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
EDJ = Diluted sample result greater than the calibration range

Chemical Abbreviations:
PFOA = Perfluorooctanoic acid (C8)
PFOS = Perfluorooctanesulfonic acid (C8)
PFBS = Perfluorobutanesulfonic acid (C4)
PFHpA = Perfluoroheptanoic acid (C7)
PFHxS = Perfluorohexanesulfonic acid (C6)
PFNA = Perfluorononanoic acid (C9)
PFDA = Perfluorodecanoic acid (C10)
PFDoA = Perfluorododecanoic acid (C12)
PFHxA = Perfluorohexanoic acid (C6)
PFTeA = Perfluorotetradecanoic acid (C14)
PFTriA = Perfluorotridecanoic acid (C13)
PFUnA = Perfluoroundecanoic acid (C11)
NEtFOSAA = N-ethylperfluorooctanesulfonamidoacetic acid (C12)
NMeFOSAA = N-methylperfluorooctanesulfonamidoacetic acid (C11)
PFBA = Perfluorobutanoic acid (C4)
PFPeA = Perfluoropentanoic acid (C5)
PFHxDA = Perfluoro-n-hexadecanoic acid (C16)
PFODA = Perfluoro-n-octadecanoic acid (C18)
PFPeS = Perfluoropentanesulfonic acid (C5)
PFHpS = Perfluoroheptanesulfonic acid (C7)
PFNS = Perfluorononanesulfonic acid (C9)
PFDS = Perfluorodecanesulfonic acid (C10)
PFDoS = Perfluorododecanesulfonic acid (C12)
FOSA = Perfluorooctanesulfonamide (C8)
NEtFOSA = N ethylperfluorooctanesulfonamide (C10)
NMeFOSA = N methylperfluorooctanesulfonamide (C9)
NMeFOSE = N methylperfluorooctanesulfonamidoethanol (C11)
NEtFOSE = N ethylperfluorooctanesulfonamidoethanol (C12)
4:2 FTS = 4:2 fluorotelomer sulfonate (C6)
6:2 FTS = 6:2 fluorotelomer sulfonate (C8)
8:2 FTS = 8:2 fluorotelomer sulfonate (C10)
10:2 FTS = 10:2 fluorotelomer sulfonate (C12)
DONA = 4,8 Dioxa 3H perfluorononanoic acid (C7)
GenX = Hexafluoropropylene oxide dimer acid (C6)
F-53B Major = 9 chlorohexadecafluoro 3 oxanonane 1 sulfonic acid (C8)
F-53B Minor = 11 chloroeicosafluoro 3 oxaundecane 1 sulfonic acid (C10)



LEGEND:

- APPROXIMATE BOOM DEPLOYMENT LOCATIONS
- APPROXIMATE SITE PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- ROAD
- DITCH/STREAM
- WATERBODY
- SURFACE WATER TREATMENT SYSTEM

NOTES:

1. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
2. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
3. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.

0 1,500 3,000

GRAPHIC SCALE IN FEET

TYCO FIRE PRODUCTS, LP
MARINETTE, WISCONSIN

BOOM DEPLOYMENT LOCATIONS

ARCADIS

FIGURE
1

City: Minneapolis/Citrix Div/Group: IMDVC Created By: Last Saved By: MSMiller
TYCO Marinette, WI
T:_ENV\Tyco_Marinette_KeepFromExternalDriveTyco_MarinetteMXD\2021-03\Figure 2 Boom Deployment Locations.mxd 3/23/2021 2:55:53 PM

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-202623-1
Client Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

For:
ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski

Sandra Fredrick

Authorized for release by:
8/1/2021 7:34:11 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

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Job ID: 500-202623-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

ob Narrative
500-202623-1

Comments
No additional comments.

Receipt
The sample was received on 7/21/2021 9:50 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

Receipt Exceptions
Samples received with extremely dark discoloration. Collapsed SW Foam (7-20-21) (500-202623-1)

LCMS
Method 537 (modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-509481 and analytical batch 320-509839 recovered outside control limits for the following analytes: NMeFOSE and NEtFOSE. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): Internal standard (ISTD) response for the following sample was outside control limits: Collapsed SW Foam (7-20-21) (500-202623-1). The sample was analyzed at a dilution and the ISTD response was within control limits. The ISTD is not used to quantitate the target analytes. Both sets of data are reported.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: Collapsed SW Foam (7-20-21) (500-202623-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The concentration of several analytes associated with the following sample exceeded the instrument calibration range: Collapsed SW Foam (7-20-21) (500-202623-1). 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 “I” qualifier means the transition mass ratio for the indicated analyte was outside of 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.
Collapsed SW Foam (7-20-21) (500-202623-1)

Method 537 (modified): Results for sample Collapsed SW Foam (7-20-21) (500-202623-1) 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 100X analysis is 113% after the dilution factor was applied to the labeled internal standard area count.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-509961 recovered above the upper control limit for Perfluorotetradecanoic acid (PFTeA). 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 Perfluorooctanesulfonic acid (PFOS) associated with the following sample exceeded the instrument calibration range: Collapsed SW Foam (7-20-21) (500-202623-1). This analyte has 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. Data has been reported per client approval.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 320-509829 recovered above the upper control limit for Perfluorotetradecanoic acid (PFTeA). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 320-509829/3).

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit: Collapsed SW Foam (7-20-21) (500-202623-1). Generally, data quality is not considered affected if the IDA

Job ID: 500-202623-1 (Continued)

Laboratory: Eurofins TestAmerica, Chicago (Continued)

signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. The recovery of the IDA in the undiluted extracted was within control limits.

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 320-509481. 3535 PFC Aqueous 320-509481

Method 3535: The following sample was black prior to extraction: Collapsed SW Foam (7-20-21) (500-202623-1) 3535 PFC Aqueous 320-509481

Method 3535: Due to the matrix, the initial volume used for the following sample deviated from the standard procedure: Collapsed SW Foam (7-20-21) (500-202623-1). A 10x (25mL) dilution was made on the sample, then fortified with IDA and extracted. The reporting limits have been adjusted proportionately. 3535 PFC Aqueous 320-509481

Method 3535: The following sample is yellow at final volume: Collapsed SW Foam (7-20-21) (500-202623-1) 3535 PFC Aqueous 320-509481

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-511910. 3535_PFC Aqueous

Method 3535: Sample is dark brown and opaque. Collapsed SW Foam (7-20-21) (500-202623-1) preparation batch 320-511910 3535_PFC Aqueous

Method 3535: Due to the matrix, the initial volume used for the following sample deviated from the standard procedure: Collapsed SW Foam (7-20-21) (500-202623-1). A 10x dilution was made on the sample, which was then fortified with IDA and extracted. The reporting limits (RLs) have been adjusted proportionately. preparation batch 320-511910 3535_PFC Aqueous

Method 3535: Extract is a golden-yellow color. Collapsed SW Foam (7-20-21) (500-202623-1) preparation batch 320-511910 3535_PFC Aqueous

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

Detection Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Client Sample ID: Collapsed SW Foam (7-20-21)
Lab Sample ID: 500-202623-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	240		50	24	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	590		20	4.9	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5700	E	20	5.8	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1800		20	2.5	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	140000	E	20	8.5	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	160000	E	20	2.7	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	50000	E	20	3.1	ng/L	1		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	18000	E	20	11	ng/L	1		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA)	1100		20	5.5	ng/L	1		537 (modified)	Total/NA
Perfluorotridecanoic acid (PFTriA)	180	I	20	13	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	55		20	7.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	5.1	J	20	3.0	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1700		20	5.7	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	7300	E	20	1.9	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	930000	E	20	5.4	ng/L	1		537 (modified)	Total/NA
Perfluorodecanesulfonic acid (PFDS)	1100		20	3.2	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	87000	E	20	9.8	ng/L	1		537 (modified)	Total/NA
NMeFOSA	46		20	4.3	ng/L	1		537 (modified)	Total/NA
NMeFOSAA	1200	I	50	12	ng/L	1		537 (modified)	Total/NA
NEtFOSAA	32000	E	50	13	ng/L	1		537 (modified)	Total/NA
NEtFOSE	210	*+	20	8.5	ng/L	1		537 (modified)	Total/NA
4:2 FTS	94		20	2.4	ng/L	1		537 (modified)	Total/NA
6:2 FTS	51000	E	50	25	ng/L	1		537 (modified)	Total/NA
8:2 FTS	49000	E	20	4.6	ng/L	1		537 (modified)	Total/NA
10:2 FTS	2500		20	6.7	ng/L	1		537 (modified)	Total/NA
F-53B Major	12	J	20	2.4	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	550	J	2000	490	ng/L	100		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	6200		2000	580	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	1800	J	2000	250	ng/L	100		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	220000		2000	850	ng/L	100		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	240000		2000	270	ng/L	100		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA) - DL	53000		2000	310	ng/L	100		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA) - DL	18000		2000	1100	ng/L	100		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA) - DL	1200	J	2000	550	ng/L	100		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	1800	J	2000	570	ng/L	100		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS) - DL	2700		2000	190	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	750000	E	2000	540	ng/L	100		537 (modified)	Total/NA
Perfluorononanesulfonic acid (PFNS) - DL	600	J I	2000	370	ng/L	100		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA) - DL	99000		2000	980	ng/L	100		537 (modified)	Total/NA
NEtFOSAA - DL	27000		5000	1300	ng/L	100		537 (modified)	Total/NA
6:2 FTS - DL	66000		5000	2500	ng/L	100		537 (modified)	Total/NA
8:2 FTS - DL	73000		2000	460	ng/L	100		537 (modified)	Total/NA
10:2 FTS - DL	2700		2000	670	ng/L	100		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

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

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

Sample Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-202623-1	Collapsed SW Foam (7-20-21)	Water	07/20/21 09:30	07/21/21 09:50

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Client Sample ID: Collapsed SW Foam (7-20-21)
Lab Sample ID: 500-202623-1

Date Collected: 07/20/21 09:30
Matrix: Water
Date Received: 07/21/21 09:50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**240**		50	24	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoropentanoic acid (PFPeA)	**590**		20	4.9	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorohexanoic acid (PFHxA)	**5700**	**E**	20	5.8	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoroheptanoic acid (PFHpA)	**1800**		20	2.5	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorooctanoic acid (PFOA)	**140000**	**E**	20	8.5	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorononanoic acid (PFNA)	**160000**	**E**	20	2.7	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorodecanoic acid (PFDA)	**50000**	**E**	20	3.1	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoroundecanoic acid (PFUnA)	**18000**	**E**	20	11	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorododecanoic acid (PFDoA)	**1100**		20	5.5	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorotridecanoic acid (PFTriA)	**180**	**I**	20	13	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorotetradecanoic acid (PFTeA)	**55**		20	7.3	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<20		20	8.9	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoro-n-octadecanoic acid (PFODA)	<20		20	9.4	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorobutanesulfonic acid (PFBS)	<20		20	2.0	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoropentanesulfonic acid (PFPeS)	**5.1**	**J**	20	3.0	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorohexanesulfonic acid (PFHxS)	**1700**		20	5.7	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	**7300**	**E**	20	1.9	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorooctanesulfonic acid (PFOS)	**930000**	**E**	20	5.4	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorononanesulfonic acid (PFNS)	<20		20	3.7	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorodecanesulfonic acid (PFDS)	**1100**		20	3.2	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorododecanesulfonic acid (PFDoS)	<20		20	9.7	ng/L		07/22/21 19:30	07/24/21 01:46	1
Perfluorooctanesulfonamide (FOSA)	**87000**	**E**	20	9.8	ng/L		07/22/21 19:30	07/24/21 01:46	1
NEtFOSA	<20		20	8.7	ng/L		07/22/21 19:30	07/24/21 01:46	1
NMeFOSA	**46**		20	4.3	ng/L		07/22/21 19:30	07/24/21 01:46	1
NMeFOSAA	**1200**	**I**	50	12	ng/L		07/22/21 19:30	07/24/21 01:46	1
NEtFOSAA	**32000**	**E**	50	13	ng/L		07/22/21 19:30	07/24/21 01:46	1
NMeFOSE	<40	*+	40	14	ng/L		07/22/21 19:30	07/24/21 01:46	1
NEtFOSE	**210**	***+**	20	8.5	ng/L		07/22/21 19:30	07/24/21 01:46	1
4:2 FTS	**94**		20	2.4	ng/L		07/22/21 19:30	07/24/21 01:46	1
6:2 FTS	**51000**	**E**	50	25	ng/L		07/22/21 19:30	07/24/21 01:46	1
8:2 FTS	**49000**	**E**	20	4.6	ng/L		07/22/21 19:30	07/24/21 01:46	1
10:2 FTS	**2500**		20	6.7	ng/L		07/22/21 19:30	07/24/21 01:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<20		20	4.0	ng/L		07/22/21 19:30	07/24/21 01:46	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<40		40	15	ng/L		07/22/21 19:30	07/24/21 01:46	1
F-53B Major	**12**	**J**	20	2.4	ng/L		07/22/21 19:30	07/24/21 01:46	1
F-53B Minor	<20		20	3.2	ng/L		07/22/21 19:30	07/24/21 01:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*120*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:46*	*1*
13C5 PFPeA	*131*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:46*	*1*

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Client Sample ID: Collapsed SW Foam (7-20-21)
Lab Sample ID: 500-202623-1
Date Collected: 07/20/21 09:30
Matrix: Water
Date Received: 07/21/21 09:50

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	131		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C4 PFHpA	122		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C4 PFOA	68		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C5 PFNA	41		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C2 PFDA	49		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C2 PFUnA	86		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C2 PFDoA	66		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C2 PFTeDA	32		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C2 PFHxDA	26		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C3 PFBS	217	*5+	25 - 150	07/22/21 19:30	07/24/21 01:46	1
18O2 PFHxS	181	*5+	25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C4 PFOS	49		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C8 FOSA	50		10 - 150	07/22/21 19:30	07/24/21 01:46	1
d3-NMeFOSAA	49		25 - 150	07/22/21 19:30	07/24/21 01:46	1
d5-NEtFOSAA	59		25 - 150	07/22/21 19:30	07/24/21 01:46	1
d-N-MeFOSA-M	80		10 - 150	07/22/21 19:30	07/24/21 01:46	1
d-N-EtFOSA-M	73		10 - 150	07/22/21 19:30	07/24/21 01:46	1
d7-N-MeFOSE-M	64		10 - 150	07/22/21 19:30	07/24/21 01:46	1
d9-N-EtFOSE-M	64		10 - 150	07/22/21 19:30	07/24/21 01:46	1
M2-4:2 FTS	286	*5+	25 - 150	07/22/21 19:30	07/24/21 01:46	1
M2-6:2 FTS	247	*5+	25 - 150	07/22/21 19:30	07/24/21 01:46	1
M2-8:2 FTS	680	*5+	25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C3 HFPO-DA	148		25 - 150	07/22/21 19:30	07/24/21 01:46	1
13C2 10:2 FTS	151	*5+	25 - 150	07/22/21 19:30	07/24/21 01:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5000		5000	2400	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoropentanoic acid (PFPeA)	**550**	**J**	2000	490	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorohexanoic acid (PFHxA)	**6200**		2000	580	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoroheptanoic acid (PFHpA)	**1800**	**J**	2000	250	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorooctanoic acid (PFOA)	**220000**		2000	850	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorononanoic acid (PFNA)	**240000**		2000	270	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorodecanoic acid (PFDA)	**53000**		2000	310	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoroundecanoic acid (PFUnA)	**18000**		2000	1100	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorododecanoic acid (PFDoA)	**1200**	**J**	2000	550	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorotridecanoic acid (PFTriA)	<2000		2000	1300	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorotetradecanoic acid (PFTeA)	<2000		2000	730	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2000		2000	890	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoro-n-octadecanoic acid (PFODA)	<2000		2000	940	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorobutanesulfonic acid (PFBS)	<2000		2000	200	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoropentanesulfonic acid (PFPeS)	<2000		2000	300	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorohexanesulfonic acid (PFHxS)	**1800**	**J**	2000	570	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluoroheptanesulfonic Acid (PFHpS)	**2700**		2000	190	ng/L		07/22/21 19:30	07/24/21 13:09	100

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Client Sample ID: Collapsed SW Foam (7-20-21)
Lab Sample ID: 500-202623-1
Date Collected: 07/20/21 09:30
Matrix: Water
Date Received: 07/21/21 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**750000**	**E**	2000	540	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorononanesulfonic acid (PFNS)	**600**	**J I**	2000	370	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorodecanesulfonic acid (PFDS)	<2000		2000	320	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorododecanesulfonic acid (PFDoS)	<2000		2000	970	ng/L		07/22/21 19:30	07/24/21 13:09	100
Perfluorooctanesulfonamide (FOSA)	**99000**		2000	980	ng/L		07/22/21 19:30	07/24/21 13:09	100
NEtFOSA	<2000		2000	870	ng/L		07/22/21 19:30	07/24/21 13:09	100
NMeFOSA	<2000		2000	430	ng/L		07/22/21 19:30	07/24/21 13:09	100
NMeFOSAA	<5000		5000	1200	ng/L		07/22/21 19:30	07/24/21 13:09	100
NEtFOSAA	**27000**		5000	1300	ng/L		07/22/21 19:30	07/24/21 13:09	100
NMeFOSE	<4000	*+	4000	1400	ng/L		07/22/21 19:30	07/24/21 13:09	100
NEtFOSE	<2000	*+	2000	850	ng/L		07/22/21 19:30	07/24/21 13:09	100
4:2 FTS	<2000		2000	240	ng/L		07/22/21 19:30	07/24/21 13:09	100
6:2 FTS	**66000**		5000	2500	ng/L		07/22/21 19:30	07/24/21 13:09	100
8:2 FTS	**73000**		2000	460	ng/L		07/22/21 19:30	07/24/21 13:09	100
10:2 FTS	**2700**		2000	670	ng/L		07/22/21 19:30	07/24/21 13:09	100
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2000		2000	400	ng/L		07/22/21 19:30	07/24/21 13:09	100
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4000		4000	1500	ng/L		07/22/21 19:30	07/24/21 13:09	100
F-53B Major	<2000		2000	240	ng/L		07/22/21 19:30	07/24/21 13:09	100
F-53B Minor	<2000		2000	320	ng/L		07/22/21 19:30	07/24/21 13:09	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*66*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C5 PFPeA	*68*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C2 PFHxA	*61*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C4 PFHpA	*72*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C4 PFOA	*61*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C5 PFNA	*59*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C2 PFDA	*66*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C2 PFUnA	*62*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C2 PFDoA	*34*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C2 PFTeDA	*17*	*5-	*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C2 PFHxDA	*11*	*5-	*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C3 PFBS	*73*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
18O2 PFHxS	*63*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C4 PFOS	*64*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C8 FOSA	*55*		*10 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
d3-NMeFOSAA	*64*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
d5-NEtFOSAA	*64*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
d-N-MeFOSA-M	*42*		*10 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
d-N-EtFOSA-M	*42*		*10 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
d7-N-MeFOSE-M	*36*		*10 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
d9-N-EtFOSE-M	*30*		*10 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
M2-4:2 FTS	*87*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
M2-6:2 FTS	*210*	*5+	*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
M2-8:2 FTS	*845*	*5+	*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*
13C3 HFPO-DA	*69*		*25 - 150*	*07/22/21 19:30*	*07/24/21 13:09*	*100*

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Client Sample ID: Collapsed SW Foam (7-20-21)
Lab Sample ID: 500-202623-1
Date Collected: 07/20/21 09:30
Matrix: Water
Date Received: 07/21/21 09:50

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 10:2 FTS	52		25 - 150	07/22/21 19:30	07/24/21 13:09	100

Definitions/Glossary

Client: ARCADIS U.S., Inc. Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
E	Result exceeded calibration range.
I	Value is EMPC (estimated maximum possible concentration).
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.
¤	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

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-509481/1-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 509481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<5.0		5.0	2.4	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	0.49	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	0.58	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	0.25	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	0.85	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	0.27	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	0.31	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	1.1	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	0.55	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorotridecanoic acid (PFTriA)	<2.0		2.0	1.3	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorotetradecanoic acid (PFTeA)	<2.0		2.0	0.73	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	<2.0		2.0	0.89	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoro-n-octadecanoic acid (PFODA)	<2.0		2.0	0.94	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	0.20	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	0.30	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	0.57	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	<2.0		2.0	0.19	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	0.54	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorononanesulfonic acid (PFNS)	<2.0		2.0	0.37	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorodecanesulfonic acid (PFDS)	<2.0		2.0	0.32	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorododecanesulfonic acid (PFDoS)	<2.0		2.0	0.97	ng/L		07/22/21 19:30	07/24/21 01:19	1
Perfluorooctanesulfonamide (FOSA)	<2.0		2.0	0.98	ng/L		07/22/21 19:30	07/24/21 01:19	1
NEtFOSA	<2.0		2.0	0.87	ng/L		07/22/21 19:30	07/24/21 01:19	1
NMeFOSA	<2.0		2.0	0.43	ng/L		07/22/21 19:30	07/24/21 01:19	1
NMeFOSAA	<5.0		5.0	1.2	ng/L		07/22/21 19:30	07/24/21 01:19	1
NEtFOSAA	<5.0		5.0	1.3	ng/L		07/22/21 19:30	07/24/21 01:19	1
NMeFOSE	<4.0		4.0	1.4	ng/L		07/22/21 19:30	07/24/21 01:19	1
NEtFOSE	<2.0		2.0	0.85	ng/L		07/22/21 19:30	07/24/21 01:19	1
4:2 FTS	<2.0		2.0	0.24	ng/L		07/22/21 19:30	07/24/21 01:19	1
6:2 FTS	<5.0		5.0	2.5	ng/L		07/22/21 19:30	07/24/21 01:19	1
8:2 FTS	<2.0		2.0	0.46	ng/L		07/22/21 19:30	07/24/21 01:19	1
10:2 FTS	<2.0		2.0	0.67	ng/L		07/22/21 19:30	07/24/21 01:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	0.40	ng/L		07/22/21 19:30	07/24/21 01:19	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	<4.0		4.0	1.5	ng/L		07/22/21 19:30	07/24/21 01:19	1
F-53B Major	<2.0		2.0	0.24	ng/L		07/22/21 19:30	07/24/21 01:19	1
F-53B Minor	<2.0		2.0	0.32	ng/L		07/22/21 19:30	07/24/21 01:19	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:19*	*1*
13C5 PFPeA	*101*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:19*	*1*
13C2 PFHxA	*93*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:19*	*1*
13C4 PFHpA	*104*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:19*	*1*
13C4 PFOA	*104*		*25 - 150*	*07/22/21 19:30*	*07/24/21 01:19*	*1*

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

Lab Sample ID: MB 320-509481/1-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 509481

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	102		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C2 PFDA	100		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C2 PFUnA	94		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C2 PFDoA	83		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C2 PFTeDA	68		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C2 PFHxDA	61		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C3 PFBS	106		25 - 150	07/22/21 19:30	07/24/21 01:19	1
18O2 PFHxS	102		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C4 PFOS	102		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C8 FOSA	92		10 - 150	07/22/21 19:30	07/24/21 01:19	1
d3-NMeFOSAA	94		25 - 150	07/22/21 19:30	07/24/21 01:19	1
d5-NEtFOSAA	91		25 - 150	07/22/21 19:30	07/24/21 01:19	1
d-N-MeFOSA-M	65		10 - 150	07/22/21 19:30	07/24/21 01:19	1
d-N-EtFOSA-M	65		10 - 150	07/22/21 19:30	07/24/21 01:19	1
d7-N-MeFOSE-M	71		10 - 150	07/22/21 19:30	07/24/21 01:19	1
d9-N-EtFOSE-M	65		10 - 150	07/22/21 19:30	07/24/21 01:19	1
M2-4:2 FTS	130		25 - 150	07/22/21 19:30	07/24/21 01:19	1
M2-6:2 FTS	135		25 - 150	07/22/21 19:30	07/24/21 01:19	1
M2-8:2 FTS	140		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C3 HFPO-DA	100		25 - 150	07/22/21 19:30	07/24/21 01:19	1
13C2 10:2 FTS	115		25 - 150	07/22/21 19:30	07/24/21 01:19	1

Lab Sample ID: LCS 320-509481/2-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 509481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.2		ng/L		108	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	44.0		ng/L		110	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	43.4		ng/L		109	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	44.6		ng/L		112	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	45.1		ng/L		113	60 - 135
Perfluorononanoic acid (PFNA)	40.0	45.1		ng/L		113	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	43.1		ng/L		108	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	44.4		ng/L		111	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	43.6		ng/L		109	60 - 135
Perfluorotridecanoic acid (PFTriA)	40.0	41.5		ng/L		104	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	39.7		ng/L		99	60 - 135
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	47.5		ng/L		119	60 - 135
Perfluoro-n-octadecanoic acid (PFODA)	40.0	35.8		ng/L		90	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.4	34.8		ng/L		99	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	34.7		ng/L		92	60 - 135

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

Lab Sample ID: LCS 320-509481/2-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 509481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.1		ng/L		102	60 - 135
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.7		ng/L		110	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	42.5		ng/L		115	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.4	39.8		ng/L		104	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.7		ng/L		103	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.7	38.7		ng/L		100	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	42.5		ng/L		106	60 - 135
NEtFOSA	40.0	41.2		ng/L		103	60 - 135
NMeFOSA	40.0	38.2		ng/L		95	60 - 135
NMeFOSAA	40.0	44.1		ng/L		110	60 - 135
NEtFOSAA	40.0	44.7		ng/L		112	60 - 135
NMeFOSE	40.0	47.1		ng/L		118	60 - 135
NEtFOSE	40.0	43.5		ng/L		109	60 - 135
4:2 FTS	37.4	34.6		ng/L		93	60 - 135
6:2 FTS	37.9	38.5		ng/L		102	60 - 135
8:2 FTS	38.3	41.3		ng/L		108	60 - 135
10:2 FTS	38.6	33.2		ng/L		86	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.0		ng/L		104	60 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	40.0	43.6		ng/L		109	60 - 135
F-53B Major	37.3	37.2		ng/L		100	60 - 135
F-53B Minor	37.7	32.2		ng/L		85	60 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*96*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*95*		*25 - 150*
13C2 PFDA	*95*		*25 - 150*
13C2 PFUnA	*96*		*25 - 150*
13C2 PFDoA	*83*		*25 - 150*
13C2 PFTeDA	*77*		*25 - 150*
13C2 PFHxDA	*67*		*25 - 150*
13C3 PFBS	*107*		*25 - 150*
18O2 PFHxS	*103*		*25 - 150*
13C4 PFOS	*103*		*25 - 150*
13C8 FOSA	*95*		*10 - 150*
d3-NMeFOSAA	*94*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
d-N-MeFOSA-M	*82*		*10 - 150*
d-N-EtFOSA-M	*82*		*10 - 150*

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

Lab Sample ID: LCS 320-509481/2-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 509481

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d7-N-MeFOSE-M	*69*		*10 - 150*
d9-N-EtFOSE-M	*71*		*10 - 150*
M2-4:2 FTS	*129*		*25 - 150*
M2-6:2 FTS	*127*		*25 - 150*
M2-8:2 FTS	*126*		*25 - 150*
13C3 HFPO-DA	*99*		*25 - 150*
13C2 10:2 FTS	*111*		*25 - 150*

Lab Sample ID: LCSD 320-509481/3-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 509481

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.8		ng/L		104	60 - 135	4	30
Perfluoropentanoic acid (PFPeA)			40.0	44.7		ng/L		112	60 - 135	2	30
Perfluorohexanoic acid (PFHxA)			40.0	42.9		ng/L		107	60 - 135	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	41.1		ng/L		103	60 - 135	8	30
Perfluorooctanoic acid (PFOA)			40.0	45.0		ng/L		112	60 - 135	0	30
Perfluorononanoic acid (PFNA)			40.0	44.5		ng/L		111	60 - 135	1	30
Perfluorodecanoic acid (PFDA)			40.0	40.8		ng/L		102	60 - 135	5	30
Perfluoroundecanoic acid (PFUnA)			40.0	46.0		ng/L		115	60 - 135	4	30
Perfluorododecanoic acid (PFDoA)			40.0	46.0		ng/L		115	60 - 135	5	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.0		ng/L		97	60 - 135	6	30
Perfluorotetradecanoic acid (PFTeA)			40.0	42.7		ng/L		107	60 - 135	7	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	45.0		ng/L		113	60 - 135	5	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	36.8		ng/L		92	60 - 135	3	30
Perfluorobutanesulfonic acid (PFBS)			35.4	33.5		ng/L		95	60 - 135	4	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	34.1		ng/L		91	60 - 135	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	36.0		ng/L		99	60 - 135	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	42.1		ng/L		111	60 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	41.3		ng/L		111	60 - 135	3	30
Perfluorononanesulfonic acid (PFNS)			38.4	38.7		ng/L		101	60 - 135	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.1		ng/L		101	60 - 135	1	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	37.0		ng/L		95	60 - 135	5	30
Perfluorooctanesulfonamide (FOSA)			40.0	46.3		ng/L		116	60 - 135	8	30
NEtFOSA			40.0	40.5		ng/L		101	60 - 135	2	30
NMeFOSA			40.0	38.6		ng/L		97	60 - 135	1	30
NMeFOSAA			40.0	44.8		ng/L		112	60 - 135	2	30

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

Lab Sample ID: LCSD 320-509481/3-A
Matrix: Water
Analysis Batch: 509839

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 509481

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
NEtFOSAA			40.0	51.3		ng/L		128	60 - 135	14	30
NMeFOSE			40.0	58.2	*+	ng/L		146	60 - 135	21	30
NEtFOSE			40.0	58.7	*+	ng/L		147	60 - 135	30	30
4:2 FTS			37.4	37.4		ng/L		100	60 - 135	8	30
6:2 FTS			37.9	39.1		ng/L		103	60 - 135	2	30
8:2 FTS			38.3	40.6		ng/L		106	60 - 135	2	30
10:2 FTS			38.6	34.3		ng/L		89	60 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	39.7		ng/L		105	60 - 135	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)			40.0	43.1		ng/L		108	60 - 135	1	30
F-53B Major			37.3	38.1		ng/L		102	60 - 135	2	30
F-53B Minor			37.7	31.1		ng/L		83	60 - 135	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*93*		*25 - 150*
13C5 PFPeA	*89*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C4 PFHpA	*97*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*92*		*25 - 150*
13C2 PFDA	*90*		*25 - 150*
13C2 PFUnA	*87*		*25 - 150*
13C2 PFDoA	*76*		*25 - 150*
13C2 PFTeDA	*76*		*25 - 150*
13C2 PFHxDA	*74*		*25 - 150*
13C3 PFBS	*102*		*25 - 150*
18O2 PFHxS	*98*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*
13C8 FOSA	*89*		*10 - 150*
d3-NMeFOSAA	*90*		*25 - 150*
d5-NEtFOSAA	*90*		*25 - 150*
d-N-MeFOSA-M	*77*		*10 - 150*
d-N-EtFOSA-M	*78*		*10 - 150*
d7-N-MeFOSE-M	*67*		*10 - 150*
d9-N-EtFOSE-M	*66*		*10 - 150*
M2-4:2 FTS	*122*		*25 - 150*
M2-6:2 FTS	*125*		*25 - 150*
M2-8:2 FTS	*133*		*25 - 150*
13C3 HFPO-DA	*95*		*25 - 150*
13C2 10:2 FTS	*106*		*25 - 150*

Lab Chronicle

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Client Sample ID: Collapsed SW Foam (7-20-21)
Lab Sample ID: 500-202623-1

Date Collected: 07/20/21 09:30
Matrix: Water
Date Received: 07/21/21 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			509481	07/22/21 19:30	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	509839	07/24/21 01:46	S1M	TAL SAC
Total/NA	Prep	3535	DL		509481	07/22/21 19:30	VP	TAL SAC
Total/NA	Analysis	537 (modified)	DL	100	509961	07/24/21 13:09	S1M	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc. Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-21

Dep: Wgt: 10.00 LBS SPECIAL: 0.00
HANDLING: 0.00
DV: 0.00 TOTAL: 0.00

Svcs PRIORITY OVERNIGHT Master 5049 4009 1409
TRCK 5049 4009 1468

Eurofins TestAmerica, Chicago
2417 Bond Street

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

500-202623 COC

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

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

Client Contact	Project Manager: Lisa Rutkowski	Sampler: Jacob Rominger	Date: 7-20-21	COC No 1
Arcadis U S , Inc.	Email: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx	1 of 1 COCs
126 North Jefferson Street, Suite 400	Tel/Fax: N/A			
Milwaukee, WI 53202	Analysis Turnaround Time: ☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only: Walk-in Client; Lab Sampling.
Phone	TAT if different from Below ☐			
FAX	☑ 2 weeks			Lab Project Number: 50018970
Project Name Marinette, WI	☐ 1 week			500-202623
Site Marinette, WI	☐ 2 days			
P O # 30015296.00016 (Collapsed Foam)	☐ 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.
Collapsed SW Foam (7-20-21)	7-20-21	9.30	G	W	3	N	N	X	

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

- 4

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:

Custody Seals Intact ☐ Yes ☐ No | Custody Seal No | Cooler Temp (°C). Obs'd 2.1 Corr'd: _____ | Therm ID No _____

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Jacob Rominger	Barley Excavating	7-20-21 9:35	Fed Ex		
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time.	Received in Laboratory by:	Company TA	Date/Time 7/21/21 0950

8/1/2021

eurofins | Envi... Testing
T...

RT 519
ST 14
5 10:30 A
1458
07 21

ORIGIN ID:PHDA (906) 863-9373
JOE BARLEY
BARLEY EXCAVATING INC
1824 10TH AVE

MENOMINEE, MI 49858
UNITED STATES US

SHI...
ACTW...
CAD:

TO

EUROFINS TESTAMERICA CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484310 1
(708) 534 – 5200
REF: S600 – 87041

RMA:

FedEx Express

FedEx
TRK# 0221 5049 4009 1458

WED - 21 JUL AA
PRIORITY OVERNIGHT

NA 10TA

60484
IL-US

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 500-150656.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sandra.fredrick@eurofinset.com	State of Origin: Wisconsin	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - Wisconsin; State Program - Wisconsin		Job #: 500-202623-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 8/3/2021			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Marinette, WI 30015296.00016 Collapsed Foam	Project #: 50018970			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA_WI/3535_PFC_28D PFAS, Standard List (36 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Collapsed SW Foam (7-20-21) (500-202623-1)	7/20/21	09:30 Central		Water			X	3	REPORT ALL DILUTIONS

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) | Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by: Shiri Scott	Date/Time: 7/21/21 1500	Company: ETACHI	Received by: [signature]	Date/Time: 7/22/21 9:40	Company: ETASAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes (circled) Δ No	Custody Seal No.: 1571348		Cooler Temperature(s) °C and Other Remarks: 3.5C		

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-202623-1

Login Number: 202623
List Number: 1
Creator: James, Jeff A

List Source: Eurofins TestAmerica, Chicago

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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-202623-1

Login Number: 202623
List Number: 2
Creator: Cahill, Nicholas P

List Source: Eurofins TestAmerica, Sacramento
List Creation: 07/22/21 02:56 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	1151348
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	3.5c
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?	False	Received project as a subcontract.
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	

eurofins | Environment Testing TestAmerica

Sacramento
Sample Receiving Notes

500-202623 Field Sheet

Job: _____

Tracking # : 1893445266 49

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-07 Corr. Factor: (+ / -) — °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 1151348

Cooler ID: —

Temp Observed: 3.5 °C Corrected: 3.5 °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: VS Date: 7/22/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
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: VS Date: 7/22/21

Notes: Samples have discoloration. Lab # 500-200623 Samples 1A, 1B, 1C = Collapsed SW Foam

VS 7/22/21

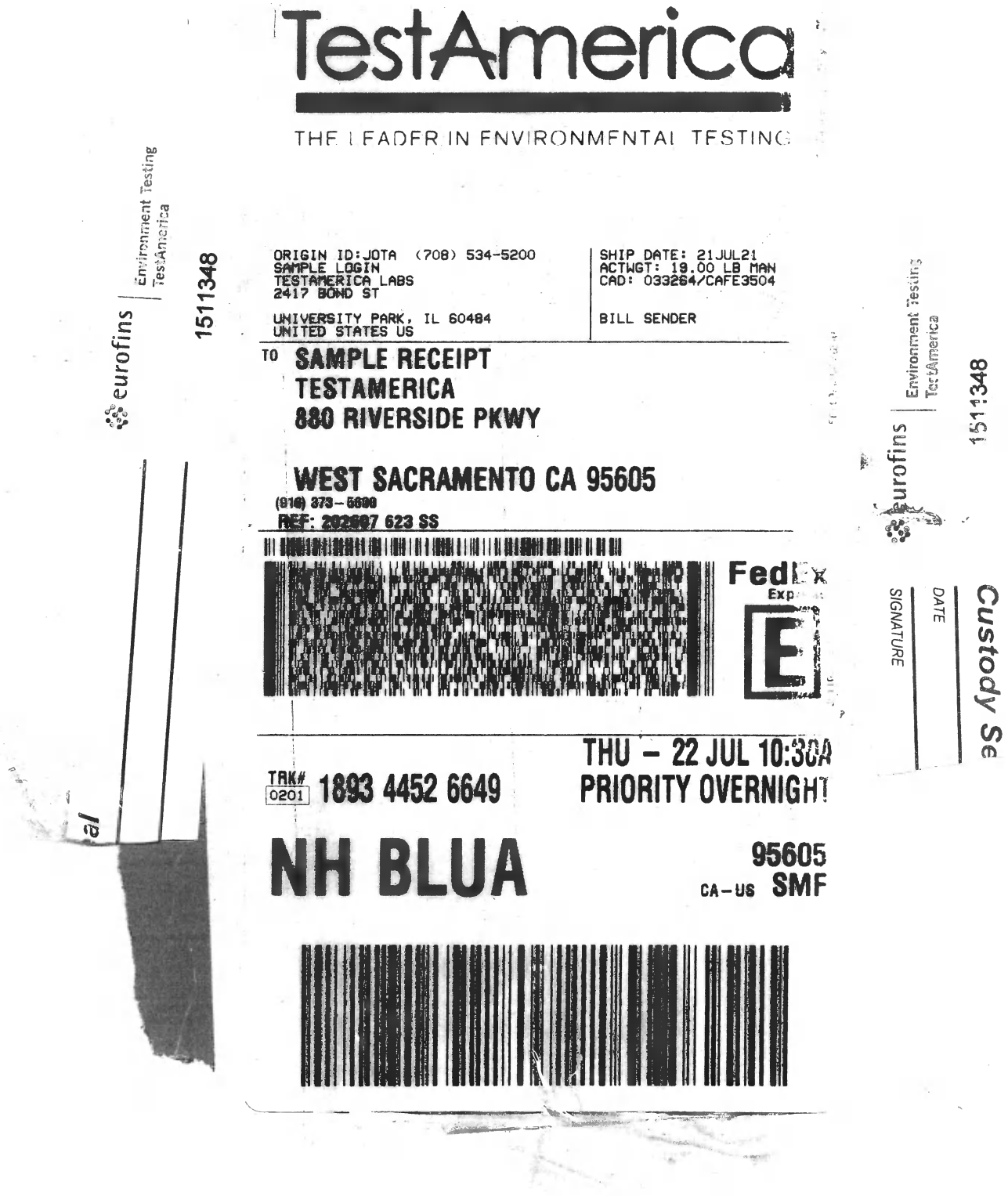
Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☐
Log Release checked in TALS?	☐	☐	☐

Initials: VS Date: 7/22/21

\\CORP\CORP\QA\QA_FACILITIES\SACRAMENTO-QA\DOCUMENT-MANAGEMENT\FORMS\QA-812 SAMPLE RECEIVING NOTES.DOC QA-812 MBB 11/06/2020

WR3 10B


TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
ORIGIN ID:JOTA (708) 534-5200
SAMPLE LOGIN
TESTAMERICA LABS
2417 BOND ST
UNIVERSITY PARK, IL 60484
UNITED STATES US
SHIP DATE: 21JUL21
ACTWGT: 19.00 LB MAN
CAD: 033264/CAFE3504
BILL SENDER
TO SAMPLE RECEIPT
TESTAMERICA
880 RIVERSIDE PKWY
WEST SACRAMENTO CA 95605
(916) 373-5600
REF: 202607 623 SS
THU - 22 JUL 10:30A
PRIORITY OVERNIGHT
TRK# 0201 1893 4452 6649
NH BLUA
95605
CA-US SMF
eurofins
Environment Testing
TestAmerica
1511348
Custody Se
DATE
SIGNATURE

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	C4PFHA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
500-202623-1	Collapsed SW Foam (7-20-21)	120	131	131	122	68	41	49	86
500-202623-1 - DL	Collapsed SW Foam (7-20-21)	66	68	61	72	61	59	66	62
LCS 320-509481/2-A	Lab Control Sample	97	97	96	96	96	95	95	96
LCSD 320-509481/3-A	Lab Control Sample Dup	93	89	91	97	93	92	90	87
MB 320-509481/1-A	Method Blank	98	101	93	104	104	102	100	94

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	PFHxDA	C3PFBS	PFHxS	PFOS	PFOSA	d3NMFOS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(10-150)	(25-150)
500-202623-1	Collapsed SW Foam (7-20-21)	66	32	26	217 *5+	181 *5+	49	50	49
500-202623-1 - DL	Collapsed SW Foam (7-20-21)	34	17 *5-	11 *5-	73	63	64	55	64
LCS 320-509481/2-A	Lab Control Sample	83	77	67	107	103	103	95	94
LCSD 320-509481/3-A	Lab Control Sample Dup	76	76	74	102	98	98	89	90
MB 320-509481/1-A	Method Blank	83	68	61	106	102	102	92	94

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d5NEFOS	dMeFOSA	dEtFOSA	NMFM	NEFM	M242FTS	M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(10-150)	(10-150)	(10-150)	(10-150)	(25-150)	(25-150)	(25-150)
500-202623-1	Collapsed SW Foam (7-20-21)	59	80	73	64	64	286 *5+	247 *5+	680 *5+
500-202623-1 - DL	Collapsed SW Foam (7-20-21)	64	42	42	36	30	87	210 *5+	845 *5+
LCS 320-509481/2-A	Lab Control Sample	95	82	82	69	71	129	127	126
LCSD 320-509481/3-A	Lab Control Sample Dup	90	77	78	67	66	122	125	133
MB 320-509481/1-A	Method Blank	91	65	65	71	65	130	135	140

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		HFPODA	M102FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
500-202623-1	Collapsed SW Foam (7-20-21)	148	151 *5+
500-202623-1 - DL	Collapsed SW Foam (7-20-21)	69	52
LCS 320-509481/2-A	Lab Control Sample	99	111
LCSD 320-509481/3-A	Lab Control Sample Dup	95	106
MB 320-509481/1-A	Method Blank	100	115

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

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
Job ID: 500-202623-1
Project/Site: Marinette, WI 30015296.00016 Collapsed Foam

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