

Tyco Fire Products LP

SEMI-ANNUAL OPERATION, MAINTENANCE, AND OPTIMIZATION PROGRESS REPORT

Tyco Fire Technology Center

Ditch B Interim Action Treatment System

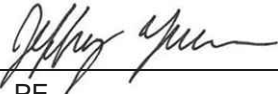
BRRTS# 02-38-580694

October 30, 2019 – December 31, 2019

February 2020

A large orange geometric shape, resembling a triangle or a trapezoid, is positioned in the bottom right corner of the page. It is composed of two overlapping triangles, one larger than the other, both pointing towards the top right. A thin white line runs horizontally across the page, intersecting the orange shape.

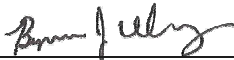
Semi-Annual Operation, Maintenance, and Optimization Progress Report
Tyco Fire Technology Center Ditch B Interim Action Treatment System
BRRTS# 02-38-580694



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Tyco Fire Technology Center
Ditch B Interim Action Treatment System
BRRTS# 02-38-580694
October 30, 2019 – December 31, 2019

Prepared for:

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- B. WPDES Laboratory Analytical Reports

EXECUTIVE SUMMARY

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance, and Optimization Progress Report* for the Tyco Fire Technology Center Ditch B Interim Action Treatment System (the Ditch B System) located at 813 Pine Beach Road in Marinette, Wisconsin (Northland Lutheran Estates, LLC [Northland Lutheran] Property), on behalf of Tyco Fire Products LP (Tyco) for the July 1, 2019 to December 31, 2019 reporting period. This report is submitted in accordance with s. NR 724.13(3), Wisconsin Administrative Code.

The Tyco Fire Technology Center (Tyco FTC; also known as the Ansul 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 Ch. Natural Resources 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. Due to the discovery of PFAS in the waters of an off-site drainage ditch (referred to as Ditch B) during a site investigation, Tyco implemented an interim action treatment system (Ditch B System) at the Northland Lutheran Property. The interim action focuses on the removal of PFAS, which encompass both perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), from the water using best available technology.

The treatment technology chosen to remediate PFAS in surface water from Ditch B was a granular activated carbon (GAC). Water is pumped from Ditch B through an equalization tank, bag filters, and GAC vessels before being discharged to Ditch B at a downstream location.

Since the startup on October 30, 2019, the Ditch B System has been operated continuously throughout the reporting period with limited downtime for system maintenance activities. Over the reporting period, the Ditch B System operated a total of 61 days and discharged a total volume of approximately 16 million gallons while removing PFOS and PFOA from the Ditch A influent at 99.8% and 99.6% efficiency, respectively.

No permit exceedances were observed over the reporting period.

1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) has prepared this *Semi-Annual Operation, Maintenance, and Optimization Progress Report* for the Ditch B System located at 813 Pine Beach Road in Marinette, Wisconsin, on behalf of Tyco Fire Products LP (Tyco). The system was constructed between July 2019 to October 2019 to address per- and polyfluoroalkyl substances (PFAS) in Ditch B surface water. This report summarizes system design and construction details; operations, maintenance, and monitoring activities; and an evaluation of system performance over the reporting period (October 30, 2019 through December 31, 2019).

2 SITE BACKGROUND

The Tyco FTC site is located at 2700 Industrial Parkway South and is found along the southern border of the city of Marinette, Marinette County, Wisconsin (Site). 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 completed to define the nature and extent of PFAS related to the use of PFAS-containing AFFF.

Due to the discovery of PFAS in the waters of an off-site ditch (referred to as Ditch B) during a site investigation, Tyco implemented an interim action treatment system (Ditch B System). The location of the Ditch B System was selected based on access and coordination with local stakeholders (e.g., the city of Marinette). A location was identified that is owned by the Northland Lutheran Estates, LLC and access was granted to Tyco that allowed for construction of the Ditch B System at the Northland Lutheran property, located at 813 Pine Beach Road in Marinette, Wisconsin; also described as being in Section 13 of Township 30 North and Range 23 East. The location of the Site, the Ditch B System, and a Ditch B System site plan are shown in **Figure 1** and **Figure 2**, respectively. The Ditch B System is continuously operated and maintained by Arcadis.

The system discharge is regulated by the Wisconsin Department of Natural Resources (WDNR) under Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-0046566-07-0 (the WPDES Permit) and the associated coverage letter issued by WDNR on April 11, 2019 (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 WDNR on a monthly basis.

3 SITE SPECIFIC INFORMATION

3.1 Contaminants of Concern

PFAS in surface water related to historical activities at the Site are the primary contaminants of concern treated by the Ditch B System. Additional compounds sampled for under the WPDES Permit include oil and grease; total suspended solids (TSS); polycyclic aromatic hydrocarbons (PAHs); pH; 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 condition in Ditch B was estimated to be 430 gallons per minute (gpm). The Ditch B System was designed to treat flow rates up to 600 gpm. Seasonal variability in flow conditions was 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).

Ditch B is a Federal Emergency Management Agency-regulated floodway; therefore, the Ditch B System intake structure was installed such that no flow obstructions exist above the original channel invert elevation. A rock cross vane and scour pool were installed around the intake structure to allow for more efficient capture of surface water within the stream and to mitigate siltation at the intake screen. Additionally, this intake configuration allows aquatic wildlife to pass through the stream unimpededly.

Flow to the Ditch B System is regulated by a submersible pump installed in the wet well. The pump operates based on the level condition in the wet well; once the water level in the ditch reaches the programmed set point, the pump conveys water to the equalization tank (T-201).

Water from the equalization tank is conveyed through a multi-bag filter housing (F-201 and F-202) containing 50 micron bag filters for coarse filtration and subsequently through another multi-bag filter housing (F-03) containing 5 micron bag filters for fine filtration by a transfer pump (P-201A/B). During normal operation, only one of either F-201 or F-202 is online. Pressure transmitters and electrically actuated valves allow for automated switching from one vessel to the other to allow for continuous operation when bag filter replacements are required. After the bag filters, water is conveyed through two identical treatment trains consisting of 3 granular activated carbon vessels (GAC-301 through GAC-303 and GAC-401 through GAC-403) each connected in series. Flowmeters are installed at the beginning of each train and 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 B downstream of the intake structure, as shown in **Figure 2**.

The Ditch B System also contains infrastructure to support backwashing the GAC vessels. Treated water can be diverted from the system discharge into a storage tank (T-501) and pumped through the vessel requiring backwashing via a transfer pump (P-501) and the piping manifold surrounding the GAC vessels.

Backwash water is directed from the GAC vessels into two decant tanks (T-601 and T-602) in which solid/liquid separation occurs. A transfer pump (P-601) is used to convey supernatant from the decant tanks through bag filter housings (F-601 and F-602) and back to the equalization tank.

A piping and instrumentation diagram is included as **Appendix A**.

3.3 System Size and Remediation Method

The Ditch B System is primarily contained within an approximately 3,500-square foot building. Additional system components are in the wet well and valve vault located adjacent to Ditch B, as shown in **Figure 2**.

The Ditch B System was designed to treat flow rates up to 600 gpm. Ditch B base flow conditions were evaluated at 430 gpm. PFAS are removed from the process flow via adsorption onto GAC media in six 10,000-pound vessels that run concurrently in two parallel treatment streams. 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, Maintenance, and Optimization Activities

No modifications to the Ditch B System were installed over the reporting period.

Periodically high TSS concentrations resulted in the need for frequent maintenance-related activities (bag filter replacements, backwashing, etc.) to be conducted on the Ditch B System throughout the reporting period. At its peak, the bag filter replacement frequency was once every two hours due to high concentrations of TSS as a result of periodic increases in runoff. Additionally, PFAS breakthrough in the carbon vessels was observed more quickly than anticipated after startup with the Ditch B System operating at 600 gpm. Due to the excessive TSS in the influent, the system operations at 600 gpm was not sustainable; hence, the system flow rate was reduced gradually. The system operations were found optimal at 150 gpm with the current equipment configuration. Since November 25, 2019, the system flowrate has been operated at approximately 150 gpm, to increase system uptime by decreasing the frequency of bag filter replacements (by decreasing the influent TSS loading) and increasing the treatment capacity of the GAC (by increasing the Ditch B System's residence time). Periodic cleaning of the scour pool has been implemented to remove accumulated solids, which may enter the system influent. Additionally, other options, such as installing sand filtration vessels with automated backwashing, and adjusting the pump intake level in the wet well are being evaluated to minimize TSS loading to the treatment system. The current carbon media used in the Ditch B System is bituminous based. Alternative carbon media (ex: coconut shell based) are being evaluated to decrease the frequency of GAC changeouts.

A timeline of significant system maintenance activities over the reporting period is provided below.

- **October 29, 2019:** Scour pool solids removal
- **November 1, 2019:** Scour pool solids removal
- **December 3 – December 13, 2019:** GAC changeout in vessels GAC-301 and GAC-401
- **December 19:** GAC changeout in vessels GAC-302 and GAC-402
- **December 27, 2019:** Scour pool solids removal.

4 SYSTEM EFFECTIVENESS EVALUATION

4.1 Ditch B System Operation

The system was operated for 61 days over the reporting period and discharged a total of approximately 16 million gallons.

System utilization over the reporting period, as calculated per WDNR Form 4400-194 on a daily basis, was 97%. Stream flow conditions in Ditch B were sufficient to support operation for at least a portion of each day during the reporting period (63 days). The utilization rate accounting for days the system was operated, and adequate stream flow conditions were present was also 97%.

System utilization calculated on an hourly basis and accounting for adequate stream flow conditions in Ditch B was 74%. System downtime was primarily associated with bag filter replacements and process optimization during GAC changeouts. All alarm-related shutdowns were responded to within one day.

The Ditch B System operational data and calculation details are presented in **Table 1**.

The system was designed to operate at up to 600 gpm (864,000 gallons per day) and variable flow rates were expected associated with the variable conditions in Ditch B. The operating flow rate typically ranged from 150 to 600 gpm with an average of approximately 270,000 gallons of treated water discharged per day the system was operated over the reporting period. In general, the system operated within the design specifications over the reporting period; however, due to the reasons described in Section 3.4 of this report the system flow rate was reduced from November 25, 2019, through December 31, 2019, to support system optimization activities.

4.2 Treatment System Sampling

4.2.1 Sample Collection

Weekly grab samples at the effluent sampling port, V-503, are collected in accordance with the WPDES Permit and Coverage Letter. The results for the reporting period were submitted to WDNR in monthly eDMRs as General Permit Long Reports.

pH is measured in the field by Arcadis personnel using a calibrated pH meter during each sampling event. 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.

4.2.2 Laboratory Analytical Methods

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

- PFAS (United States Environmental Protection Agency [U.S. EPA] Method 537 Modified)
- Oil and Grease (U.S. EPA Method 1664)
- TSS (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).

4.2.3 WPDES Permit Exceedances

No WPDES permit exceedances for the Ditch B System were observed over the reporting period.

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

4.3 Quantity of Contaminants Treated and System Efficiency

As shown in **Figure 3**, the system removed 0.02 pounds of perfluorooctanesulfonic acid (PFOS) and 0.35 pounds of perfluorooctanoic acid (PFOA) over the reporting period.

On average, the system removed PFOS and PFOA at 99.8% and 99.6% efficiency, respectively, from the Ditch B influent over the reporting period, as shown in **Table 3**.

5 DITCH B SURFACE WATER PFAS TREND EVALUATION

Baseline PFOS and PFOA concentrations were collected from Ditch B near t/he proposed Ditch B System location in May 2018 and July 2018 (prior to system startup). PFOS concentrations in samples collected from location SW-16 were 140 nanograms per liter (ng/L) in May 2018 and July 2018. PFOA concentrations in samples collected from location SW-16 ranged from 3,300 ng/L in May 2018 to 300 ng/L in July 2018 (Arcadis 2018). The PFOS and PFOA concentration from samples collected from the Ditch B System influent from startup (October 2019) through the end of the reporting period (December 2019) are shown in **Figure 4** in comparison to baseline samples.

Ditch B 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 B surface water. The interconnected nature of these factors is expected to result in varying PFAS concentrations in Ditch B 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 (ex: 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 4**, PFOS and PFOA concentrations in Ditch B surface water have fluctuated since system sampling began; however, concentrations have remained largely within the range observed during baseline sampling.

6 REFERENCES

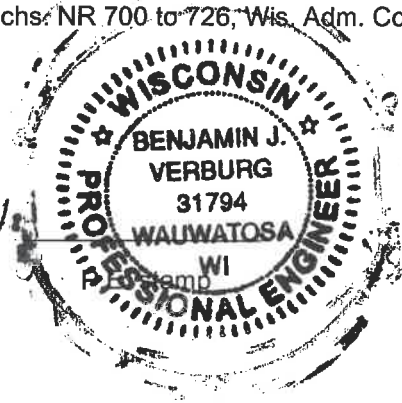
Arcadis. 2018. Discharge Management Plan for WPDES Permit No. WI-0046566-07-0. December 2018.

7 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.

Ben Verburg, Principal Engineer, 31794

Signature, title and P.E. number



TABLES



Table 1
System Operational Data
Tyco Fire Technology Center Ditch B Interim Action Treatment System
Marinette, Wisconsin

Month	Total Volume of Treated Water Discharged (gallons)	Days in Period	Operating Days (with Adequate Stream Flow Conditions) ¹	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]	
October 2019	574,757	2	2	48	2	100%	100%	287,379	287,379	27	57%	508,389	System startup occurred on 10/30/19
November 2019	10,723,913	30	30	667	28	93%	93%	357,464	382,997	502	75%	512,339	System downtime primarily associated with bag filter replacements and backwashing. System flow rate reduced to approximately 140 GPM on 11/25/19 to increase uptime.
December 2019	5,020,780	31	31	712	31	100%	100%	161,961	161,961	533	75%	225,953	System downtime primarily associated with bag filter replacements and process optimization for GAC changeouts.
Total:	16,319,450	63	63	1,427	61	97%	97%	259,039	267,532	1063	74%	368,533	

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 / 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 / Operating Hours with Adequate Stream Flow Conditions
- 9 = Average Flow Rate (Actual Operating Hours) = Volume Discharged / ([Actual Operating Hours] * 24)

eDMR = electronic discharge monitoring report

GPD = gallons per day

WDNR = Wisconsin Department of Natural Resources

Table 2
WPDES Laboratory Analytical Results
Tyco Fire Technology Center Ditch B Interim Action Treatment System
Marinette, Wisconsin

		Total Suspended Solids	Oil & Grease	BTEX, total		PAH, total		Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)		pH
Units:		mg/L	mg/L	µg/L		µg/L		ng/L		ng/L	s.u.
Effluent Limitations:		40	10	750	0.1	11	420	6/9			
Location	Sample Date	Daily Max	Daily Max						Monthly Average	Monthly Average	Monthly Average
SC-503	11/1/2019	3.0 J	< 5.1 UB	< 0.40	< 0.39	< 0.53 U		< 0.83 U		8.83	
SC-503	11/7/2019	2.0 J	< 5.1 UB	< 0.40	< 0.36	< 0.44 U		2.1		7.88	
SC-503	11/14/2019	2.5 J	< 1.3 U	< 0.40	< 0.36	1.2 J	0.24	39	12.56	7.61	
SC-503	11/22/2019	< 1.9 U	< 1.4 U	< 0.40	< 0.36	< 0.51 U		19		7.54	
SC-503	11/26/2019	2.0 J	1.4 J	< 0.40	< 0.36	< 0.53 U		2.7		7.62	
SC-503	12/5/2019	4.0 J	1.7 J	< 0.40	< 0.37	0.61 J		11		7.33	
SC-503	12/14/2019	2.5 J	< 1.4 U	< 0.40	< 0.36	< 0.48 U	0.15	< 0.76 U	8.25	8.77	
SC-503	12/18/2019	< 1.9 U	< 1.4 U	< 0.40	0.054	< 0.46 U		22		7.67	
SC-503	12/23/2019	2.5 J	< 5.2 UB	< 0.40	< 0.37	< 0.46 U		< 0.72 U		8.31	

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

ng/L = nanograms per liter

PAH = Polycyclic aromatic hydrocarbons

s.u. = standard units

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

SC-503 is the Ditch B System WPDES discharge sampling location

Effluent Limitations per Coverage Letter dated April 11, 2019 (under WPDES General Permit No. WI-0046566-07-0)

Table 3. PFAS Treatment Efficiency
Tyco Fire Technology Center Ditch B Interim Action Treatment System
Marinette, Wisconsin

Date	PFOS in Influent (ng/L)	PFOS in Effluent (ng/L)	Efficiency (%)	PFOA in Influent (ng/L)	PFOA in Effluent (ng/L)	Efficiency (%)	
11/1/2019	110	< 0.53 U	100.00	2500 D	< 0.83 U	100.00	
11/7/2019	130 D	< 0.44 U	100.00	2700 D	2.1	99.92	
11/14/2019	120	1.2 J	99.00	2500 D	39	98.44	
11/22/2019	110 J+	< 0.51 U	100.00	2300 DJ	19	99.17	
11/26/2019	120	< 0.53 U	100.00	2600 D	2.7	99.90	
Average:			99.80	Average:			99.49
12/5/2019	93	0.61 J	99.34	2100 D	11	99.48	
12/14/2019	140	< 0.48 U	100.00	2600 D	< 0.76 U	100.00	
12/18/2019	150	< 0.46 U	100.00	2800 D	22	99.21	
12/23/2019	130	< 0.46 U	100.00	2900 D	< 0.72 U	100.00	
Average:			99.84	Average:			99.67
Overall Average:			99.82	Overall Average:			99.57

Notes:

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

* = The associated numerical value is expected to have a positive or high bias

B = Compound was found in blank and sample

D = Result is from a diluted extract

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

ng/L = Nanograms per liter

NA = Not Available

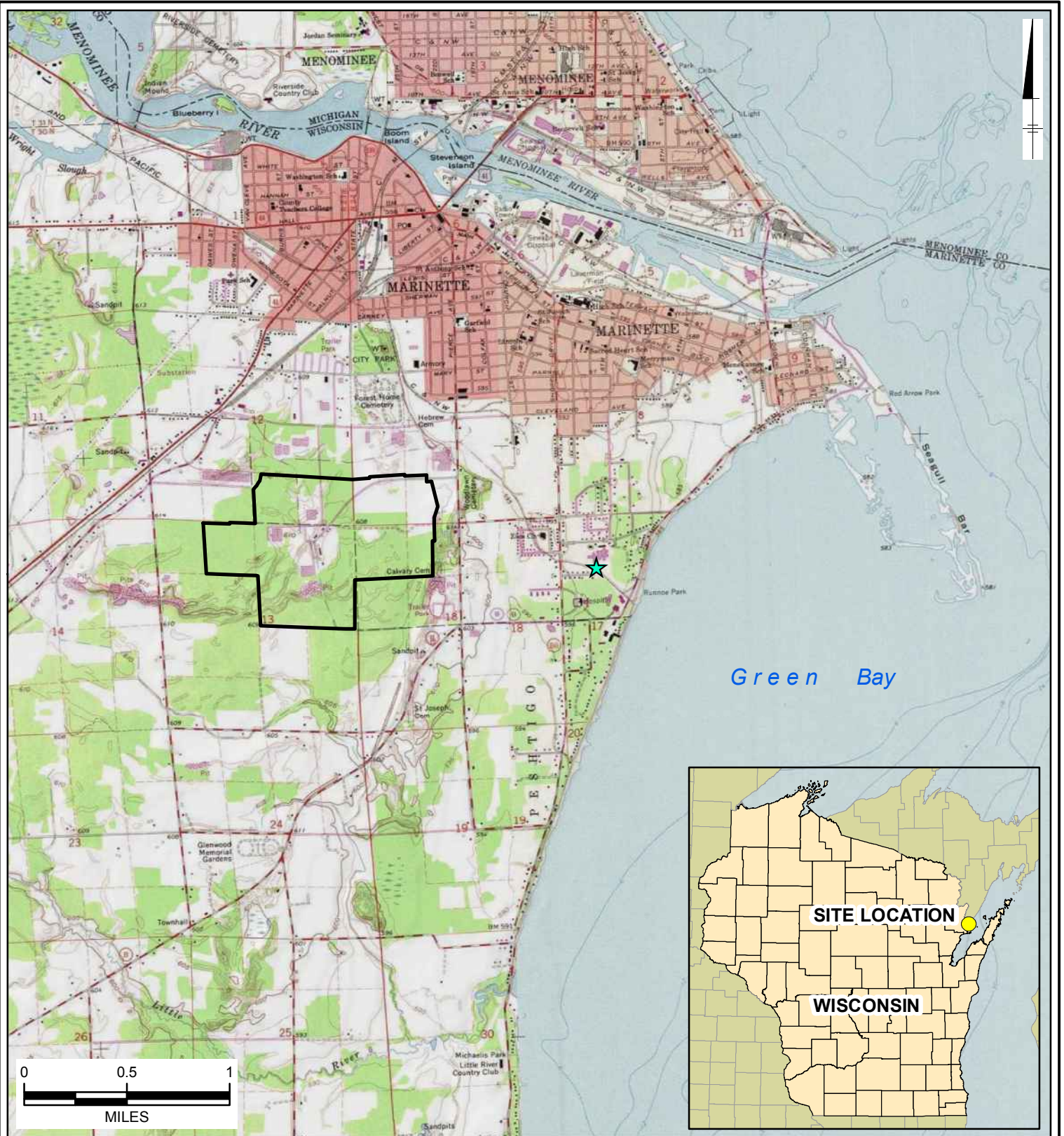
PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

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



FIGURES





City: Minneapolis/Clark Div/Group: IMDVC Created By: Last Saved By: alrens
 TYCO Marinette WI
 Z:\GIS\Projects\ENVT\TYCO_Marinette_WI\MapXD\2018-03\Work_Plan\Fig1_SiteLocation_DitchB.mxd 2/10/2020 12:21:47 PM

LEGEND:

-  APPROXIMATE SITE PROPERTY BOUNDARY
-  APPROXIMATE LOCATION OF DITCH B 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

CITY: MILWAUKEE, WI DIV/GROUP: ENV/CAD, DB: E. EBERT, LD: E. EBERT, PIC: J. BENNETT, PM: B. VERBURG, TM: B. VERBURG, LYN: ON+ OFF= REF*
 C:\Users\mwasilewski\OneDrive\Documents\360\Arcadis\IANA - TYCO\Project Files\DITCH EVALUATION - MARINETTE\2020\30015296\01-DWG\30015296-FIG02 SITE LAYOUT.dwg LAYOUT: 2 SAVED: 2/17/2020 4:29 PM ACADVER: 23.0S (LMS TECH) PAGES: 21 PLOTTED: 2/17/2020 4:29 PM BY: WASILEWSKI, MATT



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

LEGEND:

PROPOSED

- LIMITS OF DISTURBANCE
- |--- SILT FENCE
- |--- CONDUIT
- |--- INDEX ELEVATION CONTOUR
- |--- INTERMEDIATE ELEVATION CONTOUR
- [Hatched Box] BUILDING
- [Dashed Box] CLEARING AND GRUBBING
- [Gravel Pattern Box] GRAVEL PAD AND LANDSCAPING
- [Stippled Box] LIVE STAKING
- [Shaded Box] SCOUR POOL
- |--- ORDINARY HIGH WATER MARK

EXISTING

- 590--- INDEX ELEVATION CONTOUR
- 591--- INTERMEDIATE ELEVATION CONTOUR
- |--- PROPERTY BOUNDARY
- IRON PIN
- |--- CHANNEL CENTERLINE
- [Wavy Line] WETLANDS
- |--- OVERHEAD POWER LINE
- [Square with X] UTILITY POLE
- [Star] LIGHT POLE
- [Hatched Box] BUILDING
- [Shaded Box] ASPHALT DRIVE

SOURCE NOTES:

1. BASE MAPPING AND TOPOGRAPHIC SURVEY PROVIDED BY COLEMAN ENGINEERING COMPANY OF GREEN BAY WISCONSIN, SURVEY MAP COMPLETED ON APRIL 16, 2019.
2. HORIZONTAL DATUM (US SURVEY FEET); WISCONSIN STATE PLANE CENTRAL ZONE (4802) - U.S. FEET. ALL ELEVATIONS ARE IN FEET AND ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988

SCALE(S) AS INDICATED

GRAPHIC SCALE

No.	Date	Revisions	By	Ckd
4	08/07/19	REVISED CP-1 THRU CP-3	MW	TK
3	04/01/19	ISSUED FOR WPDES PERMIT	EE	TK
2	01/29/19	ISSUED FOR PLANNING PERMIT	EE	TK
1	12/19/18	ISSUED FOR PERMIT	EE	BV
0	12/14/18	DRAFT DESIGN PACKAGE FOR REVIEW	EE	BV

Professional Engineer's Name		
BEN VERBURG		
Professional Engineer's No.		
31794-006		
State	Date Signed	Project Mgr.
WI	04/01/19	BV
Designed by	Drawn by	Checked by
BV	EE	TK

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ARCADIS Design & Consultancy for natural and built assets

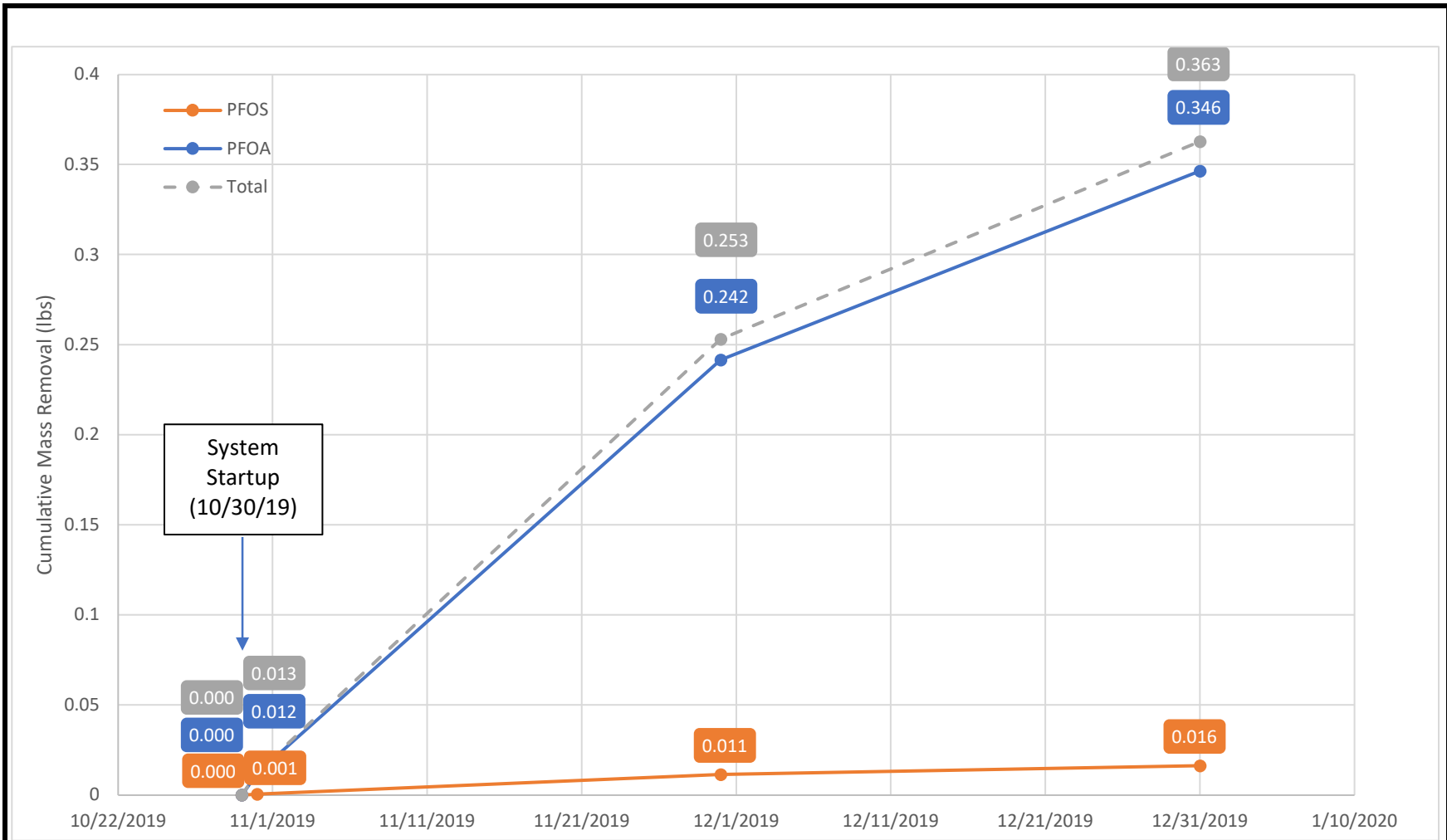
ARCADIS U.S., INC.

ANSUL FTC SITE • MARINETTE, WISCONSIN • 2700 INDUSTRIAL PARKWAY SOUTH

DITCH B INTERIM ACTION DESIGN

SITE LAYOUT

ARCADIS Project No. 30015296.00006	2
Date FEBRUARY 2020	
ARCADIS U.S., INC. 126 N. JEFFERSON ST. SUITE 400 MILWAUKEE, WI 53202	



Notes:

PFOS = Perfluorooctanesulfonic Acid

PFOA = Perfluorooctanoic Acid

Total = PFOS + PFOA

Lbs = Pounds

Data points presented on a monthly basis

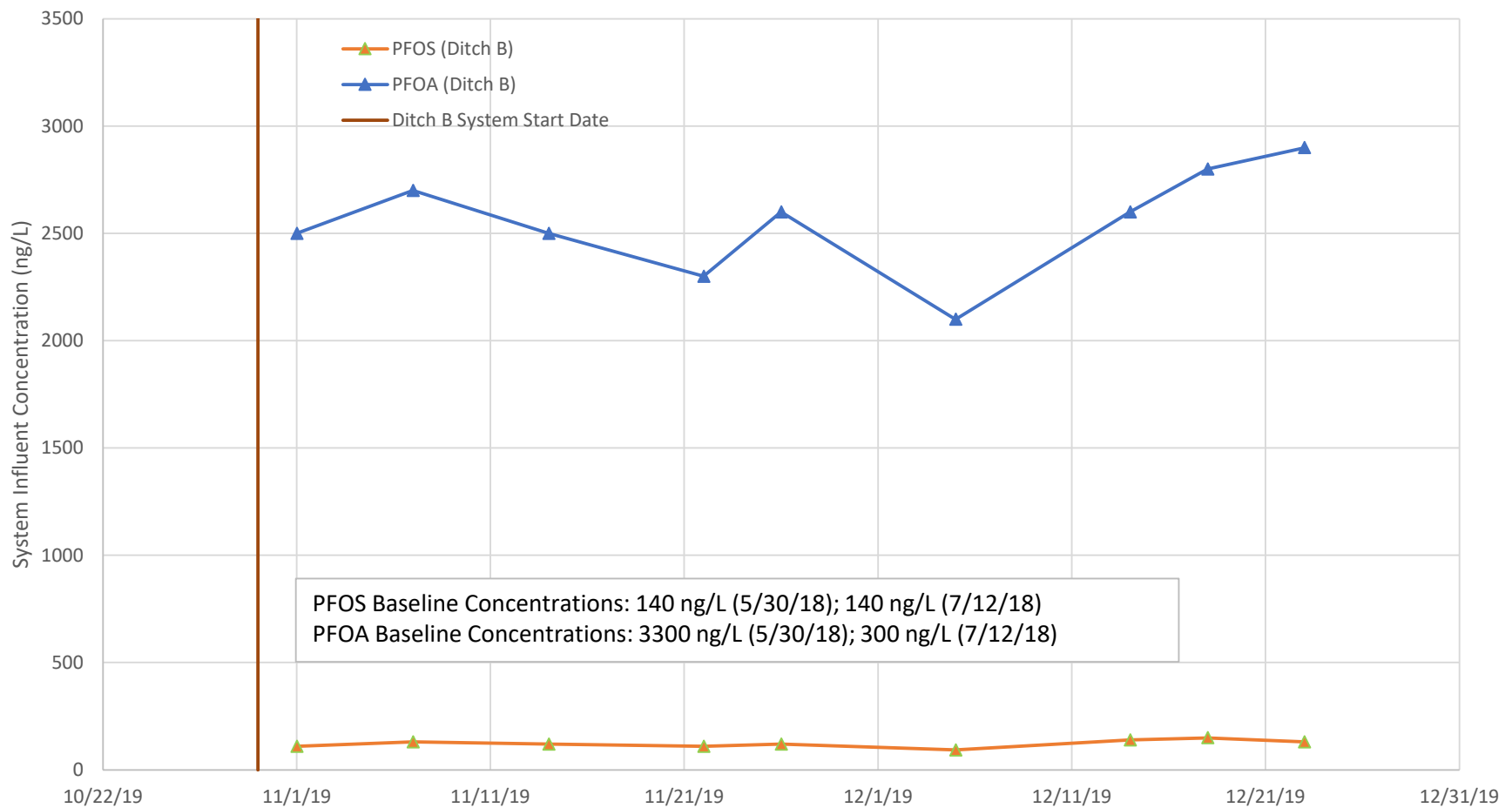
DITCH B TREATMENT SYSTEM
 TYCO FIRE PRODUCTS LP
 2700 INDUSTRIAL PARKWAY SOUTH
 MARINETTE, WISCONSIN

CUMULATIVE PFAS MASS REMOVAL (10/30/19 - 12/31/19)



FIGURE

3



Notes:

PFOS = Perfluorooctanesulfonic Acid

PFOA = Perfluorooctanoic Acid

Baseline concentrations collected from sample location SW-16 on 5/30/18 and 7/12/18

TYCO FIRE PRODUCTS LP
2700 INDUSTRIAL PARKWAY SOUTH
MARINETTE, WISCONSIN

DITCH B SYSTEM PFAS INFLUENT CONCENTRATIONS



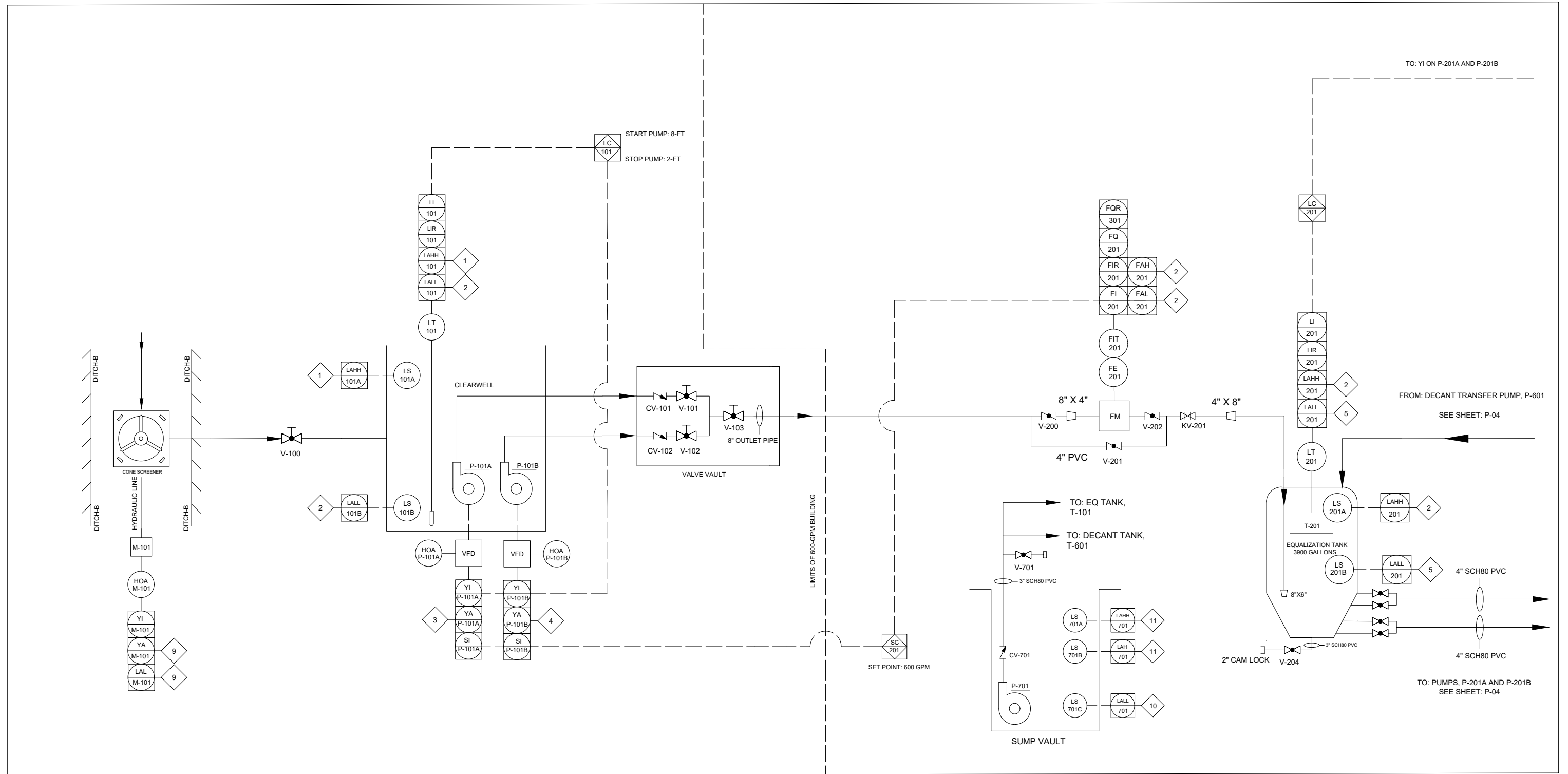
FIGURE

4

APPENDIX A

Piping and Instrumentation Diagram





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

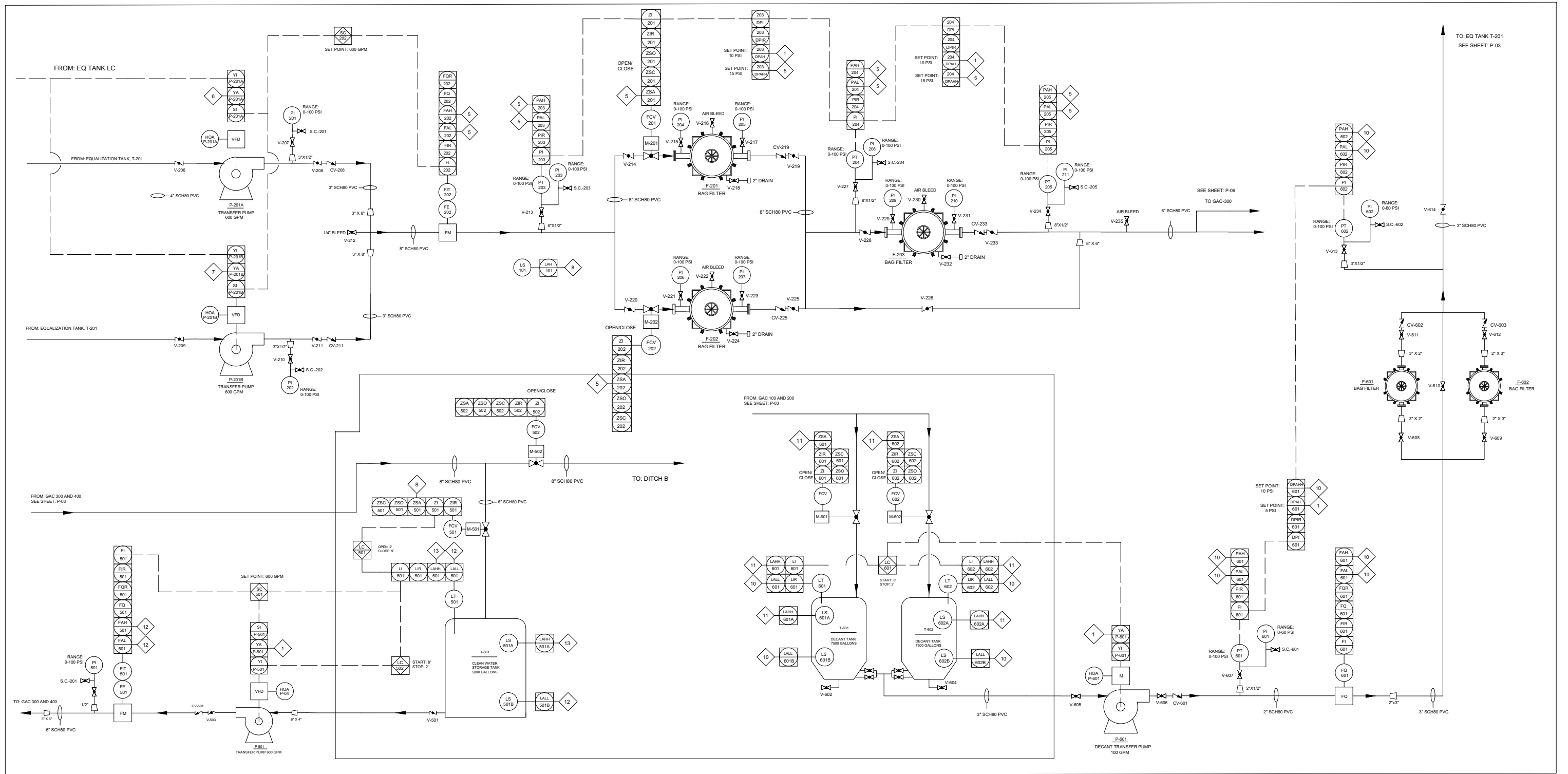
Prepared by:
Presidio Systems, Inc.
 Presidio Systems, Inc.
 2129 E. Birchwood Ave.
 Cudahy, WI 53110
 Tel: (414) 483-5600 Fax: (414) 483-1957
 www.presidiosystems.com

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

SHEET TITLE
**DITCH AND CLEARWELL
 P&ID**

APPROVED BY
MPS
 DESIGNED BY
PAP
 PROJECT NUMBER
Q14887

CHECKED BY
MPS
 DRAWN BY
PAP
 DRAWING NUMBER
P-03
 SHEET **3** OF **6**



- | | | | | | | | | | | | |
|-----|--------------------------------|----|----------------|-----|--------------|----|------------------|--|-----------------------|--|----------------------|
| PI | PRESSURE INDICATOR 0-100 PSI | FQ | FLOW TOTALIZER | ZSO | VALVE OPEN | LS | LEVEL SWITCH | | WAFER BUTTERFLY VALVE | | MOTORIZED BALL VALVE |
| PT | PRESSURE TRANSMITTER 0-100 PSI | ZI | VALVE POSITION | ZSC | VALVE CLOSED | LT | LEVEL TRANSDUCER | | CHECK VALVE | | BALL VALVE |
| FIT | FLOW INDICATING TRANSMITTER | FE | FLOW ELEMENT | | | | | | | | |

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 Tel: (414)-276-7742
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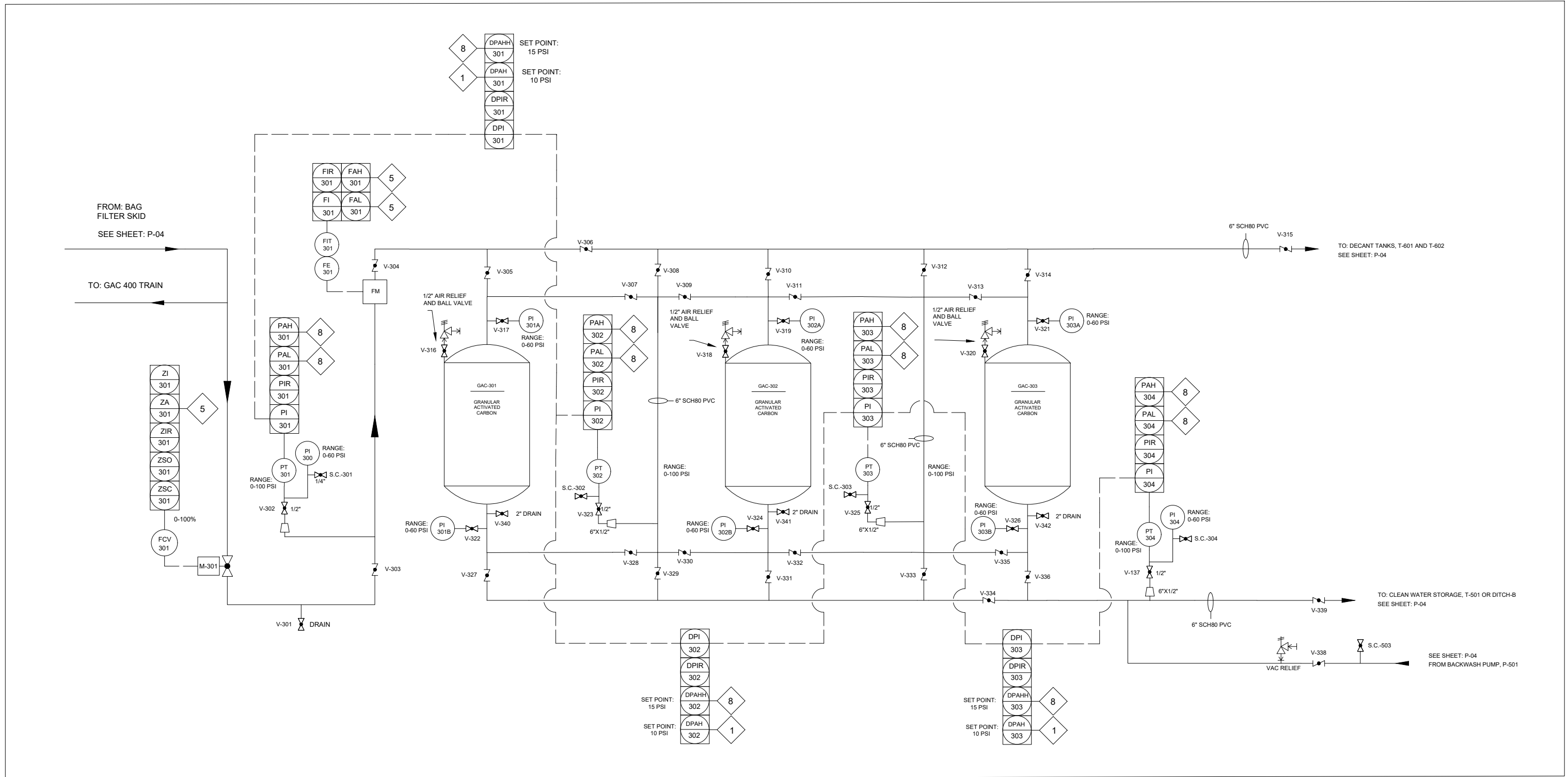
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**DITCH INTERIM ACTION-DITCH B
 MARINETTE, WI**

SHEET TITLE
**BAG FILTER SKID
 P&ID**

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DESIGNED BY PAP	DRAWN BY PAP
PROJECT NUMBER Q14887	DRAWING NUMBER P-04
	SHEET 4 OF 6



- | | | | | | |
|--------------------------------|----------------|--------------|------------------|-----------------------|----------------------|
| PRESSURE INDICATOR 0-100 PSI | FLOW TOTALIZER | VALVE OPEN | LEVEL SWITCH | WAFER BUTTERFLY VALVE | MOTORIZED BALL VALVE |
| PRESSURE TRANSMITTER 0-100 PSI | VALVE POSITION | VALVE CLOSED | LEVEL TRANSDUCER | CHECK VALVE | BALL VALVE |
| FLOW INDICATING TRANSMITTER | FLOW ELEMENT | | | | |

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Prepared by:

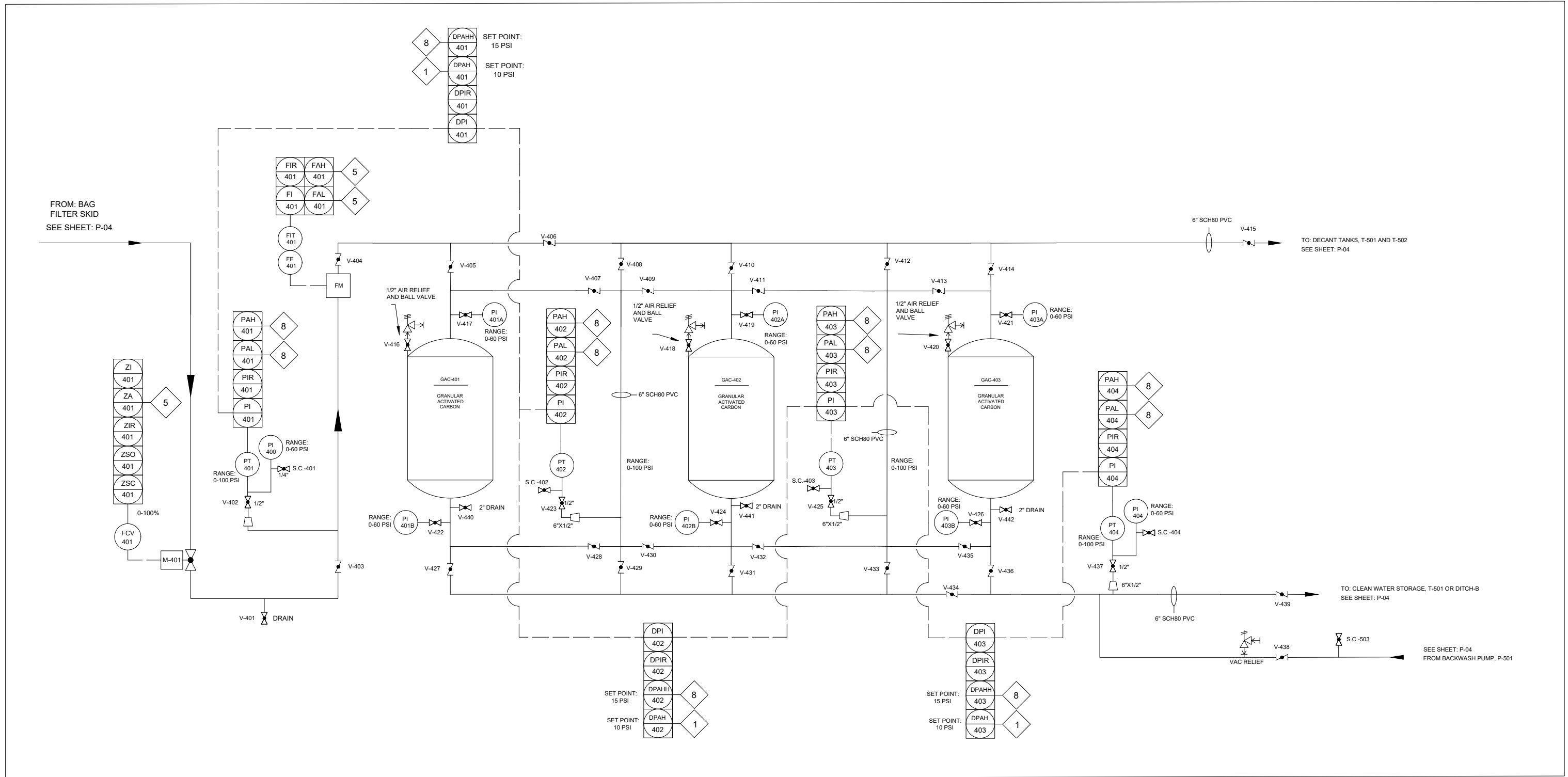
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 www.presidiosystems.com

DITCH INTERIM ACTION-DITCH B MARINETTE, WI

SHEET TITLE
GAC 100 SKID P&ID

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 DESIGNED BY
PAP
 PROJECT NUMBER
Q14887

CHECKED BY
MPS
 DRAWN BY
PAP
 DRAWING NUMBER
P-05
 SHEET **5** OF **6**



- | | | | | | |
|--------------------------------|----------------|--------------|------------------|-----------------------|----------------------|
| PRESSURE INDICATOR 0-100 PSI | FLOW TOTALIZER | VALVE OPEN | LEVEL SWITCH | WAFER BUTTERFLY VALVE | MOTORIZED BALL VALVE |
| PRESSURE TRANSMITTER 0-100 PSI | VALVE POSITION | VALVE CLOSED | LEVEL TRANSDUCER | CHECK VALVE | BALL VALVE |
| FLOW INDICATING TRANSMITTER | FLOW ELEMENT | | | | |

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Prepared by:

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

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

SHEET TITLE
**GAC 200 SKID
 P&ID**

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PAP
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Q14887

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MPS
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PAP
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P-06
 SHEET **6** OF **6**

APPENDIX B

WPDES Laboratory Analytical Reports



ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-55923-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Ms. Jennifer Bennett



Authorized for release by:
11/19/2019 2:54:51 PM

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

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Qualifiers

LCMS

Qualifier	Qualifier Description
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.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Job ID: 320-55923-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-55923-1

Comments

No additional comments.

Receipt

The samples were received on 11/2/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.1° C.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analytes Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead. (ICV 320-337024/12)

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following samples exceeded the instrument calibration range: SC-203-B (320-55923-1). 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 samples SC-203-B (320-55923-1) 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.

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 contain a thin layer of sediment at the bottom of the bottle prior to extraction: SC-203-B (320-55923-1) 320-338181 Method: 3535 PFC-W

Method 3535: The following sample is light yellow after extraction: SC-203-B (320-55923-1) 320-338181 Method: 3535 PFC-W

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

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-55923-1

Date Collected: 11/01/19 08:00

Matrix: Water

Date Received: 11/02/19 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.0	J	18	1.7	ng/L		11/13/19 09:16	11/14/19 22:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.8		18	2.8	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorobutanesulfonic acid (PFBS)	4.6		1.8	0.18	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorodecanoic acid (PFDA)	3.5		1.8	0.28	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluoroheptanoic acid (PFHpA)	120		1.8	0.22	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorohexanesulfonic acid (PFHxS)	50	B	1.8	0.15	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorohexanoic acid (PFHxA)	320		1.8	0.52	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorononanoic acid (PFNA)	83		1.8	0.24	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorooctanesulfonic acid (PFOS)	110		1.8	0.49	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorooctanoic acid (PFOA)	1900	E	1.8	0.76	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		11/13/19 09:16	11/14/19 22:06	1
Perfluoroundecanoic acid (PFUnA)	1.0	J	1.8	0.99	ng/L		11/13/19 09:16	11/14/19 22:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	134		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C2 PFDoA	131		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C4 PFHpA	124		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C2 PFHxA	108		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C5 PFNA	131		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C4 PFOA	98		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C4 PFOS	122		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C2 PFTeDA	119		25 - 150	11/13/19 09:16	11/14/19 22:06	1
18O2 PFHxS	138		25 - 150	11/13/19 09:16	11/14/19 22:06	1
13C2 PFUnA	143		25 - 150	11/13/19 09:16	11/14/19 22:06	1
d3-NMeFOSAA	128		25 - 150	11/13/19 09:16	11/14/19 22:06	1
d5-NEtFOSAA	130		25 - 150	11/13/19 09:16	11/14/19 22:06	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<17		180	17	ng/L		11/13/19 09:16	11/15/19 19:39	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<28		180	28	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorobutanesulfonic acid (PFBS)	6.1	J	18	1.8	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorodecanoic acid (PFDA)	4.0	J	18	2.8	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorododecanoic acid (PFDoA)	<4.9		18	4.9	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluoroheptanoic acid (PFHpA)	120		18	2.2	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorohexanesulfonic acid (PFHxS)	52	B	18	1.5	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorohexanoic acid (PFHxA)	330		18	5.2	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorononanoic acid (PFNA)	83		18	2.4	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorooctanesulfonic acid (PFOS)	100		18	4.9	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorooctanoic acid (PFOA)	2500		18	7.6	ng/L		11/13/19 09:16	11/15/19 19:39	10

Eurolins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-55923-1

Date Collected: 11/01/19 08:00

Matrix: Water

Date Received: 11/02/19 09:05

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	<2.6		18	2.6	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluorotridecanoic acid (PFTriA)	<12		18	12	ng/L		11/13/19 09:16	11/15/19 19:39	10
Perfluoroundecanoic acid (PFUnA)	<9.9		18	9.9	ng/L		11/13/19 09:16	11/15/19 19:39	10
<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	93		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C2 PFDoA	99		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C4 PFHpA	104		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C2 PFHxA	97		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C5 PFNA	100		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C4 PFOA	97		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C4 PFOS	95		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C2 PFTeDA	82		25 - 150				11/13/19 09:16	11/15/19 19:39	10
18O2 PFHxS	110		25 - 150				11/13/19 09:16	11/15/19 19:39	10
13C2 PFUnA	98		25 - 150				11/13/19 09:16	11/15/19 19:39	10
d3-NMeFOSAA	97		25 - 150				11/13/19 09:16	11/15/19 19:39	10
d5-NEtFOSAA	96		25 - 150				11/13/19 09:16	11/15/19 19:39	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-55923-2

Date Collected: 11/01/19 07:40

Matrix: Water

Date Received: 11/02/19 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		11/13/19 09:16	11/14/19 22:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		20	3.0	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorodecanoic acid (PFDA)	<0.30		2.0	0.30	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	0.54	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluoroheptanoic acid (PFHpA)	<0.24		2.0	0.24	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorohexanesulfonic acid (PFHxS)	0.33	J B	2.0	0.17	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorohexanoic acid (PFHxA)	0.64	J	2.0	0.57	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorononanoic acid (PFNA)	<0.26		2.0	0.26	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorooctanesulfonic acid (PFOS)	<0.53		2.0	0.53	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorooctanoic acid (PFOA)	<0.83		2.0	0.83	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		2.0	0.28	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluorotridecanoic acid (PFTrIA)	<1.3		2.0	1.3	ng/L		11/13/19 09:16	11/14/19 22:14	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		11/13/19 09:16	11/14/19 22:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	95		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C2 PFDoA	106		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C4 PFHpA	100		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C2 PFHxA	100		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C5 PFNA	98		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C4 PFOA	100		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C4 PFOS	91		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C2 PFTeDA	102		25 - 150				11/13/19 09:16	11/14/19 22:14	1
18O2 PFHxS	104		25 - 150				11/13/19 09:16	11/14/19 22:14	1
13C2 PFUnA	102		25 - 150				11/13/19 09:16	11/14/19 22:14	1
d3-NMeFOSAA	91		25 - 150				11/13/19 09:16	11/14/19 22:14	1
d5-NEtFOSAA	91		25 - 150				11/13/19 09:16	11/14/19 22:14	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-55923-1	SC-203-B	134	131	124	108	131	98	122	119
320-55923-1 - DL	SC-203-B	93	99	104	97	100	97	95	82
320-55923-2	SC-503-B	95	106	100	100	98	100	91	102
LCS 320-338181/2-A	Lab Control Sample	99	109	100	100	101	104	95	117
MB 320-338181/1-A	Method Blank	100	106	104	100	99	105	98	115

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)
320-55923-1	SC-203-B	138	143	128	130
320-55923-1 - DL	SC-203-B	110	98	97	96
320-55923-2	SC-503-B	104	102	91	91
LCS 320-338181/2-A	Lab Control Sample	109	105	97	95
MB 320-338181/1-A	Method Blank	109	101	100	97

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-338181/1-A
Matrix: Water
Analysis Batch: 338621

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 338181

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		11/13/19 09:16	11/14/19 18:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorohexanesulfonic acid (PFHxS)	0.316	J	2.0	0.17	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		11/13/19 09:16	11/14/19 18:52	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		11/13/19 09:16	11/14/19 18:52	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C2 PFDoA	106		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C4 PFHpA	104		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C2 PFHxA	100		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C5 PFNA	99		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C4 PFOA	105		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C4 PFOS	98		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C2 PFTeDA	115		25 - 150	11/13/19 09:16	11/14/19 18:52	1
18O2 PFHxS	109		25 - 150	11/13/19 09:16	11/14/19 18:52	1
13C2 PFUnA	101		25 - 150	11/13/19 09:16	11/14/19 18:52	1
d3-NMeFOSAA	100		25 - 150	11/13/19 09:16	11/14/19 18:52	1
d5-NEtFOSAA	97		25 - 150	11/13/19 09:16	11/14/19 18:52	1

Lab Sample ID: LCS 320-338181/2-A
Matrix: Water
Analysis Batch: 338621

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 338181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.9		ng/L		107	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.6		ng/L		99	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	34.9		ng/L		99	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	42.2		ng/L		106	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	40.7		ng/L		102	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	39.4		ng/L		99	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.7		ng/L		84	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	39.4		ng/L		98	73 - 133
Perfluorononanoic acid (PFNA)	40.0	41.8		ng/L		105	75 - 135

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

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

Lab Sample ID: LCS 320-338181/2-A
Matrix: Water
Analysis Batch: 338621

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 338181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	38.1		ng/L		103	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.7		ng/L		97	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	36.7		ng/L		92	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	39.7		ng/L		99	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	36.9		ng/L		92	68 - 128
		LCS	LCS				
Isotope Dilution		%Recovery	Qualifier				Limits
13C2 PFDA		99					25 - 150
13C2 PFDoA		109					25 - 150
13C4 PFHpA		100					25 - 150
13C2 PFHxA		100					25 - 150
13C5 PFNA		101					25 - 150
13C4 PFOA		104					25 - 150
13C4 PFOS		95					25 - 150
13C2 PFTeDA		117					25 - 150
18O2 PFHxS		109					25 - 150
13C2 PFUnA		105					25 - 150
d3-NMeFOSAA		97					25 - 150
d5-NEFOSAA		95					25 - 150

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

LCMS

Prep Batch: 338181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55923-1 - DL	SC-203-B	Total/NA	Water	3535	
320-55923-1	SC-203-B	Total/NA	Water	3535	
320-55923-2	SC-503-B	Total/NA	Water	3535	
MB 320-338181/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-338181/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 338621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55923-1	SC-203-B	Total/NA	Water	537 (modified)	338181
320-55923-2	SC-503-B	Total/NA	Water	537 (modified)	338181
MB 320-338181/1-A	Method Blank	Total/NA	Water	537 (modified)	338181
LCS 320-338181/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	338181

Analysis Batch: 338992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55923-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	338181

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-55923-1

Date Collected: 11/01/19 08:00

Matrix: Water

Date Received: 11/02/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.2 mL	10.0 mL	338181	11/13/19 09:16	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			338621	11/14/19 22:06	D1R	TAL SAC
Total/NA	Prep	3535	DL		278.2 mL	10.0 mL	338181	11/13/19 09:16	MTN	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			338992	11/15/19 19:39	GMK	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-55923-2

Date Collected: 11/01/19 07:40

Matrix: Water

Date Received: 11/02/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256 mL	10.0 mL	338181	11/13/19 09:16	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			338621	11/14/19 22:14	D1R	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-55923-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-55923-1	SC-203-B	Water	11/01/19 08:00	11/02/19 09:05	
320-55923-2	SC-503-B	Water	11/01/19 07:40	11/02/19 09:05	

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- 9
- 10
- 11
- 12
- 13
- 14

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-55923-1

Login Number: 55923

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

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	136840
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	
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	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-56110-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Ms. Jennifer Bennett



Authorized for release by:

11/22/2019 9:41:21 AM

Therese Hargraves, Project Manager I
(708)793-3461

therese.hargraves@testamericainc.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660

sandie.fredrick@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
C	See Case Narrative
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Job ID: 320-56110-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-56110-1

Comments

No additional comments.

Receipt

The samples were received on 11/8/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analytes Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead. (ICV 320-337024/12)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C4 PFOS and 18O2 PFHxS in the following sample: SC 203 B (320-56110-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) and Perfluorohexanoic acid (PFHxA) associated with the following samples exceeded the instrument calibration range: SC 203 B (320-56110-1). 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 samples SC 203 B (320-56110-1) 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.

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead. (ICV 320-339894/12)

Method 537 (modified): The transition mass ratio for the indicated analyte, Perfluoroundecanoic acid (PFUnA) was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte.

SC 203 B (320-56110-1)

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

Organic Prep

Method 3535: Samples are a light yellowish-tan in color, but clear.

SC 203 B (320-56110-1) and SC 503 B (320-56110-2)

preparation batch 320-339050
3535_PFC
Aqueous

Method 3535: Samples have a small amount of blackish sediment.

SC 203 B (320-56110-1)

preparation batch 320-339050
3535_PFC
Aqueous

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Job ID: 320-56110-1 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-339050.

3535_PFC
Aqueous

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

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Client Sample ID: SC 203 B

Lab Sample ID: 320-56110-1

Date Collected: 11/07/19 10:50

Matrix: Water

Date Received: 11/08/19 09:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.9	J	16	1.5	ng/L		11/15/19 17:56	11/18/19 02:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.5		16	2.5	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorobutanesulfonic acid (PFBS)	5.3		1.6	0.16	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorodecanoic acid (PFDA)	4.1		1.6	0.25	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorododecanoic acid (PFDoA)	<0.45		1.6	0.45	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluoroheptanoic acid (PFHpA)	140		1.6	0.20	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorohexanesulfonic acid (PFHxS)	61	B	1.6	0.14	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorohexanoic acid (PFHxA)	360	E	1.6	0.47	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorononanoic acid (PFNA)	99		1.6	0.22	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorooctanesulfonic acid (PFOS)	120		1.6	0.44	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorooctanoic acid (PFOA)	2100	E	1.6	0.69	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorotetradecanoic acid (PFTeA)	<0.24		1.6	0.24	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.6	1.1	ng/L		11/15/19 17:56	11/18/19 02:11	1
Perfluoroundecanoic acid (PFUnA)	1.3	J C	1.6	0.89	ng/L		11/15/19 17:56	11/18/19 02:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	143		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C2 PFDoA	139		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C4 PFHpA	145		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C2 PFHxA	121		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C5 PFNA	148		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C4 PFOA	107		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C4 PFOS	153 *		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C2 PFTeDA	121		25 - 150	11/15/19 17:56	11/18/19 02:11	1
18O2 PFHxS	164 *		25 - 150	11/15/19 17:56	11/18/19 02:11	1
13C2 PFUnA	143		25 - 150	11/15/19 17:56	11/18/19 02:11	1
d3-NMeFOSAA	121		25 - 150	11/15/19 17:56	11/18/19 02:11	1
d5-NEtFOSAA	118		25 - 150	11/15/19 17:56	11/18/19 02:11	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<15		160	15	ng/L		11/15/19 17:56	11/19/19 15:21	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<25		160	25	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorobutanesulfonic acid (PFBS)	7.4	J	16	1.6	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorodecanoic acid (PFDA)	4.4	J	16	2.5	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorododecanoic acid (PFDoA)	<4.5		16	4.5	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluoroheptanoic acid (PFHpA)	140		16	2.0	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorohexanesulfonic acid (PFHxS)	57	B	16	1.4	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorohexanoic acid (PFHxA)	360		16	4.7	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorononanoic acid (PFNA)	97		16	2.2	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorooctanesulfonic acid (PFOS)	130		16	4.4	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorooctanoic acid (PFOA)	2700		16	6.9	ng/L		11/15/19 17:56	11/19/19 15:21	10

Eurolins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Client Sample ID: SC 203 B

Lab Sample ID: 320-56110-1

Date Collected: 11/07/19 10:50

Matrix: Water

Date Received: 11/08/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	<2.4		16	2.4	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluorotridecanoic acid (PFTriA)	<11		16	11	ng/L		11/15/19 17:56	11/19/19 15:21	10
Perfluoroundecanoic acid (PFUnA)	<8.9		16	8.9	ng/L		11/15/19 17:56	11/19/19 15:21	10
<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	108		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C2 PFDoA	99		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C4 PFHpA	112		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C2 PFHxA	109		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C5 PFNA	113		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C4 PFOA	106		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C4 PFOS	103		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C2 PFTeDA	75		25 - 150				11/15/19 17:56	11/19/19 15:21	10
18O2 PFHxS	117		25 - 150				11/15/19 17:56	11/19/19 15:21	10
13C2 PFUnA	103		25 - 150				11/15/19 17:56	11/19/19 15:21	10
d3-NMeFOSAA	109		25 - 150				11/15/19 17:56	11/19/19 15:21	10
d5-NEtFOSAA	110		25 - 150				11/15/19 17:56	11/19/19 15:21	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Client Sample ID: SC 503 B

Lab Sample ID: 320-56110-2

Date Collected: 11/07/19 13:00

Matrix: Water

Date Received: 11/08/19 09:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.6		16	1.6	ng/L		11/15/19 17:56	11/18/19 02:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.5		16	2.5	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorobutanesulfonic acid (PFBS)	<0.16		1.6	0.16	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorodecanoic acid (PFDA)	<0.25		1.6	0.25	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorododecanoic acid (PFDoA)	<0.45		1.6	0.45	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluoroheptanoic acid (PFHpA)	<0.20		1.6	0.20	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.6	0.14	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorohexanoic acid (PFHxA)	<0.47		1.6	0.47	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorononanoic acid (PFNA)	<0.22		1.6	0.22	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorooctanesulfonic acid (PFOS)	<0.44		1.6	0.44	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorooctanoic acid (PFOA)	2.1		1.6	0.69	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorotetradecanoic acid (PFTeA)	<0.24		1.6	0.24	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.6	1.1	ng/L		11/15/19 17:56	11/18/19 02:19	1
Perfluoroundecanoic acid (PFUnA)	<0.90		1.6	0.90	ng/L		11/15/19 17:56	11/18/19 02:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	76		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C2 PFDoA	73		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C4 PFHpA	86		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C2 PFHxA	84		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C5 PFNA	82		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C4 PFOA	86		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C4 PFOS	80		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C2 PFTeDA	61		25 - 150	11/15/19 17:56	11/18/19 02:19	1
18O2 PFHxS	95		25 - 150	11/15/19 17:56	11/18/19 02:19	1
13C2 PFUnA	75		25 - 150	11/15/19 17:56	11/18/19 02:19	1
d3-NMeFOSAA	57		25 - 150	11/15/19 17:56	11/18/19 02:19	1
d5-NEtFOSAA	55		25 - 150	11/15/19 17:56	11/18/19 02:19	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-56110-1	SC 203 B	143	139	145	121	148	107	153 *	121
320-56110-1 - DL	SC 203 B	108	99	112	109	113	106	103	75
320-56110-2	SC 503 B	76	73	86	84	82	86	80	61
LCS 320-339050/2-A	Lab Control Sample	109	113	116	113	109	117	109	112
LCSD 320-339050/3-A	Lab Control Sample Dup	115	122	116	112	114	117	113	115
MB 320-339050/1-A	Method Blank	102	110	111	105	110	110	107	110

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)
320-56110-1	SC 203 B	164 *	143	121	118
320-56110-1 - DL	SC 203 B	117	103	109	110
320-56110-2	SC 503 B	95	75	57	55
LCS 320-339050/2-A	Lab Control Sample	124	111	88	86
LCSD 320-339050/3-A	Lab Control Sample Dup	119	119	125	115
MB 320-339050/1-A	Method Blank	114	107	88	82

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-339050/1-A
Matrix: Water
Analysis Batch: 339397

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 339050

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		11/15/19 17:56	11/18/19 00:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorohexanesulfonic acid (PFHxS)	0.286	J	2.0	0.17	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		11/15/19 17:56	11/18/19 00:50	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		11/15/19 17:56	11/18/19 00:50	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	102		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C2 PFDoA	110		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C4 PFHpA	111		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C2 PFHxA	105		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C5 PFNA	110		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C4 PFOA	110		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C4 PFOS	107		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C2 PFTeDA	110		25 - 150	11/15/19 17:56	11/18/19 00:50	1
18O2 PFHxS	114		25 - 150	11/15/19 17:56	11/18/19 00:50	1
13C2 PFUnA	107		25 - 150	11/15/19 17:56	11/18/19 00:50	1
d3-NMeFOSAA	88		25 - 150	11/15/19 17:56	11/18/19 00:50	1
d5-NEtFOSAA	82		25 - 150	11/15/19 17:56	11/18/19 00:50	1

Lab Sample ID: LCS 320-339050/2-A
Matrix: Water
Analysis Batch: 339397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 339050

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.4		ng/L		111	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.5		ng/L		104	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	35.1		ng/L		99	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	42.5		ng/L		106	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	39.4		ng/L		98	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	38.7		ng/L		97	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.7		ng/L		90	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	40.2		ng/L		101	73 - 133
Perfluorononanoic acid (PFNA)	40.0	41.6		ng/L		104	75 - 135

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QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

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

Lab Sample ID: LCS 320-339050/2-A
Matrix: Water
Analysis Batch: 339397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 339050

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	36.2		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	37.4		ng/L		94	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	36.9		ng/L		92	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	38.8		ng/L		97	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	36.0		ng/L		90	68 - 128
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	109		25 - 150				
13C2 PFDoA	113		25 - 150				
13C4 PFHpA	116		25 - 150				
13C2 PFHxA	113		25 - 150				
13C5 PFNA	109		25 - 150				
13C4 PFOA	117		25 - 150				
13C4 PFOS	109		25 - 150				
13C2 PFTeDA	112		25 - 150				
18O2 PFHxS	124		25 - 150				
13C2 PFUnA	111		25 - 150				
d3-NMeFOSAA	88		25 - 150				
d5-NEFOSAA	86		25 - 150				

Lab Sample ID: LCSD 320-339050/3-A
Matrix: Water
Analysis Batch: 340003

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 339050

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.4		ng/L		101	76 - 136	9	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.0		ng/L		100	76 - 136	4	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.4		ng/L		100	67 - 127	1	30
Perfluorodecanoic acid (PFDA)	40.0	40.5		ng/L		101	76 - 136	5	30
Perfluorododecanoic acid (PFDoA)	40.0	37.7		ng/L		94	71 - 131	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		100	72 - 132	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.8		ng/L		87	59 - 119	3	30
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	73 - 133	4	30
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	75 - 135	2	30
Perfluorooctanesulfonic acid (PFOS)	37.1	37.1		ng/L		100	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	40.0	38.4		ng/L		96	70 - 130	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	35.5		ng/L		89	70 - 130	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	37.5		ng/L		94	71 - 131	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	37.8		ng/L		94	68 - 128	5	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

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

<i>Isotope Dilution</i>	<i>LCS D LCS D</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C2 PFDA	115		25 - 150
13C2 PFDoA	122		25 - 150
13C4 PFHpA	116		25 - 150
13C2 PFHxA	112		25 - 150
13C5 PFNA	114		25 - 150
13C4 PFOA	117		25 - 150
13C4 PFOS	113		25 - 150
13C2 PFTeDA	115		25 - 150
18O2 PFHxS	119		25 - 150
13C2 PFUnA	119		25 - 150
d3-NMeFOSAA	125		25 - 150
d5-NEtFOSAA	115		25 - 150

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

LCMS

Prep Batch: 339050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56110-1 - DL	SC 203 B	Total/NA	Water	3535	
320-56110-1	SC 203 B	Total/NA	Water	3535	
320-56110-2	SC 503 B	Total/NA	Water	3535	
MB 320-339050/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-339050/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-339050/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 339397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56110-1	SC 203 B	Total/NA	Water	537 (modified)	339050
320-56110-2	SC 503 B	Total/NA	Water	537 (modified)	339050
MB 320-339050/1-A	Method Blank	Total/NA	Water	537 (modified)	339050
LCS 320-339050/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	339050

Analysis Batch: 340003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56110-1 - DL	SC 203 B	Total/NA	Water	537 (modified)	339050
LCSD 320-339050/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	339050

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Client Sample ID: SC 203 B

Lab Sample ID: 320-56110-1

Date Collected: 11/07/19 10:50

Matrix: Water

Date Received: 11/08/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			307.9 mL	10.00 mL	339050	11/15/19 17:56	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			339397	11/18/19 02:11	P1N	TAL SAC
Total/NA	Prep	3535	DL		307.9 mL	10.00 mL	339050	11/15/19 17:56	JER	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			340003	11/19/19 15:21	MNV	TAL SAC

Client Sample ID: SC 503 B

Lab Sample ID: 320-56110-2

Date Collected: 11/07/19 13:00

Matrix: Water

Date Received: 11/08/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			306.4 mL	10.00 mL	339050	11/15/19 17:56	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			339397	11/18/19 02:19	P1N	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56110-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-56110-1	SC 203 B	Water	11/07/19 10:50	11/08/19 09:00	
320-56110-2	SC 503 B	Water	11/07/19 13:00	11/08/19 09:00	

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Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-56110-1

Login Number: 56110

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Guzman, Juan

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	747432
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	
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	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-56310-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Ms. Jennifer Bennett



Authorized for release by:

11/22/2019 5:03:01 PM

Therese Hargraves, Project Manager I
(708)793-3461

therese.hargraves@testamericainc.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660

sandie.fredrick@testamericainc.com

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
C	See Case Narrative
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Job ID: 320-56310-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-56310-1

Comments

No additional comments.

Receipt

The samples were received on 11/15/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

LCMS

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-338862/11)

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following samples exceeded the instrument calibration range: SC-203-B (320-56310-1). 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. The samples were diluted within calibration range. Both sets of data were reported per client requirement.

Method 537 (modified): The transition mass ratio for the indicated analyte, Perfluorooctanoic acid (PFOA) was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte.

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and PFPeS were quantitated versus 18O2-PFHxS instead. (ICV 320-339894/12)

Method 537 (modified): Results for samples SC-203-B (320-56310-1) were reported from the analysis of a diluted extract due to high concentration and matrix interference 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

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 320-339410.

Method Code: 3535 PFC

Method 3535: The following samples were observed to contain sediment prior to extraction: SC-203-B (320-56310-1) and SC-503-B (320-56310-2)

Method Code: 3535 PFC

preparation batch 320-339410

Method 3535: The following samples contain non-settleable particulate matter which clogged the solid-phase extraction column:

Method Code: 3535 PFC
preparation batch 320-339410

Method 3535: The following samples were observed to be light yellow after extraction: SC-203-B (320-56310-1)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Job ID: 320-56310-1 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

Method Code: 3535 PFC
preparation batch 320-339410

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

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56310-1

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.8	J	19	1.8	ng/L	-	11/18/19 05:20	11/19/19 02:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorobutanesulfonic acid (PFBS)	5.9		1.9	0.19	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorodecanoic acid (PFDA)	4.3		1.9	0.30	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluoroheptanoic acid (PFHpA)	130		1.9	0.24	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorohexanesulfonic acid (PFHxS)	56	B	1.9	0.16	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorohexanoic acid (PFHxA)	310		1.9	0.55	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorononanoic acid (PFNA)	96		1.9	0.26	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorooctanesulfonic acid (PFOS)	120		1.9	0.51	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorooctanoic acid (PFOA)	1100	E C	1.9	0.81	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		11/18/19 05:20	11/19/19 02:02	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		11/18/19 05:20	11/19/19 02:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	101		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C2 PFDoA	97		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C4 PFHpA	115		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C2 PFHxA	108		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C5 PFNA	106		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C4 PFOA	84		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C4 PFOS	104		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C2 PFTeDA	74		25 - 150	11/18/19 05:20	11/19/19 02:02	1
18O2 PFHxS	123		25 - 150	11/18/19 05:20	11/19/19 02:02	1
13C2 PFUnA	98		25 - 150	11/18/19 05:20	11/19/19 02:02	1
d3-NMeFOSAA	86		25 - 150	11/18/19 05:20	11/19/19 02:02	1
d5-NEtFOSAA	92		25 - 150	11/18/19 05:20	11/19/19 02:02	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<18		190	18	ng/L		11/18/19 05:20	11/21/19 17:50	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<30		190	30	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorobutanesulfonic acid (PFBS)	5.6	J	19	1.9	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorodecanoic acid (PFDA)	3.9	J	19	3.0	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorododecanoic acid (PFDoA)	<5.2		19	5.2	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluoroheptanoic acid (PFHpA)	130		19	2.4	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorohexanesulfonic acid (PFHxS)	50	B	19	1.6	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorohexanoic acid (PFHxA)	330		19	5.5	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorononanoic acid (PFNA)	97		19	2.6	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorooctanesulfonic acid (PFOS)	130		19	5.1	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorooctanoic acid (PFOA)	2500		19	8.1	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluorotetradecanoic acid (PFTeA)	<2.8		19	2.8	ng/L		11/18/19 05:20	11/21/19 17:50	10

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56310-1

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 09:05

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		11/18/19 05:20	11/21/19 17:50	10
Perfluoroundecanoic acid (PFUnA)	<10		19	10	ng/L		11/18/19 05:20	11/21/19 17:50	10
<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	82		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C2 PFDoA	79		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C4 PFHpA	88		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C2 PFHxA	81		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C5 PFNA	88		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C4 PFOA	84		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C4 PFOS	86		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C2 PFTeDA	61		25 - 150				11/18/19 05:20	11/21/19 17:50	10
18O2 PFHxS	98		25 - 150				11/18/19 05:20	11/21/19 17:50	10
13C2 PFUnA	73		25 - 150				11/18/19 05:20	11/21/19 17:50	10
d3-NMeFOSAA	80		25 - 150				11/18/19 05:20	11/21/19 17:50	10
d5-NEtFOSAA	83		25 - 150				11/18/19 05:20	11/21/19 17:50	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-56310-2

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		11/18/19 05:20	11/19/19 02:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluoroheptanoic acid (PFHpA)	2.6		1.9	0.24	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorohexanesulfonic acid (PFHxS)	0.56	J B	1.9	0.16	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorohexanoic acid (PFHxA)	9.9		1.9	0.56	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorononanoic acid (PFNA)	1.0	J	1.9	0.26	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.9	0.52	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorooctanoic acid (PFOA)	39		1.9	0.82	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorotetradecanoic acid (PFTeA)	0.28	J	1.9	0.28	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		11/18/19 05:20	11/19/19 02:31	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		11/18/19 05:20	11/19/19 02:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C2 PFDoA	98		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C4 PFHpA	119		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C2 PFHxA	114		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C5 PFNA	107		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C4 PFOA	113		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C4 PFOS	102		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C2 PFTeDA	77		25 - 150				11/18/19 05:20	11/19/19 02:31	1
18O2 PFHxS	122		25 - 150				11/18/19 05:20	11/19/19 02:31	1
13C2 PFUnA	102		25 - 150				11/18/19 05:20	11/19/19 02:31	1
d3-NMeFOSAA	86		25 - 150				11/18/19 05:20	11/19/19 02:31	1
d5-NEtFOSAA	93		25 - 150				11/18/19 05:20	11/19/19 02:31	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDaA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-56310-1	SC-203-B	101	97	115	108	106	84	104	74
320-56310-1 - DL	SC-203-B	82	79	88	81	88	84	86	61
320-56310-2	SC-503-B	100	98	119	114	107	113	102	77
LCS 320-339410/2-A	Lab Control Sample	81	80	95	89	84	89	80	81
LCSD 320-339410/3-A	Lab Control Sample Dup	78	79	91	84	81	84	75	79
MB 320-339410/1-A	Method Blank	84	86	99	92	87	89	83	82

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)
320-56310-1	SC-203-B	123	98	86	92
320-56310-1 - DL	SC-203-B	98	73	80	83
320-56310-2	SC-503-B	122	102	86	93
LCS 320-339410/2-A	Lab Control Sample	97	81	72	73
LCSD 320-339410/3-A	Lab Control Sample Dup	93	80	67	71
MB 320-339410/1-A	Method Blank	98	86	73	75

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDaA = 13C2 PFDaA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-339410/1-A
Matrix: Water
Analysis Batch: 339721

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 339410

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		11/18/19 05:20	11/19/19 00:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorohexanesulfonic acid (PFHxS)	0.325	J	2.0	0.17	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		11/18/19 05:20	11/19/19 00:34	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		11/18/19 05:20	11/19/19 00:34	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	84		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C2 PFDoA	86		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C4 PFHpA	99		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C2 PFHxA	92		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C5 PFNA	87		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C4 PFOA	89		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C4 PFOS	83		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C2 PFTeDA	82		25 - 150	11/18/19 05:20	11/19/19 00:34	1
18O2 PFHxS	98		25 - 150	11/18/19 05:20	11/19/19 00:34	1
13C2 PFUnA	86		25 - 150	11/18/19 05:20	11/19/19 00:34	1
d3-NMeFOSAA	73		25 - 150	11/18/19 05:20	11/19/19 00:34	1
d5-NEtFOSAA	75		25 - 150	11/18/19 05:20	11/19/19 00:34	1

Lab Sample ID: LCS 320-339410/2-A
Matrix: Water
Analysis Batch: 339721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 339410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.0		ng/L		107	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.5		ng/L		101	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	31.5		ng/L		89	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	42.3		ng/L		106	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	43.1		ng/L		108	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	39.3		ng/L		98	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.8		ng/L		87	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	40.6		ng/L		102	73 - 133
Perfluorononanoic acid (PFNA)	40.0	42.6		ng/L		107	75 - 135

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

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

Lab Sample ID: LCS 320-339410/2-A
Matrix: Water
Analysis Batch: 339721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 339410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	38.6		ng/L		104	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	40.6		ng/L		102	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	38.3		ng/L		96	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	46.8		ng/L		117	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	38.7		ng/L		97	68 - 128
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	81		25 - 150				
13C2 PFDoA	80		25 - 150				
13C4 PFHpA	95		25 - 150				
13C2 PFHxA	89		25 - 150				
13C5 PFNA	84		25 - 150				
13C4 PFOA	89		25 - 150				
13C4 PFOS	80		25 - 150				
13C2 PFTeDA	81		25 - 150				
18O2 PFHxS	97		25 - 150				
13C2 PFUnA	81		25 - 150				
d3-NMeFOSAA	72		25 - 150				
d5-NEFOSAA	73		25 - 150				

Lab Sample ID: LCSD 320-339410/3-A
Matrix: Water
Analysis Batch: 339721

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 339410

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	45.5		ng/L		114	76 - 136	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.9		ng/L		105	76 - 136	3	30
Perfluorobutanesulfonic acid (PFBS)	35.4	32.0		ng/L		91	67 - 127	2	30
Perfluorodecanoic acid (PFDA)	40.0	42.0		ng/L		105	76 - 136	1	30
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	71 - 131	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.7		ng/L		99	72 - 132	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.0		ng/L		88	59 - 119	1	30
Perfluorohexanoic acid (PFHxA)	40.0	41.4		ng/L		103	73 - 133	2	30
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	75 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	39.2		ng/L		106	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	41.1		ng/L		103	70 - 130	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.2		ng/L		98	70 - 130	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.6		ng/L		112	71 - 131	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	36.4		ng/L		91	68 - 128	6	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

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

<i>Isotope Dilution</i>	<i>LCS D LCS D</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C2 PFDA	78		25 - 150
13C2 PFDoA	79		25 - 150
13C4 PFHpA	91		25 - 150
13C2 PFHxA	84		25 - 150
13C5 PFNA	81		25 - 150
13C4 PFOA	84		25 - 150
13C4 PFOS	75		25 - 150
13C2 PFTeDA	79		25 - 150
18O2 PFHxS	93		25 - 150
13C2 PFUnA	80		25 - 150
d3-NMeFOSAA	67		25 - 150
d5-NEtFOSAA	71		25 - 150

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

LCMS

Prep Batch: 339410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56310-1	SC-203-B	Total/NA	Water	3535	
320-56310-1 - DL	SC-203-B	Total/NA	Water	3535	
320-56310-2	SC-503-B	Total/NA	Water	3535	
MB 320-339410/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-339410/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-339410/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 339721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56310-1	SC-203-B	Total/NA	Water	537 (modified)	339410
320-56310-2	SC-503-B	Total/NA	Water	537 (modified)	339410
MB 320-339410/1-A	Method Blank	Total/NA	Water	537 (modified)	339410
LCS 320-339410/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	339410
LCSD 320-339410/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	339410

Analysis Batch: 340548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56310-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	339410

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56310-1

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.2 mL	10 mL	339410	11/18/19 05:20	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			339721	11/19/19 02:02	VPM	TAL SAC
Total/NA	Prep	3535	DL		262.2 mL	10 mL	339410	11/18/19 05:20	AF	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			340548	11/21/19 17:50	S1M	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-56310-2

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.5 mL	10 mL	339410	11/18/19 05:20	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			339721	11/19/19 02:31	VPM	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56310-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-56310-1	SC-203-B	Water	11/14/19 12:45	11/15/19 09:05	
320-56310-2	SC-503-B	Water	11/14/19 12:45	11/15/19 09:05	

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

Chain of Custody Record

Eurofins TestAmerica, Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248



TestAmerica Laboratories, Inc. dba Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A		Site Contact: Lab Contact: Sandie Fredrick Carrier: FedEx		COC No.: _____ of _____ COCs	
Client Contact: Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below: <i>Solve</i> <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sampler: For Lab Use Only: Walk-In Client: Lab Sampling: Lab Project Number	
Project Name: Marinette, WI Site: Marinette, WI P O #		Filtered Sample (Y/N) Perform MS/MSD (Y/N) EPA 537 Modified (14 Compounds)		Sample Specific Notes:	
Sample Identification		Sample Date 11/14 1245 11/14 1245	Sample Type (C=Comp, G=Grab) G G	Matrix W W	# of Cont. 2 2
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) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Special Instructions/QC Requirements & Comments: Level 2 QA/QC, Questions call Jennifer Bennett. WPDES: LOD/LOQ TAT: 5 Day		Received by: _____ Date/Time: 11/15/19 905 Company: EPA SAC Received in Laboratory by: _____ Date/Time: _____ Company: _____			



Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019



Environment Testing
TestAmerica

Sacramento
Sample Receiving Notes



320-56310 Field Sheet

Tracking #: 7125 4941 2930

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.

Notes: _____

Therm. ID: IR stem Corr. Factor: (+/-) 0 °C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 747286

Cooler ID: _____

Temp Observed: 3.6 °C Corrected: 3.6 °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"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: MAN Date: 11/15/19

Unpacking/Labeling The Samples	Yes	No	NA
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Containers are not broken or leaking?	<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"/>
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"/>

Non-conformance Yes No NA
NCM Filed?

Initials: PK Date: 11/15/19

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

Seal

11/14/19

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

747286

TESTAMERICA RT 362

THE LEADER IN EN

1 10:30 F 2930 11.15

ORIGIN ID:RRLA (262) 202-5955
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126 NORTH JEFFERSON STREET
MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 01NOV19
ACTWGT: 15.00 LB MAN
CAD: 525155/CAFE3211

TO

TESTAMERICA SACRAMENTO
880 RIVERSIDE PARKWAY

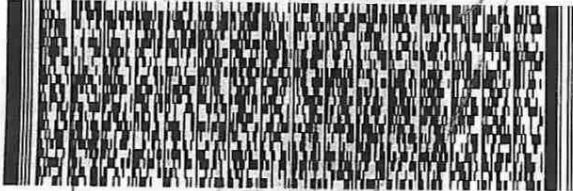
WEST SACRAMENTO CA 95605-1500

(816) 373-5800

REF:

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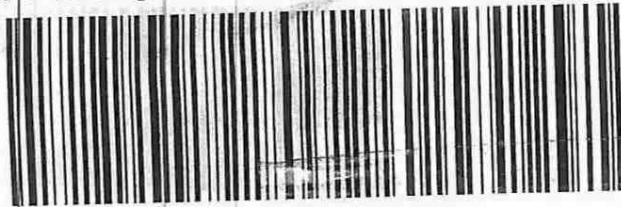
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Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-56310-1

Login Number: 56310

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

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.	N/A	
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	
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	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-56666-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/12/2019 10:56:45 AM

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

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
C	See Case Narrative
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Job ID: 320-56666-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-56666-1

Comments

No additional comments.

Receipt

The samples were received on 11/27/2019 12:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.2° C.

LCMS

Method 537 (modified): Results for samples SC-203-B (320-56666-1) were reported from the analysis of a diluted extract due to high concentration and matrix interference 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

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following samples exceeded the instrument calibration range: SC-203-B (320-56666-1). 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 for the indicated analyte, Perfluorooctanoic acid (PFOA) was outside of 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.

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 duplicate (MSD) associated with preparation batch 320-343585. Method Code: 3535 PFC-W

Method 3535: The following samples were observed to be yellow prior to extraction: SC-203-B (320-56666-1) and SC-503-B (320-56666-2). Method Code: 3535 PFC-W preparation batch 320-343585

Method 3535: The following samples contain non-settleable particulate matter which clogged the solid phase extraction column: SC-203-B (320-56666-1). Method Code: 3535 PFC-W preparation batch 320-343585

Method 3535: The following samples were observed to be light yellow after final voluming: SC-203-B (320-56666-1). Method Code: 3535 PFC-W preparation batch 320-343585

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

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56666-1

Date Collected: 11/26/19 11:30

Matrix: Water

Date Received: 11/27/19 12:25

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	J	19	1.8	ng/L		12/06/19 06:03	12/07/19 19:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorobutanesulfonic acid (PFBS)	5.8		1.9	0.19	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorodecanoic acid (PFDA)	3.7		1.9	0.30	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluoroheptanoic acid (PFHpA)	130		1.9	0.24	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorohexanesulfonic acid (PFHxS)	62	B	1.9	0.16	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorohexanoic acid (PFHxA)	340		1.9	0.56	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorononanoic acid (PFNA)	99		1.9	0.26	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorooctanesulfonic acid (PFOS)	120		1.9	0.52	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorooctanoic acid (PFOA)	1300	E C	1.9	0.82	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		12/06/19 06:03	12/07/19 19:02	1
Perfluoroundecanoic acid (PFUnA)	1.2	J	1.9	1.1	ng/L		12/06/19 06:03	12/07/19 19:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	106		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C2 PFDoA	98		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C4 PFHpA	114		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C2 PFHxA	106		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C5 PFNA	111		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C4 PFOA	85		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C4 PFOS	103		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C2 PFTeDA	67		25 - 150	12/06/19 06:03	12/07/19 19:02	1
18O2 PFHxS	108		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C2 PFUnA	102		25 - 150	12/06/19 06:03	12/07/19 19:02	1
d3-NMeFOSAA	96		25 - 150	12/06/19 06:03	12/07/19 19:02	1
d5-NEtFOSAA	104		25 - 150	12/06/19 06:03	12/07/19 19:02	1
13C3 PFBS	108		25 - 150	12/06/19 06:03	12/07/19 19:02	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<37		380	37	ng/L		12/06/19 06:03	12/10/19 02:22	20
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<60		380	60	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorobutanesulfonic acid (PFBS)	6.4	J	38	3.8	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorodecanoic acid (PFDA)	<6.0		38	6.0	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorododecanoic acid (PFDoA)	<11		38	11	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluoroheptanoic acid (PFHpA)	140		38	4.8	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorohexanesulfonic acid (PFHxS)	64	B	38	3.3	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorohexanoic acid (PFHxA)	360		38	11	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorononanoic acid (PFNA)	96		38	5.2	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorooctanesulfonic acid (PFOS)	120		38	10	ng/L		12/06/19 06:03	12/10/19 02:22	20

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56666-1

Date Collected: 11/26/19 11:30

Matrix: Water

Date Received: 11/27/19 12:25

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2600		38	16	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorotetradecanoic acid (PFTeA)	<5.6		38	5.6	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluorotridecanoic acid (PFTrIA)	<25		38	25	ng/L		12/06/19 06:03	12/10/19 02:22	20
Perfluoroundecanoic acid (PFUnA)	<21		38	21	ng/L		12/06/19 06:03	12/10/19 02:22	20
<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	82		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C2 PFDoA	78		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C4 PFHpA	91		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C2 PFHxA	88		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C5 PFNA	89		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C4 PFOA	88		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C4 PFOS	80		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C2 PFTeDA	56		25 - 150				12/06/19 06:03	12/10/19 02:22	20
18O2 PFHxS	85		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C2 PFUnA	80		25 - 150				12/06/19 06:03	12/10/19 02:22	20
d3-NMeFOSAA	80		25 - 150				12/06/19 06:03	12/10/19 02:22	20
d5-NEtFOSAA	83		25 - 150				12/06/19 06:03	12/10/19 02:22	20
13C3 PFBS	83		25 - 150				12/06/19 06:03	12/10/19 02:22	20

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-56666-2

Date Collected: 11/26/19 11:45

Matrix: Water

Date Received: 11/27/19 12:25

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		12/06/19 06:03	12/07/19 19:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	0.54	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluoroheptanoic acid (PFHpA)	0.26	J	2.0	0.25	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorohexanesulfonic acid (PFHxS)	0.33	J B	2.0	0.17	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorohexanoic acid (PFHxA)	1.3	J	2.0	0.57	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorooctanesulfonic acid (PFOS)	<0.53		2.0	0.53	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorooctanoic acid (PFOA)	2.7		2.0	0.84	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluorotridecanoic acid (PFTrIA)	<1.3		2.0	1.3	ng/L		12/06/19 06:03	12/07/19 19:12	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/06/19 06:03	12/07/19 19:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	78		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C2 PFDoA	66		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C4 PFHpA	86		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C2 PFHxA	83		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C5 PFNA	83		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C4 PFOA	81		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C4 PFOS	77		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C2 PFTeDA	52		25 - 150				12/06/19 06:03	12/07/19 19:12	1
18O2 PFHxS	79		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C2 PFUnA	72		25 - 150				12/06/19 06:03	12/07/19 19:12	1
d3-NMeFOSAA	68		25 - 150				12/06/19 06:03	12/07/19 19:12	1
d5-NEtFOSAA	69		25 - 150				12/06/19 06:03	12/07/19 19:12	1
13C3 PFBS	81		25 - 150				12/06/19 06:03	12/07/19 19:12	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-56666-1	SC-203-B	106	98	114	106	111	85	103	67
320-56666-1 - DL	SC-203-B	82	78	91	88	89	88	80	56
320-56666-2	SC-503-B	78	66	86	83	83	81	77	52
LCS 320-343585/2-A	Lab Control Sample	88	86	88	88	88	86	86	88
LCSD 320-343585/3-A	Lab Control Sample Dup	78	78	82	80	79	78	78	78
MB 320-343585/1-A	Method Blank	86	84	88	87	88	87	85	79

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)	13C3-PFBS (25-150)
320-56666-1	SC-203-B	108	102	96	104	108
320-56666-1 - DL	SC-203-B	85	80	80	83	83
320-56666-2	SC-503-B	79	72	68	69	81
LCS 320-343585/2-A	Lab Control Sample	84	86	84	81	89
LCSD 320-343585/3-A	Lab Control Sample Dup	77	78	75	76	80
MB 320-343585/1-A	Method Blank	82	81	83	83	89

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA
- 13C3-PFBS = 13C3 PFBS

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-343585/1-A
Matrix: Water
Analysis Batch: 343953

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 343585

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		12/06/19 06:03	12/07/19 18:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorohexanesulfonic acid (PFHxS)	0.313	J	2.0	0.17	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/06/19 06:03	12/07/19 18:33	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/06/19 06:03	12/07/19 18:33	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	86		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C2 PFDoA	84		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C4 PFHpA	88		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C2 PFHxA	87		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C5 PFNA	88		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C4 PFOA	87		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C4 PFOS	85		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C2 PFTeDA	79		25 - 150	12/06/19 06:03	12/07/19 18:33	1
18O2 PFHxS	82		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C2 PFUnA	81		25 - 150	12/06/19 06:03	12/07/19 18:33	1
d3-NMeFOSAA	83		25 - 150	12/06/19 06:03	12/07/19 18:33	1
d5-NEtFOSAA	83		25 - 150	12/06/19 06:03	12/07/19 18:33	1
13C3 PFBS	89		25 - 150	12/06/19 06:03	12/07/19 18:33	1

Lab Sample ID: LCS 320-343585/2-A
Matrix: Water
Analysis Batch: 343953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.4		ng/L		94	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.0		ng/L		95	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	31.7		ng/L		90	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	37.2		ng/L		93	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	37.0		ng/L		93	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	37.1		ng/L		93	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.8		ng/L		90	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	37.0		ng/L		93	73 - 133

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

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

Lab Sample ID: LCS 320-343585/2-A
Matrix: Water
Analysis Batch: 343953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	39.3		ng/L		98	75 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	33.3		ng/L		90	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.3		ng/L		96	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	34.5		ng/L		86	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	38.7		ng/L		97	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	35.1		ng/L		88	68 - 128
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	88		25 - 150				
13C2 PFDoA	86		25 - 150				
13C4 PFHpA	88		25 - 150				
13C2 PFHxA	88		25 - 150				
13C5 PFNA	88		25 - 150				
13C4 PFOA	86		25 - 150				
13C4 PFOS	86		25 - 150				
13C2 PFTeDA	88		25 - 150				
18O2 PFHxS	84		25 - 150				
13C2 PFUnA	86		25 - 150				
d3-NMeFOSAA	84		25 - 150				
d5-NEFOSAA	81		25 - 150				
13C3 PFBS	89		25 - 150				

Lab Sample ID: LCSD 320-343585/3-A
Matrix: Water
Analysis Batch: 343953

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 343585

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	35.6		ng/L		89	76 - 136	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.9		ng/L		90	76 - 136	6	30
Perfluorobutanesulfonic acid (PFBS)	35.4	32.4		ng/L		92	67 - 127	2	30
Perfluorodecanoic acid (PFDA)	40.0	37.9		ng/L		95	76 - 136	2	30
Perfluorododecanoic acid (PFDoA)	40.0	37.0		ng/L		93	71 - 131	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	36.5		ng/L		91	72 - 132	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.7		ng/L		87	59 - 119	3	30
Perfluorohexanoic acid (PFHxA)	40.0	37.3		ng/L		93	73 - 133	1	30
Perfluorononanoic acid (PFNA)	40.0	39.5		ng/L		99	75 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	32.1		ng/L		86	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	37.7		ng/L		94	70 - 130	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	36.1		ng/L		90	70 - 130	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	38.7		ng/L		97	71 - 131	0	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

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

Lab Sample ID: LCSD 320-343585/3-A
Matrix: Water
Analysis Batch: 343953

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 343585

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	34.7		ng/L		87	68 - 128	1	30
	LCS	D	L						
	Recovery	Qual	SD						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C2 PFDA	78		25 - 150						
13C2 PFDoA	78		25 - 150						
13C4 PFHpA	82		25 - 150						
13C2 PFHxA	80		25 - 150						
13C5 PFNA	79		25 - 150						
13C4 PFOA	78		25 - 150						
13C4 PFOS	78		25 - 150						
13C2 PFTeDA	78		25 - 150						
18O2 PFHxS	77		25 - 150						
13C2 PFUnA	78		25 - 150						
d3-NMeFOSAA	75		25 - 150						
d5-NEtFOSAA	76		25 - 150						
13C3 PFBS	80		25 - 150						

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

LCMS

Prep Batch: 343585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56666-1 - DL	SC-203-B	Total/NA	Water	3535	
320-56666-1	SC-203-B	Total/NA	Water	3535	
320-56666-2	SC-503-B	Total/NA	Water	3535	
MB 320-343585/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-343585/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-343585/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 343953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56666-1	SC-203-B	Total/NA	Water	537 (modified)	343585
320-56666-2	SC-503-B	Total/NA	Water	537 (modified)	343585
MB 320-343585/1-A	Method Blank	Total/NA	Water	537 (modified)	343585
LCS 320-343585/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	343585
LCSD 320-343585/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	343585

Analysis Batch: 344286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56666-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	343585

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56666-1

Date Collected: 11/26/19 11:30

Matrix: Water

Date Received: 11/27/19 12:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.8 mL	10 mL	343585	12/06/19 06:03	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			343953	12/07/19 19:02	S1M	TAL SAC
Total/NA	Prep	3535	DL		259.8 mL	10 mL	343585	12/06/19 06:03	AF	TAL SAC
Total/NA	Analysis	537 (modified)	DL	20			344286	12/10/19 02:22	S1M	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-56666-2

Date Collected: 11/26/19 11:45

Matrix: Water

Date Received: 11/27/19 12:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.1 mL	10 mL	343585	12/06/19 06:03	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			343953	12/07/19 19:12	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56666-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

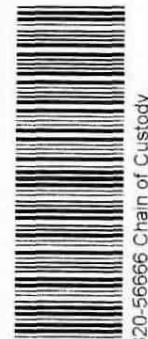
Job ID: 320-56666-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-56666-1	SC-203-B	Water	11/26/19 11:30	11/27/19 12:25	
320-56666-2	SC-503-B	Water	11/26/19 11:45	11/27/19 12:25	

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

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 # 30015296.00006 (WPDES) CAB 50016846		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 5 DAY <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Lab Contact: Sandie Fredrick Date: _____ Carrier: FedEx COC No: _____ of _____ COCs Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Lab Project Number 50016846 Sample Specific Notes:	
Sample Identification SC-203-B SC-503-B		Filtered Sample (Y / N) Perform MS / MSD (Y / N) PA 537 Modified (14 Compounds) 2 2		Sample Type (C=Comp, G=Grab) Sample Time Matrix # of Cont.	
Sample Date 11/26 11/26		Sample Type G G		Matrix W W	
Sample Time 10:50 10:55		Sample Type G G		Matrix W W	
Sample Date 11/26 11/26		Sample Type G G		Matrix W W	
Sample Time 10:50 10:55		Sample Type G G		Matrix W W	



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

Non-Hazardous Flammable Skin Irritant Poison B Unknown
 Return to Client Disposal by Lab Archive for _____ Months

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:
 Level 2 QA/QC, Questions call Jennifer Bennett.
 WPDES: LOD/LOQ
 TAT: 5 Day
 Total Gals. 10.8 M
 PPM 130
 PPS 4, 2, 3

Custody Seals Intact: Yes No
 Relinquished by: _____
 Relinquished by: _____
 Relinquished by: _____

Custody Seal No.: _____
 Company: ARCADIS
 Date/Time: 11/26/2010
 Company: _____
 Date/Time: _____
 Company: _____
 Date/Time: _____

Coolery Temp. (°C): Obs'd: 0.7
 Corrid: 0.7
 Therm ID No.: AP07
 Received by: _____
 Company: EPA SA
 Date/Time: 11/27, 9 12:25
 Received by: _____
 Company: _____
 Date/Time: _____
 Received in Laboratory by: _____
 Company: _____
 Date/Time: _____



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-56666-1

Login Number: 56666

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Her, David A

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	747288
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	
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	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-56867-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/16/2019 8:04:11 AM

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

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Qualifiers

LCMS

Qualifier	Qualifier Description
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.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Job ID: 320-56867-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-56867-1

Comments

No additional comments.

Receipt

The samples were received on 12/7/2019 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

LCMS

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) in the following samples exceeded the instrument calibration range: SC-203-B (320-56867-1). These analytes have been qualified; however, the peak did not saturate the instrument detector. The sample has been re-analyzed at a dilution and both sets of data have been reported.

Method 537 (modified): Results for sample SC-203-B (320-56867-1) 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

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 320-344577. Method Code: 3535 PFC-W

Method 3535: The following samples were observed to be yellow with dark sediment prior to extraction: SC-203-B (320-56867-1) and SC-503-B (320-56867-2). Method Code: 3535 PFC-W preparation batch 320-344577

Method 3535: The following sample contains non-settleable particulate matter which clogged the solid-phase extraction column: SC-203-B (320-56867-1). Method Code: 3535 PFC W preparation batch 320-344577

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

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56867-1

Date Collected: 12/05/19 16:00

Matrix: Water

Date Received: 12/07/19 09:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.1	J	19	1.8	ng/L		12/11/19 05:18	12/11/19 23:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorobutanesulfonic acid (PFBS)	4.9		1.9	0.19	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorodecanoic acid (PFDA)	3.1		1.9	0.30	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluoroheptanoic acid (PFHpA)	110		1.9	0.24	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorohexanesulfonic acid (PFHxS)	49	B	1.9	0.16	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorohexanoic acid (PFHxA)	270		1.9	0.55	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorononanoic acid (PFNA)	73		1.9	0.26	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorooctanesulfonic acid (PFOS)	93		1.9	0.51	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorooctanoic acid (PFOA)	1300	E	1.9	0.81	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		12/11/19 05:18	12/11/19 23:49	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		12/11/19 05:18	12/11/19 23:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	69		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C2 PFDoA	65		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C4 PFHpA	71		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C2 PFHxA	69		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C5 PFNA	69		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C4 PFOA	58		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C4 PFOS	69		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C2 PFTeDA	45		25 - 150	12/11/19 05:18	12/11/19 23:49	1
18O2 PFHxS	67		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C2 PFUnA	63		25 - 150	12/11/19 05:18	12/11/19 23:49	1
d3-NMeFOSAA	59		25 - 150	12/11/19 05:18	12/11/19 23:49	1
d5-NEtFOSAA	60		25 - 150	12/11/19 05:18	12/11/19 23:49	1
13C3 PFBS	66		25 - 150	12/11/19 05:18	12/11/19 23:49	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<18		190	18	ng/L		12/11/19 05:18	12/12/19 21:30	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<30		190	30	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorobutanesulfonic acid (PFBS)	4.6	J	19	1.9	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorodecanoic acid (PFDA)	<3.0		19	3.0	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorododecanoic acid (PFDoA)	<5.2		19	5.2	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluoroheptanoic acid (PFHpA)	110		19	2.4	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorohexanesulfonic acid (PFHxS)	48	B	19	1.6	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorohexanoic acid (PFHxA)	290		19	5.5	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorononanoic acid (PFNA)	73		19	2.6	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorooctanesulfonic acid (PFOS)	93		19	5.1	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorooctanoic acid (PFOA)	2100		19	8.1	ng/L		12/11/19 05:18	12/12/19 21:30	10

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56867-1

Date Collected: 12/05/19 16:00

Matrix: Water

Date Received: 12/07/19 09:40

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	<2.8		19	2.8	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluorotridecanoic acid (PFTriA)	<12		19	12	ng/L		12/11/19 05:18	12/12/19 21:30	10
Perfluoroundecanoic acid (PFUnA)	<10		19	10	ng/L		12/11/19 05:18	12/12/19 21:30	10
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFDA	59		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C2 PFDoA	55		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C4 PFHpA	57		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C2 PFHxA	56		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C5 PFNA	59		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C4 PFOA	58		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C4 PFOS	55		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C2 PFTeDA	39		25 - 150				12/11/19 05:18	12/12/19 21:30	10
18O2 PFHxS	55		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C2 PFUnA	58		25 - 150				12/11/19 05:18	12/12/19 21:30	10
d3-NMeFOSAA	54		25 - 150				12/11/19 05:18	12/12/19 21:30	10
d5-NEtFOSAA	59		25 - 150				12/11/19 05:18	12/12/19 21:30	10
13C3 PFBS	55		25 - 150				12/11/19 05:18	12/12/19 21:30	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-56867-2

Date Collected: 12/05/19 16:10

Matrix: Water

Date Received: 12/07/19 09:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		12/11/19 05:18	12/11/19 23:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluoroheptanoic acid (PFHpA)	0.67	J	1.9	0.24	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorohexanesulfonic acid (PFHxS)	0.39	J B	1.9	0.16	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorohexanoic acid (PFHxA)	2.9		1.9	0.55	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorononanoic acid (PFNA)	0.45	J	1.9	0.25	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorooctanesulfonic acid (PFOS)	0.61	J	1.9	0.51	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorooctanoic acid (PFOA)	11		1.9	0.80	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.9	0.27	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		12/11/19 05:18	12/11/19 23:59	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		12/11/19 05:18	12/11/19 23:59	1
<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	81		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C2 PFDoA	67		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C4 PFHpA	88		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C2 PFHxA	86		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C5 PFNA	83		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C4 PFOA	86		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C4 PFOS	78		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C2 PFTeDA	35		25 - 150				12/11/19 05:18	12/11/19 23:59	1
18O2 PFHxS	82		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C2 PFUnA	75		25 - 150				12/11/19 05:18	12/11/19 23:59	1
d3-NMeFOSAA	68		25 - 150				12/11/19 05:18	12/11/19 23:59	1
d5-NEtFOSAA	71		25 - 150				12/11/19 05:18	12/11/19 23:59	1
13C3 PFBS	81		25 - 150				12/11/19 05:18	12/11/19 23:59	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-56867-1	SC-203-B	69	65	71	69	69	58	69	45
320-56867-1 - DL	SC-203-B	59	55	57	56	59	58	55	39
320-56867-2	SC-503-B	81	67	88	86	83	86	78	35
LCS 320-344577/2-A	Lab Control Sample	83	82	86	83	82	84	81	79
LCSD 320-344577/3-A	Lab Control Sample Dup	90	91	93	92	86	89	90	86
MB 320-344577/1-A	Method Blank	80	75	85	81	80	82	79	74

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)	13C3-PFBS (25-150)
320-56867-1	SC-203-B	67	63	59	60	66
320-56867-1 - DL	SC-203-B	55	58	54	59	55
320-56867-2	SC-503-B	82	75	68	71	81
LCS 320-344577/2-A	Lab Control Sample	82	81	69	73	80
LCSD 320-344577/3-A	Lab Control Sample Dup	93	88	81	78	88
MB 320-344577/1-A	Method Blank	81	75	70	72	76

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA
- 13C3-PFBS = 13C3 PFBS

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-344577/1-A
Matrix: Water
Analysis Batch: 344840

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 344577

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		12/11/19 05:18	12/11/19 21:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.323	J	2.0	0.17	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/11/19 05:18	12/11/19 21:53	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/11/19 05:18	12/11/19 21:53	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	80		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C2 PFDoA	75		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C4 PFHpA	85		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C2 PFHxA	81		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C5 PFNA	80		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C4 PFOA	82		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C4 PFOS	79		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C2 PFTeDA	74		25 - 150	12/11/19 05:18	12/11/19 21:53	1
18O2 PFHxS	81		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C2 PFUnA	75		25 - 150	12/11/19 05:18	12/11/19 21:53	1
d3-NMeFOSAA	70		25 - 150	12/11/19 05:18	12/11/19 21:53	1
d5-NEtFOSAA	72		25 - 150	12/11/19 05:18	12/11/19 21:53	1
13C3 PFBS	76		25 - 150	12/11/19 05:18	12/11/19 21:53	1

Lab Sample ID: LCS 320-344577/2-A
Matrix: Water
Analysis Batch: 344840

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 344577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.2		ng/L		103	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.9		ng/L		107	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		101	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	39.9		ng/L		100	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	41.1		ng/L		103	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.8		ng/L		98	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	39.9		ng/L		100	73 - 133

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

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

Lab Sample ID: LCS 320-344577/2-A
Matrix: Water
Analysis Batch: 344840

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 344577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	41.2		ng/L		103	75 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	36.3		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	39.6		ng/L		99	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	39.3		ng/L		98	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	42.8		ng/L		107	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	37.6		ng/L		94	68 - 128
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	83		25 - 150				
13C2 PFDoA	82		25 - 150				
13C4 PFHpA	86		25 - 150				
13C2 PFHxA	83		25 - 150				
13C5 PFNA	82		25 - 150				
13C4 PFOA	84		25 - 150				
13C4 PFOS	81		25 - 150				
13C2 PFTeDA	79		25 - 150				
18O2 PFHxS	82		25 - 150				
13C2 PFUnA	81		25 - 150				
d3-NMeFOSAA	69		25 - 150				
d5-NEFOSAA	73		25 - 150				
13C3 PFBS	80		25 - 150				

Lab Sample ID: LCSD 320-344577/3-A
Matrix: Water
Analysis Batch: 344840

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 344577

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.3		ng/L		103	76 - 136	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.4		ng/L		104	76 - 136	4	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.6		ng/L		101	67 - 127	1	30
Perfluorodecanoic acid (PFDA)	40.0	40.2		ng/L		101	76 - 136	2	30
Perfluorododecanoic acid (PFDoA)	40.0	39.4		ng/L		98	71 - 131	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.9		ng/L		102	72 - 132	0	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.5		ng/L		92	59 - 119	7	30
Perfluorohexanoic acid (PFHxA)	40.0	39.2		ng/L		98	73 - 133	2	30
Perfluorononanoic acid (PFNA)	40.0	41.5		ng/L		104	75 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	35.7		ng/L		96	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	40.0	40.9		ng/L		102	70 - 130	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.2		ng/L		96	70 - 130	3	30
Perfluorotridecanoic acid (PFTriA)	40.0	42.2		ng/L		105	71 - 131	1	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

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

Lab Sample ID: LCSD 320-344577/3-A
Matrix: Water
Analysis Batch: 344840

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 344577

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	37.2		ng/L		93	68 - 128	1	30
	LCS	D	L						
	Recovery	Qual	SD						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C2 PFDA	90		25 - 150						
13C2 PFDoA	91		25 - 150						
13C4 PFHpA	93		25 - 150						
13C2 PFHxA	92		25 - 150						
13C5 PFNA	86		25 - 150						
13C4 PFOA	89		25 - 150						
13C4 PFOS	90		25 - 150						
13C2 PFTeDA	86		25 - 150						
18O2 PFHxS	93		25 - 150						
13C2 PFUnA	88		25 - 150						
d3-NMeFOSAA	81		25 - 150						
d5-NEtFOSAA	78		25 - 150						
13C3 PFBS	88		25 - 150						



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

LCMS

Prep Batch: 344577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56867-1 - DL	SC-203-B	Total/NA	Water	3535	
320-56867-1	SC-203-B	Total/NA	Water	3535	
320-56867-2	SC-503-B	Total/NA	Water	3535	
MB 320-344577/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-344577/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-344577/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 344840

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56867-1	SC-203-B	Total/NA	Water	537 (modified)	344577
320-56867-2	SC-503-B	Total/NA	Water	537 (modified)	344577
MB 320-344577/1-A	Method Blank	Total/NA	Water	537 (modified)	344577
LCS 320-344577/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	344577
LCSD 320-344577/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	344577

Analysis Batch: 345306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-56867-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	344577

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-56867-1

Date Collected: 12/05/19 16:00

Matrix: Water

Date Received: 12/07/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.3 mL	10 mL	344577	12/11/19 05:18	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			344840	12/11/19 23:49	JRM	TAL SAC
Total/NA	Prep	3535	DL		262.3 mL	10 mL	344577	12/11/19 05:18	AF	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			345306	12/12/19 21:30	P1N	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-56867-2

Date Collected: 12/05/19 16:10

Matrix: Water

Date Received: 12/07/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.4 mL	10 mL	344577	12/11/19 05:18	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1			344840	12/11/19 23:59	JRM	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-56867-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-56867-1	SC-203-B	Water	12/05/19 16:00	12/07/19 09:40	
320-56867-2	SC-503-B	Water	12/05/19 16:10	12/07/19 09:40	

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


Chain of Custody Record

Euofrins TestAmerica, Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

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

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Lisa Rutkowski		Site Contact:		
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandie Fredrick		
126 North Jefferson Street, Suite 400		Tel/Fax: N/A		Carrier: FedEx		
Milwaukee, WI 53202		Analysis Turnaround Time		Date: _____		
Phone _____		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS		COC No: _____ of _____ COCs		
FAX _____		TAT if different from Below		Sampler: _____		
Project Name: Marinette, WI		<input type="checkbox"/> 2 weeks		For Lab Use Only:		
Site: Marinette, WI		<input checked="" type="checkbox"/> 1 week		Walk-in Client:		
P O # 30015296.00006 (WPDES)		<input type="checkbox"/> 2 days		Lab Sampling:		
		<input type="checkbox"/> 1 day		Lab Project Number		
				50016846		
Sample Identification	Sample Date	Sample Time	Sample Type (E-Comp, G-Grab)	Matrix	# of Cont.	Sample Specific Notes:
SC-203-B	1/15	1100	G	W	2	 320-56867 Chain of Custody
SC-503-B	1/15	1100	G	W	2	
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: Level 2 QA/QC, Questions call Jennifer Bennett. WPDES: LOD/LOQ TAT: 5 Day						
Relinquished by: _____		Date/Time: 1/16/19		Received by: Susan Johnson		Date/Time: 12/17/19 - 9:40
Relinquished by: _____		Date/Time: _____		Received by: _____		Date/Time: _____
Relinquished by: _____		Date/Time: _____		Received in Laboratory by: _____		Date/Time: _____



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-56867-1

Login Number: 56867

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

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.	N/A	
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	
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	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-57126-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



*Authorized for release by:
12/24/2019 4:23:34 PM*

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

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Qualifiers

LCMS

Qualifier	Qualifier Description
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.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Job ID: 320-57126-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-57126-1

Comments

No additional comments.

Receipt

The samples were received on 12/17/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

LCMS

Method 537 (modified): The transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

Method 537 (modified): Results for sample SC-203-B (320-57126-1) 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

Method 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following samples exceeded the instrument calibration range: SC-203-B (320-57126-1). 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.

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 320-346512. 320-346512 Method: 3535 PFC-W

Method 3535: The following samples were light orange and contained particulates at the bottom of the bottle prior to extraction: SC-203-B (320-57126-1) . 320-346512 Method: 3535 PFC-W

Method 3535: During the solid phase extraction process, the following sample had non- settable particulates which clogged the extraction column: SC-503-B (320-57126-2). 320-346512 Method: 3535 PFC-W

Method 3535: The following sample is slightly yellow after extraction: SC-203-B (320-57126-1) 320-346512 Method: 3535 PFC_W

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57126-1

Date Collected: 12/14/19 14:10

Matrix: Water

Date Received: 12/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	J	18	1.7	ng/L		12/19/19 06:32	12/21/19 13:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.8		18	2.8	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorobutanesulfonic acid (PFBS)	5.9		1.8	0.18	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorodecanoic acid (PFDA)	4.6		1.8	0.28	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluoroheptanoic acid (PFHpA)	140		1.8	0.23	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorohexanesulfonic acid (PFHxS)	63	B	1.8	0.15	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorohexanoic acid (PFHxA)	350		1.8	0.53	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorononanoic acid (PFNA)	100		1.8	0.25	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorooctanesulfonic acid (PFOS)	140		1.8	0.49	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorooctanoic acid (PFOA)	1600	E	1.8	0.77	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		12/19/19 06:32	12/21/19 13:23	1
Perfluoroundecanoic acid (PFUnA)	1.5	J	1.8	1.0	ng/L		12/19/19 06:32	12/21/19 13:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	97		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C2 PFDoA	92		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C4 PFHpA	94		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C2 PFHxA	89		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C5 PFNA	95		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C4 PFOA	82		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C4 PFOS	90		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C2 PFTeDA	75		25 - 150	12/19/19 06:32	12/21/19 13:23	1
18O2 PFHxS	90		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C2 PFUnA	97		25 - 150	12/19/19 06:32	12/21/19 13:23	1
13C3 PFBS	90		25 - 150	12/19/19 06:32	12/21/19 13:23	1
d3-NMeFOSAA	87		25 - 150	12/19/19 06:32	12/21/19 13:23	1
d5-NEtFOSAA	90		25 - 150	12/19/19 06:32	12/21/19 13:23	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<17		180	17	ng/L		12/19/19 06:32	12/23/19 01:02	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<28		180	28	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorobutanesulfonic acid (PFBS)	8.9	J	18	1.8	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorodecanoic acid (PFDA)	3.7	J	18	2.8	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorododecanoic acid (PFDoA)	<5.0		18	5.0	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluoroheptanoic acid (PFHpA)	140		18	2.3	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorohexanesulfonic acid (PFHxS)	63	B	18	1.5	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorohexanoic acid (PFHxA)	380		18	5.3	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorononanoic acid (PFNA)	100		18	2.5	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorooctanesulfonic acid (PFOS)	140		18	4.9	ng/L		12/19/19 06:32	12/23/19 01:02	10

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57126-1

Date Collected: 12/14/19 14:10

Matrix: Water

Date Received: 12/17/19 09:20

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2600		18	7.7	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorotetradecanoic acid (PFTeA)	<2.6		18	2.6	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluorotridecanoic acid (PFTrIA)	<12		18	12	ng/L		12/19/19 06:32	12/23/19 01:02	10
Perfluoroundecanoic acid (PFUnA)	<10		18	10	ng/L		12/19/19 06:32	12/23/19 01:02	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	83		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C2 PFDoA	80		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C4 PFHpA	83		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C2 PFHxA	78		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C5 PFNA	83		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C4 PFOA	80		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C4 PFOS	74		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C2 PFTeDA	62		25 - 150				12/19/19 06:32	12/23/19 01:02	10
18O2 PFHxS	70		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C2 PFUnA	80		25 - 150				12/19/19 06:32	12/23/19 01:02	10
13C3 PFBS	75		25 - 150				12/19/19 06:32	12/23/19 01:02	10
d3-NMeFOSAA	85		25 - 150				12/19/19 06:32	12/23/19 01:02	10
d5-NEtFOSAA	84		25 - 150				12/19/19 06:32	12/23/19 01:02	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-57126-2

Date Collected: 12/14/19 14:20

Matrix: Water

Date Received: 12/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		18	1.7	ng/L		12/19/19 06:32	12/21/19 13:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.8		18	2.8	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	1.8	0.15	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorooctanoic acid (PFOA)	<0.76		1.8	0.76	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluorotridecanoic acid (PFTrIA)	<1.2		1.8	1.2	ng/L		12/19/19 06:32	12/21/19 13:33	1
Perfluoroundecanoic acid (PFUnA)	<0.99		1.8	0.99	ng/L		12/19/19 06:32	12/21/19 13:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	102		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C2 PFDoA	100		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C4 PFHpA	97		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C2 PFHxA	94		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C5 PFNA	103		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C4 PFOA	99		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C4 PFOS	98		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C2 PFTeDA	99		25 - 150				12/19/19 06:32	12/21/19 13:33	1
18O2 PFHxS	97		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C2 PFUnA	99		25 - 150				12/19/19 06:32	12/21/19 13:33	1
13C3 PFBS	98		25 - 150				12/19/19 06:32	12/21/19 13:33	1
d3-NMeFOSAA	89		25 - 150				12/19/19 06:32	12/21/19 13:33	1
d5-NEtFOSAA	99		25 - 150				12/19/19 06:32	12/21/19 13:33	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-57126-1	SC-203-B	97	92	94	89	95	82	90	75
320-57126-1 - DL	SC-203-B	83	80	83	78	83	80	74	62
320-57126-2	SC-503-B	102	100	97	94	103	99	98	99
LCS 320-346512/2-A	Lab Control Sample	100	99	99	90	98	97	98	102
LCSD 320-346512/3-A	Lab Control Sample Dup	100	97	95	88	97	98	99	112
MB 320-346512/1-A	Method Blank	93	94	90	81	95	94	92	96

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	3C3-PFBs (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)
320-57126-1	SC-203-B	90	97	90	87	90
320-57126-1 - DL	SC-203-B	70	80	75	85	84
320-57126-2	SC-503-B	97	99	98	89	99
LCS 320-346512/2-A	Lab Control Sample	94	99	93	94	98
LCSD 320-346512/3-A	Lab Control Sample Dup	95	100	95	95	93
MB 320-346512/1-A	Method Blank	88	95	89	91	97

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- 13C3-PFBs = 13C3 PFBS
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-346512/1-A
Matrix: Water
Analysis Batch: 346989

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 346512

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		12/19/19 06:32	12/21/19 09:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.325	J	2.0	0.17	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/19/19 06:32	12/21/19 09:22	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/19/19 06:32	12/21/19 09:22	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	93		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C2 PFDoA	94		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C4 PFHpA	90		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C2 PFHxA	81		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C5 PFNA	95		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C4 PFOA	94		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C4 PFOS	92		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C2 PFTeDA	96		25 - 150	12/19/19 06:32	12/21/19 09:22	1
18O2 PFHxS	88		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C2 PFUnA	95		25 - 150	12/19/19 06:32	12/21/19 09:22	1
13C3 PFBS	89		25 - 150	12/19/19 06:32	12/21/19 09:22	1
d3-NMeFOSAA	91		25 - 150	12/19/19 06:32	12/21/19 09:22	1
d5-NEtFOSAA	97		25 - 150	12/19/19 06:32	12/21/19 09:22	1

Lab Sample ID: LCS 320-346512/2-A
Matrix: Water
Analysis Batch: 346989

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 346512

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.4		ng/L		99	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.2		ng/L		108	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	37.3		ng/L		105	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	41.7		ng/L		104	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	42.1		ng/L		105	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	42.1		ng/L		105	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.6		ng/L		103	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	45.1		ng/L		113	73 - 133

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

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

Lab Sample ID: LCS 320-346512/2-A
Matrix: Water
Analysis Batch: 346989

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 346512

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	45.9		ng/L		115	75 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	39.2		ng/L		106	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	42.3		ng/L		106	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	41.7		ng/L		104	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	42.6		ng/L		107	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	35.8		ng/L		90	68 - 128

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFDA	100		25 - 150
13C2 PFDoA	99		25 - 150
13C4 PFHpA	99		25 - 150
13C2 PFHxA	90		25 - 150
13C5 PFNA	98		25 - 150
13C4 PFOA	97		25 - 150
13C4 PFOS	98		25 - 150
13C2 PFTeDA	102		25 - 150
18O2 PFHxS	94		25 - 150
13C2 PFUnA	99		25 - 150
13C3 PFBS	93		25 - 150
d3-NMeFOSAA	94		25 - 150
d5-NEtFOSAA	98		25 - 150

Lab Sample ID: LCSD 320-346512/3-A
Matrix: Water
Analysis Batch: 346989

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 346512

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.4		ng/L		106	76 - 136	7	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.8		ng/L		92	76 - 136	16	30
Perfluorobutanesulfonic acid (PFBS)	35.4	39.0		ng/L		110	67 - 127	5	30
Perfluorodecanoic acid (PFDA)	40.0	43.2		ng/L		108	76 - 136	3	30
Perfluorododecanoic acid (PFDoA)	40.0	41.5		ng/L		104	71 - 131	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.8		ng/L		109	72 - 132	4	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.3		ng/L		100	59 - 119	4	30
Perfluorohexanoic acid (PFHxA)	40.0	49.1		ng/L		123	73 - 133	8	30
Perfluorononanoic acid (PFNA)	40.0	46.5		ng/L		116	75 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	39.4		ng/L		106	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	43.0		ng/L		107	70 - 130	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	39.5		ng/L		99	70 - 130	5	30
Perfluorotridecanoic acid (PFTriA)	40.0	44.9		ng/L		112	71 - 131	5	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

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

Lab Sample ID: LCSD 320-346512/3-A
Matrix: Water
Analysis Batch: 346989

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 346512

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	37.6		ng/L		94	68 - 128	5	30
	LCS	D	L						
	Recovery	Qual	SD						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C2 PFDA	100		25 - 150						
13C2 PFDoA	97		25 - 150						
13C4 PFHpA	95		25 - 150						
13C2 PFHxA	88		25 - 150						
13C5 PFNA	97		25 - 150						
13C4 PFOA	98		25 - 150						
13C4 PFOS	99		25 - 150						
13C2 PFTeDA	112		25 - 150						
18O2 PFHxS	95		25 - 150						
13C2 PFUnA	100		25 - 150						
13C3 PFBS	95		25 - 150						
d3-NMeFOSAA	95		25 - 150						
d5-NEtFOSAA	93		25 - 150						

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

LCMS

Prep Batch: 346512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57126-1	SC-203-B	Total/NA	Water	3535	
320-57126-1 - DL	SC-203-B	Total/NA	Water	3535	
320-57126-2	SC-503-B	Total/NA	Water	3535	
MB 320-346512/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-346512/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-346512/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 346989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57126-1	SC-203-B	Total/NA	Water	537 (modified)	346512
320-57126-2	SC-503-B	Total/NA	Water	537 (modified)	346512
MB 320-346512/1-A	Method Blank	Total/NA	Water	537 (modified)	346512
LCS 320-346512/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	346512
LCSD 320-346512/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	346512

Analysis Batch: 347248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57126-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	346512

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57126-1

Date Collected: 12/14/19 14:10

Matrix: Water

Date Received: 12/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			274.3 mL	10.0 mL	346512	12/19/19 06:32	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			346989	12/21/19 13:23	RS1	TAL SAC
Total/NA	Prep	3535	DL		274.3 mL	10.0 mL	346512	12/19/19 06:32	MTN	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			347248	12/23/19 01:02	RS1	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-57126-2

Date Collected: 12/14/19 14:20

Matrix: Water

Date Received: 12/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			278.6 mL	10.0 mL	346512	12/19/19 06:32	MTN	TAL SAC
Total/NA	Analysis	537 (modified)		1			346989	12/21/19 13:33	RS1	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57126-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-57126-1	SC-203-B	Water	12/14/19 14:10	12/17/19 09:20	
320-57126-2	SC-503-B	Water	12/14/19 14:20	12/17/19 09:20	

- 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: _____

Project Manager: Lisa Rutkowski			Site Contact: Sandie Fredrick		Date: _____	
Email: N/A			Lab Contact: Sandie Fredrick		Carrier: FedEx	
Tel/Fax: N/A			Perform MS/MSD (Y/N)		COC No: _____ of _____ COCs	
Analysis Turnaround Time			Filtered Sample (Y/N)		Sampler: _____	
<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input type="checkbox"/> 1 day			Comounds)		For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____	
Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Lab Project Number 50016846	
12/14	14:10	G	W	2	Sample Specific Notes:	
12/14	14:20	G	W	2		
				320-57126 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.						
Relinquished by: _____ Relinquished by: _____ Relinquished by: _____						
Custody Seal No.:			Cooler Temp. (°C):		Therm ID No.:	
Company: ARCADIS			Obs'd: 2-6		Corr'd: 2-6	
Company:			Received by: <i>[Signature]</i>		Company: eta SAC	
Company:			Date/Time: 12/16/19		Date/Time: 12/17/19	
Company:			Received in Laboratory by:		Date/Time: _____	
Company:			Received in Laboratory by:		Date/Time: _____	

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

Return to Client Disposal by Lab Archive for _____ Months

Unknown

Poison B

Flammable Skin Irritant

Special Instructions/QC Requirements & Comments:
Level 2 QA/QC. Questions call Jennifer Bennett.
WPDES: LOD/LOQ
TAT: 5 Day

Custody Seals Intact? Yes No



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-57126-1

Login Number: 57126

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Kintaudi, Pauline W

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	738163
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	
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	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-57222-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/24/2019 4:05:07 PM

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

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Qualifiers

LCMS

Qualifier	Qualifier Description
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.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Job ID: 320-57222-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-57222-1

Comments

No additional comments.

Receipt

The samples were received on 12/19/2019 11:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.4° C.

LCMS

Method 537 (modified): The concentration of Perfluorohexanoic acid (PFHxA) and Perfluorooctanoic acid (PFOA) associated with the following samples exceeded the instrument calibration range: SC-203-B (320-57222-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were re-analyzed at a dilution, and both sets of data were reported per client requirements.

Method 537 (modified): Results for samples SC-203-B (320-57222-1) 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

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 320-346922. 3535_PFC Aqueous

Method 3535: Samples are tan in color, but clear. SC-203-B (320-57222-1) and SC-503-B (320-57222-2) preparation batch 320-346922 3535_PFCAqueous

Method 3535: Samples had a small amount of brown sediment. SC-203-B (320-57222-1) preparation batch 320-346922 3535_PFC Aqueous

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

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57222-1

Date Collected: 12/18/19 09:20

Matrix: Water

Date Received: 12/19/19 11:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.2	J	17	1.6	ng/L		12/20/19 15:04	12/23/19 00:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.6		17	2.6	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorobutanesulfonic acid (PFBS)	5.5		1.7	0.17	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorodecanoic acid (PFDA)	4.5		1.7	0.26	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluoroheptanoic acid (PFHpA)	150		1.7	0.21	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorohexanesulfonic acid (PFHxS)	71	B	1.7	0.14	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorohexanoic acid (PFHxA)	390	E	1.7	0.49	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorononanoic acid (PFNA)	110		1.7	0.23	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorooctanesulfonic acid (PFOS)	150		1.7	0.46	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorooctanoic acid (PFOA)	2100	E	1.7	0.72	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		12/20/19 15:04	12/23/19 00:01	1
Perfluoroundecanoic acid (PFUnA)	1.6	J	1.7	0.93	ng/L		12/20/19 15:04	12/23/19 00:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	128		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C2 PFDoA	109		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C4 PFHpA	121		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C2 PFHxA	103		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C5 PFNA	120		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C4 PFOA	95		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C4 PFOS	113		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C2 PFTeDA	90		25 - 150	12/20/19 15:04	12/23/19 00:01	1
18O2 PFHxS	107		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C2 PFUnA	113		25 - 150	12/20/19 15:04	12/23/19 00:01	1
13C3 PFBS	110		25 - 150	12/20/19 15:04	12/23/19 00:01	1
d3-NMeFOSAA	103		25 - 150	12/20/19 15:04	12/23/19 00:01	1
d5-NEtFOSAA	108		25 - 150	12/20/19 15:04	12/23/19 00:01	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<16		170	16	ng/L		12/20/19 15:04	12/23/19 19:54	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<26		170	26	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorobutanesulfonic acid (PFBS)	6.7	J	17	1.7	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorodecanoic acid (PFDA)	3.4	J	17	2.6	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorododecanoic acid (PFDoA)	<4.7		17	4.7	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluoroheptanoic acid (PFHpA)	150		17	2.1	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorohexanesulfonic acid (PFHxS)	68	B	17	1.4	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorohexanoic acid (PFHxA)	380		17	4.9	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorononanoic acid (PFNA)	100		17	2.3	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorooctanesulfonic acid (PFOS)	140		17	4.6	ng/L		12/20/19 15:04	12/23/19 19:54	10

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57222-1

Date Collected: 12/18/19 09:20

Matrix: Water

Date Received: 12/19/19 11:40

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2800		17	7.2	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorotetradecanoic acid (PFTeA)	<2.5		17	2.5	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluorotridecanoic acid (PFTrIA)	<11		17	11	ng/L		12/20/19 15:04	12/23/19 19:54	10
Perfluoroundecanoic acid (PFUnA)	<9.3		17	9.3	ng/L		12/20/19 15:04	12/23/19 19:54	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	89		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C2 PFDoA	74		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C4 PFHpA	102		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C2 PFHxA	101		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C5 PFNA	101		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C4 PFOA	91		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C4 PFOS	98		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C2 PFTeDA	66		25 - 150				12/20/19 15:04	12/23/19 19:54	10
18O2 PFHxS	95		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C2 PFUnA	85		25 - 150				12/20/19 15:04	12/23/19 19:54	10
13C3 PFBS	98		25 - 150				12/20/19 15:04	12/23/19 19:54	10
d3-NMeFOSAA	97		25 - 150				12/20/19 15:04	12/23/19 19:54	10
d5-NEtFOSAA	99		25 - 150				12/20/19 15:04	12/23/19 19:54	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-57222-2

Date Collected: 12/18/19 09:30

Matrix: Water

Date Received: 12/19/19 11:40

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<1.6		17	1.6	ng/L		12/20/19 15:04	12/23/19 20:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.7		17	2.7	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.7	0.21	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorohexanesulfonic acid (PFHxS)	0.29	J B	1.7	0.15	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorohexanoic acid (PFHxA)	5.3		1.7	0.50	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorononanoic acid (PFNA)	0.33	J	1.7	0.23	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorooctanoic acid (PFOA)	22		1.7	0.73	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		12/20/19 15:04	12/23/19 20:34	1
Perfluoroundecanoic acid (PFUnA)	<0.94		1.7	0.94	ng/L		12/20/19 15:04	12/23/19 20:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	97		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C2 PFDoA	84		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C4 PFHpA	102		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C2 PFHxA	102		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C5 PFNA	97		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C4 PFOA	97		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C4 PFOS	94		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C2 PFTeDA	75		25 - 150				12/20/19 15:04	12/23/19 20:34	1
18O2 PFHxS	95		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C2 PFUnA	91		25 - 150				12/20/19 15:04	12/23/19 20:34	1
13C3 PFBS	98		25 - 150				12/20/19 15:04	12/23/19 20:34	1
d3-NMeFOSAA	96		25 - 150				12/20/19 15:04	12/23/19 20:34	1
d5-NETFOSAA	98		25 - 150				12/20/19 15:04	12/23/19 20:34	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-57222-1	SC-203-B	128	109	121	103	120	95	113	90
320-57222-1 - DL	SC-203-B	89	74	102	101	101	91	98	66
320-57222-2	SC-503-B	97	84	102	102	97	97	94	75
LCS 320-346922/2-A	Lab Control Sample	103	98	97	95	100	96	92	93
LCSD 320-346922/3-A	Lab Control Sample Dup	101	100	97	97	100	100	91	95
MB 320-346922/1-A	Method Blank	100	105	96	96	99	95	92	92

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	3C3-PFB (25-150)	d3-NMeFOS (25-150)	d5-NEtFOS (25-150)
320-57222-1	SC-203-B	107	113	110	103	108
320-57222-1 - DL	SC-203-B	95	85	98	97	99
320-57222-2	SC-503-B	95	91	98	96	98
LCS 320-346922/2-A	Lab Control Sample	85	102	90	90	87
LCSD 320-346922/3-A	Lab Control Sample Dup	87	101	90	93	90
MB 320-346922/1-A	Method Blank	90	96	86	89	88

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- 13C3-PFB = 13C3 PFBS
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-346922/1-A
Matrix: Water
Analysis Batch: 347017

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 346922

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		12/20/19 15:04	12/22/19 23:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorohexanesulfonic acid (PFHxS)	0.351	J	2.0	0.17	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/20/19 15:04	12/22/19 23:12	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/20/19 15:04	12/22/19 23:12	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C2 PFDoA	105		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C4 PFHpA	96		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C2 PFHxA	96		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C5 PFNA	99		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C4 PFOA	95		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C4 PFOS	92		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C2 PFTeDA	92		25 - 150	12/20/19 15:04	12/22/19 23:12	1
18O2 PFHxS	90		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C2 PFUnA	96		25 - 150	12/20/19 15:04	12/22/19 23:12	1
13C3 PFBS	86		25 - 150	12/20/19 15:04	12/22/19 23:12	1
d3-NMeFOSAA	89		25 - 150	12/20/19 15:04	12/22/19 23:12	1
d5-NEtFOSAA	88		25 - 150	12/20/19 15:04	12/22/19 23:12	1

Lab Sample ID: LCS 320-346922/2-A
Matrix: Water
Analysis Batch: 347017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 346922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	43.3		ng/L		108	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.6		ng/L		104	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	36.0		ng/L		102	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	41.4		ng/L		103	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	40.4		ng/L		101	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	40.8		ng/L		102	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.3		ng/L		100	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	40.1		ng/L		100	73 - 133

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

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

Lab Sample ID: LCS 320-346922/2-A
Matrix: Water
Analysis Batch: 347017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 346922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	40.3		ng/L		101	75 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	37.9		ng/L		102	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.0		ng/L		95	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	37.6		ng/L		94	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	37.0		ng/L		93	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	41.1		ng/L		103	68 - 128

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFDA	103		25 - 150
13C2 PFDoA	98		25 - 150
13C4 PFHpA	97		25 - 150
13C2 PFHxA	95		25 - 150
13C5 PFNA	100		25 - 150
13C4 PFOA	96		25 - 150
13C4 PFOS	92		25 - 150
13C2 PFTeDA	93		25 - 150
18O2 PFHxS	85		25 - 150
13C2 PFUnA	102		25 - 150
13C3 PFBS	90		25 - 150
d3-NMeFOSAA	90		25 - 150
d5-NEtFOSAA	87		25 - 150

Lab Sample ID: LCSD 320-346922/3-A
Matrix: Water
Analysis Batch: 347017

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 346922

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.6		ng/L		107	76 - 136	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.5		ng/L		99	76 - 136	5	30
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	67 - 127	1	30
Perfluorodecanoic acid (PFDA)	40.0	39.7		ng/L		99	76 - 136	4	30
Perfluorododecanoic acid (PFDoA)	40.0	40.7		ng/L		102	71 - 131	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	40.1		ng/L		100	72 - 132	2	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.8		ng/L		98	59 - 119	1	30
Perfluorohexanoic acid (PFHxA)	40.0	38.9		ng/L		97	73 - 133	3	30
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	75 - 135	1	30
Perfluorooctanesulfonic acid (PFOS)	37.1	37.6		ng/L		101	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	40.0	37.0		ng/L		93	70 - 130	2	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.1		ng/L		95	70 - 130	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	37.8		ng/L		94	71 - 131	2	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

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

Lab Sample ID: LCSD 320-346922/3-A
Matrix: Water
Analysis Batch: 347017

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 346922

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	40.7		ng/L		102	68 - 128	1	30
	LCS	D	L						
	SD	SD	SD						
	Recovery	Qualifier	Limits						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C2 PFDA	101		25 - 150						
13C2 PFDoA	100		25 - 150						
13C4 PFHpA	97		25 - 150						
13C2 PFHxA	97		25 - 150						
13C5 PFNA	100		25 - 150						
13C4 PFOA	100		25 - 150						
13C4 PFOS	91		25 - 150						
13C2 PFTeDA	95		25 - 150						
18O2 PFHxS	87		25 - 150						
13C2 PFUnA	101		25 - 150						
13C3 PFBS	90		25 - 150						
d3-NMeFOSAA	93		25 - 150						
d5-NEtFOSAA	90		25 - 150						



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

LCMS

Prep Batch: 346922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57222-1	SC-203-B	Total/NA	Water	3535	
320-57222-1 - DL	SC-203-B	Total/NA	Water	3535	
320-57222-2	SC-503-B	Total/NA	Water	3535	
MB 320-346922/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-346922/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-346922/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 347017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57222-1	SC-203-B	Total/NA	Water	537 (modified)	346922
MB 320-346922/1-A	Method Blank	Total/NA	Water	537 (modified)	346922
LCS 320-346922/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	346922
LCSD 320-346922/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	346922

Analysis Batch: 347413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57222-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	346922
320-57222-2	SC-503-B	Total/NA	Water	537 (modified)	346922

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57222-1

Date Collected: 12/18/19 09:20

Matrix: Water

Date Received: 12/19/19 11:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			295 mL	10.00 mL	346922	12/20/19 15:04	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			347017	12/23/19 00:01	AAR	TAL SAC
Total/NA	Prep	3535	DL		295 mL	10.00 mL	346922	12/20/19 15:04	JER	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			347413	12/23/19 19:54	S1M	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-57222-2

Date Collected: 12/18/19 09:30

Matrix: Water

Date Received: 12/19/19 11:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			291.7 mL	10.00 mL	346922	12/20/19 15:04	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			347413	12/23/19 20:34	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57222-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-57222-1	SC-203-B	Water	12/18/19 09:20	12/19/19 11:40	
320-57222-2	SC-503-B	Water	12/18/19 09:30	12/19/19 11:40	

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

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-57222-1

Login Number: 57222

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Thompson, Sarah W

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	738164
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	
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	



ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-57347-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
1/7/2020 3:24:40 PM

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

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Job ID: 320-57347-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-57347-1

Comments

No additional comments.

Receipt

The samples were received on 12/24/2019 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° C.

LCMS

Method 537 (modified): The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-348931 and analytical batch 320-349004 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeDA).

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-348931 and analytical batch 320-349004 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeDA). This analyte was 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 Perfluorooctanoic acid (PFOA) and Perfluorohexanoic acid (PFHxA) associated with the following sample exceeded the instrument calibration range: SC-203-B (320-57347-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The sample was analyzed at a dilution with results within calibration range. Both sets of data were reported.

Method 537 (modified): Results for sample SC-203-B (320-57347-1) 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.

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 SC-203-B (320-57347-1) was a yellow color after elution. Method code: 3535_PFC Matrix: water Prep batch: 320-348931

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-348931. Method code: 3535_PFC Matrix: water Prep batch: 320-348931

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

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57347-1

Date Collected: 12/23/19 08:45

Matrix: Water

Date Received: 12/24/19 10:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.6	J	17	1.6	ng/L		01/02/20 10:20	01/03/20 08:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.6		17	2.6	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorobutanesulfonic acid (PFBS)	5.3		1.7	0.17	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorodecanoic acid (PFDA)	3.8		1.7	0.26	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorododecanoic acid (PFDoA)	<0.46		1.7	0.46	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluoroheptanoic acid (PFHpA)	150		1.7	0.21	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorohexanesulfonic acid (PFHxS)	63	B	1.7	0.14	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorohexanoic acid (PFHxA)	370	E	1.7	0.48	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorononanoic acid (PFNA)	110		1.7	0.22	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorooctanesulfonic acid (PFOS)	130		1.7	0.45	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorooctanoic acid (PFOA)	2100	E	1.7	0.71	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorotetradecanoic acid (PFTeA)	<0.24	*	1.7	0.24	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluorotridecanoic acid (PFTriA)	<1.1		1.7	1.1	ng/L		01/02/20 10:20	01/03/20 08:42	1
Perfluoroundecanoic acid (PFUnA)	<0.92		1.7	0.92	ng/L		01/02/20 10:20	01/03/20 08:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	110		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C2 PFDoA	113		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C4 PFHpA	110		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C2 PFHxA	104		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C5 PFNA	112		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C4 PFOA	89		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C4 PFOS	143		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C2 PFTeDA	102		25 - 150	01/02/20 10:20	01/03/20 08:42	1
18O2 PFHxS	139		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C2 PFUnA	115		25 - 150	01/02/20 10:20	01/03/20 08:42	1
13C3 PFBS	138		25 - 150	01/02/20 10:20	01/03/20 08:42	1
d3-NMeFOSAA	122		25 - 150	01/02/20 10:20	01/03/20 08:42	1
d5-NEtFOSAA	123		25 - 150	01/02/20 10:20	01/03/20 08:42	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<16		170	16	ng/L		01/02/20 10:20	01/04/20 00:50	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<26		170	26	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorobutanesulfonic acid (PFBS)	6.8	J	17	1.7	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorodecanoic acid (PFDA)	<2.6		17	2.6	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorododecanoic acid (PFDoA)	<4.6		17	4.6	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluoroheptanoic acid (PFHpA)	150		17	2.1	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorohexanesulfonic acid (PFHxS)	62	B	17	1.4	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorohexanoic acid (PFHxA)	370		17	4.8	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorononanoic acid (PFNA)	110		17	2.2	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorooctanesulfonic acid (PFOS)	130		17	4.5	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorooctanoic acid (PFOA)	2900		17	7.1	ng/L		01/02/20 10:20	01/04/20 00:50	10

Eurofins TestAmerica, Sacramento

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57347-1

Date Collected: 12/23/19 08:45

Matrix: Water

Date Received: 12/24/19 10:05

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	<2.4	*	17	2.4	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluorotridecanoic acid (PFTriA)	<11		17	11	ng/L		01/02/20 10:20	01/04/20 00:50	10
Perfluoroundecanoic acid (PFUnA)	<9.2		17	9.2	ng/L		01/02/20 10:20	01/04/20 00:50	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	89		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C2 PFDoA	80		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C4 PFHpA	95		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C2 PFHxA	98		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C5 PFNA	86		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C4 PFOA	86		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C4 PFOS	112		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C2 PFTeDA	78		25 - 150				01/02/20 10:20	01/04/20 00:50	10
18O2 PFHxS	119		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C2 PFUnA	85		25 - 150				01/02/20 10:20	01/04/20 00:50	10
13C3 PFBS	114		25 - 150				01/02/20 10:20	01/04/20 00:50	10
d3-NMeFOSAA	78		25 - 150				01/02/20 10:20	01/04/20 00:50	10
d5-NEtFOSAA	76		25 - 150				01/02/20 10:20	01/04/20 00:50	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Client Sample ID: SC-503-B

Lab Sample ID: 320-57347-2

Date Collected: 12/23/19 08:30

Matrix: Water

Date Received: 12/24/19 10:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<1.6		17	1.6	ng/L		01/02/20 10:20	01/03/20 08:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.6		17	2.6	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorodecanoic acid (PFDA)	<0.26		1.7	0.26	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	1.7	0.14	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorohexanoic acid (PFHxA)	<0.49		1.7	0.49	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorooctanoic acid (PFOA)	<0.72		1.7	0.72	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorotetradecanoic acid (PFTeA)	<0.25 *		1.7	0.25	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		01/02/20 10:20	01/03/20 08:50	1
Perfluoroundecanoic acid (PFUnA)	<0.94		1.7	0.94	ng/L		01/02/20 10:20	01/03/20 08:50	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	78		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C2 PFDoA	88		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C4 PFHpA	95		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C2 PFHxA	92		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C5 PFNA	81		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C4 PFOA	87		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C4 PFOS	107		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C2 PFTeDA	81		25 - 150				01/02/20 10:20	01/03/20 08:50	1
18O2 PFHxS	111		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C2 PFUnA	79		25 - 150				01/02/20 10:20	01/03/20 08:50	1
13C3 PFBS	105		25 - 150				01/02/20 10:20	01/03/20 08:50	1
d3-NMeFOSAA	90		25 - 150				01/02/20 10:20	01/03/20 08:50	1
d5-NETFOSAA	87		25 - 150				01/02/20 10:20	01/03/20 08:50	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-57347-1	SC-203-B	110	113	110	104	112	89	143	102
320-57347-1 - DL	SC-203-B	89	80	95	98	86	86	112	78
320-57347-2	SC-503-B	78	88	95	92	81	87	107	81
LCS 320-348931/2-A	Lab Control Sample	87	96	95	94	90	91	110	47
LCSD 320-348931/3-A	Lab Control Sample Dup	99	90	94	100	90	88	117	92
MB 320-348931/1-A	Method Blank	91	92	97	95	85	86	114	89

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	3C3-PFB: (25-150)	d3-NMeFOS: (25-150)	d5-NEtFOS: (25-150)
320-57347-1	SC-203-B	139	115	138	122	123
320-57347-1 - DL	SC-203-B	119	85	114	78	76
320-57347-2	SC-503-B	111	79	105	90	87
LCS 320-348931/2-A	Lab Control Sample	113	91	108	100	97
LCSD 320-348931/3-A	Lab Control Sample Dup	116	87	116	100	99
MB 320-348931/1-A	Method Blank	112	88	108	91	94

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- 13C3-PFBS = 13C3 PFBS
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-348931/1-A
Matrix: Water
Analysis Batch: 349004

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 348931

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		01/02/20 10:20	01/03/20 08:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorohexanesulfonic acid (PFHxS)	0.358	J	2.0	0.17	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		01/02/20 10:20	01/03/20 08:18	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		01/02/20 10:20	01/03/20 08:18	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	91		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C2 PFDoA	92		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C4 PFHpA	97		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C2 PFHxA	95		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C5 PFNA	85		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C4 PFOA	86		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C4 PFOS	114		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C2 PFTeDA	89		25 - 150	01/02/20 10:20	01/03/20 08:18	1
18O2 PFHxS	112		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C2 PFUnA	88		25 - 150	01/02/20 10:20	01/03/20 08:18	1
13C3 PFBS	108		25 - 150	01/02/20 10:20	01/03/20 08:18	1
d3-NMeFOSAA	91		25 - 150	01/02/20 10:20	01/03/20 08:18	1
d5-NEtFOSAA	94		25 - 150	01/02/20 10:20	01/03/20 08:18	1

Lab Sample ID: LCS 320-348931/2-A
Matrix: Water
Analysis Batch: 349004

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 348931

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	38.0		ng/L		95	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.2		ng/L		101	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	35.6		ng/L		101	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	39.1		ng/L		98	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	33.2		ng/L		83	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	37.1		ng/L		93	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.1		ng/L		96	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	40.7		ng/L		102	73 - 133

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

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

Lab Sample ID: LCS 320-348931/2-A
Matrix: Water
Analysis Batch: 349004

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 348931

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	75 - 135		
Perfluorooctanesulfonic acid (PFOS)	37.1	37.5		ng/L		101	70 - 130		
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	70 - 130		
Perfluorotetradecanoic acid (PFTeA)	40.0	76.9	*	ng/L		192	70 - 130		
Perfluorotridecanoic acid (PFTriA)	40.0	36.8		ng/L		92	71 - 131		
Perfluoroundecanoic acid (PFUnA)	40.0	35.6		ng/L		89	68 - 128		
		LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits						
13C2 PFDA	87		25 - 150						
13C2 PFDoA	96		25 - 150						
13C4 PFHpA	95		25 - 150						
13C2 PFHxA	94		25 - 150						
13C5 PFNA	90		25 - 150						
13C4 PFOA	91		25 - 150						
13C4 PFOS	110		25 - 150						
13C2 PFTeDA	47		25 - 150						
18O2 PFHxS	113		25 - 150						
13C2 PFUnA	91		25 - 150						
13C3 PFBS	108		25 - 150						
d3-NMeFOSAA	100		25 - 150						
d5-NEtFOSAA	97		25 - 150						

Lab Sample ID: LCSD 320-348931/3-A
Matrix: Water
Analysis Batch: 349004

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 348931

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD	
									RPD	Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.7		ng/L		99	76 - 136	4	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.3		ng/L		103	76 - 136	3	30	
Perfluorobutanesulfonic acid (PFBS)	35.4	35.4		ng/L		100	67 - 127	1	30	
Perfluorodecanoic acid (PFDA)	40.0	36.6		ng/L		92	76 - 136	7	30	
Perfluorododecanoic acid (PFDoA)	40.0	38.0		ng/L		95	71 - 131	13	30	
Perfluoroheptanoic acid (PFHpA)	40.0	41.1		ng/L		103	72 - 132	10	30	
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.3		ng/L		100	59 - 119	3	30	
Perfluorohexanoic acid (PFHxA)	40.0	42.0		ng/L		105	73 - 133	3	30	
Perfluorononanoic acid (PFNA)	40.0	41.2		ng/L		103	75 - 135	1	30	
Perfluorooctanesulfonic acid (PFOS)	37.1	39.6		ng/L		107	70 - 130	5	30	
Perfluorooctanoic acid (PFOA)	40.0	44.8		ng/L		112	70 - 130	10	30	
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1	*	ng/L		100	70 - 130	63	30	
Perfluorotridecanoic acid (PFTriA)	40.0	41.0		ng/L		103	71 - 131	11	30	

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

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

Lab Sample ID: LCSD 320-348931/3-A
Matrix: Water
Analysis Batch: 349004

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 348931

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	39.5		ng/L		99	68 - 128	10	30
	LCS	D	L						
	Recovery	Qual	SD						
Isotope Dilution	%Recovery	Qualifier	Limits						
13C2 PFDA	99		25 - 150						
13C2 PFDoA	90		25 - 150						
13C4 PFHpA	94		25 - 150						
13C2 PFHxA	100		25 - 150						
13C5 PFNA	90		25 - 150						
13C4 PFOA	88		25 - 150						
13C4 PFOS	117		25 - 150						
13C2 PFTeDA	92		25 - 150						
18O2 PFHxS	116		25 - 150						
13C2 PFUnA	87		25 - 150						
13C3 PFBS	116		25 - 150						
d3-NMeFOSAA	100		25 - 150						
d5-NEtFOSAA	99		25 - 150						



QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

LCMS

Prep Batch: 348931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57347-1	SC-203-B	Total/NA	Water	3535	
320-57347-1 - DL	SC-203-B	Total/NA	Water	3535	
320-57347-2	SC-503-B	Total/NA	Water	3535	
MB 320-348931/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-348931/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-348931/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 349004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57347-1	SC-203-B	Total/NA	Water	537 (modified)	348931
320-57347-2	SC-503-B	Total/NA	Water	537 (modified)	348931
MB 320-348931/1-A	Method Blank	Total/NA	Water	537 (modified)	348931
LCS 320-348931/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	348931
LCSD 320-348931/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	348931

Analysis Batch: 349107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-57347-1 - DL	SC-203-B	Total/NA	Water	537 (modified)	348931

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Client Sample ID: SC-203-B

Lab Sample ID: 320-57347-1

Date Collected: 12/23/19 08:45

Matrix: Water

Date Received: 12/24/19 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			300.1 mL	10.00 mL	348931	01/02/20 10:20	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			349004	01/03/20 08:42	JY1	TAL SAC
Total/NA	Prep	3535	DL		300.1 mL	10.00 mL	348931	01/02/20 10:20	HJA	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10			349107	01/04/20 00:50	JRB	TAL SAC

Client Sample ID: SC-503-B

Lab Sample ID: 320-57347-2

Date Collected: 12/23/19 08:30

Matrix: Water

Date Received: 12/24/19 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.2 mL	10.00 mL	348931	01/02/20 10:20	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			349004	01/03/20 08:50	JY1	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 320-57347-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-57347-1	SC-203-B	Water	12/23/19 08:45	12/24/19 10:05	
320-57347-2	SC-503-B	Water	12/23/19 08:30	12/24/19 10:05	

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- 12
- 13
- 14

Ditch B

Chain of Custody Record

Tracking #
7125 4941 5733



Regulatory Program: DW NPDES RCRA Other:

Project Manager: Lisa Rutkowski

Client Contact		Project Manager: Lisa Rutkowski	
Arcadis U.S., Inc.	Email: N/A	Site Contact: Kirk Schwim	Date: 12-23-19
126 North Jefferson Street, Suite 400	Tel/Fax: N/A	Lab Contact: Sandie Fredrick	Carrier: FedEx
Milwaukee, WI 53202	Analysis Turnaround Time	COC No: 2 of 2 COCs	
Phone	<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS	Sampler:	
FAX	TAT if different from Below	For Lab Use Only:	
Project Name: Marinette, WI	<input type="checkbox"/> 2 weeks	Walk-in Client:	
Site: Marinette, WI	<input checked="" type="checkbox"/> 1 week	Lab Sampling:	
P O # 30015296.00006 (WPDES)	<input type="checkbox"/> 2 days	Lab Project Number	
	<input type="checkbox"/> 1 day	50016846	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Gab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y / N)	EPA 537 Modified (4 Compounds)	Sample Specific Notes:
SC-203-B	12-23-19	0845	G	W	2				VS.
SC-503-B	12-23-19	0830	G	W	2				
VS.									

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

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.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:
Level 2 QA/QC. Questions call Jennifer Bennett.
WPDES: LOD/LOQ
TAT: 5 Day

Relinquished by: Kirk Schwim	Relinquished by: Fed Ex	Relinquished by: EHS	Relinquished by: HALL
Date/Time: 12-23-19 1445	Date/Time: 12-23-19 1445	Date/Time: 12/24/19 1005	Date/Time: 12/24/19 1005
Company: ARCADIS	Company: ARCADIS	Company: EHS	Company: HALL
Custody Seal No.: 738117	Cooler Temp. (°C): Obs'd: 1.0	Corrd: 1.0	Therm ID No.: HALL



Ditch B

Chain of Custody Record



Tracking #
7125 4941 5733

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

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: Marinette, WI
Site: Marinette, WI
P O # 30015296.00006 (WPDES)

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

Site Contact: Kirk Schwim Date: 12-23-19
Lab Contact: Sandie Fredrick Carrier: FedEx

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 (4 Compounds)
SC-203-B	12-23-19	0845	G	W	2			
SC-503-B	12-23-19	0830	G	W	2			



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:
Level 2 QA/QC. Questions call Jennifer Bennett.
WPDES: LOD/LOQ
TAT: 5 Day

Custody Seal No.: 738117
Company: ARCADIS

Relinquished by: Kirk Schwim
Date/Time: 12-23-19 1445

Relinquished by: _____
Date/Time: _____

Relinquished by: _____
Date/Time: _____

Cooler Temp. (°C): Obs'd: 1.0
Company: Fed Ex

Received by: _____
Date/Time: 12/24/19 1005

Received in Laboratory by: _____
Date/Time: _____

Therm ID No.: 1.0
Company: Fed Ex

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 U.S., Inc.

Job Number: 320-57347-1

Login Number: 57347

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Fredrick, Sandie

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
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	
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.	True	

ANALYTICAL REPORT

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

Laboratory Job ID: 500-172808-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Ms. Jennifer Bennett



Authorized for release by:
11/15/2019 7:01:13 AM

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

LINKS

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results through
TotalAccess

Have a Question?



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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Job ID: 500-172808-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-172808-1

Comments

No additional comments.

Receipt

The samples were received on 11/2/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

GC/MS VOA

Method 624: The method blank for 515270 contained Toluene above the method detection limit and below the Reporting limit (RL). This target analyte concentration was less than the reporting limit (RL) in the associated samples; therefore, re-analysis of samples was not performed. Toluene results have been flagged in the associated sample with a "B" flag denote the presence in the blank and possible lab contamination.

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

GC/MS Semi VOA

Method 625: The continuing calibration verification (CCV) associated with batch 500-514211 recovered above the upper control limit for Acenaphthene, Acenaphthylene, Benzo[b]fluoranthene, Dibenz(a,h)anthracene, Indeno[1,2,3-cd]pyrene and Fluorene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 500-514211/2).

No additional analytical or quality issues were noted, other than those described above or 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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-172808-1	SC-203-B	Water	11/01/19 08:00	11/02/19 09:30	
500-172808-2	SC-503-B	Water	11/01/19 07:40	11/02/19 09:30	
500-172808-3	Trip Blank	Water	11/01/19 00:00	11/02/19 09:30	

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-172808-1

Date Collected: 11/01/19 08:00

Matrix: Water

Date Received: 11/02/19 09:30

Method: 624 - 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			11/14/19 14:04	1
Toluene	<0.15		0.50	0.15	ug/L			11/14/19 14:04	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 14:04	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 14:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		75 - 120		11/14/19 14:04	1
4-Bromofluorobenzene (Surr)	106		71 - 120		11/14/19 14:04	1
1,2-Dichloroethane-d4 (Surr)	86		71 - 127		11/14/19 14:04	1
Dibromofluoromethane (Surr)	88		70 - 120		11/14/19 14:04	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.092	^c	0.75	0.092	ug/L		11/06/19 09:16	11/08/19 07:01	1
Acenaphthylene	<0.10	^c	0.75	0.10	ug/L		11/06/19 09:16	11/08/19 07:01	1
Anthracene	<0.14		0.75	0.14	ug/L		11/06/19 09:16	11/08/19 07:01	1
Benzo[a]anthracene	<0.049		0.75	0.049	ug/L		11/06/19 09:16	11/08/19 07:01	1
Benzo[a]pyrene	<0.057		0.75	0.057	ug/L		11/06/19 09:16	11/08/19 07:01	1
Benzo[b]fluoranthene	<0.061	^c	0.75	0.061	ug/L		11/06/19 09:16	11/08/19 07:01	1
Benzo[g,h,i]perylene	<0.36		0.75	0.36	ug/L		11/06/19 09:16	11/08/19 07:01	1
Benzo[k]fluoranthene	<0.13		0.75	0.13	ug/L		11/06/19 09:16	11/08/19 07:01	1
Chrysene	<0.070		0.75	0.070	ug/L		11/06/19 09:16	11/08/19 07:01	1
Dibenz(a,h)anthracene	<0.085	^c	0.75	0.085	ug/L		11/06/19 09:16	11/08/19 07:01	1
Fluoranthene	<0.15		0.75	0.15	ug/L		11/06/19 09:16	11/08/19 07:01	1
Fluorene	<0.13	^c	0.75	0.13	ug/L		11/06/19 09:16	11/08/19 07:01	1
Indeno[1,2,3-cd]pyrene	<0.057	^c	0.75	0.057	ug/L		11/06/19 09:16	11/08/19 07:01	1
Naphthalene	<0.12		0.75	0.12	ug/L		11/06/19 09:16	11/08/19 07:01	1
Phenanthrene	<0.16		0.75	0.16	ug/L		11/06/19 09:16	11/08/19 07:01	1
Pyrene	<0.17		0.75	0.17	ug/L		11/06/19 09:16	11/08/19 07:01	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		11/06/19 09:16	11/08/19 07:01	1
2-Methylnaphthalene	<0.063		1.5	0.063	ug/L		11/06/19 09:16	11/08/19 07:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	78		36 - 120	11/06/19 09:16	11/08/19 07:01	1
Terphenyl-d14	103		40 - 145	11/06/19 09:16	11/08/19 07:01	1
2-Fluorobiphenyl	84		34 - 110	11/06/19 09:16	11/08/19 07:01	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.4	J B	5.1	1.4	mg/L		11/07/19 09:09	11/07/19 09:44	1
Total Suspended Solids	4.5	J	5.0	1.9	mg/L			11/08/19 12:48	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-172808-2

Date Collected: 11/01/19 07:40

Matrix: Water

Date Received: 11/02/19 09:30

Method: 624 - 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			11/14/19 14:29	1
Toluene	<0.15		0.50	0.15	ug/L			11/14/19 14:29	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 14:29	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 14:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		75 - 120		11/14/19 14:29	1
4-Bromofluorobenzene (Surr)	108		71 - 120		11/14/19 14:29	1
1,2-Dichloroethane-d4 (Surr)	86		71 - 127		11/14/19 14:29	1
Dibromofluoromethane (Surr)	90		70 - 120		11/14/19 14:29	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099	^c	0.80	0.099	ug/L		11/06/19 09:16	11/08/19 07:28	1
Acenaphthylene	<0.11	^c	0.80	0.11	ug/L		11/06/19 09:16	11/08/19 07:28	1
Anthracene	<0.15		0.80	0.15	ug/L		11/06/19 09:16	11/08/19 07:28	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		11/06/19 09:16	11/08/19 07:28	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		11/06/19 09:16	11/08/19 07:28	1
Benzo[b]fluoranthene	<0.066	^c	0.80	0.066	ug/L		11/06/19 09:16	11/08/19 07:28	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		11/06/19 09:16	11/08/19 07:28	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		11/06/19 09:16	11/08/19 07:28	1
Chrysene	<0.075		0.80	0.075	ug/L		11/06/19 09:16	11/08/19 07:28	1
Dibenz(a,h)anthracene	<0.091	^c	0.80	0.091	ug/L		11/06/19 09:16	11/08/19 07:28	1
Fluoranthene	<0.16		0.80	0.16	ug/L		11/06/19 09:16	11/08/19 07:28	1
Fluorene	<0.13	^c	0.80	0.13	ug/L		11/06/19 09:16	11/08/19 07:28	1
Indeno[1,2,3-cd]pyrene	<0.062	^c	0.80	0.062	ug/L		11/06/19 09:16	11/08/19 07:28	1
Naphthalene	<0.12		0.80	0.12	ug/L		11/06/19 09:16	11/08/19 07:28	1
Phenanthrene	<0.17		0.80	0.17	ug/L		11/06/19 09:16	11/08/19 07:28	1
Pyrene	<0.18		0.80	0.18	ug/L		11/06/19 09:16	11/08/19 07:28	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		11/06/19 09:16	11/08/19 07:28	1
2-Methylnaphthalene	<0.068		1.6	0.068	ug/L		11/06/19 09:16	11/08/19 07:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	76		36 - 120	11/06/19 09:16	11/08/19 07:28	1
Terphenyl-d14	101		40 - 145	11/06/19 09:16	11/08/19 07:28	1
2-Fluorobiphenyl	81		34 - 110	11/06/19 09:16	11/08/19 07:28	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.9	J B	5.1	1.3	mg/L		11/07/19 09:09	11/07/19 09:44	1
Total Suspended Solids	3.0	J	5.0	1.9	mg/L			11/08/19 12:49	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-172808-3

Date Collected: 11/01/19 00:00

Matrix: Water

Date Received: 11/02/19 09:30

Method: 624 - 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			11/14/19 12:24	1
Toluene	0.21	J B	0.50	0.15	ug/L			11/14/19 12:24	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 12:24	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 12:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		75 - 120		11/14/19 12:24	1
<i>4-Bromofluorobenzene (Surr)</i>	107		71 - 120		11/14/19 12:24	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	82		71 - 127		11/14/19 12:24	1
<i>Dibromofluoromethane (Surr)</i>	87		70 - 120		11/14/19 12:24	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.

GC/MS Semi VOA

Qualifier	Qualifier Description
^c	CCV Recovery is outside acceptance limits.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Method: 624 - 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
		(75-120)	(71-120)	(71-127)	(70-120)
500-172808-1	SC-203-B	97	106	86	88
500-172808-2	SC-503-B	96	108	86	90
500-172808-3	Trip Blank	99	107	82	87
LCS 500-515270/5	Lab Control Sample	100	97	81	92
MB 500-515270/7	Method Blank	98	108	84	90

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	TPHL	FBP
		(36-120)	(40-145)	(34-110)
500-172808-1	SC-203-B	78	103	84
500-172808-2	SC-503-B	76	101	81
LCS 500-513849/2-A	Lab Control Sample	78	100	88
MB 500-513849/1-A	Method Blank	74	98	82

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-515270/7
Matrix: Water
Analysis Batch: 515270

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			11/14/19 10:43	1
Toluene	0.171	J	0.50	0.15	ug/L			11/14/19 10:43	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 10:43	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 10:43	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	98		75 - 120		11/14/19 10:43	1
4-Bromofluorobenzene (Surr)	108		71 - 120		11/14/19 10:43	1
1,2-Dichloroethane-d4 (Surr)	84		71 - 127		11/14/19 10:43	1
Dibromofluoromethane (Surr)	90		70 - 120		11/14/19 10:43	1

Lab Sample ID: LCS 500-515270/5
Matrix: Water
Analysis Batch: 515270

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	50.0	45.8		ug/L		92	47 - 150
Ethylbenzene	50.0	48.6		ug/L		97	37 - 162

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	100		75 - 120
4-Bromofluorobenzene (Surr)	97		71 - 120
1,2-Dichloroethane-d4 (Surr)	81		71 - 127
Dibromofluoromethane (Surr)	92		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-513849/1-A
Matrix: Water
Analysis Batch: 514211

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513849

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		11/06/19 09:16	11/08/19 01:11	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		11/06/19 09:16	11/08/19 01:11	1
Anthracene	<0.15		0.80	0.15	ug/L		11/06/19 09:16	11/08/19 01:11	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		11/06/19 09:16	11/08/19 01:11	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		11/06/19 09:16	11/08/19 01:11	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		11/06/19 09:16	11/08/19 01:11	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		11/06/19 09:16	11/08/19 01:11	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		11/06/19 09:16	11/08/19 01:11	1
Chrysene	<0.075		0.80	0.075	ug/L		11/06/19 09:16	11/08/19 01:11	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		11/06/19 09:16	11/08/19 01:11	1
Fluoranthene	<0.16		0.80	0.16	ug/L		11/06/19 09:16	11/08/19 01:11	1
Fluorene	<0.13		0.80	0.13	ug/L		11/06/19 09:16	11/08/19 01:11	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		11/06/19 09:16	11/08/19 01:11	1
Naphthalene	<0.12		0.80	0.12	ug/L		11/06/19 09:16	11/08/19 01:11	1
Phenanthrene	<0.17		0.80	0.17	ug/L		11/06/19 09:16	11/08/19 01:11	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-513849/1-A
Matrix: Water
Analysis Batch: 514211

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513849

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		11/06/19 09:16	11/08/19 01:11	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		11/06/19 09:16	11/08/19 01:11	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		11/06/19 09:16	11/08/19 01:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	74		36 - 120	11/06/19 09:16	11/08/19 01:11	1
Terphenyl-d14	98		40 - 145	11/06/19 09:16	11/08/19 01:11	1
2-Fluorobiphenyl	82		34 - 110	11/06/19 09:16	11/08/19 01:11	1

Lab Sample ID: LCS 500-513849/2-A
Matrix: Water
Analysis Batch: 514211

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513849

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	32.0	28.3		ug/L		88	47 - 145
Acenaphthylene	32.0	29.1		ug/L		91	33 - 145
Anthracene	32.0	31.4		ug/L		98	27 - 133
Benzo[a]anthracene	32.0	32.2		ug/L		101	33 - 143
Benzo[a]pyrene	32.0	34.7		ug/L		109	17 - 163
Benzo[b]fluoranthene	32.0	32.9		ug/L		103	24 - 159
Benzo[g,h,i]perylene	32.0	35.1		ug/L		110	10 - 219
Benzo[k]fluoranthene	32.0	32.6		ug/L		102	11 - 162
Chrysene	32.0	32.7		ug/L		102	17 - 168
Dibenz(a,h)anthracene	32.0	35.2		ug/L		110	10 - 227
Fluoranthene	32.0	31.9		ug/L		100	26 - 137
Fluorene	32.0	30.1		ug/L		94	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	36.1		ug/L		113	10 - 171
Naphthalene	32.0	23.4		ug/L		73	21 - 133
Phenanthrene	32.0	31.2		ug/L		97	54 - 120
Pyrene	32.0	32.3		ug/L		101	52 - 115
1-Methylnaphthalene	32.0	24.0		ug/L		75	
2-Methylnaphthalene	32.0	25.9		ug/L		81	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	78		36 - 120
Terphenyl-d14	100		40 - 145
2-Fluorobiphenyl	88		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-514082/15-A
Matrix: Water
Analysis Batch: 514097

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 514082

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.70	J	5.0	1.3	mg/L		11/07/19 09:09	11/07/19 09:44	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Method: 1664B - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 500-514082/2-A
 Matrix: Water
 Analysis Batch: 514097

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 514082
 %Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	33.80		mg/L		85	78 - 114

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

Lab Sample ID: MB 500-514374/1
 Matrix: Water
 Analysis Batch: 514374

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			11/08/19 12:40	1

Lab Sample ID: LCS 500-514374/2
 Matrix: Water
 Analysis Batch: 514374

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Suspended Solids	200	185.5		mg/L		93	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-172808-1

Date Collected: 11/01/19 08:00

Matrix: Water

Date Received: 11/02/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	515270	11/14/19 14:04	STW	TAL CHI
Total/NA	Prep	625			513849	11/06/19 09:16	DAK	TAL CHI
Total/NA	Analysis	625		1	514211	11/08/19 07:01	NRJ	TAL CHI
Total/NA	Prep	1664B			514082	11/07/19 09:09	TMS	TAL CHI
Total/NA	Analysis	1664B		1	514097	11/07/19 09:44	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	514374		SMO	TAL CHI
					(Start)	11/08/19 12:48		
					(End)	11/08/19 12:49		

Client Sample ID: SC-503-B

Lab Sample ID: 500-172808-2

Date Collected: 11/01/19 07:40

Matrix: Water

Date Received: 11/02/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	515270	11/14/19 14:29	STW	TAL CHI
Total/NA	Prep	625			513849	11/06/19 09:16	DAK	TAL CHI
Total/NA	Analysis	625		1	514211	11/08/19 07:28	NRJ	TAL CHI
Total/NA	Prep	1664B			514082	11/07/19 09:09	TMS	TAL CHI
Total/NA	Analysis	1664B		1	514097	11/07/19 09:44	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	514374		SMO	TAL CHI
					(Start)	11/08/19 12:49		
					(End)	11/08/19 12:50		

Client Sample ID: Trip Blank

Lab Sample ID: 500-172808-3

Date Collected: 11/01/19 00:00

Matrix: Water

Date Received: 11/02/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	515270	11/14/19 12:24	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-172808-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

1

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Eurofins TestAmerica, Chicago
2417 Bond Street

Chain of Custody Record

eurofins Environment Testing
TestAmerica

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

Client Contact		Project Manager: Lisa Rutkowski		Site Contact:		Date:		COC No:	
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		_____ of _____ COCs	
126 North Jefferson Street, Suite 400		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS / MSD (Y / N) BTEX: Method 824 Oil&Grease: Method 1664 TSS: Method 2540D PAHs: Method 625		Sampler: For Lab Use Only: Walk-in Client: Lab Sampling:		Lab Project number <u>500-172808</u>	
Milwaukee, WI 53202		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS							
Phone _____ FAX _____ Project Name: Marinette, WI Site: Marinette, WI 500-172808 COC		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 Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.				Sample Specific Notes:
SC-203-B	11/1	8:00	G	W					
SC-503-B	11/1	7:40	G	W					
Trip Blank			G	W					
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.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Special Instructions/QC Requirements & Comments:									
Level 2 QA/QC, Questions call Jennifer Bennett WPDES: LOD/LOQ TAT: 5 Day SC-203-B Ph 7.69 Temp 6.1°C SC-503-B Ph 8.03 Temp 6.6°C									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No						Cooler Temp. (°C): Obs'd: <u>24</u> Corr'd: _____ Therm ID No.:			
Relinquished by: <u>[Signature]</u>		Company: ARCADIS		Date/Time: 11/1 10:20		Received by:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by: <u>[Signature]</u>		Company: <u>TA-COPE</u> Date/Time: 11/2/19 09:30	

Form No. CA-C-WI/002, Rev. 4.23, dated 4/16/2019



500-172808 Waybill

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

R# 159469-434 RIT EXP 07/20

ORIGIN ID:RRLA- (262) 202-5955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET
MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 29AUG19
ACTWT: 25.00 LB MAN
CAD: 525155/CAFE3211

TO

TESTAMERICA CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484-3101

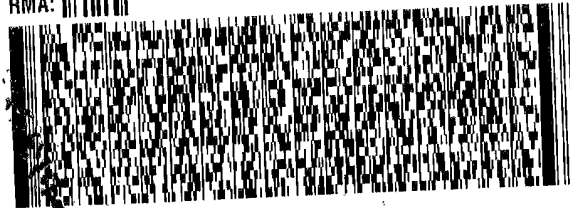
(708) 534-5200

REF:

DEPT:

INU:
PO:

RMA: III III III



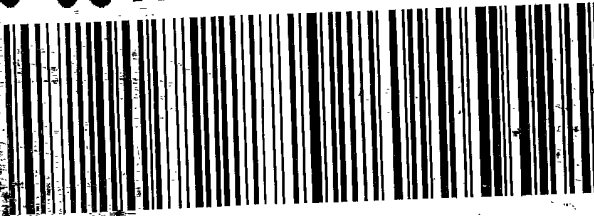
FedEx
TRK#
0221

7125 3040 7779

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 JOTA

60484
IL-US
ORD



310 832374 01 NOV 19 GRBA 56AC3/2A3C/05A2

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- 11
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- 13

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-172808-1

Login Number: 172808

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

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	2.4
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

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

Laboratory Job ID: 500-173182-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Ms. Jennifer Bennett



Authorized for release by:
11/15/2019 3:08:56 PM

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

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Job ID: 500-173182-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-173182-1

Comments

No additional comments.

Receipt

The samples were received on 11/8/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5° C.

GC/MS VOA

Method 624: The method blank for 515270 contained Toluene above the method detection limit and below the Reporting limit (RL). This target analyte concentration were detected in the associated samples; therefore, re-analysis of samples was not performed. Toluene results have been flagged in the associated samples with a "B" flag denote the presence in the blank and possible lab contamination.

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

GC/MS Semi VOA

Method 625: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch preparation batch 500-514420 and analytical batch 500-514835 recovered outside control limits for the following analytes: Naphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo[a]anthracene, Chrysene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Indeno[1,2,3-cd]pyrene, Dibenz(a,h)anthracene and Benzo[g,h,i]perylene.

Method 625: The laboratory control sample duplicate (LCSD) for preparation batch 500-514420 and analytical batch 500-514835 recovered below the control limits for the following analytes: 2-Methylnaphthalene, Acenaphthene and Fluorene. These analytes were within the QC limits in the LCS; therefore, the data have been reported. (LCS 500-514420/2-A) and (LCSD 500-514420/3-A)

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

General Chemistry

Method 1664B: The method blank for batch 500-515344 contained HEM (Oil & Grease) above the reporting limit (RL). None of the samples associated with this method blank contained HEM (Oil & Grease) above the RL; 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

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-173182-1	SC-203-B	Water	11/07/19 10:50	11/08/19 09:00	
500-173182-2	SC-503-B	Water	11/07/19 13:00	11/08/19 09:00	
500-173182-3	Trip Blank	Water	11/07/19 00:00	11/08/19 09:00	

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-173182-1

Date Collected: 11/07/19 10:50

Matrix: Water

Date Received: 11/08/19 09:00

Method: 624 - 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			11/14/19 15:20	1
Toluene	0.15	J B	0.50	0.15	ug/L			11/14/19 15:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 15:20	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 15:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	94		75 - 120					11/14/19 15:20	1
<i>4-Bromofluorobenzene (Surr)</i>	106		71 - 120					11/14/19 15:20	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	86		71 - 127					11/14/19 15:20	1
<i>Dibromofluoromethane (Surr)</i>	90		70 - 120					11/14/19 15:20	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.092	*	0.75	0.092	ug/L		11/08/19 17:18	11/12/19 21:20	1
Acenaphthylene	<0.10	*	0.75	0.10	ug/L		11/08/19 17:18	11/12/19 21:20	1
Anthracene	<0.14	*	0.75	0.14	ug/L		11/08/19 17:18	11/12/19 21:20	1
Benzo[a]anthracene	0.082	J *	0.75	0.049	ug/L		11/08/19 17:18	11/12/19 21:20	1
Benzo[a]pyrene	0.10	J *	0.75	0.056	ug/L		11/08/19 17:18	11/12/19 21:20	1
Benzo[b]fluoranthene	0.18	J *	0.75	0.061	ug/L		11/08/19 17:18	11/12/19 21:20	1
Benzo[g,h,i]perylene	<0.36	*	0.75	0.36	ug/L		11/08/19 17:18	11/12/19 21:20	1
Benzo[k]fluoranthene	<0.13	*	0.75	0.13	ug/L		11/08/19 17:18	11/12/19 21:20	1
Chrysene	0.15	J *	0.75	0.070	ug/L		11/08/19 17:18	11/12/19 21:20	1
Dibenz(a,h)anthracene	<0.085	*	0.75	0.085	ug/L		11/08/19 17:18	11/12/19 21:20	1
Fluoranthene	0.22	J *	0.75	0.15	ug/L		11/08/19 17:18	11/12/19 21:20	1
Fluorene	<0.12	*	0.75	0.12	ug/L		11/08/19 17:18	11/12/19 21:20	1
Indeno[1,2,3-cd]pyrene	<0.057	*	0.75	0.057	ug/L		11/08/19 17:18	11/12/19 21:20	1
Naphthalene	<0.12	*	0.75	0.12	ug/L		11/08/19 17:18	11/12/19 21:20	1
Phenanthrene	<0.16	*	0.75	0.16	ug/L		11/08/19 17:18	11/12/19 21:20	1
Pyrene	0.17	J *	0.75	0.17	ug/L		11/08/19 17:18	11/12/19 21:20	1
1-Methylnaphthalene	<0.22	*	1.5	0.22	ug/L		11/08/19 17:18	11/12/19 21:20	1
2-Methylnaphthalene	<0.063	*	1.5	0.063	ug/L		11/08/19 17:18	11/12/19 21:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Nitrobenzene-d5</i>	60		36 - 120				11/08/19 17:18	11/12/19 21:20	1
<i>Terphenyl-d14</i>	101		40 - 145				11/08/19 17:18	11/12/19 21:20	1
<i>2-Fluorobiphenyl</i>	63		34 - 110				11/08/19 17:18	11/12/19 21:20	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	2.3	J B	5.1	1.3	mg/L		11/14/19 09:10	11/14/19 09:43	1
Total Suspended Solids	9.0		5.0	1.9	mg/L			11/14/19 12:16	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-173182-2

Date Collected: 11/07/19 13:00

Matrix: Water

Date Received: 11/08/19 09:00

Method: 624 - 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			11/14/19 15:45	1
Toluene	<0.15		0.50	0.15	ug/L			11/14/19 15:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 15:45	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 15:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		75 - 120		11/14/19 15:45	1
4-Bromofluorobenzene (Surr)	110		71 - 120		11/14/19 15:45	1
1,2-Dichloroethane-d4 (Surr)	85		71 - 127		11/14/19 15:45	1
Dibromofluoromethane (Surr)	90		70 - 120		11/14/19 15:45	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.091	*	0.74	0.091	ug/L		11/08/19 17:18	11/12/19 21:45	1
Acenaphthylene	<0.10	*	0.74	0.10	ug/L		11/08/19 17:18	11/12/19 21:45	1
Anthracene	<0.14	*	0.74	0.14	ug/L		11/08/19 17:18	11/12/19 21:45	1
Benzo[a]anthracene	<0.048	*	0.74	0.048	ug/L		11/08/19 17:18	11/12/19 21:45	1
Benzo[a]pyrene	<0.056	*	0.74	0.056	ug/L		11/08/19 17:18	11/12/19 21:45	1
Benzo[b]fluoranthene	<0.060	*	0.74	0.060	ug/L		11/08/19 17:18	11/12/19 21:45	1
Benzo[g,h,i]perylene	<0.36	*	0.74	0.36	ug/L		11/08/19 17:18	11/12/19 21:45	1
Benzo[k]fluoranthene	<0.12	*	0.74	0.12	ug/L		11/08/19 17:18	11/12/19 21:45	1
Chrysene	<0.069	*	0.74	0.069	ug/L		11/08/19 17:18	11/12/19 21:45	1
Dibenz(a,h)anthracene	<0.084	*	0.74	0.084	ug/L		11/08/19 17:18	11/12/19 21:45	1
Fluoranthene	<0.15	*	0.74	0.15	ug/L		11/08/19 17:18	11/12/19 21:45	1
Fluorene	<0.12	*	0.74	0.12	ug/L		11/08/19 17:18	11/12/19 21:45	1
Indeno[1,2,3-cd]pyrene	<0.057	*	0.74	0.057	ug/L		11/08/19 17:18	11/12/19 21:45	1
Naphthalene	<0.11	*	0.74	0.11	ug/L		11/08/19 17:18	11/12/19 21:45	1
Phenanthrene	<0.16	*	0.74	0.16	ug/L		11/08/19 17:18	11/12/19 21:45	1
Pyrene	<0.17	*	0.74	0.17	ug/L		11/08/19 17:18	11/12/19 21:45	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		11/08/19 17:18	11/12/19 21:45	1
2-Methylnaphthalene	<0.062	*	1.5	0.062	ug/L		11/08/19 17:18	11/12/19 21:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	55		36 - 120	11/08/19 17:18	11/12/19 21:45	1
Terphenyl-d14	95		40 - 145	11/08/19 17:18	11/12/19 21:45	1
2-Fluorobiphenyl	55		34 - 110	11/08/19 17:18	11/12/19 21:45	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.9	J B	5.1	1.4	mg/L		11/14/19 09:10	11/14/19 09:43	1
Total Suspended Solids	2.0	J	5.0	1.9	mg/L			11/14/19 12:17	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-173182-3

Date Collected: 11/07/19 00:00

Matrix: Water

Date Received: 11/08/19 09:00

Method: 624 - 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			11/14/19 12:49	1
Toluene	0.20	J B	0.50	0.15	ug/L			11/14/19 12:49	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 12:49	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 12:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	98		75 - 120		11/14/19 12:49	1
<i>4-Bromofluorobenzene (Surr)</i>	107		71 - 120		11/14/19 12:49	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	84		71 - 127		11/14/19 12:49	1
<i>Dibromofluoromethane (Surr)</i>	88		70 - 120		11/14/19 12:49	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Reported value was between the limit of detection and the limit of quantitation.

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Method: 624 - 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
		(75-120)	(71-120)	(71-127)	(70-120)
500-173182-1	SC-203-B	94	106	86	90
500-173182-2	SC-503-B	97	110	85	90
500-173182-3	Trip Blank	98	107	84	88
LCS 500-515270/5	Lab Control Sample	100	97	81	92
MB 500-515270/7	Method Blank	98	108	84	90

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	TPHL	FBP
		(36-120)	(40-145)	(34-110)
500-173182-1	SC-203-B	60	101	63
500-173182-2	SC-503-B	55	95	55
LCS 500-514420/2-A	Lab Control Sample	57	102	72
LCSD 500-514420/3-A	Lab Control Sample Dup	50	94	51
MB 500-514420/1-A	Method Blank	66	119	61

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-515270/7
Matrix: Water
Analysis Batch: 515270

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			11/14/19 10:43	1
Toluene	0.171	J	0.50	0.15	ug/L			11/14/19 10:43	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/14/19 10:43	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/14/19 10:43	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	98		75 - 120		11/14/19 10:43	1
4-Bromofluorobenzene (Surr)	108		71 - 120		11/14/19 10:43	1
1,2-Dichloroethane-d4 (Surr)	84		71 - 127		11/14/19 10:43	1
Dibromofluoromethane (Surr)	90		70 - 120		11/14/19 10:43	1

Lab Sample ID: LCS 500-515270/5
Matrix: Water
Analysis Batch: 515270

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	45.0		ug/L		90	37 - 151
Toluene	50.0	45.8		ug/L		92	47 - 150
Ethylbenzene	50.0	48.6		ug/L		97	37 - 162

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	100		75 - 120
4-Bromofluorobenzene (Surr)	97		71 - 120
1,2-Dichloroethane-d4 (Surr)	81		71 - 127
Dibromofluoromethane (Surr)	92		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-514420/1-A
Matrix: Water
Analysis Batch: 514835

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 514420

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		11/08/19 17:17	11/12/19 16:26	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		11/08/19 17:17	11/12/19 16:26	1
Anthracene	<0.15		0.80	0.15	ug/L		11/08/19 17:17	11/12/19 16:26	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		11/08/19 17:17	11/12/19 16:26	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		11/08/19 17:17	11/12/19 16:26	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		11/08/19 17:17	11/12/19 16:26	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		11/08/19 17:17	11/12/19 16:26	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		11/08/19 17:17	11/12/19 16:26	1
Chrysene	<0.075		0.80	0.075	ug/L		11/08/19 17:17	11/12/19 16:26	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		11/08/19 17:17	11/12/19 16:26	1
Fluoranthene	<0.16		0.80	0.16	ug/L		11/08/19 17:17	11/12/19 16:26	1
Fluorene	<0.13		0.80	0.13	ug/L		11/08/19 17:17	11/12/19 16:26	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		11/08/19 17:17	11/12/19 16:26	1
Naphthalene	<0.12		0.80	0.12	ug/L		11/08/19 17:17	11/12/19 16:26	1
Phenanthrene	<0.17		0.80	0.17	ug/L		11/08/19 17:17	11/12/19 16:26	1

Eurolins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-514420/1-A
Matrix: Water
Analysis Batch: 514835

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 514420

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		11/08/19 17:17	11/12/19 16:26	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		11/08/19 17:17	11/12/19 16:26	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		11/08/19 17:17	11/12/19 16:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	66		36 - 120	11/08/19 17:17	11/12/19 16:26	1
Terphenyl-d14	119		40 - 145	11/08/19 17:17	11/12/19 16:26	1
2-Fluorobiphenyl	61		34 - 110	11/08/19 17:17	11/12/19 16:26	1

Lab Sample ID: LCS 500-514420/2-A
Matrix: Water
Analysis Batch: 514835

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 514420

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	20.8		ug/L		65	47 - 145
Acenaphthylene	32.0	21.4		ug/L		67	33 - 145
Anthracene	32.0	36.5		ug/L		114	27 - 133
Benzo[a]anthracene	32.0	39.1		ug/L		122	33 - 143
Benzo[a]pyrene	32.0	40.7		ug/L		127	17 - 163
Benzo[b]fluoranthene	32.0	43.0		ug/L		134	24 - 159
Benzo[g,h,i]perylene	32.0	45.3		ug/L		142	10 - 219
Benzo[k]fluoranthene	32.0	37.2		ug/L		116	11 - 162
Chrysene	32.0	42.8		ug/L		134	17 - 168
Dibenz(a,h)anthracene	32.0	45.5		ug/L		142	10 - 227
Fluoranthene	32.0	37.4		ug/L		117	26 - 137
Fluorene	32.0	24.5		ug/L		77	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	43.2		ug/L		135	10 - 171
Naphthalene	32.0	16.2		ug/L		51	21 - 133
Phenanthrene	32.0	31.2		ug/L		97	54 - 120
Pyrene	32.0	34.8		ug/L		109	52 - 115
1-Methylnaphthalene	32.0	17.5		ug/L		55	
2-Methylnaphthalene	32.0	17.4		ug/L		55	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	57		36 - 120
Terphenyl-d14	102		40 - 145
2-Fluorobiphenyl	72		34 - 110

Lab Sample ID: LCSD 500-514420/3-A
Matrix: Water
Analysis Batch: 514835

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 514420

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	32.0	13.1	*	ug/L		41	47 - 145	46	20
Acenaphthylene	32.0	14.2	*	ug/L		44	33 - 145	41	20
Anthracene	32.0	26.9	*	ug/L		84	27 - 133	30	20
Benzo[a]anthracene	32.0	28.4	*	ug/L		89	33 - 143	32	20
Benzo[a]pyrene	32.0	29.1	*	ug/L		91	17 - 163	33	20

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-514420/3-A
 Matrix: Water
 Analysis Batch: 514835

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 514420

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	28.8	*	ug/L		90	24 - 159	39	20
Benzo[g,h,i]perylene	32.0	32.3	*	ug/L		101	10 - 219	34	20
Benzo[k]fluoranthene	32.0	28.4	*	ug/L		89	11 - 162	27	20
Chrysene	32.0	31.2	*	ug/L		98	17 - 168	31	20
Dibenz(a,h)anthracene	32.0	32.5	*	ug/L		101	10 - 227	33	20
Fluoranthene	32.0	27.7	*	ug/L		86	26 - 137	30	20
Fluorene	32.0	18.1	*	ug/L		57	59 - 121	30	20
Indeno[1,2,3-cd]pyrene	32.0	30.9	*	ug/L		96	10 - 171	33	20
Naphthalene	32.0	10.4	*	ug/L		32	21 - 133	44	20
Phenanthrene	32.0	24.2	*	ug/L		76	54 - 120	25	20
Pyrene	32.0	26.1	*	ug/L		82	52 - 115	28	20
1-Methylnaphthalene	32.0	9.88		ug/L		31		55	
2-Methylnaphthalene	32.0	9.93	*	ug/L		31	42 - 110	55	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Nitrobenzene-d5	50		36 - 120
Terphenyl-d14	94		40 - 145
2-Fluorobiphenyl	51		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-515332/10-A
 Matrix: Water
 Analysis Batch: 515344

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 515332

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	5.40		5.0	1.3	mg/L		11/14/19 09:10	11/14/19 09:43	1

Lab Sample ID: LCS 500-515332/2-A
 Matrix: Water
 Analysis Batch: 515344

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 515332

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	40.30		mg/L		101	78 - 114

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

Lab Sample ID: MB 500-515363/1
 Matrix: Water
 Analysis Batch: 515363

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			11/14/19 12:00	1

Lab Sample ID: LCS 500-515363/2
 Matrix: Water
 Analysis Batch: 515363

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	187.5		mg/L		94	80 - 120

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-173182-1

Date Collected: 11/07/19 10:50

Matrix: Water

Date Received: 11/08/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	515270	11/14/19 15:20	STW	TAL CHI
Total/NA	Prep	625			514420	11/08/19 17:18	CMC	TAL CHI
Total/NA	Analysis	625		1	514835	11/12/19 21:20	AJD	TAL CHI
Total/NA	Prep	1664B			515332	11/14/19 09:10	TMS	TAL CHI
Total/NA	Analysis	1664B		1	515344	11/14/19 09:43	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	515363		SMO	TAL CHI
					(Start)	11/14/19 12:16		
					(End)	11/14/19 12:17		

Client Sample ID: SC-503-B

Lab Sample ID: 500-173182-2

Date Collected: 11/07/19 13:00

Matrix: Water

Date Received: 11/08/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	515270	11/14/19 15:45	STW	TAL CHI
Total/NA	Prep	625			514420	11/08/19 17:18	CMC	TAL CHI
Total/NA	Analysis	625		1	514835	11/12/19 21:45	AJD	TAL CHI
Total/NA	Prep	1664B			515332	11/14/19 09:10	TMS	TAL CHI
Total/NA	Analysis	1664B		1	515344	11/14/19 09:43	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	515363		SMO	TAL CHI
					(Start)	11/14/19 12:17		
					(End)	11/14/19 12:18		

Client Sample ID: Trip Blank

Lab Sample ID: 500-173182-3

Date Collected: 11/07/19 00:00

Matrix: Water

Date Received: 11/08/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	515270	11/14/19 12:49	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173182-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

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

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-173182-1

Login Number: 173182

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: James, Jeff A

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	0.5
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

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

Laboratory Job ID: 500-173591-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Ms. Jennifer Bennett



Authorized for release by:

11/22/2019 6:42:50 PM

Therese Hargraves, Project Manager I
(708)793-3461

therese.hargraves@testamericainc.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660

sandie.fredrick@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Job ID: 500-173591-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-173591-1

Comments

No additional comments.

Receipt

The samples were received on 11/15/2019 8:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described 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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-173591-1	SC-203-B	Water	11/14/19 12:45	11/15/19 08:55	
500-173591-2	SC-503-B	Water	11/14/19 13:00	11/15/19 08:55	
500-173591-3	Trip Blank	Water	11/14/19 00:00	11/15/19 08:55	

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-173591-1

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 08:55

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.18	J	0.50	0.15	ug/L			11/21/19 05:20	1
Toluene	<0.15		0.50	0.15	ug/L			11/21/19 05:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/21/19 05:20	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/21/19 05:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	95		75 - 120		11/21/19 05:20	1
<i>4-Bromofluorobenzene (Surr)</i>	101		71 - 120		11/21/19 05:20	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	106		71 - 127		11/21/19 05:20	1
<i>Dibromofluoromethane (Surr)</i>	106		70 - 120		11/21/19 05:20	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.091		0.74	0.091	ug/L		11/18/19 16:33	11/21/19 21:18	1
Acenaphthylene	<0.10		0.74	0.10	ug/L		11/18/19 16:33	11/21/19 21:18	1
Anthracene	<0.14		0.74	0.14	ug/L		11/18/19 16:33	11/21/19 21:18	1
Benzo[a]anthracene	<0.048		0.74	0.048	ug/L		11/18/19 16:33	11/21/19 21:18	1
Benzo[a]pyrene	0.28	J	0.74	0.056	ug/L		11/18/19 16:33	11/21/19 21:18	1
Benzo[b]fluoranthene	<0.061		0.74	0.061	ug/L		11/18/19 16:33	11/21/19 21:18	1
Benzo[g,h,i]perylene	<0.36		0.74	0.36	ug/L		11/18/19 16:33	11/21/19 21:18	1
Benzo[k]fluoranthene	<0.13		0.74	0.13	ug/L		11/18/19 16:33	11/21/19 21:18	1
Chrysene	0.34	J	0.74	0.069	ug/L		11/18/19 16:33	11/21/19 21:18	1
Dibenz(a,h)anthracene	<0.084		0.74	0.084	ug/L		11/18/19 16:33	11/21/19 21:18	1
Fluoranthene	0.59	J	0.74	0.15	ug/L		11/18/19 16:33	11/21/19 21:18	1
Fluorene	<0.12		0.74	0.12	ug/L		11/18/19 16:33	11/21/19 21:18	1
Indeno[1,2,3-cd]pyrene	0.20	J	0.74	0.057	ug/L		11/18/19 16:33	11/21/19 21:18	1
Naphthalene	<0.12		0.74	0.12	ug/L		11/18/19 16:33	11/21/19 21:18	1
Phenanthrene	0.26	J	0.74	0.16	ug/L		11/18/19 16:33	11/21/19 21:18	1
Pyrene	0.44	J	0.74	0.17	ug/L		11/18/19 16:33	11/21/19 21:18	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		11/18/19 16:33	11/21/19 21:18	1
2-Methylnaphthalene	<0.063		1.5	0.063	ug/L		11/18/19 16:33	11/21/19 21:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Nitrobenzene-d5</i>	48		36 - 120	11/18/19 16:33	11/21/19 21:18	1
<i>Terphenyl-d14</i>	80		40 - 145	11/18/19 16:33	11/21/19 21:18	1
<i>2-Fluorobiphenyl</i>	56		34 - 110	11/18/19 16:33	11/21/19 21:18	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	3.0	J	5.1	1.4	mg/L		11/22/19 09:08	11/22/19 09:14	1
Total Suspended Solids	42.8		5.6	2.1	mg/L			11/21/19 13:11	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-173591-2

Date Collected: 11/14/19 13:00

Matrix: Water

Date Received: 11/15/19 08:55

Method: 624 - 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			11/21/19 05:47	1
Toluene	<0.15		0.50	0.15	ug/L			11/21/19 05:47	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/21/19 05:47	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/21/19 05:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		75 - 120		11/21/19 05:47	1
4-Bromofluorobenzene (Surr)	102		71 - 120		11/21/19 05:47	1
1,2-Dichloroethane-d4 (Surr)	107		71 - 127		11/21/19 05:47	1
Dibromofluoromethane (Surr)	106		70 - 120		11/21/19 05:47	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.091		0.74	0.091	ug/L		11/18/19 16:33	11/21/19 20:51	1
Acenaphthylene	<0.10		0.74	0.10	ug/L		11/18/19 16:33	11/21/19 20:51	1
Anthracene	<0.14		0.74	0.14	ug/L		11/18/19 16:33	11/21/19 20:51	1
Benzo[a]anthracene	<0.048		0.74	0.048	ug/L		11/18/19 16:33	11/21/19 20:51	1
Benzo[a]pyrene	<0.056		0.74	0.056	ug/L		11/18/19 16:33	11/21/19 20:51	1
Benzo[b]fluoranthene	<0.060		0.74	0.060	ug/L		11/18/19 16:33	11/21/19 20:51	1
Benzo[g,h,i]perylene	<0.36		0.74	0.36	ug/L		11/18/19 16:33	11/21/19 20:51	1
Benzo[k]fluoranthene	<0.12		0.74	0.12	ug/L		11/18/19 16:33	11/21/19 20:51	1
Chrysene	<0.069		0.74	0.069	ug/L		11/18/19 16:33	11/21/19 20:51	1
Dibenz(a,h)anthracene	<0.084		0.74	0.084	ug/L		11/18/19 16:33	11/21/19 20:51	1
Fluoranthene	<0.15		0.74	0.15	ug/L		11/18/19 16:33	11/21/19 20:51	1
Fluorene	<0.12		0.74	0.12	ug/L		11/18/19 16:33	11/21/19 20:51	1
Indeno[1,2,3-cd]pyrene	<0.057		0.74	0.057	ug/L		11/18/19 16:33	11/21/19 20:51	1
Naphthalene	<0.11		0.74	0.11	ug/L		11/18/19 16:33	11/21/19 20:51	1
Phenanthrene	<0.16		0.74	0.16	ug/L		11/18/19 16:33	11/21/19 20:51	1
Pyrene	<0.17		0.74	0.17	ug/L		11/18/19 16:33	11/21/19 20:51	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		11/18/19 16:33	11/21/19 20:51	1
2-Methylnaphthalene	<0.062		1.5	0.062	ug/L		11/18/19 16:33	11/21/19 20:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	60		36 - 120	11/18/19 16:33	11/21/19 20:51	1
Terphenyl-d14	88		40 - 145	11/18/19 16:33	11/21/19 20:51	1
2-Fluorobiphenyl	61		34 - 110	11/18/19 16:33	11/21/19 20:51	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.1	1.3	mg/L		11/22/19 09:08	11/22/19 09:14	1
Total Suspended Solids	2.5 J		5.0	1.9	mg/L			11/21/19 13:12	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-173591-3

Date Collected: 11/14/19 00:00

Matrix: Water

Date Received: 11/15/19 08:55

Method: 624 - 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			11/21/19 00:48	1
Toluene	<0.15		0.50	0.15	ug/L			11/21/19 00:48	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/21/19 00:48	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/21/19 00:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		75 - 120		11/21/19 00:48	1
4-Bromofluorobenzene (Surr)	99		71 - 120		11/21/19 00:48	1
1,2-Dichloroethane-d4 (Surr)	105		71 - 127		11/21/19 00:48	1
Dibromofluoromethane (Surr)	105		70 - 120		11/21/19 00:48	1



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

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

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (75-120)	BFB (71-120)	DCA (71-127)	DBFM (70-120)
500-173591-1	SC-203-B	95	101	106	106
500-173591-2	SC-503-B	96	102	107	106
500-173591-2 MS	SC-503-B	95	98	108	113
500-173591-2 MSD	SC-503-B	95	97	108	113
500-173591-3	Trip Blank	96	99	105	105
LCS 500-516366/27	Lab Control Sample	98	95	104	107
MB 500-516366/29	Method Blank	99	101	103	105

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	TPHL (40-145)	FBP (34-110)
500-173591-1	SC-203-B	48	80	56
500-173591-2	SC-503-B	60	88	61
LCS 500-516031/2-A	Lab Control Sample	67	86	76
LCSD 500-516031/3-A	Lab Control Sample Dup	70	88	73
MB 500-516031/1-A	Method Blank	59	87	58

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-516366/29
Matrix: Water
Analysis Batch: 516366

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			11/20/19 23:27	1
Toluene	<0.15		0.50	0.15	ug/L			11/20/19 23:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/20/19 23:27	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/20/19 23:27	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	99		75 - 120		11/20/19 23:27	1
4-Bromofluorobenzene (Surr)	101		71 - 120		11/20/19 23:27	1
1,2-Dichloroethane-d4 (Surr)	103		71 - 127		11/20/19 23:27	1
Dibromofluoromethane (Surr)	105		70 - 120		11/20/19 23:27	1

Lab Sample ID: LCS 500-516366/27
Matrix: Water
Analysis Batch: 516366

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	54.7		ug/L		109	37 - 151
Toluene	50.0	49.9		ug/L		100	47 - 150
Ethylbenzene	50.0	53.9		ug/L		108	37 - 162

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	98		75 - 120
4-Bromofluorobenzene (Surr)	95		71 - 120
1,2-Dichloroethane-d4 (Surr)	104		71 - 127
Dibromofluoromethane (Surr)	107		70 - 120

Lab Sample ID: 500-173591-2 MS
Matrix: Water
Analysis Batch: 516366

Client Sample ID: SC-503-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
Benzene	<0.15		50.0	57.7		ug/L		115	37 - 151
Toluene	<0.15		50.0	49.3		ug/L		99	47 - 150
Ethylbenzene	<0.18		50.0	54.8		ug/L		110	37 - 162

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	95		75 - 120
4-Bromofluorobenzene (Surr)	98		71 - 120
1,2-Dichloroethane-d4 (Surr)	108		71 - 127
Dibromofluoromethane (Surr)	113		70 - 120

Lab Sample ID: 500-173591-2 MSD
Matrix: Water
Analysis Batch: 516366

Client Sample ID: SC-503-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	Limit
				Result	Qualifier						
Benzene	<0.15		50.0	59.0		ug/L		118	37 - 151	2	20
Toluene	<0.15		50.0	50.8		ug/L		102	47 - 150	3	20

Euromins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-173591-2 MSD
Matrix: Water
Analysis Batch: 516366

Client Sample ID: SC-503-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	<0.18		50.0	55.9		ug/L		112	37 - 162	2	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
Toluene-d8 (Surr)	95		75 - 120								
4-Bromofluorobenzene (Surr)	97		71 - 120								
1,2-Dichloroethane-d4 (Surr)	108		71 - 127								
Dibromofluoromethane (Surr)	113		70 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-516031/1-A
Matrix: Water
Analysis Batch: 516573

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 516031

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		11/18/19 16:33	11/21/19 11:51	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		11/18/19 16:33	11/21/19 11:51	1
Anthracene	<0.15		0.80	0.15	ug/L		11/18/19 16:33	11/21/19 11:51	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		11/18/19 16:33	11/21/19 11:51	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		11/18/19 16:33	11/21/19 11:51	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		11/18/19 16:33	11/21/19 11:51	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		11/18/19 16:33	11/21/19 11:51	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		11/18/19 16:33	11/21/19 11:51	1
Chrysene	<0.075		0.80	0.075	ug/L		11/18/19 16:33	11/21/19 11:51	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		11/18/19 16:33	11/21/19 11:51	1
Fluoranthene	<0.16		0.80	0.16	ug/L		11/18/19 16:33	11/21/19 11:51	1
Fluorene	<0.13		0.80	0.13	ug/L		11/18/19 16:33	11/21/19 11:51	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		11/18/19 16:33	11/21/19 11:51	1
Naphthalene	<0.12		0.80	0.12	ug/L		11/18/19 16:33	11/21/19 11:51	1
Phenanthrene	<0.17		0.80	0.17	ug/L		11/18/19 16:33	11/21/19 11:51	1
Pyrene	<0.18		0.80	0.18	ug/L		11/18/19 16:33	11/21/19 11:51	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		11/18/19 16:33	11/21/19 11:51	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		11/18/19 16:33	11/21/19 11:51	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	59		36 - 120				11/18/19 16:33	11/21/19 11:51	1
Terphenyl-d14	87		40 - 145				11/18/19 16:33	11/21/19 11:51	1
2-Fluorobiphenyl	58		34 - 110				11/18/19 16:33	11/21/19 11:51	1

Lab Sample ID: LCS 500-516031/2-A
Matrix: Water
Analysis Batch: 516573

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 516031

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	26.3		ug/L		82	47 - 145
Acenaphthylene	32.0	27.1		ug/L		85	33 - 145
Anthracene	32.0	28.3		ug/L		88	27 - 133
Benzo[a]anthracene	32.0	28.7		ug/L		90	33 - 143

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-516031/2-A
Matrix: Water
Analysis Batch: 516573

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 516031

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzo[a]pyrene	32.0	30.3		ug/L		95	17 - 163
Benzo[b]fluoranthene	32.0	25.3		ug/L		79	24 - 159
Benzo[g,h,i]perylene	32.0	30.4		ug/L		95	10 - 219
Benzo[k]fluoranthene	32.0	31.4		ug/L		98	11 - 162
Chrysene	32.0	28.3		ug/L		88	17 - 168
Dibenz(a,h)anthracene	32.0	29.7		ug/L		93	10 - 227
Fluoranthene	32.0	30.1		ug/L		94	26 - 137
Fluorene	32.0	28.1		ug/L		88	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	30.4		ug/L		95	10 - 171
Naphthalene	32.0	18.4		ug/L		58	21 - 133
Phenanthrene	32.0	27.4		ug/L		86	54 - 120
Pyrene	32.0	27.7		ug/L		87	52 - 115
1-Methylnaphthalene	32.0	20.2		ug/L		63	
2-Methylnaphthalene	32.0	21.9		ug/L		68	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	67		36 - 120
Terphenyl-d14	86		40 - 145
2-Fluorobiphenyl	76		34 - 110

Lab Sample ID: LCSD 500-516031/3-A
Matrix: Water
Analysis Batch: 516573

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 516031

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	32.0	26.1		ug/L		81	47 - 145	1	20
Acenaphthylene	32.0	26.6		ug/L		83	33 - 145	2	20
Anthracene	32.0	28.6		ug/L		89	27 - 133	1	20
Benzo[a]anthracene	32.0	28.3		ug/L		88	33 - 143	2	20
Benzo[a]pyrene	32.0	29.9		ug/L		94	17 - 163	1	20
Benzo[b]fluoranthene	32.0	25.9		ug/L		81	24 - 159	2	20
Benzo[g,h,i]perylene	32.0	30.3		ug/L		95	10 - 219	0	20
Benzo[k]fluoranthene	32.0	29.7		ug/L		93	11 - 162	5	20
Chrysene	32.0	27.2		ug/L		85	17 - 168	4	20
Dibenz(a,h)anthracene	32.0	30.0		ug/L		94	10 - 227	1	20
Fluoranthene	32.0	30.9		ug/L		97	26 - 137	3	20
Fluorene	32.0	28.4		ug/L		89	59 - 121	1	20
Indeno[1,2,3-cd]pyrene	32.0	30.5		ug/L		95	10 - 171	0	20
Naphthalene	32.0	19.7		ug/L		62	21 - 133	7	20
Phenanthrene	32.0	28.3		ug/L		88	54 - 120	3	20
Pyrene	32.0	27.9		ug/L		87	52 - 115	1	20
1-Methylnaphthalene	32.0	20.6		ug/L		65		2	
2-Methylnaphthalene	32.0	23.7		ug/L		74	42 - 110	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	70		36 - 120
Terphenyl-d14	88		40 - 145
2-Fluorobiphenyl	73		34 - 110

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-516836/15-A
Matrix: Water
Analysis Batch: 516839

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 516836

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		11/22/19 09:08	11/22/19 09:14	1

Lab Sample ID: MB 500-516836/1-A
Matrix: Water
Analysis Batch: 516839

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 516836

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		11/22/19 09:08	11/22/19 09:14	1

Lab Sample ID: LCS 500-516836/2-A
Matrix: Water
Analysis Batch: 516839

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 516836

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.40		mg/L		89	78 - 114

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

Lab Sample ID: MB 500-516655/1
Matrix: Water
Analysis Batch: 516655

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			11/21/19 12:45	1

Lab Sample ID: LCS 500-516655/2
Matrix: Water
Analysis Batch: 516655

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	189.5		mg/L		95	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-173591-1

Date Collected: 11/14/19 12:45

Matrix: Water

Date Received: 11/15/19 08:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	516366	11/21/19 05:20	STW	TAL CHI
Total/NA	Prep	625			516031	11/18/19 16:33	CMC	TAL CHI
Total/NA	Analysis	625		1	516573	11/21/19 21:18	AJD	TAL CHI
Total/NA	Prep	1664B			516836	11/22/19 09:08	TMS	TAL CHI
Total/NA	Analysis	1664B		1	516839	11/22/19 09:14	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	516655		SMO	TAL CHI
					(Start)	11/21/19 13:11		
					(End)	11/21/19 13:12		

Client Sample ID: SC-503-B

Lab Sample ID: 500-173591-2

Date Collected: 11/14/19 13:00

Matrix: Water

Date Received: 11/15/19 08:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	516366	11/21/19 05:47	STW	TAL CHI
Total/NA	Prep	625			516031	11/18/19 16:33	CMC	TAL CHI
Total/NA	Analysis	625		1	516573	11/21/19 20:51	AJD	TAL CHI
Total/NA	Prep	1664B			516836	11/22/19 09:08	TMS	TAL CHI
Total/NA	Analysis	1664B		1	516839	11/22/19 09:14	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	516655		SMO	TAL CHI
					(Start)	11/21/19 13:12		
					(End)	11/21/19 13:13		

Client Sample ID: Trip Blank

Lab Sample ID: 500-173591-3

Date Collected: 11/14/19 00:00

Matrix: Water

Date Received: 11/15/19 08:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	516366	11/21/19 00:48	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-173591-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

1

2

3

4

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12

13

Chain of Custody Record

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Lisa Rutkowski		Site Contact:		Date:		COC No:	
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		_____ of _____ COCs	
126 North Jefferson Street, Suite 400		Analysis Turnaround Time		Filtered Sample (Y/N) _____ Perform MS / MSD (Y/N) _____ BTEX: Method 624 _____ Oil&Grease: Method 1664 _____ TSS: Method 2540D _____ PAHs: Method 625 _____		 500-173591 COC		Sampler:	
Milwaukee, WI 53202		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS <input checked="" type="checkbox"/> TAT if different from Below <i>5 Day</i>						For Lab Use Only:	
Phone _____		<input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day						Walk-in Client: _____	
FAX _____								Lab Sampling: _____	
Project Name: Marinette, WI						Lab Project number		500-173591	
Site: Marinette, WI								Sample Specific Notes:	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.			
1 SC-203-B		11/14	1245	G	W				
2 SC-503-B		11/14	1300	G	W				
3 Trip Blank				G	W				
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.				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown				<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by lab <input type="checkbox"/> Archive for _____ Months					
Special Instructions/QC Requirements & Comments: Level 2 QA/QC, Questions call Jennifer Bennett WPDES: LOD/LOQ TAT: 5 Day <i>SC-203-B PH 7.50 Temp 6.2°C</i> <i>SC-503-B PH 7.61 Temp 5.7°C</i> 2.3									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Corr'd: _____		Therm ID No.: _____	
Relinquished by: <i>[Signature]</i>		Company: ARCADIS		Date/Time: 11/14/14		Received by: _____		Company: _____	
Relinquished by: _____		Company: _____		Date/Time: _____		Received by: _____		Company: _____	
Relinquished by: _____		Company: _____		Date/Time: _____		Received in Laboratory by: <i>Paula Buckley</i>		Company: <i>TH</i>	
								Date/Time: 11/18/14 0855	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID: RRLA (262) 202-5955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET

SHIP DATE: 15OCT19
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3211

MILWAUKEE, WI 53202
UNITED STATES US

TO:

TESTAMERICA CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484-3101


(708) 634-5200

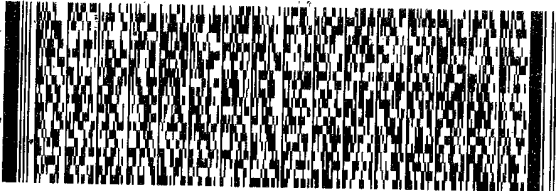
REF:

INV:

PO:

DEPT:

RMA: 



FedEx
Express



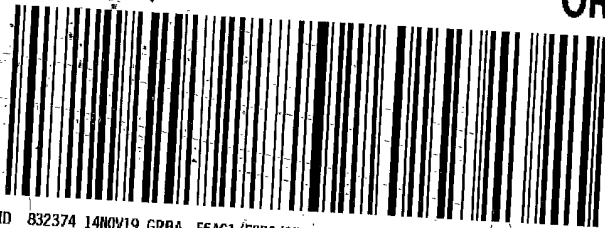
FedEx

TRK#
0221 7125 4941 1278

RETURNS MON SAT
FRI - 15 NOV 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD



FID 832374 14NOV19 GRBA 56AC1/F330/05A2



500-173591 Waybill

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

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-173591-1

Login Number: 173591

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Buckley, Paula M

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	2.3
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

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

Laboratory Job ID: 500-174052-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



*Authorized for release by:
12/11/2019 1:37:11 PM*

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

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Job ID: 500-174052-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-174052-1

Comments

No additional comments.

Receipt

The samples were received on 11/23/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

LCMS

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for the following sample: SC-203-B (500-174052-1). Since the high recovery is due to matrix interferences, the analytes associated with this IDA may have a low bias. The sample was re-run at a dilution and both sets of data have been reported.

Method 537 (modified): Results for sample SC-203-B (500-174052-1) 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

Method 537 (modified): Internal standard (ISTD) response for the following sample was outside control limits: SC-203-B (500-174052-1). The sample was re-analyzed at a dilution which improved ISTD recovery, and both sets of data have been reported.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: SC-203-B (500-174052-1). Since the high recovery is due to matrix interferences, the analytes associated with this IDA may have a low bias. The sample was re-analyzed at a dilution and both sets of data have been reported.

Method 537 (modified): Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for several analytes in the following sample: SC-203-B (500-174052-1). This sample was re-analyzed at a dilution with improved results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries. Both sets of data have been reported.

Method 537 (modified): The "C" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analytes have some degree of uncertainty. However, analyst judgment was used to positively identify the analytes. SC-203-B (500-174052-1)

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 320-343311. Method Code: 3535 PFC-W

Method 3535: The following samples were observed to be light yellow and contain sediment prior to extraction: SC-203-B (500-174052-1) and SC-503-B (500-174052-2). Method Code: 3535 PFC-W preparation batch 320-343311

Method 3535: The following sample contains non-settleable particulate matter which clogged the solid-phase extraction column: SC-503-B (500-174052-2). Method Code: 3535 PFC-W preparation batch 320-343311

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

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

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.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-174052-1	SC-203-B	Water	11/22/19 14:30	11/23/19 09:30	
500-174052-2	SC-503-B	Water	11/22/19 14:40	11/23/19 09:30	

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174052-1

Date Collected: 11/22/19 14:30

Matrix: Water

Date Received: 11/23/19 09:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.4	J	19	1.8	ng/L		12/05/19 06:04	12/06/19 10:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorobutanesulfonic acid (PFBS)	4.8		1.9	0.19	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorodecanoic acid (PFDA)	3.4		1.9	0.30	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluoroheptanoic acid (PFHpA)	120		1.9	0.24	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorohexanesulfonic acid (PFHxS)	59	B	1.9	0.16	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorohexanoic acid (PFHxA)	270		1.9	0.55	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorononanoic acid (PFNA)	82		1.9	0.26	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorooctanesulfonic acid (PFOS)	110		1.9	0.51	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorooctanoic acid (PFOA)	2000	E	1.9	0.81	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		12/05/19 06:04	12/06/19 10:33	1
Perfluoroundecanoic acid (PFUnA)	1.2	J	1.9	1.0	ng/L		12/05/19 06:04	12/06/19 10:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	249	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C2 PFDoA	212	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C4 PFHpA	209	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C2 PFHxA	226	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C5 PFNA	223	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C4 PFOA	147	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C4 PFOS	239	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C2 PFTeDA	148	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
18O2 PFHxS	246	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C2 PFUnA	194	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
d3-NMeFOSAA	255	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
d5-NEtFOSAA	254	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1
13C3 PFBS	241	*	25 - 150	12/05/19 06:04	12/06/19 10:33	1

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<18		190	18	ng/L		12/05/19 06:04	12/09/19 15:04	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<30		190	30	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorobutanesulfonic acid (PFBS)	10	J C	19	1.9	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorodecanoic acid (PFDA)	3.4	J	19	3.0	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorododecanoic acid (PFDoA)	<5.2		19	5.2	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluoroheptanoic acid (PFHpA)	91		19	2.4	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorohexanesulfonic acid (PFHxS)	49	B	19	1.6	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorohexanoic acid (PFHxA)	300		19	5.5	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorononanoic acid (PFNA)	81		19	2.6	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorooctanesulfonic acid (PFOS)	110		19	5.1	ng/L		12/05/19 06:04	12/09/19 15:04	10

Eurofins TestAmerica, Chicago

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174052-1

Date Collected: 11/22/19 14:30

Matrix: Water

Date Received: 11/23/19 09:30

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	2300		19	8.1	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorotetradecanoic acid (PFTeA)	<2.8		19	2.8	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluorotridecanoic acid (PFTrIA)	<12		19	12	ng/L		12/05/19 06:04	12/09/19 15:04	10
Perfluoroundecanoic acid (PFUnA)	<10		19	10	ng/L		12/05/19 06:04	12/09/19 15:04	10
<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	188	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C2 PFDoA	144		25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C4 PFHpA	201	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C2 PFHxA	167	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C5 PFNA	162	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C4 PFOA	155	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C4 PFOS	172	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C2 PFTeDA	107		25 - 150				12/05/19 06:04	12/09/19 15:04	10
18O2 PFHxS	165	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C2 PFUnA	150		25 - 150				12/05/19 06:04	12/09/19 15:04	10
d3-NMeFOSAA	168	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
d5-NEtFOSAA	186	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10
13C3 PFBS	173	*	25 - 150				12/05/19 06:04	12/09/19 15:04	10

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-174052-2

Date Collected: 11/22/19 14:40

Matrix: Water

Date Received: 11/23/19 09:30

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		12/05/19 06:04	12/06/19 10:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.9	0.24	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorohexanesulfonic acid (PFHxS)	0.44	J B	1.9	0.16	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorohexanoic acid (PFHxA)	5.2		1.9	0.55	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorononanoic acid (PFNA)	0.35	J C	1.9	0.26	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorooctanesulfonic acid (PFOS)	<0.51		1.9	0.51	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorooctanoic acid (PFOA)	19		1.9	0.80	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.9	0.27	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluorotridecanoic acid (PFTrIA)	<1.2		1.9	1.2	ng/L		12/05/19 06:04	12/06/19 10:42	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		12/05/19 06:04	12/06/19 10:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	84		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C2 PFDoA	65		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C4 PFHpA	85		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C2 PFHxA	84		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C5 PFNA	85		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C4 PFOA	83		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C4 PFOS	83		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C2 PFTeDA	58		25 - 150				12/05/19 06:04	12/06/19 10:42	1
18O2 PFHxS	91		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C2 PFUnA	78		25 - 150				12/05/19 06:04	12/06/19 10:42	1
d3-NMeFOSAA	84		25 - 150				12/05/19 06:04	12/06/19 10:42	1
d5-NEtFOSAA	84		25 - 150				12/05/19 06:04	12/06/19 10:42	1
13C3 PFBS	87		25 - 150				12/05/19 06:04	12/06/19 10:42	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
C	See Case Narrative
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-343311/1-A
Matrix: Water
Analysis Batch: 343671

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 343311

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		12/05/19 06:04	12/06/19 09:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorohexanesulfonic acid (PFHxS)	0.275	J	2.0	0.17	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		12/05/19 06:04	12/06/19 09:26	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		12/05/19 06:04	12/06/19 09:26	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	107		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C2 PFDoA	99		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C4 PFHpA	101		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C2 PFHxA	111		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C5 PFNA	88		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C4 PFOA	96		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C4 PFOS	111		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C2 PFTeDA	91		25 - 150	12/05/19 06:04	12/06/19 09:26	1
18O2 PFHxS	112		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C2 PFUnA	96		25 - 150	12/05/19 06:04	12/06/19 09:26	1
d3-NMeFOSAA	110		25 - 150	12/05/19 06:04	12/06/19 09:26	1
d5-NEtFOSAA	108		25 - 150	12/05/19 06:04	12/06/19 09:26	1
13C3 PFBS	107		25 - 150	12/05/19 06:04	12/06/19 09:26	1

Lab Sample ID: LCS 320-343311/2-A
Matrix: Water
Analysis Batch: 343671

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343311

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.7		ng/L		92	76 - 136
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.0		ng/L		97	76 - 136
Perfluorobutanesulfonic acid (PFBS)	35.4	31.6		ng/L		89	67 - 127
Perfluorodecanoic acid (PFDA)	40.0	37.7		ng/L		94	76 - 136
Perfluorododecanoic acid (PFDoA)	40.0	38.3		ng/L		96	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	72 - 132
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.2		ng/L		99	59 - 119
Perfluorohexanoic acid (PFHxA)	40.0	36.2		ng/L		91	73 - 133

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

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

Lab Sample ID: LCS 320-343311/2-A
Matrix: Water
Analysis Batch: 343671

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343311

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	33.8		ng/L		84	75 - 135
Perfluorooctanesulfonic acid (PFOS)	37.1	34.6		ng/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	34.8		ng/L		87	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	37.0		ng/L		92	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	50.5		ng/L		126	71 - 131
Perfluoroundecanoic acid (PFUnA)	40.0	36.4		ng/L		91	68 - 128
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	85		25 - 150				
13C2 PFDoA	73		25 - 150				
13C4 PFHpA	82		25 - 150				
13C2 PFHxA	91		25 - 150				
13C5 PFNA	87		25 - 150				
13C4 PFOA	89		25 - 150				
13C4 PFOS	95		25 - 150				
13C2 PFTeDA	85		25 - 150				
18O2 PFHxS	94		25 - 150				
13C2 PFUnA	85		25 - 150				
d3-NMeFOSAA	93		25 - 150				
d5-NEFOSAA	95		25 - 150				
13C3 PFBS	94		25 - 150				

Lab Sample ID: LCSD 320-343311/3-A
Matrix: Water
Analysis Batch: 343671

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 343311

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.1		ng/L		93	76 - 136	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.4		ng/L		101	76 - 136	4	30
Perfluorobutanesulfonic acid (PFBS)	35.4	31.1		ng/L		88	67 - 127	2	30
Perfluorodecanoic acid (PFDA)	40.0	35.6		ng/L		89	76 - 136	6	30
Perfluorododecanoic acid (PFDoA)	40.0	37.8		ng/L		95	71 - 131	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.9		ng/L		100	72 - 132	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.7		ng/L		93	59 - 119	7	30
Perfluorohexanoic acid (PFHxA)	40.0	34.4		ng/L		86	73 - 133	5	30
Perfluorononanoic acid (PFNA)	40.0	41.2		ng/L		103	75 - 135	20	30
Perfluorooctanesulfonic acid (PFOS)	37.1	33.3		ng/L		90	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	40.0	35.2		ng/L		88	70 - 130	1	30
Perfluorotetradecanoic acid (PFTeA)	40.0	37.7		ng/L		94	70 - 130	2	30
Perfluorotridecanoic acid (PFTriA)	40.0	41.2		ng/L		103	71 - 131	20	30

Eurofins TestAmerica, Chicago

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Client Sample ID: SC-203-B

Date Collected: 11/22/19 14:30

Date Received: 11/23/19 09:30

Lab Sample ID: 500-174052-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			343311	12/05/19 06:04	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1	343671	12/06/19 10:33	P1N	TAL SAC
Total/NA	Prep	3535	DL		343311	12/05/19 06:04	AF	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10	344224	12/09/19 15:04	JRM	TAL SAC

Client Sample ID: SC-503-B

Date Collected: 11/22/19 14:40

Date Received: 11/23/19 09:30

Lab Sample ID: 500-174052-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			343311	12/05/19 06:04	AF	TAL SAC
Total/NA	Analysis	537 (modified)		1	343671	12/06/19 10:42	P1N	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.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



500-174052 Waybi

ORIGIN ID:RRLA (262) 202-5955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET
MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 01NOV19
ACTWGT: 15.00 LB MAN
CAD: 525165/CAFE3211

TO

TESTAMERICA CHICAGO
2417 BOND STREET

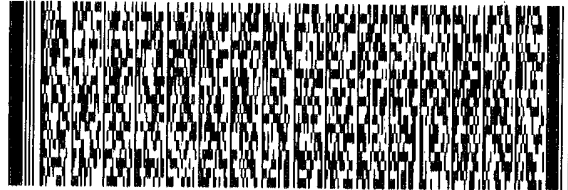
UNIVERSITY PARK IL 60484-3101

(708) 634-6200

REF:

DEPT:

RMA:



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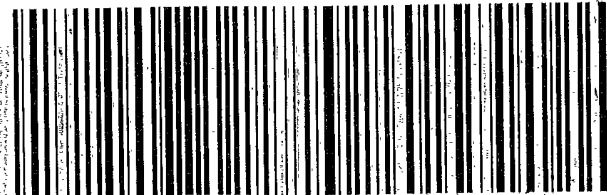
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TRK# 7125 4941 2859
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SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 JOTA

60484
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ORD



FTD 832374 22NOV19 GRDA: 56AC1/F330/05A2

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-174052-1

Login Number: 174052

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: James, Jeff A

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	2.6
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").	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: 500-174052-1

Login Number: 174052

List Number: 2

Creator: Oropenza, Salvador

List Source: Eurofins TestAmerica, Sacramento

List Creation: 11/26/19 03:58 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	956989
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	3.0c
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 <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 U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174052-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
500-174052-1	SC-203-B	249 *	212 *	209 *	226 *	223 *	147	239 *	148
500-174052-1 - DL	SC-203-B	188 *	144	201 *	167 *	162 *	155 *	172 *	107
500-174052-2	SC-503-B	84	65	85	84	85	83	83	58
LCS 320-343311/2-A	Lab Control Sample	85	73	82	91	87	89	95	85
LCSD 320-343311/3-A	Lab Control Sample Dup	89	73	82	88	77	80	89	78
MB 320-343311/1-A	Method Blank	107	99	101	111	88	96	111	91

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)	13C3-PFBS (25-150)
500-174052-1	SC-203-B	246 *	194 *	255 *	254 *	241 *
500-174052-1 - DL	SC-203-B	165 *	150	168 *	186 *	173 *
500-174052-2	SC-503-B	91	78	84	84	87
LCS 320-343311/2-A	Lab Control Sample	94	85	93	95	94
LCSD 320-343311/3-A	Lab Control Sample Dup	89	76	85	89	87
MB 320-343311/1-A	Method Blank	112	96	110	108	107

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA
- 13C3-PFBS = 13C3 PFBS

ANALYTICAL REPORT

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

Laboratory Job ID: 500-174056-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/3/2019 12:27:35 PM

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

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Job ID: 500-174056-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-174056-1

Comments

No additional comments.

Receipt

The samples were received on 11/23/2019 12:44 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° 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: The continuing calibration verification (CCV) associated with batch 500-517943 recovered above the upper control limit for Acenaphthylene, Benzo[k]fluoranthene, Indeno[1,2,3-cd]pyrene and Fluorene. 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.

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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-174056-1	SC-203-B	Water	11/22/19 14:30	11/23/19 12:44	
500-174056-2	SC-503-B	Water	11/22/19 14:40	11/23/19 12:44	
500-174056-3	TRIP BLANK	Water	11/22/19 00:00	11/23/19 12:44	

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174056-1

Date Collected: 11/22/19 14:30

Matrix: Water

Date Received: 11/23/19 12:44

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.41	J	0.50	0.15	ug/L			11/29/19 22:14	1
Toluene	<0.15		0.50	0.15	ug/L			11/29/19 22:14	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/29/19 22:14	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/29/19 22:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	102		75 - 120		11/29/19 22:14	1
<i>4-Bromofluorobenzene (Surr)</i>	90		71 - 120		11/29/19 22:14	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	121		71 - 127		11/29/19 22:14	1
<i>Dibromofluoromethane (Surr)</i>	116		70 - 120		11/29/19 22:14	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.091		0.74	0.091	ug/L		11/25/19 14:11	11/30/19 08:53	1
Acenaphthylene	<0.10	^c	0.74	0.10	ug/L		11/25/19 14:11	11/30/19 08:53	1
Anthracene	<0.14		0.74	0.14	ug/L		11/25/19 14:11	11/30/19 08:53	1
Benzo[a]anthracene	<0.048		0.74	0.048	ug/L		11/25/19 14:11	11/30/19 08:53	1
Benzo[a]pyrene	0.16	J	0.74	0.056	ug/L		11/25/19 14:11	11/30/19 08:53	1
Benzo[b]fluoranthene	<0.060		0.74	0.060	ug/L		11/25/19 14:11	11/30/19 08:53	1
Benzo[g,h,i]perylene	<0.36		0.74	0.36	ug/L		11/25/19 14:11	11/30/19 08:53	1
Benzo[k]fluoranthene	<0.13	^c	0.74	0.13	ug/L		11/25/19 14:11	11/30/19 08:53	1
Chrysene	<0.069		0.74	0.069	ug/L		11/25/19 14:11	11/30/19 08:53	1
Dibenz(a,h)anthracene	<0.084		0.74	0.084	ug/L		11/25/19 14:11	11/30/19 08:53	1
Fluoranthene	0.45	J	0.74	0.15	ug/L		11/25/19 14:11	11/30/19 08:53	1
Fluorene	<0.12	^c	0.74	0.12	ug/L		11/25/19 14:11	11/30/19 08:53	1
Indeno[1,2,3-cd]pyrene	<0.057	^c	0.74	0.057	ug/L		11/25/19 14:11	11/30/19 08:53	1
Naphthalene	<0.11		0.74	0.11	ug/L		11/25/19 14:11	11/30/19 08:53	1
Phenanthrene	<0.16		0.74	0.16	ug/L		11/25/19 14:11	11/30/19 08:53	1
Pyrene	0.32	J	0.74	0.17	ug/L		11/25/19 14:11	11/30/19 08:53	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		11/25/19 14:11	11/30/19 08:53	1
2-Methylnaphthalene	<0.062		1.5	0.062	ug/L		11/25/19 14:11	11/30/19 08:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Nitrobenzene-d5</i>	70		36 - 120	11/25/19 14:11	11/30/19 08:53	1
<i>Terphenyl-d14</i>	92		40 - 145	11/25/19 14:11	11/30/19 08:53	1
<i>2-Fluorobiphenyl</i>	77		34 - 110	11/25/19 14:11	11/30/19 08:53	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.9	J B	5.2	1.4	mg/L		11/29/19 08:42	11/29/19 08:46	1
Total Suspended Solids	19.5		5.0	1.9	mg/L			11/27/19 11:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-174056-2

Date Collected: 11/22/19 14:40

Matrix: Water

Date Received: 11/23/19 12:44

Method: 624 - 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			11/29/19 22:38	1
Toluene	<0.15		0.50	0.15	ug/L			11/29/19 22:38	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/29/19 22:38	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/29/19 22:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		75 - 120		11/29/19 22:38	1
4-Bromofluorobenzene (Surr)	90		71 - 120		11/29/19 22:38	1
1,2-Dichloroethane-d4 (Surr)	114		71 - 127		11/29/19 22:38	1
Dibromofluoromethane (Surr)	108		70 - 120		11/29/19 22:38	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.091		0.74	0.091	ug/L		11/25/19 14:11	11/30/19 09:20	1
Acenaphthylene	<0.099	^c	0.74	0.099	ug/L		11/25/19 14:11	11/30/19 09:20	1
Anthracene	<0.14		0.74	0.14	ug/L		11/25/19 14:11	11/30/19 09:20	1
Benzo[a]anthracene	<0.048		0.74	0.048	ug/L		11/25/19 14:11	11/30/19 09:20	1
Benzo[a]pyrene	<0.056		0.74	0.056	ug/L		11/25/19 14:11	11/30/19 09:20	1
Benzo[b]fluoranthene	<0.060		0.74	0.060	ug/L		11/25/19 14:11	11/30/19 09:20	1
Benzo[g,h,i]perylene	<0.36		0.74	0.36	ug/L		11/25/19 14:11	11/30/19 09:20	1
Benzo[k]fluoranthene	<0.12	^c	0.74	0.12	ug/L		11/25/19 14:11	11/30/19 09:20	1
Chrysene	<0.069		0.74	0.069	ug/L		11/25/19 14:11	11/30/19 09:20	1
Dibenz(a,h)anthracene	<0.083		0.74	0.083	ug/L		11/25/19 14:11	11/30/19 09:20	1
Fluoranthene	<0.15		0.74	0.15	ug/L		11/25/19 14:11	11/30/19 09:20	1
Fluorene	<0.12	^c	0.74	0.12	ug/L		11/25/19 14:11	11/30/19 09:20	1
Indeno[1,2,3-cd]pyrene	<0.057	^c	0.74	0.057	ug/L		11/25/19 14:11	11/30/19 09:20	1
Naphthalene	<0.11		0.74	0.11	ug/L		11/25/19 14:11	11/30/19 09:20	1
Phenanthrene	<0.16		0.74	0.16	ug/L		11/25/19 14:11	11/30/19 09:20	1
Pyrene	<0.17		0.74	0.17	ug/L		11/25/19 14:11	11/30/19 09:20	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		11/25/19 14:11	11/30/19 09:20	1
2-Methylnaphthalene	<0.062		1.5	0.062	ug/L		11/25/19 14:11	11/30/19 09:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	69		36 - 120	11/25/19 14:11	11/30/19 09:20	1
Terphenyl-d14	82		40 - 145	11/25/19 14:11	11/30/19 09:20	1
2-Fluorobiphenyl	71		34 - 110	11/25/19 14:11	11/30/19 09:20	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.1	1.4	mg/L		11/29/19 08:42	11/29/19 08:46	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			11/27/19 11:11	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-174056-3

Date Collected: 11/22/19 00:00

Matrix: Water

Date Received: 11/23/19 12:44

Method: 624 - 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			11/29/19 23:02	1
Toluene	<0.15		0.50	0.15	ug/L			11/29/19 23:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/29/19 23:02	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/29/19 23:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	97		75 - 120		11/29/19 23:02	1
<i>4-Bromofluorobenzene (Surr)</i>	93		71 - 120		11/29/19 23:02	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	113		71 - 127		11/29/19 23:02	1
<i>Dibromofluoromethane (Surr)</i>	108		70 - 120		11/29/19 23:02	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

Qualifier	Qualifier Description
^C	CCV Recovery is outside acceptance limits.
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (75-120)	BFB (71-120)	DCA (71-127)	DBFM (70-120)
500-174056-1	SC-203-B	102	90	121	116
500-174056-2	SC-503-B	97	90	114	108
500-174056-3	TRIP BLANK	97	93	113	108
LCS 500-517912/15	Lab Control Sample	105	92	102	102
MB 500-517912/7	Method Blank	98	88	114	107

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ (36-120)	TPHL (40-145)	FBP (34-110)
500-174056-1	SC-203-B	70	92	77
500-174056-2	SC-503-B	69	82	71
LCS 500-517238/2-A	Lab Control Sample	81	86	89
LCSD 500-517238/3-A	Lab Control Sample Dup	72	76	79
MB 500-517238/1-A	Method Blank	63	81	70

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-517912/7
Matrix: Water
Analysis Batch: 517912

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			11/29/19 16:14	1
Toluene	<0.15		0.50	0.15	ug/L			11/29/19 16:14	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			11/29/19 16:14	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			11/29/19 16:14	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	98		75 - 120		11/29/19 16:14	1
4-Bromofluorobenzene (Surr)	88		71 - 120		11/29/19 16:14	1
1,2-Dichloroethane-d4 (Surr)	114		71 - 127		11/29/19 16:14	1
Dibromofluoromethane (Surr)	107		70 - 120		11/29/19 16:14	1

Lab Sample ID: LCS 500-517912/15
Matrix: Water
Analysis Batch: 517912

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	52.1		ug/L		104	37 - 151
Toluene	50.0	54.1		ug/L		108	47 - 150
Ethylbenzene	50.0	55.4		ug/L		111	37 - 162

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	105		75 - 120
4-Bromofluorobenzene (Surr)	92		71 - 120
1,2-Dichloroethane-d4 (Surr)	102		71 - 127
Dibromofluoromethane (Surr)	102		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-517238/1-A
Matrix: Water
Analysis Batch: 517943

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517238

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		11/25/19 14:11	11/30/19 04:22	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		11/25/19 14:11	11/30/19 04:22	1
Anthracene	<0.15		0.80	0.15	ug/L		11/25/19 14:11	11/30/19 04:22	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		11/25/19 14:11	11/30/19 04:22	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		11/25/19 14:11	11/30/19 04:22	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		11/25/19 14:11	11/30/19 04:22	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		11/25/19 14:11	11/30/19 04:22	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		11/25/19 14:11	11/30/19 04:22	1
Chrysene	<0.075		0.80	0.075	ug/L		11/25/19 14:11	11/30/19 04:22	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		11/25/19 14:11	11/30/19 04:22	1
Fluoranthene	<0.16		0.80	0.16	ug/L		11/25/19 14:11	11/30/19 04:22	1
Fluorene	<0.13		0.80	0.13	ug/L		11/25/19 14:11	11/30/19 04:22	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		11/25/19 14:11	11/30/19 04:22	1
Naphthalene	<0.12		0.80	0.12	ug/L		11/25/19 14:11	11/30/19 04:22	1
Phenanthrene	<0.17		0.80	0.17	ug/L		11/25/19 14:11	11/30/19 04:22	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-517238/1-A
Matrix: Water
Analysis Batch: 517943

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517238

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Pyrene	<0.18		0.80	0.18	ug/L		11/25/19 14:11	11/30/19 04:22	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		11/25/19 14:11	11/30/19 04:22	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		11/25/19 14:11	11/30/19 04:22	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Nitrobenzene-d5	63		36 - 120	11/25/19 14:11	11/30/19 04:22	1
Terphenyl-d14	81		40 - 145	11/25/19 14:11	11/30/19 04:22	1
2-Fluorobiphenyl	70		34 - 110	11/25/19 14:11	11/30/19 04:22	1

Lab Sample ID: LCS 500-517238/2-A
Matrix: Water
Analysis Batch: 517943

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517238

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Acenaphthene	32.0	28.4		ug/L		89	47 - 145
Acenaphthylene	32.0	31.3		ug/L		98	33 - 145
Anthracene	32.0	29.9		ug/L		93	27 - 133
Benzo[a]anthracene	32.0	29.1		ug/L		91	33 - 143
Benzo[a]pyrene	32.0	32.9		ug/L		103	17 - 163
Benzo[b]fluoranthene	32.0	30.1		ug/L		94	24 - 159
Benzo[g,h,i]perylene	32.0	35.7		ug/L		112	10 - 219
Benzo[k]fluoranthene	32.0	34.9		ug/L		109	11 - 162
Chrysene	32.0	28.4		ug/L		89	17 - 168
Dibenz(a,h)anthracene	32.0	34.8		ug/L		109	10 - 227
Fluoranthene	32.0	32.0		ug/L		100	26 - 137
Fluorene	32.0	29.3		ug/L		91	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	35.6		ug/L		111	10 - 171
Naphthalene	32.0	24.6		ug/L		77	21 - 133
Phenanthrene	32.0	29.7		ug/L		93	54 - 120
Pyrene	32.0	28.6		ug/L		89	52 - 115
1-Methylnaphthalene	32.0	27.1		ug/L		85	
2-Methylnaphthalene	32.0	24.0		ug/L		75	42 - 110

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Nitrobenzene-d5	81		36 - 120
Terphenyl-d14	86		40 - 145
2-Fluorobiphenyl	89		34 - 110

Lab Sample ID: LCSD 500-517238/3-A
Matrix: Water
Analysis Batch: 517943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 517238

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
		Result	Qualifier						
Acenaphthene	32.0	26.3		ug/L		82	47 - 145	8	20
Acenaphthylene	32.0	30.0		ug/L		94	33 - 145	4	20
Anthracene	32.0	27.3		ug/L		85	27 - 133	9	20
Benzo[a]anthracene	32.0	27.7		ug/L		87	33 - 143	5	20
Benzo[a]pyrene	32.0	30.0		ug/L		94	17 - 163	9	20

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-517238/3-A
Matrix: Water
Analysis Batch: 517943

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 517238

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	28.1		ug/L		88	24 - 159	7	20
Benzo[g,h,i]perylene	32.0	31.7		ug/L		99	10 - 219	12	20
Benzo[k]fluoranthene	32.0	29.7		ug/L		93	11 - 162	16	20
Chrysene	32.0	27.0		ug/L		84	17 - 168	5	20
Dibenz(a,h)anthracene	32.0	31.6		ug/L		99	10 - 227	10	20
Fluoranthene	32.0	27.8		ug/L		87	26 - 137	14	20
Fluorene	32.0	26.9		ug/L		84	59 - 121	8	20
Indeno[1,2,3-cd]pyrene	32.0	31.2		ug/L		98	10 - 171	13	20
Naphthalene	32.0	21.7		ug/L		68	21 - 133	12	20
Phenanthrene	32.0	27.7		ug/L		87	54 - 120	7	20
Pyrene	32.0	25.6		ug/L		80	52 - 115	11	20
1-Methylnaphthalene	32.0	24.3		ug/L		76		11	
2-Methylnaphthalene	32.0	21.4		ug/L		67	42 - 110	11	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Nitrobenzene-d5	72		36 - 120
Terphenyl-d14	76		40 - 145
2-Fluorobiphenyl	79		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-517804/12-A
Matrix: Water
Analysis Batch: 517806

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517804

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		11/29/19 08:42	11/29/19 08:46	1

Lab Sample ID: MB 500-517804/1-A
Matrix: Water
Analysis Batch: 517806

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517804

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.30	J	5.0	1.3	mg/L		11/29/19 08:42	11/29/19 08:46	1

Lab Sample ID: LCS 500-517804/2-A
Matrix: Water
Analysis Batch: 517806

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.90		mg/L		90	78 - 114

Lab Sample ID: 500-174056-2 MS
Matrix: Water
Analysis Batch: 517806

Client Sample ID: SC-503-B
Prep Type: Total/NA
Prep Batch: 517804

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	<1.4		41.0	35.45		mg/L		86	78 - 114

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

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

Lab Sample ID: MB 500-517625/1
Matrix: Water
Analysis Batch: 517625

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			11/27/19 11:05	1

Lab Sample ID: LCS 500-517625/2
Matrix: Water
Analysis Batch: 517625

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	185.0		mg/L		93	80 - 120



Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174056-1

Date Collected: 11/22/19 14:30

Matrix: Water

Date Received: 11/23/19 12:44

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	517912	11/29/19 22:14	JLC	TAL CHI
Total/NA	Prep	625			517238	11/25/19 14:11	DAK	TAL CHI
Total/NA	Analysis	625		1	517943	11/30/19 08:53	NRJ	TAL CHI
Total/NA	Prep	1664B			517804	11/29/19 08:42	TMS	TAL CHI
Total/NA	Analysis	1664B		1	517806	11/29/19 08:46	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	517625		MTB	TAL CHI
					(Start)	11/27/19 11:09		
					(End)	11/27/19 11:11		

Client Sample ID: SC-503-B

Lab Sample ID: 500-174056-2

Date Collected: 11/22/19 14:40

Matrix: Water

Date Received: 11/23/19 12:44

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	517912	11/29/19 22:38	JLC	TAL CHI
Total/NA	Prep	625			517238	11/25/19 14:11	DAK	TAL CHI
Total/NA	Analysis	625		1	517943	11/30/19 09:20	NRJ	TAL CHI
Total/NA	Prep	1664B			517804	11/29/19 08:42	TMS	TAL CHI
Total/NA	Analysis	1664B		1	517806	11/29/19 08:46	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	517625		MTB	TAL CHI
					(Start)	11/27/19 11:11		
					(End)	11/27/19 11:13		

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-174056-3

Date Collected: 11/22/19 00:00

Matrix: Water

Date Received: 11/23/19 12:44

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	517912	11/29/19 23:02	JLC	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174056-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20


- 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: DWI NPDES RCRA Other:

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

Client Contact		Project Manager: Lisa Rutkowski		Site Contact:		Date:		COC No:	
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		_____ of _____ COCs	
126 North Jefferson Street, Suite 400		Analysis Turnaround Time		 500-174056 COC		Filtered Sample (Y/N) Perform MS /MSD (Y/N) BTEX: Method 624 Oil & Grease: Method 1664 TSS: Method 2540D PAHs: Method 625		Sampler:	
Milwaukee, WI 53202		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS TAT if different from Below _____						For Lab Use Only:	
Phone _____		<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day						Walk-in Client: _____	
FAX _____		Project Name: Marinette, WI Site: Marinette, WI <i>LAB# 50016846</i>						Lab Sampling: _____	
P O # 30015296.00006 (WPDES)								Lab Project number 50016846 <i>500-174056</i>	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:		
SC-203-B		11/22	1430	G	W	8			
SC-503-B		11/22	1440	G	W	8			
Trip Blank				G	W	1			
							Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other		
Possible Hazard Identification:							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
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							<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months		
Special Instructions/QC Requirements & Comments:									
Level 2 QA/QC, Questions call Jennifer Bennett WPDES: LOD/LOQ TAT: 5 Day <i>SC-203-B PH 7.35 Temp 4.9°C</i> <i>SC-503-B PH 7.54 Temp 5.4°C TOTALCAL 10.1UM / 450.67UM</i>									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: <i>2.0</i> Corr'd: <i>2.0</i>		Therm ID No.:			
Relinquished by: <i>[Signature]</i>		Company: ARCADIS		Date/Time: 11/22 1500		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by: <i>Paula Buckley</i>		Company: <i>TA</i> Date/Time: 11/23/19 0930	

Part # 159469-434 RIT2 EXP 07/19

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

5 12:00 A
11 23 1290

RT 777
ST 15

ORIGIN ID: RRLA (262) 202-6955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET
MILWAUKEE, WI 53202
UNITED STATES US

SHIP ACTAGT: 525153
CAD: 525153

TO
TESTAMERICA CHICAGO
2417 BOND STREET

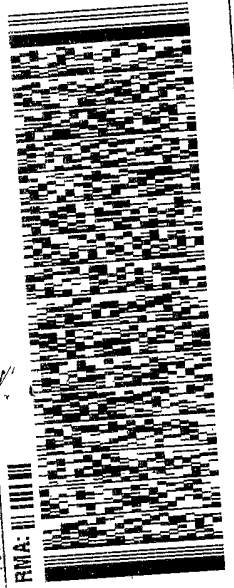
UNIVERSITY PARK IL 60484 - 3101

(709) 584-5200 REF:
RMA: 0221



500-174056 Waybill

FedEx Express



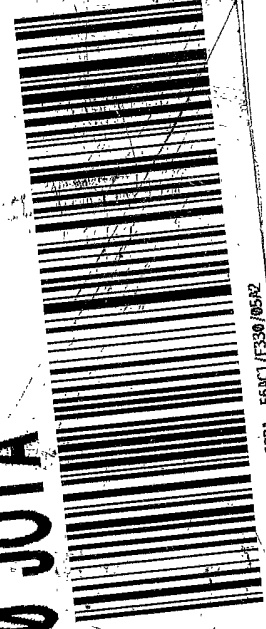
SATURDAY 12:00P
PRIORITY OVERNIGHT

FedEx

TRK# 7125 4941 1290

60484 IL-US
ORD

X0 JOTA



FID 832374 22NOV19 CRBA 56461 /F536 /0542



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-174056-1

Login Number: 174056

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Buckley, Paula M

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	2.6
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

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

Laboratory Job ID: 500-174254-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/5/2019 2:23:34 PM

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

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Job ID: 500-174254-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-174254-1

Comments

No additional comments.

Receipt

The samples were received on 11/27/2019 11:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.3° C.

Receipt Exceptions

Received only VOA vial for sample 3 with headspace.

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: The continuing calibration verification (CCV) associated with batch 500-518480 recovered above the upper control limit for Acenaphthylene and Benzo[b]fluoranthene. The samples associated with this CCV were not-detected above the reporting limit 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.

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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-174254-1	SC-203-B	Water	11/26/19 11:30	11/27/19 11:35	
500-174254-2	SC-503-B	Water	11/26/19 11:45	11/27/19 11:35	
500-174254-3	TRIP BLANK	Water	11/26/19 00:00	11/27/19 11:35	

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174254-1

Date Collected: 11/26/19 11:30

Matrix: Water

Date Received: 11/27/19 11:35

Method: 624 - 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			12/05/19 00:42	1
Toluene	<0.15		0.50	0.15	ug/L			12/05/19 00:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/05/19 00:42	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/05/19 00:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		75 - 120		12/05/19 00:42	1
4-Bromofluorobenzene (Surr)	107		71 - 120		12/05/19 00:42	1
1,2-Dichloroethane-d4 (Surr)	86		71 - 127		12/05/19 00:42	1
Dibromofluoromethane (Surr)	90		70 - 120		12/05/19 00:42	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.092		0.75	0.092	ug/L		12/03/19 08:00	12/04/19 05:12	1
Acenaphthylene	<0.10	^c	0.75	0.10	ug/L		12/03/19 08:00	12/04/19 05:12	1
Anthracene	<0.14		0.75	0.14	ug/L		12/03/19 08:00	12/04/19 05:12	1
Benzo[a]anthracene	0.13	J	0.75	0.049	ug/L		12/03/19 08:00	12/04/19 05:12	1
Benzo[a]pyrene	0.23	J	0.75	0.056	ug/L		12/03/19 08:00	12/04/19 05:12	1
Benzo[b]fluoranthene	0.24	J ^c	0.75	0.061	ug/L		12/03/19 08:00	12/04/19 05:12	1
Benzo[g,h,i]perylene	<0.36		0.75	0.36	ug/L		12/03/19 08:00	12/04/19 05:12	1
Benzo[k]fluoranthene	0.26	J	0.75	0.13	ug/L		12/03/19 08:00	12/04/19 05:12	1
Chrysene	0.17	J	0.75	0.070	ug/L		12/03/19 08:00	12/04/19 05:12	1
Dibenz(a,h)anthracene	<0.085		0.75	0.085	ug/L		12/03/19 08:00	12/04/19 05:12	1
Fluoranthene	0.35	J	0.75	0.15	ug/L		12/03/19 08:00	12/04/19 05:12	1
Fluorene	<0.13		0.75	0.13	ug/L		12/03/19 08:00	12/04/19 05:12	1
Indeno[1,2,3-cd]pyrene	<0.057		0.75	0.057	ug/L		12/03/19 08:00	12/04/19 05:12	1
Naphthalene	<0.12		0.75	0.12	ug/L		12/03/19 08:00	12/04/19 05:12	1
Phenanthrene	<0.16		0.75	0.16	ug/L		12/03/19 08:00	12/04/19 05:12	1
Pyrene	0.32	J	0.75	0.17	ug/L		12/03/19 08:00	12/04/19 05:12	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		12/03/19 08:00	12/04/19 05:12	1
2-Methylnaphthalene	<0.063		1.5	0.063	ug/L		12/03/19 08:00	12/04/19 05:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	61		36 - 120	12/03/19 08:00	12/04/19 05:12	1
Terphenyl-d14	87		40 - 145	12/03/19 08:00	12/04/19 05:12	1
2-Fluorobiphenyl	67		34 - 110	12/03/19 08:00	12/04/19 05:12	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	2.4	J B	5.1	1.3	mg/L		12/03/19 08:34	12/03/19 09:34	1
Total Suspended Solids	24.0		5.0	1.9	mg/L			12/02/19 13:05	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-174254-2

Date Collected: 11/26/19 11:45

Matrix: Water

Date Received: 11/27/19 11:35

Method: 624 - 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			12/05/19 01:06	1
Toluene	<0.15		0.50	0.15	ug/L			12/05/19 01:06	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/05/19 01:06	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/05/19 01:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		75 - 120		12/05/19 01:06	1
4-Bromofluorobenzene (Surr)	109		71 - 120		12/05/19 01:06	1
1,2-Dichloroethane-d4 (Surr)	86		71 - 127		12/05/19 01:06	1
Dibromofluoromethane (Surr)	89		70 - 120		12/05/19 01:06	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.091		0.74	0.091	ug/L		12/03/19 08:00	12/04/19 05:38	1
Acenaphthylene	<0.10	^c	0.74	0.10	ug/L		12/03/19 08:00	12/04/19 05:38	1
Anthracene	<0.14		0.74	0.14	ug/L		12/03/19 08:00	12/04/19 05:38	1
Benzo[a]anthracene	<0.048		0.74	0.048	ug/L		12/03/19 08:00	12/04/19 05:38	1
Benzo[a]pyrene	<0.056		0.74	0.056	ug/L		12/03/19 08:00	12/04/19 05:38	1
Benzo[b]fluoranthene	<0.060	^c	0.74	0.060	ug/L		12/03/19 08:00	12/04/19 05:38	1
Benzo[g,h,i]perylene	<0.36		0.74	0.36	ug/L		12/03/19 08:00	12/04/19 05:38	1
Benzo[k]fluoranthene	<0.12		0.74	0.12	ug/L		12/03/19 08:00	12/04/19 05:38	1
Chrysene	<0.069		0.74	0.069	ug/L		12/03/19 08:00	12/04/19 05:38	1
Dibenz(a,h)anthracene	<0.084		0.74	0.084	ug/L		12/03/19 08:00	12/04/19 05:38	1
Fluoranthene	<0.15		0.74	0.15	ug/L		12/03/19 08:00	12/04/19 05:38	1
Fluorene	<0.12		0.74	0.12	ug/L		12/03/19 08:00	12/04/19 05:38	1
Indeno[1,2,3-cd]pyrene	<0.057		0.74	0.057	ug/L		12/03/19 08:00	12/04/19 05:38	1
Naphthalene	<0.11		0.74	0.11	ug/L		12/03/19 08:00	12/04/19 05:38	1
Phenanthrene	<0.16		0.74	0.16	ug/L		12/03/19 08:00	12/04/19 05:38	1
Pyrene	<0.17		0.74	0.17	ug/L		12/03/19 08:00	12/04/19 05:38	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		12/03/19 08:00	12/04/19 05:38	1
2-Methylnaphthalene	<0.062		1.5	0.062	ug/L		12/03/19 08:00	12/04/19 05:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	54		36 - 120	12/03/19 08:00	12/04/19 05:38	1
Terphenyl-d14	92		40 - 145	12/03/19 08:00	12/04/19 05:38	1
2-Fluorobiphenyl	57		34 - 110	12/03/19 08:00	12/04/19 05:38	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.4	J	5.1	1.3	mg/L		12/04/19 09:37	12/04/19 09:42	1
Total Suspended Solids	2.0	J	5.0	1.9	mg/L			12/02/19 13:06	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-174254-3

Date Collected: 11/26/19 00:00

Matrix: Water

Date Received: 11/27/19 11:35

Method: 624 - 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			12/04/19 23:27	1
Toluene	<0.15		0.50	0.15	ug/L			12/04/19 23:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/04/19 23:27	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/04/19 23:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		75 - 120		12/04/19 23:27	1
<i>4-Bromofluorobenzene (Surr)</i>	108		71 - 120		12/04/19 23:27	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	86		71 - 127		12/04/19 23:27	1
<i>Dibromofluoromethane (Surr)</i>	89		70 - 120		12/04/19 23:27	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Qualifiers

GC/MS Semi VOA

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

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (75-120)	BFB (71-120)	DCA (71-127)	DBFM (70-120)
500-174254-1	SC-203-B	97	107	86	90
500-174254-1 MS	SC-203-B	99	101	85	91
500-174254-1 MSD	SC-203-B	98	99	87	94
500-174254-2	SC-503-B	98	109	86	89
500-174254-3	TRIP BLANK	99	108	86	89
LCS 500-518610/32	Lab Control Sample	100	96	85	91
MB 500-518610/34	Method Blank	99	109	85	90

Surrogate Legend

TOL = Toluene-d8 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 DCA = 1,2-Dichloroethane-d4 (Surr)
 DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	TPHL (40-145)	FBP (34-110)
500-174254-1	SC-203-B	61	87	67
500-174254-2	SC-503-B	54	92	57
LCS 500-518354/2-A	Lab Control Sample	73	82	81
LCSD 500-518354/3-A	Lab Control Sample Dup	69	82	78
MB 500-518354/1-A	Method Blank	69	90	76

Surrogate Legend

NBZ = Nitrobenzene-d5
 TPHL = Terphenyl-d14
 FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-518610/34
Matrix: Water
Analysis Batch: 518610

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			12/04/19 23:02	1
Toluene	<0.15		0.50	0.15	ug/L			12/04/19 23:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/04/19 23:02	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/04/19 23:02	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	99		75 - 120		12/04/19 23:02	1
4-Bromofluorobenzene (Surr)	109		71 - 120		12/04/19 23:02	1
1,2-Dichloroethane-d4 (Surr)	85		71 - 127		12/04/19 23:02	1
Dibromofluoromethane (Surr)	90		70 - 120		12/04/19 23:02	1

Lab Sample ID: LCS 500-518610/32
Matrix: Water
Analysis Batch: 518610

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	37 - 151
Toluene	50.0	48.0		ug/L		96	47 - 150
Ethylbenzene	50.0	49.2		ug/L		98	37 - 162

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	100		75 - 120
4-Bromofluorobenzene (Surr)	96		71 - 120
1,2-Dichloroethane-d4 (Surr)	85		71 - 127
Dibromofluoromethane (Surr)	91		70 - 120

Lab Sample ID: 500-174254-1 MS
Matrix: Water
Analysis Batch: 518610

Client Sample ID: SC-203-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
Benzene	<0.15		50.0	48.3		ug/L		97	37 - 151
Toluene	<0.15		50.0	48.4		ug/L		97	47 - 150
Ethylbenzene	<0.18		50.0	49.8		ug/L		100	37 - 162

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	99		75 - 120
4-Bromofluorobenzene (Surr)	101		71 - 120
1,2-Dichloroethane-d4 (Surr)	85		71 - 127
Dibromofluoromethane (Surr)	91		70 - 120

Lab Sample ID: 500-174254-1 MSD
Matrix: Water
Analysis Batch: 518610

Client Sample ID: SC-203-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
				Result	Qualifier						
Benzene	<0.15		50.0	48.7		ug/L		97	37 - 151	1	20
Toluene	<0.15		50.0	47.9		ug/L		96	47 - 150	1	20

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-174254-1 MSD

Matrix: Water

Analysis Batch: 518610

Client Sample ID: SC-203-B

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	<0.18		50.0	50.2		ug/L		100	37 - 162	1	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
Toluene-d8 (Surr)	98		75 - 120								
4-Bromofluorobenzene (Surr)	99		71 - 120								
1,2-Dichloroethane-d4 (Surr)	87		71 - 127								
Dibromofluoromethane (Surr)	94		70 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-518354/1-A

Matrix: Water

Analysis Batch: 518480

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 518354

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		12/03/19 08:00	12/03/19 20:08	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		12/03/19 08:00	12/03/19 20:08	1
Anthracene	<0.15		0.80	0.15	ug/L		12/03/19 08:00	12/03/19 20:08	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		12/03/19 08:00	12/03/19 20:08	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		12/03/19 08:00	12/03/19 20:08	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		12/03/19 08:00	12/03/19 20:08	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		12/03/19 08:00	12/03/19 20:08	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		12/03/19 08:00	12/03/19 20:08	1
Chrysene	<0.075		0.80	0.075	ug/L		12/03/19 08:00	12/03/19 20:08	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		12/03/19 08:00	12/03/19 20:08	1
Fluoranthene	<0.16		0.80	0.16	ug/L		12/03/19 08:00	12/03/19 20:08	1
Fluorene	<0.13		0.80	0.13	ug/L		12/03/19 08:00	12/03/19 20:08	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		12/03/19 08:00	12/03/19 20:08	1
Naphthalene	<0.12		0.80	0.12	ug/L		12/03/19 08:00	12/03/19 20:08	1
Phenanthrene	<0.17		0.80	0.17	ug/L		12/03/19 08:00	12/03/19 20:08	1
Pyrene	<0.18		0.80	0.18	ug/L		12/03/19 08:00	12/03/19 20:08	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		12/03/19 08:00	12/03/19 20:08	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		12/03/19 08:00	12/03/19 20:08	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	69		36 - 120				12/03/19 08:00	12/03/19 20:08	1
Terphenyl-d14	90		40 - 145				12/03/19 08:00	12/03/19 20:08	1
2-Fluorobiphenyl	76		34 - 110				12/03/19 08:00	12/03/19 20:08	1

Lab Sample ID: LCS 500-518354/2-A

Matrix: Water

Analysis Batch: 518480

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 518354

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	26.0		ug/L		81	47 - 145
Acenaphthylene	32.0	28.5		ug/L		89	33 - 145
Anthracene	32.0	27.6		ug/L		86	27 - 133
Benzo[a]anthracene	32.0	30.4		ug/L		95	33 - 143

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-518354/2-A
Matrix: Water
Analysis Batch: 518480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518354

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzo[a]pyrene	32.0	30.6		ug/L		96	17 - 163
Benzo[b]fluoranthene	32.0	27.7		ug/L		87	24 - 159
Benzo[g,h,i]perylene	32.0	31.4		ug/L		98	10 - 219
Benzo[k]fluoranthene	32.0	35.6		ug/L		111	11 - 162
Chrysene	32.0	28.8		ug/L		90	17 - 168
Dibenz(a,h)anthracene	32.0	30.6		ug/L		95	10 - 227
Fluoranthene	32.0	30.7		ug/L		96	26 - 137
Fluorene	32.0	26.8		ug/L		84	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	31.4		ug/L		98	10 - 171
Naphthalene	32.0	21.6		ug/L		67	21 - 133
Phenanthrene	32.0	27.8		ug/L		87	54 - 120
Pyrene	32.0	27.7		ug/L		87	52 - 115
1-Methylnaphthalene	32.0	22.7		ug/L		71	
2-Methylnaphthalene	32.0	21.8		ug/L		68	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	73		36 - 120
Terphenyl-d14	82		40 - 145
2-Fluorobiphenyl	81		34 - 110

Lab Sample ID: LCSD 500-518354/3-A
Matrix: Water
Analysis Batch: 518480

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 518354

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	32.0	26.5		ug/L		83	47 - 145	2	20
Acenaphthylene	32.0	29.4		ug/L		92	33 - 145	3	20
Anthracene	32.0	29.4		ug/L		92	27 - 133	6	20
Benzo[a]anthracene	32.0	31.3		ug/L		98	33 - 143	3	20
Benzo[a]pyrene	32.0	32.5		ug/L		101	17 - 163	6	20
Benzo[b]fluoranthene	32.0	29.6		ug/L		93	24 - 159	7	20
Benzo[g,h,i]perylene	32.0	32.1		ug/L		100	10 - 219	2	20
Benzo[k]fluoranthene	32.0	31.7		ug/L		99	11 - 162	12	20
Chrysene	32.0	30.0		ug/L		94	17 - 168	4	20
Dibenz(a,h)anthracene	32.0	31.9		ug/L		100	10 - 227	4	20
Fluoranthene	32.0	32.6		ug/L		102	26 - 137	6	20
Fluorene	32.0	27.6		ug/L		86	59 - 121	3	20
Indeno[1,2,3-cd]pyrene	32.0	32.6		ug/L		102	10 - 171	4	20
Naphthalene	32.0	20.9		ug/L		65	21 - 133	3	20
Phenanthrene	32.0	29.3		ug/L		91	54 - 120	5	20
Pyrene	32.0	28.3		ug/L		88	52 - 115	2	20
1-Methylnaphthalene	32.0	22.2		ug/L		69		2	
2-Methylnaphthalene	32.0	21.7		ug/L		68	42 - 110	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	69		36 - 120
Terphenyl-d14	82		40 - 145
2-Fluorobiphenyl	78		34 - 110

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-518382/1-A
Matrix: Water
Analysis Batch: 518402

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 518382

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.60	J	5.0	1.3	mg/L		12/03/19 08:34	12/03/19 09:34	1

Lab Sample ID: LCS 500-518382/2-A
Matrix: Water
Analysis Batch: 518402

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518382
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	34.50		mg/L		86	78 - 114

Lab Sample ID: MB 500-518636/11-A
Matrix: Water
Analysis Batch: 518642

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 518636

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		12/04/19 09:37	12/04/19 09:42	1

Lab Sample ID: LCS 500-518636/2-A
Matrix: Water
Analysis Batch: 518642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 518636
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	31.10		mg/L		78	78 - 114

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

Lab Sample ID: MB 500-518194/1
Matrix: Water
Analysis Batch: 518194

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			12/02/19 12:50	1

Lab Sample ID: LCS 500-518194/2
Matrix: Water
Analysis Batch: 518194

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Suspended Solids	200	176.5		mg/L		88	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174254-1

Date Collected: 11/26/19 11:30

Matrix: Water

Date Received: 11/27/19 11:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	518610	12/05/19 00:42	STW	TAL CHI
Total/NA	Prep	625			518354	12/03/19 08:00	DAK	TAL CHI
Total/NA	Analysis	625		1	518480	12/04/19 05:12	NRJ	TAL CHI
Total/NA	Prep	1664B			518382	12/03/19 08:34	TMS	TAL CHI
Total/NA	Analysis	1664B		1	518402	12/03/19 09:34	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	518194		SMO	TAL CHI
					(Start)	12/02/19 13:05		
					(End)	12/02/19 13:06		

Client Sample ID: SC-503-B

Lab Sample ID: 500-174254-2

Date Collected: 11/26/19 11:45

Matrix: Water

Date Received: 11/27/19 11:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	518610	12/05/19 01:06	STW	TAL CHI
Total/NA	Prep	625			518354	12/03/19 08:00	DAK	TAL CHI
Total/NA	Analysis	625		1	518480	12/04/19 05:38	NRJ	TAL CHI
Total/NA	Prep	1664B			518636	12/04/19 09:37	TMS	TAL CHI
Total/NA	Analysis	1664B		1	518642	12/04/19 09:42	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	518194		SMO	TAL CHI
					(Start)	12/02/19 13:06		
					(End)	12/02/19 13:07		

Client Sample ID: TRIP BLANK

Lab Sample ID: 500-174254-3

Date Collected: 11/26/19 00:00

Matrix: Water

Date Received: 11/27/19 11:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	518610	12/04/19 23:27	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174254-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

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

Chain of Custody Record



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
500-174254 COC

Phone _____
FAX _____

Project Name: Marinette, WI
Site: Marinette, WI
P O # 30015296.00006 (WPDES)

Email: N/A
Tel/Fax: N/A

Site Contact: _____
Lab Contact: Sandie Fredrick
Carrier: FedEx

Date: _____
COC No: _____
of _____ COCs

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS

TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

5 day

Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	BTEX: Method 624	Oil & Grease: Method 1664	TSS: Method 2540D	PAHs: Method 625

Sampler: _____
For Lab Use Only:
Walk-in Client: _____
Lab Sampling: _____

Lab Project number
500-174254

Sample Specific Notes:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered	MS/MSD	BTEX	Oil & Grease	TSS	PAHs
SC-203-B	11/26	1030	G	W	8	N	N	3	2	1	2
SC-503-B	11/26	1045	G	W	8	N	N	3	2	1	2
Trip Blank	11		G	W	1	N	N	1			

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

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:
Level 2 QA/QC. Questions call Jennifer Bennett
WPDES: LOD/LOQ
TAT: 5 Day

SC-203-B PH 7.45 temp 7.6°C
SC-503-B PH 7.0 temp 9.0°C

Custody Seals Intact: Yes No

Relinquished by: <i>[Signature]</i>	Company: ARCADIS	Date/Time: 11/26 1500
Relinquished by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:

Received by:	Company:	Date/Time:
Received by:	Company:	Date/Time:
Received by: <i>[Signature]</i>	Company: <i>TA-CHP</i>	Date/Time: 11/27/19 1135

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-174254-1

Login Number: 174254

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

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	0.3
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").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

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

Laboratory Job ID: 500-174720-1
Client Project/Site: Marinette, WI 30015296.00006 WPDES

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/16/2019 4:01:57 PM

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

LINKS

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results through
TotalAccess

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Job ID: 500-174720-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

**Job Narrative
500-174720-1**

Comments

No additional comments.

Receipt

The samples were received on 12/7/2019 11:57 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described 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.

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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-174720-1	SC-203-B	Water	12/05/19 16:00	12/07/19 11:57	
500-174720-2	SC-503-B	Water	12/05/19 16:10	12/07/19 11:57	
500-174720-3	Trip Blank	Water	12/05/19 00:00	12/07/19 11:57	

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-174720-1

Date Collected: 12/05/19 16:00

Matrix: Water

Date Received: 12/07/19 11:57

Method: 624 - 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			12/12/19 16:41	1
Toluene	1.1		0.50	0.15	ug/L			12/12/19 16:41	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/12/19 16:41	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/12/19 16:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	97		75 - 120					12/12/19 16:41	1
<i>4-Bromofluorobenzene (Surr)</i>	97		71 - 120					12/12/19 16:41	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	101		71 - 127					12/12/19 16:41	1
<i>Dibromofluoromethane (Surr)</i>	108		70 - 120					12/12/19 16:41	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.092		0.75	0.092	ug/L		12/12/19 08:16	12/13/19 22:42	1
Acenaphthylene	<0.10		0.75	0.10	ug/L		12/12/19 08:16	12/13/19 22:42	1
Anthracene	<0.14		0.75	0.14	ug/L		12/12/19 08:16	12/13/19 22:42	1
Benzo[a]anthracene	<0.049		0.75	0.049	ug/L		12/12/19 08:16	12/13/19 22:42	1
Benzo[a]pyrene	0.35	J	0.75	0.057	ug/L		12/12/19 08:16	12/13/19 22:42	1
Benzo[b]fluoranthene	0.50	J	0.75	0.061	ug/L		12/12/19 08:16	12/13/19 22:42	1
Benzo[g,h,i]perylene	0.37	J	0.75	0.36	ug/L		12/12/19 08:16	12/13/19 22:42	1
Benzo[k]fluoranthene	0.34	J	0.75	0.13	ug/L		12/12/19 08:16	12/13/19 22:42	1
Chrysene	0.43	J	0.75	0.070	ug/L		12/12/19 08:16	12/13/19 22:42	1
Dibenz(a,h)anthracene	<0.085		0.75	0.085	ug/L		12/12/19 08:16	12/13/19 22:42	1
Fluoranthene	0.76		0.75	0.15	ug/L		12/12/19 08:16	12/13/19 22:42	1
Fluorene	<0.13		0.75	0.13	ug/L		12/12/19 08:16	12/13/19 22:42	1
Indeno[1,2,3-cd]pyrene	0.30	J	0.75	0.057	ug/L		12/12/19 08:16	12/13/19 22:42	1
Naphthalene	<0.12		0.75	0.12	ug/L		12/12/19 08:16	12/13/19 22:42	1
Phenanthrene	0.29	J	0.75	0.16	ug/L		12/12/19 08:16	12/13/19 22:42	1
Pyrene	0.61	J	0.75	0.17	ug/L		12/12/19 08:16	12/13/19 22:42	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		12/12/19 08:16	12/13/19 22:42	1
2-Methylnaphthalene	<0.063		1.5	0.063	ug/L		12/12/19 08:16	12/13/19 22:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Nitrobenzene-d5</i>	60		36 - 120					12/12/19 08:16	12/13/19 22:42
<i>Terphenyl-d14</i>	85		40 - 145					12/12/19 08:16	12/13/19 22:42
<i>2-Fluorobiphenyl</i>	62		34 - 110					12/12/19 08:16	12/13/19 22:42

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.5	J	5.2	1.4	mg/L		12/13/19 14:12	12/13/19 15:41	1
Total Suspended Solids	64.2		8.3	3.2	mg/L			12/09/19 13:31	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-174720-2

Date Collected: 12/05/19 16:10

Matrix: Water

Date Received: 12/07/19 11:57

Method: 624 - 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			12/12/19 17:08	1
Toluene	<0.15		0.50	0.15	ug/L			12/12/19 17:08	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/12/19 17:08	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/12/19 17:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		75 - 120		12/12/19 17:08	1
4-Bromofluorobenzene (Surr)	98		71 - 120		12/12/19 17:08	1
1,2-Dichloroethane-d4 (Surr)	98		71 - 127		12/12/19 17:08	1
Dibromofluoromethane (Surr)	105		70 - 120		12/12/19 17:08	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.095		0.77	0.095	ug/L		12/12/19 08:16	12/13/19 22:14	1
Acenaphthylene	<0.10		0.77	0.10	ug/L		12/12/19 08:16	12/13/19 22:14	1
Anthracene	<0.14		0.77	0.14	ug/L		12/12/19 08:16	12/13/19 22:14	1
Benzo[a]anthracene	<0.050		0.77	0.050	ug/L		12/12/19 08:16	12/13/19 22:14	1
Benzo[a]pyrene	<0.058		0.77	0.058	ug/L		12/12/19 08:16	12/13/19 22:14	1
Benzo[b]fluoranthene	<0.063		0.77	0.063	ug/L		12/12/19 08:16	12/13/19 22:14	1
Benzo[g,h,i]perylene	<0.37		0.77	0.37	ug/L		12/12/19 08:16	12/13/19 22:14	1
Benzo[k]fluoranthene	<0.13		0.77	0.13	ug/L		12/12/19 08:16	12/13/19 22:14	1
Chrysene	<0.072		0.77	0.072	ug/L		12/12/19 08:16	12/13/19 22:14	1
Dibenz(a,h)anthracene	<0.087		0.77	0.087	ug/L		12/12/19 08:16	12/13/19 22:14	1
Fluoranthene	<0.16		0.77	0.16	ug/L		12/12/19 08:16	12/13/19 22:14	1
Fluorene	<0.13		0.77	0.13	ug/L		12/12/19 08:16	12/13/19 22:14	1
Indeno[1,2,3-cd]pyrene	<0.059		0.77	0.059	ug/L		12/12/19 08:16	12/13/19 22:14	1
Naphthalene	<0.12		0.77	0.12	ug/L		12/12/19 08:16	12/13/19 22:14	1
Phenanthrene	<0.16		0.77	0.16	ug/L		12/12/19 08:16	12/13/19 22:14	1
Pyrene	<0.18		0.77	0.18	ug/L		12/12/19 08:16	12/13/19 22:14	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		12/12/19 08:16	12/13/19 22:14	1
2-Methylnaphthalene	<0.065		1.5	0.065	ug/L		12/12/19 08:16	12/13/19 22:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	71		36 - 120	12/12/19 08:16	12/13/19 22:14	1
Terphenyl-d14	87		40 - 145	12/12/19 08:16	12/13/19 22:14	1
2-Fluorobiphenyl	72		34 - 110	12/12/19 08:16	12/13/19 22:14	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.7	J	5.1	1.4	mg/L		12/13/19 14:12	12/13/19 15:41	1
Total Suspended Solids	4.0	J	5.0	1.9	mg/L			12/09/19 13:32	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-174720-3

Date Collected: 12/05/19 00:00

Matrix: Water

Date Received: 12/07/19 11:57

Method: 624 - 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			12/12/19 17:36	1
Toluene	<0.15		0.50	0.15	ug/L			12/12/19 17:36	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/12/19 17:36	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/12/19 17:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		75 - 120		12/12/19 17:36	1
4-Bromofluorobenzene (Surr)	98		71 - 120		12/12/19 17:36	1
1,2-Dichloroethane-d4 (Surr)	100		71 - 127		12/12/19 17:36	1
Dibromofluoromethane (Surr)	107		70 - 120		12/12/19 17:36	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Qualifiers

GC/MS Semi VOA

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

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (75-120)	BFB (71-120)	DCA (71-127)	DBFM (70-120)
500-174720-1	SC-203-B	97	97	101	108
500-174720-1 MS	SC-203-B	99	96	100	112
500-174720-1 MSD	SC-203-B	97	94	100	112
500-174720-2	SC-503-B	99	98	98	105
500-174720-3	Trip Blank	98	98	100	107
LCS 500-520151/5	Lab Control Sample	101	93	97	109
MB 500-520151/7	Method Blank	98	99	101	106

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	TPHL (40-145)	FBP (34-110)
500-174720-1	SC-203-B	60	85	62
500-174720-2	SC-503-B	71	87	72
LCS 500-520195/2-A	Lab Control Sample	82	95	77
LCSD 500-520195/3-A	Lab Control Sample Dup	77	90	73
MB 500-520195/1-A	Method Blank	64	84	62

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-520151/7
Matrix: Water
Analysis Batch: 520151

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.15		0.50	0.15	ug/L			12/12/19 11:41	1
Toluene	<0.15		0.50	0.15	ug/L			12/12/19 11:41	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/12/19 11:41	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/12/19 11:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		75 - 120		12/12/19 11:41	1
4-Bromofluorobenzene (Surr)	99		71 - 120		12/12/19 11:41	1
1,2-Dichloroethane-d4 (Surr)	101		71 - 127		12/12/19 11:41	1
Dibromofluoromethane (Surr)	106		70 - 120		12/12/19 11:41	1

Lab Sample ID: LCS 500-520151/5
Matrix: Water
Analysis Batch: 520151

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	48.1		ug/L		96	37 - 151
Toluene	50.0	45.3		ug/L		91	47 - 150
Ethylbenzene	50.0	48.5		ug/L		97	37 - 162

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		75 - 120
4-Bromofluorobenzene (Surr)	93		71 - 120
1,2-Dichloroethane-d4 (Surr)	97		71 - 127
Dibromofluoromethane (Surr)	109		70 - 120

Lab Sample ID: 500-174720-1 MS
Matrix: Water
Analysis Batch: 520151

Client Sample ID: SC-203-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	<0.15		50.0	50.1		ug/L		100	37 - 151
Toluene	1.1		50.0	46.2		ug/L		90	47 - 150
Ethylbenzene	<0.18		50.0	49.6		ug/L		99	37 - 162

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	99		75 - 120
4-Bromofluorobenzene (Surr)	96		71 - 120
1,2-Dichloroethane-d4 (Surr)	100		71 - 127
Dibromofluoromethane (Surr)	112		70 - 120

Lab Sample ID: 500-174720-1 MSD
Matrix: Water
Analysis Batch: 520151

Client Sample ID: SC-203-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	<0.15		50.0	50.1		ug/L		100	37 - 151	0	20
Toluene	1.1		50.0	45.9		ug/L		90	47 - 150	1	20

Euromins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-174720-1 MSD
Matrix: Water
Analysis Batch: 520151

Client Sample ID: SC-203-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	<0.18		50.0	49.4		ug/L		99	37 - 162	0	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
Toluene-d8 (Surr)	97		75 - 120								
4-Bromofluorobenzene (Surr)	94		71 - 120								
1,2-Dichloroethane-d4 (Surr)	100		71 - 127								
Dibromofluoromethane (Surr)	112		70 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-520195/1-A
Matrix: Water
Analysis Batch: 520428

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 520195

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.099		0.80	0.099	ug/L		12/12/19 08:16	12/13/19 13:39	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		12/12/19 08:16	12/13/19 13:39	1
Anthracene	<0.15		0.80	0.15	ug/L		12/12/19 08:16	12/13/19 13:39	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		12/12/19 08:16	12/13/19 13:39	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		12/12/19 08:16	12/13/19 13:39	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		12/12/19 08:16	12/13/19 13:39	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		12/12/19 08:16	12/13/19 13:39	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		12/12/19 08:16	12/13/19 13:39	1
Chrysene	<0.075		0.80	0.075	ug/L		12/12/19 08:16	12/13/19 13:39	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		12/12/19 08:16	12/13/19 13:39	1
Fluoranthene	<0.16		0.80	0.16	ug/L		12/12/19 08:16	12/13/19 13:39	1
Fluorene	<0.13		0.80	0.13	ug/L		12/12/19 08:16	12/13/19 13:39	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		12/12/19 08:16	12/13/19 13:39	1
Naphthalene	<0.12		0.80	0.12	ug/L		12/12/19 08:16	12/13/19 13:39	1
Phenanthrene	<0.17		0.80	0.17	ug/L		12/12/19 08:16	12/13/19 13:39	1
Pyrene	<0.18		0.80	0.18	ug/L		12/12/19 08:16	12/13/19 13:39	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		12/12/19 08:16	12/13/19 13:39	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		12/12/19 08:16	12/13/19 13:39	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	64		36 - 120				12/12/19 08:16	12/13/19 13:39	1
Terphenyl-d14	84		40 - 145				12/12/19 08:16	12/13/19 13:39	1
2-Fluorobiphenyl	62		34 - 110				12/12/19 08:16	12/13/19 13:39	1

Lab Sample ID: LCS 500-520195/2-A
Matrix: Water
Analysis Batch: 520428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 520195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	26.1		ug/L		82	47 - 145
Acenaphthylene	32.0	26.7		ug/L		83	33 - 145
Anthracene	32.0	28.4		ug/L		89	27 - 133
Benzo[a]anthracene	32.0	28.6		ug/L		89	33 - 143

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 500-520195/2-A

Matrix: Water

Analysis Batch: 520428

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 520195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzo[a]pyrene	32.0	28.3		ug/L		88	17 - 163
Benzo[b]fluoranthene	32.0	28.3		ug/L		88	24 - 159
Benzo[g,h,i]perylene	32.0	32.2		ug/L		101	10 - 219
Benzo[k]fluoranthene	32.0	28.3		ug/L		89	11 - 162
Chrysene	32.0	28.6		ug/L		90	17 - 168
Dibenz(a,h)anthracene	32.0	30.6		ug/L		96	10 - 227
Fluoranthene	32.0	29.4		ug/L		92	26 - 137
Fluorene	32.0	27.1		ug/L		85	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	30.4		ug/L		95	10 - 171
Naphthalene	32.0	22.1		ug/L		69	21 - 133
Phenanthrene	32.0	29.6		ug/L		93	54 - 120
Pyrene	32.0	30.7		ug/L		96	52 - 115
1-Methylnaphthalene	32.0	22.6		ug/L		71	
2-Methylnaphthalene	32.0	25.1		ug/L		78	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	82		36 - 120
Terphenyl-d14	95		40 - 145
2-Fluorobiphenyl	77		34 - 110

Lab Sample ID: LCSD 500-520195/3-A

Matrix: Water

Analysis Batch: 520428

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 520195

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	32.0	25.6		ug/L		80	47 - 145	2	20
Acenaphthylene	32.0	26.2		ug/L		82	33 - 145	2	20
Anthracene	32.0	30.0		ug/L		94	27 - 133	6	20
Benzo[a]anthracene	32.0	28.9		ug/L		90	33 - 143	1	20
Benzo[a]pyrene	32.0	29.3		ug/L		92	17 - 163	4	20
Benzo[b]fluoranthene	32.0	29.1		ug/L		91	24 - 159	3	20
Benzo[g,h,i]perylene	32.0	32.9		ug/L		103	10 - 219	2	20
Benzo[k]fluoranthene	32.0	28.9		ug/L		90	11 - 162	2	20
Chrysene	32.0	29.0		ug/L		91	17 - 168	1	20
Dibenz(a,h)anthracene	32.0	31.6		ug/L		99	10 - 227	3	20
Fluoranthene	32.0	30.4		ug/L		95	26 - 137	3	20
Fluorene	32.0	26.8		ug/L		84	59 - 121	1	20
Indeno[1,2,3-cd]pyrene	32.0	31.2		ug/L		98	10 - 171	3	20
Naphthalene	32.0	21.6		ug/L		67	21 - 133	2	20
Phenanthrene	32.0	30.8		ug/L		96	54 - 120	4	20
Pyrene	32.0	30.9		ug/L		96	52 - 115	1	20
1-Methylnaphthalene	32.0	21.7		ug/L		68		4	
2-Methylnaphthalene	32.0	24.6		ug/L		77	42 - 110	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	77		36 - 120
Terphenyl-d14	90		40 - 145
2-Fluorobiphenyl	73		34 - 110

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-520526/1-A
 Matrix: Water
 Analysis Batch: 520560

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 520526

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		12/13/19 14:12	12/13/19 15:41	1

Lab Sample ID: LCS 500-520526/2-A
 Matrix: Water
 Analysis Batch: 520560

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 520526
 %Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	35.60		mg/L		89	78 - 114

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

Lab Sample ID: MB 500-519553/1
 Matrix: Water
 Analysis Batch: 519553

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			12/09/19 13:10	1

Lab Sample ID: LCS 500-519553/2
 Matrix: Water
 Analysis Batch: 519553

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 %Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Suspended Solids	200	197.5		mg/L		99	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Client Sample ID: SC-203-B

Date Collected: 12/05/19 16:00

Date Received: 12/07/19 11:57

Lab Sample ID: 500-174720-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	520151	12/12/19 16:41	STW	TAL CHI
Total/NA	Prep	625			520195	12/12/19 08:16	DAK	TAL CHI
Total/NA	Analysis	625		1	520428	12/13/19 22:42	AJD	TAL CHI
Total/NA	Prep	1664B			520526	12/13/19 14:12	TMS	TAL CHI
Total/NA	Analysis	1664B		1	520560	12/13/19 15:41	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	519553		SMO	TAL CHI
					(Start)	12/09/19 13:31		
					(End)	12/09/19 13:32		

Client Sample ID: SC-503-B

Date Collected: 12/05/19 16:10

Date Received: 12/07/19 11:57

Lab Sample ID: 500-174720-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	520151	12/12/19 17:08	STW	TAL CHI
Total/NA	Prep	625			520195	12/12/19 08:16	DAK	TAL CHI
Total/NA	Analysis	625		1	520428	12/13/19 22:14	AJD	TAL CHI
Total/NA	Prep	1664B			520526	12/13/19 14:12	TMS	TAL CHI
Total/NA	Analysis	1664B		1	520560	12/13/19 15:41	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	519553		SMO	TAL CHI
					(Start)	12/09/19 13:32		
					(End)	12/09/19 13:33		

Client Sample ID: Trip Blank

Date Collected: 12/05/19 00:00

Date Received: 12/07/19 11:57

Lab Sample ID: 500-174720-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	520151	12/12/19 17:36	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-174720-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20


- 1
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- 12
- 13

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	Site Contact: Lab Contact: Sandie Fredrick Carrier: FedEx	Date: COC No: _____ of _____ COCs
Project Name: Marinette, WI Site: Marinette, WI P O # 30015296.00006 (WPDES)	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	 500-174720 COC	Sampler: For Lab Use Only: Walk-in Client: Lab Sampling:
			Lab Project number 50016846
			500-174720 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								
1 SC-203-B	12/5	1600	G	W	8	N	N	3	2	1	2								
2 SC-503-B	12/5	1610	G	W	8	N	N	3	2	1	2								
3 Trip Blank	12/5		G	W	1	N	N	1											

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

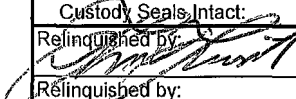
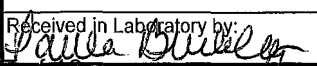
Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

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:
Level 2 QA/QC. Questions call Jennifer Bennett
WPDES: LOD/LOQ
TAT: 5 Day
SC-503-B PH 7.33
SC-203-B PH 7.48
Note: System Sample collected during d/d hole water present to elev well - Sediment extracted
Also: Custom Changeout ongoing - 2 of 3 each hand in place

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

Relinquished by: 	Company: ARCADIS	Date/Time: 12/6/10	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: 	Company: TH	Date/Time: 12/7/19 1010



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-174720-1

Login Number: 174720

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Buckley, Paula M

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	2.6
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

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

Laboratory Job ID: 500-175213-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/24/2019 2:25:56 PM

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

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Job ID: 500-175213-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-175213-1

Comments

No additional comments.

Receipt

The samples were received on 12/17/2019 1:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° 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: The continuing calibration verification (CCV) associated with batch 500-521504 recovered above the upper control limit for Dibenz(a,h)anthracene. The samples associated with this CCV were non-detect for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 500-521504/2).

No additional analytical or quality issues were noted, other than those described above or 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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-175213-1	SC-203-B	Water	12/14/19 14:10	12/17/19 13:45	
500-175213-2	SC-503-B	Water	12/14/19 14:20	12/17/19 13:45	
500-175213-3	Trip Blank	Water	12/14/19 00:00	12/17/19 13:45	

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- 12
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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-175213-1

Date Collected: 12/14/19 14:10

Matrix: Water

Date Received: 12/17/19 13:45

Method: 624 - 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			12/23/19 13:20	1
Toluene	<0.15		0.50	0.15	ug/L			12/23/19 13:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/23/19 13:20	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/23/19 13:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		75 - 120		12/23/19 13:20	1
4-Bromofluorobenzene (Surr)	105		71 - 120		12/23/19 13:20	1
1,2-Dichloroethane-d4 (Surr)	85		71 - 127		12/23/19 13:20	1
Dibromofluoromethane (Surr)	88		70 - 120		12/23/19 13:20	1

Method: 625 - 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		12/19/19 08:10	12/20/19 03:07	1
Acenaphthylene	<0.11		0.82	0.11	ug/L		12/19/19 08:10	12/20/19 03:07	1
Anthracene	<0.15		0.82	0.15	ug/L		12/19/19 08:10	12/20/19 03:07	1
Benzo[a]anthracene	<0.053		0.82	0.053	ug/L		12/19/19 08:10	12/20/19 03:07	1
Benzo[a]pyrene	<0.062		0.82	0.062	ug/L		12/19/19 08:10	12/20/19 03:07	1
Benzo[b]fluoranthene	0.27	J	0.82	0.067	ug/L		12/19/19 08:10	12/20/19 03:07	1
Benzo[g,h,i]perylene	<0.39		0.82	0.39	ug/L		12/19/19 08:10	12/20/19 03:07	1
Benzo[k]fluoranthene	0.15	J	0.82	0.14	ug/L		12/19/19 08:10	12/20/19 03:07	1
Chrysene	0.17	J	0.82	0.076	ug/L		12/19/19 08:10	12/20/19 03:07	1
Dibenz(a,h)anthracene	<0.092	^c	0.82	0.092	ug/L		12/19/19 08:10	12/20/19 03:07	1
Fluoranthene	0.34	J	0.82	0.17	ug/L		12/19/19 08:10	12/20/19 03:07	1
Fluorene	<0.14		0.82	0.14	ug/L		12/19/19 08:10	12/20/19 03:07	1
Indeno[1,2,3-cd]pyrene	<0.063		0.82	0.063	ug/L		12/19/19 08:10	12/20/19 03:07	1
Naphthalene	<0.13		0.82	0.13	ug/L		12/19/19 08:10	12/20/19 03:07	1
Phenanthrene	<0.17		0.82	0.17	ug/L		12/19/19 08:10	12/20/19 03:07	1
Pyrene	0.28	J	0.82	0.19	ug/L		12/19/19 08:10	12/20/19 03:07	1
1-Methylnaphthalene	<0.25		1.6	0.25	ug/L		12/19/19 08:10	12/20/19 03:07	1
2-Methylnaphthalene	<0.069		1.6	0.069	ug/L		12/19/19 08:10	12/20/19 03:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	72		36 - 120	12/19/19 08:10	12/20/19 03:07	1
Terphenyl-d14	132		40 - 145	12/19/19 08:10	12/20/19 03:07	1
2-Fluorobiphenyl	81		34 - 110	12/19/19 08:10	12/20/19 03:07	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	3.7	J B	5.4	1.4	mg/L		12/20/19 11:56	12/20/19 12:00	1
Total Suspended Solids	22.5		5.0	1.9	mg/L			12/18/19 17:08	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-175213-2

Date Collected: 12/14/19 14:20

Matrix: Water

Date Received: 12/17/19 13:45

Method: 624 - 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			12/23/19 13:45	1
Toluene	<0.15		0.50	0.15	ug/L			12/23/19 13:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/23/19 13:45	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/23/19 13:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		75 - 120		12/23/19 13:45	1
4-Bromofluorobenzene (Surr)	105		71 - 120		12/23/19 13:45	1
1,2-Dichloroethane-d4 (Surr)	83		71 - 127		12/23/19 13:45	1
Dibromofluoromethane (Surr)	89		70 - 120		12/23/19 13:45	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.092		0.74	0.092	ug/L		12/19/19 08:10	12/20/19 03:37	1
Acenaphthylene	<0.10		0.74	0.10	ug/L		12/19/19 08:10	12/20/19 03:37	1
Anthracene	<0.14		0.74	0.14	ug/L		12/19/19 08:10	12/20/19 03:37	1
Benzo[a]anthracene	<0.049		0.74	0.049	ug/L		12/19/19 08:10	12/20/19 03:37	1
Benzo[a]pyrene	<0.056		0.74	0.056	ug/L		12/19/19 08:10	12/20/19 03:37	1
Benzo[b]fluoranthene	<0.061		0.74	0.061	ug/L		12/19/19 08:10	12/20/19 03:37	1
Benzo[g,h,i]perylene	<0.36		0.74	0.36	ug/L		12/19/19 08:10	12/20/19 03:37	1
Benzo[k]fluoranthene	<0.13		0.74	0.13	ug/L		12/19/19 08:10	12/20/19 03:37	1
Chrysene	<0.070		0.74	0.070	ug/L		12/19/19 08:10	12/20/19 03:37	1
Dibenz(a,h)anthracene	<0.084	^c	0.74	0.084	ug/L		12/19/19 08:10	12/20/19 03:37	1
Fluoranthene	<0.15		0.74	0.15	ug/L		12/19/19 08:10	12/20/19 03:37	1
Fluorene	<0.12		0.74	0.12	ug/L		12/19/19 08:10	12/20/19 03:37	1
Indeno[1,2,3-cd]pyrene	<0.057		0.74	0.057	ug/L		12/19/19 08:10	12/20/19 03:37	1
Naphthalene	<0.12		0.74	0.12	ug/L		12/19/19 08:10	12/20/19 03:37	1
Phenanthrene	<0.16		0.74	0.16	ug/L		12/19/19 08:10	12/20/19 03:37	1
Pyrene	<0.17		0.74	0.17	ug/L		12/19/19 08:10	12/20/19 03:37	1
1-Methylnaphthalene	<0.22		1.5	0.22	ug/L		12/19/19 08:10	12/20/19 03:37	1
2-Methylnaphthalene	<0.063		1.5	0.063	ug/L		12/19/19 08:10	12/20/19 03:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	72		36 - 120	12/19/19 08:10	12/20/19 03:37	1
Terphenyl-d14	125		40 - 145	12/19/19 08:10	12/20/19 03:37	1
2-Fluorobiphenyl	79		34 - 110	12/19/19 08:10	12/20/19 03:37	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.2	1.4	mg/L		12/20/19 11:56	12/20/19 12:00	1
Total Suspended Solids	2.5	J	5.0	1.9	mg/L			12/18/19 17:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-175213-3

Date Collected: 12/14/19 00:00

Matrix: Water

Date Received: 12/17/19 13:45

Method: 624 - 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			12/23/19 11:39	1
Toluene	<0.15		0.50	0.15	ug/L			12/23/19 11:39	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/23/19 11:39	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/23/19 11:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		75 - 120		12/23/19 11:39	1
4-Bromofluorobenzene (Surr)	103		71 - 120		12/23/19 11:39	1
1,2-Dichloroethane-d4 (Surr)	82		71 - 127		12/23/19 11:39	1
Dibromofluoromethane (Surr)	88		70 - 120		12/23/19 11:39	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Qualifiers

GC/MS Semi VOA

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

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Method: 624 - 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
		(75-120)	(71-120)	(71-127)	(70-120)
500-175213-1	SC-203-B	104	105	85	88
500-175213-2	SC-503-B	104	105	83	89
500-175213-3	Trip Blank	105	103	82	88
LCS 500-522078/5	Lab Control Sample	102	101	84	90
MB 500-522078/7	Method Blank	104	107	83	87

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	TPHL	FBP
		(36-120)	(40-145)	(34-110)
500-175213-1	SC-203-B	72	132	81
500-175213-2	SC-503-B	72	125	79
LCS 500-521448/2-A	Lab Control Sample	69	123	77
LCSD 500-521448/3-A	Lab Control Sample Dup	70	117	84
MB 500-521448/1-A	Method Blank	73	132	84

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-522078/7
Matrix: Water
Analysis Batch: 522078

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			12/23/19 11:13	1
Toluene	<0.15		0.50	0.15	ug/L			12/23/19 11:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/23/19 11:13	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/23/19 11:13	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	104		75 - 120		12/23/19 11:13	1
4-Bromofluorobenzene (Surr)	107		71 - 120		12/23/19 11:13	1
1,2-Dichloroethane-d4 (Surr)	83		71 - 127		12/23/19 11:13	1
Dibromofluoromethane (Surr)	87		70 - 120		12/23/19 11:13	1

Lab Sample ID: LCS 500-522078/5
Matrix: Water
Analysis Batch: 522078

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	47.6		ug/L		95	37 - 151
Toluene	50.0	50.6		ug/L		101	47 - 150
Ethylbenzene	50.0	52.4		ug/L		105	37 - 162

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	102		75 - 120
4-Bromofluorobenzene (Surr)	101		71 - 120
1,2-Dichloroethane-d4 (Surr)	84		71 - 127
Dibromofluoromethane (Surr)	90		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-521448/1-A
Matrix: Water
Analysis Batch: 521504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 521448

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		12/19/19 08:10	12/19/19 19:12	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		12/19/19 08:10	12/19/19 19:12	1
Anthracene	<0.15		0.80	0.15	ug/L		12/19/19 08:10	12/19/19 19:12	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		12/19/19 08:10	12/19/19 19:12	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		12/19/19 08:10	12/19/19 19:12	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		12/19/19 08:10	12/19/19 19:12	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		12/19/19 08:10	12/19/19 19:12	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		12/19/19 08:10	12/19/19 19:12	1
Chrysene	<0.075		0.80	0.075	ug/L		12/19/19 08:10	12/19/19 19:12	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		12/19/19 08:10	12/19/19 19:12	1
Fluoranthene	<0.16		0.80	0.16	ug/L		12/19/19 08:10	12/19/19 19:12	1
Fluorene	<0.13		0.80	0.13	ug/L		12/19/19 08:10	12/19/19 19:12	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		12/19/19 08:10	12/19/19 19:12	1
Naphthalene	<0.12		0.80	0.12	ug/L		12/19/19 08:10	12/19/19 19:12	1
Phenanthrene	<0.17		0.80	0.17	ug/L		12/19/19 08:10	12/19/19 19:12	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-521448/1-A
Matrix: Water
Analysis Batch: 521504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 521448

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		12/19/19 08:10	12/19/19 19:12	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		12/19/19 08:10	12/19/19 19:12	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		12/19/19 08:10	12/19/19 19:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	73		36 - 120	12/19/19 08:10	12/19/19 19:12	1
Terphenyl-d14	132		40 - 145	12/19/19 08:10	12/19/19 19:12	1
2-Fluorobiphenyl	84		34 - 110	12/19/19 08:10	12/19/19 19:12	1

Lab Sample ID: LCS 500-521448/2-A
Matrix: Water
Analysis Batch: 521504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 521448

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	32.0	23.5		ug/L		73	47 - 145
Acenaphthylene	32.0	24.8		ug/L		78	33 - 145
Anthracene	32.0	35.3		ug/L		110	27 - 133
Benzo[a]anthracene	32.0	37.2		ug/L		116	33 - 143
Benzo[a]pyrene	32.0	37.8		ug/L		118	17 - 163
Benzo[b]fluoranthene	32.0	37.4		ug/L		117	24 - 159
Benzo[g,h,i]perylene	32.0	37.5		ug/L		117	10 - 219
Benzo[k]fluoranthene	32.0	38.2		ug/L		119	11 - 162
Chrysene	32.0	35.4		ug/L		111	17 - 168
Dibenz(a,h)anthracene	32.0	39.9		ug/L		125	10 - 227
Fluoranthene	32.0	37.2		ug/L		116	26 - 137
Fluorene	32.0	28.0		ug/L		88	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	38.3		ug/L		120	10 - 171
Naphthalene	32.0	18.8		ug/L		59	21 - 133
Phenanthrene	32.0	34.1		ug/L		107	54 - 120
Pyrene	32.0	35.8		ug/L		112	52 - 115
1-Methylnaphthalene	32.0	19.5		ug/L		61	
2-Methylnaphthalene	32.0	19.1		ug/L		60	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	69		36 - 120
Terphenyl-d14	123		40 - 145
2-Fluorobiphenyl	77		34 - 110

Lab Sample ID: LCSD 500-521448/3-A
Matrix: Water
Analysis Batch: 521504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 521448

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	32.0	26.3		ug/L		82	47 - 145	11	20
Acenaphthylene	32.0	27.1		ug/L		85	33 - 145	9	20
Anthracene	32.0	33.1		ug/L		103	27 - 133	6	20
Benzo[a]anthracene	32.0	35.4		ug/L		111	33 - 143	5	20
Benzo[a]pyrene	32.0	35.7		ug/L		112	17 - 163	6	20

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-521448/3-A
Matrix: Water
Analysis Batch: 521504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 521448

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	35.9		ug/L		112	24 - 159	4	20
Benzo[g,h,i]perylene	32.0	35.6		ug/L		111	10 - 219	5	20
Benzo[k]fluoranthene	32.0	36.2		ug/L		113	11 - 162	6	20
Chrysene	32.0	34.1		ug/L		107	17 - 168	4	20
Dibenz(a,h)anthracene	32.0	37.6		ug/L		118	10 - 227	6	20
Fluoranthene	32.0	35.2		ug/L		110	26 - 137	6	20
Fluorene	32.0	29.1		ug/L		91	59 - 121	4	20
Indeno[1,2,3-cd]pyrene	32.0	36.2		ug/L		113	10 - 171	6	20
Naphthalene	32.0	20.9		ug/L		65	21 - 133	10	20
Phenanthrene	32.0	32.2		ug/L		101	54 - 120	6	20
Pyrene	32.0	34.3		ug/L		107	52 - 115	4	20
1-Methylnaphthalene	32.0	21.9		ug/L		68		12	
2-Methylnaphthalene	32.0	21.8		ug/L		68	42 - 110	13	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	70		36 - 120
Terphenyl-d14	117		40 - 145
2-Fluorobiphenyl	84		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-521764/14-A
Matrix: Water
Analysis Batch: 521766

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 521764

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		12/20/19 11:56	12/20/19 12:00	1

Lab Sample ID: MB 500-521764/1-A
Matrix: Water
Analysis Batch: 521766

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 521764

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	3.10	J	5.0	1.3	mg/L		12/20/19 11:56	12/20/19 12:00	1

Lab Sample ID: LCS 500-521764/2-A
Matrix: Water
Analysis Batch: 521766

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 521764

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	33.30		mg/L		83	78 - 114

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

Lab Sample ID: MB 500-521365/1
Matrix: Water
Analysis Batch: 521365

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			12/18/19 17:05	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

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

Lab Sample ID: LCS 500-521365/2
Matrix: Water
Analysis Batch: 521365

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	180.0		mg/L		90	80 - 120

Lab Sample ID: 500-175213-2 MS
Matrix: Water
Analysis Batch: 521365

Client Sample ID: SC-503-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	2.5	J	100	90.00		mg/L		88	75 - 125

Lab Sample ID: 500-175213-2 DU
Matrix: Water
Analysis Batch: 521365

Client Sample ID: SC-503-B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	2.5	J	2.00	J F5	mg/L		22	5

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-175213-1

Date Collected: 12/14/19 14:10

Matrix: Water

Date Received: 12/17/19 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	522078	12/23/19 13:20	STW	TAL CHI
Total/NA	Prep	625			521448	12/19/19 08:10	DAK	TAL CHI
Total/NA	Analysis	625		1	521504	12/20/19 03:07	AJD	TAL CHI
Total/NA	Prep	1664B			521764	12/20/19 11:56	TMS	TAL CHI
Total/NA	Analysis	1664B		1	521766	12/20/19 12:00	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	521365		SMO	TAL CHI
					(Start)	12/18/19 17:08		
					(End)	12/18/19 17:09		

Client Sample ID: SC-503-B

Lab Sample ID: 500-175213-2

Date Collected: 12/14/19 14:20

Matrix: Water

Date Received: 12/17/19 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	522078	12/23/19 13:45	STW	TAL CHI
Total/NA	Prep	625			521448	12/19/19 08:10	DAK	TAL CHI
Total/NA	Analysis	625		1	521504	12/20/19 03:37	AJD	TAL CHI
Total/NA	Prep	1664B			521764	12/20/19 11:56	TMS	TAL CHI
Total/NA	Analysis	1664B		1	521766	12/20/19 12:00	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	521365		SMO	TAL CHI
					(Start)	12/18/19 17:09		
					(End)	12/18/19 17:10		

Client Sample ID: Trip Blank

Lab Sample ID: 500-175213-3

Date Collected: 12/14/19 00:00

Matrix: Water

Date Received: 12/17/19 13:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	522078	12/23/19 11:39	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175213-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

1

2

3

4

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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:

500-175213 COC a Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact		Project Manager: Lisa Rutkowski		Site Contact:		Date:		COC No:	
Arcadis U.S., Inc.		Email: N/A		Lab Contact: Sandie Fredrick		Carrier: FedEx		_____ of _____ COCs	
126 North Jefferson Street, Suite 400		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS /MSD (Y/N) BTEX: Method 624 Oil&Grease: Method 1664 TSS: Method 2540D PAHs: Method 625				Sampler: For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Lab Project number 50016846 Sample Specific Notes:	
Milwaukee, WI 53202		CALENDAR DAYS <input type="checkbox"/> WORKING DAYS <input checked="" type="checkbox"/>							
Phone _____		TAT if different from Below _____							
FAX _____		2 weeks							
Project Name: Marinette, WI		1 week							
Site: Marinette, WI		2 days							
P O # 30015296.00006 (WPDES)		1 day							
Sample Identification			Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.		
1	SC-203-B	12/14	14:10	G	W	8	N	N	3 2 1 2
2	SC-503-B	12/14	14:26	G	W	8	N	N	3 2 1 2
3	Trip Blank			G	W	1	N	N	1
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.						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						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Special Instructions/QC Requirements & Comments:									
Level 2 QA/QC, Questions call Jennifer Bennett WPDES: LOD/LOQ TAT: 5 Day SC-203-B PH 7.30 SC-503-B PH 8.77									
Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 3.9		Corr'd:		Therm ID No.:	
Relinquished by: <i>[Signature]</i>		Company: ARCADIS		Date/Time: 12/16/19		Received by: <i>[Signature]</i>		Company: TA	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

ORIGIN ID:RRLA (262) 202-5955
LISA RUTKOWSKI
ARCADIS
126 NORTH JEFFERSON STREET
MILWAUKEE, WI 53202
UNITED STATES US

SHIP DATE: 09DEC19
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3211



500-175213 Waybill

TO

TESTAMERICA CHICAGO
2417 BOND STREET

UNIVERSITY PARK IL 60484 - 3101

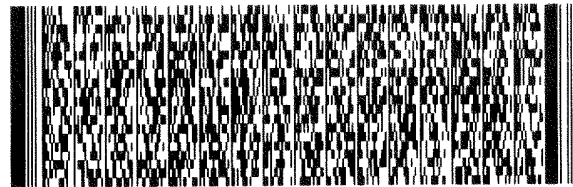
(709) 534 - 5200

REF:

INU:
PO:

DEPT:

RMA:



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Express



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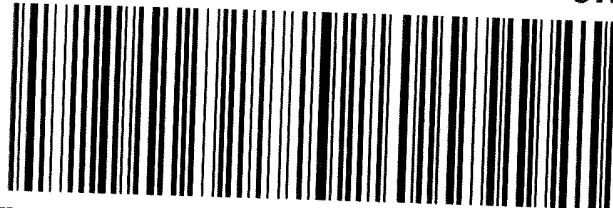
TRK#
0221

7125 4941 5457

TUE - 17 DEC 10:30A
PRIORITY OVERNIGHT

NA JOTA

60484
IL-US
ORD



FTD 832374 16DEC19 GRBA 56AC2/1800/05A2

48 qt.

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Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-175213-1

Login Number: 175213

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: James, Jeff A

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	3.9
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.	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

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

Laboratory Job ID: 500-175358-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
12/27/2019 4:00:31 PM

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

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Job ID: 500-175358-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-175358-1

Comments

No additional comments.

Receipt

The samples were received on 12/19/2019 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described 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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-175358-1	SC-203-B	Water	12/18/19 09:20	12/19/19 10:30	
500-175358-2	SC-503-B	Water	12/18/19 09:30	12/19/19 10:30	
500-175358-3	Trip Blank	Water	12/18/19 00:00	12/19/19 10:30	

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Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-175358-1

Date Collected: 12/18/19 09:20

Matrix: Water

Date Received: 12/19/19 10:30

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.21	J	0.50	0.15	ug/L			12/27/19 14:28	1
Toluene	<0.15		0.50	0.15	ug/L			12/27/19 14:28	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/27/19 14:28	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/27/19 14:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	97		75 - 120					12/27/19 14:28	1
<i>4-Bromofluorobenzene (Surr)</i>	99		71 - 120					12/27/19 14:28	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	100		71 - 127					12/27/19 14:28	1
<i>Dibromofluoromethane (Surr)</i>	106		70 - 120					12/27/19 14:28	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.096		0.78	0.096	ug/L		12/20/19 08:01	12/24/19 23:15	1
Acenaphthylene	<0.11		0.78	0.11	ug/L		12/20/19 08:01	12/24/19 23:15	1
Anthracene	<0.14		0.78	0.14	ug/L		12/20/19 08:01	12/24/19 23:15	1
Benzo[a]anthracene	0.070	J	0.78	0.051	ug/L		12/20/19 08:01	12/24/19 23:15	1
Benzo[a]pyrene	0.081	J	0.78	0.059	ug/L		12/20/19 08:01	12/24/19 23:15	1
Benzo[b]fluoranthene	0.080	J	0.78	0.064	ug/L		12/20/19 08:01	12/24/19 23:15	1
Benzo[g,h,i]perylene	<0.38		0.78	0.38	ug/L		12/20/19 08:01	12/24/19 23:15	1
Benzo[k]fluoranthene	<0.13		0.78	0.13	ug/L		12/20/19 08:01	12/24/19 23:15	1
Chrysene	0.087	J	0.78	0.073	ug/L		12/20/19 08:01	12/24/19 23:15	1
Dibenz(a,h)anthracene	<0.088		0.78	0.088	ug/L		12/20/19 08:01	12/24/19 23:15	1
Fluoranthene	0.19	J	0.78	0.16	ug/L		12/20/19 08:01	12/24/19 23:15	1
Fluorene	<0.13		0.78	0.13	ug/L		12/20/19 08:01	12/24/19 23:15	1
Indeno[1,2,3-cd]pyrene	<0.060		0.78	0.060	ug/L		12/20/19 08:01	12/24/19 23:15	1
Naphthalene	<0.12		0.78	0.12	ug/L		12/20/19 08:01	12/24/19 23:15	1
Phenanthrene	<0.16		0.78	0.16	ug/L		12/20/19 08:01	12/24/19 23:15	1
Pyrene	<0.18		0.78	0.18	ug/L		12/20/19 08:01	12/24/19 23:15	1
1-Methylnaphthalene	<0.23		1.6	0.23	ug/L		12/20/19 08:01	12/24/19 23:15	1
2-Methylnaphthalene	<0.066		1.6	0.066	ug/L		12/20/19 08:01	12/24/19 23:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Nitrobenzene-d5</i>	85		36 - 120				12/20/19 08:01	12/24/19 23:15	1
<i>Terphenyl-d14</i>	107		40 - 145				12/20/19 08:01	12/24/19 23:15	1
<i>2-Fluorobiphenyl</i>	87		34 - 110				12/20/19 08:01	12/24/19 23:15	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.2	1.4	mg/L		12/26/19 09:32	12/26/19 09:38	1
Total Suspended Solids	9.0		5.0	1.9	mg/L			12/21/19 16:06	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-175358-2

Date Collected: 12/18/19 09:30

Matrix: Water

Date Received: 12/19/19 10:30

Method: 624 - 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			12/27/19 14:55	1
Toluene	<0.15		0.50	0.15	ug/L			12/27/19 14:55	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/27/19 14:55	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/27/19 14:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		75 - 120		12/27/19 14:55	1
4-Bromofluorobenzene (Surr)	99		71 - 120		12/27/19 14:55	1
1,2-Dichloroethane-d4 (Surr)	100		71 - 127		12/27/19 14:55	1
Dibromofluoromethane (Surr)	107		70 - 120		12/27/19 14:55	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.10		0.83	0.10	ug/L		12/20/19 08:01	12/24/19 23:43	1
Acenaphthylene	<0.11		0.83	0.11	ug/L		12/20/19 08:01	12/24/19 23:43	1
Anthracene	<0.15		0.83	0.15	ug/L		12/20/19 08:01	12/24/19 23:43	1
Benzo[a]anthracene	0.054	J	0.83	0.054	ug/L		12/20/19 08:01	12/24/19 23:43	1
Benzo[a]pyrene	<0.063		0.83	0.063	ug/L		12/20/19 08:01	12/24/19 23:43	1
Benzo[b]fluoranthene	<0.068		0.83	0.068	ug/L		12/20/19 08:01	12/24/19 23:43	1
Benzo[g,h,i]perylene	<0.40		0.83	0.40	ug/L		12/20/19 08:01	12/24/19 23:43	1
Benzo[k]fluoranthene	<0.14		0.83	0.14	ug/L		12/20/19 08:01	12/24/19 23:43	1
Chrysene	<0.077		0.83	0.077	ug/L		12/20/19 08:01	12/24/19 23:43	1
Dibenz(a,h)anthracene	<0.094		0.83	0.094	ug/L		12/20/19 08:01	12/24/19 23:43	1
Fluoranthene	<0.17		0.83	0.17	ug/L		12/20/19 08:01	12/24/19 23:43	1
Fluorene	<0.14		0.83	0.14	ug/L		12/20/19 08:01	12/24/19 23:43	1
Indeno[1,2,3-cd]pyrene	<0.064		0.83	0.064	ug/L		12/20/19 08:01	12/24/19 23:43	1
Naphthalene	<0.13		0.83	0.13	ug/L		12/20/19 08:01	12/24/19 23:43	1
Phenanthrene	<0.17		0.83	0.17	ug/L		12/20/19 08:01	12/24/19 23:43	1
Pyrene	<0.19		0.83	0.19	ug/L		12/20/19 08:01	12/24/19 23:43	1
1-Methylnaphthalene	<0.25		1.7	0.25	ug/L		12/20/19 08:01	12/24/19 23:43	1
2-Methylnaphthalene	<0.070		1.7	0.070	ug/L		12/20/19 08:01	12/24/19 23:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	99		36 - 120	12/20/19 08:01	12/24/19 23:43	1
Terphenyl-d14	110		40 - 145	12/20/19 08:01	12/24/19 23:43	1
2-Fluorobiphenyl	83		34 - 110	12/20/19 08:01	12/24/19 23:43	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.4		5.4	1.4	mg/L		12/26/19 09:32	12/26/19 09:38	1
Total Suspended Solids	<1.9		5.0	1.9	mg/L			12/21/19 16:08	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-175358-3

Date Collected: 12/18/19 00:00

Matrix: Water

Date Received: 12/19/19 10:30

Method: 624 - 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			12/27/19 13:06	1
Toluene	<0.15		0.50	0.15	ug/L			12/27/19 13:06	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/27/19 13:06	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/27/19 13:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		75 - 120		12/27/19 13:06	1
4-Bromofluorobenzene (Surr)	98		71 - 120		12/27/19 13:06	1
1,2-Dichloroethane-d4 (Surr)	99		71 - 127		12/27/19 13:06	1
Dibromofluoromethane (Surr)	107		70 - 120		12/27/19 13:06	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (75-120)	BFB (71-120)	DCA (71-127)	DBFM (70-120)
500-175358-1	SC-203-B	97	99	100	106
500-175358-2	SC-503-B	97	99	100	107
500-175358-3	Trip Blank	97	98	99	107
LCS 500-522635/22	Lab Control Sample	100	94	94	108
MB 500-522635/7	Method Blank	97	98	99	106

Surrogate Legend

TOL = Toluene-d8 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 DCA = 1,2-Dichloroethane-d4 (Surr)
 DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (36-120)	TPHL (40-145)	FBP (34-110)
500-175358-1	SC-203-B	85	107	87
500-175358-2	SC-503-B	99	110	83
LCS 500-521663/2-A	Lab Control Sample	107	128	100
MB 500-521663/1-A	Method Blank	83	123	70

Surrogate Legend

NBZ = Nitrobenzene-d5
 TPHL = Terphenyl-d14
 FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-522635/7
Matrix: Water
Analysis Batch: 522635

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			12/27/19 12:39	1
Toluene	<0.15		0.50	0.15	ug/L			12/27/19 12:39	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/27/19 12:39	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			12/27/19 12:39	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	97		75 - 120		12/27/19 12:39	1
4-Bromofluorobenzene (Surr)	98		71 - 120		12/27/19 12:39	1
1,2-Dichloroethane-d4 (Surr)	99		71 - 127		12/27/19 12:39	1
Dibromofluoromethane (Surr)	106		70 - 120		12/27/19 12:39	1

Lab Sample ID: LCS 500-522635/22
Matrix: Water
Analysis Batch: 522635

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	46.2		ug/L		92	37 - 151
Toluene	50.0	43.7		ug/L		87	47 - 150
Ethylbenzene	50.0	47.7		ug/L		95	37 - 162

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	100		75 - 120
4-Bromofluorobenzene (Surr)	94		71 - 120
1,2-Dichloroethane-d4 (Surr)	94		71 - 127
Dibromofluoromethane (Surr)	108		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-521663/1-A
Matrix: Water
Analysis Batch: 521828

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 521663

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		12/20/19 08:01	12/21/19 02:05	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		12/20/19 08:01	12/21/19 02:05	1
Anthracene	<0.15		0.80	0.15	ug/L		12/20/19 08:01	12/21/19 02:05	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		12/20/19 08:01	12/21/19 02:05	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		12/20/19 08:01	12/21/19 02:05	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		12/20/19 08:01	12/21/19 02:05	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		12/20/19 08:01	12/21/19 02:05	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		12/20/19 08:01	12/21/19 02:05	1
Chrysene	<0.075		0.80	0.075	ug/L		12/20/19 08:01	12/21/19 02:05	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		12/20/19 08:01	12/21/19 02:05	1
Fluoranthene	<0.16		0.80	0.16	ug/L		12/20/19 08:01	12/21/19 02:05	1
Fluorene	<0.13		0.80	0.13	ug/L		12/20/19 08:01	12/21/19 02:05	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		12/20/19 08:01	12/21/19 02:05	1
Naphthalene	<0.12		0.80	0.12	ug/L		12/20/19 08:01	12/21/19 02:05	1
Phenanthrene	<0.17		0.80	0.17	ug/L		12/20/19 08:01	12/21/19 02:05	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-521663/1-A
Matrix: Water
Analysis Batch: 521828

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 521663

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		12/20/19 08:01	12/21/19 02:05	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		12/20/19 08:01	12/21/19 02:05	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		12/20/19 08:01	12/21/19 02:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	83		36 - 120	12/20/19 08:01	12/21/19 02:05	1
Terphenyl-d14	123		40 - 145	12/20/19 08:01	12/21/19 02:05	1
2-Fluorobiphenyl	70		34 - 110	12/20/19 08:01	12/21/19 02:05	1

Lab Sample ID: LCS 500-521663/2-A
Matrix: Water
Analysis Batch: 521828

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 521663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	32.0	29.7		ug/L		93	47 - 145
Acenaphthylene	32.0	31.3		ug/L		98	33 - 145
Anthracene	32.0	36.0		ug/L		112	27 - 133
Benzo[a]anthracene	32.0	37.9		ug/L		119	33 - 143
Benzo[a]pyrene	32.0	38.7		ug/L		121	17 - 163
Benzo[b]fluoranthene	32.0	38.8		ug/L		121	24 - 159
Benzo[g,h,i]perylene	32.0	38.8		ug/L		121	10 - 219
Benzo[k]fluoranthene	32.0	39.9		ug/L		125	11 - 162
Chrysene	32.0	36.5		ug/L		114	17 - 168
Dibenz(a,h)anthracene	32.0	41.0		ug/L		128	10 - 227
Fluoranthene	32.0	38.6		ug/L		121	26 - 137
Fluorene	32.0	31.9		ug/L		100	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	39.7		ug/L		124	10 - 171
Naphthalene	32.0	24.6		ug/L		77	21 - 133
Phenanthrene	32.0	35.3		ug/L		110	54 - 120
Pyrene	32.0	36.8		ug/L		115	52 - 115
1-Methylnaphthalene	32.0	25.8		ug/L		81	
2-Methylnaphthalene	32.0	25.3		ug/L		79	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	107		36 - 120
Terphenyl-d14	128		40 - 145
2-Fluorobiphenyl	100		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-522486/18-A
Matrix: Water
Analysis Batch: 522488

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 522486

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	<1.3		5.0	1.3	mg/L		12/26/19 09:32	12/26/19 09:38	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Method: 1664B - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 500-522486/2-A
Matrix: Water
Analysis Batch: 522488

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 522486
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	34.40		mg/L		86	78 - 114

Lab Sample ID: 500-175358-1 MS
Matrix: Water
Analysis Batch: 522488

Client Sample ID: SC-203-B
Prep Type: Total/NA
Prep Batch: 522486
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	<1.4		41.7	36.91		mg/L		88	78 - 114

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

Lab Sample ID: MB 500-521922/1
Matrix: Water
Analysis Batch: 521922

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			12/21/19 15:30	1

Lab Sample ID: LCS 500-521922/2
Matrix: Water
Analysis Batch: 521922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Suspended Solids	200	187.5		mg/L		94	80 - 120

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-175358-1

Date Collected: 12/18/19 09:20

Matrix: Water

Date Received: 12/19/19 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	522635	12/27/19 14:28	STW	TAL CHI
Total/NA	Prep	625			521663	12/20/19 08:01	DAK	TAL CHI
Total/NA	Analysis	625		1	522287	12/24/19 23:15	AJD	TAL CHI
Total/NA	Prep	1664B			522486	12/26/19 09:32	TMS	TAL CHI
Total/NA	Analysis	1664B		1	522488	12/26/19 09:38	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	521922		SMO	TAL CHI
					(Start)	12/21/19 16:06		
					(End)	12/21/19 16:08		

Client Sample ID: SC-503-B

Lab Sample ID: 500-175358-2

Date Collected: 12/18/19 09:30

Matrix: Water

Date Received: 12/19/19 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	522635	12/27/19 14:55	STW	TAL CHI
Total/NA	Prep	625			521663	12/20/19 08:01	DAK	TAL CHI
Total/NA	Analysis	625		1	522287	12/24/19 23:43	AJD	TAL CHI
Total/NA	Prep	1664B			522486	12/26/19 09:32	TMS	TAL CHI
Total/NA	Analysis	1664B		1	522488	12/26/19 09:38	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	521922		SMO	TAL CHI
					(Start)	12/21/19 16:08		
					(End)	12/21/19 16:10		

Client Sample ID: Trip Blank

Lab Sample ID: 500-175358-3

Date Collected: 12/18/19 00:00

Matrix: Water

Date Received: 12/19/19 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	522635	12/27/19 13:06	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175358-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

1

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Chain of Custody Record



Regulatory Program: DW NPDES RCRA Other:

Client Contact Arcadis U.S., Inc. 126 North Jefferson Street, Suite 400 Milwaukee, WI 53202 Phone _____ FAX _____		Project Manager: Lisa Rutkowski Email: N/A Tel/Fax: N/A		Site Contact: Lab Contact: Sandie Fredrick		Date: Carrier: FedEx		COC No: _____ of _____ COCs											
Analysis Turnaround Time CALENDAR DAYS <input type="checkbox"/> WORKING DAYS <input checked="" type="checkbox"/> TAT if different from Below _____ 2 weeks _____ 1 week _____ 2 days _____ 1 day _____		Filtered Sample (Y/N) Perform MS / MSD (Y/N) BTEX: Method 624 Oil&Grease: Method 1664 TSS: Method 2540D PAHs: Method 625		Sampler: For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____		Lab Project number 50016846 500-175358		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								
1 2 3 SC-203-B	12/18	920	G	W	8	N	N	3	2	1	2								
SC-503-B	12/18	930	G	W	8	N	N	3	2	1	2								
Trip Blank			G	W	1	N	N	1											
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-Hazardous <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/>						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													
Special Instructions/QC Requirements & Comments: Level 2 QA/QC, Questions call Jennifer Bennett WPDES: LOD/LOQ TAT: 5 Day SC-203-B P# 7160 SC-503-B P# 7167																			
Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>		Custody Seal No.: _____		Cooler Temp. (°C): Obs'd: 0.3 Corr'd: 1.3		Therm ID No.: _____													
Relinquished by: _____		Company: ARCADIS		Date/Time: 12/18/1300		Received by: _____		Company: _____		Date/Time: 12/19/1030									
Relinquished by: _____		Company: _____		Date/Time: _____		Received by: _____		Company: _____		Date/Time: _____									
Relinquished by: _____		Company: _____		Date/Time: _____		Received in Laboratory by: _____		Company: _____		Date/Time: _____									



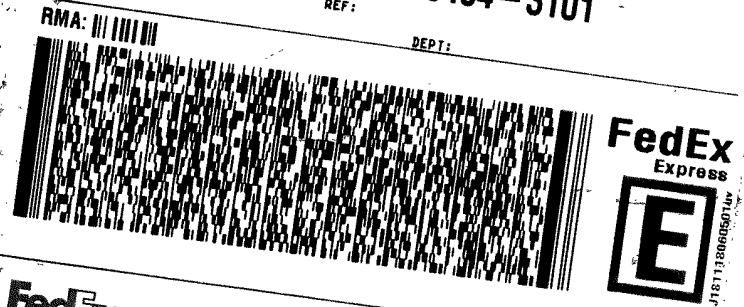
500-175358 Waybill

25
 619
 5
 10:30
 7790
 12:19
Test
merica
 THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID: RRLA (262) 202-5955
 LISA RUTKOWSKI
 ARCADIS
 126 NORTH JEFFERSON STREET
 MILWAUKEE, WI 53202
 UNITED STATES US

SHIP DATE: 29AUG19
 ACTWGT: 25.00 LB MAN
 CAD: 525155/CAFE3211

TO
TESTAMERICA CHICAGO
2417 BOND STREET
UNIVERSITY PARK IL 60484-3101
 (708) 634-5200
 THU: REF: DEPT:



FedEx
 TRK# 7125 4940 7790
0221
NA JOTA
THU - 19 DEC 10:30A
PRIORITY OVERNIGHT
60484
IL-US
ORD



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-175358-1

Login Number: 175358

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: James, Jeff A

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	1.3
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

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

Laboratory Job ID: 500-175565-1

Client Project/Site: Marinette, WI 30015296.00006 WPDES

For:

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

Attn: Genevieve Vander Velden



Authorized for release by:
1/6/2020 2:16:32 PM

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

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Job ID: 500-175565-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative 500-175565-1

Comments

No additional comments.

Receipt

The samples were received on 12/24/2019 10:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was -1.1° 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: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 500-522665 and analytical batch 500-522739 recovered outside control limits for the following analyte: Indeno[1,2,3-cd]pyrene.

Method 625: The continuing calibration verification (CCV) analyzed in 500-522739 was outside the method criteria for the following analyte: Benzo[g,h,i]perylene. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or 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 U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
625	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL CHI
1664B	HEM and SGT-HEM	1664B	TAL CHI
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CHI
1664B	HEM and SGT-HEM (SPE)	1664B	TAL CHI
625	Liquid-Liquid Extraction	40CFR136A	TAL CHI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

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

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-175565-1	SC-203-B	Water	12/23/19 08:45	12/24/19 10:25	
500-175565-2	SC-503-B	Water	12/23/19 08:30	12/24/19 10:25	
500-175565-3	Trip Blank	Water	12/23/19 09:00	12/24/19 10:25	

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-175565-1

Date Collected: 12/23/19 08:45

Matrix: Water

Date Received: 12/24/19 10:25

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.16	J	0.50	0.15	ug/L			01/02/20 23:21	1
Toluene	<0.15		0.50	0.15	ug/L			01/02/20 23:21	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			01/02/20 23:21	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			01/02/20 23:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	103		75 - 120		01/02/20 23:21	1
<i>4-Bromofluorobenzene (Surr)</i>	109		71 - 120		01/02/20 23:21	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	91		71 - 127		01/02/20 23:21	1
<i>Dibromofluoromethane (Surr)</i>	91		70 - 120		01/02/20 23:21	1

Method: 625 - 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		12/27/19 07:33	12/28/19 07:38	1
Acenaphthylene	<0.10		0.76	0.10	ug/L		12/27/19 07:33	12/28/19 07:38	1
Anthracene	<0.14		0.76	0.14	ug/L		12/27/19 07:33	12/28/19 07:38	1
Benzo[a]anthracene	0.098	J	0.76	0.050	ug/L		12/27/19 07:33	12/28/19 07:38	1
Benzo[a]pyrene	0.14	J	0.76	0.058	ug/L		12/27/19 07:33	12/28/19 07:38	1
Benzo[b]fluoranthene	0.13	J	0.76	0.062	ug/L		12/27/19 07:33	12/28/19 07:38	1
Benzo[g,h,i]perylene	<0.37		0.76	0.37	ug/L		12/27/19 07:33	12/28/19 07:38	1
Benzo[k]fluoranthene	<0.13		0.76	0.13	ug/L		12/27/19 07:33	12/28/19 07:38	1
Chrysene	0.18	J	0.76	0.071	ug/L		12/27/19 07:33	12/28/19 07:38	1
Dibenz(a,h)anthracene	<0.086		0.76	0.086	ug/L		12/27/19 07:33	12/28/19 07:38	1
Fluoranthene	0.36	J	0.76	0.16	ug/L		12/27/19 07:33	12/28/19 07:38	1
Fluorene	<0.13		0.76	0.13	ug/L		12/27/19 07:33	12/28/19 07:38	1
Indeno[1,2,3-cd]pyrene	0.13	J*	0.76	0.059	ug/L		12/27/19 07:33	12/28/19 07:38	1
Naphthalene	<0.12		0.76	0.12	ug/L		12/27/19 07:33	12/28/19 07:38	1
Phenanthrene	0.18	J	0.76	0.16	ug/L		12/27/19 07:33	12/28/19 07:38	1
Pyrene	0.27	J	0.76	0.17	ug/L		12/27/19 07:33	12/28/19 07:38	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		12/27/19 07:33	12/28/19 07:38	1
2-Methylnaphthalene	<0.064		1.5	0.064	ug/L		12/27/19 07:33	12/28/19 07:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Nitrobenzene-d5</i>	84		36 - 120	12/27/19 07:33	12/28/19 07:38	1
<i>Terphenyl-d14</i>	109		40 - 145	12/27/19 07:33	12/28/19 07:38	1
<i>2-Fluorobiphenyl</i>	75		34 - 110	12/27/19 07:33	12/28/19 07:38	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.4	J B	5.2	1.4	mg/L		12/30/19 09:03	12/30/19 09:07	1
Total Suspended Solids	15.5		5.0	1.9	mg/L			12/30/19 14:04	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Client Sample ID: SC-503-B

Lab Sample ID: 500-175565-2

Date Collected: 12/23/19 08:30

Matrix: Water

Date Received: 12/24/19 10:25

Method: 624 - 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			01/02/20 23:46	1
Toluene	<0.15		0.50	0.15	ug/L			01/02/20 23:46	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			01/02/20 23:46	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			01/02/20 23:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	107		75 - 120		01/02/20 23:46	1
4-Bromofluorobenzene (Surr)	108		71 - 120		01/02/20 23:46	1
1,2-Dichloroethane-d4 (Surr)	90		71 - 127		01/02/20 23:46	1
Dibromofluoromethane (Surr)	90		70 - 120		01/02/20 23:46	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<0.094		0.77	0.094	ug/L		12/27/19 07:33	12/28/19 08:05	1
Acenaphthylene	<0.10		0.77	0.10	ug/L		12/27/19 07:33	12/28/19 08:05	1
Anthracene	<0.14		0.77	0.14	ug/L		12/27/19 07:33	12/28/19 08:05	1
Benzo[a]anthracene	<0.050		0.77	0.050	ug/L		12/27/19 07:33	12/28/19 08:05	1
Benzo[a]pyrene	<0.058		0.77	0.058	ug/L		12/27/19 07:33	12/28/19 08:05	1
Benzo[b]fluoranthene	<0.063		0.77	0.063	ug/L		12/27/19 07:33	12/28/19 08:05	1
Benzo[g,h,i]perylene	<0.37		0.77	0.37	ug/L		12/27/19 07:33	12/28/19 08:05	1
Benzo[k]fluoranthene	<0.13		0.77	0.13	ug/L		12/27/19 07:33	12/28/19 08:05	1
Chrysene	<0.072		0.77	0.072	ug/L		12/27/19 07:33	12/28/19 08:05	1
Dibenz(a,h)anthracene	<0.087		0.77	0.087	ug/L		12/27/19 07:33	12/28/19 08:05	1
Fluoranthene	<0.16		0.77	0.16	ug/L		12/27/19 07:33	12/28/19 08:05	1
Fluorene	<0.13		0.77	0.13	ug/L		12/27/19 07:33	12/28/19 08:05	1
Indeno[1,2,3-cd]pyrene	<0.059 *		0.77	0.059	ug/L		12/27/19 07:33	12/28/19 08:05	1
Naphthalene	<0.12		0.77	0.12	ug/L		12/27/19 07:33	12/28/19 08:05	1
Phenanthrene	<0.16		0.77	0.16	ug/L		12/27/19 07:33	12/28/19 08:05	1
Pyrene	<0.17		0.77	0.17	ug/L		12/27/19 07:33	12/28/19 08:05	1
1-Methylnaphthalene	<0.23		1.5	0.23	ug/L		12/27/19 07:33	12/28/19 08:05	1
2-Methylnaphthalene	<0.065		1.5	0.065	ug/L		12/27/19 07:33	12/28/19 08:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	88		36 - 120	12/27/19 07:33	12/28/19 08:05	1
Terphenyl-d14	111		40 - 145	12/27/19 07:33	12/28/19 08:05	1
2-Fluorobiphenyl	81		34 - 110	12/27/19 07:33	12/28/19 08:05	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.7	J B	5.2	1.4	mg/L		12/30/19 09:03	12/30/19 09:07	1
Total Suspended Solids	2.5	J	5.0	1.9	mg/L			12/30/19 14:05	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Client Sample ID: Trip Blank

Lab Sample ID: 500-175565-3

Date Collected: 12/23/19 09:00

Matrix: Water

Date Received: 12/24/19 10:25

Method: 624 - 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			01/02/20 21:41	1
Toluene	<0.15		0.50	0.15	ug/L			01/02/20 21:41	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			01/02/20 21:41	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			01/02/20 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		75 - 120		01/02/20 21:41	1
4-Bromofluorobenzene (Surr)	105		71 - 120		01/02/20 21:41	1
1,2-Dichloroethane-d4 (Surr)	89		71 - 127		01/02/20 21:41	1
Dibromofluoromethane (Surr)	89		70 - 120		01/02/20 21:41	1

Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
J	Reported value was between the limit of detection and the limit of quantitation.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Method: 624 - 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
		(75-120)	(71-120)	(71-127)	(70-120)
500-175565-1	SC-203-B	103	109	91	91
500-175565-2	SC-503-B	107	108	90	90
500-175565-3	Trip Blank	103	105	89	89
LCS 500-523307/31	Lab Control Sample	103	107	92	94
MB 500-523307/33	Method Blank	105	107	90	91

Surrogate Legend

TOL = Toluene-d8 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

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

DBFM = Dibromofluoromethane (Surr)

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	TPHL	FBP
		(36-120)	(40-145)	(34-110)
500-175565-1	SC-203-B	84	109	75
500-175565-2	SC-503-B	88	111	81
LCS 500-522665/2-A	Lab Control Sample	88	106	82
LCSD 500-522665/3-A	Lab Control Sample Dup	77	108	77
MB 500-522665/1-A	Method Blank	89	118	79

Surrogate Legend

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

FBP = 2-Fluorobiphenyl

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-523307/33
Matrix: Water
Analysis Batch: 523307

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			01/02/20 21:17	1
Toluene	<0.15		0.50	0.15	ug/L			01/02/20 21:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			01/02/20 21:17	1
Xylenes, Total	<0.40		1.0	0.40	ug/L			01/02/20 21:17	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	105		75 - 120		01/02/20 21:17	1
4-Bromofluorobenzene (Surr)	107		71 - 120		01/02/20 21:17	1
1,2-Dichloroethane-d4 (Surr)	90		71 - 127		01/02/20 21:17	1
Dibromofluoromethane (Surr)	91		70 - 120		01/02/20 21:17	1

Lab Sample ID: LCS 500-523307/31
Matrix: Water
Analysis Batch: 523307

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	44.6		ug/L		89	37 - 151
Toluene	50.0	46.7		ug/L		93	47 - 150
Ethylbenzene	50.0	47.4		ug/L		95	37 - 162

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	103		75 - 120
4-Bromofluorobenzene (Surr)	107		71 - 120
1,2-Dichloroethane-d4 (Surr)	92		71 - 127
Dibromofluoromethane (Surr)	94		70 - 120

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-522665/1-A
Matrix: Water
Analysis Batch: 522739

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 522665

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acenaphthene	<0.099		0.80	0.099	ug/L		12/27/19 07:33	12/27/19 21:36	1
Acenaphthylene	<0.11		0.80	0.11	ug/L		12/27/19 07:33	12/27/19 21:36	1
Anthracene	<0.15		0.80	0.15	ug/L		12/27/19 07:33	12/27/19 21:36	1
Benzo[a]anthracene	<0.052		0.80	0.052	ug/L		12/27/19 07:33	12/27/19 21:36	1
Benzo[a]pyrene	<0.061		0.80	0.061	ug/L		12/27/19 07:33	12/27/19 21:36	1
Benzo[b]fluoranthene	<0.065		0.80	0.065	ug/L		12/27/19 07:33	12/27/19 21:36	1
Benzo[g,h,i]perylene	<0.39		0.80	0.39	ug/L		12/27/19 07:33	12/27/19 21:36	1
Benzo[k]fluoranthene	<0.14		0.80	0.14	ug/L		12/27/19 07:33	12/27/19 21:36	1
Chrysene	<0.075		0.80	0.075	ug/L		12/27/19 07:33	12/27/19 21:36	1
Dibenz(a,h)anthracene	<0.091		0.80	0.091	ug/L		12/27/19 07:33	12/27/19 21:36	1
Fluoranthene	<0.16		0.80	0.16	ug/L		12/27/19 07:33	12/27/19 21:36	1
Fluorene	<0.13		0.80	0.13	ug/L		12/27/19 07:33	12/27/19 21:36	1
Indeno[1,2,3-cd]pyrene	<0.061		0.80	0.061	ug/L		12/27/19 07:33	12/27/19 21:36	1
Naphthalene	<0.12		0.80	0.12	ug/L		12/27/19 07:33	12/27/19 21:36	1
Phenanthrene	<0.17		0.80	0.17	ug/L		12/27/19 07:33	12/27/19 21:36	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-522665/1-A
Matrix: Water
Analysis Batch: 522739

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 522665

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<0.18		0.80	0.18	ug/L		12/27/19 07:33	12/27/19 21:36	1
1-Methylnaphthalene	<0.24		1.6	0.24	ug/L		12/27/19 07:33	12/27/19 21:36	1
2-Methylnaphthalene	<0.067		1.6	0.067	ug/L		12/27/19 07:33	12/27/19 21:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	89		36 - 120	12/27/19 07:33	12/27/19 21:36	1
Terphenyl-d14	118		40 - 145	12/27/19 07:33	12/27/19 21:36	1
2-Fluorobiphenyl	79		34 - 110	12/27/19 07:33	12/27/19 21:36	1

Lab Sample ID: LCS 500-522665/2-A
Matrix: Water
Analysis Batch: 522739

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 522665

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	32.0	25.8		ug/L		81	47 - 145
Acenaphthylene	32.0	27.6		ug/L		86	33 - 145
Anthracene	32.0	30.4		ug/L		95	27 - 133
Benzo[a]anthracene	32.0	32.3		ug/L		101	33 - 143
Benzo[a]pyrene	32.0	34.3		ug/L		107	17 - 163
Benzo[b]fluoranthene	32.0	31.8		ug/L		99	24 - 159
Benzo[g,h,i]perylene	32.0	28.5		ug/L		89	10 - 219
Benzo[k]fluoranthene	32.0	33.3		ug/L		104	11 - 162
Chrysene	32.0	29.3		ug/L		92	17 - 168
Dibenz(a,h)anthracene	32.0	31.4		ug/L		98	10 - 227
Fluoranthene	32.0	30.0		ug/L		94	26 - 137
Fluorene	32.0	28.5		ug/L		89	59 - 121
Indeno[1,2,3-cd]pyrene	32.0	24.8		ug/L		77	10 - 171
Naphthalene	32.0	22.2		ug/L		69	21 - 133
Phenanthrene	32.0	29.6		ug/L		93	54 - 120
Pyrene	32.0	32.3		ug/L		101	52 - 115
1-Methylnaphthalene	32.0	22.8		ug/L		71	
2-Methylnaphthalene	32.0	22.7		ug/L		71	42 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	88		36 - 120
Terphenyl-d14	106		40 - 145
2-Fluorobiphenyl	82		34 - 110

Lab Sample ID: LCSD 500-522665/3-A
Matrix: Water
Analysis Batch: 522739

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 522665

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Acenaphthene	32.0	24.9		ug/L		78	47 - 145	4	20
Acenaphthylene	32.0	25.9		ug/L		81	33 - 145	6	20
Anthracene	32.0	30.4		ug/L		95	27 - 133	0	20
Benzo[a]anthracene	32.0	33.1		ug/L		103	33 - 143	2	20
Benzo[a]pyrene	32.0	32.4		ug/L		101	17 - 163	6	20

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 500-522665/3-A
Matrix: Water
Analysis Batch: 522739

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 522665

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[b]fluoranthene	32.0	30.7		ug/L		96	24 - 159	4	20
Benzo[g,h,i]perylene	32.0	28.5		ug/L		89	10 - 219	0	20
Benzo[k]fluoranthene	32.0	30.9		ug/L		97	11 - 162	8	20
Chrysene	32.0	29.0		ug/L		91	17 - 168	1	20
Dibenz(a,h)anthracene	32.0	30.8		ug/L		96	10 - 227	2	20
Fluoranthene	32.0	31.7		ug/L		99	26 - 137	6	20
Fluorene	32.0	24.9		ug/L		78	59 - 121	14	20
Indeno[1,2,3-cd]pyrene	32.0	30.9	*	ug/L		97	10 - 171	22	20
Naphthalene	32.0	21.5		ug/L		67	21 - 133	3	20
Phenanthrene	32.0	30.4		ug/L		95	54 - 120	3	20
Pyrene	32.0	32.3		ug/L		101	52 - 115	0	20
1-Methylnaphthalene	32.0	21.6		ug/L		67		5	
2-Methylnaphthalene	32.0	22.3		ug/L		70	42 - 110	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5	77		36 - 120
Terphenyl-d14	108		40 - 145
2-Fluorobiphenyl	77		34 - 110

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 500-523012/12-A
Matrix: Water
Analysis Batch: 523014

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523012

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.60	J	5.0	1.3	mg/L		12/30/19 09:03	12/30/19 09:07	1

Lab Sample ID: LCS 500-523012/2-A
Matrix: Water
Analysis Batch: 523014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523012

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	37.60		mg/L		94	78 - 114

Lab Sample ID: 500-175565-2 MS
Matrix: Water
Analysis Batch: 523014

Client Sample ID: SC-503-B
Prep Type: Total/NA
Prep Batch: 523012

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	1.7	J B	40.9	37.77		mg/L		88	78 - 114

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

Lab Sample ID: MB 500-523084/1
Matrix: Water
Analysis Batch: 523084

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			12/30/19 13:50	1

Eurofins TestAmerica, Chicago

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

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

Lab Sample ID: LCS 500-523084/2
Matrix: Water
Analysis Batch: 523084

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	183.5		mg/L		92	80 - 120

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

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Client Sample ID: SC-203-B

Lab Sample ID: 500-175565-1

Date Collected: 12/23/19 08:45

Matrix: Water

Date Received: 12/24/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	523307	01/02/20 23:21	STW	TAL CHI
Total/NA	Prep	625			522665	12/27/19 07:33	BSO	TAL CHI
Total/NA	Analysis	625		1	522739	12/28/19 07:38	NRJ	TAL CHI
Total/NA	Prep	1664B			523012	12/30/19 09:03	TMS	TAL CHI
Total/NA	Analysis	1664B		1	523014	12/30/19 09:07	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	523084		SMO	TAL CHI
					(Start)	12/30/19 14:04		
					(End)	12/30/19 14:05		

Client Sample ID: SC-503-B

Lab Sample ID: 500-175565-2

Date Collected: 12/23/19 08:30

Matrix: Water

Date Received: 12/24/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	523307	01/02/20 23:46	STW	TAL CHI
Total/NA	Prep	625			522665	12/27/19 07:33	BSO	TAL CHI
Total/NA	Analysis	625		1	522739	12/28/19 08:05	NRJ	TAL CHI
Total/NA	Prep	1664B			523012	12/30/19 09:03	TMS	TAL CHI
Total/NA	Analysis	1664B		1	523014	12/30/19 09:07	TMS	TAL CHI
Total/NA	Analysis	SM 2540D		1	523084		SMO	TAL CHI
					(Start)	12/30/19 14:05		
					(End)	12/30/19 14:06		

Client Sample ID: Trip Blank

Lab Sample ID: 500-175565-3

Date Collected: 12/23/19 09:00

Matrix: Water

Date Received: 12/24/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	523307	01/02/20 21:41	STW	TAL CHI

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015296.00006 WPDES

Job ID: 500-175565-1

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

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

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 500-175565-1

Login Number: 175565

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: James, Jeff A

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	-1.1(samples not frozen)
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	



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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the width of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.