Weihemuller, Wendy - DNR

From: Ales, Stephen M -DNR
Sent: Thursday, September 23, 2021 9:24 AM
To: Dunlap, Mike J - DMA
Cc: HINMAN, MICHAEL T GS-12 USAF ANG 115 CES/Architect; Ross, Issac A - DNR; Ales, Stephen M - DNR
Subject: MMP approval for the Medical Readiness Building

Mike:

The Wisconsin Air National Guard submitted a plan for addressing the containing PFAS soil from the area of the proposed Medical Readiness building. This information was submitted to the DNR via email from Mike Hinman on 9/21/21. Four borings were completed at this location with soil samples collected at 1'-2' and just above the water table.

Soil boring SB-2 had a detection of PFOS in the sample collected at 1'-2' depth. Soil within 10' of this boring in the top two feet should be handled as PFAS containing soil and placed under an impervious surface as required in the approved materials management plan. Until it is used for final placement it may be kept on site or temporarily placed west of Building 1209. Other soil from this project area is not subject to this requirement and can be used as needed for this or other projects.

Let me know if you have any questions.

Steve

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Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Stephen M. Ales, P.G.
Hydrogeologist Program Coordinator – Remediation and Redevelopment Bureau, Division of Environmental Management
Wisconsin Department of Natural Resources
Phone: 608-400-9187
Stephenm.Ales@wisconsin.gov


dnr.wi.gov


WISCONSIN AIR NATIONAL GUARD
HEADQUARTERS 115TH FIGHTER WING (ACC) (ANG)
3110 MITCHELL STREET
MADISON WISCONSIN 53704-2529

21 September 2021

MEMORANDUM FOR WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FROM: 115 CES/CC

SUBJECT: XGFG139001 Medical Readiness Facility, Truax Field. Materials Management Plan Addendum – BRRTS #: 02-13-585319

1. Pursuant to the 21 July 2021 approved materials management plan, this serves as a project specific addendum for the subject project.

2. Attachment 1 details PFAS sampling results for the subject project. Attachment 2 details the areas where sampling was accomplished. As you can see, PFAS levels for Sampling Points SB-1 through SB-4 indicate a level of non-detect for PFAS. No further action is required since no compromised soil is present on the proposed construction site.

3. If you have any additional questions, please feel free to contact me at 608-286-0010 or michael.dunlap@us.af.mil at any time. Thank you in advance for your review of this material management plan.

DUNLAP.MICHAEL.J.1138452693 Digitally signed by DUNLAP.MICHAEL.J.1138452693 Date: 2021.09.21 14:20:04 -05'00'

MICHAEL J. DUNLAP, Lt Col, WI ANG
Commander, 115th Civil Engineer Squadron
Base Civil Engineer, 115th Fighter Wing

Attachment:
1. Medical Readiness Sampling Report Results
2. Medical Readiness Sampling Plan

Table 1
Soil Analytical Results - PFAS
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

				Collected By-->	**REI Engineering, Inc.**							
				Date-->	*6/23/20*	*6/23/20*	*6/23/20*	*6/23/20*	*6/23/20*	*6/23/20*	*6/23/20*	*6/23/20*
				Sample-->	*SB-1-1*	*SB-1-1*	*SB-2-1*	*SB-2-2*	*SB-3-1*	*SB-3-2*	*SB-4-1*	*SB-4-1*
				Sample Depth--(Feet)-->	*1-2*	*4-4.5*	*1-2*	*9-10*	*1-2*	*7.5-8.5*	*1-2*	*3-4*
				PID--(ppm)-->	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.2*	*0.0*
				Percent Moisture (%)-->	*17.0*	*11.2*	*4.5*	*6.4*	*6.9*	*10.2*	*17.5*	*19.0*
				Saturated (S) vs Unsaturated (U)-->	*U*	*U*	*U*	*U*	*U*	*U*	*U*	*U*
PFAS's (mg/kg)	**CAS Number**	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL								
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
1H, 1H, 2H, 2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
Hexafluoropropylene oxide dimer acid (Gen X)	13252-13-6	--	--	--	<0.0048	<0.0053	<0.0045	<0.0046	<0.0044	<0.0053	<0.0053	<0.0047
4, 8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	1,260	16,400	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-butanoic acid (PFBA)	375-22-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-decanoic acid (PFDA)	335-76-2	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-octanoic acid (PFOA)	335-67-1	1.26	16.4	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.26	16.4	--	<0.0012	<0.0013	0.0022	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Individual Exceedances (DC) [1]		1	1	--	0	0	0	0	0	0	0	0
Cumulative Hazard Index (DC) [1]		1.0	1.0	--	0	0	0.0017	0	0	0	0	0
Cumulative Cancer Risk (DC) [1]		1.0E-05	1.0E-05	--	0	0	0	0	0	0	0	0

Notes:
NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet
This site is assessed as **Non-Industrial**
Cumulative RCL Calculated on: **7/21/2020**
RCL = Residual Contaminant Level
DC = Direct Contact
mg/kg = Parts Per Million (ppm)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled/Collected
-- = No Standard/Not Applicable
J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ)
[1] = Includes all analyzed compounds (PFAS & VOC)

Laboratory Prep Method: SOP SPE
Laboratory Analytical Method: PFAS by ID SOP QSM B-15 (PFAS by LC/MS/MS)

Italic	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
Underlined	= Exceeds NR720 Industrial Not-To-Exceed DC RCL

REI Engineering, INC.

REI CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING

TRUAX FIELD
NORTHEAST INTERSECTION OF
BECKER AND PEARSON STREETS
MADISON, WISCONSIN 53704

FIGURE 2 : SITE MAP

PROJECT No.	DRAWN BY:	DATE:
9259	MCM	6/19/2020

DRAWING FILE: P:\9200-9299\9259 - GESTRA ENGINEERING - TRUAX FIELD PFAS SAMPLING\DWG\9259-SITE.DWG LAYOUT PFAS PLOTTED JUL 29, 2020 - 9:45AM PLOTTED BY MATTM

REI
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING

August 18, 2020

GESTRA Engineering, Inc.
Attn: Mr. Eric Jeske, PE
191 W. Edgerton Avenue
Milwaukee, WI 53207

Subject:

Environmental Site Characterization for Contaminated Materials Management Plan
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

Dear Mr. Jeske:

Enclosed is the Environmental Site Characterization for the development of a Contaminated Materials Management Plan for the above site.

If you have questions or concerns regarding this report, please contact REI at your convenience at 715-675-9784.

Sincerely,
REI Engineering, Inc.

Matthew C. Michalski
Hydrogeologist

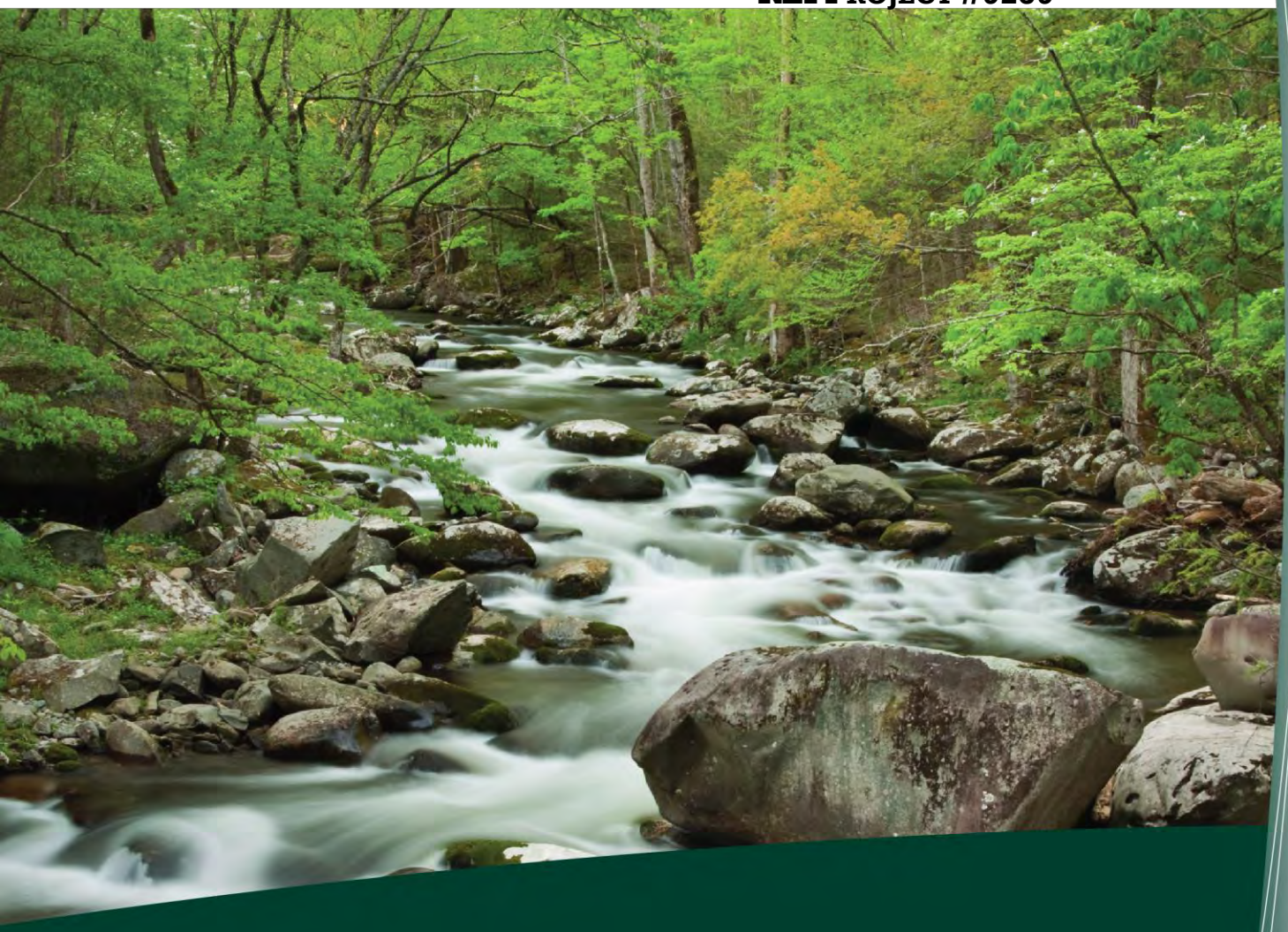
REI

CIVIL & ENVIRONMENTAL
ENGINEERING, SURVEYING

Environmental Site Characterization for Contaminated Materials Management Plan

Truax Field
Corner of Becker and Person Streets
Madison, WI

REI Project #9259



COMPREHENSIVE SERVICES WITH PRACTICAL SOLUTIONS

Environmental Site Characterization for Contaminated Materials Management Plan

Truax Field
Corner of Becker and Pearson Streets
Madison, WI

REI Project #9259

Prepared for:

GESTRA Engineering, Inc.
Mr. Eric Jeske, PE
191 W. Edgerton Avenue
Milwaukee, WI 53207

August 2020

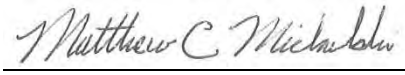
ENVIRONMENTAL SITE CHARACTERIZATION FOR CONTAMINATED MATERIALS MANAGEMENT PLAN

TRUAX FIELD
CORNER OF BECKER AND PEARSON STREETS
MADISON, WI

REI PROJECT #9259

The recommendations contained in this report are based on the information obtained from our study of the site and were arrived at in accordance with accepted hydrogeologic and engineering practices at this time and location.

"I, Matthew C. Michalski, hereby certify that I am a scientist as that term is defined in s. NR 712.03 (3), Wis. Adm. Code, and that, to the best of my knowledge, all of the 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."



Hydrogeologist

08-18-20
Date

"I, Kenneth J. Lassa, hereby certify that I am a scientist as that term is defined in s. NR 712.03 (3), Wis. Adm. Code, and that, to the best of my knowledge, all of the 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."

Senior Consultant

08-18-20
Date

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ENVIRONMENTAL SITE CHARACTERIZATION FOR CONTAMINATED MATERIALS MANAGEMENT PLAN

TRUAX FIELD
CORNER OF BECKER AND PEARSON STREETS
MADISON, WI

REI PROJECT #9259

1.0 INTRODUCTION

1.1 Purpose

GESTRA Engineering, Inc. (GESTRA), requested REI Engineering, Inc. (REI) prepare an environmental site characterization including the collection soil and groundwater samples from the Truax Field site in Madison, WI. The environmental site characterization will be utilized in the development of a contaminated materials management plan for future development at the site. An additional request was made to collected paint samples for lead analysis for two (2) structures to be demolished in the future.

2.0 SITE LOCATION

The scope of services included work in three (3) distinct locations on the base including one (1) location were soil borings were completed and two (2) individual structures were paint samples were collected to determine if the paints used in the structures were lead-bearing/based. The site and surround area is identified in the site vicinity map included as Figure 1. The soil borings were completed in a vacant manicured lawn area, bound by Pearson Street to the west, Becker Street to the south, an asphalt parking lot to the north, and an existing structure to the east. The grass lot is located in the Southeast Quarter (SE ¼) of the Northwest Quarter (NW ¼) of Section Twenty-nine (29), Township Eight (8) North, Range Ten (10) East.

Paint samples were collected from the interior of two (2) structures including the Landing Strip (Building 311) and the Airman and Family Resource Center (Building 307). The Landing Strip (Building 311) is bound by Hoffman Street to the west, Mitchell Street and an asphalt parking lot to the south, the Airman and Family Resource Center

(Building 307) to the north, and airplane hangars to the east. The Airman and Family Resource Center (Building 307) is bound by Hoffman Street to the west, The Landing Strip (Building 311) to the south, a single-story structure to the north, and airplane hangars to the east. Both sampled buildings are located in the Northwest Quarter (NW ¼) of the Northeast Quarter (NE ¼) of Section Twenty-nine (29), Township Eight (8) North, Range Ten (10) East.

3.0 SUMMARY OF WORK

3.1 Soil Borings

On June 23, 2020, REI personnel mobilized to the site to collect soil samples from four (4) soil borings to be completed by GESTRA. After arrival at the facility and clearing security, REI personnel were led to the grass field, where the soil borings were to be completed, by 2nd Lieutenant Cory Corson. REI personnel proceeded to observe the area, including marked utilities, visible storm water catch basins, and previously installed 2'' PVC well. GESTRA arrived on site with a tracked Hydraulic Push Probe (Geoprobe) to complete the soil borings. Prior to advancement of the soil borings GESTRA personnel used a tape measure to determine the approximate depth the groundwater in the on-site monitoring wells, with groundwater present in the well at a depth of approximately six (6) feet below land surface (bls). Four (4) soil borings (SB-1 through SB-4) were advanced, approximately equidistant, to a depth of ten (10) feet bls. Continuous soil samples were collected for field description. After completion, one (1) inch temporary wells, constructed of flush thread PVC with a five (5) foot factory cut screen, were installed to ten (10) feet bls in each of the completed soil borings.

As the State of Wisconsin does not currently have preferred sampling guidance for Polyfluorinated Alkyl Substances (PFAS) compounds, REI personnel followed the Michigan Environment, Great Lakes and Energy (EGLE), formerly known as the Michigan Department of Environmental Quality (MDEQ), Soil and groundwater PFAS Sampling Guidance documents in respect to limited potential cross-contamination of samples due to either equipment or field personnel clothing or personal care products. These guidance documents were also compared to the PFAS sampling

guidance provided by PACE Analytical. Deionized water and Liquinox were utilized for all onsite decon activities and provided to the GESTRA drill crew also.

The site map is included as Figure 2 which depicts the area of the soil borings and marked/located utilities along with other relevant features. Site photographs are included in Appendix A. Soil boring logs are included in Appendix B. Copies of the PFAS sampling guidance documents and REI methods and procedures are included in Appendix C.

3.1.a Soil Sampling

Two (2) soil samples were collected from each soil boring and submitted to Pace Analytical in Green Bay, WI for laboratory analysis of PFAS, Volatile Organic Compounds (VOCs), and Percent Moisture.

One (1) sample was collected at a depth of one (1) to two (2) feet bls from each boring. The second sample collected from each boring was collected within one (1) foot of the observed water table. Based on the soil borings SB-1 and SB-4, completed on the western side of the property, saturated soils were encountered at four (4) and five (5) feet bls, respectively. However, these soils were underlaid by moist soils at depths of seven (7) and five and one half (5.5) feet bls, respectively. Based on the soil borings SB-2 and SB-3, completed on the eastern side of the property, wet soils were encountered at ten (10) and eight and one half (8.5) feet bls, respectively. However, in soil boring SB-3 moist soils were again encountered at a depth of nine (9) feet bls.

3.1.b Groundwater Sampling

An attempt was made to collect ground water samples from the four (4) temporary wells installed the completed soil borings. During the initial sampling attempts water was only encountered in the wells installed in soil borings SB-1 and SB-4. Groundwater was purged from temporary wells utilizing a peristaltic pump with HDPE and silicon tubing for a period of five (5) minutes. Groundwater samples were collected into laboratory prepared containers for

laboratory analysis. A duplicate sample was collected from the temporary well installed in soil boring SB-1 and submitted for laboratory analysis at the request of 2nd Lieutenant Cory Corson.

The temporary wells installed in soil boring SB-2 and SB-3 were left installed for an additional two and one half (2.5) hours and checked if water entered either well. Both temporary monitoring wells remained dry. After discussion with 2nd Lieutenant Cory Corson, REI personnel collected a groundwater sample from the previously installed well located on the northeast corner of the work site. The well was purged using a peristaltic pump with HDPE and silicon tubing for ten (10) minutes prior to samples being collected.

All collected groundwater samples were submitted to Pace Analytical in Green Bay, WI for laboratory analysis of PFAS and VOCs.

3.1.c Quality Assurance and Quality Control Sampling

Prior to mobilizing to the site GESTRA personnel deconned all equipment to be used at this site utilized water from the Milwaukee Water Works potable water system. Based on analytical results from the Milwaukee Water Works for sampling completed from the system water source (Lake Michigan), the Water Treatment Plant prior to distribution and from the distribution system, all three (3) sample locations identified concentrations of Perfluoro-n-hexanoic acid (PFHxA), Perfluorooctanesulfonic acid (PFOS), and Perfluoro-n-octanoic acid (PFOA) above the laboratory method limit of detection during at least one (1) sampling event. Due to this potential source of cross contamination, REI sent GESTRA personnel laboratory containers to collect a sample of the water used for decoding equipment.

Equipment blank samples were collected from the Geoprobe Macro-Core, Geoprobe liners, and HDPE and silicon tubing utilized with the peristaltic pump for groundwater sample collection. Deionized water was poured into the top of the Macro-Core while the rod was held at a slight angle from vertical and the

water discharging from the end was collected in laboratory containers for analysis. An unused Geoprobe liner was sampled in the same manner as the Macro-Core. The equipment blank collected from the HDPE and silicon tubing utilized was collected from unused tubing cut to the sample lengths and setup as used during the day for collected groundwater samples from the temporary wells.

All collected quality assurance and quality control samples were submitted to Pace Analytical in Green Bay, WI for laboratory analysis of PFAS. Copies of the Milwaukee Water Works Consumer Confidence Report & Analytical Data are included in Appendix D.

3.2 Paint Sampling

On June 23, 2020, after the completion of the soil borings, REI personnel collected paint samples from two (2) structures located on the base. All of the collected samples were from interior surfaces, with samples collected from each accessible room and from each individual paint color. REI personnel made all possible attempts to limit sample to only the paint and limit the inclusion of any material from the underlying surface. All collected samples were submitted EMSL Analytical, Inc in New Home, MN for Lead in Paint Chips by Flame AAS analysis.

3.2.a Building 311

Building 311 is also known as The Landing Strip and includes a Bar/Dining Room, Kitchen with walk-in freezer, office, janitorial closet, storage room, and restrooms. The majority of the building had a drop tile ceiling except for the janitorial closet and storage room. The painted ceiling in the janitorial closet was sampled. The ceiling in the storage room was also painted, but further inspection showed no difference in paint color or consistency to the walls of the room. Underlying materials from which paint samples were collected included drywall, fiber cement board, metal, and wood. Fourteen (14) paint samples were collected from the interior of the structure.

A site map depicting the building layout and sample locations is included as Figure 3.

3. 2.b Building 307

Building 307 is also known as Airman and Family Resource Center and includes two (2) offices, a credit union, restrooms, a shower room, break room, administration office, janitorial/storage room, and mechanical room. One (1) office, the mental health office, and the credit union were not accessible during the sampling activities and both areas were locked and access could not be obtained for the date of sampling. The majority of the accessible building had a drop tile ceiling except for the janitorial/storage room and mechanical room. The painted ceiling in the janitorial closet was sampled while the mechanical room had no ceiling installed. Underlying materials from which paint samples were collected included drywall, fiber cement board, metal, wood, and concrete block. Eleven (11) paint samples were collected from the interior of the structure.

A site map depicting the building layout and sample locations is included as Figure 4.

4.0 ANALYTICAL RESULTS

4.1 Soil Analytical Results

Two (2) unsaturated soil samples were collected from each the four (4) completed soil borings and submitted for laboratory analysis of PFAS, VOC, and Dry Weight.

Soil sample SB-1-1 (1-2 feet bls) identified a low-level detection for Toluene, however the concentration was below the Wisconsin Administrative Code (WAC) NR720 state soil standards. All other analyzed parameters were below the laboratory method limit of detection.

Soil sample SB-2-1 (1-2 feet bls) identified a low-level detection for Perfluorooctanessulfonic acid (PFOS), however the concentration was below the

Wisconsin Administrative Code (WAC) NR720 state soil standards. All other analyzed parameters were below the laboratory method limit of detection.

The laboratory analytical results for the remaining six (6) soil samples (SB-1-2, SB-2-2, SB-3-1, SB-3-2, SB-4-1, SB-4-2) identified all analyzed parameters were below the laboratory method limit of detection.

Soil analytical results are summarized in Tables 1 & 2. WDNR cumulative direct contact calculations for samples with identified concentrations exceeding the laboratory method limit of detection are included in Appendix E. VOC, PFAS, and dry weight laboratory analytical results are included in Appendix F.

4.2 Groundwater Analytical Results

Two (2) groundwater samples were collected from the temporary monitoring wells installed in soil borings SB-1 and SB-4. A duplicate sample was also collected from the temporary monitoring well installed in soil boring SB-1 One (1) groundwater sample was collected from the two (2) inch well already installed at the site. All collected groundwater samples were submitted for laboratory analysis of PFAS and VOC.

Currently the WDNR does not have WAC NR140 state groundwater standards in place for PFAS compounds. The Wisconsin Department of Health Services (DHS) has provided the WDNR with recommendations for state health-based groundwater standards for PFOA, PFOS, or the combined compounds. The DHS recommended WAC NR140 Enforcement Standard for either PFOA, PFOS, or the combined compounds is 20 ng/L and the recommended WAC NR140 Preventive Action Limit is 2 ng/L. Due to the lack of current standards REI will be comparing the analytical results to the DHS recommended state health-based groundwater standards for PFOA, PFOS, or the combined compounds.

Groundwater sample SB-1-W identified a concentration of PFOS exceeding the DHS recommended WAC NR140 ES and a concentration of PFOA exceeding the DHS recommended WAC NR140 PAL. Concentration of Perfluoro-1-butanesulfonic acid

(PFBS), Perfluoro-1-heptanesulfonic acid (PFHpS), Perfluoro-1-pentanesulfonic acid (PFPeS), Perfluorohexanesulfonic acid (PFHxS), Perfluoro-n-butanoic acid (PFBA), Perfluoro-n-heptanoic acid (PFHpA), PFHxA, and Perfluoro-n-pentanoic acid (PFPeA) were also identified exceeding the laboratory method limit of detection. The concentrations of all analyzed VOC compounds and the remining twenty-six (26) PFAS compounds were below the laboratory method limit of detection.

Groundwater sample SB-2-W identified a concentration of PFOS exceeding the DHS recommended WAC NR140 ES and a concentration of PFOA exceeding the DHS recommended WAC NR140 PAL. Concentrations of PFBS, PFHpS, PFPeS, PFHxS, PFBA, PFHpA, PFHxA, and PFPeA were also identified exceeding the laboratory method limit of detection. The concentrations of all analyzed VOC compounds and the remining twenty-six (26) PFAS compounds were below the laboratory method limit of detection.

The groundwater sample collected from the existing two (2) inch PVC well identified a concentration of PFOS exceeding the DHS recommended WAC NR140 ES and a concentration of PFOA exceeding the DHS recommended WAC NR140 PAL. Concentrations of PFBS, PFPeS, PFHxS, PFBA, PFHpA, PFHxA, and PFPeA were also identified exceeding the laboratory method limit of detection. The concentrations of all analyzed VOC compounds and the remining twenty-seven (27) PFAS compounds were below the laboratory method limit of detection.

Groundwater analytical results are summarized in Tables 3 & 4. VOC and PFAS laboratory analytical results are included in Appendix F.

4.3 Quality Assurance and Quality Control Analytical Results

Equipment blank samples were collected from the Geoprobe Macro-Core, Geoprobe liners, and HDPE and silicon tubing utilized as part of the sampling at the site. A duplicate groundwater sample was collected from the temporary monitoring well installed in soil boring SB-1. A sample of the water, from the Milwaukee municipal distribution system, used by GESTA to decon equipment prior to mobilizing the site

was also sampled. All collected quality assurance and quality control samples were submitted to Pace Analytical in Green Bay, WI for laboratory analysis of PFAS.

The three (3) equipment blank samples identified the thirty-six (36) analyzed PFAS compounds were below the laboratory method limit of detection

The duplicate groundwater sample collected from soil boring SB-1 identified a concentration of PFOS exceeding the DHS recommended WAC NR140 ES and a concentration of PFOA exceeding the DHS recommended WAC NR140 PAL. Concentrations of PFBS, PFHpS, PFPeS, PFHxS, PFBA, PFHpA, PFHxA, and PFPeA were also identified exceeding the laboratory method limit of detection. The concentrations of all analyzed VOC compounds and the remining twenty-six (26) PFAS compounds were below the laboratory method limit of detection. Additionally, the difference between the analytical results from groundwater sample SB-1-W and the duplicate sample ranged from zero (0) to twenty (20) ng/L with a calculated percent difference ranging from zero (0) to 12.9%.

The GESTRA decon water sample identified a concentration of PFOA exceeding the DHS recommended WAC NR140 PAL. Based on the analytical results the water utilized by the drilling contractor may have been a potential source of cross contamination. However, the concentration identified in the decon water was approximately one fifth (1/5) the concentration identified in the collected groundwater samples.

Quality Assurance and Quality Control analytical results are summarized in Table 5. PFAS laboratory analytical results are included in Appendix F.

4.4 Lead-bearing Paint Analytical Results

A total of twenty-five (25) paint samples from two (2) structures located on the property. The sampled structures including Building 311, also know and the Landing Strip, and Building 301, also known as the Airman & Family Resource Center. All collected paint samples were submitted EMSL Analytical, Inc in New Home, MN for Lead in Paint Chips by Flame AAS analysis.

Under Wisconsin State Statue Chapter 254.11: Lead-bearing paint means any paint or other surface coating material containing more than 0.06% (600 ppm) lead by weight, calculated as lead metal, in the total nonvolatile content of liquid paint, more than 0.5% (5000 ppm) lead by weight in the dried film of applied paint, or more than 1 milligram of lead per square centimeter in the dried film of applied paint.

Under WAC DHS163.03 (61): "Lead-based paint" or "lead-bearing paint" means paint or any other surface coating material containing more than 0.06% (600 ppm) lead by weight, calculated as lead metal, in the total nonvolatile content of liquid paint or in the dried film of applied paint, or more than 0.7 milligrams lead per square centimeter in the dried film of applied paint.

4.4.a Building 311

Fourteen paint samples (L1 through L14) were collected for laboratory analysis from this structure. Analytical results are summarized in the below table.

Sample		**Analytical Results**	
ID	**Description**	**% wt**	**ppm**
L1	Red Photo Wall (Bar)	<0.0080	<80
L2	Brown Photo Wall Base Trim (Bar)	0.043	430
L3	Grey Back Bar Wall	<0.0080	<80
L4	White Kitchen Wall	<0.0080	<80
L5	White Office Wall	<0.0080	<80
L6	White Janitorial Closet Wall	0.083	830
L7	White Janitorial Closet Ceiling	0.11	*1,100*
L8	White Storage Room Wall	<0.0080	<80
L9	Black Men's Restroom Wall (Behind Paneling)	<0.012	<120
L10	White Women's Restroom Wall (Behind Paneling)	<0.011	<110
L11	Brown Women's Restroom Trim	0.16	*1,600*

Sample		Analytical Results	
ID	**Description**	**% wt**	**ppm**
L12	Tan Restroom Stalls	<0.018	<180
L13	Red Bar Wall	0.0083	83
L14	Grey Bar Wall	<0.0080	<80

Two (2) paint samples, L7 and L11, collected from the janitorial closet ceiling and brown wood trim from the inside the women's restroom, respectively, exceeded the WAC DHS163.03 (61) definition for lead-bearing or lead-based paint.

4.4.b Building 307

Eleven paint samples (A1 through L11) were collected for laboratory analysis from this structure. Analytical results are summarized in the below table.

Sample		Analytical Results	
ID	**Description**	**% wt**	**ppm**
A1	White Office Wall	<0.0080	<80
A2	White Women's Restroom Wall	<0.0081	<81
A3	White Men's Restroom Wall	<0.0084	<84
A4	White Breakroom Wall	<0.0088	<88
A5	White Office Wall - Drywall	<0.0080	<80
A6	White Office Wall - Concrete Block	0.15	*1,500*
A7	White Storage Room Wall	<0.0080	<80
A8	White Storage Room Ceiling	<0.0080	<80
A9	White Mechanical Room Wall	<0.0080	<80
A10	Black Mechanical Room Wall	<0.023	<230
A11	Brown Mechanical Room Metal Door	<0.0080	<80

One (1) paint sample, A6, collected from the white concrete block wall of the Administration office, exceeded the WAC DHS163.03 (61) definition for lead-bearing of lead-based paint.

Table 6 presents lead-bearing paint analytical results. The complete laboratory analytical report is included as Appendix G.

5.0 CONCLUSION AND RECOMMENDATIONS

Based on the laboratory analytical results, unsaturated soil contamination exceeding the WAC NR720 state soil standards was not identified in any of the collected soil samples. Dissolved phase groundwater contamination exceeding the WAC NR140 state groundwater standards was not identified in any of the collected groundwater samples. However, the three (3) groundwater samples did identify concentrations of PFOS exceeding the DHS recommended ES and concentrations of PFOA exceeding the DHS recommended PAL. Additionally, concentrations of PFBS, PFHpS, PFPeS, PFHxS, PFBA, PFHpA, PFHxA, and PFPeA were also identified exceeding the laboratory method limit of detection as these compounds do not currently have WAC NR140 state groundwater standards or recommended DHS standards.

Two (2) paint samples collected from the interior of Building 311, L7 and L11, and one (1) paint sample collected from the interior of Building 307, A6, exceeded the WAC DHS163.03 (61) definition for lead-bearing of lead-based paint (0.06% or 600 ppm). However, none of the collected paint samples identified exceedances of the Wisconsin State Statue Chapter 254.11 definition of lead-bearing paint (0.5% or 5,000ppm).

Table 1
Soil Analytical Results - PFAS
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

				Collected By-->	**REI Engineering, Inc.**							
				Date-->	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***
				Sample-->	***SB-1-1***	***SB-1-1***	***SB-2-1***	***SB-2-2***	***SB-3-1***	***SB-3-2***	***SB-4-1***	***SB-4-1***
				Sample Depth--(Feet)-->	***1-2***	***4-4.5***	***1-2***	***9-10***	***1-2***	***7.5-8.5***	***1-2***	***3-4***
				PID--(ppm)-->	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.2***	***0.0***
				Percent Moisture (%)-->	***17.0***	***11.2***	***4.5***	***6.4***	***6.9***	***10.2***	***17.5***	***19.0***
				Saturated (S) vs Unsaturated (U)-->	***U***	***U***	***U***	***U***	***U***	***U***	***U***	***U***
PFAS's (mg/kg)	**CAS Number**	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL								
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
1H, 1H, 2H, 2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
Hexafluoropropylene oxide dimer acid (Gen X)	13252-13-6	--	--	--	<0.0048	<0.0053	<0.0045	<0.0046	<0.0044	<0.0053	<0.0053	<0.0047
4, 8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (ErFOSE)	1691-99-2	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	--	--	--	<0.0024	<0.0026	<0.0023	<0.0023	<0.0022	<0.0026	<0.0027	<0.0023
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	1,260	16,400	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-butanoic acid (PFBA)	375-22-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-decanoic acid (PFDA)	335-76-2	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-octanoic acid (PFOA)	335-67-1	1.26	16.4	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	--	--	--	<0.0012	<0.0013	<0.0011	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.26	16.4	--	<0.0012	<0.0013	0.0022	<0.0011	<0.0011	<0.0013	<0.0013	<0.0012
Individual Exceedances (DC) [1]		1	1	--	0	0	0	0	0	0	0	0
Cumulative Hazard Index (DC) [1]		1.0	1.0	--	0	0	0.0017	0	0	0	0	0
Cumulative Cancer Risk (DC) [1]		1.0E-05	1.0E-05	--	0	0	0	0	0	0	0	0

Notes:
NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet
This site is assessed as **Non-Industrial**
Cumulative RCL Calculated on: **7/21/2020**
RCL = Residual Contaminant Level
DC = Direct Contact
mg/kg = Parts Per Million (ppm)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled/Collected
-- = No Standard/Not Applicable
[J] = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ)
[1] = Includes all analyzed compounds (PFAS & VOC)

Laboratory Prep Method: SOP SPE
Laboratory Analytical Method: PFAS by ID SOP QSM B-15 (PFAS by LC/MS/MS)

Italic	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
Underlined	= Exceeds NR720 Industrial Not-To-Exceed DC RCL

Table 2
Soil Analytical Results
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

			Collected By-->	**REI Engineering, Inc.**							
			Date-->	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***
			Sample-->	***SB-1-1***	***SB-1-1***	***SB-2-1***	***SB-2-2***	***SB-3-1***	***SB-3-2***	***SB-4-1***	***SB-4-1***
			Sample Depth--(Feet)-->	***1-2***	***4-4.5***	***1-2***	***9-10***	***1-2***	***7.5-8.5***	***1-2***	***3-4***
			PID--(ppm)-->	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.2***	***0.0***
			Percent Moisture (%)-->	***17.0***	***11.2***	***4.5***	***6.4***	***6.9***	***10.2***	***17.5***	***19.0***
			Saturated (S) vs Unsaturated (U)-->	***U***	***U***	***U***	***U***	***U***	***U***	***U***	***U***
VOC's (mg/kg)	Non-Industrial Not-to-Exceed DC RCL	Industrial Not-to-Exceed DC RCL	Groundwater Pathway Protection RCL								
Benzene	1.6	7.07	0.0051	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Bromobenzene	342	679	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Bromochloromethane	216	906	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Bromodichloromethane	0.418	1.83	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Bromoform	25.4	113	0.0023	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Bromomethane	9.6	43	0.0051	<0.0638	<0.0638	<0.0638	<0.0638	<0.0638	<0.0638	<0.0638	<0.0638
n-Butylbenzene	108	108	--	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
sec-Butylbenzene	145	145	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
tert-Butylbenzene	183	183	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Carbon tetrachloride	0.916	4.03	0.0039	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Chlorobenzene	370	761	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Chloroethane	--	--	0.2266	<0.0464	<0.0464	<0.0464	<0.0464	<0.0464	<0.0464	<0.0464	<0.0464
Chloroform	0.454	1.98	0.0033	<0.0475	<0.0475	<0.0475	<0.0475	<0.0475	<0.0475	<0.0475	<0.0475
Chloromethane	159	669	0.0155	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
2-Chlorotoluene	907	907	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
4-Chlorotoluene	253	253	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,2-Dibromo-3-chloropropane	0.008	0.092	0.00002	<0.237	<0.237	<0.237	<0.237	<0.237	<0.237	<0.237	<0.237
Dibromochloromethane	8.28	38.9	0.032	<0.229	<0.229	<0.229	<0.229	<0.229	<0.229	<0.229	<0.229
1,2-Dibromoethane (EDB)	0.05	0.221	$2.82x10^{-5}$	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Dibromomethane	34	143	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,2-Dichlorobenzene	376	376	1.168	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,3-Dichlorobenzene	297	297	1.1528	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,4-Dichlorobenzene	3.74	16.4	0.144	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Dichlorodifluoromethane	126	530	3.0863	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,1-Dichloroethane	5.06	22.2	0.4834	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,2-Dichloroethane	0.652	2.87	0.0028	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,1-Dichloroethene	320	1190	0.005	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
cis-1,2-Dichloroethene	156	2340	0.0412	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
trans-1,2-Dichloroethene	1560	1850	0.0626	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,2-Dichloropropane	3.4	15	0.0033	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,3-Dichloropropane	1,490	1,490	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
2,2-Dichloropropane	191	191	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,1-Dichloropropene	--	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
cis-1,3-Dichloropropene	1,210	1,210	0.0003	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423	<0.0423
trans-1,3-Dichloropropene	1,510	1,510	0.0003	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Diisopropyl ether	2,260	2,260	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Ethylbenzene	8.02	35.4	1.57	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Hexachloro-1,3-butadiene	--	--	--	<0.0687	<0.0687	<0.0687	<0.0687	<0.0687	<0.0687	<0.0687	<0.0687
Isopropylbenzene (cumene)	268	268	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
p-Isopropyltoluene	162	162	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Methylene Chloride	61.8	1,150	0.0026	<0.0263	<0.0263	<0.0263	<0.0263	<0.0263	<0.0263	<0.0263	<0.0263
Methyl-tert-butyl ether (MTBE)	63.8	282	0.027	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Naphthalene	5.52	24.1	0.6582	<0.0273	<0.0273	<0.0273	<0.0273	<0.0273	<0.0273	<0.0273	<0.0273
n-Propylbenzene	--	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Styrene	867	867	0.22	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,1,1,2-Tetrachloroethane	2.78	12.3	0.0534	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,1,2,2-Tetrachloroethane	0.81	3.6	0.0002	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Tetrachloroethene (PCE)	33	145	0.0045	<0.0387	<0.0387	<0.0387	<0.0387	<0.0387	<0.0387	<0.0387	<0.0387
Toluene	818	818	1.1072	0.0393[J]	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,2,3-Trichlorobenzene	62.6	934	--	<0.0473	<0.0473	<0.0473	<0.0473	<0.0473	<0.0473	<0.0473	<0.0473
1,2,4-Trichlorobenzene	24	113	0.408	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417
1,1,1-Trichloroethane	640	640	0.1402	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,1,2-Trichloroethane	1.59	7.01	0.0032	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Trichloroethene (TCE)	1.3	8.41	0.0036	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Trichlorofluoromethane	1,230	1,230	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,2,3-Trichloropropane	0.005	0.109	0.0519	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374	<0.0374
1,2,4-Trimethylbenzene (TMB)	219	219	1.3787	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
1,3,5-Trimethylbenzene (TMB)	182	182		<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Vinyl chloride	0.067	2.08	0.0001	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
m&p-Xylene	260	260	3.96	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
o-Xylene				<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250
Individual Exceedances (DC) [1]	1	1	--	0	0	0	0	0	0	0	0
Cumulative Hazard Index (DC) [1]	1.0	1.0	--	0	0	0.0017	0	0	0	0	0
Cumulative Cancer Risk (DC) [1]	1.0E-05	1.0E-05	--	0	0	0	0	0	0	0	0

Notes:
NR 720 Standards Obtained From WDNR RR Program's Soil RCL Spreadsheet
This site is assessed as **Non-Industrial**
Cumulative RCL Calculated on: **7/21/2020**
RCL = Residual Contaminant Level
DC = Direct Contact
mg/kg = Parts Per Million (ppm)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled/Collected
- - = No Standard/Not Applicable
[J] = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ)
[1] = Includes all analyzed compounds (PFAS & VOC)

Italic	= Exceeds NR720 Groundwater Pathway Protection
Bold	= Exceeds NR720 Non-Industrial Not-To-Exceed DC RCL
Underlined	= Exceeds NR720 Industrial Not-To-Exceed DC RCL

Table 3
Groundwater Analytical Results - PFAS
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

			Collected By-->	**REI Engineering, Inc.**			
			Date-->	***6/23/20***	***6/23/20***	***6/23/20***	***6/23/20***
			Sample-->	***SB-1-W***	***SB-4-W***	***MW***	***Duplicate [1]***
PFAS's (ng/L)	CAS Number	Enforcement Standard (ES)	Preventive Action Limit (PAL)				
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	<8.1	<7.7	<7.7	<7.8
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	<8.1	<7.7	<7.7	<7.8
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	--	--	<4.1	<3.9	<3.9	<3.9
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	--	--	<4.1	<3.9	<3.9	<3.9
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	--	--	<8.1	<7.7	<7.7	<7.8
1H, 1H, 2H, 2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	--	--	<8.1	<7.7	<7.7	<7.8
Hexafluoropropylene oxide dimer acid (Gen X)	13252-13-6	--	--	<8.1	<7.7	<7.7	<7.8
4, 8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	<8.1	<7.7	<7.7	<7.8
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	--	--	<4.1	<3.9	<3.9	<3.9
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	--	--	<8.1	<7.7	<7.7	<7.8
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (ErFOSE)	1691-99-2	--	--	<8.1	<7.7	<7.7	<7.8
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	--	--	<8.1	<7.7	<7.7	<7.8
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	--	--	<8.1	<7.7	<7.7	<7.8
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	--	--	<8.1	<7.7	<7.7	<7.8
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	--	--	14	11	12	16
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	--	--	5	4.1	<3.9	4.8
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	--	--	<8.1	<7.7	<7.7	<7.8
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	--	--	6.9	14	11	7.2
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	--	--	<8.1	<7.7	<7.7	<7.8
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	--	--	170	320	120	190
Perfluoro-n-butanoic acid (PFBA)	375-22-4	--	--	16	8.7	13	17
Perfluoro-n-decanoic acid (PFDA)	335-76-2	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	--	--	7.6	7.1	5.9	6.8
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	--	--	<8.1	<7.7	<7.7	<7.8
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	--	--	29	14	13	33
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	--	--	<8.1	<7.7	<7.7	<7.8
Perfluoro-n-octanoic acid (PFOA)	335-67-1	20^	2^	*17*	*11*	*11*	*15*
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	--	--	19	9.6	13	19
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	--	--	<4.1	<3.9	<3.9	<3.9
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	--	--	<4.1	<3.9	<3.9	<3.9
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	20^	2^	**110**	**77**	**41**	**120**
Total PFOA & PFOS	--	20^	2^	**127**	**88**	**52**	**135**

Notes:
µg/L - Parts Per Billion (ppb)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled
-- = No Standard/Not Applicable
[J] = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ)
^ = Wisconsin Department of Health Services Cycle 10 recommendations for state health based groundwater quality standards. Compound does not currently have standards under NR140.
[1] = Duplicate sample collected from sample point SB-1-W.

Laboratory Prep Method: SOP SPE
Laboratory Analytical Method: PFAS by ID SOP QSM B-15 (PFAS by LC/MS/MS)

Bold	= Exceeds NR140.10 Enforcement Standard
Italic	= Exceeds NR140.10 Preventive Action Limit

Bold = Exceeds DHS recommended NR140.10 Enforcement Standard
Italic = Exceeds DHS recommended NR140.10 Preventive Action Limit

Table 4
Groundwater Analytical Results - VOC
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

			Collected By-->	**REI Engineering, Inc.**	
			Date-->	***6/23/20***	***6/23/20***	***6/23/20***
			Sample-->	***SB-1-W***	***SB-4-W***	***MW***
VOC's (µg/L)	Enforcement Standard (ES)	Preventive Action Limit (PAL)			
Benzene	5	0.5	<0.25	<0.25	<0.25
Bromobenzene	- -	- -	<0.24	<0.24	<0.24
Bromochloromethane	- -	- -	<0.36	<0.36	<0.36
Bromodichloromethane	0.6	0.06	<0.36	<0.36	<0.36
Bromoform	4.4	0.44	<4.0	<4.0	<4.0
Bromomethane	10	1	<0.97	<0.97	<0.97
n-Butylbenzene	- -	- -	<0.71	<0.71	<0.71
sec-Butylbenzene	- -	- -	<0.85	<0.85	<0.85
tert-Butylbenzene	- -	- -	<0.30	<0.30	<0.30
Carbon tetrachloride	5	0.5	<1.1	<1.1	<1.1
Chlorobenzene	- -	- -	<0.71	<0.71	<0.71
Chloroethane	400	80	<1.3	<1.3	<1.3
Chloroform	6	0.6	<1.3	<1.3	<1.3
Chloromethane	30	3	<2.2	<2.2	<2.2
2-Chlorotoluene	- -	- -	<0.93	<0.93	<0.93
4-Chlorotoluene	- -	- -	<0.76	<0.76	<0.76
1,2-Dibromo-3-chloropropane	0.2	0.02	<1.8	<1.8	<1.8
Dibromochloromethane	60	6	<2.6	<2.6	<2.6
1,2-Dibromoethane (EDB)	0.05	0.005	<0.83	<0.83	<0.83
Dibromomethane	- -	- -	<0.94	<0.94	<0.94
1,2-Dichlorobenzene	600	60	<0.71	<0.71	<0.71
1,3-Dichlorobenzene	600	120	<0.63	<0.63	<0.63
1,4-Dichlorobenzene	75	15	<0.94	<0.94	<0.94
Dichlorodifluoromethane	1,000	200	<0.50	<0.50	<0.50
1,1-Dichloroethane	850	85	<0.27	<0.27	<0.27
1,2-Dichloroethane	5	0.5	<0.28	<0.28	<0.28
1,1-Dichloroethene	7	0.7	<0.24	<0.24	<0.24
cis-1,2-Dichloroethene	70	7	<0.27	<0.27	<0.27
trans-1,2-Dichloroethene	100	20	<0.46	<0.46	<0.46
1,2-Dichloropropane	5	0.5	<0.28	<0.28	<0.28
1,3-Dichloropropane	- -	- -	<0.83	<0.83	<0.83
2,2-Dichloropropane	- -	- -	<2.3	<2.3	<2.3
1,1-Dichloropropene	- -	- -	<0.54	<0.54	<0.54
cis-1,3-Dichloropropene	0.4	0.04	<3.6	<3.6	<3.6
trans-1,3-Dichloropropene	0.4	0.04	<4.4	<4.4	<4.4
Diisopropyl ether	- -	- -	<1.9	<1.9	<1.9
Ethylbenzene	700	140	<0.32	<0.32	<0.32
Hexachloro-1,3-butadiene	- -	- -	<1.5	<1.5	<1.5
Isopropylbenzene (cumene)	- -	- -	<1.7	<1.7	<1.7
p-Isopropyltoluene	- -	- -	<0.80	<0.80	<0.80
Methylene Chloride	5	1	<0.58	<0.58	<0.58
Methyl-tert-butyl ether (MTBE)	60	12	<1.2	<1.2	<1.2
Naphthalene	100	10	<1.2	<1.2	<1.2
n-Propylbenzene	- -	- -	<0.81	<0.81	<0.81
Styrene	100	10	<3.0	<3.0	<3.0
1,1,1,2-Tetrachloroethane	70	7	<0.27	<0.27	<0.27
1,1,2,2-Tetrachloroethane	0.2	0.02	<0.28	<0.28	<0.28
Tetrachloroethene (PCE)	5	0.5	<0.33	<0.33	<0.33
Toluene	800	160	<0.27	<0.27	<0.27
1,2,3-Trichlorobenzene	- -	- -	<2.2	<2.2	<2.2
1,2,4-Trichlorobenzene	70	14	<0.95	<0.95	<0.95
1,1,1-Trichloroethane	200	40	<0.24	<0.24	<0.24
1,1,2-Trichloroethane	5	0.5	<0.55	<0.55	<0.55
Trichloroethene (TCE)	5	0.5	<0.26	<0.26	<0.26
Trichlorofluoromethane	- -	- -	<0.21	<0.21	<0.21
1,2,3-Trichloropropane	60	12	<0.59	<0.59	<0.59
Trimethylbenzenes (TMB)[1]	480	96	<1.71	<1.71	<1.71
Vinyl chloride	0.2	0.02	<0.17	<0.17	<0.17
Xylenes[2]	2,000	400	<0.73	<0.73	<0.73

Notes:
[1] = NR140.10 Trimethylbenzene standard is for combined 1,2,4- and 1,3,5- isomers
[2] = NR140.10 Xylene standard is for combined m-, o-, and p- isomers
µg/L - Parts Per Billion (ppb)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled
- - = No Standard/Not Applicable
[J] = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ)

Bold	= Exceeds NR140.10 Enforcement Standard
Italic	= Exceeds NR140.10 Preventive Action Limit

Table 5
QA/QC Analytical Results - PFAS
Truax Field
Corner of Becker and Pearson Streets
Madison, WI

			Collected By-->	**REI Engineering, Inc.**			
			Date-->	*6/23/20*	*6/23/20*	*6/23/20*	*6/22/20*
			Sample-->	*Equipment Blanks*			*GESTRA*
				Geoprobe Macro-Core	*Geoprobe Liner*	*HDPE Tubing*	*Decon Water*
PFAS's (ng/L)	**CAS Number**	Enforcement Standard (ES)	Preventive Action Limit (PAL)				
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	--	--	<7.4	<7.4	<7.9	<8.3
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	--	--	<7.4	<7.4	<7.9	<8.3
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	--	--	<3.7	<3.7	<4.0	<4.1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	--	--	<3.7	<3.7	<4.0	<4.1
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	--	--	<7.4	<7.4	<7.9	<8.3
1H, 1H, 2H, 2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	--	--	<7.4	<7.4	<7.9	<8.3
Hexafluoropropylene oxide dimer acid (Gen X)	13252-13-6	--	--	<7.4	<7.4	<7.9	<8.3
4, 8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	--	--	<7.4	<7.4	<7.9	<8.3
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	--	--	<3.7	<3.7	<4.0	<4.1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	--	--	<7.4	<7.4	<7.9	<8.3
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (ErFOSE)	1691-99-2	--	--	<7.4	<7.4	<7.9	<8.3
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	--	--	<7.4	<7.4	<7.9	<8.3
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	--	--	<7.4	<7.4	<7.9	<8.3
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	--	--	<7.4	<7.4	<7.9	<8.3
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	--	--	<7.4	<7.4	<7.9	<8.3
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	--	--	<3.7	<3.7	<4.0	<4.1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	--	--	<7.4	<7.4	<7.9	<8.3
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	--	--	<7.4	<7.4	<7.9	<8.3
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	--	--	<7.4	<7.4	<7.9	<8.3
Perfluoro-n-octanoic acid (PFOA)	335-67-1	20^	2^	<1.8	<1.9	<2.0	*2.4*
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	--	--	<3.7	<3.7	<4.0	<4.1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	--	--	<3.7	<3.7	<4.0	<4.1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	20^	2^	<3.7	<3.7	<4.0	<4.1
Total PFOA & PFOS	--	20^	2^	-	-	-	-

Notes:
µg/L - Parts Per Billion (ppb)
< = Concentration Below Laboratory Detection Limit
- = Not Sampled
- - = No Standard/Not Applicable

Laboratory Prep Method: SOP SPE
Laboratory Analytical Method: PFAS by ID SOP QSM B-15 (PFAS by LC/MS/MS)

J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ)
^ = Wisconsin Department of Health Services Cycle 10 recommendations for state health based groundwater quality standards. Compound does not currently have standards under NR140.
1 = Duplicate sample collected from sample point MW.

Bold	= Exceeds NR140.10 Enforcement Standard
Italic	= Exceeds NR140.10 Preventive Action Limit

Bold	= Exceeds DHS recommended NR140.10 Enforcement Standard
Italic	= Exceeds DHS recommended NR140.10 Preventive Action Limit

Table 6
Lead-bearing Paint Analytical Results
Truax Field
Buildings 307 & 311
Madison, WI

Sample	**Analytical Results**		*Description*	*Date*
	% wt	*ppm*		
L1	<0.0080	<80	Red Photo Wall (Bar)	6/23/2020
L2	0.043	430	Brown Photo Wall Base Trim (Bar)	6/23/2020
L3	<0.0080	<80	Grey Back Bar Wall	6/23/2020
L4	<0.0080	<80	White Kitchen Wall	6/23/2020
L5	<0.0080	<80	White Office Wall	6/23/2020
L6	0.083	830	White Janitorial Closet Wall	6/23/2020
L7	*0.11*	*1,100*	White Janitorial Closet Ceiling	6/23/2020
L8	<0.0080	<80	White Storage Room Wall	6/23/2020
L9	<0.012	<120	Black Men's Restroom Wall (Behind Paneling)	6/23/2020
L10	<0.011	<110	White Women's Restroom Wall (Behind Paneling)	6/23/2020
L11	*0.16*	*1,600*	Brown Women's Restroom Trim	6/23/2020
L12	<0.018	<180	Tan Restroom Stalls	6/23/2020
L13	0.0083	83	Red Bar Wall	6/23/2020
L14	<0.0080	<80	Grey Bar Wall	6/23/2020
A1	<0.0080	<80	White Office Wall	6/23/2020
A2	<0.0081	<81	White Women's Restroom Wall	6/23/2020
A3	<0.0084	<84	White Men's Restroom Wall	6/23/2020
A4	<0.0088	<88	White Breakroom Wall	6/23/2020
A5	<0.0080	<80	White Office Wall - Drywall	6/23/2020
A6	*0.15*	*1,500*	White Office Wall - Concrete Block	6/23/2020
A7	<0.0080	<80	White Storage Room Wall	6/23/2020
A8	<0.0080	<80	White Storage Room Ceiling	6/23/2020
A9	<0.0080	<80	White Mechanical Room Wall	6/23/2020
A10	<0.023	<230	Black Mechanical Room Wall	6/23/2020
A11	<0.0080	<80	Brown Mechanical Room Metal Door	6/23/2020

Notes:
wt = weight
ppm = parts per million

Under Wisconsin Statute Chapter 254.11 (8)

Lead-bearing paint means any paint or other surface coating material containing more than 0.06% (600 ppm) lead by weight, calculated as lead metal, in the total nonvolatile content of liquid paint, more than 0.5% (5000 ppm) lead by weight in the dried film of applied paint, or more than 1 milligram of lead per square centimeter in the dried film of applied paint. [Updated 2017-18 Wis. Stats. & through Wis. Act 186. Published and certified under s. 35.18 July 14, 2020]

Under Wisconsin Administrative Code Chapter 163.03 (61)

"Lead-based paint" or "lead-bearing paint" means paint or any other surface coating material containing more than 0.06% (600 ppm) lead by weight, calculated as lead metal, in the total nonvolatile content of liquid paint or in the dried film of applied paint, or more than 0.7 milligrams lead per square centimeter in the dried film of applied paint. Register January 2016 No. 721

Bold	= Exceeds Wis Stats. Chapter 254.11 (8) definition of "Lead-bearing paint".
Italic	= Exceeds Wis Administrative Code 163.03 (61) definition of "Lead-based paint" or "Lead-bearing paint".

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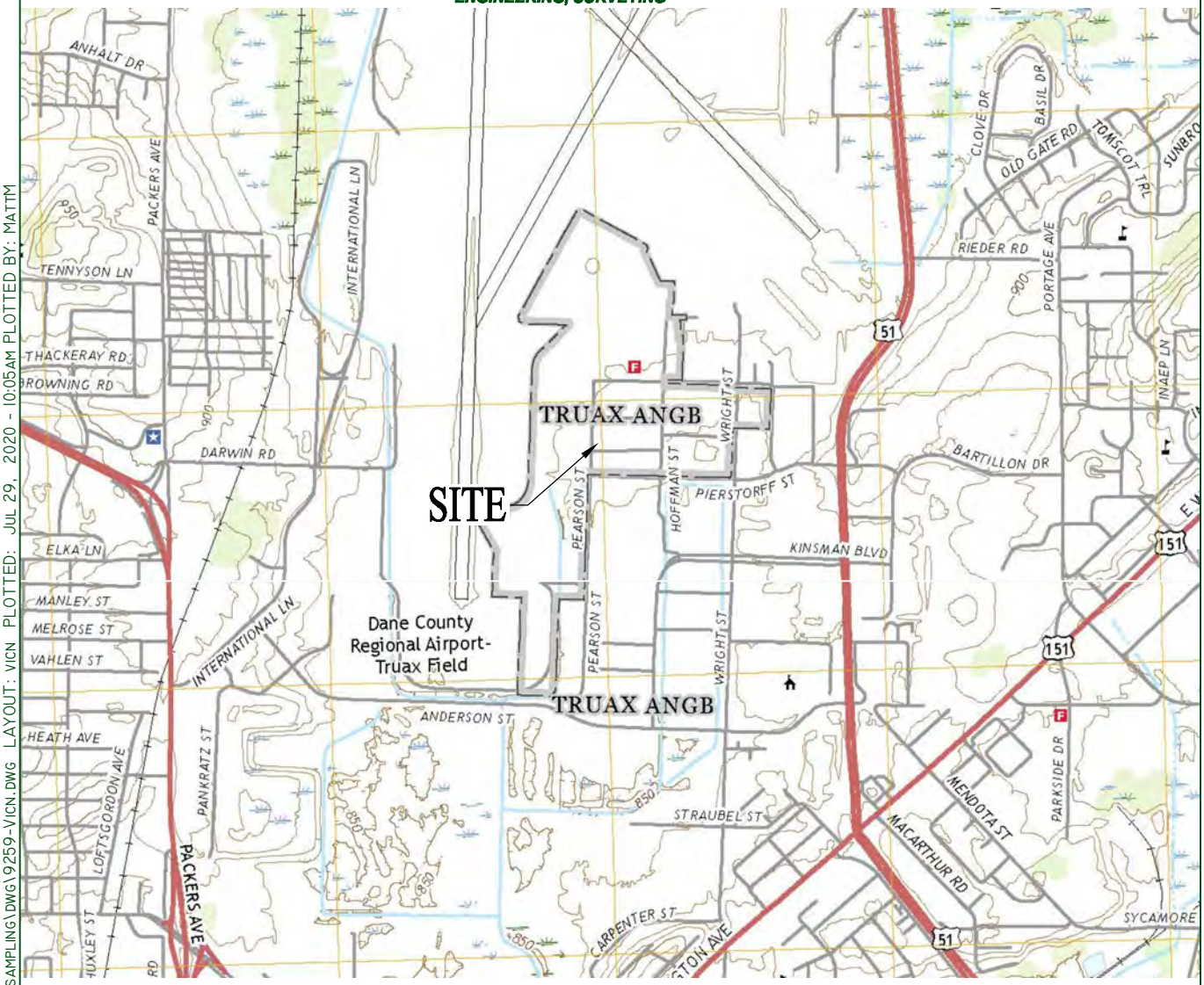

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

1000 500 0 METERS 1000 2000

1 0.5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

MN
GN
2°53'
51 MILS
1°35'
28 MILS

UTM GRID AND 2019 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

DE FOREST QUADRANGLE
WISCONSIN - DANE COUNTY
7.5-MINUTE SERIES

QUADRANGLE LOCATION

DE FOREST, WI
2018

REI ENGINEERING, INC.

TRUAX FIELD NORTHEAST INTERSECTION OF BECKER AND PEARSON STREETS MADISON, WISCONSIN 53704	N	FIGURE 1 : VICINITY MAP	
		PROJECT NO. 9259	DRAWN BY: MCM
			DATE: 7/29/2020

DRAWING FILE: P:\9200-9299\9259 - GESTRA ENGINEERING - TRUAX FIELD PFAS SAMPLING\DWG\9259-VICN.DWG LAYOUT: VICN PLOTTED: JUL 29, 2020 - 10:05AM PLOTTED BY: MATTM

LEGEND

0 30

SCALE: 1" = 30'

- SOIL BORING
- MONITORING WELL
- MANHOLE - TELECOMMUNICATION
- STORMWATER CATCH BASIN

GAS LINE

ELECTRICAL LINE

TELECOMMUNICATION LINE

STORMWATER LINE

PROPERTY BOUNDARY (APPROXIMATE)

REI CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING

TRUAX FIELD
NORTHEAST INTERSECTION OF
BECKER AND PEARSON STREETS
MADISON, WISCONSIN 53704

FIGURE 2 : SITE MAP

PROJECT No.	DRAWN BY:	DATE:
9259	MCM	6/19/2020

REI Engineering, INC.

DRAWING FILE: P:\9200-9299\9259 - GESTRA ENGINEERING - TRUAX FIELD PFAS SAMPLING\DWG\9259-SITE.DWG LAYOUT: PFAS PLOTTED: JUL 29, 2020 - 9:45AM PLOTTED BY: MATTM

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LEGEND

0 20

SCALE: 1" = 20'

△ PAINT SAMPLE LOCATION

REI ENGINEERING, INC.

TRUAX FIELD
NORTHEAST INTERSECTION OF
BECKER AND PEARSON STREETS
MADISON, WISCONSIN 53704

N

FIGURE 3 : SITE MAP - BUILDING 311

PROJECT NO.	DRAWN BY:	DATE:
9259	MCM	7/22/2020

DRAWING FILE: P:\9200-9299\9259 - GESTRA ENGINEERING - TRUAX FIELD PFAS SAMPLING\DWG\9259-SITE.DWG LAYOUT: B3II PLOTTED: JUL 29, 2020 - 9:47AM PLOTTED BY: MATTM

REI
CIVIL & ENVIRONMENTAL
ENGINEERING, SURVEYING

LEGEND

0 15

SCALE: 1" = 15'

PAINT SAMPLE LOCATION

REI Engineering, INC.

TRUAX FIELD
NORTHEAST INTERSECTION OF
BECKER AND PEARSON STREETS
MADISON, WISCONSIN 53704

N

FIGURE 4 : SITE MAP - BUILDING 307

PROJECT NO.	DRAWN BY:	DATE:
9259	MCM	7/22/2020

DRAWING FILE: P:\9200-9299\9259 - GESTRA ENGINEERING - TRUAX FIELD PFAS SAMPLING\DWG\9259-SITE.DWG LAYOUT: B307 PLOTTED: JUL 29, 2020 - 9:46AM PLOTTED BY: MATTM

APPENDIX A

PHOTOGRAPHS

Site overview - View southeast from northwest corner of grass lot.

Site overview - View northeast from southwest corner of grass lot.

Marked utilities and abandoned previous soil boring locations.

Marked utilities

Storm water catch basin.

Site Overview - View northwest from southeast corner of grass lot.

Soil sampling station setup.

Hydraulic push soil boring advancement.

Groundwater sample collection SB-1.

Attempted groundwater sample collection SB-2.

Groundwater sample collection SB-4.

Groundwater sample collection from existing monitoring well.

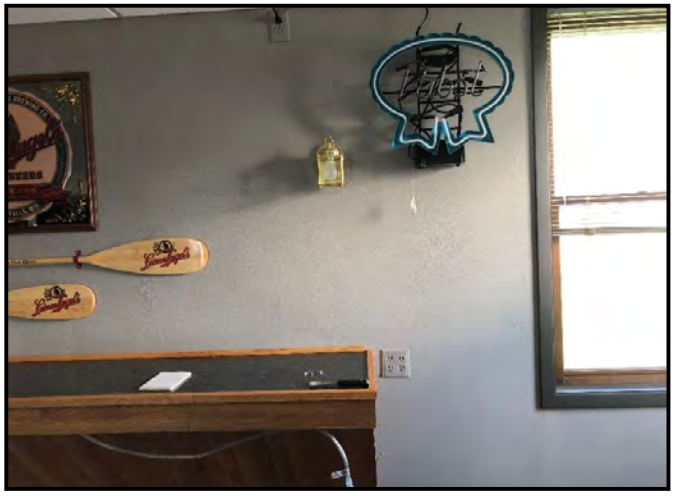
Temp wells installed in soil boring SB-2 and SB-3 after attempted sample collection.

Temp well removed and soil boring SB-3 abandoned.

Temp well removed and soil boring SB-2 abandoned.

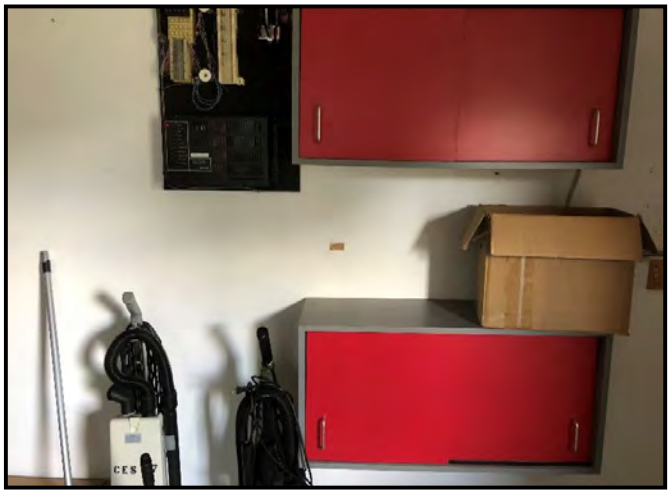
Paint Sample L1.

Paint Sample L2.

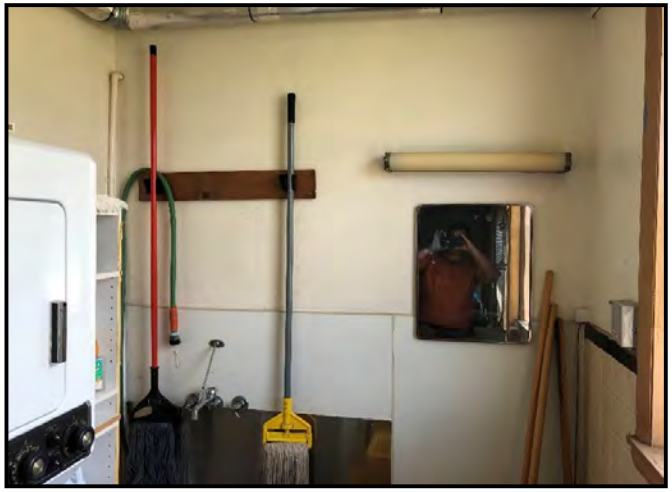


Paint Sample L3.

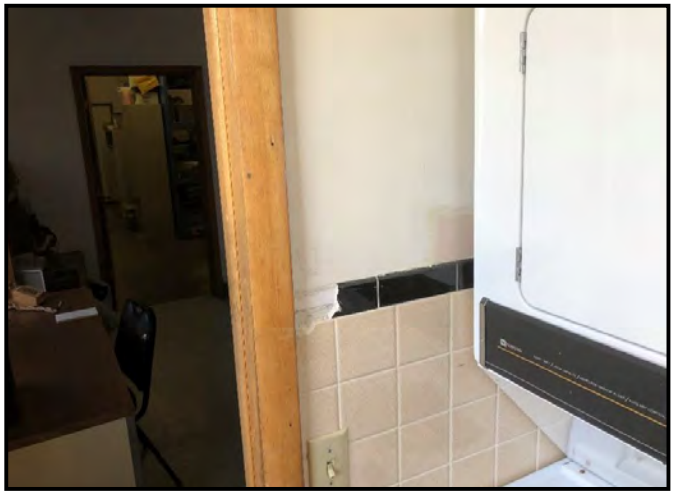
Paint Sample L4.



Paint Sample L5.



Janitorial Closet



Paint Sample L6.

Women's Restroom Paint Samples L10 & L11

Paint Sample L12.

Paint Sample L13.

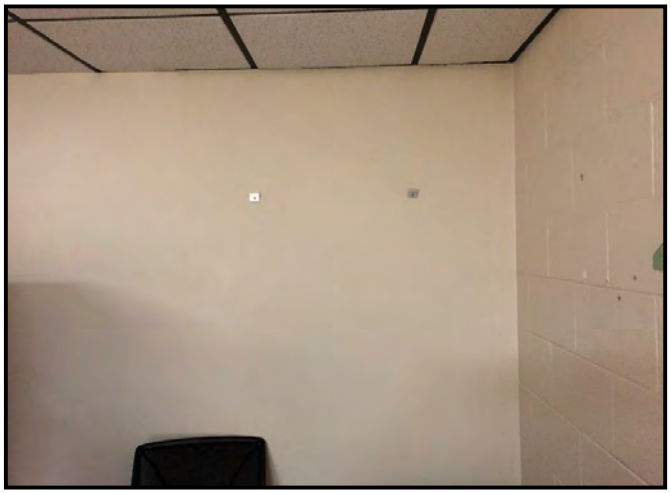
Paint Sample L14.

Paint Sample A1.

Paint Sample A2.

Paint Sample A3.

Paint Sample A4.

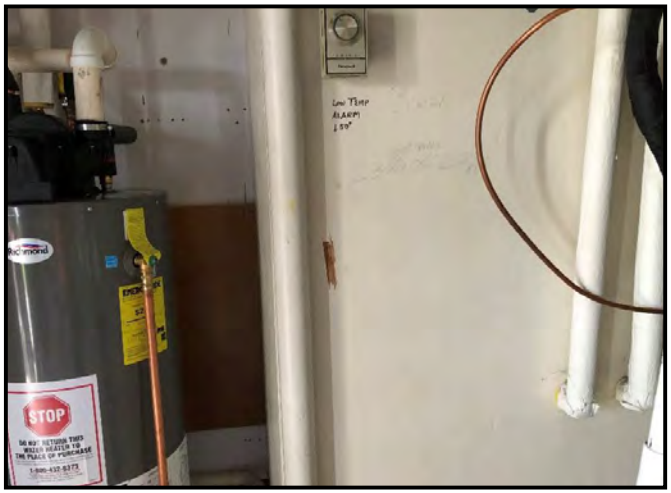


Paint Sample A5.

Paint Sample A6.

Paint Sample A7.

Paint Sample A8.



Paint Sample A9.

Paint Sample A10.

Paint Sample A11.

APPENDIX B

SOIL BORING LOGS

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: **Watershed/Wastewater** ☐ **Waste Management** ☐
Remediation/Redevelopment ☐ **Other** ☑

Facility/Project Name Truax Field	**License/Permit/Monitoring Number**	**Boring Number** SB-1

Boring Drilled By: Name of crew chief (first, last) and Firm	**Date Drilling Started**	**Date Drilling Completed**	**Drilling Method**
GESTRA Engineering, Inc.	6/23/2020	6/23/2020	Hydraulic Push

WI Unique Well No.	**DNR Well ID No.**	**Common Well Name**	**Final Static Water Level**	**Surface Elevation**	**Borehole Diameter**
				0	2.25"

Local Grid Orgin ☐ **(estimated)** ☐ **or Boring Location** ☒ SB-1
State Plane
Lat
Long
Local Grid Location **N** ☐ **E** ☐ **S** ☐ **W** ☐

Facility ID	**County** Dane	**County Code** 13	**Civil Town/City/or Village** Madison

Sample Number	Sample Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/ Rock Description And Geologic Origin For Each Major Unit	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				0	**GRASS**						M				
				1	**Silty Sand** Black, organic rich										
					Clay Brown, with silt				0.0						
1	SS	48		2											
				3											
				4	**Sand** Brown, fine to medium grained with trace silt				0.0						
				5							M/W				
				6											
				7	**Sand** Brown, fine to medium grained										
2	SS	40		8											
				9											
				10	**End of boring** 1-inch temporary well with 5 foot screen installed in borhole.										
				11											
				12											

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	**Firm**	**REI Engineering, Inc.** 4080 North 20th Avenue, Wausau, WI

This form is authorized by Chapters 281,283,289,292,293,295, and 299, Wis. Stats. Completion of thes form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: **Watershed/Wastewater** ☐ **Waste Management** ☐
Remediation/Redevelopment ☐ **Other** ☑

Facility/Project Name Truax Field	**License/Permit/Monitoring Number**	**Boring Number** SB-2

Boring Drilled By: Name of crew chief (first, last) and Firm	**Date Drilling Started**	**Date Drilling Completed**	**Drilling Method**
GESTRA Engineering, Inc	6/23/2020	6/23/2020	Hydraulic Push

WI Unique Well No.	**DNR Well ID No.**	**Common Well Name**	**Final Static Water Level**	**Surface Elevation**	**Borehole Diameter**
				0	2.25"

Local Grid Origin ☐ **(estimated)** ☐ **or Boring Location** ☒ SB-2
State Plane
Lat
Long
Local Grid Location **N** ☐ **E** ☐ **S** ☐ **W** ☐

Facility ID	**County** Dane	**County Code** 13	**Civil Town/City/or Village** Madison

Sample Number	Sample Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/ Rock Description And Geologic Origin For Each Major Unit	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				0	**GRASS**						M				
				1	**Silty Clay** Black, organic rich						D				
				2	**Sand** Tan, very fine to fine grained with angular gravel				0.0		M				
1	SS	48		3	**Silty Clay** Brown, with trace sand										
				4											
				5											
				6	**Clayey Sand** Brown										
				7	**Sand** Tan, fine to medium grained with trace gravel										
2	SS	43		8											
				9					0.0						
				10	**End of Boring** 1-inch temporay well with 5 foot screen installed in borehole. Wet soil in tip of sampler.										
				11											
				12											

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	**Firm**	**REI Engineering, Inc.** 4080 North 20th Avenue, Wausau, WI

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: **Watershed/Wastewater** ☐ **Waste Management** ☐
Remediation/Redevelopment ☐ **Other** ☑

Facility/Project Name Truax Field	**License/Permit/Monitoring Number**	**Boring Number** SB-3

Boring Drilled By: Name of crew chief (first, last) and Firm	**Date Drilling Started**	**Date Drilling Completed**	**Drilling Method**
GESTRA Engineering, Inc	6/23/2020	6/23/2020	Hydraulic Push

WI Unique Well No.	**DNR Well ID No.**	**Common Well Name**	**Final Static Water Level**	**Surface Elevation**	**Borehole Diameter**
				0	2.25"

Local Grid Orgin ☐ **(estimated)** ☐ **or Boring Location** ☒ SB-3 **Lat** **Local Grid Location** **N** ☐ **E** ☐
State Plane **Long** **S** ☐ **W** ☐

Facility ID	**County** Dane	**County Code** 13	**Civil Town/City/or Village** Madison

Sample Number	Sample Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/ Rock Description And Geologic Origin For Each Major Unit	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
				0	**GRASS**						M				
					Silty Clay Black, organic rich						D				
				1	**Sandy Clay** Brown				0.0						
				2	**Crushed Rock**										
1	SS	54			**Clayey Sand** Brown, with gravel						M				
				3	**Clay** Brown, with trace silt										
				4											
				5	**Silty Clay** Brown										
				6	**Clayey Sand** Brown, very fine to fine grained						M/W				
				7											
2	SS	42		8					0.0						
				9	**Sand** Tan, fine to coarse grained with trace gravel						W				
				10	**End of Boring** 1-inch temporay well with 5 foot screen installed in borehole.										
				11											
				12											

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	**Firm**	**REI Engineering, Inc.** 4080 North 20th Avenue, Wausau, WI

This form is authorized by Chapters 281,283,289,292,293,295, and 299, Wis. Stats. Completion of thes form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☑

Facility/Project Name Truax Field	**License/Permit/Monitoring Number**	**Boring Number** SB-4

Boring Drilled By: Name of crew chief (first, last) and Firm	**Date Drilling Started**	**Date Drilling Completed**	**Drilling Method**
GESTRA Engineering, Inc.	6/23/2020	6/23/2020	Hydraulic Push

WI Unique Well No.	**DNR Well ID No.**	**Common Well Name**	**Final Static Water Level**	**Surface Elevation**	**Borehole Diameter**
				0	2.25"

Local Grid Orgin ☐ **(estimated)** ☐ **or Boring Location** ☒B-4 **Lat** **Local Grid Location** N ☐ E ☐
State Plane **Long** S ☐ W ☐

Facility ID	**County** Dane	**County Code** 13	**Civil Town/City/or Village** Madison

Sample Number	Sample Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/ Rock Description And Geologic Origin For Each Major Unit	U.S.C.S.	Graphic	Well	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				0	**GRASS**						M				
				1	**Silty Sand** Black, organic rich										
					Silty Clay Brown				0.0						
1	SS	51		2											
				3					0.0						
				4	**Sandy Clay** Brown, with trace silt						W				
				5											
				6	**Sand** Tan, fine to coarse grained with trace gravel						M				
2	SS	42		7											
				8											
				9											
				10	**End of boring** 1-inch temporary well with 5 foot screen installed in borhole.										
				11											
				12											

I herby certify that the information on this form is true and the correct to the best of my knowledge

Signature	**Firm**
Matthew C. Michaels	**REI Engineering, Inc.** 4080 North 20th Avenue, Wausau, WI

This form is authorized by Chapters 281,283,289,292,293,295, and 299, Wis. Stats. Completion of thes form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

APPENDIX C

SAMPLING GUIDANCE DOCUMENTS, METHODS & PROCEDURES

METHODS AND PROCEDURES

FOR

GEOPROBE SOIL SAMPLING

The Geoprobe unit hydraulically advances threaded, two-inch diameter, four-foot long, steel rod sections into the subsurface. A four-foot sampler, consisting of a drive shoe, a steel tube with a clean acetate liner, and a drive-head retractable piston, is attached to the leading Geoprobe rod. The sampler is driven down to the top of the interval to be sampled. The stop-pin is removed to release the drive head piston, which retracts as the sampler is advanced. When the sampler has been advanced four feet, the rods are retracted from the hole and the soil in the acetate liner is recovered. The acetate liner is split open and the soil is visually and manually classified by the field geologist/technician in accordance with **ASTM:D2488-84**. Logs of the borings are filled out indicating the depth and identification of the various strata, water level information, and pertinent information regarding the method of maintaining and advancing the borings.

Immediately after identification, the soil is quickly divided into two portions. One portion is prepared for potential laboratory analysis. The other portion is placed into a clean one-quart Ziploc bag for field screening. See the section "Soil Headspace Analysis" for field screening procedures.

HEADSPACE ANALYSIS

The soils were screened with a Mini-RAE photoionization detector (PID) equipped with an 10.6 eV lamp. The detector was calibrated in instrument units for Total Organic Vapors using an isobutylene standard. The soil sample, sealed in a Ziploc bag, was shaken vigorously to promote volatilization of the contaminant into the headspace of the bag. The sample was allowed to rest for at least ten minutes and then shaken again before screening. When ambient temperatures were below 60 degrees F, soil samples were allowed to warm for a minimum of 10 minutes in a heated environment prior to headspace development. The Ziploc bag was punctured with the PID probe and the resulting meter reading was recorded.

SAMPLING AND CHAIN OF CUSTODY

Soil samples for laboratory analysis were collected into laboratory prepared vials. Each vial was labeled and placed directly into a cooler pending delivery to the laboratory. Latex gloves were worn during all sample collection procedures.

An entry on a Chain of Custody log was completed as each sample was collected. The Chain of Custody included the following information: project name, work order number, shipped by, shipped to, sampling point, location, field ID number, date and time taken, sample type, number of containers, analysis required, sampler (s) signature (s), etc. As few people as possible handled the samples. The Chain of Custody log was sent to the laboratory with each cooler of samples.

DECONTAMINATION

Sampling equipment was decontaminated prior to sampling. Steel rod sections were washed after every sample collected.

METHODS AND PROCEDURES

FOR

GEOPROBE WATER SAMPLING

GROUNDWATER PROFILER (IF SOIL SAMPLES ARE NOT COLLECTED)

The Geoprobe rods are connected to a covered stainless steel, 2-foot screen and driven to the appropriate depth. Internal rods are inserted in the hollow rods, and the cover is unscrewed and released, exposing the screen. Following sample collection, the rods are withdrawn, and the borehole is properly abandoned.

TEMPORARY CASING AND SCREEN INSTALLATION (FOLLOWING SOIL SAMPLING)

One (1) inch PVC casing and screen is placed in the open geoprobe borehole to the appropriate depth. The annular space seal between the screen and the borehole is filled with #30 Red Flint filter pack sand. Following sample collection, the casing and screen is withdrawn, and the borehole is properly abandoned.

PURGING, SAMPLING AND CHAIN OF CUSTODY

Disposable ¼" polyethylene tubing is inserted to the screen and connected to a peristaltic pump. The water is pumped slowly until sediment free. Purge water is containerized for proper disposal. Water samples are collected directly from the tubing. If the well is purged dry, it is allowed to recharge and then sampled. Samples are labeled and placed in a cooler to be preserved at approximately 4 degrees C. Samples are accompanied by Chain of Custody records.

Upon completion of a sample, a chain of custody log is initiated. The chain of custody record includes the following information: project name, work order number, shipped by, shipped to, sampling point, location, field ID number, date and time taken, sample type, number of containers, analysis required, sampler (s) signature (s), etc. As few people as possible handle the samples.

DECONTAMINATION

Sampling equipment is decontaminated prior to sampling. The Geoprobe rods and screen are washed between holes using distilled water and Alconox cleaning detergent. New, disposable

tubing is used at each sample location. Latex gloves are worn during all sample collection procedures and are changed between the collection of each of the water samples from each monitoring well.

SOIL PFAS SAMPLING

Guidance

Introduction

This guidance document discusses the processes, decontamination procedures, and acceptable items and materials for sampling soil for per- and polyfluoroalkyl substances (PFAS). In addition, this guidance will be used to support the sampling objectives and procedures based on any Quality Assurance Project Plan (QAPP) developed prior to sampling activities. This guidance assumes staff has basic familiarity with and/or understanding of basic soil sampling procedures.

NOTE: Review the General PFAS Sampling Guidance prior to reviewing this guidance document.

The Michigan Department of Environmental Quality (DEQ) intends to update the information contained within this PFAS Sampling Guidance document as new information becomes available. The user of this PFAS Sampling Guidance is encouraged to visit the Michigan PFAS Action Response Team webpage (www.michigan.gov/PFASresponse) to access the current version of this document.

Because PFAS compounds can be analyzed at concentrations in the parts per trillion (ppt) range, precautions must be taken to prevent cross-contamination. Field sampling equipment, either rented or not, that is used at multiple sites or sampling locations (also described as non-dedicated equipment), could become highly contaminated with PFAS. If site-specific information is available, sampling should be conducted from the least to the most contaminated locations. Additional guidance on the sampling sequence can be found in **Section 4.3.3** of the **General PFAS Sampling Guidance**.

Soil sampling involves the use of non-dedicated equipment, such as scoops, trowels, shovels, augers and other drilling-related equipment, which could be a source of cross-contamination. Decontamination procedures outlined in this guidance document should be followed to avoid cross contamination and equipment should be verified as PFAS-free.

The site-specific quality assurance document will generally provide the following information:

- Sample collection objectives.
- Locations, number, and volume of samples.
- Types of chemical analyses.
- Specific quality control procedures.
- Additional sampling requirements, as necessary.

This soil sampling guidance document discusses the collection of surface and sub-surface soil samples for PFAS and methods to prevent cross-contamination that can occur from:

- Field clothing and personal protection equipment (PPE)
- Sampling equipment
- Equipment decontamination
- Sample collection and handling
- Sample shipment

Contents

NOTE: Additional information about PFAS testing can be found on the Michigan PFAS Action Response Team (MPART) website: www.michigan.gov/PFASresponse

● - Prohibited ■ – Allowable ▲ - Needs Screening

1. Potential Sources for PFAS Cross-Contamination

Potential sources for PFAS cross-contamination include items and materials used within the sampling environment, such as sampling equipment, field clothing, personal protective equipment (PPE), sun and biological protection products, personal hygiene, personal care products (PCPs), and food packaging. A detailed discussion about potential sources for PFAS cross-contamination is included in the **General PFAS Sampling Guidance**, which should be reviewed before reading this document. However, a high-level summary is presented in this guidance.

All of the items and materials discussed in each of the MDEQ's PFAS Sampling Guidance Documents are divided into three major groups:

- Prohibited (●) identifies items and materials that should not be used when sampling. It is well documented that they contain PFAS or that PFAS are used in their manufacture.

- Allowable (■) identifies items and materials that have been proven not to be sources of PFAS cross contamination and are considered acceptable for sampling.

- Needs Screening (▲) identifies items and materials that have the potential for PFAS cross-contamination due to a lack of scientific data or statements from manufacturers to prove otherwise. These items and materials are further sub-divided into two categories:

    - **Category 1:** Items and materials that <u>will come in direct contact</u> with the sample. These should not be used when sampling unless they are known to be PFAS-free, by collecting an equipment blank sample prior to use.

    - **Category 2:** Items and materials that <u>will not come in direct contact</u> with the sample. These should be avoided, if possible, unless they are known to be PFAS-free by collecting an equipment blank sample prior to use.

Please note that at this time no published research is available that documents the use of various materials and effect on sample results. Therefore, a conservative approach is recommended, and the guidance is based on the collection of multiple environmental samples at various PFAS Sites. Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event.

A general overview of PFAS contamination sources during sampling can be found in **Section 4.2** of the **General PFAS Sampling Guidance**. Any items or materials utilized that are not identified in this guidance or not discussed in **Section 4.2** should be evaluated as described in **Section 4.2.1**.

Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event (see below).

1.1 Field Clothing and Personal Protection Equipment (PPE)

A general overview of field clothing and PPE can be found in **Section 4.2.2** from the **General PFAS Sampling Guidance**. Materials, field clothing, and equipment screening should be performed during the QAPP development or the planning phase of sampling programs. The screening should be performed on all items and materials that are expected to come into contact with the samples and are defined as **Category 1**. This Soil Sampling Guidance assumes that the soil samples will be collected in an environment where only Level D protection (such as steel toe

NOTE: Both field clothing and PPE should be kept dust and fiber free.

boots, eye protection, hardhat, etc.) is required by the Health and Safety Plan (HASP). During a PFAS investigation, PPE that contains PFAS should be avoided to prevent cross-contamination.

As with any field mobilization, it is the responsibility of all personnel to be aware of the physical, chemical, and biological hazards associated with a particular site. Personal safety is paramount. Any deviation from this guidance, including those necessary to ensure the health and safety of sampling personnel, should be recorded in field notes and discussed in the final report. Any additional field clothing and/or PPE items that might be required for the soil sampling and not discussed in the Sampling Guidance should be evaluated as described in **Sections 4.2.1** and **4.2.2** of the **General PFAS Sampling Guidance**.

Field sampling during wet weather (e.g., rainfall and snow) should be conducted while wearing the proper field clothing.

- ● Dust and fibers must not be allowed to collect on field clothing or PPE.
- ■ Do not use clothing that has been advertised as waterproof, dirt and/or stain repellant that has not been verified to be made of PFAS-free materials.
- ■ Only use clothing/PPE that has been verified to be made of PFAS-free materials.

Powderless nitrile gloves should be changed frequently any time there is an opportunity for cross-contamination. See **Section 6** of this guidance for additional glove instructions.

1.2 Personal Care Products (PCPs)

A number of sampling guidance documents recommend that personal hygiene and personal care products (PCPs) (e.g., cosmetics, shampoo, sunscreens, dental floss, etc.) not be used prior to and on the day(s) of sampling because the presence of PFAS in these products has been documented (OECD, 2002, Fujii, 2013, Borg and Ivarsson, 2017). However, if the MDEQ's sampling SOPs are followed, these items should not come into contact with the sampling equipment or the sample being collected. As of the date of this sampling guidance, cross-contamination of samples due to the use of PCPs has not been documented during the collection of thousands of samples. However, field personnel should be aware of the potential of cross-contamination if the sampling equipment or actual samples would come into contact with these products.

The following precautions should be taken when dealing with personal hygiene or PCPs before sampling:

- ● Do not handle or apply PCPs in the sampling area.
- ● Do not handle or apply PCPs while wearing PPE that will be present during sampling.
- ■ Move to the staging area and remove PPE if applying personal care products becomes necessary.
- ■ Wash hands thoroughly after the handling or application of PCPs and, when finished, put on a fresh pair of powderless nitrile gloves.

1.3 Food Packaging

PFAS has been used by the paper industry as a special protective coating against grease, oil, and water for paper and paperboards, including food packaging since the late 1950s (Trier et al., 2018). PFAS application for food packaging includes paper products that come into contact with food such as paper plates, food containers, bags, and wraps (OECD, 2002). Pre-wrapped food or snacks (such as candy bars, microwave popcorn, etc.) must not be in the sampling and staging areas during

sampling due to PFAS contamination of the packaging. When staff requires a break to eat or drink, they should remove their gloves, coveralls, and any other PPE, if worn, in the staging area and move to the designated area for food and beverage consumption. When finished, staff should wash their hands and put on a fresh pair of powderless nitrile gloves at the staging area, before returning to the sampling area.

- ● Do not handle, consume, or otherwise interact with pre-wrapped food or snacks, carry-out food, fast food, or other food items while on-site during sampling.
- ■ Move to the staging area and remove PPE prior to leaving the sampling and staging areas if consuming food on site becomes necessary.

2. Soil Sampling Equipment

Soil sampling equipment is categorized into **Category 1** and **Category 2:**

NOTE: As a precautionary action, an equipment rinsate blank should be collected even if the sampling materials are made of materials that are not expected to contain PFAS.

Category 1: Any item that will directly contact with the soil, including shovels, trowels, spoons, bowls, hand augers buckets and extensions, and augers and direct push equipment, including any split spoon or sampling barrels. This equipment has a high likelihood of cross-contamination occurring if the proper decontamination procedures are not followed. These items should be known to be PFAS free.

Category 2: Any item that will not directly contact the soil, including field books, Munsell® color charts, Post-It® Notes, aluminum foil, and recycled paper towels.

Although these items will not directly contact soil samples, cross-contamination may still occur. Every effort should be made to ensure these items are PFAS-free. Be aware that surfaces of this field equipment or the containers in which they are kept may contain PFAS.

Do not use any equipment that contains any known fluoropolymers or that potentially has been cross-contamination with PFAS such as, but not limited to:

- ● Do not use Polytetrafluoroethylene (PTFE) that includes the trademark Teflon® and Hostaflon®, which can be found in many items, including but not limited to the lining of some hoses and tubing, some wiring, certain kinds of gears, and some objects that require the sliding action of parts.
- ● Do not use Polyvinylidene fluoride (PVDF) that includes the trademark Kynar®, which can be found in many items, including but not limited to tubing, films/coatings on aluminum, galvanized or aluminized steel, wire insulators, and lithium-ion batteries.
- ● Do not use Polychlorotrifluoroethylene (PCTFE), that includes the trademark Neoflon®, which can be found in many items, including but not limited to valves, seals, gaskets, and food packaging.
- ● Do not use Ethylene-tetrafluoro-ethylene (ETFE) that includes the trademark Tefzel®, which can be found in many items, including but not limited to wire and cable insulation and covers, films for roofing and siding, liners in pipes, and some cable tie wraps.
- ● Do not use Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP,

NOTE: Manufacturers can change the chemical composition of any product. As a result, all materials that will come into contact with the sample matrices (defined as Category 1) should be tested to confirm they are “PFAS-free”, i.e. will not contaminate samples at detectable levels. **There is no guarantee that materials in the ‘Allowable’ category will always be PFAS-free.**

●- Prohibited ■ – Allowable ▲- Needs Screening

and may also include Neoflon®, which can be found in many items, including but not limited to wire and cable insulation and covers, pipe linings, and some labware.

- ● Do not use low density polyethylene (LDPE) for any items that will come into **direct contact** with the sample media. LDPE can be found in many items, including but not limited to containers and bottles, plastic bags, and tubing.
  - ▲ **However**, LDPE may be used if an equipment blank has confirmed it to be PFAS-free. LDPE does not contain PFAS in the raw material but may contain PFAS cross-contamination from the manufacturing process.
- ■ LDPE bags (e.g. Ziploc®) that **do not** come into direct contact with the sample media and do not introduce cross-contamination with samples may be used.
- ■ Use items and materials that are either made of high density polyethylene (HDPE), polypropylene, silicone, or acetate.
- ▲ Post-It® Notes should be screened before use.

Staff should follow the **MDEQ PFAS Sampling Quick Reference Field Guide** table for approved and prohibited items for documenting and sampling residential wells for PFAS.

NOTE: Special care and consideration should be given to the field sampling equipment when stored and handled outside the site boundaries or between different sample locations.

Many times, the release of PFAS in the environment occurs concurrently with other chemicals. For example, the release of PFAS present in the aqueous film forming foam (AFFF) is generally associated with the release of flammable liquids, such as jet fuels. As a result, sampling soil for PFAS may occur within plumes of volatile organic compounds (VOCs). For staff protection, the use of a photoionization detector (PID) is recommended to measure VOCs that might be present in the soil. The PID used during PFAS sampling to screen for VOCs may be made of materials that contain PFAS. However, the PID is a **Category 2** field equipment item and will have a very low possibility of cross contamination.

3. Soil Sampling Methods

Soils are usually sampled to define the subsurface geology and presence of aquifers or aquitards (lithology), or to determine the presence or absence of contaminants—in this case, PFAS (chemical analysis).

3.1 Soil Sampling for Lithologic Description

Soil samples are collected to determine the lithologic and physical makeup of the sample (i.e.: clay, sand, gravel, brown, mottled, etc.). This is done to determine the subsurface geologic stratigraphy of the site and help identify possible aquifers and aquitards in the subsurface. Soil can be collected loose or cored.

3.1.1 Loose Soil Samples

A loose soil sample is usually obtained by auger or rotary drilling processes, where the process delivers loose drilled soil to the surface for collection and interpretation. In the auger drilling process, the auger flights deliver soil cuttings to the surface around the auger string. These soils can be collected by a shovel and bagged in LDPE bags (e.g. Ziploc) or piled for later lithologic analysis and entry into a geologic log.

3.1.2 Cored Soil Samples

A cored soil sample is collected with a coring type of mechanism in a way that preserves the soil structure. Most coring mechanisms consist of a steel core barrel with a clear plastic liner (use an acetate or other PFAS-free liner) into which the soil core enters. Once the core barrel is retrieved at the surface, this liner is removed and cut open. The soil core is then sliced open to reveal a clean face. This clean face is examined for lithology and structure.

3.2 Soil Sampling for Chemical Analysis

Soils collected for chemical analysis are usually collected by using the core soil sample method. The soil samples need to be as undisturbed as possible. The requirement of an undisturbed soil sample **excludes** the use of loose auger cuttings or rotary methods of soil collection.

During the soil sampling process, the soil sampling device is removed from the ground. The liner is removed and placed on the cutting board and opened using a liner cutting device. The soil sample is visually inspected, and observations recorded in the site field book. The core is cut open to reveal a "clean" face for sampling. This process avoids the possibility of picking up any contaminants that may have gotten smeared onto the soil surface as the soil core entered the liner.

4. Equipment Decontamination Before Sampling

It is customary with soil sampling that the equipment is decontaminated at the conclusion of the sampling event. If the previous user of the equipment is not known, and it is unclear how the equipment was handled—especially rental equipment—decontaminate the equipment prior to sampling.

Disposable **Category 1** sampling equipment should be used, especially for sample bottles and other materials that are used where the soil sample may be in contact with the sampling equipment for an extended period of time. Field sampling equipment used at multiple sites or sampling locations can become highly contaminated with PFAS. Decontamination procedures should be implemented to prevent cross-contamination, including between individual sample locations.

For non-dedicated **Category 1** sampling equipment, the following items, materials, and procedures should be used for decontamination:

- ● Do not use Decon 90®.
- ■ Laboratory supplied PFAS-free deionized water is preferred for decontamination.
- ■ Alconox®, Liquinox®, and Citranox® can be used for equipment decontamination.
- ■ Sampling equipment can be scrubbed using a polyethylene or Polyvinyl chloride (PVC) brush to remove particulates.
- ■ Decontamination procedures should include triple rinsing with PFAS-free water.
- ■ Commercially available deionized water in an HDPE container may be used for decontamination if the water is verified to be PFAS-free.
- ▲ Municipal drinking water may be used for decontamination purposes if it is known to be PFAS-free.

NOTE: All samples should be collected using PFAS-free High-Density Polyethylene (HDPE), glass, or polypropylene bottles provided by the laboratory, with Teflon®-

5. Sample Collection and Handling

The following considerations should be observed for sample collection:

- ● Dust and fibers must be kept out of sample bottles.
- ● The sample cap should never be placed directly on the ground during sampling.
  - ▲ If sampling staff must set the sample bottle cap down during sample collection and a second member of the sampling crew (wearing a fresh pair of powderless nitrile gloves) is not available, set the cap on a clean surface (cotton sheeting, HDPE sheeting, triple rinsed cooler lid, etc.).
- ● Do not sample without powderless nitrile gloves.
- ● Regular size Sharpie® are to be avoided. Thicker markers may contain PFAS.
- ■ Fine and Ultra-Fine point Sharpie® markers are acceptable.
- ■ Ballpoint pens may be used when labeling sample containers. If ballpoint pens do not write on the sample container labels, preprinted labels from the laboratory may be used.
- ■ Bottles should only be opened immediately prior to sampling.
- ■ Hands should be well washed and gloved.
- ■ Use HDPE, glass, or polypropylene sample bottles with Teflon®-free caps, provided by the laboratory.
- ■ Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS have been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.
- ■ Commercially bought sample bottles used with automatic sampling equipment should be decontaminated prior to sampling and equipment blank samples should be collected using laboratory supplied PFAS-free water.
- ■ Samples should be double bagged using resealable low density polyethelene (LDPE) bags (e.g., Ziploc®).
- ■ Follow any guidance or requirements in the PFAS analytical reference method that will be used for testing samples, for sample collection, storage, preservation, and holding times.
- ■ If a published testing method is not used, and in the absence of formal United States Environmental Protection Agency (USEPA) guidance for PFAS sample storage, the documentation in USEPA Method 537 Rev. 1.1 should be used as a guide for thermal preservation (holding temperature) and holding times for soil or other samples. Samples must be chilled during storage and shipment and must not exceed 50°F (10º C) during the first 48 hours after collection.
- ▲ Latex gloves should be screened before use.

NOTE: USEPA Method 537 Rev. 1.1 was developed for the analysis of finished drinking water samples only. It was not designed for soils or other matrices that could cause significant interferences to the method. Other analytical methods such as ASTM D7968-14 or D7968-17a may be better at resolving interferences in soil samples. These methods were developed specifically for other matrices such as soil and sediments.

If site-specific information is available, sampling should be conducted from the least to the most contaminated location. Additional guidance on the sampling sequence can be found in **Section 4.3.3** of the **General PFAS Sampling Guidance**.

If possible, collect PFAS samples prior to collecting non-PFAS samples or field parameters (pH, temperature, etc.).

●- Prohibited ■ – Allowable ▲- Needs Screening

Powderless nitrile gloves should be changed any time there is an opportunity for cross-contamination during sampling, including, but not limited to:

- Immediately prior to sample collection
- Each time sampling equipment is placed in and then removed from soil at a new location
- Handling of any sample, including quality assurance/quality control (QA/QC) samples
- After the handling of any non-dedicated sampling equipment
- After contact with non-decontaminated surfaces
- After decontamination of sampling equipment
- When judged necessary by field personnel

6. Sample Shipment

The following procedures should be used for sample shipment:

- ■ Regular ice should be used to cool and maintain the sample at or below 42.8°F (6°C).
  - ▲ Chemical or blue ice may be used if it is known to be PFAS-free and it is absolutely certain that the sample is cooled and maintained at or below 42.8°F (6°C) during collection and through transit to the laboratory.
- ■ Check the cooler periodically to ensure samples are well iced and at the proper temperature.
- ■ Refresh with regular ice, if needed, double bagged in LDPE resealable storage bags if needed.
- ■ Chain of Custody and other forms should be single bagged in LDPE (e.g. Ziploc®) storage bags and taped to the inside of the cooler lid.
- ■ The cooler should be taped closed with a custody seal and shipped by overnight courier.
- ■ Samples should be shipped as soon as possible (e.g. overnight) to ensure the samples arrive within the analytical holding time specified by the lab.

7. Equipment Decontamination After Sampling

It is customary to decontaminate soil sampling equipment at the end of the sampling event, whether it is a single sampling location or the conclusion of the workday. This is to ensure sampling equipment is decontaminated ahead of time for the next sampling event.

- ● Do not put equipment away without decontaminating it.
- ■ Do decontaminate sampling equipment after sampling at each location, or at the end of the workday. Follow the decontamination guidelines in **Section 4 (Equipment Decontamination Before Sampling)** of this document.

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Michigan Department of Environmental Quality

MDEQ PFAS Sampling Quick Reference Field Guide[1]

All Items Used During Sampling Event

● Prohibited
• Items or materials that contain fluoropolymers such as o Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon® o Polyvinylidene fluoride (PVDF), that includes the trademark Kynar® o Polycholotrifluoroethylene (PCTFE), that includes the trademark Neoflon ® o Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel® o Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP • Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲Needs Screening[2]
• Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape)	• High-density polyethylene (HDPE) • Low-density polyethylene (LDPE) tubing • Polypropylene • Silicone • Stainless-steel • Any items used to secure sampling bottles made from: o Natural rubber o Nylon (cable ties) o Uncoated metal springs o Polyethylene	• Any items or materials that will come into direct contact with the sample that have **not** been verified to be PFAS-free o Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps	• Glass jars[4] • Laboratory-provided PFAS-Free bottles: o HDPE or polypropylene • Regular wet ice • Thin HDPE sheeting • LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media[6]	• Aluminium foil[4] • Chemical or blue ice[5] • Plastic storage bags other than those listed as ■ Allowable • Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Clipboards coated with PFAS • Notebooks made with PFAS treated paper • PFAS treated loose paper • PFAS treated adhesive paper products	• Loose paper (non-waterproof, non-recycled) • Rite in the Rain® notebooks • Aluminium, polypropylene, or Masonite field clipboards • Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers	• Plastic clipboards, binders, or spiral hard cover notebooks • All markers not listed as ■ Allowable • Post-It® Notes or other adhesive paper products • Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲Needs Screening[2]
• Decon 90® • PFAS treated paper towel	• Alconox®, Liquinox®, or Citranox® • Triple rinse with PFAS-free deionized water • Cotton cloth or untreated paper towel	• Municipal water • Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲Needs Screening[2]
• New or unwashed clothing • Anything made of or with: o Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: o Fabric softeners o Fabric protectors, including UV protection o Insect resistant chemicals o Water, dirt, and/or stain resistant chemicals	• Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: o Polyurethane o Polyvinyl chloride (PVC) o Wax coated fabrics o Rubber / Neoprene o Uncoated Tyvek®	• Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
• No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE.	• Brought and consumed only outside the vicinity of the sampling area: o Bottled water o Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection[6]

● Prohibited	■ Allowable	▲Needs Screening[2]
• Any PCPs[6], sunscreen, and insect repellent applied in the sampling area.	PCPs[6], sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands: **PCPs[6]:** • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs[6] **Sunscreens:** • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 **Insect Repellents:** • OFF® Deep Woods • Sawyer® Permethrin	• Products other than those listed as ■Allowable

[1] This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

[2] Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

[3] **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

[4] **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

[5] Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8˚F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

[6] Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.

● - Prohibited ■ - Allowable ▲ - Needs Screening

GROUNDWATER PFAS SAMPLING

Guidance

Introduction

This sampling guidance discusses the processes and acceptable items and materials that should be used when sampling groundwater monitoring wells for per- and polyfluoroalkyl substances (PFAS). The guidance primarily addresses the collection of representative water samples from the subsurface saturated zone. In addition, this guidance will be used to support the sampling objectives and procedures based on the Quality Assurance Project Plan (QAPP) developed prior to sampling activities. This guidance assumes staff has basic familiarity with and/or understanding of basic groundwater sampling procedures.

NOTE: Review the **General PFAS Sampling Guidance** document prior to reviewing this guidance document.

This sampling guidance may be varied or changed as required, depending on site conditions, equipment limitations, or limitations imposed by the procedure. The ultimate procedures used should be documented in the final report.

The MDEQ intends to update the information contained within this Groundwater PFAS Sampling Guidance document as new information becomes available. The user of this Groundwater PFAS Sampling Guidance is encouraged to visit the Michigan PFAS Action Response Team (MPART) webpage (www.michigan.gov/PFASresponse) to access the most current version of this document.

PFAS has been detected in groundwater in Michigan at concentrations over 810,000 parts per trillion (ppt). Many commercial laboratories have extremely low PFAS detection limits of about 1 ppt. Therefore, there is a high potential of false positives if proper procedures are not followed during sample collection.

This Groundwater PFAS Sampling Guidance discusses the collection of groundwater samples and methods to prevent cross-contamination that can occur from:

- Field clothing and personal protective equipment (PPE)
- Personal care products (PCPs)
- Food Ppckaging
- Sampling equipment
- Equipment decontamination
- Filtering of surface water
- Sample collection and handling
- Sample shipment

Contents

1. Potential Sources for PFAS Cross-Contamination

Potential sources for PFAS cross-contamination include items and materials used within the sampling environment, such as sampling equipment, field clothing, personal protective equipment (PPE), sun and biological protection products, personal hygiene, personal care products (PCPs), and food packaging. A detailed discussion about potential sources for PFAS cross-contamination is included in the **General PFAS Sampling Guidance**, which should be reviewed before reading this document. However, a high-level summary is presented in this guidance.

All of the items and materials discussed in each of the MDEQ's PFAS Sampling Guidance Documents are divided into three major groups:

- Prohibited (●) identifies items and materials that should not be used when sampling. It is well documented that they contain PFAS or that PFAS are used in their manufacture.

- Allowable (■) identifies items and materials that have been proven not to be sources of PFAS cross contamination and are considered acceptable for sampling.

- Needs Screening (▲) identifies items and materials that have the potential for PFAS cross-contamination due to a lack of scientific data or statements from manufacturers to prove otherwise. These items and materials are further sub-divided into two categories:

    - **Category 1:** Items and materials that will come in direct contact with the sample. These should not be used when sampling unless they are known to be PFAS-free, by collecting an equipment blank sample prior to use.

    - **Category 2:** Items and materials that will not come in direct contact with the sample. These should be avoided, if possible, unless they are known to be PFAS-free by collecting an equipment blank sample prior to use.

Please note that at this time no published research is available that documents the use of various materials and effect on sample results. Therefore, a conservative approach is recommended, and the guidance is based on the collection of multiple environmental samples at various PFAS sites. Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event.

A general overview of PFAS contamination sources during sampling can be found in **Section 4.2** of the **General PFAS Sampling Guidance**. Any items or materials utilized that are not identified in this guidance or not discussed in **Section 4.2** should be evaluated as described in **Section 4.2.1 of the General PFAS Sampling Guidance**.

Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event (see below).

1.1 Field Clothing and PPE

Materials, field clothing, and equipment screening should be performed during the QAPP development or the planning phase of sampling programs. The screening should be performed on all items and materials that are expected to come into contact with the samples and are defined as **Category 1.** Due to the extensive use of PFAS in many industries and

products, PPE may contain PFAS. During a PFAS investigation, PPE containing PFAS should be avoided to prevent cross-contamination.

As with any field mobilization, it is the responsibility of all personnel to be aware of the physical, chemical, and biological hazards associated with a particular site. Personal safety is paramount. The safety of staff should not be compromised by fear of PFAS-containing items or materials without any scientific basis. Any deviation from this guidance, including those necessary to ensure the health and safety of sampling personnel, should be recorded in field notes and discussed in the final report.

Any additional field clothing and/or PPE items that might be required for groundwater sampling and not discussed in this sampling guidance should be evaluated as described in **Sections 4.2.1** and **4.2.2** of the **General PFAS Sampling Guidance**.

NOTE: Special attention should be given to clothing that has been advertised as having waterproof, water-repellant, or dirt and/or stain characteristics. They are likely to have PFAS in their manufacturing.

Field sampling during wet weather (e.g., rainfall and snow) should be conducted while wearing the proper field clothing.

- ● Dust and fibers must not be allowed to collect on field clothing or PPE.
- ● Do not use clothing that has been advertised as waterproof, dirt and/or stain repellant that has not been verified to be made of PFAS-free materials.
- ■ Use powderless nitrile gloves
- ■ Only use clothing/PPE that has been verified to be made of PFAS-free materials.
- ▲ Latex gloves should be screened before use.

Powderless nitrile gloves should be changed frequently any time there is an opportunity for cross-contamination. See **Section 5** of this guidance for additional glove instructions.

1.2 Personal Care Products (PCPs)

A number of sampling guidance documents recommend that personal hygiene and PCPs (e.g., cosmetics, shampoo, sunscreens, dental floss, etc.) not be used prior to and on the day(s) of sampling because the presence of PFAS in these products has been documented (OECD, 2002, Fujii, 2013, Borg and Ivarsson, 2017). However, if the MDEQ's sampling SOPs are followed, these items should not come into contact with the sampling equipment or the sample being collected. As of the date of this sampling guidance, cross-contamination of samples due to the use of PCPs has not been documented during the collection of thousands of samples. However, field personnel should be aware of the potential of cross-contamination of the sampling equipment or actual samples would come into contact with these products. The following precautions should be taken when dealing with personal hygiene or PCPs before sampling:

- ● Do not handle or apply PCPs in the sampling area.
- ● Do not handle or apply PCPs while wearing PPE that will be present during sampling.
- ■ Move to the staging area and remove PPE if applying personal care products becomes necessary.
- ■ Wash hands thoroughly after the handling or application of PCPs and, when finished, put on a fresh pair of powderless nitrile gloves.

1.3 Food Packaging

PFAS has been used by the paper industry as a special protective coating against grease, oil, and water for paper and paperboards, including food packaging since the late 1950s (Trier et al., 2018). PFAS application for food packaging includes paper products that come into contact with food such as paper plates, food containers, bags, and wraps (OECD, 2002). Pre-wrapped food or snacks (such as candy bars, microwave popcorn, etc.) must not be in the sampling and staging areas during sampling due to PFAS contamination of the packaging. When staff requires a break to eat or drink, they should remove their gloves, coveralls, and any other PPE, if worn, in the staging area and move to the designated area for food and beverage consumption. When finished, staff should wash their hands and put on a fresh pair of powderless nitrile gloves at the staging area, before returning to the sampling area.

- ● Do not handle, consume, or otherwise interact with pre-wrapped food or snacks, carry-out food, fast food, or other food items while on-site during sampling.
- ■ Move to the staging area and remove PPE prior to leaving the sampling and staging areas if consuming food on site becomes necessary.

2. Groundwater Sampling Equipment

Do not use any equipment that contains any known fluoropolymers including, but not limited to:

- ● Do not use polytetrafluoroethylene (PTFE), that includes the trademark Teflon® and Hostaflon®, which can be found in many items, including but not limited to ball check-valves on certain bailers, the lining of some hoses and tubing, some wiring, certain kinds of gears, lubricant, and some objects that require the sliding action of parts.
- ● Do not use Polyvinylidene fluoride (PVDF), that includes the trademark Kynar®, which can be found in many items, including but not limited to tubing, films/coatings on aluminum, galvanized or aluminized steel, wire insulators, and lithium-ion batteries.
- ● Do not use Polychlorotrifluoroethylene (PCTFE), that includes the trademark Neoflon®, which can be found in many items, including but not limited to valves, seals, gaskets, and food packaging.
- ● Do not use Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel®, which can be found in many items, including but not limited to wire and cable insulation and covers, films for roofing and siding, liners in pipes, and some cable tie wraps.
- ● Do not use Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP, and may also include Neoflon®, which can be found in many items, including but not limited to wire and cable insulation and covers, pipe linings, and some labware.
- ● Do not use low density polyethylene (LDPE) for any items that will come into **direct contact** with the sample media. LDPE can be found in many items, including but not limited to containers and bottles, plastic bags, and tubing.
  - ▲ **However**, LDPE may be used if an equipment blank has confirmed it to be PFAS-free. LDPE does not contain PFAS in the raw material but may contain PFAS cross-contamination from the manufacturing process.
- ■ LDPE bags (e.g., Ziploc®) that **do not** come into direct contact with the sample media and do not introduce cross-contamination with samples may be used.

NOTE: Manufacturers can change the chemical composition of any product. As a result, all materials that will come into direct contact with the sample media (defined as Category 1) should be tested to confirm they are "PFAS-free," i.e. will not contaminate samples at detectable levels. **There is no guarantee that materials in the "Allowable" category will always be PFAS- free.**

● - Prohibited ■ - Allowable ▲ - Needs Screening

- ■ Use items and materials that are either made of high-density polyethylene (HDPE), polypropylene, silicone, polyvinyl chloride(PVC), or acetate.
- ■ Keep tubing in the original cardboard or bag in which it was shipped.
- ■ Store tubing in a clean location free of dust and fibers.
- ■ Use nylon line, cotton string, or other PFAS-free material when raising and lowering bailers.
- ■ When using bladder pumps, use pumps made of stainless steel with polyethylene bladders.
- ■ Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS have been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.
- ▲ In many submersible pumps, the O-Rings do not come into contact with the groundwater sample, and in this case, the O-Rings should be treated as internal pump components. The O-Rings present a low possibility of cross-contamination. Equipment blanks should be collected simulating actual field sampling procedures and not for individual pump components.

Field rental equipment companies offer “PFAS-free” bladder pumps; however, caution is advised, and an equipment rinsate blank is required. Rental equipment should be treated as being contaminated and only used after proper decontamination has been done.

Staff should follow the **MDEQ PFAS Sampling Quick Reference Field Guide** at the end of this document for approved and prohibited items for documenting and sampling groundwater for PFAS.

3. Equipment Decontamination

It is customary with groundwater sampling that the equipment is decontaminated before the sampling event. If the previous user of the equipment is not known, and it is unclear how the equipment was handled—especially rental equipment—decontaminate the equipment before sampling. Any **Category 1** non-dedicated sampling equipment (equipment used for more than one location) must be verified as PFAS free before use.

For non-dedicated **Category 1** sampling equipment, the following materials and procedures must be used for decontamination:

- ● Do not use Decon 90®.
- ■ Laboratory supplied PFAS-free deionized water is preferred for decontamination.
- ■ Alconox®, Liquinox®, and Citranox® can be used for equipment decontamination.
- ■ Sampling equipment can be scrubbed using a polyethylene or Polyvinyl chloride (PVC) brush to remove particulates.
- ■ Decontamination procedures should include triple rinsing with PFAS-free water.
- ■ Commercially available deionized water in an HDPE container may be used for decontamination if the water is verified to be PFAS-free.
- ▲ Municipal drinking water may be used for decontamination purposes if it is known to be PFAS-free.

NOTE: All samples must be collected using PFAS-free High-Density Polyethylene (HDPE), glass, or polypropylene bottles provided by the laboratory, with Teflon®-free caps.

4. Groundwater Sample Collection Methods

4.1 Method summary

Before a well is sampled, stagnant water in the well casing must be removed or purged in order to obtain a representative groundwater sample. The instruments most commonly used for purging by the MDEQ are bailers, submersible pumps, and inertia pumps. MDEQ staff may oversee purging and sampling conducted by noncontact gas bladder pumps, suction-lift pumps, and other pumps, but the MDEQ does not typically use these pumps. The MDEQ typically samples groundwater using bailers, or by low-flow methods utilizing a peristaltic pump.

Prior to purging, the water level in the well and the total depth of the well should be measured, using the procedures described in the QAPP to determine the volume of water in the well. When using a bailer, a minimum of three well volumes should be purged, unless the well runs dry. When using low-flow methods, purging should continue until the selected indicator parameters have stabilized (see **Section 4.7 Low-Flow Methods**).

Once purging is completed or the groundwater in the well recovers, the groundwater pH, temperature, specific conductance, and turbidity should be measured using the procedures described in the QAPP. After the correct sample containers have been prepared, sampling may proceed. Care should be taken when choosing the sampling device, since some devices may affect the integrity of the sample.

NOTE: Purging is mandatory in all cases where there is the potential for the data to be used for enforcement purposes.

Purging and sampling should occur in a progression from the least contaminated well to the most contaminated well, if this information is known; disposable equipment should be used for each well or equipment must be decontaminated prior to use and between each well.

4.2 Calculations

If it is necessary to calculate the volume of water in the well, use the following equation:

Well volume (gallons) = $\pi r^2 h$ (cf)
where:

r = radius of monitoring well (feet)
h = height of the water column (feet) (This may be determined by subtracting the depth to the water from the total depth of the well as measured from the same reference point.)
cf = conversion factor (gallons/linear foot) = 7.48 gal/ft^3

If the diameter of the monitoring well is known, standard conversion factors can be applied to simplify the equation above. Monitoring well diameters are typically two, three, four, or six inches.

Well volumes, in gallons per linear foot, for these common monitoring well diameters are as follows:

Well diameter	2-inches	3-inches	4-inches	6-inches
Volume (gal/ft.)	0.1632	0.3672	0.6528	1.4688

The volume of water in the well can then be calculated by multiplying the appropriate value of gallons per linear foot by the height of the water column in feet (h).

This well volume is typically tripled to determine the volume to be purged.

4.3 Preparation Procedures

The success of any sampling effort depends on thorough preparation. The following steps should be followed in preparing for groundwater well sampling:

1. Determine the extent of the sampling effort, the sampling methods to be used, and the types and quantities of equipment and supplies needed.
2. Develop and implement a site-specific sampling plan.
3. Prepare the schedule and coordinate with the laboratory, staff, contractors, and the regulated facility, as appropriate.
4. Obtain necessary sampling and monitoring equipment and supplies.
5. Decontaminate or preclean equipment, and ensure that it is in working order.
6. Perform a general site survey prior to site entry in accordance with the site-specific Health and Safety Plan (HASP), if appropriate.
7. Identify all monitoring wells to be sampled.
8. Start at the least contaminated well, if known.
9. Powderless nitrile gloves should be changed between each discrete task in the well purging and sampling process.
10. Remove the locking well cap; note the location, time of day, date and general weather conditions in the field logbook or Monitor Well and Groundwater Data Sheets.
11. Remove the well casing cap.
12. Lower the water level measuring device into the well until the water surface is encountered. Refer to the QAPP for specific water level measurement procedures.
13. Measure the distance from the water surface to a known reference measuring point on the well casing or protective barrier post and record the distance in the field logbook or Monitor Well and Groundwater Data Sheets. Alternatively, if no known reference point is available, note that the water level measurement is from the top of the steel casing, top of the riser pipe from ground surface, or some specific position on the well head.
14. Measure total depth of the well and record the depth in the field logbook or Monitor Well and Groundwater Data Sheets.
15. Calculate the volume of water in the well and the volume to be purged using the equations in **Section 4.2 Calculations**.

4.4 Purging Procedures

Wells should be purged to ensure that a representative sample is obtained. Generally, at a minimum, purging of three well volumes is effective. Bailers, submersible pumps, and inertia pumps are the purging devices most commonly used.

NOTE: Reference and utilize the *MDEQ Purge Water Disposal Policy* for detailed purge water disposal procedures.

- Purge water should be containerized, characterized, and properly disposed of. Sample results for the well can be used to assist in waste characterization.

  If no other option is available and only a small volume of purge water has been generated, purge water may be disposed of on the ground near the well.

- Do not dispose of purge water in a way that the disposal will exacerbate existing contamination.

4.4.1 Bailers

Bailers are the simplest purging device used and have many advantages. They generally consist of a rigid length of tube, with a ball check-valve at the bottom. A line is used to lower the bailer into the well and retrieve a volume of water.

Manual purging with bailers is best suited to shallow and/or narrow-diameter wells. For deep, larger-diameter wells that require purging large volumes of water, other devices may be more appropriate.

Procedures for purging with a bailer are as follows:

1. Determine the volume of water to be purged as described in **Section 4.2 Calculations.**
2. Attach the line to the bailer and slowly lower the bailer until it is completely submerged. Be careful not to drop the bailer to the water, as it causes turbulence and the possible loss of volatile organic contaminants. On the bailer's first trip down the well, it is good sampling practice to gently lower it to the bottom of the well casing so that the sampler has an adequate length of line in hand to bail the well dry, should it be needed.
3. Pull the bailer out in a manner that the line never touches the ground.
4. Empty the bailer into a graduated pail.
5. Collect and dispose of purge water in accordance with the *MDEQ Purge Water Disposal Policy* and any additional requirements in the site-specific sampling plan. If purge water is disposed of on the ground, this should be done away from the base of the well.

4.4.2 Submersible Pumps

The use of submersible pumps for purging is permissible, provided they are constructed of suitably noncontaminating materials. The chief drawback, however, is possible cross-contamination between wells. Although some units can be disassembled easily to allow surfaces contacted by contaminants to be cleaned, field decontamination may be difficult and require solvents that can affect sample analysis.

NOTE: Submersible pumps may be the only practical sampling device for extremely deep wells (greater than 300 feet of water). Under those conditions, it is recommended that dedicated pump systems be installed to eliminate the potential for cross-contamination of well samples.

The use of submersible pumps in multiple well-sampling programs should be carefully compared to other sampling mechanisms (e.g., bailers, peristaltic pumps). In many cases, a sample can be collected by a bailer after purging with a submersible pump.

Submersible pumps generally use one of two types of power supplies: electric or compressed gas. Electrically powered pumps can run off a 12-volt DC rechargeable

battery, or a 110 or 220-volt AC power supply. Pumps powered by compressed air normally use a small electric or gas-powered air compressor. They may also utilize compressed gas (i.e., nitrogen) from bottles. Differently sized pumps are available for different depth or diameter monitoring wells.

Procedures for purging with a submersible pump are as follows:

1. Determine the volume of water to be purged as described in **Section 4.2 Calculations**.
2. Assemble the pump, hoses, and safety cable, then lower the pump into the well. Make sure the pump is deep enough so that all the water is not evacuated (running the pump dry may cause damage).
3. Determine the volume of water purged by discharging purged water into a graduated pail or by attaching a flow meter to the outlet hose.
4. Use a ground fault circuit interrupter or ground the generator to avoid possible electric shock.
5. Connect the power supply and purge the well until the specified volume of water has been evacuated. If the pumping rate exceeds the well recharge rate, lower the pumping rate, lower the pump further into the well, and continue pumping.
6. Collect and dispose purge waters in accordance with the *MDEQ Purge Water Disposal Policy* and any additional requirements in the site-specific sampling plan. If purge water is disposed on the ground, this should be done away from the base of the well.

4.4.3 Inertia Pumps

Inertia pumps, such as the WaTerra® pump and piston pump, are manually operated. They are the most appropriate to use when wells are too deep to bail by hand, or too shallow, narrow, or inaccessible for a submersible pump. Inertia pumps are made of plastic or stainless steel and may be either decontaminated or discarded.

Procedures for purging with an inertia pump are as follows:

1. Determine the volume of water to be purged as described in **Section 4.2 Calculations.**
2. Assemble the pump and lower it to the appropriate depth in the well.
3. Begin pumping manually, discharging the water into a graduated pail. Purge until the specified volume of water has been evacuated.
4. Collect and dispose purge waters in accordance with the *MDEQ Purge Water Disposal Policy* and any additional requirements in the site-specific sampling plan. If purge water is disposed on the ground, this should be done away from the base of the well.

4.5 Representative Sample Collection

The primary goal in performing groundwater sampling is to obtain a representative sample of the aquifer or water-bearing zone. Groundwater sampling results can be compromised in two primary ways: collecting a non-representative sample or handling the sample incorrectly.

A monitoring well will have little or no vertical mixing of the water, and stratification will occur. The well water in the screened section will mix with the groundwater due to normal flow patterns, but the well water above the screened section will remain isolated, become stagnant, and may no longer be representative of the groundwater quality. Also, stagnant water may contain foreign material inadvertently or deliberately introduced from the surface, resulting in a non-representative sample. To safeguard against collecting non-representative stagnant water, the following guidelines and techniques should be adhered to during sampling:

1. As a general rule, all monitoring wells should be purged prior to sampling; see **Section 4.3 Purging Procedures.** To obtain a representative sample, a minimum of three volumes of water in the well casing should be purged. When using low-flow methods, purging should continue until the selected indicator parameters have stabilized. Indicator parameters typically used in low-flow purging include groundwater pH, specific conductivity, turbidity, temperature, dissolved oxygen and oxidation-reduction potential. The appropriate set of indicator parameters for the specific sampling event should be chosen by the project manager in advance of the sampling event. Alternatively, for low-yielding groundwater formations, the well can be pumped dry. For deeper wells, packers can be used to isolate a portion of the screened interval, minimizing the volume of groundwater that must be purged. In a high-yielding groundwater formation and where there is no stagnant water in the well above the screened section, purging is not as critical.
2. When purging with a pump, the pump should be set within the screened interval. When sampling a screened well, the sample should also be collected from the same depth within the screened interval at which the pump was set.
3. The well should be sampled as soon as possible after purging.
4. For wells that are pumped or bailed to dryness prior to the purging procedure being completed, the well should be allowed to recover (for up to, but no longer than, 24 hours) prior to collecting a sample.
5. A non-representative sample can also result from excessive pre-pumping of the monitoring well. Stratification of the constituent concentration in the groundwater formation may occur, or heavier-than-water compounds may sink to the lower portions of the aquifer. Excessive pumping can dilute or increase the constituent concentrations relative to those at the sampling point of interest.
6. A sampling methodology must be used that accounts for the effects of aquifer heterogeneities, while minimizing alterations in water chemistry that could result from sampling disturbances. The MDEQ will accept properly conducted purging methods designed to minimize drawdown, by controlling the flow from the well while monitoring stabilization indicator parameters, commonly referred to as low-flow methods. Available low-flow procedures include:

    - United States Environmental Protection Agency (USEPA), Office of Research and Development, Office of Solid Waste and Emergency Responses, EPA/540/S-95/504, April 1996, USEPA Ground Water Issue, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*, Robert Puls and Michael Barcelona
    - USEPA, Region 1, July 30, 1996, Revision 3, *Low Stress (Low-Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells*

4.6 Low-Flow Methods

Low-flow sampling involves the slow removal of a minimal amount of water from a well to ensure that stagnant water is removed and that water in the well is representative of water in the formation. The advantage of low-flow sampling is that, when conducted properly, it avoids

disrupting the formation and minimizes turbidity that can be introduced by other purging and sampling devices, such as bailers. Instead of removing a set volume of water from the well, low-flow sampling uses a pump (typically a peristaltic pump), set at a low rate of flow, to continuously remove water until a set of indicator parameters are stabilized.

Flow rates are typically on the order of 100 to 200 milliliters per minute (ml/min) and should never exceed 500 ml/min. Indicator parameters are measured using probes inside a flow through cell and may include pH, specific conductance, dissolved oxygen, oxidation-reduction (redox) potential, temperature, and turbidity. Not all indicators may be used for a specific sampling; staff is most likely to use pH, specific conductivity, temperature, and turbidity.

NOTE: For a detailed discussion of low-flow methods, see USEPA, Office of Research and Development, Office of Solid Waste and Emergency Responses, EPA/540/S-95/504, April 1996, USEPA Ground Water Issue, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*, Robert Puls and Michael Barcelona

5. Groundwater Sample Collection Procedures

Groundwater samples can be collected using bailers, submersible pumps, inertia pumps, and peristaltic pumps used for purging. Several factors must be considered when choosing a sampling device, and care should be taken when reviewing the advantages or disadvantages of any one device (see **Section 2 Groundwater Sampling Equipment**). It may be appropriate to use a sampling device different than that used to purge. The most common example of this is the use of a submersible pump to purge and a bailer to sample.

The following considerations should be taken during sample collection to prevent contamination:

- ● Dust and fibers must be kept out of sample bottles.
- ● The sample cap should never be placed directly on the ground during sampling.
  - ▲ If sampling staff must set the sample bottle cap down during sample collection and a second member of the sampling crew (wearing a fresh pair of powderless nitrile gloves) is not available, set the cap on a clean surface (cotton sheeting, HDPE sheeting, triple rinsed cooler lid, etc.).
- ● Do not sample without powderless nitrile gloves.
- ● Regular/thick size markers (Sharpie® or otherwise) are to be avoided; as they may contain PFAS.
- ■ Fine and Ultra-Fine point Sharpie® markers are acceptable to label the empty sample bottle while in the staging area provided the lid is on the sample bottle and gloves are changed following sample bottle labeling.
- ■ Ballpoint pens may be used when labeling sample containers. If ballpoint pens do not write on the sample container labels, preprinted labels from the laboratory may be used.
- ■ Hands should be well washed and gloved.
- ■ Use HDPE or polypropylene sample bottles with Teflon®-free caps, provided by the laboratory.
- ■ Commercialy bought sample bottles used with automatic sampling equipment should be decontaminated prior to sampling and equipment blank samples should be collected using laboratory supplied PFAS-free water.
- ■ Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS have been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect

the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.

- ■ Bottles should only be opened immediately prior to sampling.
- ■ Bottles should be capped immediately after collecting the sample.
- ■ Samples should be double bagged using resealable low density polyethelene (LDPE) bags (e.g., Ziploc®).
- ■ Follow any guidance or requirements in the PFAS analytical reference method that will be used for testing samples, for sample collection, storage, preservation, and holding times.
- ■ In the absence of formal USEPA guidance for PFAS groundwater sample storage, the documentation in USEPA Method 537 Rev. 1.1 should be used as a guide for thermal preservation (holding temperature) and holding times for groundwater or other samples. Samples must be chilled during storage and shipment and must not exceed 50°F (10º C) during the first 48 hours after collection. Samples stored in the laboratory must be held at or below 50°F (10°C) until extraction but should not be frozen.

NOTE: USEPA Method 537 Rev. 1.1 was developed for the analysis of finished drinking water samples **only**.

- ■ Groundwater samples should be extracted as soon as possible but must be extracted within 14 days. Extracts must be stored at room temperature and analyzed within 28 days after extraction.
- ▲ Off-brand markers should be known to be PFAS free prior to use.
- ▲ Latex gloves should be screened before use.

5.1 Bailers

1. Complete purging. Measure the groundwater pH, temperature, and specific conductance using the procedures described in the QAPP.
2. Assemble the appropriate sample containers, and label with appropriate sample labels.
3. Attach a nylon or cotton line to the bailer.
4. Lower the bailer slowly and gently into the well, attempt to minimize contact with the casing, and avoid splashing the bailer into the water. Stop lowering at a point adjacent to the screen.
5. Allow the bailer to fill and then slowly and gently retrieve the bailer from the well. Attempt to minimize contact with the casing, to ensure that flakes of rust or other foreign materials are not knocked into the bailer.
6. Remove the cap from the sample container and keep it in a gloved hand (two sample collection personnel may be needed).
7. Begin slowly pouring groundwater from the bailer into the sample container.
8. Replace the well cap once all sample containers are filled.
9. Cap the sample container tightly, label the container, and place the container in a temperature-controlled carrier.
10. Log all samples in the field logbook and on Monitor Well and Groundwater Data Sheets.
11. Package the samples for transport to the analytical laboratory. Complete chain-of-custody records.
12. Properly dispose of the bailer and line.

NOTE: For bailers especially, two sample collection personnel may be needed.

5.2 Submersible Pumps (Low-Flow Sampling)

1. Complete purging, keeping the pump approximately in the middle of the screened interval. Measure the groundwater pH, temperature, and specific conductance using the procedures described in the QAPP.
2. Assemble the appropriate sample containers, and label with the appropriate sample labels.
3. Reduce the purge water flow rate to a manageable sampling rate by adjusting the control box or by attaching a gate valve to the tubing (if not already fitted).
4. If the flow rate cannot be adjusted, run the water down the side of a clean jar and fill the sample containers from the jar.
5. Remove the pump and assembly. Dedicate the tubing to the monitoring well.
6. Replace the well cap once all sample containers are filled.
7. Cap the sample container tightly, label the container, and place it in a temperature-controlled carrier.
8. Log all of the samples in the field logbook and/or the Monitor Well and Groundwater Data Sheets.
9. Package the samples for transport to the analytical laboratory. Complete chain-of-custody records.
10. Decontaminate equipment in accordance with **Section 3 Equipment Decontamination**.

5.3 Inertia Pumps

1. Complete purging, keeping the pump approximately in the middle of the screened interval. Measure the groundwater pH, temperature, and specific conductance using the procedures described in the QAPP.
2. Assemble the appropriate sample containers, and label with appropriate sample labels.
3. Manually regulate the flow rate and discharge the sample from the pump outlet directly into the appropriate sample container.
4. Remove the pump from the well.
5. Replace the well cap once all sample containers are filled.
6. Cap the sample container tightly, label the container, and place it in a temperature-controlled carrier.
7. Log all samples in the field logbook and/or the Monitor Well and Groundwater Data Sheets.
8. Transport the samples to the decontamination zone, and package them for transport to the analytical laboratory. Complete chain-of-custody records.
9. Decontaminate equipment in accordance with **Section 3 Equipment Decontamination**.

5.4 Peristaltic Pumps (Low-Flow Sampling)

1. Determine that the indicator parameters (see **Section 4.4**) have stabilized. Complete purging, keeping the pump approximately in the middle of the screened interval. Record indicator parameters at 3-minute intervals.
2. Assemble the appropriate sample containers, and label with appropriate sample labels.
3. Collect samples.
4. Remove the pump and assembly. Dedicate the tubing to the monitoring well or properly dispose.
5. Replace the well cap once all sample containers are filled.
6. Cap the sample container tightly, label the container, and place it in a temperature-controlled carrier.
7. Log all samples in the field logbook and/or the Monitor Well and Groundwater Data Sheets.
8. Package the samples for transport to the analytical laboratory. Complete chain-of-custody records.
9. Decontaminate equipment in accordance with **Section 3 Equipment Decontamination**.

● - Prohibited ■ - Allowable ▲ - Needs Screening

When the depth to the water table exceeds 25 feet below grade, suction-lift mechanisms, such as peristaltic pumps, cannot be used to sample groundwater. A bladder or submersible pump can be used in the case when groundwater is located deeper than 25 feet below grade. Both of these pumps are submerged beneath the water table and will come into contact with the groundwater being sampled.

6. Field Quality Assurance/Quality Control

Sample blanks and duplicates are the primary means of assuring and assessing quality control during sample collection or transport.

Field blanks consist of:

- **Equipment blanks**
  - Equipment blanks consist of laboratory verified PFAS-free water poured over (for equipment such as static water level indicators) or through (for equipment such as pumps, bailers and flow through cells) the sampling equipment, collected in laboratory-supplied sample containers, and analyzed.
  - Equipment blanks should be collected prior to the first use of sampling equipment in the field (particularly if there is any uncertainty as to whether the equipment is constructed from PFAS containing materials) and occasionally after decontamination.
  - Equipment blanks should be collected from a representative sample of disposable sampling equipment (one bailer from a box, a length of tubing from a roll) to document that these items are not contributing PFAS to groundwater samples.
  - In the field, equipment blanks should be collected at a minimum frequency of one per day (or at a different frequency as specified in the sampling plan).

NOTE: Refer to the specific sampling plan to determine the appropriate number and frequency regarding field quality assurance and quality control.

- **Trip blanks**
  - Trip blanks consist of laboratory-verified PFAS-free water in a laboratory-supplied sample container. Trip blanks travel with the field samples and are analyzed in the same batch.
  - Typically trip blanks are collected to assess the potential cross contamination from VOCs. The current MDEQ minimum analyte PFAS list does not contain PFAS that are volatile.
  - Trip blanks could be used to evaluate the potential cross-contamination present the lab in the containers or deionized water provided from the lab.

- **Field blanks**
  - Field blanks consist of laboratory verified PFAS-free water in a laboratory supplied sample container.
  - A field blank is opened at the sampling site and exposed to ambient conditions for approximately the same amount of time as an actual sampling container (generally 1 to 3 minutes). Alternately, the PFAS—free water can be poured from one sample container into another to mimic sample collection activities. The field blank then travels with the field samples and is analyzed in the same batch.
  - A field blank must be collected once every twenty samples (or at a different frequency as specified in sampling plan) or once during any sampling event, when an ambient source of PFAS (particularly atmospheric) is suspected.
  - If an atmospheric source of PFAS is suspected, collect the equipment blank downwind of the suspected source

- **Field duplicates**
  - Groundwater sample duplicates are two samples collected immediately sequentially from the same well. Duplicate samples should be labeled to prevent anyone, other than the sample collector, from knowing which specific well(s) are being duplicated.
  - Duplicates are analyzed in the same batch and serve as a quality check on the accuracy and precision of sampling procedures.
  - Duplicates are recommended once every ten samples or once per day (whichever is less; or at a different frequency as specified in the sampling plan.

7. Filtration

Filtering of the groundwater samples is sometimes necessary. PFAS can adsorb to particulate matter, and unfiltered samples may result in high biased results. However, the filter material should be carefully evaluated. A study between four different filter materials (PTFE, glass, polyethersulfone [PES], and nylon) found that glass filters adsorbed the least amount of PFAS and nylon adsorbed the most and is therefore not recommended for PFAS sampling.

NOTE: It is recommended that filtering of the samples should **only be performed in the laboratory** in order to reduce the possibility of cross contamination.

The following recommendations should be used when considering filtering of the samples:

- 🔴 **Field filtration of the sample is generally not advised.**
  - 🟡 If filtering is absolutely necessary, if specifically requested by a client or for other reasons:
    - 🔴 Do not use any filters that contain any PFAS, such as PTFE filters
    - 🔴 Do not use nylon filters.
    - 🟢 Glass filters are recommended to be used.
    - 🟢 Consider use of a centrifuge in the laboratory to reduce the need for sample filtering.

8. Sample Shipment

Once the sample is collected in laboratory-supplied containers, the following recommendations should be used for sample shipment:

- 🟢 Check the cooler periodically to ensure samples are well iced and at the proper temperature.

🔴- Prohibited 🟢- Allowable 🟡- Needs Screening

- Refresh with regular ice, if needed, double bagged in LDPE resealable storage bags if needed.
- Regular ice should be used to cool and maintain the sample at or below the proper temperature.
  - ▲ Chemical or blue ice may be used if it is known to be PFAS-free and it is absolutely certain that the sample is cooled and maintained at or below the proper temperature during collection and through transit to the laboratory.
- Complete the appropriate Monitor Well and Groundwater Data Sheets.
- Shipping containers should be packed with enough PFAS-free noncombustible, absorbent, cushioning material, such as bubble wrap, to minimize the possibility of breakage.
- Complete a Chain of Custody (COC) form for each separate shipping container. The forms should be hand-carried to the laboratory by the sampler.
- If unable to hand-carry the COC and other forms to the laboratory, forms should be single bagged in LDPE (e.g. Ziploc®) storage bags and taped to the inside of the cooler lid.
- The cooler should be taped closed with a custody seal and, if shipping, shipped by overnight courier.
- Samples should be shipped as soon as possible (e.g. overnight) to ensure the samples arrive within the analytical holding time specified by the lab.

NOTE: Chain-of-custody procedures must be followed and documented.

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Michigan Department of Environmental Quality

MDEQ PFAS Sampling Quick Reference Field Guide[1]

All Items Used During Sampling Event

● Prohibited
• Items or materials that contain fluoropolymers such as o Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon® o Polyvinylidene fluoride (PVDF), that includes the trademark Kynar® o Polycholotrifluoroethylene (PCTFE), that includes the trademark Neoflon ® o Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel® o Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP • Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲Needs Screening[2]
• Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape)	• High-density polyethylene (HDPE) • Low-density polyethylene (LDPE) tubing • Polypropylene • Silicone • Stainless-steel • Any items used to secure sampling bottles made from: o Natural rubber o Nylon (cable ties) o Uncoated metal springs o Polyethylene	• Any items or materials that will come into direct contact with the sample that have **not** been verified to be PFAS-free o Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps	• Glass jars[4] • Laboratory-provided PFAS-Free bottles: o HDPE or polypropylene • Regular wet ice • Thin HDPE sheeting • LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media[6]	• Aluminium foil[4] • Chemical or blue ice[5] • Plastic storage bags other than those listed as ■ Allowable • Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Clipboards coated with PFAS • Notebooks made with PFAS treated paper • PFAS treated loose paper • PFAS treated adhesive paper products	• Loose paper (non-waterproof, non-recycled) • Rite in the Rain® notebooks • Aluminium, polypropylene, or Masonite field clipboards • Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers	• Plastic clipboards, binders, or spiral hard cover notebooks • All markers not listed as ■ Allowable • Post-It® Notes or other adhesive paper products • Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲Needs Screening[2]
• Decon 90® • PFAS treated paper towel	• Alconox®, Liquinox®, or Citranox® • Triple rinse with PFAS-free deionized water • Cotton cloth or untreated paper towel	• Municipal water • Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲Needs Screening[2]
• New or unwashed clothing • Anything made of or with: o Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: o Fabric softeners o Fabric protectors, including UV protection o Insect resistant chemicals o Water, dirt, and/or stain resistant chemicals	• Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: o Polyurethane o Polyvinyl chloride (PVC) o Wax coated fabrics o Rubber / Neoprene o Uncoated Tyvek®	• Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
• No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE.	• Brought and consumed only outside the vicinity of the sampling area: o Bottled water o Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection[6]

● Prohibited	■ Allowable	▲Needs Screening[2]
• Any PCPs[6], sunscreen, and insect repellent applied in the sampling area.	PCPs[6], sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands: **PCPs[6]:** • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs[6] **Sunscreens:** • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 **Insect Repellents:** • OFF® Deep Woods • Sawyer® Permethrin	• Products other than those listed as ■Allowable

[1] This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

[2] Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

[3] **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

[4] **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

[5] Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8˚F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

[6] Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.

●- Prohibited ■- Allowable ▲- Needs Screening

APPENDIX D

MILWAUKEE WATER WORKS CONSUMER CONFIDENCE REPORT & ANALYTICAL DATA

Milwaukee Water Works

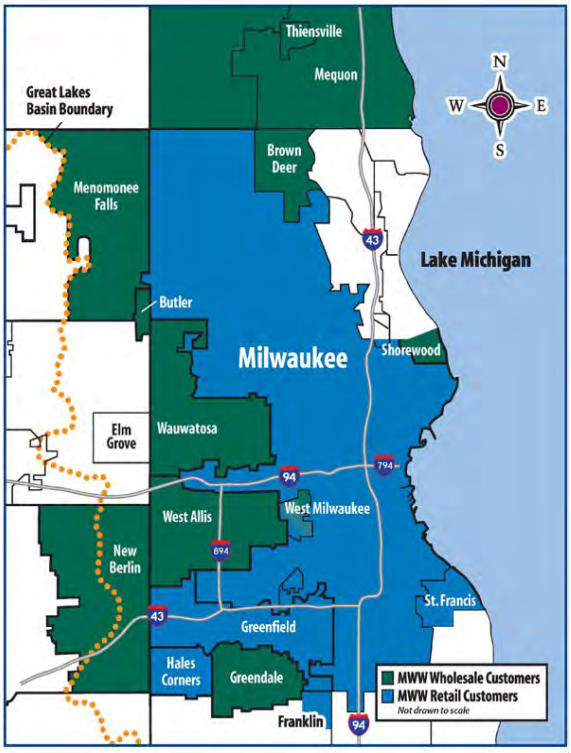
2019 Consumer Confidence Report

2019 Reporte de Confianza del Consumidor

The U.S. Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (DNR) require drinking water utilities to provide an annual Consumer Confidence Report to help consumers understand where their drinking water comes from, so they can make informed decisions about their health and protection of the environment. In this report, you will find:

- Information about the source of your drinking water
- The treatment process that ensures the highest quality water
- Results of 2019 water quality testing and compliance with water quality laws and standards
- Additional educational information and public health announcements

Visit https://Milwaukee.gov/water for more information.



Milwaukee Water Works

The City of Milwaukee-owned public utility provides pure, safe water to approximately 867,000 people in Milwaukee and across 16 communities:

Wholesale Customers: Brown Deer, Butler, Greendale, Menomonee Falls, Mequon, Milwaukee County Grounds, New Berlin, Shorewood, Thiensville, Wauwatosa, and West Allis.

Retail Customers: Greenfield, Hales Corners, a portion of Franklin, St. Francis, and West Milwaukee.

Participate in decisions regarding your water

Attend City of Milwaukee Common Council Public Works Committee meetings, which occur regularly each month in Milwaukee City Hall, Room 301B, 200 East Wells Street, Milwaukee, WI 53202. You may also attend City of Milwaukee Common Council meetings, which meet in the Milwaukee City Hall, 3rd Floor Common Council Chambers, 200 East Wells Street, Milwaukee, WI 53202. Common Council meeting dates vary. Please contact the City Clerk for the schedule at (414)286-2221, or visit https://Milwaukee.gov/cityclerk/PublicRecords/Agendas.htm.

Important Information
This report contains important information about your drinking water. Translate it, or speak with someone who understands it.

Información Importante
Este informe contiene información muy importante sobre su agua de beber. Tradúzcalo o hable con alguien que lo entienda bien.

Lug tseem ceeb rua cov siv dlej kws has lug Moob
Ntawm nuav yog cov lug tseem ceeb qha txug kev haus dlej nyob nroog Milwaukee. Yog mej nyeem tsi tau cov lug nuav, thov lwm tug txhais rua mej.

Braille

This material is available in alternative formats for individuals with disabilities upon request. Please contact the City of Milwaukee ADA Coordinator via phone at (414) 286-3475 or email ADACoordinator@milwaukee.gov. Please provide a 72-hour advance notice for large print and seven days for Braille documents.

Large Print

Milwaukee's Source Water Comes from Lake Michigan

Milwaukee's drinking water comes from Lake Michigan, a surface water source. The most recent DNR Source Water Assessment for Milwaukee is available online under "Resources" at https://Milwaukee.gov/water/WaterQuality. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants, or substances, that may be present in source water include:

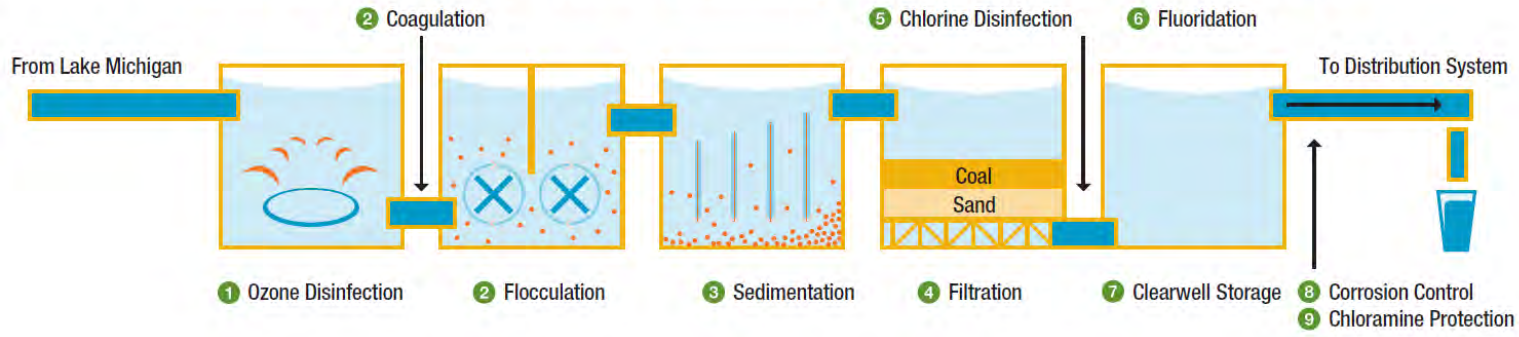
- **Microbial contaminants**, such as viruses, protozoa, and bacteria, may come from leaky sewer pipes, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or the result of oil and gas production and mining activities.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's safe drinking water hotline (800-426-4791) or at:

https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

In order to ensure that tap water is safe, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Milwaukee Water Works maintains a nationally recognized water monitoring program to assure all treated water meets or exceeds local, state, and federal regulations.

Milwaukee Water Works Drinking Water Treatment Process



(1) **Ozone disinfection**: Ozone gas is bubbled through the incoming lake water. Ozone destroys disease-causing microorganisms including *Giardia* and *Cryptosporidium*, controls taste and odor, and reduces the formation of chlorinated disinfection byproducts.

(2) **Coagulation and Flocculation**: Aluminum sulfate is added to the water to neutralize the charge on microscopic particles. The water is then gently mixed to encourage suspended particles to stick together to form "floc."

(3) **Sedimentation**: Sedimentation is the process in which floc settles out and is removed from the water.

(4) **Biologically Active Filtration**: The water is slowly filtered through 24" of anthracite coal and 12" of crushed sand to remove very small particles.

(5) **Chlorine Disinfection**: After filtration, chlorine is added as a secondary disinfectant to provide extra protection from potentially harmful microorganisms.

(6) **Fluoridation**: Fluoride, when administered at low levels, is proven to help prevent tooth decay.

(7) **Clearwell Storage**: Treated water is stored in deep underground tanks and pumped as needed through the distribution.

(8) **Corrosion Control**: A phosphorus compound is added to help control corrosion of pipes. This helps prevent lead and copper from leaching from plumbing into water.

(9) **Chloramine Protection**: Ammonia changes the chlorine to chloramine, a disinfectant that maintains bacteriological protection in the distribution system.

Reading the Water Quality Tables

The following tables show regulated and unregulated contaminants, or substances, detected in Milwaukee's drinking water in 2019. It also includes all substances tested for in the mandatory EPA monitoring program, most recently the Fourth Unregulated Contaminant Monitoring Rule (UCMR-4). **All contaminants detected continue to meet or exceed local, state, and federal drinking water standards for health and safety**. The tables contain the name of each substance, the highest level allowed by regulation (maximum contaminant level, MCL), the ideal goals for public health (MCLG), the amount detected, and the usual sources of such contamination. The presence of a substance in drinking water does not necessarily indicate the water poses a health risk. Certain quantities of some substances are essential for good health, but excessive quantities can be hazardous.

Definitions	
Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirement that a water system must follow. Action levels are reported at the 90th percentile for homes at greatest risk.
Health Advisory (HA)	An estimate of acceptable drinking water levels for a chemical substance based on health effects information; a health advisory is not a legally enforceable federal standard, but serves as technical guidance to assist federal, state, and local officials.
Maximum contaminant level (MCL)	The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum contaminant level goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Maximum residual disinfectant level (MRDL)	The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for the control of microbial contaminants.
Maximum residual disinfectant level goal	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
Treatment technique (TT)	A required process intended to reduce the level of a contaminant in drinking water.
Turbidity	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms may include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Unit abbreviations	
<	"less than" or not detected
-log[H^+]	pH measurements are expressed as the negative base 10 logarithm of the hydrogen ion concentration
NA	not applicable
NR	not regulated
NTU	nephelometric turbidity unit (a unit to measure turbidity)
ppb	parts per billion (microgram per liter)
ppm	parts per million (milligram per liter)
ppq	parts per quadrillion (picograms per liter)
ppt	parts per trillion (nanogram per liter)
pCi/L	picocuries per liter: a measure of radioactivity
RAA	running annual average: the average of four quarterly samples collected in one year

Primary and Secondary Drinking Water Standards

The EPA has National Primary Drinking Water Regulations that set water quality standards for contaminants, or substances, in public drinking water. These standards are referred to as maximum contaminant levels (MCLs), which are established to protect public health, and are legally enforceable above the allowed MCL. The EPA has also established National Secondary Drinking Water Regulations that set non-mandatory standards for potential water-quality substances. These secondary substances are not currently considered a risk to human health, but instead, act as guidelines for drinking water aesthetics such as taste, odor, and color.

Primary Substances Detected	Ideal Goal (MCLG)	Highest Level Allowed (MCL)	Median Value	Range	Meets Standard	Typical Source of Substance
Barium (ppm)	2	2	0.02	0.02	Yes	Drilling waste discharge; metal refineries discharge; erosion of natural deposits
Chlorine, Total (ppm)	4 (MRDLG)	4 (MRDL)	1.52	1.07 - 1.86	Yes	Water additive used to control microbes
Copper (ppm)	1.3 (AL)	1.3 (AL)	0.0014	< 0.001 - 0.0014	Yes	Corrosion of household plumbing systems; erosion of natural deposits
Disinfection By-Products						
Bromate (ppb)	0	10 RAA	3.1	1.1 - 6.0	Yes	By-product of drinking water disinfection
Chlorite (ppm)	0.8	1	< 0.002	< 0.002 - 0.068	Yes	By-product of drinking water disinfection
Haloacetic Acids [HAA5] (ppb)	NA	60	1.7	< 1.0 - 3.3	Yes	Byproduct of drinking water disinfection
Total Trihalomethanes [TTHM] (ppb)	NA	80	5.4	2.4 - 14.8	Yes	Byproduct of drinking water disinfection
Fluoride (ppm)	4.0	4.0	0.55	0.03 - 0.66	Yes	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Heterotrophic plate count	NA	TT	Met standard	Met standard	Yes	Naturally present in the environment; runoff from fertilizer use; leeching from septic tanks sewage; erosion of natural deposits
Nitrate, as N (ppm)	10	10	0.33	0.29 - 0.41	Yes	Runoff from fertilizer use; leeching from septic tanks sewage; erosion of natural deposits
Nitrite, as N (ppm)	NA	1	0.002	0.001 - 0.007	Yes	Runoff from fertilizer use; leeching from septic tanks sewage; erosion of natural deposits
Radionuclides (August 17, 2015)						
Gross alpha (pCi/L) [excluding Ra and U]	NA	15	1.86	0.30 - 3.42	Yes	Erosion of natural deposits
Gross alpha (pCi/L) [including Ra and U]	NA	15	2.03	0.46 - 3.60	Yes	Erosion of natural deposits
Gross beta (pCi/L)	NA	50	3.90	3.70 - 4.00	Yes	Decay of natural and manmade deposits
Radium (pCi/L) [Ra 226 + Ra 228]	NA	5	1.20	0.89 - 1.51	Yes	Erosion of natural deposits
Turbidity (NTU)	NA	< 0.300 95% of time	0.020	0 - 0.940 (1 day max)	Yes	Soil runoff

Secondary Substances Detected	Highest Level Allowed (MCL)	Median Value	Range	Meets Standard	Typical Source of Substance
Aluminum (ppm)	0.05-0.20	0.082	0.073 - 0.091	Yes	Water treatment additive, natural deposits
Chloride (ppm)	250	14.9	13.6 - 25.6	Yes	Natural deposits and road salts
Odor	3	1	1	Yes	Naturally present in the environment
pH (-log [H^+])	6.5 - 8.5	7.64	7.27 - 8.01	Yes	Naturally present in the environment
Sulfate (ppm)	250	26	26	Yes	Natural deposits
Total Dissolved Solids (ppm)	500	181	170 - 213	Yes	Aggregate of dissolved minerals

Monitoring for *Cryptosporidium* and Other Contaminants

Milwaukee Water Works maintains an extensive, nationally recognized water quality monitoring program. The utility tests for approximately 500 substances to ensure safe water, increase understanding of how substances affect public health, and meet future regulations. Below are unregulated substances that were detected in treated water in 2019. A full list of undetected substances can be found under "Resources" at https://Milwaukee.gov/water/WaterQuality.

***Cryptosporidium* was not detected in any of the source water or finished drinking water samples collected in 2019**. Additionally, no *Giardia*, Reovirus, or Enterovirus were detected in MWW drinking water in 2019.

Substance Detected	Range of Results	Typical Source of Substance
Acesulfame-K (ppb)	0.05 - 0.06	Artificial sweetener
Acetaldehyde (ppb)	< 5 - 15	Byproduct of drinking water disinfection
Acetone (ppb)	< 2.0 - 2.3	Manufacturing; solvent
Aldehydes, Total (ppb)	< 5 - 15	Byproduct of drinking water disinfection
Ammonia, as N (ppm)	0.12 - 0.23	Disinfection with chloramines; wastes; fertilizers and natural processes
Boron (ppb)	22	Naturally occurring; borax mining and refining; boric acid manufacturing
Bromide (ppb)	12 - 28	Naturally occurring
Bromochloroacetonitrile (ppb)	< 0.4 - 0.8	Byproduct of drinking water disinfection
Calcium (ppm)	33	Naturally occurring
Chlorate (ppb)	31 - 272	Byproduct of drinking water disinfection
Chromium, hexavalent (ppb)	0.17 - 0.21	Natural deposits and manufacturing
Cotinine (ppt)	< 1 - 1	Metabolic byproduct of tobacco smoking
Dibromoacetonitrile (ppb)	< 0.4 - 0.8	Byproduct of drinking water disinfection
Dichloroacetonitrile (ppb)	< 0.5 - 0.5	Byproduct of drinking water disinfection
1,1-Dichloropropanone (ppb)	< 0.5 - 1.2	Byproduct of drinking water disinfection
Lithium (ppb)	2.2	Naturally occurring
Magnesium (ppm)	11	Naturally occurring
N-Nitrosodimethylamine (NDMA)(ppb)	< 2.0 - 2.3	Disinfection with chloramines; rocket fuel; pesticides
Perchlorate (ppb)	0.12 - 0.14	Naturally occurring; manufacturing of rocket fuels, fireworks, munitions
Perflorohexanoic acid [PFHxA] (ppt)	< 2.0 - 2.2	Waterproofing; textile manufacturing
Perfluorooctane sulfonate [PFOS] (ppt)	< 2.0 - 2.6	Waterproofing; textile manufacturing; used in fire fighting foams
Perfluorocatanoic acid [PFOA] (ppt)	< 2.0 - 2.3	Waterproofing; textile manufacturing; used in fire fighting foams
o-Phosphate as PO_4 (ppm)	0.31 - 4.65	Byproduct of drinking water treatment
Phosphorus as P (ppm)	0.59 - 0.74	Naturally occurring
Potassium (ppm)	1.4	Naturally occurring
Rubidium (ppb)	1.1	Naturally occurring
Silica (ppm)	1.7 - 1.9	Naturally occurring
Sodium (ppm)	9.1 - 10.0	Natural deposits and road salt
Strontium (ppb)	120	Natural deposits
Sucralose (ppt)	34 - 36	Artificial sweetener
Total Organic Carbon (ppm)	1.27 - 1.75	Naturally present in the environment
Total Solids (ppm)	160	Measure of solid materials in water
Trichloroacetonitrile (ppb)	< 0.5 - 0.5	Byproduct of drinking water disinfection
1,1,1-Trichloropropanone (ppb)	0.5 - 1.6	Byproduct of drinking water disinfection
Tris(chloropropyl) phosphate (ppb)	0.01	Flame retardant

Fourth Unregulated Contaminants Monitoring Rule (UCMR-4)(2018)

The Unregulated Contaminant Monitoring Rule (UCMR) was established by the EPA as part of the Safe Drinking Water Act Amendments of 1996. Every five years, in compliance with the EPA, Milwaukee Water Works collects data on potential contaminants that are not yet regulated but are known, or anticipated, to occur in public water systems. These data help the EPA determine if future regulations are needed for contaminants of concern.

UCMR-4 Assessment Monitoring (2018)	Median Value	Highest Detected	Typical source of substance
alpha-Hexachlorocyclohexane (ppt)	< 0.0100	< 0.0100	Pesticide
1-Butanol (ppb)	< 2.00	< 2.00	Solvent, food additive
Butylated hydroxyanisole (ppt)	< 0.300	< 0.300	Food additive (antioxidant)
Chlorpyrifos (ppt)	< 0.0300	< 0.0300	Organophosphate, insecticide, acaricide, miticide
Dimethipin (ppt)	< 0.200	< 0.200	Herbicide and plant growth regulator
Ethoprop (ppt)	< 0.030	< 0.030	Insecticide
Germanium (ppt)	< 0.300	< 0.300	Naturally occurring element
Manganese (ppt)	< 0.400	0.520	Naturally occurring element
2-Methoxyethanol (ppt)	< 0.400	< 0.400	Synthetic cosmetics, perfumes, fragrances, hair preparations, skin lotions
o-Toluidine (ppq)	< 7.00	< 7.00	Dyes, rubber, pharmaceuticals, pesticide
Oxyfluorfen (ppt)	< 0.500	< 0.500	Herbicide
Permethrin cis & trans (ppt)	< 0.040	< 0.040	Insecticide
Profenofos (ppt)	< 0.300	< 0.300	Insecticide and acaricide
2-Propen-1-ol (ppt)	< 0.500	< 0.500	Flavorings, perfumes
Quinoline (ppt)	< 0.020	< 0.020	Anti-malarial pharmaceutical, flavoring agent
Tebuconazole (ppt)	< 0.200	< 0.200	Fungicide
Tribufos (ppt)	< 0.070	< 0.070	Insecticide, cotton defoliant

UCMR-4 Assessment Monitoring of Cyanotoxins (2018)	Median Value	Highest Detected	Typical source of substance
Anatoxin-a (ppt)	< 30	< 30	Source water
Cylindrospermopsin (ppt)	< 90	< 90	Source water
Total Microcystins & Nodularins (ppb)	< 0.300	< 0.300	Source water

UCMR-4 Assessment Monitoring of Surface Water Indicators (2018)	Median Value	Highest Detected	Typical source of substance
Bromide (ppb)	33.1	35.3	Source water
Total Organic Carbon [TOC] (ppm)	1.825	2.010	Source water

UCMR-4 Assessment Monitoring of Distribution Water (2018)	Median	Highest Detected	Typical source of substance
Bromochloroacetic acid [BCAA] (ppb)	0.862	1.180	Byproduct of drinking water disinfection
Bromodichloroacetic acid [BDCAA] (ppb)	0.762	1.090	Byproduct of drinking water disinfection
Chlorodibromoacetic acid [CDBAA] (ppb)	0.421	0.524	Byproduct of drinking water disinfection
Dibromoacetic acid [DBAA] (ppb)	0.389	0.504	Byproduct of drinking water disinfection
Dichloroacetic acid [DCAA] (ppb)	1.505	2.020	Byproduct of drinking water disinfection
Monobromoacetic acid [MBAA] (ppb)	< 0.300	< 0.300	Byproduct of drinking water disinfection
Monochloroacetic acid [MCAA] (ppb)	< 2.00	< 2.00	Byproduct of drinking water disinfection
Tribromoacetic acid [TBAA] (ppb)	< 2.00	< 2.00	Byproduct of drinking water disinfection
Trichloroacetic acid [TCAA] (ppb)	0.779	1.260	Byproduct of drinking water disinfection
HAA5 Total (ppb)	2.575	3.398	Byproduct of drinking water disinfection
HAA6 Br Total (ppb)	2.325	3.075	Byproduct of drinking water disinfection
HAA9 Total (ppb)	4.523	5.951	Byproduct of drinking water disinfection

Lead and Copper Rule (2017)

In 2017, in compliance with the US EPA and Wisconsin DNR, Milwaukee Water Works completed Lead and Copper Rule (LCR) testing. In order to remain in compliance with EPA regulations, 90th percentile levels must be below 15 ppb for lead and 1300 ppb for copper. Milwaukee Water Works is conducting LCR testing again in 2020.

Lead and Copper (2017)	Action Level	90th percentile	Highest Detected	Number of Sites at Action Level	Number of Sites Exceeding Action Level
Copper (ppb)	1300	**46.0**	110	0	0
Lead (ppb)	15.0	**7.2**	130	1	2

Optimal Water Quality Parameters (2017)	Minimum	Mean	Median	Maximum
Alkalinity, Total (ppm)	102	104	103	112
Hardness, Total (ppm)	130	135	140	140
Conductivity (µmhos cm^{-1})	310	318	320	320
Chloride (ppm)	14.0	14.9	15.0	16.0
Sulfate (ppm)	25.0	27.7	28.0	30.0
Phosphorus (ppm)	0.53	0.60	0.60	0.71
Calcium (ppm)	34.0	34.8	35.0	37.0
Iron (ppm)	0.02	0.05	0.04	0.10
Magnesium (ppm)	11.0	12.0	12.0	12.0
Aluminum (ppb)	36.0	94.8	82.0	240
Manganese (ppb)	0.14	1.03	0.79	3.30

Lead and Copper Public Safety

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Milwaukee Water Works is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for three minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Additional information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the EPA at https://EPA.gov/safewater/lead.

Guidelines regarding lead

- Occupants of buildings where lead service lines are present should adequately flush water lines after prolonged periods of stagnation to reduce potential lead hazards, but the use of NSF/ANSI Standard 53 certified lead filters is the most thorough means of lead-water safety.
- At-risk populations of women and children living in buildings where lead service lines are present, including women who are pregnant, may become pregnant (woman ages 15-45) or are breastfeeding, and children up to the age of 6, should drink and cook only with water that has been filtered with an NSF/ANSI Standard 53 lead certified filter.
- If using water directly from the faucet (without a filter), only cold water that has been well-flushed for a minimum of three minutes should be used. Not running your water for the recommended length of time may increase your risk of lead exposure.
- To learn more, visit MWW Lead and Water at https://Milwaukee.gov/WaterQuality/LeadAndWater.

Lead-Safe Milwaukee
SAFE PAINT SAFE WATER SAFE KIDS

Other Compliance

Deficiency description: Milwaukee Water Works was notified of the following deficiency on August 6, 2019, "System is not implementing a comprehensive Cross-Connection Control Program," with a scheduled correction date of March 31, 2020.

Actions taken: The Milwaukee Water Works developed a Cross-Connection Control Plan to meet the March 31, 2020 deadline. A cross-connection is any actual or potential physical connection between a drinking water system and a source or system of non-drinkable water or substances. An example is a hose connected to a laundry tub faucet that is submerged in a sink below filled with soapy water. This plan is the result of a two-year redesign of the utility's Cross-Connection Control Program. The program will bring MWW into compliance with NR 810.15 by December 31, 2021 per WDNR order.

Other Educational Information

Cryptosporidium

Cryptosporidium is a microscopic protozoan that, when ingested, can result in diarrhea, fever, and other gastrointestinal symptoms. The Milwaukee Water Works and Milwaukee Health Department consider *Cryptosporidium* detection a priority, and since 1993, have continued to test Lake Michigan source water and treated water for *Cryptosporidium*. *Cryptosporidium* is found in many surface water sources (lakes, rivers, streams) and comes from human and animal wastes in the watershed. The risk of *Cryptosporidium* infection from drinking water has been reduced to extremely low levels by an effective treatment combination (*see* page 2), which places Milwaukee Water Works in the Bin 1 classification (lowest risk) for *Cryptosporidium* treatment requirements set by the DNR.

The Milwaukee Water Works provides a brochure based on EPA and CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium.* Obtain a copy from our Customer Service Center, (414) 286-2830, or at https://Milwaukee.gov/water/WaterQuality and scroll down to Resource Links, choose "Information for persons with weakened immune systems."

Information for Those with Compromised Immune Systems and/or Vulnerable Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available at https://CDC.gov/parasites/crypto/audience-immune-compromised.html and at https://CDC.gov/parasites/water.html and from the EPA's safe drinking water hotline at 1-800-426-4791.

Notice to Parents of Infants Six Months of Age or Younger

According to the CDC, the proper amount of fluoride, from infancy and at all ages throughout life, helps prevent and control tooth decay (cavities). Therefore, the Milwaukee Water Works, following public health recommendations, maintains a level of fluoride in our drinking water that is both safe and effective. The following is an advisory regarding fluoride and young infants:

The American Academy of Pediatrics recommends exclusive breastfeeding for the first six months of a child's life, followed by continued breastfeeding as complementary foods are introduced, for optimal short– and long-term health advantages. For more information, visit: https://pediatrics.aappublications.org/content/129/3/e827.

As of August 31, 2012, Milwaukee water is fluoridated at a level not to exceed 0.7 mg/L. According to the CDC, for infants up to six months of age, if tap water is fluoridated or has substantial natural fluoride (0.7 mg/L or higher) and is being used to dilute infant formula, a parent may consider using a low-fluoride alternative water source. Bottled water known to be low in fluoride is labeled as purified, deionized, demineralized, distilled, or prepared by reverse osmosis. Ready-to-feed (no-mix) infant formula typically has little fluoride and may be preferable at least some of the time. If breastfeeding is not possible, parents should consult a pediatrician about an appropriate infant formula option. Parents should be aware that there may be an increased chance of mild dental fluorosis if the child is exclusively consuming infant formula reconstituted with fluoridated water. Dental fluorosis is a term that covers a range of visible changes to the enamel surface of the tooth. For more information on dental fluorosis and the use of fluoridated drinking water in infant formula, go to https://CDC.gov/fluoridation.

Contact Us

Milwaukee Water Works
Customer Service Center
Zeidler Municipal Building
841 N. Broadway, Room 406
Milwaukee, WI 53202
Open M-F, 7:30 a.m. to 5:00 p.m.

Phone: (414) 286-2830
TDD: (414) 286-8801
Fax: (414) 286-5452

24-hour Water Control Center:
(414) 286-3710

For non-emergency contact:
watwebcs@milwaukee.gov
https://Milwaukee.gov/water

Para una explicación en Español, por favor llame al:
(414) 286-2830.

Milwaukee Water Works

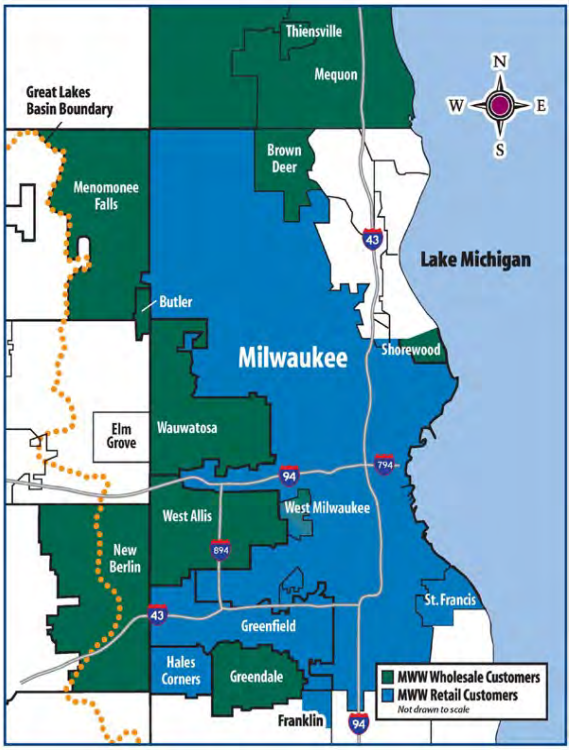
2019 Consumer Confidence Report

Reporte de Confianza del Consumidor 2019

La Agencia de Protección Ambiental de E.U.A (EPA) y el Departamento de Recursos Naturales de Wisconsin (DNR) requieren que los servicios públicos de agua potable provean un Reporte de Confianza del Consumidor para ayudar a que los consumidores entiendan de donde viene su agua potable, de manera que puedan hacer decisiones informadas sobre su salud y la protección del ambiente. En este reporte, usted encontrará:

- Información sobre la fuente de su agua potable
- El proceso de tratamiento que asegura la más alta calidad de agua
- Resultados de la prueba de la calidad de agua de 2019 y cumplimiento con las leyes y estándares
- Información educacional adicional y anuncios de salud pública

Visite https://Milwaukee.gov/water para más información.



Milwaukee Water Works

Este servicio público que pertenece a la Ciudad de Milwaukee provee agua pura y segura y sirve aproximadamente a 867,000 personas en Milwaukee y a través de 16 comunidades:

Clientes de venta por mayor: Brown Deer, Butler, Greendale, Menomonee Falls, Mequon, Milwaukee County Grounds, New Berlin, Shorewood, Thiensville, Wauwatosa, y West Allis.

Clientes de venta por menor: Greenfield, Hales Corners, una parte de Franklin, St. Francis, y West Milwaukee.

Participe en las decisiones relacionadas con su agua

Asista a las reuniones del Comité del Consejo Común de Obras Públicas de la Ciudad de Milwaukee (City of Milwaukee Common Council Public Works Committee) que tienen lugar regularmente todos los meses en Milwaukee City Hall, Room 301B, 200 East Wells Street, Milwaukee, WI 53202. También podría asistir a las reuniones del Consejo Común de la Ciudad de Milwaukee, que se reúne en Milwaukee City Hall, 3rd Floor Common Council Chambers, 200 East Wells Street, Milwaukee, WI 53202. Las fechas de las reuniones del Consejo Común varían. Por favor contacte al Secretario de la Ciudad para el horario al (414)286-2221, o visite https://Milwaukee.gov/cityclerk/PublicRecords/Agendas.htm.

Important Information
This report contains important information about your drinking water. Translate it, or speak with someone who understands it.

Información Importante
Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Lug tseem ceeb rua cov siv dlej kws has lug Moob
Ntawm nuav yog cov lug tseem ceeb qha txug kev haus dlej nyob nroog Milwaukee. Yog mej nyeem tsi tau cov lug nuav, thov lwm tug txhais rua mej.

Braille

Se puede pedir este material que está a la disposición en formatos alternativos para personas con incapacidades. Por favor contacte al coordinador de ADA de la Ciudad de Milwaukee llamando por teléfono al (414) 286-3475 o por email en ADACoordinator@milwaukee.gov. Por favor avísenos 72 horas antes para documentos en letras grandes imprimidas y documentos de Braille.

Large Print

El agua de fuente de Milwaukee viene del Lago Michigan

La fuente del agua potable de Milwaukee es el Lago Michigan, una fuente de agua de superficie. El más reciente DNR Source Water Assessment para Milwaukee está a la disposición por el Internet bajo "Resources" en https://Milwaukee.gov/water/WaterQuality. Mientras el agua viaja sobre la superficie del suelo o a través de la tierra, disuelve naturalmente los minerales que ocurren y, en algunos casos, material radioactivo y puede recoger las sustancias que resultan de la presencia de animales o de la actividad humana. Los contaminantes o sustancias que podrían estar presentes en el agua de fuente incluyen:

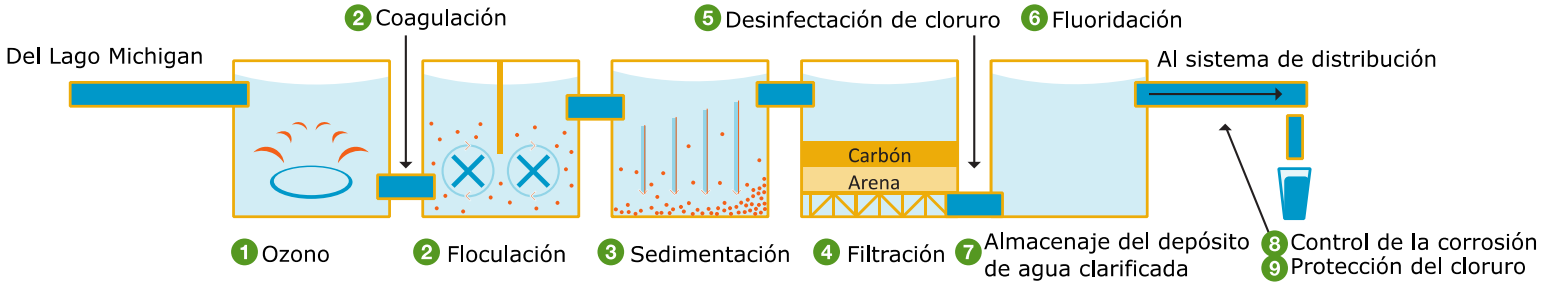
- **Contaminación por microbios,** tales como virus, protozoarios y bacteria, que podrían venir de fugas de tuberías de aguas negras, tanques sépticos, operaciones de ganado, agrícolas y de la vida silvestre.
- **Contaminantes inorgánicos,** tales como sales y metales, los cuales pueden ocurrir naturalmente o como resultado de descargas de aguas industriales o de aguas domésticas desechadas, producción de aceite y gas, minería o agricultura.
- **Pesticidas y herbicidas,** los cuales podrían venir de una variedad de fuentes como agricultura, escorrentía de aguas pluviales y usos residenciales.
- **Contaminantes químicos orgánicos**, incluyendo químicos orgánicos volátiles y sintéticos, los cuales son subproductos de procesos industriales y de producción de petróleo, y también de gasolineras, escorrentía de aguas pluviales y tanques sépticos.
- **Contaminantes radioactivos,** los cuales pueden ocurrir naturalmente o ser el resultado de la producción de aceite y gas y de actividades mineras.

El agua potable, incluyendo el agua embotellada, podría razonablemente esperarse que contenga por lo menos pequeñas cantidades de algunos contaminantes. La presencia de contaminantes no necesariamente indica que constituya un riesgo para la salud. Más información acerca de los contaminantes y sus posibles efectos sobre la salud puede obtenerse llamando a la línea de consulta inmediata sobre el agua potable del EPA (800-426-4791) ó en:

https://EPA.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

Para asegurar que el agua potable es segura, el EPA prescribe regulaciones que limitan la cantidad de ciertos contaminantes en el agua que se provee en los sistemas de agua públicos. Milwaukee Water Works mantiene un sistema de monitoreo nacionalmente reconocido para asegurar que toda el agua tratada cumple o excede las regulaciones locales, estatales y federales.

Proceso de tratamiento del agua de Milwaukee Water Works



(1) **Desinfección del ozono:** El gas ozono se burbujea a través del agua del lago que entra. El ozono destruye los microorganismos que causan enfermedades incluyendo *Giardia* y *Criptosporidium*, controla el sabor y el olor, y reduce la formación de subproductos de desinfección clorinados.

(2) **Coagulación y floculación:** Se agrega el sulfato de aluminio al agua para neutralizar la carga en las partículas microscópicas. Entonces se mezcla suavemente el agua para animar a que las partículas suspendidas se mantengan juntas para formar "flóculos."

(3) **Sedimentación:** Sedimentación es el proceso en el cual "flóculos" se asienta y se saca del agua.

(4) **Filtración biológicamente activa:** Se filtra el agua lentamente a través de 24" de carbón de antracita y 12" de arena molida para remover las partículas muy pequeñas.

(5) **Desinfección del cloro:** Después de la filtración, se agrega el cloro como un desinfectante secundario para proveer protección extra contra microorganismos potencialmente dañinos.

(6) **Fluoridación:** El fluoruro, cuando se administra en bajos niveles, está comprobado que ayuda a prevenir las caries dentales.

(7) **Almacenaje del depósito de agua clarificada:** Se guarda el agua tratada en tanques profundos subterráneos y se bombea según sea necesario a través de la distribución.

(8) **Control de la corrosión:** Se agrega un compuesto de fósforo para ayudar a controlar la corrosión de los tubos. Esto ayuda a prevenir que el plomo y el cobre se filtren de la tubería en el agua.

(9) **Protección del cloruro:** El amoníaco cambia el cloro a cloruro, un desinfectante que mantiene la protección bacteriológica en el sistema de distribución.

Cómo leer las tablas de la calidad del agua

Las siguientes tablas muestran contaminantes regulados y no regulados o sustancias detectadas en el agua potable de Milwaukee en 2019. También incluyen todas las sustancias analizadas en el programa de monitoreo obligatorio de EPA, más recientemente Fourth Unregulated Contaminant Monitoring Rule (UCMR-4). **Todos los contaminantes detectados continúan cumpliendo o excediendo los estándares locales, estatales y federales del agua potable para la salud y la seguridad**. Las tablas contienen el nombre de cada sustancia, el nivel más algo permitido por la regulación (nivel máximo del contaminante del, MCL), las metas ideales para la salud pública (MCLG), el monto detectado y las fuentes usuales de dicha contaminación. La presencia de una sustancia en el agua potable no necesariamente indica que el agua sea un riesgo para la salud. Cierta cantidad de algunas sustancias es esencial para una buena salud, pero cantidades excesivas pueden ser peligrosas.

Definiciones	
Nivel de acción (AL)	La concentración de un contaminante el cual, si se excede, acciona un tratamiento u otro requisito que debe seguir un sistema de agua. Se reportan niveles de acción en el percentil 90 para casas en el mayor riesgo.
Aviso de salud (HA)	Es un estimado del nivel aceptable en el agua potable que debe tener una sustancia química basado en la información de efectos en la salud; una advertencia de salud no es legalmente un estándar que se tiene que obedecer, pero sirve como una guía técnica para ayudar a los funcionarios federales, estatales y locales.
Nivel máximo del contaminante (MCL)	Es el nivel máximo de contaminante permitido en el agua potable. MCLs se ponen lo más cerca posible de los MCLGs usando la mejor tecnología de tratamiento a la disposición.
Meta del nivel máximo del contaminante level (MCLG)	El nivel de un contaminante en agua potable bajo el cual no se sabe o se espera riesgo para la salud. El MCLG permite un margen de seguridad.
Nivel del desinfectante residual máximo (MRDL)	El mayor nivel de desinfectante permitido en el agua potable. Hay evidencia convincente de que agregar un desinfectante es necesario para el control de contaminantes microbianos.
Meta del nivel de desinfectante residual máximo (MRDLG)	El nivel de desinfectante del agua potable bajo el cual no se sabe o se espera un riesgo para la salud. MRDLGs no reflejan los beneficios de usar desinfectantes para el control de la contaminación de microbios.
Técnica del tratamiento (TT)	Un proceso requerido para reducir el nivel de un contaminante en el agua potable.
Turbidez	La turbidez no afecta la salud. Sin embargo, la turbidez puede interferir con la desinfección y proveer un medio para el crecimiento de microbios. La turbidez podría indicar la presencia de organismos causantes de enfermedades. Estos organismos podrían incluir bacterias, virus, y parásitos que pueden provocar síntomas tales como nausea, dolores, diarrea, y están asociados con dolores de cabeza.

Abreviaciones de unidad	
<	“menos que” o no se detecta
-log[H^+]	Medidas de pH se expresan como la base negativa del logaritmo 10 de la concentración del ion de hidrógeno
NA	No aplicable
NR	No regulada
NTU	Unidad de turbidez nefelométrica (una unidad para medir turbidez)
ppb	partes por billón (microgramo por litro)
ppm	partes por millón (miligramo por litro)
ppq	partes por cuadrillón (picogramos por litro)
ppt	partes por trillón (nanogramas por litro)
pCi/L	picocurios por litro: una medida de radioactividad
RAA	promedio continuo anual: el promedio de cuatro muestras tomadas trimestralmente en un año

Estándares primarios y secundarios del agua potable

EPA ha establecido Regulaciones Nacionales Primarias de Agua Potable que establecen los estándares de la calidad del agua para contaminantes, o sustancias, en el agua potable en público. Estos estándares son referidos como los niveles de contaminantes máximos (MCLs), los cuales se establecen para proteger la salud pública, y son legalmente ejecutables sobre el MCL permitido. EPA también ha establecido las Regulaciones Nacionales Secundarias de Agua Potable que establecen los estándares no mandatorios para sustancias potenciales de la calidad del agua. Estas sustancias secundarias actualmente no están consideradas como un riesgo para la salud humana, pero en su lugar, actúan como normas paras los estéticos del agua potable tales como sabor, olor y color.

Sustancias Primarias Detectadas	Meta Ideal (MCLG)	Nivel Maximo Permitido (MCL)	Valor Mediano	Gama	Cumple con los Estándares	Fuente típico de la Sustancia
Bario (ppm)	2	2	0.02	0.02	Sí	Descarga de desechos de perforación; descarga de refinerías de metal; erosión de depósitos naturales
Cloro, Total (ppm)	4 (MRDLG)	4 (MRDL)	1.52	1.07 - 1.86	Sí	Aditivo de agua usado para controlar los microbios
Cobre (ppm)	1.3 (AL)	1.3 (AL)	0.0014	< 0.001 - 0.0014	Sí	Corrosión de sistemas de tubería del hogar; erosión de depósitos naturales
Derivados de desinfección						
Bromato (ppb)	0	10 RAA	3.1	1.1 - 6.0	Sí	Derivado de desinfección del agua potable
Clorato (ppm)	0.8	1	< 0.002	< 0.002 - 0.068	Sí	Derivado de desinfección del agua potable
Acidos haloacéticos [HAA5] (ppb)	NA	60	1.7	< 1.0 - 3.3	Sí	Derivado de desinfección del agua potable
Trihalometanos totales [TTHM] (ppb)	NA	80	5.4	2.4 - 14.8	Sí	Derivado de desinfección del agua potable
Fluoruro (ppm)	4.0	4.0	0.55	0.03 - 0.66	Sí	Erosión de depósitos naturales; aditivo de agua que promueve dientes fuertes; descarga de las fábricas de fertilizantes y aluminio
Cuenta de placa heteretrófica	NA	TT	Requisito	Requisito	Sí	Naturalmente presente en el ambiente; escorrentía del uso de fertilizantes; desagüe de las aguas negras de tanques sépticos; erosión de depósitos naturales
Nitrato, como N (ppm)	10	10	0.33	0.29 - 0.41	Sí	Escorrentía del uso de fertilizantes; desagüe de las aguas negras; erosión de depósitos naturales
Nitrito, como N (ppm)	NA	1	0.002	0.001 - 0.007	Sí	Escorrentía del uso de fertilizantes; desagüe de las aguas negras; erosión de depósitos naturales
Radionuclidos (17 Agosto 2015)						
Bruto alfa (pCi/L) [excluyedo Ra and U]	NA	15	1.86	0.30 - 3.42	Sí	Erosión de depósitos naturales
Bruto alfa (pCi/L) [incluyendo Ra and U]	NA	15	2.03	0.46 - 3.60	Sí	Erosión de depósitos naturales
Bruto beta (pCi/L)	NA	50	3.90	3.70 - 4.00	Sí	Descomposición de depósitos naturales y hechos por el hombre
Radio (pCi/L) [Ra 226 + Ra 228]	NA	5	1.20	0.89 - 1.51	Sí	Erosión de depósitos naturales
Turbidez (NTU)	NA	< 0.300 95% del tiempo	0.020	0 - 0.940 (1 día max)	Sí	Escorrería del suelo

Sustancias Secundarias Detectadas	Nivel Maximo Permitido (MCL)	Valor Medio	Gama	Cumple con los Estándares	Fuente Típica de la Sustancia
Aluminio (ppm)	0.05-0.20	0.082	0.073 - 0.091	Sí	Aditivo del tratamiento del agua, depósitos naturales
Cloro (ppm)	250	14.9	13.6 - 25.6	Sí	Depósitos naturales y sales del camino
Olor	3	1	1	Sí	Presente naturalmente en el ambiente
pH (-log [H^+])	6.5 - 8.5	7.64	7.27 - 8.01	Sí	Presente naturalmente en el ambiente
Sulfato (ppm)	250	26	26	Sí	Depósitos naturales
Sólidos Disueltos Total (ppm)	500	181	170 - 213	Sí	Agregado de minerales disueltos

Monitoreo de *Criptosporidio y* Otros Contaminantes

Milwaukee Water Works mantiene un extensivo programa de monitoreo de la calidad del agua reconocido nacionalmente. Este servicio público les hace pruebas aproximadamente a 500 sustancias para asegurar el agua segura, aumentar el entendimiento de cómo las sustancias afectan la salud pública y satisfacer regulaciones futuras. A continuación están las sustancias sin regulaciones que se detectaron en el agua tratada en 2019. Una lista completa de sustancias no detectadas se puede ver por el Internet bajo "Resources" en https://Milwaukee.gov/water/WaterQuality.

No se detectó *Cripstosporidio* en ninguna de las muestras de agua de la fuente Lake Michigan recogidas en 2019, ni tampoco se detectó *Criptosporidio* en el agua potable MWW final en 2019. Además, ni *Giardia*, Reovirus, ni Enterovirus fueron detectados en la agua potable de MWW en 2019.

Sustancia Detectada	Rango de Resultados	Fuente Típica de la Sustancia
Acesulfame-K (ppb)	0.05 - 0.06	Endulzantes artificiales
Acetaldehído (ppb)	< 5 - 15	Subproducto de la desinfección del agua potable
Acetona (ppb)	< 2.0 - 2.3	Fabricación; solvente
Aldehidos, Total (ppb)	< 5 - 15	Derivado de la desinfección del agua potable
Amoniaco, as N (ppm)	0.12 - 0.23	Desinfección con clorominas; desechos; fertilizantes y procesos naturales
Boro (ppb)	22	Ocurre naturalmente; explotación minera de bórax y refinación; fabricación de ácido bórico
Bromuro (ppb)	12 - 28	Ocurre naturalmente
Bromocloroacetonitril (ppb)	< 0.4 - 0.8	Derivado de desinfección del agua potable
Calcio (ppm)	33	Ocurre naturalmente
Clorato (ppb)	31 - 272	Derivado de desinfección del agua potable
Cromo, hexavalente (ppb)	0.17 - 0.21	Depósitos naturales y fabricación
Cotininia (ppt)	< 1 - 1	Derivado metabólico del fumado de tabaco
Dibromoacetonitril (ppb)	< 0.4 - 0.8	Derivado de desinfección del agua potable
Dicloroacetonitril (ppb)	< 0.5 - 0.5	Derivado de desinfección del agua potable
1,1-Dicloropropanona (ppb)	< 0.5 - 1.2	Subproducto de la desinfección del agua potable
Litio (ppb)	2.2	Ocurre naturalmente
Magnesio (ppm)	11	Ocurre naturalmente
N-Nitrosodimetilamina (NDMA)(ppb)	< 2.0 - 2.3	Disinfección con clorominas, combustible para cohetes; pesticidas
Perclorato (ppb)	0.12 - 0.14	Ocurre naturalmente; manufactura de combustible de cohetes, fuegos artificiales, municiones
Acido Perflorohexanoico [PFHxA] (ppt)	< 2.0 - 2.2	Impermeabilización; fabricación de textiles
Perfluorooctano Sulfonato [PFOS] (ppt)	< 2.0 - 2.6	Impermeabilización; fabricación de textiles; usado en espumas para combatir incendios
Acido Perfluorocatanoico [PFOA] (ppt)	< 2.0 - 2.3	Impermeabilización; fabricación de textiles; usado en espumas para combatir incendios
o-Fosfato como PO_4 (ppm)	0.31 - 4.65	Derivado de desinfección del agua potable
Fósforo como P (ppm)	0.59 - 0.74	Ocurre naturalmente
Potasio (ppm)	1.4	Ocurre naturalmente
Rubidio (ppb)	1.1	Ocurre naturalmente
Sílica (ppm)	1.7 - 1.9	Ocurre naturalmente
Sodio (ppm)	9.1 - 10.0	Depósitos naturales y sal del camino
Estrontiom (ppb)	120	Depósitos naturales
Sucralosa (ppt)	34 - 36	Endulzantes artificiales
Carbón Orgánico Total (ppm)	1.27 - 1.75	Presente naturalmente en el ambiente
Solídos Totales (ppm)	160	Medida de materiales sólidos en el agua
Tricloroacetonitrilo (ppb)	< 0.5 - 0.5	Subproducto de la desinfección del agua potable
1,1,1-Tricloropropanon (ppb)	0.5 - 1.6	Derivado de desinfección del agua potable
Tris(cloropropile) fosfato (ppb)	0.01	Retardante de llama

Regla de Monitoreo de Contaminantes no Regulados Fase Cuarta (UCMR-4)

La Regla de Monitoreo de Contaminantes no Regulados (UCMR) fue establecida por EPA como parte de las Enmiendas del Acta de Agua Potable Segura de 1996. Cada cinco años, en cumplimiento con EPA, Milwaukee Water Works recoge datos sobre contaminantes potenciales que todavía no están regulados pero se conocen, o se anticipa, que ocurren en los sistemas de agua pública. Estos datos le ayudan a EPA a determinar si se necesitan regulaciones futuras para contaminantes que preocupan.

UCMR-4 Monitoreo de regulación (2018)	Valor Medio	Más Alto Detectado	Fuente Típica de la Sustancia
alfa-Hexaclorociclohexana (ppt)	< 0.0100	< 0.0100	Pesticida
1-Butanol (ppb)	< 2.00	< 2.00	Solvente, aditivo de comida
Butilado hidroxlanisol (ppt)	< 0.300	< 0.300	Aditivo de comida (antioxidante)
Chlorpirifos (ppt)	< 0.0300	< 0.0300	Organofosfato, insecticida, acaricida, miticida
Dimetipino (ppt)	< 0.200	< 0.200	Herbicida y regulador del crecimiento de plantas
Etoprop (ppt)	< 0.030	< 0.030	Insecticida
Germanio (ppt)	< 0.300	< 0.300	Elemento que ocurre naturalmente
Manganeso (ppt)	< 0.400	0.520	Elemento que ocurre naturalmente
2-Methoxietanol (ppt)	< 0.400	< 0.400	Cosméticos, perfumes, preparaciones de fragrancias del pelo, lociones de la piel sintéticos
o-Toluidino (ppq)	< 7.00	< 7.00	Tintes, goma, productos farmacéuticos, pesticidas
Oxifluorfen (ppt)	< 0.500	< 0.500	Herbicida
Permetrin cis & trans (ppt)	< 0.040	< 0.040	Insecticida
Profenofos (ppt)	< 0.300	< 0.300	Insecticida y acaricida
2-Propeno-1-ol (ppt)	< 0.500	< 0.500	Condimentos, perfumes
Quinolina (ppt)	< 0.020	< 0.020	Farmacéutico contra la malaria, agente de sabor
Tebuconazol (ppt)	< 0.200	< 0.200	Funguicida
Tribufos (ppt)	< 0.070	< 0.070	Insecticida, defoliante de algodón

UCMR-4 Monitoreo de Regulación de Cianotoxinas (2018)	Valor Medio	Más Alto Detectado	Fuente Típica de la Sustancia
Anatoxina-a (ppt)	< 30	< 30	Agua de la fuente
Cilindrospermopsins (ppt)	< 90	< 90	Agua de la fuente
Microcistinas y Nodularinas Totales (ppb)	< 0.300	< 0.300	Agua de la fuente

UCMR-4 Monitoreo de Regulación de Indicadores de Agua de Superficie (2018)	Valor Medio	Más Alto Detectado	Fuente Típica de la Sustancia
Bromuro (ppb)	33.1	35.3	Agua de la fuente
Carbón Orgánico Total [TOC] (ppm)	1.825	2.010	Agua de la fuente

UCMR-4 Monitoreo de Regulación de Agua de Distribución (2018)	Valor Medio	Más Alto Detectado	Fuente Típica de la Sustancia
Acido Bromocloroacético [BCAA] (ppb)	0.862	1.180	Derivado de desinfección del agua potable
Acido Bromodicloroacético [BDCAA] (ppb)	0.762	1.090	Derivado de desinfección del agua potable
Acido Clorodibromoacético [CDBAA] (ppb)	0.421	0.524	Derivado de desinfección del agua potable
Acido Dibromoacético [DBAA] (ppb)	0.389	0.504	Derivado de desinfección del agua potable
Acido Dicloroacético [DCAA] (ppb)	1.505	2.020	Derivado de desinfección del agua potable
Acido Monobromoacético [MBAA] (ppb)	< 0.300	< 0.300	Derivado de desinfección del agua potable
Acido Monocloroacétic [MCAA] (ppb)	< 2.00	< 2.00	Derivado de desinfección del agua potable
Acido Tribromoacético [TBAA] (ppb)	< 2.00	< 2.00	Derivado de desinfección del agua potable
Acido Tricloroacético [TCAA] (ppb)	0.779	1.260	Derivado de desinfección del agua potable
HAA5 Total (ppb)	2.575	3.398	Derivado de desinfección del agua potable
HAA6 Br Total (ppb)	2.325	3.075	Derivado de desinfección del agua potable
HAA9 Total (ppb)	4.523	5.951	Derivado de desinfección del agua potable

Regla del Plomo y el Cobre (2017)

En 2017, en cumplimiento con US EPA y Wisconsin DNR, Milwaukee Water Works completó las pruebas de la Regla del Plomo y Cobre. Para permanecer en cumplimiento con las regulaciones de EPA, los niveles de 90no de percentil deben estar debajo de 15 ppb para el plomo y 1300 ppb para el cobre. Milwaukee Water Works está haciendo pruebas de LCR en 2020.

Plomo y cobre (2017)	Nivel de Acción	Percentil 90th	Nivel Más Alto Detectado	Número de Sitios al Nivel de Acción	Número de Sitios que Exceden el Nivel de Acción
Cobre (ppb)	1300	**46.0**	110	0	0
Plomo (ppb)	15.0	**7.2**	130	1	2

Parámetros Optimos de la Calidad del Agua (2017)	Mínimo	Medio	Mediana	Máximo
Alcalinidad, Total (ppm)	102	104	103	112
Dureza, Total (ppm)	130	135	140	140
Conductividad (µmhos cm^{-1})	310	318	320	320
Cloruro (ppm)	14.0	14.9	15.0	16.0
Sulfato (ppm)	25.0	27.7	28.0	30.0
Fósforo (ppm)	0.53	0.60	0.60	0.71
Calcio (ppm)	34.0	34.8	35.0	37.0
Hierro (ppm)	0.02	0.05	0.04	0.10
Magnesio (ppm)	11.0	12.0	12.0	12.0
Aluminio (ppb)	36.0	94.8	82.0	240
Manganeso (ppb)	0.14	1.03	0.79	3.30

Seguridad Pública del Plomo y el Cobre

Si existen, niveles elevados de plomo pueden causar problemas de salud serios, especialmente para las mujeres embarazadas y los niños pequeños. El plomo en el agua potable viene principalmente de materiales y componentes asociados con líneas de servicio y la tubería de la casa. Milwaukee Water Works tiene la responsabilidad de proveer agua potable de alta calidad, pero no puede controlar la variedad de materiales usados en los componentes de las tuberías. Cuando el agua suya ha estado sin usar por varias horas, usted puede minimizar el potencial de exposición al plomo dejando correr su grifo por 3 minutos antes de usar el agua para beber o cocinar. Si le preocupa que haya plomo en su agua, usted podría pedir que la examinen. Hay información adicional sobre el plomo en el agua potable, los métodos de pruebas y los pasos que puede tomar para minimizar la exposición en el sitio de EPA: https://EPA.gov/safewater/lead.

Guías con relación al plomo

- Los ocupantes de edificios en donde existen líneas de servicio de plomo deben dejar correr las líneas de agua adecuadamente después de períodos prolongados de inactividad para reducir los peligros potenciales del plomo, pero el uso de filtros de plomo certificados NSF/ANSI Standard 53 es la manera más completa de seguridad del plomo en el agua.
- La población en riesgo como las mujeres y los niños que viven en edificios en donde existen líneas de servicio de plomo, incluyendo las mujeres embarazadas, o que pueden quedar embarazadas (mujeres entre las edades de 15-45 años) o que están en lactancia, y los niños hasta la edad de 6 años, deben beber y cocinar solamente con agua que ha sido filtrada con un filtro de plomo certificado NSF/ANSI Standard 53.
- Si usa el agua directamente del grifo (sin un filtro), sólo use agua que se ha dejado correr por un mínimo de 3 minutos. De no hacerlo por el tiempo recomendado podría aumentar su riesgo de exposición al plomo.

Lead-Safe Milwaukee
SAFE PAINT SAFE WATER SAFE KIDS

Para más información, visite Lead Safe Milwaukee en https://Milwaukee.gov/WaterQuality/LeadAndWater.

Otro Cumplimiento

Descripción de la deficiencia: Se le notificó a Milwaukee Water Works la deficiencia siguiente el 6 de agosto, 2019, "El sistema no está implementando un Programa de Control de Conexión Cruzada," con la fecha de corrección programada del 31 de marzo, 2020.

Acciones tomadas: Milwaukee Water Works desarrolló un Plan de Control de Conexión Cruzada (Cross-Connection Control Plan) para cumplir la meta del 31 de marzo, 2020. Una conexión cruzada es cualquier conexión física actual o potencial entre un sistema de agua potable y una fuente o sistema de agua o sustancias no potables. Un ejemplo es una manguera conectada a un grifo de una tina de lavandería que está sumergida en un fregadero más abajo lleno de agua jabonosa. Este plan es el resultado de un rediseño de dos años del Plan de Control de Conexión Cruzada del servicio público. El programa pondrá al MWW en cumplimiento con el NR810.15 para el 31 de diciembre del 2021 por orden del WDNR.

Otra Información Educacional

Criptosporidio

El Criptosporidio es un protozoario microscópico que cuando se ingiere, puede causar diarrea, fiebre, y otros síntomas gastrointestinales. Milwaukee Water Works y el Departamento de Salud de Milwaukee consideran la detección del *Criptosporidio,* una prioridad y desde 1993, han continuado examinando la fuente de agua del Lago Michigan y tratado el agua por *Criptosporidio*. *Criptosporidio* se encuentra en muchas fuentes de agua de superficie (lagos, ríos, corrientes) y proviene de desechos humanos y de animales en los lechos acuosos. El riesgo de infección por *Criptosporidio* por el agua potable ha sido reducida a niveles extremadamente bajos por una combinación de tratamiento efectivo (ver página 2), lo cual pone a Milwaukee Water Works en la clasificación del Bin 1 (el riesgo más bajo) para los requisitos del tratamiento de *Criptosporidio* establecidos por DNR.

Milwaukee Water Works provee un folleto basado en las normas de EPA y CDC sobre las maneras apropiadas de disminuir el riesgo de infección por *Criptosporidio.* Obtenga una copia de nuestro Centro de Servicio al Cliente, (414) 286-2830, o en https://Milwaukee.gov/water/WaterQuality y baje a Resource Links, escoja "Information for persons with weakened immune systems."

Información para Personas con Sistemas Inmunes Débiles y/o Grupos Vulnerables

Algunas personas podrían ser más vulnerables a los contaminantes en el agua potable que el resto de la población. Las personas con problemas de inmunidad como las que tienen cáncer y están recibiendo tratamientos de quimioterapia, personas que hayan recibido trasplantes de órganos, personas con VIH/SIDA u otros desórdenes del sistema inmunológico, algunas personas de edad avanzada e infantes podrían estar particularmente en riesgo para estas infecciones. Estas personas deberían buscar consejo de sus proveedores del cuidado de la salud acerca del agua de beber de los grifos. Las normas del EPA/CDC (Centros para el Control de Enfermedades) sobre maneras apropiadas de reducir el riesgo de infección por *Criptosporidio* y otros contaminantes microbiológicos, están a la disposición en https://CDC.gov/parasites/crypto/audience-immune-compromised.html y en https://CDC.gov/parasites/water.html y en la línea directa de EPA sobre el agua potable segura en 1-800-426-4791.

Aviso a los Padres de Infantes de Seis Meses de Edad o Menores

De acuerdo con el CDC, la cantidad apropiada de fluoruro desde la infancia y a cualquier edad a través de la vida, ayuda a prevenir y controlar la pérdida de dientes (caries). Por esta razón, Milwaukee Water Works, siguiendo las recomendaciones de salud pública mantiene un nivel de fluoruro en el agua potable que es seguro y efectivo. Lo siguiente es una advertencia con relación al fluoruro y los infantes pequeños:

La Academia Americana de Pediatría (American Academy of Pediatrics) recomienda la lactancia materna exclusiva en los primeros seis meses de la vida de un niño, seguido a continuación por la lactancia y la introducción de comidas complementarias, para obtener ventajas óptimas a corto y a largo plazo en la salud. Para más información vaya a https://pediatrics.aappublications.org/content/129/3/e827.

Desde el 31 de Agosto, 2012, el agua de Milwaukee es fluorada a un nivel que no exceda los 0.7 mg/L . De acuerdo con el CDC, para los infantes hasta los seis meses de edad, si el agua del grifo es fluorada o tiene una fuente natural de fluoruro (0.7 mg/L o más alta) y está siendo usada para diluir la fórmula del infante, los padres podrían considerar usar una fuente de agua alternativa de bajo fluoruro. El agua embotellada considerada con tener bajo contenido de fluoruro está etiqueteada como purificada, desionizada, desmineralizada, destilada o preparada por osmosis inverso. Las fórmulas para niños listas para usar (no hay mezcla) típicamente tienen poco fluoruro y podrían ser preferidas al menos por un tiempo. Si la lactancia materna no es posible, los padres deben consultar con un pediatra acerca de una opción para la fórmula del niño. Los padres deben saber que se puede incrementar la posibilidad de una fluorosis dental leve si el niño está exclusivamente consumiendo fórmula de niño reconstituida con agua fluorada. La fluorosis dental es un término que comprende un margen de cambios visibles en la superficie del esmalte de los dientes. Para más información sobre la fluorosis dental y el uso de agua potable fluoroda en la fórmula del niño vaya a https://CDC.gov/fluoridation.

Contáctenos

Milwaukee Water Works
Centro de Servicio al Cliente
Zeidler Municipal Building
841 N. Broadway, Room 406
Milwaukee, WI 53202
Abierto L-V, 7:30 a.m. to 5:00 p.m.

Teléfono: (414) 286-2830
TDD: (414) 286-8801
Fax: (414) 286-5452

24-hour Water Control Center:
(414) 286-3710

Contacto cuando no es una emergencia:
watwebcs@milwaukee.gov
https://Milwaukee.gov/water

Para una explicación en Español, por favor llame al:
(414) 286-2830.

Milwaukee
Water Works

2019 Lake Michigan Source Water Quality

This report shows results from the Lake Michigan source water we treat.

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Clarity			
Turbidity , NTU	100.00	0.14	0.79
Microbiological			
Coliform, Total, Presence in 100mL	2419	<1	1
Cryptosporidium parvum, oocysts/1L*	<0.030	<0.020	<0.020
Giardia lamblia, cysts/1L**	<0.030	<0.020	<0.020
Heterotrophic Plate Count, cfu/1mL	905	<1	1
Viruses			
Reovirus (MPN/100L)	<1.1	<1.1	<1.1
Enterovirus (MPN/20L)	<1	<1	<1
Chemical & Physical Parameters			
Alkalinity, as CaCO3	127	101	109
Carbon dioxide, free, (calc.)	1.77	0.72	1.17
Conductivity, µS/cm	356	279	297
Hardness,Total, as CaCO3	157	130	138
Hardness, Calcium, as CaCO3	105	72	91
Hardness, Magnesium, as CaCO3	61	38	47
Odor (Threshold Odor Number)	1	1	1
pH	8.62	7.53	8.26
Saturation Index (calc.)	0.52	0.05	0.21
Specific UV absorbance, L/mg-M, (calc.)	2.2	0.7	1.2
Temperature, degrees Celsius	20.7	0	6.2
Total Dissolved Solids (TDS) (calc.)	206	162	172
Total Solids	180	170	175
Total Suspended Solids	<25	<25	<25
Total Organic Carbon	2.26	1.66	1.87
UV-254 (cm-1)	0.042	0.013	0.021
Inorganic Chemicals			
Aluminum	0.01	0.01	0.01
Ammonia, as Nitrogen	<0.06	<0.05	<0.05
Antimony	<0.001	<0.001	<0.001
Arsenic	<0.001	<0.001	<0.001
Barium	0.020	0.020	0.020
Beryllium	<0.0003	<0.0003	<0.0003
Boron	0.022	0.022	0.022
Bromate	<0.0021	<0.0021	<0.0021
Bromide	0.620	0.020	0.031
Cadmium	<0.0010	<0.0010	<0.0010
Calcium	34.0	33.0	33.5
Cerium	<0.001	<0.001	<0.001
Cesium	<0.001	<0.001	<0.001

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Chlorate	0.051	<0.0044	<0.0044
Chloride	28.3	12.1	12.8
Chlorite	0.0075	<0.0021	<0.0021
Chromium, total	<0.0009	<0.0009	<0.0009
Chromium, hexavalent	0.00028	0.00016	0.00017
Cobalt	<0.0020	<0.0020	<0.0020
Copper	0.041	0.007	0.024
Cyanide	<0.0020	<0.0020	<0.0020
Dysprosium	<0.001	<0.001	<0.001
Erbium	<0.001	<0.001	<0.001
Europium	<0.001	<0.001	<0.001
Fluoride	0.23	0.13	0.15
Gadolinium	<0.001	<0.001	<0.001
Gallium	<0.001	<0.001	<0.001
Germanium	<0.001	<0.001	<0.001
Gold	<0.001	<0.001	<0.001
Hafnium	<0.001	<0.001	<0.001
Holmium	<0.001	<0.001	<0.001
Iridium	<0.001	<0.001	<0.001
Iron	<0.020	<0.020	<0.020
Lanthanum	<0.001	<0.001	<0.001
Lead	<0.001	<0.001	<0.001
Lithium	0.0022	0.0022	0.0022
Lutetium	<0.001	<0.001	<0.001
Magnesium	11	11	11
Manganese	0.002	0.002	0.002
Mercury	<0.00010	<0.00010	<0.00010
Molybdenum	<0.002	<0.002	<0.002
Neodymium	<0.001	<0.001	<0.001
Nickel	<0.001	<0.001	<0.001
Niobium	<0.001	<0.001	<0.001
Nitrate, as Nitrogen	0.550	0.289	0.310
Nitrate and Nitrite, Total, as Nitrogen	0.550	0.289	0.310
Nitrite, as Nitrogen	0.008	0.001	0.002
Osmium	<0.001	<0.001	<0.001
Palladium	<0.001	<0.001	<0.001
Perchlorate	0.00011	0.00010	0.00011
o-Phosphate as PO_4	<0.050	<0.050	<0.050
Phosphorus as P	<0.050	<0.050	<0.050
Platinum	<0.001	<0.001	<0.001
Potassium	1.40	1.40	1.40
Praseodymium	<0.001	<0.001	<0.001
Rhenium	<0.001	<0.001	<0.001
Rhodium	<0.001	<0.001	<0.001
Rubidium	0.0012	0.0011	0.0012
Ruthenium	<0.001	<0.001	<0.001
Samarium	<0.001	<0.001	<0.001
Selenium	<0.002	<0.002	<0.002
Silica, Total	1.8	1.6	1.7
Silver	<0.002	<0.002	<0.002
Sodium	7.80	7.80	7.80
Strontium	0.120	0.120	0.120
Sulfate	22.0	22.0	22.0
Tantalum	<0.001	<0.001	<0.001
Tellurium	<0.001	<0.001	<0.001
Thallium	<0.0003	<0.0003	<0.0003
Thorium	<0.0050	<0.0050	<0.0050
Thulium	<0.001	<0.001	<0.001

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Tin	<0.002	<0.002	<0.002
Titanium	<0.005	<0.005	<0.005
Tungsten	<0.001	<0.001	<0.001
Uranium	<0.001	<0.001	<0.001
Vanadium	<0.002	<0.002	<0.002
Ytterbium	<0.001	<0.001	<0.001
Zinc	<0.005	<0.005	<0.005
Zirconium	<0.001	<0.001	<0.001
Organic Chemicals			
Acenaphthene	<0.0001	<0.0001	<0.0001
Acenaphthylene	<0.0001	<0.0001	<0.0001
Acetaldehyde	0.0140	<0.0050	<0.0050
Acetochlor	<0.0001	<0.0001	<0.0001
Acetone	<0.0050	<0.0050	<0.0050
Acrylamide	<0.0005	<0.0005	<0.0005
Acrylonitrile	<0.0010	<0.0010	<0.0010
Adipate, di(2-ethylhexyl)	<0.0006	<0.0006	<0.0006
Alachlor	<0.00010	<0.00010	<0.00010
Aldehydes, Total	0.0140	<0.0050	<0.0050
Aldicarb (Temik)	<0.0005	<0.0005	<0.0005
Aldicarb sulfone	<0.0007	<0.0007	<0.0007
Aldicarb sulfoxide	<0.0005	<0.0005	<0.0005
Aldrin	<0.0001	<0.0001	<0.0001
Allyl chloride	<0.0050	<0.0050	<0.0050
tert-Amyl Methyl ether	<0.0030	<0.0030	<0.0030
Ametryn	<0.0001	<0.0001	<0.0001
Anilazine	<0.0010	<0.0010	<0.0010
Aniline (2015)	<0.0005	<0.0005	<0.0005
Anthracene	<0.0001	<0.0001	<0.0001
Aspon	<0.0001	<0.0001	<0.0001
Atraton	<0.0001	<0.0001	<0.0001
Atrazine	<0.00010	<0.00010	<0.00010
Azinphos-ethyl	<0.0005	<0.0005	<0.0005
Azinphos-methyl	<0.0005	<0.0005	<0.0005
Bendiocarb	<0.0005	<0.0005	<0.0005
Benfluralin	<0.0001	<0.0001	<0.0001
Benzaldehyde	<0.0051	<0.0050	<0.0050
Benzene	<0.0005	<0.0005	<0.0005
alpha-Benzene hexachloride (alpha-Hexachlorocyclohexane)	<0.0001	<0.0001	<0.0001
beta-Benzene hexachloride	<0.0001	<0.0001	<0.0001
delta-Benzene hexachloride	<0.0001	<0.0001	<0.0001
gamma-Benzene hexachloride (Lindane)	<0.00002	<0.00002	<0.00002
Benzo(a)anthracene	<0.0001	<0.0001	<0.0001
Benzo(b)fluoranthene	<0.0001	<0.0001	<0.0001
Benzo(k)fluoranthene	<0.0001	<0.0001	<0.0001
Benzo(g, h, I)perylene	<0.0001	<0.0001	<0.0001
Benzophenone (2015)	<0.0001	<0.0001	<0.0001
Benzo(a)pyrene	<0.00002	<0.00002	<0.00002
Benzyl chloride	<0.0005	<0.0005	<0.0005
Bifenthrin (2015)	<0.0005	<0.0005	<0.0005
Bolstar	<0.0001	<0.0001	<0.0001
Bromacil	<0.0001	<0.0001	<0.0001
Bromobenzene	<0.0005	<0.0005	<0.0005
Bromochloromethane	<0.0005	<0.0005	<0.0005
Bromodichloromethane	0.0019	0.0017	0.0018
Bromoform	<0.0005	<0.0005	<0.0005

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Bromomethane	<0.0005	<0.0005	<0.0005
Butachlor	<0.00010	<0.00010	<0.00010
1,3-Butadiene	<0.0050	<0.0050	<0.0050
2-Butanone (MEK)	<0.0050	<0.0050	<0.0050
tert-Butyl alcohol	<0.0020	<0.0020	<0.0020
n-Butylacrylate	<0.0005	<0.0005	<0.0005
Butylate	<0.0001	<0.0001	<0.0001
n-Butylbenzene	<0.0005	<0.0005	<0.0005
sec-Butylbenzene	<0.0005	<0.0005	<0.0005
tert-Butylbenzene	<0.0005	<0.0005	<0.0005
Butylbenzylphthalate	<0.001	<0.001	<0.001
Butyraldehyde (Butanal)	<0.0051	<0.0050	<0.0050
Carbaryl	<0.0005	<0.0005	<0.0005
Carbazole (2015)	<0.00005	<0.00005	<0.00005
Carbofuran	<0.0009	<0.0009	<0.0009
Carbon disulfide	<0.0050	<0.0050	<0.0050
Carbon Tetrachloride	<0.0005	<0.0005	<0.0005
Carbophenothion	<0.0005	<0.0005	<0.0005
Carboxin	<0.0001	<0.0001	<0.0001
Chlordane	<0.0001	<0.0001	<0.0001
Chlordane, alpha	<0.0001	<0.0001	<0.0001
Chlordane, gamma	<0.0001	<0.0001	<0.0001
Chlorfenvinphos	<0.0050	<0.0050	<0.0050
Chloroacetonitrile	<0.0050	<0.0050	<0.0050
Chlorobenzene	<0.0005	<0.0005	<0.0005
Chlorobenzilate	<0.0001	<0.0001	<0.0001
2-Chlorobiphenyl	<0.0001	<0.0001	<0.0001
1-Chlorobutane	<0.0050	<0.0050	<0.0050
Chloroethane	<0.0005	<0.0005	<0.0005
Chloroform	0.0016	0.0014	0.0015
Chloromethane	<0.0005	<0.0005	<0.0005
Chloroneb	<0.0001	<0.0001	<0.0001
Chloroprene	<0.0050	<0.0050	<0.0050
Chloropropylate	<0.0001	<0.0001	<0.0001
Chlorothalonil	<0.0001	<0.0001	<0.0001
o-Chlorotoluene	<0.0005	<0.0005	<0.0005
p-Chlorotoluene	<0.0005	<0.0005	<0.0005
Chlorpropham	<0.0001	<0.0001	<0.0001
Chlorpyrifos	<0.0001	<0.0001	<0.0001
Chlorpyrifos methyl	<0.0005	<0.0005	<0.0005
Chrysene	<0.0001	<0.0001	<0.0001
Clomazone	<0.0001	<0.0001	<0.0001
Clopyralid	<0.010	<0.010	<0.010
Coumaphos	<0.0001	<0.0001	<0.0001
Crotonaldehyde	<0.0051	<0.0050	<0.0050
Crotoxyphos	<0.0005	<0.0005	<0.0005
4-Cumyl phenol (2015)	<0.0001	<0.0001	<0.0001
Cyanazine	<0.0001	<0.0001	<0.0001
Cycloate	<0.0001	<0.0001	<0.0001
Cyclohexanone	<0.0050	<0.0050	<0.0050
2,4-D	<0.0001	<0.0001	<0.0001
DCPA	<0.0001	<0.0001	<0.0001
4,4'-DDD	<0.0001	<0.0001	<0.0001
4,4'-DDE	<0.0001	<0.0001	<0.0001
4,4'-DDT	<0.0001	<0.0001	<0.0001
Dalapon	<0.001	<0.001	<0.001
Decanal	<0.0051	<0.0050	<0.0050
Demeton O	<0.0005	<0.0005	<0.0005

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Demeton S	<0.0005	<0.0005	<0.0005
Desethylatrazine	<0.001	<0.001	<0.001
Desisopropylatrazine	<0.001	<0.001	<0.001
Diazinon	<0.0001	<0.0001	<0.0001
Dibenzo(a,h)anthracene	<0.0001	<0.0001	<0.0001
1,2-Dibromoethane	<0.00001	<0.00001	<0.00001
Dibromochloromethane	0.0009	0.0006	0.0008
Dibromomethane	<0.00001	<0.00001	<0.00001
1-2 Dibromo 3 chloropropane (DBCP)	<0.00001	<0.00001	<0.00001
Di-n-butylphthalate	<0.002	<0.002	<0.002
Dicamba	<0.0001	<0.0001	<0.0001
Dichlobenil	<0.0001	<0.0001	<0.0001
Dichlofenthion	<0.0001	<0.0001	<0.0001
Dichloran	<0.0005	<0.0005	<0.0005
2,3-Dichlorobiphenyl	<0.0001	<0.0001	<0.0001
Dichlorvos	<0.0001	<0.0001	<0.0001
1,2-Dichlorobenzene	<0.0005	<0.0005	<0.0005
1,3-Dichlorobenzene	<0.0005	<0.0005	<0.0005
1,4-Dichlorobenzene	<0.0005	<0.0005	<0.0005
trans-1,4-Dichloro-2-butylene	<0.0050	<0.0050	<0.0050
Dichlorodifluoromethane	<0.0005	<0.0005	<0.0005
1,1-Dichloroethane	<0.0005	<0.0005	<0.0005
1,2-Dichloroethane	<0.0005	<0.0005	<0.0005
1,1-Dichloroethylene	<0.0005	<0.0005	<0.0005
1,2-Dichloroethylene, cis	<0.0005	<0.0005	<0.0005
1,2-Dichloroethylene, trans	<0.0005	<0.0005	<0.0005
Di(2-chloroethyl)ether	<0.0020	<0.0020	<0.0020
Dichloromethane (methylene chloride)	<0.0005	<0.0005	<0.0005
1,2-Dichloropropane	<0.0005	<0.0005	<0.0005
1,3-Dichloropropane	<0.0005	<0.0005	<0.0005
2,2-Dichloropropane	<0.0005	<0.0005	<0.0005
1,1-Dichloropropanone	<0.0050	<0.0050	<0.0050
1,1-Dichloropropene (2015)	<0.0005	<0.0005	<0.0005
1,3-Dichloropropene (2015)	<0.0005	<0.0005	<0.0005
1,1-Dichloropropylene	<0.0005	<0.0005	<0.0005
cis 1,3-Dichloropropylene	<0.0005	<0.0005	<0.0005
trans 1,3-Dichloropropylene	<0.0005	<0.0005	<0.0005
Dicrotophos	<0.0005	<0.0005	<0.0005
Dieldrin	<0.0001	<0.0001	<0.0001
Di (2-ethylhexyl) adipate	<0.0006	<0.0006	<0.0006
Di (2-ethylhexyl) phthalate	<0.0006	<0.0006	<0.0006
Diethylphthalate	<0.0005	<0.0005	<0.0005
Diisopropyl ether	<0.0005	<0.0005	<0.0005
Dimethoate	<0.0005	<0.0005	<0.0005
2,6-Dimethylnapthalene (2016)	<0.0001	<0.0001	<0.0001
Dimethylphthalate	<0.0010	<0.0010	<0.0010
2,4-Dinitrotoluene	<0.0005	<0.0005	<0.0005
2,6-Dinitrotoluene	<0.0005	<0.0005	<0.0005
Di-n-octylphthalate	<0.002	<0.002	<0.002
Dinoseb	<0.0001	<0.0001	<0.0001
1,4-Dioxane	<0.0050	<0.0050	<0.0050
Dioxathion A	<0.0005	<0.0005	<0.0005
Dioxathion B	<0.0005	<0.0005	<0.0005
Dioxin (2,3,7,8-TCDD)	<0.000000005	<0.000000005	<0.000000005
Diphenamid	<0.0001	<0.0001	<0.0001
Diquat	<0.0004	<0.0004	<0.0004
Disulfoton	<0.0001	<0.0001	<0.0001
Disulfoton sulfone	<0.0001	<0.0001	<0.0001

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Disulfoton sulfoxide	<0.010	<0.010	<0.010
Endosulfan I	<0.0001	<0.0001	<0.0001
Endosulfan II	<0.0001	<0.0001	<0.0001
Endosulfan sulfate	<0.0001	<0.0001	<0.0001
Endothall	<0.009	<0.009	<0.009
Endrin	<0.00001	<0.00001	<0.00001
Endrin aldehyde	<0.0005	<0.0005	<0.0005
Epichlorohydrin	<0.0010	<0.0010	<0.0010
EPN	<0.0005	<0.0005	<0.0005
EPTC	<0.0001	<0.0001	<0.0001
Erucylamide	<0.0050	<0.0050	<0.0050
Esbiol (2016)	<0.0005	<0.0005	<0.0005
Esfenvalerate	<0.0005	<0.0005	<0.0005
Ethalfluralin	<0.0001	<0.0001	<0.0001
Ethion	<0.0050	<0.0050	<0.0050
Ethofumesate	<0.0005	<0.0005	<0.0005
Ethoprop	<0.0001	<0.0001	<0.0001
Ethylacrylate	<0.0010	<0.0010	<0.0010
Ethylbenzene	<0.0005	<0.0005	<0.0005
Ethylene dibromide (EDB)	<0.00001	<0.00001	<0.00001
Ethyl ether	<0.0020	<0.0020	<0.0020
Ethyl methacrylate	<0.0010	<0.0010	<0.0010
Ethyl tert-butyl ether	<0.0030	<0.0030	<0.0030
Etridiazole	<0.0001	<0.0001	<0.0001
Famphur	<0.0001	<0.0001	<0.0001
Fenamiphos	<0.0001	<0.0001	<0.0001
Fenarimol	<0.0010	<0.0010	<0.0010
Fenitrotion	<0.0005	<0.0005	<0.0005
Fenoxyprop-ethyl	<0.0010	<0.0010	<0.0010
Fensulfothion	<0.0005	<0.0005	<0.0005
Fenthion	<0.0001	<0.0001	<0.0001
Fenvalerate (2016)	<0.0005	<0.0005	<0.0005
Fluazifop-butyl	<0.0001	<0.0001	<0.0001
Fluchloralin	<0.0001	<0.0001	<0.0001
Fluometuron	<0.0005	<0.0005	<0.0005
Fluoranthene	<0.0001	<0.0001	<0.0001
Fluorene	<0.0001	<0.0001	<0.0001
Fluridone	<0.0010	<0.0010	<0.0010
Fonofos	<0.0001	<0.0001	<0.0001
Formaldehyde	<0.0051	<0.0050	<0.0050
Glyoxal	<0.0051	<0.0050	<0.0050
Glyphosate (Round-up)	<0.006	<0.006	<0.006
Heptachlor	<0.00004	<0.00004	<0.00004
Heptachlor epoxide	<0.00002	<0.00002	<0.00002
2,2',4,4',5,5'-Hexabromobiphenyl (HBB) (2016)	<0.0007	<0.0007	<0.0007
2,2',4,4',5,5'-Hexabromobiphenyl ether (BDE-153) (2016)	<0.0008	<0.0008	<0.0008
2,2',3,3',4,4',6-Heptachlorobiphenyl	<0.0005	<0.0005	<0.0005
Heptanal	<0.0051	<0.0050	<0.0050
Hexachlorobenzene	<0.0001	<0.0001	<0.0001
2,2',4,4',5,6'-Hexachlorobiphenyl	<0.0001	<0.0001	<0.0001
Hexachlorobutadiene	<0.0005	<0.0005	<0.0005
Hexachloroethane	<0.0020	<0.0020	<0.0020
Hexachlorocyclopentadiene	<0.0001	<0.0001	<0.0001
Hexanal	<0.0051	<0.0050	<0.0050
2-Hexanone	<0.0050	<0.0050	<0.0050
Hexazione	<0.0001	<0.0001	<0.0001
3-Hydroxycarbofuran	<0.0005	<0.0005	<0.0005
Indeno(1,2,3-cd)pyrene	<0.0001	<0.0001	<0.0001

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Iprodione	<0.0005	<0.0005	<0.0005
Isoborneol (2015)	<0.00005	<0.00005	<0.00005
Isofenphos	<0.0005	<0.0005	<0.0005
Isophorone	<0.0001	<0.0001	<0.0001
Isopropylbenzene	<0.0005	<0.0005	<0.0005
4-Isopropyltoluene (p-)	<0.0005	<0.0005	<0.0005
Kepone (2015)	<0.0005	<0.0005	<0.0005
Leptophos	<0.0005	<0.0005	<0.0005
Lindane	<0.00002	<0.00002	<0.00002
Malathion	<0.0001	<0.0001	<0.0001
Metalazyl	<0.0005	<0.0005	<0.0005
Methacrylonitrile	<0.0050	<0.0050	<0.0050
Methomyl	<0.0005	<0.0005	<0.0005
Methoxychlor	<0.0001	<0.0001	<0.0001
Methylacrylate	<0.0010	<0.0010	<0.0010
Methyl iodide (Iodomethane)	<0.0020	<0.0020	<0.0020
Methylmethacrylate	<0.0010	<0.0010	<0.0010
1-Methyl naphthalene	<0.0001	<0.0001	<0.0001
2-Methyl naphthalene	<0.0001	<0.0001	<0.0001
Methyl paraoxon	<0.0005	<0.0005	<0.0005
Methyl parathion	<0.0005	<0.0005	<0.0005
4-Methyl-2-pentanone (MIBK)	<0.0020	<0.0020	<0.0020
Methyl-t-butyl ether (MBTE)	<0.0005	<0.0005	<0.0005
Metolachlor (Dual)	<0.0001	<0.0001	<0.0001
Metribuzin (Sencor)	<0.0001	<0.0001	<0.0001
Metsulfuron methyl	<0.010	<0.010	<0.010
Mevinphos	<0.0001	<0.0001	<0.0001
MGK-264 isomer a	<0.0001	<0.0001	<0.0001
MGK-264 isomer b	<0.0001	<0.0001	<0.0001
MGK-326	<0.0001	<0.0001	<0.0001
Mirex	<0.0005	<0.0005	<0.0005
Molinate	<0.0001	<0.0001	<0.0001
Monocrotophos	<0.0005	<0.0005	<0.0005
Naled	<0.0005	<0.0005	<0.0005
Naphthalene	<0.0005	<0.0005	<0.0005
1-Napthol	<0.0010	<0.0010	<0.0010
Napropamide	<0.0001	<0.0001	<0.0001
Nitrobenzene	<0.0050	<0.0050	<0.0050
Nitrofen (2015)	<0.0005	<0.0005	<0.0005
2-Nitropropane	<0.0020	<0.0020	<0.0020
cis-Nonachlor	<0.0001	<0.0001	<0.0001
trans-Nonachlor	<0.0001	<0.0001	<0.0001
Nonanal	<0.0051	<0.0050	<0.0050
Norflurazon	<0.0010	<0.0010	<0.0010
2,2',3,3',4,5',6,6'-Octachlorobiphenyl	<0.0005	<0.0005	<0.0005
Octanal	<0.0051	<0.0050	<0.0050
Oryzalin	<0.010	<0.010	<0.010
Oxadiazon	<0.0001	<0.0001	<0.0001
Oxamyl (Vydate)	<0.001	<0.001	<0.001
Oxychlordane	<0.0001	<0.0001	<0.0001
Oxyfluorfen	<0.0005	<0.0005	<0.0005
Paraquat	<0.0004	<0.0004	<0.0004
Parathion	<0.0005	<0.0005	<0.0005
Pebulate	<0.0001	<0.0001	<0.0001
Pendimethalin	<0.0001	<0.0001	<0.0001
2,2',4,4',5-Pentabromodiphenyl ether (BDE-99) (2015)	<0.0009	<0.0009	<0.0009
2,2',4,4',6-Pentabromodiphenyl ether (BDE-100) (2015)	<0.0005	<0.0005	<0.0005
Pentachlorobenzene	<0.0005	<0.0005	<0.0005

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Pentachloronitrobenzene	<0.0005	<0.0005	<0.0005
2,2',3',4,6-Pentachlorobiphenyl	<0.0001	<0.0001	<0.0001
Pentachloroethane	<0.0020	<0.0020	<0.0020
Pentachlorophenol	<0.00004	<0.00004	<0.00004
PAHs(benzo(a)-pyrene)	<0.00002	<0.00002	<0.00002
cis-Permethrin	<0.0001	<0.0001	<0.0001
trans-Permethrin	<0.0001	<0.0001	<0.0001
Phthalate, (di(2-ethylhexyl)	<0.0006	<0.0006	<0.0006
Phenanthrene	<0.0001	<0.0001	<0.0001
Phorate	<0.0001	<0.0001	<0.0001
Phosmet	<0.0005	<0.0005	<0.0005
E-Phosphamidon	<0.0005	<0.0005	<0.0005
Z-Phosphamidon	<0.0005	<0.0005	<0.0005
Picloram (Tordon)	<.0001	<.0001	<.0001
Polychlorinated Byphenyls (PCB's), Total***			
Aroclor 1016	<0.00008	<0.00008	<0.00008
Aroclor 1221	<0.00019	<0.00019	<0.00019
Aroclor 1232	<0.00023	<0.00023	<0.00023
Aroclor 1242	<0.00026	<0.00026	<0.00026
Aroclor 1248	<0.0001	<0.0001	<0.0001
Aroclor 1254	<0.0001	<0.0001	<0.0001
Aroclor 1260	<0.0002	<0.0002	<0.0002
Profluralin	<0.0010	<0.0010	<0.0010
Prometon	<0.0001	<0.0001	<0.0001
Prometryn	<0.0001	<0.0001	<0.0001
Pronamide	<0.0001	<0.0001	<0.0001
Propachlor	<0.0001	<0.0001	<0.0001
Propanil	<0.0005	<0.0005	<0.0005
Propazine	<0.0001	<0.0001	<0.0001
Propiconazole isomer a	<0.0050	<0.0050	<0.0050
Propiconazole isomer b	<0.0050	<0.0050	<0.0050
Propionaldehyde (Propanal)	<0.0051	<0.0050	<0.0050
Propionitrile	<0.0050	<0.0050	<0.0050
n-Propylbenzene	<0.0005	<0.0005	<0.0005
Prothiofos	<0.0005	<0.0005	<0.0005
Pyrene	<0.0001	<0.0001	<0.0001
Pyruvaldehyde (Methylglyoxal)	<0.0051	<0.0050	<0.0050
Silvex (2,4,4-TP)	<0.0001	<0.0001	<0.0001
Simazine	<0.00007	<0.00007	<0.00007
Simetryn	<0.0001	<0.0001	<0.0001
Stirofos	<0.0001	<0.0001	<0.0001
Styrene	<0.0005	<0.0005	<0.0005
Sulfotep	<0.0005	<0.0005	<0.0005
2,3,7,8-TCDD (Dioxin)	<0.0000000050	<0.0000000050	<0.0000000050
Tebuthiuron	<0.010	<0.010	<0.010
TEPP	<0.001	<0.001	<0.001
Terbacil	<0.0001	<0.0001	<0.0001
Terbufos	<0.0005	<0.0005	<0.0005
Terbufos-sulfone (2015)	<0.0004	<0.0004	<0.0004
Terbutryn	<0.0001	<0.0001	<0.0001
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47) (2015)	<0.0003	<0.0003	<0.0003
1,2,4,5-Tetrachlorobenzene	<0.0005	<0.0005	<0.0005
2,2',4,4'-Tetrachorobiphenyl	<0.0005	<0.0005	<0.0005
1,1,1,2-Tetrachloroethane	<0.0005	<0.0005	<0.0005
1,1,2,2-Tetrachloroethane	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	<0.0005	<0.0005	<0.0005
Tetrahydrofuran	<0.0050	<0.0050	<0.0050
Thiabendazole	<0.010	<0.010	<0.010

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Thiobencarb	<0.0001	<0.0001	<0.0001
Thionazin	<0.0005	<0.0005	<0.0005
Toluene	<0.0005	<0.0005	<0.0005
Toxaphene	<0.0010	<0.0010	<0.0010
2,4,5-TP (Silvex)	<0.0001	<0.0001	<0.0001
Triademefon	<0.0005	<0.0005	<0.0005
Tribufos	<0.0001	<0.0001	<0.0001
1,2,3-Trichlorobenzene	<0.0005	<0.0005	<0.0005
1,2,4-Trichlorobenzene	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorobiphenyl	<0.0001	<0.0001	<0.0001
1,1,1-Trichloroethane	<0.0005	<0.0005	<0.0005
1,1,2-Trichloroethane	<0.0005	<0.0005	<0.0005
Trichloroethylene	<0.0005	<0.0005	<0.0005
Trichlorofluoromethane	<0.0005	<0.0005	<0.0005
Trichloronate	<0.0005	<0.0005	<0.0005
1,2,3-Trichloropropane	<0.0005	<0.0005	<0.0005
1,1,2-Trichloro-1,2,2-trifluorethane	<0.0005	<0.0005	<0.0005
Tricyclazole	<0.0010	<0.0010	<0.0010
1,2,3-Trimethylbenzene	<0.0005	<0.0005	<0.0005
1,2,4-Trimethylbenzene	<0.0005	<0.0005	<0.0005
1,3,5-Trimethylbenzene	<0.0005	<0.0005	<0.0005
Trifluralin (2015)	<0.0001	<0.0001	<0.0001
Trihalomethanes, total	0.0049	0.0021	0.0046
Urethane (2015)	<0.0010	<0.0010	<0.0010
n-Valeraldehyde (Pentanal)	<0.0051	<0.0050	<0.0050
Vernolate	<0.0001	<0.0001	<0.0001
Vinclozolin	<0.0005	<0.0005	<0.0005
Vinyl acetate	<0.0050	<0.0050	<0.0050
Vinyl Chloride	<0.0002	<0.0002	<0.0002
Xylene, total	<0.0005	<0.0005	<0.0005
Estrogens and Other Hormones (EDCs)			
Diethylstilbestrol (DES)	<0.0000005	<0.0000005	<0.0000005
17alpha-Estradiol	<0.0000005	<0.0000005	<0.0000005
17beta-Estradiol	<0.0000005	<0.0000005	<0.0000005
Estriol	<0.0000005	<0.0000005	<0.0000005
Estrone	<0.0000005	<0.0000005	<0.0000005
17alpha-Ethynl estradiol	<0.0000005	<0.0000005	<0.0000005
Progesterone	0.0000003	0.0000002	0.0000003
cis-Testosterone	0.0000002	0.0000002	0.0000002
trans-Testosterone	0.0000001	0.0000001	0.0000001
Nitrosamines			
N-Nitrosodi-N-butylamine (NDBA)	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodi-N-propylamine (NDPA)	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodiethylamine (NDEA)	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodimethylamine (NDMA)	0.0000053	<0.0000020	<0.0000020
N-Nitrosodiphenylamine (NDPhA)	<0.000020	<0.000020	<0.000020
N-Nitrosomethylethylamine (NMEA)	<0.0000020	<0.0000020	<0.0000020
N-Nitrosomorpholine (NMOR)	<0.0000020	<0.0000020	<0.0000020
N-Nitrosopiperdine (NPIP)	<0.0000020	<0.0000020	<0.0000020
N-Nitropyrrolidine (NPYR)	<0.0000020	<0.0000020	<0.0000020
Perfluorinated Compounds			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	<0.0000020	<0.0000020	<0.0000020
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	<0.0000020	<0.0000020	<0.0000020
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	<0.0000020	<0.0000020	<0.0000020
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	<0.0000020	<0.0000020	<0.0000020

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
ADONA	<0.0000020	<0.0000020	<0.0000020
F-53B Major	<0.0000020	<0.0000020	<0.0000020
F-53B Minor	<0.0000020	<0.0000020	<0.0000020
GenX	<0.0000050	<0.0000050	<0.0000050
Nafion Byproduct 1	<0.0000050	<0.0000050	<0.0000050
Nafion Byproduct 2	<0.0000050	<0.0000050	<0.0000050
N-ethylperfluoroctane sulfonamide (NEtFOSA)	<0.0000020	<0.0000020	<0.0000020
N-ethylperfluoroctane sulfonamidoethanol	<0.0000020	<0.0000020	<0.0000020
N-methylperfluorooctane sulfonamide (NMeFOSA)	<0.0000020	<0.0000020	<0.0000020
N-methylperfluoroctane sulfonamideoethanol	<0.0000020	<0.0000020	<0.0000020
Perfluorobutanesulfone acid (PFBS)	<0.0000020	<0.0000020	<0.0000020
Perfluorobutanoic acid (PFBA)	<0.0000050	<0.0000050	<0.0000050
Perfluorodecanoic acid (PFDA)	<0.0000020	<0.0000020	<0.0000020
Perfluoroheptanoic acid (PFHpA)	<0.0000020	<0.0000020	<0.0000020
Perfluorohexanesulfonic acid (PFHxS)	<0.0000020	<0.0000020	<0.0000020
Perfluorohexanoic acid (PFHxA)	0.0000022	<0.0000020	<0.0000020
Perfluorolauric acid (PFDoA)	<0.0000020	<0.0000020	<0.0000020
Perfluorononanoic acid (PFNA)	<0.0000020	<0.0000020	<0.0000020
Perfluorooctane sulfonate (PFOS)	0.0000025	0.0000021	0.0000023
N-ethyl Perfluorooctanesulfonamidoacetic acid	<0.0000020	<0.0000020	<0.0000020
N-methyl Perfluorooctanesulfonamidoacetic acid	<0.0000020	<0.0000020	<0.0000020
Perfluorocatanoic acid (PFOA)	0.0000023	<0.0000020	0.0000022
Perfluorotridecanoic acid (PFTrDA)	<0.0000020	<0.0000020	<0.0000020
Perfluoroundecanoic acid (PFUnA)	<0.0000020	<0.0000020	<0.0000020
Perfluorododecanesulfonic acid (PFDoS)	<0.0000020	<0.0000020	<0.0000020
Perfluorodecanesulfonic acid (PFDS)	<0.0000020	<0.0000020	<0.0000020
Perfluoroheptanesulfonic acid (PFHpS)	<0.0000020	<0.0000020	<0.0000020
Perfluorohexadecanoic acid (PFHxDA)	<0.0000020	<0.0000020	<0.0000020
Perfluoro-2-methoxyethoxyacetic acid	<0.0000050	<0.0000050	<0.0000050
Perfluoro-4-isopropoxybutanoic acid	<0.0000050	<0.0000050	<0.0000050
Perfluoro-2-methoxyacetic acid	<0.0000050	<0.0000050	<0.0000050
Perfluoro-4-methoxybutanoic acid (PFMOBA)	<0.0000050	<0.0000050	<0.0000050
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	<0.0000050	<0.0000050	<0.0000050
Perfluorononanesulfonic acid (PFNS)	<0.0000020	<0.0000020	<0.0000020
Perfluoro(3,5-dioxahexanoic) acid	<0.0000050	<0.0000050	<0.0000050
Perfluoro(3,5,7-trioxaoctanoic) acid	<0.0000050	<0.0000050	<0.0000050
Perfluorooctane sulfonamide (PFOSA)	<0.0000050	<0.0000050	<0.0000050
Perfluoropentanoic acid (PFPeA)	<0.0000020	<0.0000020	<0.0000020
Perfluoropentanesulfonic acid (PFPeS)	<0.0000020	<0.0000020	<0.0000020
Perfluorotetradecanoic acid (PFTeDA)	<0.0000020	<0.0000020	<0.0000020
Perfluoromyristic acid (PFTA)(2017)	<0.0000020	<0.0000020	<0.0000020
Phosphate Flame Retardants			
Tributyl phosphate (2015)	<0.0001	<0.0001	<0.0001
Triphenyl phospate (2015)	<0.0001	<0.0001	<0.0001
Tris(2-butoxyethyl) phosphate (2015)	<0.0010	<0.0010	<0.0010
Tris(2-chloroethyl) phosphate	<0.00001	<0.00001	<0.00001
Tris(chloropropyl) phosphate	0.00001	<0.00001	0.00001
Tris(1,3-dichloro-2-propyl) phosphate (2015)	<0.0001	<0.0001	<0.0001
Phenolic Endocrine Disruptors (EDCs)			
Bisphenol A	<0.0001	<0.0001	<0.0001
Nonylphenol, isomer mix	<0.0005	<0.0005	<0.0005
4-n-Octylphenol	<0.0005	<0.0005	<0.0005
4-tert-Octylphenol	<0.0005	<0.0005	<0.0005
Pentachlorophenol	<0.0001	<0.0001	<0.0001
Phenylphenol	<0.0001	<0.0001	<0.0001
Tetrabromobisphenol A	<0.0001	<0.0001	<0.0001
2, 4, 6-Trichlorophenol	<0.0001	<0.0001	<0.0001

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Pharmaceuticals & Personal Care Products			
Acesulfame-K	0.00019	0.00017	0.00018
Acetaminophen	<0.000005	<0.000005	<0.000005
Acetophenone (2015)	<0.00005	<0.00005	<0.00005
9, 10-Anthracenedione (2017)	<0.000001	<0.000001	<0.000001
Antipyrine	<0.000001	<0.000001	<0.000001
Atenolol	<0.000001	<0.000001	<0.000001
Azithromycin	<0.000005	<0.000005	<0.000005
Bacitracin (2015)	<0.0010	<0.0010	<0.0010
Bezafibrate	<0.0000005	<0.0000005	<0.0000005
Caffeine	<0.00005	<0.00005	<0.00005
Camphor (2015)	<0.00005	<0.00005	<0.00005
Carbadox	<0.000005	<0.000005	<0.000005
Carbamazepine	<0.000001	<0.000001	<0.000001
Chloramphenicol	<0.000005	<0.000005	<0.000005
Chlorotetracycline	<0.00005	<0.00005	<0.00005
Cholesterol (2015)	0.0022	<0.0010	0.0022
Ciprofloxacin (2015)	<0.00005	<0.00005	<0.00005
Clofibric acid	<0.0000005	<0.0000005	<0.0000005
Cotinine	0.000002	0.000002	0.000002
DEET	0.000005	<0.000005	0.000005
Dexamethasone	<0.000005	<0.000005	<0.000005
Diazepam	<0.000001	<0.000001	<0.000001
Diclofenac	<0.0000005	<0.0000005	<0.0000005
Dilantin	<0.000002	<0.000002	<0.000002
Diltiazem	<0.0000001	<0.0000001	<0.0000001
Doxycycline (2015)	<0.00005	<0.00005	<0.00005
Enrofloxacin (2015)	<0.00005	<0.00005	<0.00005
Erythromycin	<0.000001	<0.000001	<0.000001
Fluoxetine (Prozac)	<0.000001	<0.000001	<0.000001
Galaxolide (2015)	<0.00005	<0.00005	<0.00005
Gemfibrozil	<0.0000005	<0.0000005	<0.0000005
Ibuprofen	<0.00005	<0.00005	<0.00005
Indole (2015)	<0.00005	<0.00005	<0.00005
Iopromide	<0.00005	<0.00005	<0.00005
Isoquinonline (2015)	<0.0004	<0.0004	<0.0004
Lasalocid (2015)	<0.000001	<0.000001	<0.000001
Levothyroxine (Synthroid)	<0.000002	<0.000002	<0.000002
Lincomycin	<0.0000001	<0.0000001	<0.0000001
Menthol (2015)	<0.0001	<0.0001	<0.0001
Meprobamate	<0.000001	<0.000001	<0.000001
Methyl salicylate (2015)	<0.0001	<0.0001	<0.0001
4-Methylphenol (2015)	<0.0001	<0.0001	<0.0001
Monensin	<0.000001	<0.000001	<0.000001
Naproxen	<0.000002	<0.000002	<0.000002
Narasin	<0.000001	<0.000001	<0.000001
Nicotine	<0.00001	<0.00001	<0.00001
Norfloxacin (2015)	<0.00005	<0.00005	<0.00005
Oleandomycin	<0.000001	<0.000001	<0.000001
Oxytetracycline (2015)	<0.0005	<0.0005	<0.0005
Paraxanthine	<0.000005	<0.000005	<0.000005
Penicillin G	<0.000002	<0.000002	<0.000002
Penicillin V	<0.000002	<0.000002	<0.000002
Phenol (2015)	<0.0004	<0.0004	<0.0004
Prednisone	<0.000002	<0.000002	<0.000002
Primidone	<0.000005	<0.000005	<0.000005

	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Roxithromycin	<0.000001	<0.000001	<0.000001
Salicylic acid	<0.00005	<0.00005	<0.00005
Salinomycin	<0.0000001	<0.0000001	<0.0000001
Simvastatin (2015)	<0.000005	<0.000005	<0.000005
Sitosterol (2015)	<0.0020	<0.0020	<0.0020
Stigmastanol (2015)	<0.0020	<0.0020	<0.0020
Sucralose	0.000050	0.000043	0.000047
Sulfachloropyridazine (2015)	<0.000005	<0.000005	<0.000005
Sulfadiazine	<0.000001	<0.000001	<0.000001
Sulfadimethoxine	<0.0000001	<0.0000001	<0.0000001
Sulfamerazine (2015)	<0.000001	<0.000001	<0.000001
Sulfamethazine	<0.000001	<0.000001	<0.000001
Sulfamethizole	<0.000001	<0.000001	<0.000001
Sulfamethoxazole	<0.000001	<0.000001	<0.000001
Sulfasalazine	<0.000005	<0.000005	<0.000005
Sulthiazole	<0.000001	<0.000001	<0.000001
Tetracycline (2015)	<0.0005	<0.0005	<0.0005
Theobromine	<0.00005	<0.00005	<0.00005
Theophylline	<0.000005	<0.000005	<0.000005
Tonalid (2015)	<0.00005	<0.00005	<0.00005
Triclocarban	<0.0000005	<0.0000005	<0.0000005
Triclosan	<0.000050	<0.000050	<0.000050
Triethyl citrate (2015)	<0.0004	<0.0004	<0.0004
Trimethoprim	<0.000001	<0.000001	<0.000001
Tylosin	<0.000001	<0.000001	<0.000001
Virginiamycin M1	<0.000001	<0.000001	<0.000001
Radionuclides (pCi/L) (2015)			
Gross Alpha, excluding Uranium and Radon	3.38 ± 2.15	2.20 ± 1.85	2.79 ±2.00
Gross Alpha	3.6 ± 2.2	2.4 ± 1.8	3.0 ± 2.0
Gross Beta	6.6 ± 2.0	4.5 ± 1.9	5.5 ± 2.0
Radium - 226	0.37 ± 0.20	0.26 ± 0.17	0.32 ± 0.19
Radium - 228	0.87 ± 0.49	0.66 ± 0.45	0.77 ± 0.47
Radium - 226 + 228, combined	1.24 ± 0.53	0.92 ± 0.48	1.08 ± 0.51
Uranium, Total mg/L	<0.0010	<0.0010	<0.0010
UCMR-4 Assessment Monitoring (2018)			
Bromide	0.0353	0.0218	0.0331
Total Organic Carbon	2.010	1.650	1.825

D = Sample collected in distribution system NR = Not Regulated R = Not Regulated in raw water, only finished water

MPN = Most Probable Number AL=Action level

*There were 0 detections of *Cryptosporidium parvum* in 24 of tests.

***There were 0 detections of Giardia lamblia in 24 tests*.

***PCB's are summation of Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260. None were detected.

****The list of Flame Retardants and Selected Pesticides is tested using USEPA Method 527. These chemicals are included in the Unregulated Contaminant Monitoring Rule-2.

Note for Lead and Copper: There is little to no detectable lead in Lake Michigan water, which is the source of Milwaukee's supply. The major sources of copper and lead in drinking water in Milwaukee are service lines, building plumbing, and fixtures. From these sources, some homes in the community have lead levels above the EPA action level of 0.015 mg/L. Milwaukee Water Works has installed and is operating treatment facilities to reduce lead in drinking water.

Revised: February 27, 2020

For more information, please call the Water Quality Section of the Milwaukee Water Works at (414) 286-2585.

Milwaukee Water Works

2019 Treated Water from Water Treatment Plants Water Quality Report

Milwaukee's drinking water fully complies with USEPA and Wis DNR regulations.

		ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Clarity					
Turbidity , NTU [1]	95% of the time[2]	<0.30	0.94	0.00	0.02
Microbiological					
Coliform, Total, Presence in 100mL		<5%	<1	<1	<1
Cryptosporidium parvum, oocysts/100L*		TT	<0.002	<0.002	<0.002
Giardia lamblia, cysts/100L**		TT	<0.002	<0.002	<0.002
Heterotrophic Plate Count, cfu/1mL [1]		TT	13	<1	<1
Chemical & Physical Parameters					
Alkalinity, as CaCO3 [1]		NR	119	97	104
Carbon dioxide, free (calculated)		NR	6.72	3.26	4.74
Conductivity, µS/cm		NR	368	294	311
Hardness, Total, as CaCO3		NR	146	120	137
Hardness, Calcium, as CaCO3		NR	125	83	91
Hardness, Magnesium, as CaCO3		NR	55	19	45
Odor (Threshold Odor Number) [1]		3 (S)	1	1	1
pH [1]		6.5-8.5 (S)	8.01	7.27	7.64
Saturation Index (calculated)		NR	-0.12	-0.54	-0.29
Specific UV absorbance, L/mg-m, calc. ***		NR	1.1	0.3	0.6
Temperature, degrees Celsius [1]		NR	21.1	0.0	7.8
Total Dissolved Solids (TDS) calc.		500 (S)	213	170	181
Total Solids		NR	160	160	160
Total Suspended Solids		NR	<25	<25	<25
Total Organic Carbon ***		TT	1.75	1.27	1.47
UV-254 (cm-1) ***		NR	0.015	0.004	0.009
Inorganic Chemicals					
Aluminum		0.05 to 0.20 (S)	0.091	0.073	0.082
Ammonia, as Nitrogen		NR	0.23	0.12	0.17
Antimony		0.006	<0.001	<0.001	<0.001
Arsenic		0.010	<0.001	<0.001	<0.001
Barium		2	0.019	0.019	0.019
Beryllium		0.004	<0.00030	<0.00030	<0.00030
Boron		NR	0.022	0.022	0.022
Bromate		RAA	0.006	<0.0011	0.0031
Bromide		NR	0.028	0.012	0.020
Cadmium		0.005	<0.001	<0.001	<0.001
Calcium		NR	33.0	33.0	33.0
Cerium		NR	<0.001	<0.001	<0.001
Cesium		NR	<0.001	<0.001	<0.001
Chlorate		NR	0.272	0.031	0.121
Chloride		250 (S)	25.6	13.6	14.9
Chlorine, Free		4	0.37	0.00	0.03

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Chlorine, Total	4	1.86	1.07	1.52
Chlorite	1	0.0068	<0.0021	<0.0021
Chromium , total	0.1	<0.0009	<0.0009	<0.0009
Chromium, hexavalent	NR	0.00021	0.00017	0.00017
Cobalt	NR	<0.002	<0.002	<0.002
Copper[3]	1.3 AL	0.0014	<0.001	0.0014
Cyanide	0.2	<0.020	<0.020	<0.020
Dysprosium	NR	<0.001	<0.001	<0.001
Erbium	NR	<0.001	<0.001	<0.001
Europium	NR	<0.001	<0.001	<0.001
Fluoride	4.0	0.66	0.03	0.55
Gadolinium	NR	<0.001	<0.001	<0.001
Gallium	NR	<0.001	<0.001	<0.001
Germanium	NR	<0.001	<0.001	<0.001
Gold	NR	<0.001	<0.001	<0.001
Hafnium	NR	<0.001	<0.001	<0.001
Holmium	NR	<0.001	<0.001	<0.001
Iridium	NR	<0.001	<0.001	<0.001
Iron	0.3 (S)	<0.020	<0.020	<0.020
Lanthanum	NR	<0.001	<0.001	<0.001
Lead[3]	0.015 AL	<0.001	<0.001	<0.001
Lithium	NR	2.2	2.2	2.2
Lutetium	NR	<0.001	<0.001	<0.001
Magnesium	NR	11.0	11.0	11.0
Manganese	0.05 (S)	<0.002	<0.002	<0.002
Mercury	0.002	<0.00010	<0.00010	<0.00010
Molybdenum	NR	<0.002	<0.002	<0.002
Neodymium	NR	<0.001	<0.001	<0.001
Nickel	NR	<0.001	<0.001	<0.001
Niobium	NR	<0.001	<0.001	<0.001
Nitrate, as Nitrogen	10	0.410	0.290	0.325
Nitrate and Nitrite, Total, as Nitrogen	10	0.417	0.294	0.330
Nitrite, as Nitrogen	1	0.0072	0.0014	0.0023
Osmium	NR	<0.001	<0.001	<0.001
Palladium	NR	<0.001	<0.001	<0.001
Perchlorate	NR	0.00014	0.00012	0.00013
o-Phosphate as PO_4	NR	3.78	0.31	1.89
Phosphorus as P	NR	0.740	0.590	0.640
Platinum	NR	<0.001	<0.001	<0.001
Potassium	NR	1.4	1.4	1.4
Praseodymium	NR	<0.001	<0.001	<0.001
Rhenium	NR	<0.001	<0.001	<0.001
Rhodium	NR	<0.001	<0.001	<0.001
Rubidium	NR	0.0011	0.0011	0.0011
Ruthenium	NR	<0.001	<0.001	<0.001
Samarium	NR	<0.001	<0.001	<0.001
Selenium	0.05	<0.002	<0.002	<0.002
Silica	NR	1.9	1.7	1.8
Silver	0.1 (S)	<0.002	<0.002	<0.002
Sodium	NR	10.00	9.10	9.35
Strontium	NR	0.120	0.120	0.120
Sulfate	250 (S)	26.0	26.0	26.0
Tantalum	NR	<0.001	<0.001	<0.001
Tellurium	NR	<0.001	<0.001	<0.001
Thallium	0.002	<0.0003	<0.0003	<0.0003
Thorium	NR	<0.005	<0.005	<0.005
Thulium	NR	<0.001	<0.001	<0.001
Tin	NR	<0.002	<0.002	<0.002

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Titanium	NR	<0.005	<0.005	<0.005
Tungsten	NR	<0.001	<0.001	<0.001
Uranium	NR	<0.001	<0.001	<0.001
Vanadium	NR	<0.002	<0.002	<0.002
Ytterbium	NR	<0.001	<0.001	<0.001
Zinc	5 (S)	<0.005	<0.005	<0.005
Zirconium	NR	<0.001	<0.001	<0.001
Organic Chemicals				
Acenaphthene	NR	<0.0001	<0.0001	<0.0001
Acenaphthylene	NR	<0.0001	<0.0001	<0.0001
Acetaldehyde	NR	0.015	<0.0050	<0.0050
Acetochlor	NR	<0.0001	<0.0001	<0.0001
Acetone	NR	0.0023	<0.0020	0.0023
Acrylamide	TT	<0.0005	<0.0005	<0.0005
Acrylonitrile	NR	<0.0007	<0.0007	<0.0007
Adipate, di(2-ethylhexyl)	0.400	<0.0006	<0.0006	<0.0006
Alachlor	0.002	<0.0001	<0.0001	<0.0001
Aldehydes, Total	NR	0.015	<0.0050	<0.0050
Aldicarb (Temik)	0.003	<0.0005	<0.0005	<0.0005
Aldicarb sulfone	0.002	<0.0007	<0.0007	<0.0007
Aldicarb sulfoxide	0.004	<0.0005	<0.0005	<0.0005
Aldrin	NR	<0.0001	<0.0001	<0.0001
Allyl chloride	NR	<0.0009	<0.0009	<0.0009
tert-Amyl Methyl ether	NR	<0.0004	<0.0004	<0.0004
Ametryn	NR	<0.0001	<0.0001	<0.0001
Aniline (2015)	NR	<0.0005	<0.0005	<0.0005
Anilizine	NR	<0.0010	<0.0010	<0.0010
Anthracene	NR	<0.0001	<0.0001	<0.0001
Aspon	NR	<0.0001	<0.0001	<0.0001
Atraton	NR	<0.0001	<0.0001	<0.0001
Atrazine	0.003	<0.0001	<0.0001	<0.0001
Azinphos-ethyl	NR	<0.0005	<0.0005	<0.0005
Azinphos-methyl	NR	<0.0005	<0.0005	<0.0005
Bendiocarb	NR	<0.0005	<0.0005	<0.0005
Benfluralin	NR	<0.0001	<0.0001	<0.0001
Benzaldehyde	NR	<0.0051	<0.0050	<0.0050
Benzene	0.005	<0.0002	<0.0002	<0.0002
alpha-Benzene hexachloride (alpha-Hexachlorocyclohexane)	NR	<0.0001	<0.0001	<0.0001
beta-Benzene hexachloride	NR	<0.0001	<0.0001	<0.0001
delta-Benzene hexachloride	NR	<0.0001	<0.0001	<0.0001
gamma-Benzene hexachloride (Lindane)	0.0002	<0.00002	<0.00002	<0.00002
Benzo(a)anthracene	NR	<0.0001	<0.0001	<0.0001
Benzo(b)fluoranthene	NR	<0.0001	<0.0001	<0.0001
Benzo(k)fluoranthene	NR	<0.0001	<0.0001	<0.0001
Benzo(g, h, I)perylene	NR	<0.0001	<0.0001	<0.0001
Benzophenone (2015)	NR	<0.0001	<0.0001	<0.0001
Benzo(a)pyrene	0.0002	<0.00002	<0.00002	<0.00002
Benzyl chloride	NR	<0.0005	<0.0005	<0.0005
Bifenthrin (2015)	NR	<0.0005	<0.0005	<0.0005
Bolstar	NR	<0.0001	<0.0001	<0.0001
Bromacil	NR	<0.0001	<0.0001	<0.0001
Bromobenzene	NR	<0.0001	<0.0001	<0.0001
Bromochloroacetic Acid	NR	0.0011	<0.0004	0.0007
Bromochloroacetonitrile	NR	0.0009	<0.0004	0.0006
Bromochloromethane	NR	<0.0002	<0.0002	<0.0002
Bromodichloroacetic Acid	NR	0.0015	<0.0007	0.0007

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Bromodichloromethane	0.080	0.0036	0.0007	0.0016
Bromoform	0.080	0.0004	<0.0002	0.0003
Bromomethane	NR	<0.0004	<0.0004	<0.0004
Butachlor	NR	<0.00010	<0.00010	<0.00010
1,3-Butadiene	NR	<0.0005	<0.0005	<0.0005
2-Butanone (MEK)	NR	<0.0024	<0.0024	<0.0024
Butylate	NR	<0.0001	<0.0001	<0.0001
tert-Butyl alcohol	NR	<0.0004	<0.0004	<0.0004
n-Butylacrylate	NR	<0.0007	<0.0007	<0.0007
n-Butylbenzene	NR	<0.0002	<0.0002	<0.0002
sec-Butylbenzene	NR	<0.0002	<0.0002	<0.0002
tert-Butylbenzene	NR	<0.0002	<0.0002	<0.0002
Butylbenzylphthalate	NR	<0.001	<0.001	<0.001
Butyraldehyde (Butanal)	NR	<0.0051	<0.0050	<0.0050
Carbaryl	NR	<0.0005	<0.0005	<0.0005
Carbazole (2015)	NR	<0.0005	<0.0005	<0.0005
Carbofuran	0.04	<0.0009	<0.0009	<0.0009
Carbon disulfide	NR	<0.0010	<0.0010	<0.0010
Carbophenothion	NR	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	0.005	<0.0003	<0.0003	<0.0003
Carboxin	NR	<0.0001	<0.0001	<0.0001
Chlordane	0.002	<0.0001	<0.0001	<0.0001
Chlordane, alpha	0.002	<0.0001	<0.0001	<0.0001
Chlordane, gamma	0.002	<0.0001	<0.0001	<0.0001
Chlorfenvinphos	NR	<0.005	<0.005	<0.005
Cloroacetonitrile	NR	<0.005	<0.005	<0.005
Chlorobenzene	0.1	<0.0002	<0.0002	<0.0002
Chlorobenzilate	NR	<0.0001	<0.0001	<0.0001
2-Chlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
1-Chlorobutane	NR	<0.0007	<0.0007	<0.0007
Chlorodibromoacetic Acid	NR	0.0010	<0.0008	0.0008
Chloroethane	NR	<0.0004	<0.0004	<0.0004
Chloroform	0.080	0.0036	0.0003	0.0012
Chloromethane	NR	<0.0002	<0.0002	<0.0002
Chloroneb	NR	<0.0001	<0.0001	<0.0001
Chloropicrin	NR	<0.0005	<0.0005	<0.0005
Chloroprene	NR	<0.0005	<0.0005	<0.0005
Chloropropylate	NR	<0.0001	<0.0001	<0.0001
Chlorothalonil	NR	<0.0001	<0.0001	<0.0001
2-Chlorotoluene (o-)	NR	<0.0002	<0.0002	<0.0002
4-Chlorotoluene (p-)	NR	<0.0002	<0.0002	<0.0002
Chlorpropham	NR	<0.0001	<0.0001	<0.0001
Chlorpyrifos	NR	<0.0001	<0.0001	<0.0001
Chlorpyrifos methyl	NR	<0.0005	<0.0005	<0.0005
Chrysene	NR	<0.0001	<0.0001	<0.0001
Clomazone	NR	<0.0001	<0.0001	<0.0001
Clopyralid	NR	<0.010	<0.010	<0.010
Coumaphos	NR	<0.0001	<0.0001	<0.0001
Crotonaldehyde	NR	<0.0051	<0.0050	<0.0050
Crotoxyphos	NR	<0.0005	<0.0005	<0.0005
4-Cumyl phenol (2015)	NR	<0.0001	<0.0001	<0.0001
Cyanazine	NR	<0.0001	<0.0001	<0.0001
Cycloate	NR	<0.0001	<0.0001	<0.0001
Cyclohexanone	NR	<0.0021	<0.0021	<0.0021
2,4-D	0.07	<0.0001	<0.0001	<0.0001
DCPA	NR	<0.001	<0.001	<0.001
4,4'-DDD	NR	<0.0001	<0.0001	<0.0001
4,4'-DDE	NR	<0.0001	<0.0001	<0.0001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
4,4'-DDT	NR	<0.0001	<0.0001	<0.0001
Dalapon	0.2	<0.0010	<0.0010	<0.0010
Decanal	NR	<0.0051	<0.0050	<0.0050
Demeton O	NR	<0.0005	<0.0005	<0.0005
Demeton S	NR	<0.0005	<0.0005	<0.0005
Desethylatrazine	NR	<0.001	<0.001	<0.001
Desisopropylatrazine	NR	<0.001	<0.001	<0.001
Diazinon	NR	<0.0001	<0.0001	<0.0001
Dibenzo(a,h)anthracene	NR	<0.0001	<0.0001	<0.0001
Dibromoacetic acid	0.060	0.0006	<0.0006	<0.0006
Dibromoacetonitrile	NR	0.0008	<0.0004	<0.0004
Dibromochloromethane	0.080	0.0024	0.0007	0.0014
1,2-Dibromoethane	0.00005	<0.00001	<0.00001	<0.00001
Dibromomethane	NR	<0.0002	<0.0002	<0.0002
1-2 Dibromo 3 chloropropane (DBCP)	0.0002	<0.00001	<0.00001	<0.00001
Di-n-butylphthalate	NR	<0.0020	<0.0020	<0.0020
Dicamba	NR	<0.0001	<0.0001	<0.0001
Dichlobenil	NR	<0.0001	<0.0001	<0.0001
Dichlofenthion	NR	<0.0001	<0.0001	<0.0001
Dichloran	NR	<0.0005	<0.0005	<0.0005
2,3-Dichlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
Dichloroacetic Acid	0.060	0.0017	<0.0004	0.0007
Dichloroacetonitrile	NR	0.0005	<0.0005	<0.0005
Dichlorvos	NR	<0.0001	<0.0001	<0.0001
1,2-Dichlorobenzene	0.600	<0.0002	<0.0002	<0.0002
1,3-Dichlorobenzene	NR	<0.0002	<0.0002	<0.0002
1,4-Dichlorobenzene	0.075	<0.0002	<0.0002	<0.0002
trans-1,4-Dichloro-2-butylene	NR	<0.0009	<0.0009	<0.0009
Dichlorodifluoromethane	NR	<0.0003	<0.0003	<0.0003
1,1-Dichloroethane	NR	<0.0002	<0.0002	<0.0002
1,2- Dichloroethane	0.005	<0.0002	<0.0002	<0.0002
1,1-Dichloroethylene	0.007	<0.0002	<0.0002	<0.0002
1,2-Dichloroethylene, cis	0.07	<0.0002	<0.0002	<0.0002
1,2-Dichloroethylene, trans	0.1	<0.0001	<0.0001	<0.0001
Di (2-chloroethyl) ether	NR	<0.0005	<0.0005	<0.0005
Dichloromethane (methylene chloride)	0.005	<0.0004	<0.0004	<0.0004
1,2-Dichloropropane	0.005	<0.0002	<0.0002	<0.0002
1,3-Dichloropropane	NR	<0.0002	<0.0002	<0.0002
2,2-Dichloropropane	NR	<0.0002	<0.0002	<0.0002
1,1-Dichloropropanone	NR	0.0012	<0.0005	0.0006
1,1-Dichloropropene (2018)	NR	<0.0003	<0.0003	<0.0003
1,3-Dichloropropene (2018)	NR	<0.0005	<0.0005	<0.0005
1,1-Dichloropropylene	NR	<0.0002	<0.0002	<0.0002
cis 1,3-Dichloropropylene	NR	<0.0002	<0.0002	<0.0002
trans 1,3-Dichloropropylene	NR	<0.0002	<0.0002	<0.0002
Dicrotophos	NR	<0.0003	<0.0003	<0.0003
Dieldrin	NR	<0.0005	<0.0005	<0.0005
Di (2-ethylhexyl) adipate	0.4	<0.0001	<0.0001	<0.0001
Di (2-ethylhexyl) phthalate	0.006	<0.0006	<0.0006	<0.0006
Diethylphthalate	NR	<0.0006	<0.0006	<0.0006
Diisopropyl ether (2015)	NR	<0.0005	<0.0005	<0.0005
Dimethoate	NR	<0.0005	<0.0005	<0.0005
2,6-Dimethylnaphthalene (2015)	NR	<0.0001	<0.0001	<0.0001
Dimethylphthalate	NR	<0.0010	<0.0010	<0.0010
2,4-Dinitrotoluene	NR	<0.0005	<0.0005	<0.0005
2,6-Dinitrotoluene	NR	<0.0005	<0.0005	<0.0005
Di-n-octylphthalate	NR	<0.0020	<0.0020	<0.0020
Dinoseb	0.007	<0.00010	<0.00010	<0.00010

	ALLOWABLE CONCENTRATION (MCL, mg/L)	**MAXIMUM** (mg/L)	**MINIMUM** (mg/L)	**MEDIAN** (mg/L)
1,4 Dioxane	NR	<0.0020	<0.0020	<0.0020
Dioxathion A	NR	<0.0005	<0.0005	<0.0005
Dioxathion B	NR	<0.0005	<0.0005	<0.0005
Dioxin (2,3,7,8-TCDD)	0.00000003	<0.0000000050	<0.0000000050	<0.0000000050
Diphenamid	NR	<0.0001	<0.0001	<0.0001
Diquat	0.02	<0.0004	<0.0004	<0.0004
Disulfoton	NR	<0.0001	<0.0001	<0.0001
Disulfoton sulfone	NR	<0.0001	<0.0001	<0.0001
Disulfoton sulfoxide	NR	<0.010	<0.010	<0.010
Endosulfan I	NR	<0.0001	<0.0001	<0.0001
Endosulfan II	NR	<0.0001	<0.0001	<0.0001
Endosulfan sulfate	NR	<0.0001	<0.0001	<0.0001
Endothall	0.1	<0.0090	<0.0090	<0.0090
Endrin	0.002	<0.00001	<0.00001	<0.00001
Endrin aldehyde	NR	<0.0005	<0.0005	<0.0005
Epichlorohydrin	TT	<0.0009	<0.0009	<0.0009
EPN	NR	<0.0005	<0.0005	<0.0005
EPTC	NR	<0.0001	<0.0001	<0.0001
Erucylamide	NR	<0.0050	<0.0050	<0.0050
Esbiol (2015)	NR	<0.0005	<0.0005	<0.0005
Esfenvalerate	NR	<0.0005	<0.0005	<0.0005
Ethalfluralin	NR	<0.0001	<0.0001	<0.0001
Ethion	NR	<0.0050	<0.0050	<0.0050
Ethofumesate	NR	<0.0005	<0.0005	<0.0005
Ethoprop	NR	<0.0001	<0.0001	<0.0001
Ethylacrylate	NR	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.7	<0.0003	<0.0003	<0.0003
Ethylene dibromide (EDB)	0.00005	<0.00001	<0.00001	<0.00001
Ethyl ether	NR	<0.0005	<0.0005	<0.0005
Ethyl methacrylate	NR	<0.0007	<0.0007	<0.0007
Ethyl tert-butyl ether	NR	<0.0001	<0.0001	<0.0001
Etridiazole	NR	<0.0001	<0.0001	<0.0001
Famphur	NR	<0.0001	<0.0001	<0.0001
Fenamiphos	NR	<0.0001	<0.0001	<0.0001
Fenarimol	NR	<0.0010	<0.0010	<0.0010
Fenitrothion	NR	<0.0005	<0.0005	<0.0005
Fenoxyprop-ethyl	NR	<0.0010	<0.0010	<0.0010
Fensulfothion	NR	<0.0005	<0.0005	<0.0005
Fenthion	NR	<0.0001	<0.0001	<0.0001
Fenvalerate (2015)	NR	<0.0005	<0.0005	<0.0005
Fluazifop-butyl	NR	<0.0001	<0.0001	<0.0001
Fluchloralin	NR	<0.0001	<0.0001	<0.0001
Fluometuron	NR	<0.0005	<0.0005	<0.0005
Fluoranthene	NR	<0.0001	<0.0001	<0.0001
Fluorene	NR	<0.0001	<0.0001	<0.0001
Fluridone	NR	<0.0010	<0.0010	<0.0010
Fonofos	NR	<0.0001	<0.0001	<0.0001
Formaldehyde	NR	<0.0051	<0.0050	<0.0050
Glyoxal	NR	<0.0051	<0.0050	<0.0050
Glyphosate (Round-up)	0.7	<0.006	<0.006	<0.006
Haloacetic acids(9), Total	0.060	0.0060	<0.0005	0.0025
Heptachlor	0.0004	<0.00004	<0.00004	<0.00004
Heptachlor epoxide	0.0002	<0.00002	<0.00002	<0.00002
Heptanal	NR	<0.0051	<0.0050	<0.0050
2,2',3,3',4,4',6-Heptachlorobiphenyl	NR	<0.0005	<0.0005	<0.0005
2,2',4,4',5,5'-Hexabromobiphenyl (HBB) (2015)	NR	<0.0007	<0.0007	<0.0007
2,2',4,4',5,5'-Hexabromobiphenyl ether (BDE-153)(2015)	NR	<0.0008	<0.0008	<0.0008
Hexachlorobenzene	0.001	<0.0001	<0.0001	<0.0001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
2,2',4,4',5,6'-Hexachlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
Hexachlorobutadiene	NR	<0.0002	<0.0002	<0.0002
Hexachloroethane	NR	<0.0012	<0.0012	<0.0012
Hexachlorocyclopentadiene	0.05	<0.0001	<0.0001	<0.0001
Hexanal	NR	<0.0051	<0.0050	<0.0050
2-Hexanone	NR	<0.0012	<0.0012	<0.0012
Hexazinone	NR	<0.0001	<0.0001	<0.0001
3-Hydroxycarbofuran	NR	<0.0005	<0.0005	<0.0005
Indeno(1,2,3-cd)pyrene	NR	<0.0001	<0.0001	<0.0001
Iprodione	NR	<0.0005	<0.0005	<0.0005
Isoborneol (2015)	NR	<0.00005	<0.00005	<0.00005
Isofenphos	NR	<0.0005	<0.0005	<0.0005
Isophorone	NR	<0.0001	<0.0001	<0.0001
Isopropylbenzene	NR	<0.0002	<0.0002	<0.0002
4-Isopropyltoluene (p-)	NR	<0.0002	<0.0002	<0.0002
Kepone (2015)	NR	<0.0005	<0.0005	<0.0005
Leptophos	NR	<0.0005	<0.0005	<0.0005
Lindane	0.0002	<0.00002	<0.00002	<0.00002
Malathion	NR	<0.0001	<0.0001	<0.0001
Metalazyl	NR	<0.0005	<0.0005	<0.0005
Methacrylonitrile	NR	<0.0008	<0.0008	<0.0008
Methomyl	0.005	<0.0005	<0.0005	<0.0005
Methoxychlor	0.04	<0.0001	<0.0001	<0.0001
Methylacrylate	NR	<0.0008	<0.0008	<0.0008
Methyl iodide (Iodomethane)	NR	<0.0007	<0.0007	<0.0007
Methylmethacrylate	NR	<0.0009	<0.0009	<0.0009
1-Methyl naphthalene	NR	<0.0001	<0.0001	<0.0001
2-Methyl naphthalene	NR	<0.0001	<0.0001	<0.0001
Methyl paraoxon	NR	<0.0005	<0.0005	<0.0005
Methyl parathion	NR	<0.0005	<0.0005	<0.0005
4-Methyl-2-pentanone (MIBK)	NR	<0.0011	<0.0011	<0.0011
Methyl-t-butyl ether (MTBE)	NR	<0.0003	<0.0003	<0.0003
Metolachlor (Dual)	NR	<0.0001	<0.0001	<0.0001
Metribuzin (Sencor)	NR	<0.0001	<0.0001	<0.0001
Metsulfuron methyl	NR	<0.010	<0.010	<0.010
Mevinphos	NR	<0.0001	<0.0001	<0.0001
MGK-264 isomer a	NR	<0.0001	<0.0001	<0.0001
MGK-264 isomer b	NR	<0.0001	<0.0001	<0.0001
MGK-326	NR	<0.0001	<0.0001	<0.0001
Mirex	NR	<0.0005	<0.0005	<0.0005
Molinate	NR	<0.0001	<0.0001	<0.0001
Monobromoacetic Acid	0.060	<0.0010	<0.0010	<0.0010
Monochloroacetic Acid	0.060	<0.0015	<0.0015	<0.0015
Monocrotophos	NR	<0.0005	<0.0005	<0.0005
Naled	NR	<0.0005	<0.0005	<0.0005
Naphthalene	NR	<0.0003	<0.0003	<0.0003
1-Naphthol (2016)	NR	<0.0010	<0.0010	<0.0010
Napropamide	NR	<0.0001	<0.0001	<0.0001
Nitrobenzene	NR	<0.0021	<0.0021	<0.0021
Nitrofen (2015)	NR	<0.0005	<0.0005	<0.0005
2-Nitropropane	NR	<0.0009	<0.0009	<0.0009
cis-Nonachlor	NR	<0.0001	<0.0001	<0.0001
trans-Nonachlor	NR	<0.0001	<0.0001	<0.0001
Nonanal	NR	<0.0051	<0.0050	<0.0050
Norflurazon	NR	<0.0010	<0.0010	<0.0010
2,2',3,3',4,5',6,6'-Octachlorobiphenyl	NR	<0.0005	<0.0005	<0.0005
Octanal	NR	<0.0051	<0.0050	<0.0050
Oryzalin	NR	<0.010	<0.010	<0.010

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Oxadiazon	NR	<0.0001	<0.0001	<0.0001
Oxamyl (Vydate)	0.2	<0.0010	<0.0010	<0.0010
Oxychlordane	NR	<0.0001	<0.0001	<0.0001
Oxyfluorfen	NR	<0.0005	<0.0005	<0.0005
Paraquat	NR	<0.0004	<0.0004	<0.0004
Parathion	NR	<0.0005	<0.0005	<0.0005
Pebulate	NR	<0.0001	<0.0001	<0.0001
Pendimethalin	NR	<0.0001	<0.0001	<0.0001
2,2',4,4',5-Pentabromodiphenyl ether (BDE-99)(2015)	NR	<0.0009	<0.0009	<0.0009
2,2',4,4',6-Pentabromodiphenyl ether (BDE-100)(2015)	NR	<0.0005	<0.0005	<0.0005
Pentachlorobenzene	NR	<0.0005	<0.0005	<0.0005
Pentachloronitrobenzene	NR	<0.0005	<0.0005	<0.0005
2,2',3',4,6-Pentachlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
Pentachloroethane	NR	<0.0011	<0.0011	<0.0011
Pentachlorophenol	0.001	<0.00004	<0.00004	<0.00004
PAHs(benzo(a)-pyrene)	0.0002	<0.00002	<0.00002	<0.00002
cis-Permethrin	NR	<0.0001	<0.0001	<0.0001
trans-Permethrin	NR	<0.0001	<0.0001	<0.0001
Phthalate, (di(2-ethylhexyl)	0.006	<0.0006	<0.0006	<0.0006
Phenanthrene	NR	<0.0001	<0.0001	<0.0001
Phorate	NR	<0.0001	<0.0001	<0.0001
Phosmet	NR	<0.0005	<0.0005	<0.0005
E-Phosphamidon	NR	<0.0005	<0.0005	<0.0005
Z-Phosphamidon	NR	<0.0005	<0.0005	<0.0005
Picloram (Tordon)	0.5	<.0001	<.0001	<.0001
Polychlorinated Byphenyls (PCB's), Total****	0.0005			
Aroclor 1016	NR	<0.00008	<0.00008	<0.00008
Aroclor 1221	NR	<0.00019	<0.00019	<0.00019
Aroclor 1232	NR	<0.00023	<0.00023	<0.00023
Aroclor 1242	NR	<0.00026	<0.00026	<0.00026
Aroclor 1248	NR	<0.0001	<0.0001	<0.0001
Aroclor 1254	NR	<0.0001	<0.0001	<0.0001
Aroclor 1260	NR	<0.0002	<0.0002	<0.0002
Profluralin	NR	<0.0001	<0.0001	<0.0001
Prometon	NR	<0.0010	<0.0010	<0.0010
Prometryn	NR	<0.0001	<0.0001	<0.0001
Pronamide	NR	<0.0001	<0.0001	<0.0001
Propachlor	NR	<0.0001	<0.0001	<0.0001
Propanil	NR	<0.0005	<0.0005	<0.0005
Propazine	NR	<0.0001	<0.0001	<0.0001
Propiconazole isomer a	NR	<0.0005	<0.0005	<0.0005
Propiconazole isomer b	NR	<0.0005	<0.0005	<0.0005
Propionaldehyde (Propanal)	NR	<0.0051	<0.0050	<0.0050
Propionitrile	NR	<0.0008	<0.0008	<0.0008
n-Propylbenzene	NR	<0.0002	<0.0002	<0.0002
Prothiofos	NR	<0.0005	<0.0005	<0.0005
Pyrene	NR	<0.0001	<0.0001	<0.0001
Pyruvaldehyde (Methylglyoxal)	NR	<0.0051	<0.0050	<0.0050
Silvex (2, 4, 5-TP)	0.05	<0.0001	<0.0001	<0.0001
Simazine	0.004	<0.00007	<0.00007	<0.00007
Simetryn	NR	<0.0001	<0.0001	<0.0001
Stirofos	NR	<0.0001	<0.0001	<0.0001
Styrene	0.1	<0.0002	<0.0002	<0.0002
Sulfotep	NR	<0.0005	<0.0005	<0.0005
2, 3, 7, 8-TCDD (Dioxin)	0.00000003	<0.0000000050	<0.0000000050	<0.0000000050
Tebuthiuron	NR	<0.010	<0.010	<0.010
TEPP	NR	<0.001	<0.001	<0.001
Terbacil	NR	<0.001	<0.001	<0.001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Terbufos	NR	<0.0005	<0.0005	<0.0005
Terbufos-sulfone (2015)	NR	<0.0004	<0.0004	<0.0004
Terbutryn	NR	<0.0001	<0.0001	<0.0001
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)(2015)	NR	<0.0003	<0.0003	<0.0003
1,2,4,5-Tetrachlorobenzene	NR	<0.0005	<0.0005	<0.0005
2,2',4,4'-Tetrachorobiphenyl	NR	<0.0001	<0.0001	<0.0001
1,1,1,2-Tetrachloroethane	NR	<0.0003	<0.0003	<0.0003
1,1,2,2-Tetrachloroethane	NR	<0.0002	<0.0002	<0.0002
Tetrachloroethylene	0.005	<0.0002	<0.0002	<0.0002
Tetrahydrofuran	NR	<0.0008	<0.0008	<0.0008
Thiabendazole	NR	<0.010	<0.010	<0.010
Thiobencarb	NR	<0.0001	<0.0001	<0.0001
Thionazin	NR	<0.0005	<0.0005	<0.0005
Toluene	1	<0.0002	<0.0002	<0.0002
Toxaphene	0.003	<0.0010	<0.0010	<0.0010
2,4,5-TP (Silvex)	0.050	<0.0001	<0.0001	<0.0001
Triademefon	NR	<0.0005	<0.0005	<0.0005
Tribromoacetic Acid	NR	<0.0010	<0.0010	<0.0010
Tribufos	NR	<0.0001	<0.0001	<0.0001
Trichloroacetic Acid	0.060	0.0017	<0.0005	0.0006
Trichloroacetonitrile	NR	0.0005	<0.0005	<0.0005
1,2,3-Trichlorobenzene	NR	<0.0002	<0.0002	<0.0002
1,2,4-Trichlorobenzene	0.07	<0.0002	<0.0002	<0.0002
2,4,5-Trichlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
1,1,1-Trichloroethane	0.2	<0.0005	<0.0005	<0.0005
1,1,2-Trichloroethane	0.005	<0.0002	<0.0002	<0.0002
Trichloroethylene	0.005	<0.0002	<0.0002	<0.0002
Trichlorofluoromethane	NR	<0.0004	<0.0004	<0.0004
Trichloronate	NR	<0.0005	<0.0005	<0.0005
1,2,3-Trichloropropane	NR	<0.0002	<0.0002	<0.0002
1, 1, 1-Trichloropropanone	NR	0.0016	<0.0005	0.0005
1,1,2-Trichloro-1,2,2-trifluorethane	NR	<0.0004	<0.0004	<0.0004
Tricyclazole	NR	<0.0010	<0.0010	<0.0010
Trifluran	NR	<0.0001	<0.0001	<0.0001
1,2,3-Trimethylbenzene	NR	<0.0002	<0.0002	<0.0002
1,2,4-Trimethylbenzene	NR	<0.0001	<0.0001	<0.0001
1,3,5-Trimethylbenzene	NR	<0.0002	<0.0002	<0.0002
Trihalomethanes, total	0.080	0.0099	0.0021	0.0041
Urethane (2015)	NR	<0.0010	<0.0010	<0.0010
n-Valeraldehyde (Pentanal)	NR	<0.0051	<0.0050	<0.0050
Vernolate	NR	<0.0001	<0.0001	<0.0001
Vinclozolin (2016)	NR	<0.0005	<0.0005	<0.0005
Vinyl acetate	NR	<0.0020	<0.0020	<0.0020
Vinyl Chloride	0.002	<0.0002	<0.0002	<0.0002
Xylene, total	10	<0.0005	<0.0005	<0.0005
Estrogens and Other Hormones (EDCs)				
Diethylstilbestrol (DES)	NR	<0.0000005	<0.0000005	<0.0000005
17alpha-Estradiol	NR	<0.0000005	<0.0000005	<0.0000005
17beta-Estradiol	NR	<0.0000005	<0.0000005	<0.0000005
Estriol	NR	<0.0000005	<0.0000005	<0.0000005
Estrone	NR	<0.0000005	<0.0000005	<0.0000005
17alpha-Ethynl estradiol	NR	<0.0000005	<0.0000005	<0.0000005
Progesterone	NR	<0.0000001	<0.0000001	<0.0000001
cis-Testosterone	NR	<0.0000001	<0.0000001	<0.0000001
trans-Testosterone	NR	<0.0000001	<0.0000001	<0.0000001
Nitrosamines				

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
N-Nitrosodi-N-butylamine (NDBA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodi-N-propylamine (NDPA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodiethylamine (NDEA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodimethylamine (NDMA)	NR	0.0000023	<0.0000020	<0.0000020
N-Nitrosodiphenylamine (NDPhA)	NR	<0.000020	<0.000020	<0.000020
N-Nitrosomethylethylamine (NMEA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosomorpholine (NMOR)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosopiperdine (NPIP)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitropyrrolidine (NPYR)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorinated Compounds				
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
ADONA	NR	<0.0000020	<0.0000020	<0.0000020
F-53B Major	NR	<0.0000020	<0.0000020	<0.0000020
F-53B Minor	NR	<0.0000020	<0.0000020	<0.0000020
GenX	NR	<0.0000050	<0.0000050	<0.0000050
Nafion Byproduct 1	NR	<0.0000050	<0.0000050	<0.0000050
Nafion Byproduct 2	NR	<0.0000050	<0.0000050	<0.0000050
N-ethylperfluoroctane sulfonamide (NEtFOSA)	NR	<0.0000020	<0.0000020	<0.0000020
N-ethylperfluoroctane sulfonamidoethanol	NR	<0.0000020	<0.0000020	<0.0000020
N-methylperfluorooctane sulfonamide (NMeFOSA)	NR	<0.0000020	<0.0000020	<0.0000020
N-methylperfluoroctane sulfonamideoethanol	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorobutanesulfone acid (PFBS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorobutanoic acid (PFBA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluorodecanoic acid (PFDA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoroheptanoic acid (PFHpA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorohexanesulfonic acid (PFHxS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorohexanoic acid (PFHxA)	NR	0.0000022	<0.0000020	<0.0000020
Perfluorolauric acid (PFDoA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorononanoic acid (PFNA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorooctane sulfonate (PFOS)	NR	0.0000026	<0.0000020	0.0000023
N-ethyl Perfluorooctanesulfonamidoacetic acid	NR	<0.0000020	<0.0000020	<0.0000020
N-methyl Perfluorooctanesulfonamidoacetic acid	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorocatanoic acid (PFOA)	NR	0.0000023	<0.0000020	<0.0000020
Perfluorotridecanoic acid (PFTrDA)	NR	<0.0000020	<0.0000020	0.0000022
Perfluoroundecanoic acid (PFUnA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorododecanesulfonic acid (PFDoS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorodecanesulfonic acid (PFDS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoroheptanesulfonic acid (PFHpS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorohexadecanoic acid (PFHxDA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoro-2-methoxyethoxyacetic acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-4-isopropoxybutanoic acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-2-methoxyacetic acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-4-methoxybutanoic acid (PFMOBA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluorononanesulfonic acid (PFNS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoro(3,5-dioxahexanoic) acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro(3,5,7-trioxaoctanoic) acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluorooctane sulfonamide (PFOSA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoropentanoic acid (PFPeA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoropentanesulfonic acid (PFPeS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorotetradecanoic acid (PFTeDA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoromyristic acid (PFTA)(2017)	NR	<0.0000020	<0.0000020	<0.0000020
Phosphate Flame Retardants				

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Tributyl phosphate (2015)	NR	<0.0001	<0.0001	<0.0001
Triphenyl phospate(2015)	NR	<0.0001	<0.0001	<0.0001
Tris(2-butoxyethyl) phosphate (2015)	NR	<0.0010	<0.0010	<0.0010
Tris(2-chloroethyl) phosphate	NR	<0.00001	<0.00001	<0.00001
Tris(chloropropyl) phosphate	NR	0.00001	0.00001	0.00001
Tris(1,3-dichloro-2-propyl) phosphate (2015)	NR	<0.0001	<0.0001	<0.0001
Phenolic Endocrine Disruptors (EDCs)				
Bisphenol A	NR	<0.0001	<0.0001	<0.0001
Nonylphenol, isomer mix	NR	<0.0005	<0.0005	<0.0005
4-n-Octylphenol	NR	<0.0005	<0.0005	<0.0005
4-tert-Octylphenol	NR	<0.0005	<0.0005	<0.0005
Pentachlorophenol	NR	<0.0001	<0.0001	<0.0001
Phenylphenol	NR	<0.0001	<0.0001	<0.0001
Tetrabromobisphenol A	NR	<0.0001	<0.0001	<0.0001
2, 4, 6-Trichlorophenol	NR	<0.0001	<0.0001	<0.0001
Pharmaceuticals & Personal Care Products				
Acesulfame-K	NR	0.00006	0.00005	0.00006
Acetaminophen	NR	<0.000005	<0.000005	<0.000005
Acetophenone (2015)	NR	<0.0001	<0.0001	<0.0001
9, 10-Anthracenedione (2016)	NR	<0.00005	<0.00005	<0.00005
Antipyrine	NR	<0.000001	<0.000001	<0.000001
Atenol	NR	<0.000001	<0.000001	<0.000001
Azithromycin	NR	<0.000005	<0.000005	<0.000005
Bacitracin (2015)	NR	<0.0010	<0.0010	<0.0010
Bezafibrate	NR	<0.0000005	<0.0000005	<0.0000005
Caffeine	NR	<0.00005	<0.00005	<0.00005
Camphor (2015)	NR	<0.00005	<0.00005	<0.00005
Carbadox	NR	<0.000005	<0.000005	<0.000005
Carbamazepine	NR	<0.000001	<0.000001	<0.000001
Chloramphenicol	NR	<0.000005	<0.000005	<0.000005
Chlorotetracycline	NR	<0.00005	<0.00005	<0.00005
Cholesterol (2015)	NR	<0.0010	<0.0010	<0.0010
Ciprofloxacin (2015)	NR	<0.00005	<0.00005	<0.00005
Clofibric acid	NR	<0.0000005	<0.0000005	<0.0000005
Cotinine	NR	0.000001	<0.000001	0.000001
DEET	NR	<0.000005	<0.000005	<0.000005
Dexamethasone	NR	<0.000005	<0.000005	<0.000005
Diazepam	NR	<0.000001	<0.000001	<0.000001
Diclofenac	NR	<0.0000005	<0.0000005	<0.0000005
Dilantin	NR	<0.000002	<0.000002	<0.000002
Diltiazem	NR	<0.0000001	<0.0000001	<0.0000001
Doxycycline (2015)	NR	<0.00005	<0.00005	<0.00005
Enrofloxacin (2015)	NR	<0.00005	<0.00005	<0.00005
Erythromycin	NR	<0.000001	<0.000001	<0.000001
Fluoxetine (Prozac)	NR	<0.000001	<0.000001	<0.000001
Galaxolide (2015)	NR	<0.000050	<0.000050	<0.000050
Gemfibrozil	NR	<0.0000005	<0.0000005	<0.0000005
Ibuprofen	NR	<0.00005	<0.00005	<0.00005
Indole (2015)	NR	<0.00005	<0.00005	<0.00005
Iopromide	NR	<0.00005	<0.00005	<0.00005
Isoquinoline (2015)	NR	<0.0004	<0.0004	<0.0004
Lasalocid (2015)	NR	<0.000001	<0.000001	<0.000001
Levothyroxine (Synthroid)	NR	<0.000002	<0.000002	<0.000002
Lincomycin	NR	<0.0000001	<0.0000001	<0.0000001
Menthol (2015)	NR	<0.0001	<0.0001	<0.0001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Meprobamate	NR	<0.000001	<0.000001	<0.000001
Methyl salicylate (2015)	NR	<0.0001	<0.0001	<0.0001
4-Methylphenol (2015)	NR	<0.0001	<0.0001	<0.0001
Monensin	NR	<0.000001	<0.000001	<0.000001
Naproxen	NR	<0.000002	<0.000002	<0.000002
Narasin	NR	<0.000001	<0.000001	<0.000001
Nicotine	NR	<0.00001	<0.00001	<0.00001
Norfloxacin (2015)	NR	<0.00005	<0.00005	<0.00005
Oleandomycin	NR	<0.000001	<0.000001	<0.000001
Oxytetracycline (2015)	NR	<0.0005	<0.0005	<0.0005
Paraxanthine	NR	<0.000005	<0.000005	<0.000005
Penicillin G	NR	<0.000002	<0.000002	<0.000002
Penicillin V	NR	<0.00002	<0.00002	<0.00002
Phenol (2015)	NR	<0.0004	<0.0004	<0.0004
Prednisone	NR	<0.00002	<0.00002	<0.00002
Primidone	NR	<0.000005	<0.000005	<0.000005
Roxithromycin	NR	<0.000001	<0.000001	<0.000001
Salicylic acid	NR	<0.00005	<0.00005	<0.00005
Salinomycin	NR	<0.0000001	<0.0000001	<0.0000001
Simvastatin (2015)	NR	<0.000005	<0.000005	<0.000005
Sitosterol (2015)	NR	<0.0020	<0.0020	<0.0020
Stigmastanol (2015)	NR	<0.0020	<0.0020	<0.0020
Sucralose	NR	0.000038	0.000034	0.000036
Sulfachloropyridazine (2015)	NR	<0.000005	<0.000005	<0.000005
Sulfadiazine	NR	<0.000001	<0.000001	<0.000001
Sulfadimethoxine	NR	<0.0000001	<0.0000001	<0.0000001
Sulfamerazine	NR	<0.000001	<0.000001	<0.000001
Sulfamethazine (2015)	NR	<0.000001	<0.000001	<0.000001
Sulfamethizole	NR	<0.000001	<0.000001	<0.000001
Sulfamethoxazole	NR	<0.000001	<0.000001	<0.000001
Sulfasalazine	NR	<0.000005	<0.000005	<0.000005
Sulthiazole	NR	<0.000001	<0.000001	<0.000001
Tetracycline (2015)	NR	<0.0005	<0.0005	<0.0005
Theobromine	NR	<0.00005	<0.00005	<0.00005
Theophylline	NR	<0.000005	<0.000005	<0.000005
Tonalid (2015)	NR	<0.000050	<0.000050	<0.000050
Triclocarban	NR	<0.0000005	<0.0000005	<0.0000005
Triclosan	NR	<0.000050	<0.000050	<0.000050
Triethyl citrate (2015)	NR	<0.0004	<0.0004	<0.0004
Trimethoprim	NR	<0.000001	<0.000001	<0.000001
Tylosin	NR	<0.000001	<0.000001	<0.000001
Virginiamycin M1	NR	<0.000001	<0.000001	<0.000001
Radionuclides (pCi/L) (2015)				
Gross Alpha, excluding Uranium and Radon	15	3.42 ± 1.99	0.30 ± 2.01	1.86 ± 2.00
Gross Alpha	NR	3.6 ± 2.0	0.46 ± 2.01	2.03 ± 2.0
Gross Beta	50	4.0 ± 1.9	3.7 ± 1.8	3.9 ± 1.9
Radium - 226	5	0.20 ± 0.18	0.11 ± 0.14	0.16 ± 0.16
Radium - 228	5	1.4 ± 0.7	0.69 ± 0.46	1.05 ± 0.58
Radium - 226 + 228, combined	5	1.51 ± 0.71	0.89 ± 0.49	1.20 ± 0.60
Uranium, Total mg/L	30	<0.0010	<0.0010	<0.0010
UCMR-4 Assessment Monitoring (2018)				
alpha-Hexachlorocyclohexane		<0.0000100	<0.0000100	<0.0000100
1-Butanol		<0.00200	<0.00200	<0.00200
Butylated hydroxyanisole		<0.000300	<0.000300	<0.000300
Chlorpyrifos		<0.0000300	<0.0000300	<0.0000300
Dimethipin		<0.000200	<0.000200	<0.000200

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Ethoprop		<0.0000300	<0.0000300	<0.0000300
Germanium		<0.000300	<0.000300	<0.000300
Manganese		0.000520	<0.000400	<0.000400
2-Methoxyethanol		<0.000400	<0.000400	<0.000400
o-toluidine		<0.00000700	<0.00000700	<0.00000700
Oxyfluorfen		<0.000500	<0.000500	<0.000500
Permethrin, cis & trans		<0.0000400	<0.0000400	<0.0000400
Profenofos		<0.000300	<0.000300	<0.000300
2-Propen-1-ol		<0.000500	<0.000500	<0.000500
Quinoline		<0.0000200	<0.0000200	<0.0000200
Tebuconazole		<0.000200	<0.000200	<0.000200
Tribufos		<0.0000700	<0.0000700	<0.0000700
UCMR- 4 Assessment Monitoring -Cyanotoxins (2018)				
Anatoxin-a		<0.0000300	<0.0000300	<0.0000300
Cylindrospermopsin		<0.0000900	<0.0000900	<0.0000900
Total Microcystins & Nodularins		<0.000300	<0.000300	<0.000300

MCL = Maximum Contaminant Level, the highest level at which a contaminant is allowed to be present in the water at the tap.

TT=Treatment Technique

P = Proposed level, regulations pending

n.o.o.=no odor observed

NR = Not Regulated S=Secondary contaminant

RAA=Running annual average 0.010 mg/L

AL=Action level

Results preceded by "less than" (<) were below the minimum detection limit.

UCMR=These compounds were tested for compliance with the Unregulated Contaminant Monitoring Rule.

* There were no detections of *Cryptosporidium parvum* in tests.

** There were no detections of *Giardia lamblia* in tests.

*** These values are from Combined Filter Effluent.

****PCB's are summation of Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260. None were detected.

[1]The average instead of the median is reported for these values.

[2] Maximum turbidity was <0.3 NTU 99.05% of the time.

[3]The copper and lead results in this section were not compliance samples.

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For more information, please call the Water Quality section at the Milwaukee Water Works at (414) 286-2585

Milwaukee
Water Works

2019 Distribution System Water Quality

The Milwaukee Water Works complies with USEPA and Wis Dept of Natural Resources drinking water quality regulations

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Clarity				
Turbidity , NTU	NR	82.83	0.01	0.32
Microbiological				
Coliform, Total, Presence in 100mL	<5%	0.0003%	0.00%	0.00%
Heterotrophic Plate Count, "V" result *	<5%	0.00%	0.00%	0.00%
Chemical & Physical Parameters				
Alkalinity, as CaCO3	NR	150	101	105
Carbon dioxide, free, calculated	NR	8.95	0.51	5.04
Conductivity, µS/cm	NR	388	251	306
Hardness,Total, as CaCO3	NR	150	124	135
Hardness, Calcium, as CaCO3	NR	114	11	92
Hardness, Magnesium, as CaCO3	NR	80	29	43
Odor (Threshold Odor Number)	NR	1	1	1
Oxygen, dissolved	NR	116.0	3.8	12.9
pH	NR	8.60	7.40	7.62
Specific UV absorbance, L/mg-M, calc.	NR	1.4	0.8	1.0
Temperature, degrees Celsius	NR	22.2	0.7	11.3
Total Dissolved Solids (TDS) calc.	NR	180	180	180
Total Solids	NR	180	180	180
Total Suspended Solids	NR	<25	<25	<25
Total Organic Carbon	NR	1.75	1.36	1.52
UV-254 (cm-1)	NR	0.022	0.012	0.015
Inorganic Chemicals				
Aluminum	NR	0.062	0.004	0.039
Ammonia, as Nitrogen	NR	0.46	0.01	0.23
Antimony	0.006	<0.001	<0.001	<0.001
Arsenic	0.010	<0.001	<0.001	<0.001
Barium	2	0.019	0.019	0.019
Beryllium	0.004	<0.00030	<0.00030	<0.00030
Boron	NR	0.022	0.022	0.022
Bromate	NR	0.012	0.001	0.003
Bromide	NR	0.126	<0.0021	0.021
Cadmium	0.005	<0.001	<0.001	<0.001
Calcium	NR	33.0	33.0	33.0
Cerium	NR	<0.001	<0.001	<0.001
Cesium	NR	<0.001	<0.001	<0.001
Chlorate	NR	0.335	0.024	0.109
Chloride	NR	38.0	9.4	15.0
Chlorine, Total	4	1.67	0.34	1.11
Chlorite	1.0	0.008	0.0015	0.0021
Chromium, total	0.1	<0.0009	<0.0009	<0.0009
Chromium, hexavalent	NR	0.00200	0.00120	0.00160
Cobalt	NR	<0.002	<0.002	<0.002
Copper	1.3 AL[1]	0.0025	0.0020	0.0025

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Cyanide	0.2	<0.020	<0.020	<0.020
Dysprosium	NR	<0.001	<0.001	<0.001
Erbium	NR	<0.001	<0.001	<0.001
Europium	NR	<0.001	<0.001	<0.001
Fluoride	4.0	0.66	0.07	0.50
Gadolinium	NR	<0.001	<0.001	<0.001
Gallium	NR	<0.001	<0.001	<0.001
Germanium	NR	<0.001	<0.001	<0.001
Gold	NR	<0.001	<0.001	<0.001
Hafnium	NR	<0.001	<0.001	<0.001
Holmium	NR	<0.001	<0.001	<0.001
Iridium	NR	<0.001	<0.001	<0.001
Iron	NR	<0.020	<0.020	<0.020
Lanthanum	NR	<0.001	<0.001	<0.001
Lead	0.015 AL[1]	<0.001	<0.001	<0.001
Lithium	NR	0.0022	0.0022	0.0022
Lutetium	NR	<0.001	<0.001	<0.001
Magnesium	NR	11.0	11.0	11.0
Manganese	NR	<0.002	<0.002	<0.002
Mercury	0.002	<0.00010	<0.00010	<0.00010
Molybdenum	NR	<0.002	<0.002	<0.002
Neodymium	NR	<0.001	<0.001	<0.001
Nickel	NR	<0.001	<0.001	<0.001
Niobium	NR	<0.001	<0.001	<0.001
Nitrate, as Nitrogen	10	0.49	0.24	0.33
Nitrate and Nitrite, Total, as Nitrogen	10	0.534	0.247	0.333
Nitrite, as Nitrogen	1	0.090	<0.0016	0.005
Osmium	NR	<0.001	<0.001	<0.001
Palladium	NR	<0.001	<0.001	<0.001
Perchlorate	NR	0.00013	0.00013	0.00013
o-Phosphate as PO_4	NR	3.39	1.14	1.68
Phosphorus as P	NR	0.640	0.550	0.588
Platinum	NR	<0.001	<0.001	<0.001
Potassium	NR	1.4	1.4	1.4
Praseodymium	NR	<0.001	<0.001	<0.001
Rhenium	NR	<0.001	<0.001	<0.001
Rhodium	NR	<0.001	<0.001	<0.001
Rubidium	NR	0.0011	0.0011	0.0011
Ruthenium	NR	<0.001	<0.001	<0.001
Samarium	NR	<0.001	<0.001	<0.001
Selenium	0.05	<0.002	<0.002	<0.002
Silica	NR	1.9	1.7	1.8
Silver	NR	<0.002	<0.002	<0.002
Sodium	NR	10.00	9.10	9.35
Strontium	NR	0.120	0.120	0.120
Sulfate	NR	26.0	26.0	26.0
Tantalum	NR	<0.001	<0.001	<0.001
Tellurium	NR	<0.001	<0.001	<0.001
Thallium	0.002	<0.0003	<0.0003	<0.0003
Thorium	NR	<0.005	<0.005	<0.005
Thulium	NR	<0.001	<0.001	<0.001
Tin	NR	<0.002	<0.002	<0.002
Titanium	NR	<0.005	<0.005	<0.005
Tungsten	NR	<0.001	<0.001	<0.001
Uranium	NR	<0.001	<0.001	<0.001
Vanadium	NR	<0.002	<0.002	<0.002
Ytterbium	NR	<0.001	<0.001	<0.001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Zinc	NR	<0.005	<0.005	<0.005
Zirconium	NR	<0.001	<0.001	<0.001
Organic Chemicals				
Acenaphthene	NR	<0.0001	<0.0001	<0.0001
Acenaphthylene	NR	<0.0001	<0.0001	<0.0001
Acetaldehyde	NR	<0.0052	<0.0050	<0.0050
Acetochlor	NR	<0.0001	<0.0001	<0.0001
Acetone	NR	<0.0050	<0.0050	<0.0050
Acetophenone (2015)	NR	<0.0001	<0.0001	<0.0001
Acrylamide	TT	<0.0005	<0.0005	<0.0005
Acrylonitrile	NR	<0.0010	<0.0010	<0.0010
Adipate, di(2-ethylhexyl)	0.400	<0.0006	<0.0006	<0.0006
Alachlor	0.002	<0.0001	<0.0001	<0.0001
Aldehydes, Total	NR	<0.0052	<0.0050	<0.0050
Aldicarb (Temik)	0.003	<0.0005	<0.0005	<0.0005
Aldicarb sulfone	0.002	<0.0007	<0.0007	<0.0007
Aldicarb sulfoxide	0.004	<0.0005	<0.0005	<0.0005
Aldrin	NR	<0.0001	<0.0001	<0.0001
Allyl chloride	NR	<0.0050	<0.0050	<0.0050
tert-Amyl Methyl ether	NR	<0.0030	<0.0030	<0.0030
Ametryn	NR	<0.0001	<0.0001	<0.0001
Anilizine	NR	<0.0010	<0.0010	<0.0010
Aniline (2015)	NR	<0.0005	<0.0005	<0.0005
Anthracene	NR	<0.0001	<0.0001	<0.0001
Aspon	NR	<0.0001	<0.0001	<0.0001
Atraton	NR	<0.0001	<0.0001	<0.0001
Atrazine	0.003	<0.0001	<0.0001	<0.0001
Azinphos-ethyl	NR	<0.0005	<0.0005	<0.0005
Azinphos-methyl	NR	<0.0005	<0.0005	<0.0005
Bendiocarb	NR	<0.0005	<0.0005	<0.0005
Benfluralin	NR	<0.0001	<0.0001	<0.0001
Benzaldehyde	NR	<0.0051	<0.0050	<0.0050
Benzene	0.005	<0.0005	<0.0005	<0.0005
alpha-Benzene hexachloride (alpha Hexachlorocyclohexan	NR	<0.0001	<0.0001	<0.0001
beta-Benzene hexachloride	NR	<0.0001	<0.0001	<0.0001
delta-Benzene hexachloride	NR	<0.0001	<0.0001	<0.0001
gamma-Benzene hexachloride (Lindane)	0.0002	<0.00002	<0.00002	<0.00002
Benzyl chloride	NR	<0.0005	<0.0005	<0.0005
Benzo(a)anthracene	NR	<0.0001	<0.0001	<0.0001
Benzo(b)fluoranthene	NR	<0.0001	<0.0001	<0.0001
Benzo(k)fluoranthene	NR	<0.0001	<0.0001	<0.0001
Benzo(g, h, I)perylene	NR	<0.0001	<0.0001	<0.0001
Benzophenone (2015)	NR	<0.0001	<0.0001	<0.0001
Benzo(a)pyrene	0.0002(D)	<0.00002	<0.00002	<0.00002
Bifenthrin (2015)	NR	<0.0005	<0.0005	<0.0005
Bolstar	NR	<0.0001	<0.0001	<0.0001
Bromacil	NR	<0.0001	<0.0001	<0.0001
Bromobenzene	NR	<0.0005	<0.0005	<0.0005
Bromochloroacetic Acid	NR	<0.0012	<0.0010	<0.0010
Bromochloroacetonitrile	NR	0.0008	<0.0005	<0.0005
Bromochloromethane	NR	<0.0005	<0.0005	<0.0005
Bromodichloroacetic Acid	NR	0.0016	<0.0010	0.0012
Bromodichloromethane	0.080	0.0008	<0.0005	0.0006
Bromoform	0.080	0.0005	0.0003	0.0004
Bromomethane	NR	<0.0005	<0.0005	<0.0005
Butachlor	NR	<0.00010	<0.00010	<0.00010

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
1,3-Butadiene	NR	<0.0050	<0.0050	<0.0050
2-Butanone (MEK)	NR	<0.0050	<0.0050	<0.0050
Butylate	NR	<0.0001	<0.0001	<0.0001
n-Butylacrylate	NR	<0.0010	<0.0010	<0.0010
tert-Butyl alcohol	NR	<0.0020	<0.0020	<0.0020
n-Butylbenzene	NR	<0.0005	<0.0005	<0.0005
sec-Butylbenzene	NR	<0.0005	<0.0005	<0.0005
tert-Butylbenzene	NR	<0.0005	<0.0005	<0.0005
Butylbenzylphthalate	NR	<0.001	<0.001	<0.001
Butyraldehyde (Butanal)	NR	<0.0052	<0.0050	<0.0050
Camphor (2015)	NR	<0.00005	<0.00005	<0.00005
Carbaryl	NR	<0.0005	<0.0005	<0.0005
Carbazole (2015)	NR	<0.00005	<0.00005	<0.00005
Carbofuran	0.04	<0.0009	<0.0009	<0.0009
Carbon disulfide	NR	<0.0050	<0.0050	<0.0050
Carbophenothion	NR	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	0.005	<0.0005	<0.0005	<0.0005
Carboxin	NR	<0.0001	<0.0001	<0.0001
Chlordane	0.002	<0.0001	<0.0001	<0.0001
Chlordane, alpha	0.002	<0.0001	<0.0001	<0.0001
Chlordane, gamma	0.002	<0.0001	<0.0001	<0.0001
Chlorfenvinphos	NR	<0.0050	<0.0050	<0.0050
Cloroacetonitrile	NR	<0.005	<0.005	<0.005
Chlorobenzene	0.1	<0.0005	<0.0005	<0.0005
Chlorobenzilate	NR	<0.0001	<0.0001	<0.0001
2-Chlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
1-Chlorobutane	NR	<0.0050	<0.0050	<0.0050
Chlorodibromoacetic Acid	NR	<0.002	<0.002	<0.002
Chloroethane	NR	<0.0005	<0.0005	<0.0005
Chloroform	0.080	0.0065	0.0004	0.0018
Chloromethane	NR	<0.0005	<0.0005	<0.0005
Chlorneb	NR	<0.0001	<0.0001	<0.0001
Chloropicrin	NR	0.0021	<0.0005	<0.005
Chloropropylate	NR	<0.0001	<0.0001	<0.0001
Chlorothalonil	NR	<0.0001	<0.0001	<0.0001
Chloroprene	NR	<0.0050	<0.0050	<0.0050
o-Chlorotoluene	NR	<0.0005	<0.0005	<0.0005
p-Chlorotoluene	NR	<0.0005	<0.0005	<0.0005
Chlorpropham	NR	<0.0001	<0.0001	<0.0001
Chlorpyrifos	NR	<0.0001	<0.0001	<0.0001
Chlorpyrifos methyl	NR	<0.0005	<0.0005	<0.0005
Chrysene	NR	<0.0001	<0.0001	<0.0001
Clomazone	NR	<0.0001	<0.0001	<0.0001
Clopyralid	NR	<0.010	<0.010	<0.010
Coumaphos	NR	<0.0001	<0.0001	<0.0001
Crotonaldehyde	NR	<0.0052	<0.0050	<0.0050
Crotoxyphos	NR	<0.0005	<0.0005	<0.0005
4-Cumyl phenol (2015)	NR	<0.0001	<0.0001	<0.0001
Cyanazine	NR	<0.0001	<0.0001	<0.0001
Cycloate	NR	<0.0001	<0.0001	<0.0001
Cyclohexanone	NR	<0.005	<0.005	<0.005
2,4-D	0.07	<0.0001	<0.0001	<0.0001
DCPA	NR	<0.0001	<0.0001	<0.0001
4,4'-DDD	NR	<0.0001	<0.0001	<0.0001
4,4'-DDE	NR	<0.0001	<0.0001	<0.0001
4,4'-DDT	NR	<0.0001	<0.0001	<0.0001
Dalapon	0.2	<0.0010	<0.0010	<0.0010

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Decanal	NR	<0.0052	<0.0050	<0.0050
Deisopropylatrazine (2015)	NR	<0.0010	<0.0010	<0.0010
Demeton O	NR	<0.0005	<0.0005	<0.0005
Demeton S	NR	<0.0005	<0.0005	<0.0005
Desethylatrazine	NR	<0.0010	<0.0010	<0.0010
Desisopropylatrazine	NR	<0.0010	<0.0010	<0.0010
Diazinon	NR	<0.0001	<0.0001	<0.0001
Dibenzo(a,h)anthracene	NR	<0.0001	<0.0001	<0.0001
Dibromoacetic Acid	0.060	<0.0006	<0.0006	<0.0006
Dibromoacetonitrile	NR	0.0012	<0.0005	0.0006
Dibromochloromethane	0.080	0.0150	0.0009	0.0020
Dibromoethane	NR	<0.00001	<0.00001	<0.00001
1,2-Dibromoethane	0.0500	<0.0002	<0.0002	<0.0002
Dibromomethane	NR	<0.00001	<0.00001	<0.00001
1-2 Dibromo 3 chloropropane (DBCP)	0.0002	<0.00001	<0.00001	<0.00001
Di-n-butylphthalate	NR	<0.0020	<0.0020	<0.0020
Dicamba	NR	<0.0001	<0.0001	<0.0001
Dichlobenil	NR	<0.0001	<0.0001	<0.0001
Dichlofenthion	NR	<0.0001	<0.0001	<0.0001
Dichloran	NR	<0.0005	<0.0005	<0.0005
2,3-Dichlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
Dichloroacetic Acid	0.060	0.0026	<0.0006	0.0011
Dichloroacetonitrile	NR	<0.0005	<0.0005	<0.0005
1,2-Dichlorobenzene	0.6	<0.0005	<0.0005	<0.0005
1,3-Dichlorobenzene	NR	<0.0005	<0.0005	<0.0005
1,4-Dichlorobenzene	0.075	<0.0005	<0.0005	<0.0005
trans-1,4-Dichloro-2-butylene	NR	<0.0050	<0.0050	<0.0050
Dichlorodifluoromethane	NR	<0.0005	<0.0005	<0.0005
1,1-Dichloroethane	NR	<0.0005	<0.0005	<0.0005
1,2- Dichloroethane	0.005	<0.0005	<0.0005	<0.0005
1,1-Dichloroethylene	0.007	<0.0005	<0.0005	<0.0005
1,2-Dichloroethylene, cis	0.07	<0.0005	<0.0005	<0.0005
1,2-Dichloroethylene, trans	0.1	<0.0005	<0.0005	<0.0005
Di (2-chloroethyl)ether	NR	<0.0020	<0.0020	<0.0020
Dichloromethane (methylene chloride)	0.005	<0.0005	<0.0005	<0.0005
1,2-Dichloropropane	0.005	<0.0005	<0.0005	<0.0005
1,3-Dichloropropane	NR	<0.0005	<0.0005	<0.0005
2,2-Dichloropropane	NR	<0.0005	<0.0005	<0.0005
1,1-Dichloropropanone	NR	0.0010	<0.0050	<0.0050
1,1-Dichloropropene (2015)	NR	<0.0005	<0.0005	<0.0005
1,3-Dichloropropene (2015)	NR	<0.0005	<0.0005	<0.0005
1,1-Dichloropropylene	NR	<0.0005	<0.0005	<0.0005
cis 1,3-Dichloropropylene	NR	<0.0005	<0.0005	<0.0005
trans 1,3-Dichloropropylene	NR	<0.0005	<0.0005	<0.0005
Dichlorovos	NR	<0.0001	<0.0001	<0.0001
Dicrotophos	NR	<0.0005	<0.0005	<0.0005
Dieldrin	NR	<0.0001	<0.0001	<0.0001
Di (2-ethylhexyl) adipate	0.4	<0.0006	<0.0006	<0.0006
Di (2-ethylhexyl) phthalate	0.006	<0.0006	<0.0006	<0.0006
Diethylphthalate	NR	<0.0010	<0.0010	<0.0010
Diisopropyl ether	NR	<0.0005	<0.0005	<0.0005
Dimethoate	NR	<0.0005	<0.0005	<0.0005
2,6-Dimethylnaphthalene (2015)	NR	<0.0001	<0.0001	<0.0001
Dimethylphthalate	NR	<0.0010	<0.0010	<0.0010
2,4-Dinitrotoluene	NR	<0.0005	<0.0005	<0.0005
2,6-Dinitrotoluene	NR	<0.0005	<0.0005	<0.0005
Di-n-octylphthalate	NR	<0.0020	<0.0020	<0.0020

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Dinoseb	0.007	<0.00010	<0.00010	<0.00010
1,4 Dioxane	NR	<0.0050	<0.0050	<0.0050
Dioxathion A	NR	<0.0005	<0.0005	<0.0005
Dioxathion B	NR	<0.0005	<0.0005	<0.0005
Dioxin (2,3,7,8-TCDD)	0.00000003	<0.000000005	<0.000000005	<0.000000005
Diphenamid	NR	<0.0001	<0.0001	<0.0001
Diquat	0.02	<0.0004	<0.0004	<0.0004
Disulfoton	NR	<0.0001	<0.0001	<0.0001
Disulfoton sulfone	NR	<0.0001	<0.0001	<0.0001
Disulfoton sulfoxide	NR	<0.010	<0.010	<0.010
Endosulfan I	NR	<0.0001	<0.0001	<0.0001
Endosulfan II	NR	<0.0001	<0.0001	<0.0001
Endosulfan sulfate	NR	<0.0001	<0.0001	<0.0001
Endothall	0.1	<0.0090	<0.0090	<0.0090
Endrin	0.002	<0.00001	<0.00001	<0.00001
Endrin aldehyde	NR	<0.0005	<0.0005	<0.0005
Epichlorohydrin	TT	<0.0010	<0.0010	<0.0010
EPN	NR	<0.0005	<0.0005	<0.0005
EPTC	NR	<0.0001	<0.0001	<0.0001
Erucylamide	NR	<0.0050	<0.0050	<0.0050
Esbiol (2015)	NR	<0.0005	<0.0005	<0.0005
Esfenvalerate	NR	<0.0005	<0.0005	<0.0005
Ethalfluralin	NR	<0.0001	<0.0001	<0.0001
Ethion	NR	<0.0050	<0.0050	<0.0050
Ethofumesate	NR	<0.0005	<0.0005	<0.0005
Ethoprop	NR	<0.0001	<0.0001	<0.0001
Ethylacrylate	NR	<0.0010	<0.0010	<0.0010
Ethylbenzene	0.7	<0.0005	<0.0005	<0.0005
Ethylene dibromide (EDB) (2016)	NR	<0.00001	<0.00001	<0.00001
Ethyl ether	NR	<0.0020	<0.0020	<0.0020
Ethyl methacrylate	NR	<0.0010	<0.0010	<0.0010
Ethyl tert-Butyl Ether	NR	<0.0030	<0.0030	<0.0030
Etridiazole	NR	<0.0001	<0.0001	<0.0001
Famphur	NR	<0.0001	<0.0001	<0.0001
Fenamiphos	NR	<0.0001	<0.0001	<0.0001
Fenarimol	NR	<0.0010	<0.0010	<0.0010
Fenitrothion	NR	<0.0005	<0.0005	<0.0005
Fenoxyprop-ethyl	NR	<0.0010	<0.0010	<0.0010
Fensulfothion	NR	<0.0005	<0.0005	<0.0005
Fenthion	NR	<0.0001	<0.0001	<0.0001
Fenvalerate (2015)	NR	<0.0005	<0.0005	<0.0005
Fluazifop-butyl	NR	<0.0001	<0.0001	<0.0001
Fluchloralin	NR	<0.0001	<0.0001	<0.0001
Fluometuron	NR	<0.0005	<0.0005	<0.0005
Fluoranthene	NR	<0.0001	<0.0001	<0.0001
Fluorene	NR	<0.0001	<0.0001	<0.0001
Fluridone	NR	<0.0010	<0.0010	<0.0010
Fonofos	NR	<0.0001	<0.0001	<0.0001
Formaldehyde	NR	<0.0052	<0.0050	<0.0050
Glyoxal	NR	<0.0052	<0.0050	<0.0050
Glyphosate (Round-up)	0.7	<0.006	<0.006	<0.006
Haloacetic acids(9), Total	0.060	0.0039	0.0010	0.0017
Heptachlor	0.0004	<0.00004	<0.00004	<0.00004
Heptachlor epoxide	0.0002	<0.00002	<0.00002	<0.00002
Heptanal	NR	<0.0052	<0.0050	<0.0050
Hexachlorobenzene	0.001	<0.00010	<0.00010	<0.00010
2,2',3,3',4,4',6-Heptachlorobiphenyl	NR	<0.0005	<0.0005	<0.0005

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
2,2',4,4',5,5'-Hexabromobiphenyl (HBB)(2015)	NR	<0.0007	<0.0007	<0.0007
2,2',4,4',5,5'-Hexabromobiphenyl ether (BDE-153)(2015)	NR	<0.0008	<0.0008	<0.0008
2,2',4,4',5,6'-Hexachlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
Hexachlorobutadiene	NR	<0.0005	<0.0005	<0.0005
Hexachloroethane	NR	<0.0020	<0.0020	<0.0020
Hexachlorocyclopentadiene	0.05	<0.00010	<0.00010	<0.00010
Hexanal	NR	<0.0052	<0.0050	<0.0050
2-Hexanone	NR	<0.0050	<0.0050	<0.0050
Hexazione	NR	<0.0001	<0.0001	<0.0001
3-Hydroxycarbofuran	NR	<0.0005	<0.0005	<0.0005
Indeno(1,2,3-cd)pyrene	NR	<0.0001	<0.0001	<0.0001
Indole (2015)	NR	<0.00005	<0.00005	<0.00005
Iprodione	NR	<0.0005	<0.0005	<0.0005
Isoborneol (2015)	NR	<0.0001	<0.0001	<0.0001
Isofenphos	NR	<0.0005	<0.0005	<0.0005
Isophorone	NR	<0.0001	<0.0001	<0.0001
Isopropylbenzene	NR	<0.0005	<0.0005	<0.0005
4-Isopropyltoluene (p-)	NR	<0.0005	<0.0005	<0.0005
Kepone (2015)	NR	<0.0005	<0.0005	<0.0005
Leptophos	NR	<0.0005	<0.0005	<0.0005
Lindane	0.0002	<0.00002	<0.00002	<0.00002
Malathion	NR	<0.0001	<0.0001	<0.0001
Metalaxyl	NR	<0.0005	<0.0005	<0.0005
Methacrylonitrile	NR	<0.0050	<0.0050	<0.0050
Methomyl	NR	<0.0005	<0.0005	<0.0005
Metolachlor (Dual)	NR	<0.0001	<0.0001	<0.0001
Methoxychlor	0.04	<0.0001	<0.0001	<0.0001
Methylacrylate	NR	<0.0010	<0.0010	<0.0010
Methyl iodide (Iodomethane)	NR	<0.0020	<0.0020	<0.0020
Methylmethacrylate	NR	<0.0010	<0.0010	<0.0010
1-Methyl naphthalene	NR	<0.0001	<0.0001	<0.0001
2-Methyl naphthalene	NR	<0.0001	<0.0001	<0.0001
Methyl paraoxon	NR	<0.0005	<0.0005	<0.0005
Methyl parathion	NR	<0.0005	<0.0005	<0.0005
4-Methyl-2-pentanone (MIBK)	NR	<0.0020	<0.0020	<0.0020
Methyl-t-butyl ether (MTBE)	NR	<0.0005	<0.0005	<0.0005
Metribuzin (Sencor)	NR	<0.0001	<0.0001	<0.0001
Metsulfuron methyl	NR	<0.010	<0.010	<0.010
Mevinphos	NR	<0.0001	<0.0001	<0.0001
MGK-264 isomer a	NR	<0.0001	<0.0001	<0.0001
MGK-264 isomer b	NR	<0.0001	<0.0001	<0.0001
MGK-326	NR	<0.0001	<0.0001	<0.0001
Mirex	NR	<0.0005	<0.0005	<0.0005
Molinate	NR	<0.0001	<0.0001	<0.0001
Monobromoacetic Acid	0.060	<0.0009	<0.0009	<0.0009
Monochloroacetic Acid	0.060	<0.0020	<0.0020	<0.0020
Monocrotophos	NR	<0.0005	<0.0005	<0.0005
Naled	NR	<0.0005	<0.0005	<0.0005
Naphthalene	NR	<0.0001	<0.0001	<0.0001
1-Napthol	NR	<0.0010	<0.0010	<0.0010
Napropamide	NR	<0.0001	<0.0001	<0.0001
Nitrobenzene	NR	<0.0050	<0.0050	<0.0050
Nitrofen (2016)	NR	<0.0020	<0.0020	<0.0020
2-Nitropropane	NR	<0.0020	<0.0020	<0.0020
cis-Nonachlor	NR	<0.0001	<0.0001	<0.0001
trans-Nonachlor	NR	<0.0001	<0.0001	<0.0001
Nonanal	NR	<0.0052	<0.0050	<0.0050

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Norflurazon	NR	<0.0010	<0.0010	<0.0010
2,2',3,3',4,5',6,6'-Octachlorobiphenyl	NR	<0.0005	<0.0005	<0.0005
Octanal	NR	<0.0052	<0.0050	<0.0050
Oryzalin	NR	<0.010	<0.010	<0.010
Oxadiazon	NR	<0.0001	<0.0001	<0.0001
Oxamyl (Vydate)	0.2	<0.0010	<0.0010	<0.0010
Oxychlordane	NR	<0.0001	<0.0001	<0.0001
Oxyfluorfen	NR	<0.0005	<0.0005	<0.0005
Paraquat	NR	<0.0004	<0.0004	<0.0004
Parathion	NR	<0.0005	<0.0005	<0.0005
Pebulate	NR	<0.0001	<0.0001	<0.0001
Pendimethalin	NR	<0.0001	<0.0001	<0.0001
2,2',4,4',5-Pentabromodiphenyl ether (BDE-99)(2015)	NR	<0.0009	<0.0009	<0.0009
2,2',4,4',6-Pentabromodiphenyl ether (BDE-100)(2015)	NR	<0.0005	<0.0005	<0.0005
Pentachlorobenzene	NR	<0.0005	<0.0005	<0.0005
Pentachloronitrobenzene	NR	<0.0005	<0.0005	<0.0005
2,2',3',4,6-Pentachlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
Pentachloroethane	NR	<0.0020	<0.0020	<0.0020
Pentachloronitrobenzene (2015)	5	<0.0005	<0.0005	<0.0005
Pentachlorophenol	0.001	<0.00004	<0.00004	<0.00004
PAHs(benzo(a)-pyrene)	0.0002	<0.00002	<0.00002	<0.00002
cis-Permethrin	NR	<0.0001	<0.0001	<0.0001
trans-Permethrin	NR	<0.0001	<0.0001	<0.0001
Phthalate, (di(2-ethylhexyl)	0.006	<0.0006	<0.0006	<0.0006
Phenanthrene	NR	<0.0001	<0.0001	<0.0001
Phorate	NR	<0.0001	<0.0001	<0.0001
Phosmet	NR	<0.0005	<0.0005	<0.0005
E-Phosphamidon	NR	<0.0005	<0.0005	<0.0005
Z-Phosphamidon	NR	<0.0005	<0.0005	<0.0005
Picloram (Tordon)	0.500	<0.0001	<0.0001	<0.0001
Polychlorinated Byphenyls (PCB's), Total**	0.0005			
Aroclor 1016	NR	<0.00008	<0.00008	<0.00008
Aroclor 1221	NR	<0.00019	<0.00019	<0.00019
Aroclor 1232	NR	<0.00023	<0.00023	<0.00023
Aroclor 1242	NR	<0.00026	<0.00026	<0.00026
Aroclor 1248	NR	<0.0001	<0.0001	<0.0001
Aroclor 1254	NR	<0.0001	<0.0001	<0.0001
Aroclor 1260	NR	<0.0002	<0.0002	<0.0002
Profluralin	NR	<0.0001	<0.0001	<0.0001
Prometon	NR	<0.0010	<0.0010	<0.0010
Prometryn	NR	<0.0001	<0.0001	<0.0001
Pronamide	NR	<0.0001	<0.0001	<0.0001
Propachlor	NR	<0.0001	<0.0001	<0.0001
Propanil	NR	<0.0005	<0.0005	<0.0005
Propazine	NR	<0.0001	<0.0001	<0.0001
Propiconazole isomer a	NR	<0.0050	<0.0050	<0.0050
Propiconazole isomer b	NR	<0.0050	<0.0050	<0.0050
Propionaldehyde (Propanal)	NR	<0.0052	<0.0050	<0.0050
Propionitrile	NR	<0.0050	<0.0050	<0.0050
n-Propylbenzene	NR	<0.0005	<0.0005	<0.0005
Prothiofos	NR	<0.0005	<0.0005	<0.0005
Pyrene	NR	<0.0001	<0.0001	<0.0001
Pyruvaldehyde (Methylglyoxal)	NR	<0.0052	<0.0050	<0.0050
Simazine	0.004	<0.00007	<0.00007	<0.00007
Simetryn	NR	<0.0001	<0.0001	<0.0001
Stirofos	NR	<0.0001	<0.0001	<0.0001
Styrene	0.1	<0.0005	<0.0005	<0.0005

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Sulfotep	NR	<0.0005	<0.0005	<0.0005
2,3,7,8-TCDD (Dioxin)	0.00000003	<0.000000005	<0.000000005	<0.000000005
Tebuthiuron	NR	<0.010	<0.010	<0.010
TEPP	NR	<0.001	<0.001	<0.001
Terbacil	NR	<0.0001	<0.0001	<0.0001
Terbufos	NR	<0.0005	<0.0005	<0.0005
Terbufos-sulfone (2015)	NR	<0.0004	<0.0004	<0.0004
Terbutryn	NR	<0.0001	<0.0001	<0.0001
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)(2015)	NR	<0.0003	<0.0003	<0.0003
1,2,4,5-Tetrachlorobenzene	NR	<0.0005	<0.0005	<0.0005
2,2',4,4'-Tetrachorobiphenyl	NR	<0.0001	<0.0001	<0.0001
1,1,1,2-Tetrachloroethane	NR	<0.0005	<0.0005	<0.0005
1,1,2,2-Tetrachloroethane	NR	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	0.005	<0.0005	<0.0005	<0.0005
Tetrahydrofuran	NR	<0.0050	<0.0050	<0.0050
Thiabendazole	NR	<0.010	<0.010	<0.010
Thiobencarb	NR	<0.0001	<0.0001	<0.0001
Thionazin	NR	<0.0005	<0.0005	<0.0005
Toluene	1	<0.0005	<0.0005	<0.0005
Toxaphene	0.003	<0.0010	<0.0010	<0.0010
2,4,5-TP (Silvex)	0.05	<0.0001	<0.0001	<0.0001
Triademefon	NR	<0.0005	<0.0005	<0.0005
Tribromoacetic Acid	NR	<0.0040	<0.0040	<0.0040
Tribufos	NR	<0.0001	<0.0001	<0.0001
Trichloroacetic Acid	0.060	0.0013	<0.0005	<0.0005
Trichloroacetonitrile	NR	<0.0050	<0.0050	<0.0050
1,2,3-Trichlorobenzene	NR	<0.0005	<0.0005	<0.0005
1,2,4-Trichlorobenzene	0.07	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorobiphenyl	NR	<0.0001	<0.0001	<0.0001
1,1,1-Trichloroethane	0.2	<0.0005	<0.0005	<0.0005
1,1,2-Trichloroethane	0.005	<0.0005	<0.0005	<0.0005
Trichloroethylene	0.005	<0.0005	<0.0005	<0.0005
Trichlorofluoromethane	NR	<0.0005	<0.0005	<0.0005
Trichloronate	NR	<0.0005	<0.0005	<0.0005
1,2,3-Trichloropropane	NR	<0.0005	<0.0005	<0.0005
1,1,1-Trichloropropanone	NR	0.0013	<0.0005	<0.0005
1,1,2-Trichloro-1,2,2-trifluorethane	NR	<0.0005	<0.0005	<0.0005
Tricyclazole	NR	<0.0010	<0.0010	<0.0010
1,2,3-Trimethylbenzene	NR	<0.0005	<0.0005	<0.0005
1,2,4-Trimethylbenzene	NR	<0.0005	<0.0005	<0.0005
1,3,5-Trimethylbenzene	NR	<0.0005	<0.0005	<0.0005
Trifluralin	NR	<0.0001	<0.0001	<0.0001
Trihalomethanes, total	0.080	0.0149	0.0024	0.0064
Urethane (2015)	NR	<0.0010	<0.0010	<0.0010
n-Valeraldehyde (Pentanal)	NR	<0.0052	<0.0050	<0.0050
Vernolate	NR	<0.0001	<0.0001	<0.0001
Vinclozolin	NR	<0.0005	<0.0005	<0.0005
Vinyl acetate	NR	<0.0050	<0.0050	<0.0050
Vinyl Chloride	0.0020	<0.0002	<0.0002	<0.0002
Xylene, total	10	<0.0005	<0.0005	<0.0005
Estrogens and Other Hormones (EDCs)				
Diethylstilbestrol (DES)	NR	<0.0000005	<0.0000005	<0.0000005
17alpha-Estradiol	NR	<0.0000005	<0.0000005	<0.0000005
17beta-Estradiol	NR	<0.0000005	<0.0000005	<0.0000005
Estriol	NR	<0.0000005	<0.0000005	<0.0000005
Estrone	NR	<0.0000005	<0.0000005	<0.0000005
17alpha-Ethynl estradiol	NR	<0.0000005	<0.0000005	<0.0000005
Progesterone	NR	<0.0000001	<0.0000001	<0.0000001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
cis-Testosterone	NR	<0.0000001	<0.0000001	<0.0000001
trans-Testosterone	NR	<0.0000001	<0.0000001	<0.0000001
Nitrosamines				
N-Nitrosodi-N-butylamine (NDBA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodi-N-propylamine (NDPA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodiethylamine (NDEA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosodimethylamine (NDMA)	NR	0.000120	<0.0000020	<0.0000020
N-Nitrosodiphenylamine (NDPhA)	NR	<0.000020	<0.000020	<0.000020
N-Nitrosomethylethylamine (NMEA)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosomorpholine (NMOR)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitrosopiperdine (NPIP)	NR	<0.0000020	<0.0000020	<0.0000020
N-Nitropyrrolidine (NPYR)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorinated Compounds				
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NR	<0.0000020	<0.0000020	<0.0000020
ADONA	NR	<0.0000020	<0.0000020	<0.0000020
F-53B Major	NR	<0.0000020	<0.0000020	<0.0000020
F-53B Minor	NR	<0.0000020	<0.0000020	<0.0000020
GenX	NR	<0.0000050	<0.0000050	<0.0000050
Nafion Byproduct 1	NR	<0.0000050	<0.0000050	<0.0000050
Nafion Byproduct 2	NR	<0.0000050	<0.0000050	<0.0000050
N-ethylperfluoroctane sulfonamide (NEtFOSA)	NR	<0.0000020	<0.0000020	<0.0000020
N-ethylperfluoroctane sulfonamidoethanol	NR	<0.0000020	<0.0000020	<0.0000020
N-methylperfluorooctane sulfonamide (NMeFOSA)	NR	<0.0000020	<0.0000020	<0.0000020
N-methylperfluoroctane sulfonamideoethanol	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorobutanesulfone acid (PFBS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorobutanoic acid (PFBA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluorodecanoic acid (PFDA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoroheptanoic acid (PFHpA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorohexanesulfonic acid (PFHxS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorohexanoic acid (PFHxA)	NR	0.0000022	<0.0000020	<0.0000020
Perfluorolauric acid (PFDoA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorononanoic acid (PFNA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorooctane sulfonate (PFOS)	NR	0.0000026	0.0000023	0.0000024
N-ethyl Perfluorooctanesulfonamidoacetic acid	NR	<0.0000020	<0.0000020	<0.0000020
N-methyl Perfluorooctanesulfonamidoacetic acid	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorocatanoic acid (PFOA)	NR	0.0000024	<0.0000020	0.0000022
Perfluorotridecanoic acid (PFTrDA)	NR	<0.0000020	<0.0000020	<0.0000022
Perfluoroundecanoic acid (PFUnA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorododecanesulfonic acid (PFDoS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorodecanesulfonic acid (PFDS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoroheptanesulfonic acid (PFHpS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorohexadecanoic acid (PFHxDA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoro-2-methoxyethoxyacetic acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-4-isopropoxybutanoic acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-2-methoxyacetic acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-4-methoxybutanoic acid (PFMOBA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluorononanesulfonic acid (PFNS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoro(3,5-dioxahexanoic) acid	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoro(3,5,7-trioxaoctanoic) acid	NR	<0.0000050	<0.0000050	<0.0000050
Perluorooctane sulfonamide (PFOSA)	NR	<0.0000050	<0.0000050	<0.0000050
Perfluoropentanoic acid (PFPeA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoropentanesulfonic acid (PFPeS)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluorotetradecanoic acid (PFTeDA)	NR	<0.0000020	<0.0000020	<0.0000020
Perfluoromyristic acid (PFTA)(2017)	NR	<0.0000020	<0.0000020	<0.0000020

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Phosphate Flame Retardants				
Tributyl phosphate (2015)	NR	<0.0001	<0.0001	<0.0001
Triphenyl phospate (2015)	NR	<0.0001	<0.0001	<0.0001
Tris(2-butoxyethyl) phosphate (2015)	NR	<0.0010	<0.0010	<0.0010
Tris(2-chloroethyl) phosphate	NR	<0.00001	<0.00001	<0.00001
Tris(chloropropyl) phosphate	NR	<0.00001	<0.00001	<0.00001
Tris(1,3-dichloro-2-propyl) phosphate (2015)	NR	<0.0001	<0.0001	<0.0001
Phenolic Endocrine Disruptors (EDCs)				
Bisphenol A	NR	<0.0001	<0.0001	<0.0001
Nonylphenol, isomer mix	NR	<0.0005	<0.0005	<0.0005
4-n-Octylphenol	NR	<0.0005	<0.0005	<0.0005
4-tert-Octylphenol	NR	<0.0005	<0.0005	<0.0005
Pentachlorophenol	NR	<0.0001	<0.0001	<0.0001
Phenylphenol, Total	NR	<0.0001	<0.0001	<0.0001
Tetrabromobisphenol A	NR	<0.0001	<0.0001	<0.0001
2, 4, 6-Trichlorophenol	NR	<0.0001	<0.0001	<0.0001
Pharmaceuticals & Personal Care Products				
Acesulfame-K	NR	0.00005	0.00004	0.00005
Acetaminophen	NR	<0.000005	<0.000005	<0.000005
Acetophenone (2015)	NR	<0.0001	<0.0001	<0.0001
9, 10-Anthracenedione (2015)	NR	<0.00005	<0.00005	<0.00005
Antipyrine	NR	<0.000001	<0.000001	<0.000001
Atenolol	NR	<0.000001	<0.000001	<0.000001
Azithromycin	NR	<0.000005	<0.000005	<0.000005
Bacitracin (2015)	NR	<0.0010	<0.0010	<0.0010
Bezafibrate	NR	<0.0000005	<0.0000005	<0.0000005
Caffeine	NR	<0.00005	<0.00005	<0.00005
Camphor (2015)	NR	<0.00005	<0.00005	<0.00005
Carbadox	NR	<0.000005	<0.000005	<0.000005
Carbamazepine	NR	<0.000001	<0.000001	<0.000001
Chloramphenicol	NR	<0.000005	<0.000005	<0.000005
Chlorotetracycline	NR	<0.00005	<0.00005	<0.00005
Cholesterol (2015)	NR	0.0022	<0.0010	0.0022
Ciprofloxacin (2015)	NR	<0.00005	<0.00005	<0.00005
Clofibric acid	NR	<0.0000005	<0.0000005	<0.0000005
Cotinine	NR	0.000001	<0.000001	0.000001
DEET	NR	<0.000005	<0.000005	<0.000005
Dexamethasone	NR	<0.000005	<0.000005	<0.000005
Diazepam	NR	<0.000001	<0.000001	<0.000001
Diclofenac	NR	<0.0000005	<0.0000005	<0.0000005
Dilantin	NR	<0.000002	<0.000002	<0.000002
Diltiazem	NR	<0.0000001	<0.0000001	<0.0000001
Doxycycline (2015)	NR	<0.00005	<0.00005	<0.00005
Enrofloxacin (2015)	NR	<0.00005	<0.00005	<0.00005
Erythromycin	NR	<0.000001	<0.000001	<0.000001
Fluoxetine (Prozac)	NR	<0.000001	<0.000001	<0.000001
Galaxolide (2015)	NR	<0.00005	<0.00005	<0.00005
Gemfibrozil	NR	<0.0000005	<0.0000005	<0.0000005
Ibuprofen	NR	<0.00005	<0.00005	<0.00005
Indole (2015)	NR	<0.00005	<0.00005	<0.00005
Iopromide	NR	<0.00005	<0.00005	<0.00005
Isoquinonline (2015)	NR	<0.0004	<0.0004	<0.0004
Lasalocid (2015)	NR	<0.000001	<0.000001	<0.000001
Levothyroxine (Synthroid)	NR	<0.000002	<0.000002	<0.000002
Lincomycin	NR	<0.0000001	<0.0000001	<0.0000001
Menthol (2015)	NR	<0.0001	<0.0001	<0.0001

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Meprobamate	NR	<0.000001	<0.000001	<0.000001
Methyl salicylate (2015)	NR	<0.0001	<0.0001	<0.0001
4-Methylphenol (2015)	NR	<0.0001	<0.0001	<0.0001
Monensin	NR	<0.000001	<0.000001	<0.000001
Naproxen	NR	<0.000002	<0.000002	<0.000002
Narasin	NR	<0.000001	<0.000001	<0.000001
Nicotine	NR	<0.00001	<0.00001	<0.00001
Norfloxacin (2015)	NR	<0.00005	<0.00005	<0.00005
Oleandomycin	NR	<0.000001	<0.000001	<0.000001
Oxytetracycline (2015)	NR	<0.0005	<0.0005	<0.0005
Paraxanthine	NR	<0.000005	<0.000005	<0.000005
Penicillin G	NR	<0.00002	<0.00002	<0.00002
Penicillin V	NR	<0.00002	<0.00002	<0.00002
Phenol (2015)	NR	<0.0004	<0.0004	<0.0004
Prednisone	NR	<0.000002	<0.000002	<0.000002
Primidone	NR	<0.000005	<0.000005	<0.000005
Roxithromycin	NR	<0.000001	<0.000001	<0.000001
Salicylic acid	NR	<0.00005	<0.00005	<0.00005
Salinomycin	NR	<0.0000001	<0.0000001	<0.0000001
Simvastatin (2015)	NR	<0.000005	<0.000005	<0.000005
Sitosterol (2016)	NR	0.000056	<0.000025	0.000056
Stigmastanol (2015)	NR	<0.0020	<0.0020	<0.0020
Sucralose	NR	0.000027	0.000027	0.000027
Sulfachloropyridazine (2015)	NR	<0.000005	<0.000005	<0.000005
Sulfadiazine	NR	<0.000001	<0.000001	<0.000001
Sulfadimethoxine	NR	<0.0000001	<0.0000001	<0.0000001
Sulfamerazine	NR	<0.000001	<0.000001	<0.000001
Sulfamethazine	NR	<0.000001	<0.000001	<0.000001
Sulfamethizole	NR	<0.000001	<0.000001	<0.000001
Sulfamethoxazole	NR	<0.000001	<0.000001	<0.000001
Sulfasalazine	NR	<0.000005	<0.000005	<0.000005
Sulthiazole	NR	<0.000001	<0.000001	<0.000001
Tetracycline (2015)	NR	<0.0005	<0.0005	<0.0005
Theobromine	NR	<0.00005	<0.00005	<0.00005
Theophylline	NR	<0.000005	<0.000005	<0.000005
Tonalid (2015)	NR	<0.00005	<0.00005	<0.00005
Triclocarbon	NR	<0.0000005	<0.0000005	<0.0000005
Triclosan	NR	<0.000050	<0.000050	<0.000050
Triethyl citrate (2015)	NR	<0.0004	<0.0004	<0.0004
Trimethoprim	NR	<0.000001	<0.000001	<0.000001
Tylosin	NR	<0.000001	<0.000001	<0.000001
Virginiamycin M1	NR	<0.000001	<0.000001	<0.000001
Lead and Copper (2017)		**Maximum**	**Minimum**	**90th percentile**
Copper	See note 2.	0.110	0.0006	0.046
Lead	See note 2.	0.130	0.0004	0.0072
Radionuclides (pCi/L) (2015)				
Gross Alpha, excluding Uranium and Radon	15	3.20 ± 1.68	2.24 ± 1.65	2.72 ± 1.67
Gross Alpha	NR	3.4 ± 1.7	2.4 ± 1.6	2.9 ± 1.7
Gross Beta millirems/year	50	3.2 ± 1.8	3.1 ± 1.9	3.2 ± 1.9
Radium - 226	5	0.62 ± 0.18	0.25 ± 0.15	0.44 ± 0.17
Radium - 228	5	1.1 ± 0.6	0.82 ± 0.50	0.96 ± 0.55
Radium - 226 + 228, combined	5	1.44 ± 0.53	1.35 ± 0.57	1.40 ± 0.55
Uranium, Total mg/L	30	<0.0010	<0.0010	<0.0010
UCMR-4 (2018)				

	ALLOWABLE CONCENTRATION (MCL, mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	MEDIAN (mg/L)
Bromochloroacetic acid (BCAA)		0.001180	0.000557	0.000862
Bromodichloroacetic acid (BDCAA)		0.001090	<0.000500	0.000762
Chlorodibromoacetic acid (CDBAA)		0.000524	<0.000300	0.000421
Dibromoacetic acid (DBAA)		0.000504	<0.000300	0.000389
Dichloroacetic acid (DCAA)		0.002020	0.000733	0.001505
Monobromoacetic acid (MBAA)		<0.000300	<0.000300	<0.000300
Monochloroacetic acid (MCAA)		<0.00200	<0.00200	<0.00200
Tribromoacetic acid (TBAA)		<0.00200	<0.00200	<0.00200
Trichloroacetic acid (TCAA)		0.001260	<0.000500	0.000779
HAA5 Total[c]		0.003398	0.001140	0.002575
HAA6 Br Total[d]		0.003075	0.001279	0.002325
HAA9 Total[e]		0.005951	0.002097	0.004523

MCL = Maximum Contaminant Level, the highest level at which a contaminant is allowed to be present in the water at the tap.

TT=Treatment Technique | P = Proposed level, regulations pending | NR = Not Regulated

D = Sample collected in distribution system | ND = Not detected | R.A.A. = Running Annual Average

AL=Action level

* The "V" result is a calculated value based on the number of samples where no disinfectant was detected and no HPC measured plus the number of samples where no disinfectant was detected and the HPC was > 500/mL plus (the number of samples where the disinfectant is not measured and the HPC is > 500/mL divided by the number of samples where the disinfectant is measured) times 100.

**PCB's are summation of Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260. None were detected.

Notes for Lead and Copper:

1. These results for Lead and Copper are from well flushed distribution samples and are not the sites used for regulatory purposes.
2. These results for Lead and Copper are from first-draw samples at taps in 50 homes with lead services. They represent MWW official compliance sampl results for 2017.

Notes for UCMR4

3. UCMR4 monitoring included 9 haloacetic acids. The haloacetic acids were categorized into 3 groups. The HAA5 group consists of Dibromoacetic acid (DBAA), Dichloroacetic acid (DCAA), Monobromoacetic acid (MBAA), Monochloroacetic acid (MCAA) and Trichloroacetic acid (TCAA).
4. The HAA6 Br group consists of Bromochloroacetic acid (BCAA), Bromodichloroacetic acid (BDCAA), Chlorodibromoacetic acid (CDBAA), Dibromacetic acid (DBAA), Monobromoacetic acid (MBAA) and Tribromoacetic acid (TBAA).
5. The HAA9 group consists of Bromochloroacetic acid (BCAA), Bromodichloroacetic acid (BDCAA), Chlorodibromoacetic acid (CDBAA), Dibromoacetic acid (DBAA), Dichloroacetic acid (DCAA), Monobromoacetic acid (MBAA), Monochloroacetic acid (MCAA), Tribromoacetic acid (TCAA), and Trichloroacetic acid (TCAA).

Revised: 2/27/2020

For more information, please call the Water Quality Section at the Milwaukee Water Works at (414) 286-2585.

APPENDIX E

WDNR CUMULATIVE DIRECT CONTACT CALCULATIONS

NR 720 Direct-Contact ***Exceedance*** - ***Hazard*** - ***Risk*** Calculation Summary from Soil Data

BRRTS # :
Truak Field (9259): SB-1-1 (1-2')

# of Soil-Concentration Entries: 1

Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
0	0.	0.0E+00

Bottom-Line: Yes, levels are below direct-contact concern.

Date of Entry: 8/13/2020.
Date of Worksheet Used: 11/20/2018.

List below only has contaminants with data.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	BTV (mg/kg)	INPUTTED Site Data (mg/kg)	Flag E = Individual Exceedance!	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Toluene	108-88-3	5,240.	-	818.	Csat		0.0393		0.	

NR 720 Direct-Contact ***Exceedance*** - ***Hazard*** - ***Risk*** Calculation Summary from Soil Data

BRRTS # :
Truax Field (9259): SB-2-1 (1-2')

# of Soil-Concentration Entries: 1

Number of Individual Exceedance	(Cumulative) Hazard Index	(Cumulative) Cancer Risk
0	0.0017	0.0E+00

Bottom-Line: Yes, levels are below direct-contact concern.

Date of Entry: 8/13/2020.
Date of Worksheet Used: 11/20/2018.

List below only has contaminants with data.

Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	BTV (mg/kg)	INPUTTED Site Data (mg/kg)	Flag E = Individual Exceedance!	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1.26	-	1.26	nc		0.0022		0.0017	

APPENDIX F

VOC & PFAS ANALYTICAL REPORT

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

July 16, 2020

Ken Lassa
REI
4080 North 20th Avenue
Wausau, WI 54401

RE: Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Dear Ken Lassa:

Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Brian Basten
brian.basten@pacelabs.com
(920)469-2436
Project Manager

Enclosures

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40210100001	**SB-1-1 (1-2')**	Solid	06/23/20 10:00	06/25/20 09:00
40210100002	**SB-1-1 (4-4.5')**	Solid	06/23/20 10:10	06/25/20 09:00
40210100003	**SB-2-1 (1-2')**	Solid	06/23/20 10:30	06/25/20 09:00
40210100004	**SB-2-2 (9-10')**	Solid	06/23/20 10:40	06/25/20 09:00
40210100005	**SB-3-1 (1-2')**	Solid	06/23/20 10:50	06/25/20 09:00
40210100006	**SB-3-2 (7.5-8.5')**	Solid	06/23/20 11:00	06/25/20 09:00
40210100007	**SB-4-1 (1-2')**	Solid	06/23/20 11:15	06/25/20 09:00
40210100008	**SB-4-1 (3-4')**	Solid	06/23/20 11:20	06/25/20 09:00
40210100009	**SB-1-W**	Water	06/23/20 12:14	06/25/20 09:00
40210100010	**SB-4-W**	Water	06/23/20 13:05	06/25/20 09:00
40210100011	**MW**	Water	06/23/20 14:15	06/25/20 09:00
40210100012	**DUPLICATE**	Water	06/23/20 00:00	06/25/20 09:00
40210100013	**EQUIPMENT BLANK-RODS**	Water	06/23/20 11:40	06/25/20 09:00
40210100014	**EQUIPMENT BLANK-LINER**	Water	06/23/20 11:50	06/25/20 09:00
40210100015	**EQUIPMENT BLANK-TUBING**	Water	06/23/20 13:30	06/25/20 09:00
40210100016	**GESTRA DECON**	Water	06/23/20 15:00	06/25/20 09:00

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40210100001	**SB-1-1 (1-2')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100002	**SB-1-1 (4-4.5')**	EPA 8260	MDS	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100003	**SB-2-1 (1-2')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100004	**SB-2-2 (9-10')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100005	**SB-3-1 (1-2')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100006	**SB-3-2 (7.5-8.5')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100007	**SB-4-1 (1-2')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100008	**SB-4-1 (3-4')**	EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40210100009	**SB-1-W**	EPA 8260	HNW	64	PASI-G
40210100010	**SB-4-W**	EPA 8260	HNW	64	PASI-G
40210100011	**MW**	EPA 8260	HNW	64	PASI-G

PASI-G = Pace Analytical Services - Green Bay

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-1-1 (1-2') **Lab ID: 40210100001** Collected: 06/23/20 10:00 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 21:18	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 21:18	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 21:18	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 21:18	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:18	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 21:18	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 21:18	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 21:18	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 21:18	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 21:18	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 21:18	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 21:18	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 21:18	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 21:18	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 21:18	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 21:18	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 21:18	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:18	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 21:18	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 21:18	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-1-1 (1-2') **Lab ID: 40210100001** Collected: 06/23/20 10:00 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 21:18	127-18-4	W
Toluene	**39.3J**	ug/kg	72.3	30.1	1	06/29/20 09:15	06/29/20 21:18	108-88-3	
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 21:18	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 21:18	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 21:18	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 21:18	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:18	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	114	%	58-145		1	06/29/20 09:15	06/29/20 21:18	1868-53-7	
Toluene-d8 (S)	106	%	56-140		1	06/29/20 09:15	06/29/20 21:18	2037-26-5	
4-Bromofluorobenzene (S)	101	%	52-137		1	06/29/20 09:15	06/29/20 21:18	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**17.0**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-1-1 (4-4.5') **Lab ID: 40210100002** Collected: 06/23/20 10:10 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/26/20 09:15	06/26/20 16:58	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/26/20 09:15	06/26/20 16:58	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/26/20 09:15	06/26/20 16:58	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/26/20 09:15	06/26/20 16:58	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/26/20 09:15	06/26/20 16:58	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/26/20 09:15	06/26/20 16:58	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/26/20 09:15	06/26/20 16:58	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/26/20 09:15	06/26/20 16:58	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/26/20 09:15	06/26/20 16:58	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/26/20 09:15	06/26/20 16:58	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/26/20 09:15	06/26/20 16:58	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/26/20 09:15	06/26/20 16:58	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/26/20 09:15	06/26/20 16:58	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/26/20 09:15	06/26/20 16:58	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/26/20 09:15	06/26/20 16:58	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/26/20 09:15	06/26/20 16:58	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/26/20 09:15	06/26/20 16:58	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/26/20 09:15	06/26/20 16:58	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/26/20 09:15	06/26/20 16:58	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/26/20 09:15	06/26/20 16:58	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-1-1 (4-4.5') **Lab ID: 40210100002** Collected: 06/23/20 10:10 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/26/20 09:15	06/26/20 16:58	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/26/20 09:15	06/26/20 16:58	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/26/20 09:15	06/26/20 16:58	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/26/20 09:15	06/26/20 16:58	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/26/20 09:15	06/26/20 16:58	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/26/20 09:15	06/26/20 16:58	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	109	%	58-145		1	06/26/20 09:15	06/26/20 16:58	1868-53-7	
Toluene-d8 (S)	110	%	56-140		1	06/26/20 09:15	06/26/20 16:58	2037-26-5	
4-Bromofluorobenzene (S)	107	%	52-137		1	06/26/20 09:15	06/26/20 16:58	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**11.2**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-2-1 (1-2') **Lab ID: 40210100003** Collected: 06/23/20 10:30 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 21:40	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 21:40	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 21:40	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 21:40	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:40	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 21:40	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 21:40	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 21:40	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 21:40	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 21:40	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 21:40	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 21:40	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 21:40	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 21:40	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 21:40	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 21:40	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 21:40	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 21:40	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 21:40	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 21:40	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-2-1 (1-2') **Lab ID: 40210100003** Collected: 06/23/20 10:30 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 21:40	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 21:40	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 21:40	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 21:40	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 21:40	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 21:40	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	114	%	58-145		1	06/29/20 09:15	06/29/20 21:40	1868-53-7	
Toluene-d8 (S)	108	%	56-140		1	06/29/20 09:15	06/29/20 21:40	2037-26-5	
4-Bromofluorobenzene (S)	100	%	52-137		1	06/29/20 09:15	06/29/20 21:40	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**4.5**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-2-2 (9-10') **Lab ID: 40210100004** Collected: 06/23/20 10:40 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 22:03	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 22:03	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 22:03	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 22:03	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:03	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 22:03	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 22:03	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 22:03	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 22:03	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 22:03	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 22:03	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 22:03	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 22:03	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 22:03	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 22:03	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 22:03	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 22:03	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:03	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 22:03	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 22:03	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-2-2 (9-10') **Lab ID: 40210100004** Collected: 06/23/20 10:40 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 22:03	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 22:03	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 22:03	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 22:03	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 22:03	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:03	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	112	%	58-145		1	06/29/20 09:15	06/29/20 22:03	1868-53-7	
Toluene-d8 (S)	107	%	56-140		1	06/29/20 09:15	06/29/20 22:03	2037-26-5	
4-Bromofluorobenzene (S)	100	%	52-137		1	06/29/20 09:15	06/29/20 22:03	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**6.4**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-3-1 (1-2') **Lab ID: 40210100005** Collected: 06/23/20 10:50 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 22:25	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 22:25	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 22:25	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 22:25	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:25	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 22:25	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 22:25	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 22:25	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 22:25	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 22:25	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 22:25	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 22:25	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 22:25	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 22:25	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 22:25	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 22:25	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 22:25	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:25	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 22:25	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 22:25	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-3-1 (1-2') **Lab ID: 40210100005** Collected: 06/23/20 10:50 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 22:25	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 22:25	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 22:25	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 22:25	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 22:25	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:25	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	107	%	58-145		1	06/29/20 09:15	06/29/20 22:25	1868-53-7	
Toluene-d8 (S)	99	%	56-140		1	06/29/20 09:15	06/29/20 22:25	2037-26-5	
4-Bromofluorobenzene (S)	91	%	52-137		1	06/29/20 09:15	06/29/20 22:25	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**6.9**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-3-2 (7.5-8.5') **Lab ID: 40210100006** Collected: 06/23/20 11:00 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 22:48	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 22:48	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 22:48	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 22:48	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:48	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 22:48	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 22:48	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 22:48	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 22:48	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 22:48	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 22:48	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 22:48	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 22:48	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 22:48	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 22:48	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 22:48	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 22:48	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 22:48	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 22:48	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 22:48	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-3-2 (7.5-8.5') **Lab ID: 40210100006** Collected: 06/23/20 11:00 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 22:48	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 22:48	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 22:48	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 22:48	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 22:48	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 22:48	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	119	%	58-145		1	06/29/20 09:15	06/29/20 22:48	1868-53-7	
Toluene-d8 (S)	112	%	56-140		1	06/29/20 09:15	06/29/20 22:48	2037-26-5	
4-Bromofluorobenzene (S)	102	%	52-137		1	06/29/20 09:15	06/29/20 22:48	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**10.2**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-4-1 (1-2') **Lab ID: 40210100007** Collected: 06/23/20 11:15 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 23:10	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 23:10	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 23:10	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 23:10	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:10	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 23:10	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 23:10	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 23:10	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 23:10	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 23:10	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 23:10	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 23:10	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 23:10	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 23:10	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 23:10	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 23:10	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 23:10	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:10	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 23:10	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 23:10	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-4-1 (1-2') **Lab ID: 40210100007** Collected: 06/23/20 11:15 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 23:10	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 23:10	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 23:10	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 23:10	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 23:10	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:10	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	107	%	58-145		1	06/29/20 09:15	06/29/20 23:10	1868-53-7	
Toluene-d8 (S)	97	%	56-140		1	06/29/20 09:15	06/29/20 23:10	2037-26-5	
4-Bromofluorobenzene (S)	88	%	52-137		1	06/29/20 09:15	06/29/20 23:10	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**17.5**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-4-1 (3-4') **Lab ID: 40210100008** Collected: 06/23/20 11:20 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	71-43-2	W
Bromobenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 23:33	108-86-1	W
Bromochloromethane	**<25.0**	ug/kg	70.0	25.0	1	06/29/20 09:15	06/29/20 23:33	74-97-5	W
Bromodichloromethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-27-4	W
Bromoform	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-25-2	W
Bromomethane	**<63.8**	ug/kg	250	63.8	1	06/29/20 09:15	06/29/20 23:33	74-83-9	W
n-Butylbenzene	**<30.0**	ug/kg	100	30.0	1	06/29/20 09:15	06/29/20 23:33	104-51-8	W
sec-Butylbenzene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:33	135-98-8	W
tert-Butylbenzene	**<25.0**	ug/kg	62.0	25.0	1	06/29/20 09:15	06/29/20 23:33	98-06-6	W
Carbon tetrachloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	56-23-5	W
Chlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	108-90-7	W
Chloroethane	**<46.4**	ug/kg	250	46.4	1	06/29/20 09:15	06/29/20 23:33	75-00-3	W
Chloroform	**<47.5**	ug/kg	250	47.5	1	06/29/20 09:15	06/29/20 23:33	67-66-3	W
Chloromethane	**<25.0**	ug/kg	80.0	25.0	1	06/29/20 09:15	06/29/20 23:33	74-87-3	W
2-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 23:33	95-49-8	W
4-Chlorotoluene	**<25.0**	ug/kg	64.0	25.0	1	06/29/20 09:15	06/29/20 23:33	106-43-4	W
1,2-Dibromo-3-chloropropane	**<237**	ug/kg	789	237	1	06/29/20 09:15	06/29/20 23:33	96-12-8	W
Dibromochloromethane	**<229**	ug/kg	763	229	1	06/29/20 09:15	06/29/20 23:33	124-48-1	W
1,2-Dibromoethane (EDB)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	106-93-4	W
Dibromomethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	74-95-3	W
1,2-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	95-50-1	W
1,3-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	541-73-1	W
1,4-Dichlorobenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	106-46-7	W
Dichlorodifluoromethane	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-71-8	W
1,1-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-34-3	W
1,2-Dichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	107-06-2	W
1,1-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-35-4	W
cis-1,2-Dichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	156-59-2	W
trans-1,2-Dichloroethene	**<25.0**	ug/kg	67.0	25.0	1	06/29/20 09:15	06/29/20 23:33	156-60-5	W
1,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	78-87-5	W
1,3-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	142-28-9	W
2,2-Dichloropropane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	594-20-7	W
1,1-Dichloropropene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	563-58-6	W
cis-1,3-Dichloropropene	**<42.3**	ug/kg	141	42.3	1	06/29/20 09:15	06/29/20 23:33	10061-01-5	W
trans-1,3-Dichloropropene	**<25.0**	ug/kg	74.0	25.0	1	06/29/20 09:15	06/29/20 23:33	10061-02-6	W
Diisopropyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	108-20-3	W
Ethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	100-41-4	W
Hexachloro-1,3-butadiene	**<68.7**	ug/kg	229	68.7	1	06/29/20 09:15	06/29/20 23:33	87-68-3	W
Isopropylbenzene (Cumene)	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	98-82-8	W
p-Isopropyltoluene	**<25.0**	ug/kg	72.0	25.0	1	06/29/20 09:15	06/29/20 23:33	99-87-6	W
Methylene Chloride	**<26.3**	ug/kg	88.0	26.3	1	06/29/20 09:15	06/29/20 23:33	75-09-2	W
Methyl-tert-butyl ether	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	1634-04-4	W
Naphthalene	**<27.3**	ug/kg	91.0	27.3	1	06/29/20 09:15	06/29/20 23:33	91-20-3	W
n-Propylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	103-65-1	W

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-4-1 (3-4') **Lab ID: 40210100008** Collected: 06/23/20 11:20 Received: 06/25/20 09:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	100-42-5	W
1,1,1,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	630-20-6	W
1,1,2,2-Tetrachloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	79-34-5	W
Tetrachloroethene	**<38.7**	ug/kg	129	38.7	1	06/29/20 09:15	06/29/20 23:33	127-18-4	W
Toluene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	108-88-3	W
1,2,3-Trichlorobenzene	**<47.3**	ug/kg	158	47.3	1	06/29/20 09:15	06/29/20 23:33	87-61-6	W
1,2,4-Trichlorobenzene	**<41.7**	ug/kg	250	41.7	1	06/29/20 09:15	06/29/20 23:33	120-82-1	W
1,1,1-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	71-55-6	W
1,1,2-Trichloroethane	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	79-00-5	W
Trichloroethene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	79-01-6	W
Trichlorofluoromethane	**<25.0**	ug/kg	65.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-69-4	W
1,2,3-Trichloropropane	**<37.4**	ug/kg	125	37.4	1	06/29/20 09:15	06/29/20 23:33	96-18-4	W
1,2,4-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	95-63-6	W
1,3,5-Trimethylbenzene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	108-67-8	W
Vinyl chloride	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	75-01-4	W
m&p-Xylene	**<50.0**	ug/kg	120	50.0	1	06/29/20 09:15	06/29/20 23:33	179601-23-1	W
o-Xylene	**<25.0**	ug/kg	60.0	25.0	1	06/29/20 09:15	06/29/20 23:33	95-47-6	W
Surrogates									
Dibromofluoromethane (S)	109	%	58-145		1	06/29/20 09:15	06/29/20 23:33	1868-53-7	
Toluene-d8 (S)	99	%	56-140		1	06/29/20 09:15	06/29/20 23:33	2037-26-5	
4-Bromofluorobenzene (S)	90	%	52-137		1	06/29/20 09:15	06/29/20 23:33	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**19.0**	%	0.10	0.10	1		06/29/20 17:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-1-W **Lab ID: 40210100009** Collected: 06/23/20 12:14 Received: 06/25/20 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/26/20 14:24	71-43-2	
Bromobenzene	**<0.24**	ug/L	1.0	0.24	1		06/26/20 14:24	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		06/26/20 14:24	74-97-5	
Bromodichloromethane	**<0.36**	ug/L	1.2	0.36	1		06/26/20 14:24	75-27-4	L1
Bromoform	**<4.0**	ug/L	13.2	4.0	1		06/26/20 14:24	75-25-2	
Bromomethane	**<0.97**	ug/L	5.0	0.97	1		06/26/20 14:24	74-83-9	
n-Butylbenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 14:24	104-51-8	
sec-Butylbenzene	**<0.85**	ug/L	5.0	0.85	1		06/26/20 14:24	135-98-8	
tert-Butylbenzene	**<0.30**	ug/L	1.0	0.30	1		06/26/20 14:24	98-06-6	
Carbon tetrachloride	**<1.1**	ug/L	3.6	1.1	1		06/26/20 14:24	56-23-5	
Chlorobenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 14:24	108-90-7	
Chloroethane	**<1.3**	ug/L	5.0	1.3	1		06/26/20 14:24	75-00-3	
Chloroform	**<1.3**	ug/L	5.0	1.3	1		06/26/20 14:24	67-66-3	
Chloromethane	**<2.2**	ug/L	7.3	2.2	1		06/26/20 14:24	74-87-3	
2-Chlorotoluene	**<0.93**	ug/L	5.0	0.93	1		06/26/20 14:24	95-49-8	
4-Chlorotoluene	**<0.76**	ug/L	2.5	0.76	1		06/26/20 14:24	106-43-4	
1,2-Dibromo-3-chloropropane	**<1.8**	ug/L	5.9	1.8	1		06/26/20 14:24	96-12-8	
Dibromochloromethane	**<2.6**	ug/L	8.7	2.6	1		06/26/20 14:24	124-48-1	
1,2-Dibromoethane (EDB)	**<0.83**	ug/L	2.8	0.83	1		06/26/20 14:24	106-93-4	
Dibromomethane	**<0.94**	ug/L	3.1	0.94	1		06/26/20 14:24	74-95-3	
1,2-Dichlorobenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 14:24	95-50-1	
1,3-Dichlorobenzene	**<0.63**	ug/L	2.1	0.63	1		06/26/20 14:24	541-73-1	
1,4-Dichlorobenzene	**<0.94**	ug/L	3.1	0.94	1		06/26/20 14:24	106-46-7	
Dichlorodifluoromethane	**<0.50**	ug/L	5.0	0.50	1		06/26/20 14:24	75-71-8	
1,1-Dichloroethane	**<0.27**	ug/L	1.0	0.27	1		06/26/20 14:24	75-34-3	
1,2-Dichloroethane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 14:24	107-06-2	
1,1-Dichloroethene	**<0.24**	ug/L	1.0	0.24	1		06/26/20 14:24	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/L	1.0	0.27	1		06/26/20 14:24	156-59-2	
trans-1,2-Dichloroethene	**<0.46**	ug/L	1.5	0.46	1		06/26/20 14:24	156-60-5	
1,2-Dichloropropane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 14:24	78-87-5	
1,3-Dichloropropane	**<0.83**	ug/L	2.8	0.83	1		06/26/20 14:24	142-28-9	
2,2-Dichloropropane	**<2.3**	ug/L	7.6	2.3	1		06/26/20 14:24	594-20-7	
1,1-Dichloropropene	**<0.54**	ug/L	1.8	0.54	1		06/26/20 14:24	563-58-6	
cis-1,3-Dichloropropene	**<3.6**	ug/L	12.1	3.6	1		06/26/20 14:24	10061-01-5	
trans-1,3-Dichloropropene	**<4.4**	ug/L	14.6	4.4	1		06/26/20 14:24	10061-02-6	
Diisopropyl ether	**<1.9**	ug/L	6.3	1.9	1		06/26/20 14:24	108-20-3	
Ethylbenzene	**<0.32**	ug/L	1.1	0.32	1		06/26/20 14:24	100-41-4	L1,M0
Hexachloro-1,3-butadiene	**<1.5**	ug/L	4.9	1.5	1		06/26/20 14:24	87-68-3	
Isopropylbenzene (Cumene)	**<1.7**	ug/L	5.6	1.7	1		06/26/20 14:24	98-82-8	
p-Isopropyltoluene	**<0.80**	ug/L	2.7	0.80	1		06/26/20 14:24	99-87-6	
Methylene Chloride	**<0.58**	ug/L	5.0	0.58	1		06/26/20 14:24	75-09-2	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/26/20 14:24	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/26/20 14:24	91-20-3	
n-Propylbenzene	**<0.81**	ug/L	5.0	0.81	1		06/26/20 14:24	103-65-1	
Styrene	**<3.0**	ug/L	10.0	3.0	1		06/26/20 14:24	100-42-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-1-W **Lab ID: 40210100009** Collected: 06/23/20 12:14 Received: 06/25/20 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<0.27**	ug/L	1.0	0.27	1		06/26/20 14:24	630-20-6	
1,1,2,2-Tetrachloroethane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 14:24	79-34-5	
Tetrachloroethene	**<0.33**	ug/L	1.1	0.33	1		06/26/20 14:24	127-18-4	
Toluene	**<0.27**	ug/L	0.90	0.27	1		06/26/20 14:24	108-88-3	L1,M0
1,2,3-Trichlorobenzene	**<2.2**	ug/L	7.4	2.2	1		06/26/20 14:24	87-61-6	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		06/26/20 14:24	120-82-1	
1,1,1-Trichloroethane	**<0.24**	ug/L	1.0	0.24	1		06/26/20 14:24	71-55-6	
1,1,2-Trichloroethane	**<0.55**	ug/L	5.0	0.55	1		06/26/20 14:24	79-00-5	
Trichloroethene	**<0.26**	ug/L	1.0	0.26	1		06/26/20 14:24	79-01-6	
Trichlorofluoromethane	**<0.21**	ug/L	1.0	0.21	1		06/26/20 14:24	75-69-4	
1,2,3-Trichloropropane	**<0.59**	ug/L	5.0	0.59	1		06/26/20 14:24	96-18-4	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/26/20 14:24	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/26/20 14:24	108-67-8	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		06/26/20 14:24	75-01-4	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/26/20 14:24	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/26/20 14:24	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		06/26/20 14:24	460-00-4	
Dibromofluoromethane (S)	97	%	70-130		1		06/26/20 14:24	1868-53-7	
Toluene-d8 (S)	104	%	70-130		1		06/26/20 14:24	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-4-W **Lab ID: 40210100010** Collected: 06/23/20 13:05 Received: 06/25/20 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/26/20 18:08	71-43-2	
Bromobenzene	**<0.24**	ug/L	1.0	0.24	1		06/26/20 18:08	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		06/26/20 18:08	74-97-5	
Bromodichloromethane	**<0.36**	ug/L	1.2	0.36	1		06/26/20 18:08	75-27-4	L1
Bromoform	**<4.0**	ug/L	13.2	4.0	1		06/26/20 18:08	75-25-2	
Bromomethane	**<0.97**	ug/L	5.0	0.97	1		06/26/20 18:08	74-83-9	
n-Butylbenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 18:08	104-51-8	
sec-Butylbenzene	**<0.85**	ug/L	5.0	0.85	1		06/26/20 18:08	135-98-8	
tert-Butylbenzene	**<0.30**	ug/L	1.0	0.30	1		06/26/20 18:08	98-06-6	
Carbon tetrachloride	**<1.1**	ug/L	3.6	1.1	1		06/26/20 18:08	56-23-5	
Chlorobenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 18:08	108-90-7	
Chloroethane	**<1.3**	ug/L	5.0	1.3	1		06/26/20 18:08	75-00-3	
Chloroform	**<1.3**	ug/L	5.0	1.3	1		06/26/20 18:08	67-66-3	
Chloromethane	**<2.2**	ug/L	7.3	2.2	1		06/26/20 18:08	74-87-3	
2-Chlorotoluene	**<0.93**	ug/L	5.0	0.93	1		06/26/20 18:08	95-49-8	
4-Chlorotoluene	**<0.76**	ug/L	2.5	0.76	1		06/26/20 18:08	106-43-4	
1,2-Dibromo-3-chloropropane	**<1.8**	ug/L	5.9	1.8	1		06/26/20 18:08	96-12-8	
Dibromochloromethane	**<2.6**	ug/L	8.7	2.6	1		06/26/20 18:08	124-48-1	
1,2-Dibromoethane (EDB)	**<0.83**	ug/L	2.8	0.83	1		06/26/20 18:08	106-93-4	
Dibromomethane	**<0.94**	ug/L	3.1	0.94	1		06/26/20 18:08	74-95-3	
1,2-Dichlorobenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 18:08	95-50-1	
1,3-Dichlorobenzene	**<0.63**	ug/L	2.1	0.63	1		06/26/20 18:08	541-73-1	
1,4-Dichlorobenzene	**<0.94**	ug/L	3.1	0.94	1		06/26/20 18:08	106-46-7	
Dichlorodifluoromethane	**<0.50**	ug/L	5.0	0.50	1		06/26/20 18:08	75-71-8	
1,1-Dichloroethane	**<0.27**	ug/L	1.0	0.27	1		06/26/20 18:08	75-34-3	
1,2-Dichloroethane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 18:08	107-06-2	
1,1-Dichloroethene	**<0.24**	ug/L	1.0	0.24	1		06/26/20 18:08	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/L	1.0	0.27	1		06/26/20 18:08	156-59-2	
trans-1,2-Dichloroethene	**<0.46**	ug/L	1.5	0.46	1		06/26/20 18:08	156-60-5	
1,2-Dichloropropane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 18:08	78-87-5	
1,3-Dichloropropane	**<0.83**	ug/L	2.8	0.83	1		06/26/20 18:08	142-28-9	
2,2-Dichloropropane	**<2.3**	ug/L	7.6	2.3	1		06/26/20 18:08	594-20-7	
1,1-Dichloropropene	**<0.54**	ug/L	1.8	0.54	1		06/26/20 18:08	563-58-6	
cis-1,3-Dichloropropene	**<3.6**	ug/L	12.1	3.6	1		06/26/20 18:08	10061-01-5	
trans-1,3-Dichloropropene	**<4.4**	ug/L	14.6	4.4	1		06/26/20 18:08	10061-02-6	
Diisopropyl ether	**<1.9**	ug/L	6.3	1.9	1		06/26/20 18:08	108-20-3	
Ethylbenzene	**<0.32**	ug/L	1.1	0.32	1		06/26/20 18:08	100-41-4	L1
Hexachloro-1,3-butadiene	**<1.5**	ug/L	4.9	1.5	1		06/26/20 18:08	87-68-3	
Isopropylbenzene (Cumene)	**<1.7**	ug/L	5.6	1.7	1		06/26/20 18:08	98-82-8	
p-Isopropyltoluene	**<0.80**	ug/L	2.7	0.80	1		06/26/20 18:08	99-87-6	
Methylene Chloride	**<0.58**	ug/L	5.0	0.58	1		06/26/20 18:08	75-09-2	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/26/20 18:08	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/26/20 18:08	91-20-3	
n-Propylbenzene	**<0.81**	ug/L	5.0	0.81	1		06/26/20 18:08	103-65-1	
Styrene	**<3.0**	ug/L	10.0	3.0	1		06/26/20 18:08	100-42-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: SB-4-W **Lab ID: 40210100010** Collected: 06/23/20 13:05 Received: 06/25/20 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<0.27**	ug/L	1.0	0.27	1		06/26/20 18:08	630-20-6	
1,1,2,2-Tetrachloroethane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 18:08	79-34-5	
Tetrachloroethene	**<0.33**	ug/L	1.1	0.33	1		06/26/20 18:08	127-18-4	
Toluene	**<0.27**	ug/L	0.90	0.27	1		06/26/20 18:08	108-88-3	L1
1,2,3-Trichlorobenzene	**<2.2**	ug/L	7.4	2.2	1		06/26/20 18:08	87-61-6	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		06/26/20 18:08	120-82-1	
1,1,1-Trichloroethane	**<0.24**	ug/L	1.0	0.24	1		06/26/20 18:08	71-55-6	
1,1,2-Trichloroethane	**<0.55**	ug/L	5.0	0.55	1		06/26/20 18:08	79-00-5	
Trichloroethene	**<0.26**	ug/L	1.0	0.26	1		06/26/20 18:08	79-01-6	
Trichlorofluoromethane	**<0.21**	ug/L	1.0	0.21	1		06/26/20 18:08	75-69-4	
1,2,3-Trichloropropane	**<0.59**	ug/L	5.0	0.59	1		06/26/20 18:08	96-18-4	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/26/20 18:08	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/26/20 18:08	108-67-8	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		06/26/20 18:08	75-01-4	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/26/20 18:08	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/26/20 18:08	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		1		06/26/20 18:08	460-00-4	
Dibromofluoromethane (S)	95	%	70-130		1		06/26/20 18:08	1868-53-7	
Toluene-d8 (S)	106	%	70-130		1		06/26/20 18:08	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: MW **Lab ID: 40210100011** Collected: 06/23/20 14:15 Received: 06/25/20 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/26/20 18:31	71-43-2	
Bromobenzene	**<0.24**	ug/L	1.0	0.24	1		06/26/20 18:31	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		06/26/20 18:31	74-97-5	
Bromodichloromethane	**<0.36**	ug/L	1.2	0.36	1		06/26/20 18:31	75-27-4	L1
Bromoform	**<4.0**	ug/L	13.2	4.0	1		06/26/20 18:31	75-25-2	
Bromomethane	**<0.97**	ug/L	5.0	0.97	1		06/26/20 18:31	74-83-9	
n-Butylbenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 18:31	104-51-8	
sec-Butylbenzene	**<0.85**	ug/L	5.0	0.85	1		06/26/20 18:31	135-98-8	
tert-Butylbenzene	**<0.30**	ug/L	1.0	0.30	1		06/26/20 18:31	98-06-6	
Carbon tetrachloride	**<1.1**	ug/L	3.6	1.1	1		06/26/20 18:31	56-23-5	
Chlorobenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 18:31	108-90-7	
Chloroethane	**<1.3**	ug/L	5.0	1.3	1		06/26/20 18:31	75-00-3	
Chloroform	**<1.3**	ug/L	5.0	1.3	1		06/26/20 18:31	67-66-3	
Chloromethane	**<2.2**	ug/L	7.3	2.2	1		06/26/20 18:31	74-87-3	
2-Chlorotoluene	**<0.93**	ug/L	5.0	0.93	1		06/26/20 18:31	95-49-8	
4-Chlorotoluene	**<0.76**	ug/L	2.5	0.76	1		06/26/20 18:31	106-43-4	
1,2-Dibromo-3-chloropropane	**<1.8**	ug/L	5.9	1.8	1		06/26/20 18:31	96-12-8	
Dibromochloromethane	**<2.6**	ug/L	8.7	2.6	1		06/26/20 18:31	124-48-1	
1,2-Dibromoethane (EDB)	**<0.83**	ug/L	2.8	0.83	1		06/26/20 18:31	106-93-4	
Dibromomethane	**<0.94**	ug/L	3.1	0.94	1		06/26/20 18:31	74-95-3	
1,2-Dichlorobenzene	**<0.71**	ug/L	2.4	0.71	1		06/26/20 18:31	95-50-1	
1,3-Dichlorobenzene	**<0.63**	ug/L	2.1	0.63	1		06/26/20 18:31	541-73-1	
1,4-Dichlorobenzene	**<0.94**	ug/L	3.1	0.94	1		06/26/20 18:31	106-46-7	
Dichlorodifluoromethane	**<0.50**	ug/L	5.0	0.50	1		06/26/20 18:31	75-71-8	
1,1-Dichloroethane	**<0.27**	ug/L	1.0	0.27	1		06/26/20 18:31	75-34-3	
1,2-Dichloroethane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 18:31	107-06-2	
1,1-Dichloroethene	**<0.24**	ug/L	1.0	0.24	1		06/26/20 18:31	75-35-4	
cis-1,2-Dichloroethene	**<0.27**	ug/L	1.0	0.27	1		06/26/20 18:31	156-59-2	
trans-1,2-Dichloroethene	**<0.46**	ug/L	1.5	0.46	1		06/26/20 18:31	156-60-5	
1,2-Dichloropropane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 18:31	78-87-5	
1,3-Dichloropropane	**<0.83**	ug/L	2.8	0.83	1		06/26/20 18:31	142-28-9	
2,2-Dichloropropane	**<2.3**	ug/L	7.6	2.3	1		06/26/20 18:31	594-20-7	
1,1-Dichloropropene	**<0.54**	ug/L	1.8	0.54	1		06/26/20 18:31	563-58-6	
cis-1,3-Dichloropropene	**<3.6**	ug/L	12.1	3.6	1		06/26/20 18:31	10061-01-5	
trans-1,3-Dichloropropene	**<4.4**	ug/L	14.6	4.4	1		06/26/20 18:31	10061-02-6	
Diisopropyl ether	**<1.9**	ug/L	6.3	1.9	1		06/26/20 18:31	108-20-3	
Ethylbenzene	**<0.32**	ug/L	1.1	0.32	1		06/26/20 18:31	100-41-4	L1
Hexachloro-1,3-butadiene	**<1.5**	ug/L	4.9	1.5	1		06/26/20 18:31	87-68-3	
Isopropylbenzene (Cumene)	**<1.7**	ug/L	5.6	1.7	1		06/26/20 18:31	98-82-8	
p-Isopropyltoluene	**<0.80**	ug/L	2.7	0.80	1		06/26/20 18:31	99-87-6	
Methylene Chloride	**<0.58**	ug/L	5.0	0.58	1		06/26/20 18:31	75-09-2	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/26/20 18:31	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/26/20 18:31	91-20-3	
n-Propylbenzene	**<0.81**	ug/L	5.0	0.81	1		06/26/20 18:31	103-65-1	
Styrene	**<3.0**	ug/L	10.0	3.0	1		06/26/20 18:31	100-42-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Sample: MW **Lab ID: 40210100011** Collected: 06/23/20 14:15 Received: 06/25/20 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<0.27**	ug/L	1.0	0.27	1		06/26/20 18:31	630-20-6	
1,1,2,2-Tetrachloroethane	**<0.28**	ug/L	1.0	0.28	1		06/26/20 18:31	79-34-5	
Tetrachloroethene	**<0.33**	ug/L	1.1	0.33	1		06/26/20 18:31	127-18-4	
Toluene	**<0.27**	ug/L	0.90	0.27	1		06/26/20 18:31	108-88-3	L1
1,2,3-Trichlorobenzene	**<2.2**	ug/L	7.4	2.2	1		06/26/20 18:31	87-61-6	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		06/26/20 18:31	120-82-1	
1,1,1-Trichloroethane	**<0.24**	ug/L	1.0	0.24	1		06/26/20 18:31	71-55-6	
1,1,2-Trichloroethane	**<0.55**	ug/L	5.0	0.55	1		06/26/20 18:31	79-00-5	
Trichloroethene	**<0.26**	ug/L	1.0	0.26	1		06/26/20 18:31	79-01-6	
Trichlorofluoromethane	**<0.21**	ug/L	1.0	0.21	1		06/26/20 18:31	75-69-4	
1,2,3-Trichloropropane	**<0.59**	ug/L	5.0	0.59	1		06/26/20 18:31	96-18-4	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/26/20 18:31	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/26/20 18:31	108-67-8	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		06/26/20 18:31	75-01-4	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/26/20 18:31	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/26/20 18:31	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		06/26/20 18:31	460-00-4	
Dibromofluoromethane (S)	99	%	70-130		1		06/26/20 18:31	1868-53-7	
Toluene-d8 (S)	105	%	70-130		1		06/26/20 18:31	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

QC Batch: 358788
QC Batch Method: EPA 5035/5030B
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Med Level Normal List
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40210100002

METHOD BLANK: 2075292 Matrix: Solid
Associated Lab Samples: 40210100002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<7.8	50.0	06/26/20 10:25	
1,1,1-Trichloroethane	ug/kg	<13.5	50.0	06/26/20 10:25	
1,1,2,2-Tetrachloroethane	ug/kg	<15.7	52.0	06/26/20 10:25	
1,1,2-Trichloroethane	ug/kg	<15.7	52.0	06/26/20 10:25	
1,1-Dichloroethane	ug/kg	<13.5	50.0	06/26/20 10:25	
1,1-Dichloroethene	ug/kg	<11.8	50.0	06/26/20 10:25	
1,1-Dichloropropene	ug/kg	<10.7	50.0	06/26/20 10:25	
1,2,3-Trichlorobenzene	ug/kg	<47.3	158	06/26/20 10:25	
1,2,3-Trichloropropane	ug/kg	<37.4	125	06/26/20 10:25	
1,2,4-Trichlorobenzene	ug/kg	<41.7	250	06/26/20 10:25	
1,2,4-Trimethylbenzene	ug/kg	<18.1	60.0	06/26/20 10:25	
1,2-Dibromo-3-chloropropane	ug/kg	<237	789	06/26/20 10:25	
1,2-Dibromoethane (EDB)	ug/kg	<17.0	57.0	06/26/20 10:25	
1,2-Dichlorobenzene	ug/kg	<13.1	50.0	06/26/20 10:25	
1,2-Dichloroethane	ug/kg	<13.8	50.0	06/26/20 10:25	
1,2-Dichloropropane	ug/kg	<13.5	50.0	06/26/20 10:25	
1,3,5-Trimethylbenzene	ug/kg	<16.0	53.0	06/26/20 10:25	
1,3-Dichlorobenzene	ug/kg	<13.0	50.0	06/26/20 10:25	
1,3-Dichloropropane	ug/kg	<11.0	50.0	06/26/20 10:25	
1,4-Dichlorobenzene	ug/kg	<12.0	50.0	06/26/20 10:25	
2,2-Dichloropropane	ug/kg	<15.7	52.0	06/26/20 10:25	
2-Chlorotoluene	ug/kg	<19.3	64.0	06/26/20 10:25	
4-Chlorotoluene	ug/kg	<19.3	64.0	06/26/20 10:25	
Benzene	ug/kg	<12.5	42.0	06/26/20 10:25	
Bromobenzene	ug/kg	<18.5	62.0	06/26/20 10:25	
Bromochloromethane	ug/kg	<20.9	70.0	06/26/20 10:25	
Bromodichloromethane	ug/kg	<10.0	50.0	06/26/20 10:25	
Bromoform	ug/kg	<21.6	72.0	06/26/20 10:25	
Bromomethane	ug/kg	<63.8	250	06/26/20 10:25	
Carbon tetrachloride	ug/kg	<7.5	50.0	06/26/20 10:25	
Chlorobenzene	ug/kg	<16.8	56.0	06/26/20 10:25	
Chloroethane	ug/kg	<46.4	250	06/26/20 10:25	
Chloroform	ug/kg	<47.5	250	06/26/20 10:25	
Chloromethane	ug/kg	<24.0	80.0	06/26/20 10:25	
cis-1,2-Dichloroethene	ug/kg	<14.8	50.0	06/26/20 10:25	
cis-1,3-Dichloropropene	ug/kg	<42.3	141	06/26/20 10:25	
Dibromochloromethane	ug/kg	<229	763	06/26/20 10:25	
Dibromomethane	ug/kg	<17.7	59.0	06/26/20 10:25	
Dichlorodifluoromethane	ug/kg	<21.7	72.0	06/26/20 10:25	
Diisopropyl ether	ug/kg	<14.0	50.0	06/26/20 10:25	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

METHOD BLANK: 2075292 Matrix: Solid
Associated Lab Samples: 40210100002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/kg	<14.5	50.0	06/26/20 10:25	
Hexachloro-1,3-butadiene	ug/kg	<68.7	229	06/26/20 10:25	
Isopropylbenzene (Cumene)	ug/kg	<17.7	59.0	06/26/20 10:25	
m&p-Xylene	ug/kg	<32.4	108	06/26/20 10:25	
Methyl-tert-butyl ether	ug/kg	<16.2	54.0	06/26/20 10:25	
Methylene Chloride	ug/kg	<26.3	88.0	06/26/20 10:25	
n-Butylbenzene	ug/kg	<30.0	100	06/26/20 10:25	
n-Propylbenzene	ug/kg	<17.8	59.0	06/26/20 10:25	
Naphthalene	ug/kg	<27.3	91.0	06/26/20 10:25	
o-Xylene	ug/kg	<18.1	60.0	06/26/20 10:25	
p-Isopropyltoluene	ug/kg	<21.7	72.0	06/26/20 10:25	
sec-Butylbenzene	ug/kg	<21.5	72.0	06/26/20 10:25	
Styrene	ug/kg	<12.3	50.0	06/26/20 10:25	
tert-Butylbenzene	ug/kg	<18.7	62.0	06/26/20 10:25	
Tetrachloroethene	ug/kg	<38.7	129	06/26/20 10:25	
Toluene	ug/kg	<13.1	50.0	06/26/20 10:25	
trans-1,2-Dichloroethene	ug/kg	<20.2	67.0	06/26/20 10:25	
trans-1,3-Dichloropropene	ug/kg	<22.2	74.0	06/26/20 10:25	
Trichloroethene	ug/kg	<12.8	50.0	06/26/20 10:25	
Trichlorofluoromethane	ug/kg	<19.6	65.0	06/26/20 10:25	
Vinyl chloride	ug/kg	<14.5	50.0	06/26/20 10:25	
4-Bromofluorobenzene (S)	%	103	52-137	06/26/20 10:25	
Dibromofluoromethane (S)	%	108	58-145	06/26/20 10:25	
Toluene-d8 (S)	%	104	56-140	06/26/20 10:25	

LABORATORY CONTROL SAMPLE: 2075293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2510	100	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2530	101	70-130	
1,1,2-Trichloroethane	ug/kg	2500	2510	100	70-130	
1,1-Dichloroethane	ug/kg	2500	2740	110	69-143	
1,1-Dichloroethene	ug/kg	2500	2540	102	73-118	
1,2,4-Trichlorobenzene	ug/kg	2500	2430	97	60-130	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2260	91	66-130	
1,2-Dibromoethane (EDB)	ug/kg	2500	2530	101	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2470	99	70-130	
1,2-Dichloroethane	ug/kg	2500	2510	100	70-130	
1,2-Dichloropropane	ug/kg	2500	2650	106	78-126	
1,3-Dichlorobenzene	ug/kg	2500	2540	102	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2370	95	70-130	
Benzene	ug/kg	2500	2540	101	70-130	
Bromodichloromethane	ug/kg	2500	2610	104	70-130	
Bromoform	ug/kg	2500	2270	91	67-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

LABORATORY CONTROL SAMPLE: 2075293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	2500	2150	86	45-134	
Carbon tetrachloride	ug/kg	2500	2630	105	70-130	
Chlorobenzene	ug/kg	2500	2520	101	70-130	
Chloroethane	ug/kg	2500	2270	91	58-143	
Chloroform	ug/kg	2500	2540	101	76-122	
Chloromethane	ug/kg	2500	2110	84	45-120	
cis-1,2-Dichloroethene	ug/kg	2500	2520	101	69-130	
cis-1,3-Dichloropropene	ug/kg	2500	2360	95	70-130	
Dibromochloromethane	ug/kg	2500	2670	107	70-130	
Dichlorodifluoromethane	ug/kg	2500	1520	61	26-99	
Ethylbenzene	ug/kg	2500	2580	103	80-120	
Isopropylbenzene (Cumene)	ug/kg	2500	2450	98	70-130	
m&p-Xylene	ug/kg	5000	5450	109	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2420	97	70-130	
Methylene Chloride	ug/kg	2500	2540	102	70-130	
o-Xylene	ug/kg	2500	2730	109	70-130	
Styrene	ug/kg	2500	2490	99	70-130	
Tetrachloroethene	ug/kg	2500	2530	101	70-130	
Toluene	ug/kg	2500	2670	107	80-120	
trans-1,2-Dichloroethene	ug/kg	2500	2630	105	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2340	94	70-130	
Trichloroethene	ug/kg	2500	2640	106	70-130	
Trichlorofluoromethane	ug/kg	2500	2340	94	70-128	
Vinyl chloride	ug/kg	2500	2210	88	53-110	
4-Bromofluorobenzene (S)	%			108	52-137	
Dibromofluoromethane (S)	%			107	58-145	
Toluene-d8 (S)	%			104	56-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2075294 2075295

Parameter	Units	40210102002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	<25.0	1380	1380	1320	1420	95	102	66-130	7	20	
1,1,2,2-Tetrachloroethane	ug/kg	<25.0	1380	1380	1490	1630	108	117	70-133	9	20	
1,1,2-Trichloroethane	ug/kg	<25.0	1380	1380	1430	1510	103	109	70-130	5	20	
1,1-Dichloroethane	ug/kg	<25.0	1380	1380	1530	1550	110	112	69-143	1	20	
1,1-Dichloroethene	ug/kg	<25.0	1380	1380	1340	1430	97	103	58-120	7	20	
1,2,4-Trichlorobenzene	ug/kg	<41.7	1380	1380	1360	1660	99	120	60-130	19	20	
1,2-Dibromo-3-chloropropane	ug/kg	<237	1380	1380	1290	1530	93	111	59-136	17	20	
1,2-Dibromoethane (EDB)	ug/kg	<25.0	1380	1380	1430	1520	103	110	70-130	6	20	
1,2-Dichlorobenzene	ug/kg	<25.0	1380	1380	1450	1590	104	115	70-130	10	20	
1,2-Dichloroethane	ug/kg	<25.0	1380	1380	1450	1470	104	106	70-136	2	20	
1,2-Dichloropropane	ug/kg	<25.0	1380	1380	1440	1530	104	111	78-128	6	20	
1,3-Dichlorobenzene	ug/kg	<25.0	1380	1380	1360	1480	99	107	70-130	8	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2075294 2075295

Parameter	Units	40210102002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/kg	<25.0	1380	1380	1480	1560	107	113	70-130	5	20	
Benzene	ug/kg	<25.0	1380	1380	1380	1440	100	104	70-130	4	20	
Bromodichloromethane	ug/kg	<25.0	1380	1380	1370	1500	99	108	70-130	9	20	
Bromoform	ug/kg	<25.0	1380	1380	1280	1440	92	104	63-130	12	20	
Bromomethane	ug/kg	<63.8	1380	1380	1180	1280	85	93	33-146	8	20	
Carbon tetrachloride	ug/kg	<25.0	1380	1380	1310	1490	95	108	65-130	13	20	
Chlorobenzene	ug/kg	<25.0	1380	1380	1380	1470	99	106	70-130	7	20	
Chloroethane	ug/kg	<46.4	1380	1380	1360	1360	98	98	46-156	0	20	
Chloroform	ug/kg	<47.5	1380	1380	1430	1440	104	104	75-130	1	20	
Chloromethane	ug/kg	<25.0	1380	1380	1360	1400	98	101	20-139	3	20	
cis-1,2-Dichloroethene	ug/kg	<25.0	1380	1380	1380	1450	100	105	69-130	5	20	
cis-1,3-Dichloropropene	ug/kg	<42.3	1380	1380	1270	1390	91	100	70-130	9	20	
Dibromochloromethane	ug/kg	<229	1380	1380	1340	1470	97	106	70-130	9	20	
Dichlorodifluoromethane	ug/kg	<25.0	1380	1380	1090	1250	79	90	10-99	13	22	
Ethylbenzene	ug/kg	<25.0	1380	1380	1340	1430	97	103	80-120	7	20	
Isopropylbenzene (Cumene)	ug/kg	<25.0	1380	1380	1260	1360	91	98	70-130	7	20	
m&p-Xylene	ug/kg	<50.0	2770	2770	2820	2980	102	108	70-130	6	20	
Methyl-tert-butyl ether	ug/kg	<25.0	1380	1380	1300	1420	94	102	70-130	9	20	
Methylene Chloride	ug/kg	<26.3	1380	1380	1470	1460	106	105	70-136	1	20	
o-Xylene	ug/kg	<25.0	1380	1380	1370	1490	99	107	70-130	9	20	
Styrene	ug/kg	<25.0	1380	1380	1350	1420	98	103	70-130	5	20	
Tetrachloroethene	ug/kg	<38.7	1380	1380	1280	1390	92	100	68-130	8	20	
Toluene	ug/kg	<25.0	1380	1380	1450	1510	105	109	80-120	4	20	
trans-1,2-Dichloroethene	ug/kg	<25.0	1380	1380	1380	1500	100	108	70-130	8	20	
trans-1,3-Dichloropropene	ug/kg	<25.0	1380	1380	1260	1370	91	99	70-130	8	20	
Trichloroethene	ug/kg	<25.0	1380	1380	1400	1450	101	104	70-130	4	20	
Trichlorofluoromethane	ug/kg	<25.0	1380	1380	1220	1430	88	103	53-128	15	20	
Vinyl chloride	ug/kg	<25.0	1380	1380	1300	1440	94	104	32-118	10	20	
4-Bromofluorobenzene (S)	%						106	113	52-137			
Dibromofluoromethane (S)	%						108	113	58-145			
Toluene-d8 (S)	%						103	110	56-140			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

QC Batch: 358960 | Analysis Method: EPA 8260
QC Batch Method: EPA 5035/5030B | Analysis Description: 8260 MSV Med Level Normal List
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40210100001, 40210100003, 40210100004, 40210100005, 40210100006, 40210100007, 40210100008

METHOD BLANK: 2076325 Matrix: Solid
Associated Lab Samples: 40210100001, 40210100003, 40210100004, 40210100005, 40210100006, 40210100007, 40210100008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<7.8	50.0	06/29/20 17:32	
1,1,1-Trichloroethane	ug/kg	<13.5	50.0	06/29/20 17:32	
1,1,2,2-Tetrachloroethane	ug/kg	<15.7	52.0	06/29/20 17:32	
1,1,2-Trichloroethane	ug/kg	<15.7	52.0	06/29/20 17:32	
1,1-Dichloroethane	ug/kg	<13.5	50.0	06/29/20 17:32	
1,1-Dichloroethene	ug/kg	<11.8	50.0	06/29/20 17:32	
1,1-Dichloropropene	ug/kg	<10.7	50.0	06/29/20 17:32	
1,2,3-Trichlorobenzene	ug/kg	<47.3	158	06/29/20 17:32	
1,2,3-Trichloropropane	ug/kg	<37.4	125	06/29/20 17:32	
1,2,4-Trichlorobenzene	ug/kg	<41.7	250	06/29/20 17:32	
1,2,4-Trimethylbenzene	ug/kg	<18.1	60.0	06/29/20 17:32	
1,2-Dibromo-3-chloropropane	ug/kg	<237	789	06/29/20 17:32	
1,2-Dibromoethane (EDB)	ug/kg	<17.0	57.0	06/29/20 17:32	
1,2-Dichlorobenzene	ug/kg	<13.1	50.0	06/29/20 17:32	
1,2-Dichloroethane	ug/kg	<13.8	50.0	06/29/20 17:32	
1,2-Dichloropropane	ug/kg	<13.5	50.0	06/29/20 17:32	
1,3,5-Trimethylbenzene	ug/kg	<16.0	53.0	06/29/20 17:32	
1,3-Dichlorobenzene	ug/kg	<13.0	50.0	06/29/20 17:32	
1,3-Dichloropropane	ug/kg	<11.0	50.0	06/29/20 17:32	
1,4-Dichlorobenzene	ug/kg	<12.0	50.0	06/29/20 17:32	
2,2-Dichloropropane	ug/kg	<15.7	52.0	06/29/20 17:32	
2-Chlorotoluene	ug/kg	<19.3	64.0	06/29/20 17:32	
4-Chlorotoluene	ug/kg	<19.3	64.0	06/29/20 17:32	
Benzene	ug/kg	<12.5	42.0	06/29/20 17:32	
Bromobenzene	ug/kg	<18.5	62.0	06/29/20 17:32	
Bromochloromethane	ug/kg	<20.9	70.0	06/29/20 17:32	
Bromodichloromethane	ug/kg	<10.0	50.0	06/29/20 17:32	
Bromoform	ug/kg	<21.6	72.0	06/29/20 17:32	
Bromomethane	ug/kg	<63.8	250	06/29/20 17:32	
Carbon tetrachloride	ug/kg	<7.5	50.0	06/29/20 17:32	
Chlorobenzene	ug/kg	<16.8	56.0	06/29/20 17:32	
Chloroethane	ug/kg	<46.4	250	06/29/20 17:32	
Chloroform	ug/kg	<47.5	250	06/29/20 17:32	
Chloromethane	ug/kg	<24.0	80.0	06/29/20 17:32	
cis-1,2-Dichloroethene	ug/kg	<14.8	50.0	06/29/20 17:32	
cis-1,3-Dichloropropene	ug/kg	<42.3	141	06/29/20 17:32	
Dibromochloromethane	ug/kg	<229	763	06/29/20 17:32	
Dibromomethane	ug/kg	<17.7	59.0	06/29/20 17:32	
Dichlorodifluoromethane	ug/kg	<21.7	72.0	06/29/20 17:32	
Diisopropyl ether	ug/kg	<14.0	50.0	06/29/20 17:32	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

METHOD BLANK: 2076325 Matrix: Solid
Associated Lab Samples: 40210100001, 40210100003, 40210100004, 40210100005, 40210100006, 40210100007, 40210100008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/kg	<14.5	50.0	06/29/20 17:32	
Hexachloro-1,3-butadiene	ug/kg	<68.7	229	06/29/20 17:32	
Isopropylbenzene (Cumene)	ug/kg	<17.7	59.0	06/29/20 17:32	
m&p-Xylene	ug/kg	<32.4	108	06/29/20 17:32	
Methyl-tert-butyl ether	ug/kg	<16.2	54.0	06/29/20 17:32	
Methylene Chloride	ug/kg	<26.3	88.0	06/29/20 17:32	
n-Butylbenzene	ug/kg	<30.0	100	06/29/20 17:32	
n-Propylbenzene	ug/kg	<17.8	59.0	06/29/20 17:32	
Naphthalene	ug/kg	<27.3	91.0	06/29/20 17:32	
o-Xylene	ug/kg	<18.1	60.0	06/29/20 17:32	
p-Isopropyltoluene	ug/kg	<21.7	72.0	06/29/20 17:32	
sec-Butylbenzene	ug/kg	<21.5	72.0	06/29/20 17:32	
Styrene	ug/kg	<12.3	50.0	06/29/20 17:32	
tert-Butylbenzene	ug/kg	<18.7	62.0	06/29/20 17:32	
Tetrachloroethene	ug/kg	<38.7	129	06/29/20 17:32	
Toluene	ug/kg	<13.1	50.0	06/29/20 17:32	
trans-1,2-Dichloroethene	ug/kg	<20.2	67.0	06/29/20 17:32	
trans-1,3-Dichloropropene	ug/kg	<22.2	74.0	06/29/20 17:32	
Trichloroethene	ug/kg	<12.8	50.0	06/29/20 17:32	
Trichlorofluoromethane	ug/kg	<19.6	65.0	06/29/20 17:32	
Vinyl chloride	ug/kg	<14.5	50.0	06/29/20 17:32	
4-Bromofluorobenzene (S)	%	93	52-137	06/29/20 17:32	
Dibromofluoromethane (S)	%	99	58-145	06/29/20 17:32	
Toluene-d8 (S)	%	98	56-140	06/29/20 17:32	

LABORATORY CONTROL SAMPLE: 2076326

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2940	118	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2480	99	70-130	
1,1,2-Trichloroethane	ug/kg	2500	2490	99	70-130	
1,1-Dichloroethane	ug/kg	2500	2710	108	69-143	
1,1-Dichloroethene	ug/kg	2500	2410	97	73-118	
1,2,4-Trichlorobenzene	ug/kg	2500	2400	96	60-130	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2400	96	66-130	
1,2-Dibromoethane (EDB)	ug/kg	2500	2450	98	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2450	98	70-130	
1,2-Dichloroethane	ug/kg	2500	2580	103	70-130	
1,2-Dichloropropane	ug/kg	2500	2630	105	78-126	
1,3-Dichlorobenzene	ug/kg	2500	2400	96	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2370	95	70-130	
Benzene	ug/kg	2500	2420	97	70-130	
Bromodichloromethane	ug/kg	2500	2530	101	70-130	
Bromoform	ug/kg	2500	2290	91	67-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

LABORATORY CONTROL SAMPLE: 2076326

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	2500	2430	97	45-134	
Carbon tetrachloride	ug/kg	2500	2690	108	70-130	
Chlorobenzene	ug/kg	2500	2520	101	70-130	
Chloroethane	ug/kg	2500	2600	104	58-143	
Chloroform	ug/kg	2500	2650	106	76-122	
Chloromethane	ug/kg	2500	1840	73	45-120	
cis-1,2-Dichloroethene	ug/kg	2500	2650	106	69-130	
cis-1,3-Dichloropropene	ug/kg	2500	2210	88	70-130	
Dibromochloromethane	ug/kg	2500	2290	92	70-130	
Dichlorodifluoromethane	ug/kg	2500	1310	52	26-99	
Ethylbenzene	ug/kg	2500	2500	100	80-120	
Isopropylbenzene (Cumene)	ug/kg	2500	2450	98	70-130	
m&p-Xylene	ug/kg	5000	5160	103	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2420	97	70-130	
Methylene Chloride	ug/kg	2500	2390	96	70-130	
o-Xylene	ug/kg	2500	2590	103	70-130	
Styrene	ug/kg	2500	2590	104	70-130	
Tetrachloroethene	ug/kg	2500	2470	99	70-130	
Toluene	ug/kg	2500	2550	102	80-120	
trans-1,2-Dichloroethene	ug/kg	2500	2820	113	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2220	89	70-130	
Trichloroethene	ug/kg	2500	2600	104	70-130	
Trichlorofluoromethane	ug/kg	2500	2450	98	70-128	
Vinyl chloride	ug/kg	2500	1950	78	53-110	
4-Bromofluorobenzene (S)	%			92	52-137	
Dibromofluoromethane (S)	%			107	58-145	
Toluene-d8 (S)	%			96	56-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2076327 2076328

Parameter	Units	40210215016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	<25.0	1330	1330	1310	1380	98	103	66-130	5	20	
1,1,2,2-Tetrachloroethane	ug/kg	<25.0	1330	1330	1400	1440	105	108	70-133	3	20	
1,1,2-Trichloroethane	ug/kg	<25.0	1330	1330	1310	1360	99	102	70-130	4	20	
1,1-Dichloroethane	ug/kg	<25.0	1330	1330	1350	1340	101	100	69-143	1	20	
1,1-Dichloroethene	ug/kg	<25.0	1330	1330	1130	1190	85	89	58-120	5	20	
1,2,4-Trichlorobenzene	ug/kg	<41.7	1330	1330	1350	1330	101	100	60-130	2	20	
1,2-Dibromo-3-chloropropane	ug/kg	<237	1330	1330	1210	1230	91	92	59-136	1	20	
1,2-Dibromoethane (EDB)	ug/kg	<25.0	1330	1330	1320	1360	99	102	70-130	2	20	
1,2-Dichlorobenzene	ug/kg	<25.0	1330	1330	1300	1310	98	98	70-130	1	20	
1,2-Dichloroethane	ug/kg	<25.0	1330	1330	1350	1390	101	104	70-136	3	20	
1,2-Dichloropropane	ug/kg	<25.0	1330	1330	1310	1310	98	98	78-128	0	20	
1,3-Dichlorobenzene	ug/kg	<25.0	1330	1330	1250	1310	94	98	70-130	4	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2076327 2076328

Parameter	Units	40210215016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/kg	<25.0	1330	1330	1240	1260	93	94	70-130	1	20	
Benzene	ug/kg	<25.0	1330	1330	1210	1250	90	93	70-130	3	20	
Bromodichloromethane	ug/kg	<25.0	1330	1330	1270	1320	95	99	70-130	4	20	
Bromoform	ug/kg	<25.0	1330	1330	1320	1320	99	99	63-130	1	20	
Bromomethane	ug/kg	<63.8	1330	1330	1360	1390	102	104	33-146	2	20	
Carbon tetrachloride	ug/kg	<25.0	1330	1330	1250	1370	94	103	65-130	9	20	
Chlorobenzene	ug/kg	<25.0	1330	1330	1330	1320	100	99	70-130	1	20	
Chloroethane	ug/kg	<46.4	1330	1330	1320	1410	99	106	46-156	7	20	
Chloroform	ug/kg	<47.5	1330	1330	1330	1360	100	102	75-130	2	20	
Chloromethane	ug/kg	<25.0	1330	1330	1110	1080	83	81	20-139	3	20	
cis-1,2-Dichloroethene	ug/kg	<25.0	1330	1330	1350	1360	101	102	69-130	1	20	
cis-1,3-Dichloropropene	ug/kg	<42.3	1330	1330	1200	1230	90	93	70-130	3	20	
Dibromochloromethane	ug/kg	<229	1330	1330	1310	1300	98	97	70-130	1	20	
Dichlorodifluoromethane	ug/kg	<25.0	1330	1330	866	885	65	66	10-99	2	22	
Ethylbenzene	ug/kg	<25.0	1330	1330	1240	1300	93	98	80-120	5	20	
Isopropylbenzene (Cumene)	ug/kg	<25.0	1330	1330	1220	1250	91	94	70-130	3	20	
m&p-Xylene	ug/kg	<50.0	2670	2670	2530	2630	95	99	70-130	4	20	
Methyl-tert-butyl ether	ug/kg	<25.0	1330	1330	1230	1310	92	98	70-130	6	20	
Methylene Chloride	ug/kg	<26.3	1330	1330	1290	1280	96	96	70-136	1	20	
o-Xylene	ug/kg	<25.0	1330	1330	1260	1290	95	97	70-130	2	20	
Styrene	ug/kg	<25.0	1330	1330	1320	1330	99	100	70-130	1	20	
Tetrachloroethene	ug/kg	<38.7	1330	1330	1230	1290	92	97	68-130	5	20	
Toluene	ug/kg	<25.0	1330	1330	1280	1360	96	102	80-120	7	20	
trans-1,2-Dichloroethene	ug/kg	<25.0	1330	1330	1380	1430	104	107	70-130	3	20	
trans-1,3-Dichloropropene	ug/kg	<25.0	1330	1330	1210	1230	91	92	70-130	2	20	
Trichloroethene	ug/kg	<25.0	1330	1330	1260	1290	94	97	70-130	3	20	
Trichlorofluoromethane	ug/kg	<25.0	1330	1330	1170	1210	88	91	53-128	3	20	
Vinyl chloride	ug/kg	<25.0	1330	1330	1110	1100	83	83	32-118	1	20	
4-Bromofluorobenzene (S)	%						106	102	52-137			
Dibromofluoromethane (S)	%						123	109	58-145			
Toluene-d8 (S)	%						107	103	56-140			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

QC Batch: 358729
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40210100009, 40210100010, 40210100011

METHOD BLANK: 2075064 Matrix: Water
Associated Lab Samples: 40210100009, 40210100010, 40210100011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	06/26/20 10:16	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	06/26/20 10:16	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	06/26/20 10:16	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	06/26/20 10:16	
1,1-Dichloroethane	ug/L	<0.27	1.0	06/26/20 10:16	
1,1-Dichloroethene	ug/L	<0.24	1.0	06/26/20 10:16	
1,1-Dichloropropene	ug/L	<0.54	1.8	06/26/20 10:16	
1,2,3-Trichlorobenzene	ug/L	<2.2	7.4	06/26/20 10:16	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	06/26/20 10:16	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	06/26/20 10:16	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	06/26/20 10:16	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	06/26/20 10:16	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	06/26/20 10:16	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	06/26/20 10:16	
1,2-Dichloroethane	ug/L	<0.28	1.0	06/26/20 10:16	
1,2-Dichloropropane	ug/L	<0.28	1.0	06/26/20 10:16	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	06/26/20 10:16	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	06/26/20 10:16	
1,3-Dichloropropane	ug/L	<0.83	2.8	06/26/20 10:16	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	06/26/20 10:16	
2,2-Dichloropropane	ug/L	<2.3	7.6	06/26/20 10:16	
2-Chlorotoluene	ug/L	<0.93	5.0	06/26/20 10:16	
4-Chlorotoluene	ug/L	<0.76	2.5	06/26/20 10:16	
Benzene	ug/L	<0.25	1.0	06/26/20 10:16	
Bromobenzene	ug/L	<0.24	1.0	06/26/20 10:16	
Bromochloromethane	ug/L	<0.36	5.0	06/26/20 10:16	
Bromodichloromethane	ug/L	<0.36	1.2	06/26/20 10:16	
Bromoform	ug/L	<4.0	13.2	06/26/20 10:16	
Bromomethane	ug/L	<0.97	5.0	06/26/20 10:16	
Carbon tetrachloride	ug/L	<1.1	3.6	06/26/20 10:16	
Chlorobenzene	ug/L	<0.71	2.4	06/26/20 10:16	
Chloroethane	ug/L	<1.3	5.0	06/26/20 10:16	
Chloroform	ug/L	<1.3	5.0	06/26/20 10:16	
Chloromethane	ug/L	<2.2	7.3	06/26/20 10:16	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	06/26/20 10:16	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	06/26/20 10:16	
Dibromochloromethane	ug/L	<2.6	8.7	06/26/20 10:16	
Dibromomethane	ug/L	<0.94	3.1	06/26/20 10:16	
Dichlorodifluoromethane	ug/L	<0.50	5.0	06/26/20 10:16	
Diisopropyl ether	ug/L	<1.9	6.3	06/26/20 10:16	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

METHOD BLANK: 2075064 Matrix: Water
Associated Lab Samples: 40210100009, 40210100010, 40210100011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/L	<0.32	1.1	06/26/20 10:16	
Hexachloro-1,3-butadiene	ug/L	1.8J	4.9	06/26/20 10:16	
Isopropylbenzene (Cumene)	ug/L	<1.7	5.6	06/26/20 10:16	
m&p-Xylene	ug/L	<0.47	2.0	06/26/20 10:16	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	06/26/20 10:16	
Methylene Chloride	ug/L	<0.58	5.0	06/26/20 10:16	
n-Butylbenzene	ug/L	<0.71	2.4	06/26/20 10:16	
n-Propylbenzene	ug/L	<0.81	5.0	06/26/20 10:16	
Naphthalene	ug/L	<1.2	5.0	06/26/20 10:16	
o-Xylene	ug/L	<0.26	1.0	06/26/20 10:16	
p-Isopropyltoluene	ug/L	<0.80	2.7	06/26/20 10:16	
sec-Butylbenzene	ug/L	<0.85	5.0	06/26/20 10:16	
Styrene	ug/L	<3.0	10.0	06/26/20 10:16	
tert-Butylbenzene	ug/L	<0.30	1.0	06/26/20 10:16	
Tetrachloroethene	ug/L	0.33J	1.1	06/26/20 10:16	
Toluene	ug/L	<0.27	0.90	06/26/20 10:16	
trans-1,2-Dichloroethene	ug/L	<0.46	1.5	06/26/20 10:16	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	06/26/20 10:16	
Trichloroethene	ug/L	<0.26	1.0	06/26/20 10:16	
Trichlorofluoromethane	ug/L	<0.21	1.0	06/26/20 10:16	
Vinyl chloride	ug/L	<0.17	1.0	06/26/20 10:16	
4-Bromofluorobenzene (S)	%	103	70-130	06/26/20 10:16	
Dibromofluoromethane (S)	%	95	70-130	06/26/20 10:16	
Toluene-d8 (S)	%	107	70-130	06/26/20 10:16	

LABORATORY CONTROL SAMPLE: 2075065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	49.8	100	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	58.9	118	64-131	
1,1,2-Trichloroethane	ug/L	50	62.9	126	70-130	
1,1-Dichloroethane	ug/L	50	55.1	110	69-163	
1,1-Dichloroethene	ug/L	50	54.3	109	77-123	
1,2,4-Trichlorobenzene	ug/L	50	53.2	106	68-130	
1,2-Dibromo-3-chloropropane	ug/L	50	52.5	105	63-130	
1,2-Dibromoethane (EDB)	ug/L	50	56.1	112	70-130	
1,2-Dichlorobenzene	ug/L	50	49.7	99	70-130	
1,2-Dichloroethane	ug/L	50	52.0	104	78-142	
1,2-Dichloropropane	ug/L	50	62.7	125	86-134	
1,3-Dichlorobenzene	ug/L	50	48.2	96	70-130	
1,4-Dichlorobenzene	ug/L	50	49.7	99	70-130	
Benzene	ug/L	50	52.4	105	70-130	
Bromodichloromethane	ug/L	50	65.3	131	70-130	L1
Bromoform	ug/L	50	56.3	113	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

LABORATORY CONTROL SAMPLE: 2075065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	41.0	82	39-129	
Carbon tetrachloride	ug/L	50	50.0	100	70-132	
Chlorobenzene	ug/L	50	55.8	112	70-130	
Chloroethane	ug/L	50	54.5	109	66-140	
Chloroform	ug/L	50	52.9	106	75-132	
Chloromethane	ug/L	50	41.1	82	32-143	
cis-1,2-Dichloroethene	ug/L	50	49.1	98	70-130	
cis-1,3-Dichloropropene	ug/L	50	55.2	110	70-130	
Dibromochloromethane	ug/L	50	53.0	106	70-130	
Dichlorodifluoromethane	ug/L	50	44.5	89	10-141	
Ethylbenzene	ug/L	50	62.8	126	80-120	L1
Isopropylbenzene (Cumene)	ug/L	50	53.7	107	70-130	
m&p-Xylene	ug/L	100	119	119	70-130	
Methyl-tert-butyl ether	ug/L	50	47.1	94	61-129	
Methylene Chloride	ug/L	50	54.2	108	70-130	
o-Xylene	ug/L	50	58.7	117	70-130	
Styrene	ug/L	50	56.7	113	70-130	
Tetrachloroethene	ug/L	50	61.7	123	70-130	
Toluene	ug/L	50	61.4	123	80-120	L1
trans-1,2-Dichloroethene	ug/L	50	55.0	110	70-130	
trans-1,3-Dichloropropene	ug/L	50	51.0	102	69-130	
Trichloroethene	ug/L	50	63.4	127	70-130	
Trichlorofluoromethane	ug/L	50	55.7	111	75-145	
Vinyl chloride	ug/L	50	50.7	101	51-140	
4-Bromofluorobenzene (S)	%			115	70-130	
Dibromofluoromethane (S)	%			92	70-130	
Toluene-d8 (S)	%			108	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2075154 2075155

Parameter	Units	40210100009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.24	50	50	50.6	50.7	101	101	70-130	0	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	50	50	56.6	59.6	113	119	64-137	5	20	
1,1,2-Trichloroethane	ug/L	<0.55	50	50	61.4	62.9	123	126	70-137	2	20	
1,1-Dichloroethane	ug/L	<0.27	50	50	54.4	55.1	109	110	69-163	1	20	
1,1-Dichloroethene	ug/L	<0.24	50	50	55.0	54.6	110	109	77-129	1	20	
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	55.5	58.5	110	116	68-130	5	20	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	50	50	53.6	55.6	107	111	60-130	3	20	
1,2-Dibromoethane (EDB)	ug/L	<0.83	50	50	55.2	56.9	110	114	70-130	3	20	
1,2-Dichlorobenzene	ug/L	<0.71	50	50	49.1	51.2	98	102	70-130	4	20	
1,2-Dichloroethane	ug/L	<0.28	50	50	50.7	51.3	101	103	78-145	1	20	
1,2-Dichloropropane	ug/L	<0.28	50	50	61.1	62.4	122	125	86-135	2	20	
1,3-Dichlorobenzene	ug/L	<0.63	50	50	47.2	49.0	94	98	70-130	4	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2075154 2075155

Parameter	Units	40210100009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/L	<0.94	50	50	49.0	50.3	98	100	70-130	3	20	
Benzene	ug/L	<0.25	50	50	52.0	52.2	104	104	70-136	0	20	
Bromodichloromethane	ug/L	<0.36	50	50	63.7	64.9	127	130	70-130	2	20	
Bromoform	ug/L	<4.0	50	50	55.4	57.1	111	114	69-130	3	20	
Bromomethane	ug/L	<0.97	50	50	50.4	49.8	101	100	39-138	1	20	
Carbon tetrachloride	ug/L	<1.1	50	50	51.0	50.0	102	100	70-142	2	20	
Chlorobenzene	ug/L	<0.71	50	50	54.5	55.7	109	111	70-130	2	20	
Chloroethane	ug/L	<1.3	50	50	54.1	55.1	108	110	61-149	2	20	
Chloroform	ug/L	<1.3	50	50	51.6	52.1	103	104	75-133	1	20	
Chloromethane	ug/L	<2.2	50	50	40.9	42.1	82	84	32-143	3	20	
cis-1,2-Dichloroethene	ug/L	<0.27	50	50	48.7	49.7	97	99	70-130	2	20	
cis-1,3-Dichloropropene	ug/L	<3.6	50	50	54.9	56.2	110	112	70-130	2	20	
Dibromochloromethane	ug/L	<2.6	50	50	52.6	53.7	105	107	70-130	2	20	
Dichlorodifluoromethane	ug/L	<0.50	50	50	45.7	44.1	91	88	10-141	4	20	
Ethylbenzene	ug/L	<0.32	50	50	62.1	63.2	124	126	80-120	2	20	M0
Isopropylbenzene (Cumene)	ug/L	<1.7	50	50	53.7	54.4	107	109	70-130	1	20	
m&p-Xylene	ug/L	<0.47	100	100	118	120	118	120	70-130	1	20	
Methyl-tert-butyl ether	ug/L	<1.2	50	50	45.8	47.5	92	95	61-136	4	20	
Methylene Chloride	ug/L	<0.58	50	50	54.6	54.8	109	110	68-137	0	20	
o-Xylene	ug/L	<0.26	50	50	57.8	58.9	116	118	70-130	2	20	
Styrene	ug/L	<3.0	50	50	55.5	56.7	111	113	70-130	2	20	
Tetrachloroethene	ug/L	<0.33	50	50	61.9	62.3	123	124	70-130	1	20	
Toluene	ug/L	<0.27	50	50	61.1	61.8	122	123	80-120	1	20	M0
trans-1,2-Dichloroethene	ug/L	<0.46	50	50	54.7	55.3	109	111	70-130	1	20	
trans-1,3-Dichloropropene	ug/L	<4.4	50	50	50.9	53.1	102	106	69-130	4	20	
Trichloroethene	ug/L	<0.26	50	50	61.9	62.8	124	126	70-130	2	20	
Trichlorofluoromethane	ug/L	<0.21	50	50	57.3	55.9	115	112	74-157	2	20	
Vinyl chloride	ug/L	<0.17	50	50	52.1	51.3	104	103	51-140	1	20	
4-Bromofluorobenzene (S)	%						116	116	70-130			
Dibromofluoromethane (S)	%						92	92	70-130			
Toluene-d8 (S)	%						108	108	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

QC Batch: 358996
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40210100001, 40210100002, 40210100003, 40210100004, 40210100005, 40210100006, 40210100007, 40210100008

SAMPLE DUPLICATE: 2076383

Parameter	Units	40210100002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.2	10.5	6	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
W	Non-detect results are reported on a wet weight basis.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 9259 TRUAX FIELD
Pace Project No.: 40210100

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40210100001	**SB-1-1 (1-2')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100002	**SB-1-1 (4-4.5')**	EPA 5035/5030B	358788	EPA 8260	358795
40210100003	**SB-2-1 (1-2')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100004	**SB-2-2 (9-10')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100005	**SB-3-1 (1-2')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100006	**SB-3-2 (7.5-8.5')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100007	**SB-4-1 (1-2')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100008	**SB-4-1 (3-4')**	EPA 5035/5030B	358960	EPA 8260	358962
40210100009	**SB-1-W**	EPA 8260	358729		
40210100010	**SB-4-W**	EPA 8260	358729		
40210100011	**MW**	EPA 8260	358729		
40210100001	**SB-1-1 (1-2')**	ASTM D2974-87	358996		
40210100002	**SB-1-1 (4-4.5')**	ASTM D2974-87	358996		
40210100003	**SB-2-1 (1-2')**	ASTM D2974-87	358996		
40210100004	**SB-2-2 (9-10')**	ASTM D2974-87	358996		
40210100005	**SB-3-1 (1-2')**	ASTM D2974-87	358996		
40210100006	**SB-3-2 (7.5-8.5')**	ASTM D2974-87	358996		
40210100007	**SB-4-1 (1-2')**	ASTM D2974-87	358996		
40210100008	**SB-4-1 (3-4')**	ASTM D2974-87	358996		

Pace Analytical
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

40210100

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	REI Engineers, Inc
Branch/Location:	Wausau, WI
Project Contact:	Ken Lassa
Phone:	(715) 675-9784
Project Number:	9259
Project Name:	Truax Field
Project State:	WI
Sampled By (Print):	Matthew C Michalski
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ken Lassa
Mail To Company:	REI Engineers, Inc
Mail To Address:	KLassa@REIengineers.com
Invoice To Contact:	SAA
Invoice To Company:	SAA
Invoice To Address:	SAA
Invoice To Phone:	(715) 675-9784

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: PFAS by LC/MS/MS	VOC	Dry Weight	PFAS by LC/MS/MS	VOC	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	FILTERED? (YES/NO)				Y/N: N	N	N	N	N			
	PRESERVATION (CODE)*				Pick Letter: A	F	A	A	B			
001	SB-1-1 (1-2')	6/23/20	10:00	S	X	X	X					
002	SB-1-1 (4-4.5')		10:10									
003	SB-2-1 (1-2')		10:30									
004	SB-2-2 (9-10')		10:40									
005	SB-3-1 (1-2')		10:50									
006	SB-3-2 (7.5-8.5')		11:00									
007	SB-4-1 (1-2')		11:15									
008	SB-4-1 (3-4')		11:20									
009	SB-1-W		10:14	GW				X	X			
010	SB-4-W		11:05	GW				X	X			
011	MW		4:15	GW				X	X			
012	Duplicate		—	GW				X				
013	Equipment Blank - Reds		11:40	W				X				

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	6/24/2020 3:00 pm		
Walco	6/25/20 0900	Earl Michalski	6/25/20 0900

PACE Project No.: 40210100
Receipt Temp = R0I °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal: Present / ~~Not Present~~ Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

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UPPER MIDWEST REGION
MN: 612-607-1700 **WI:** 920-469-2436

Page #2 of 3

CHAIN OF CUSTODY

402100100

(Please Print Clearly)	
Company Name:	REI Engineering, Inc
Branch/Location:	Wausau, WI
Project Contact:	Ken Lasss
Phone:	(715) 675-9784
Project Number:	9259
Project Name:	Truax Field
Project State:	WI
Sampled By (Print):	Matthew C Michitsch
Sampled By (Sign):	MC Michitsch
PO #:	
Regulatory Program:	

Quote #:	
Mail To Contact:	Ken Lasss
Mail To Company:	REI Engineering, Inc
Mail To Address:	KLasss@REIengineering.com
Invoice To Contact:	SAA
Invoice To Company:	SAA
Invoice To Address:	SAA
Invoice To Phone:	(715) 675-9784

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	Analyses Requested	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					Y/N	Pick Letter	PFAS by DOD			
014	Equipment Blank-Liner	6/23/20	11:50	W	N	A	2			
015	Equipment Blank-Tubing	6/23/20	11:30	W	N	A	2			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1:
Email #2:
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	6/24/2020 3:44pm		
Walter	6/25/20 0900	Pace	6/25/20 0900

PACE Project No.
402100

Receipt Temp = R01 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / ~~Not Present~~
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

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U0210100

Pace Analytical®
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CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	REI Engineering, Inc
Branch/Location:	Wayzata, MN
Project Contact:	Ken Lasse
Phone:	(715) 675-9384
Project Number:	9259
Project Name:	Truax Field
Project State:	WI
Sampled By (Print):	Bryan Sargent (GESTRA)
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ken Lasse
Mail To Company:	REI Engineering Inc.
Mail To Address:	KLasse@REIengineering.com
Invoice To Contact:	SAM
Invoice To Company:	SAM
Invoice To Address:	SAM
Invoice To Phone:	(715) 675-9354

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
SI = Sludge	WP = Wipes

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					N	A	PFAS by ID			
016	GESTRA Decon	6/23/20	3:00pm	W		X				

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge) Date Needed:	Relinquished By:	Date/Time:	Received By:	Date/Time:
	Bryan Sargent (GESTRA)	6/23/2020 10:00am	REI	6/23/20 10:00am
Transmit Prelim Rush Results by (complete what you want):	Relinquished By:	Date/Time:	Received By:	Date/Time:
		6/24/2020 3:00pm		
Email #1:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Email #2:	Waltco	6/25/20 0900	Eric Wisniewski	6/25/20 0900
Telephone:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Fax:				
Samples on HOLD are subject to special pricing and release of liability	Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.
9024010D

Receipt Temp = R05 °C
Sample Receipt pH
OK / Adjusted
Cooler Custody Seal
Present / ~~Not Present~~
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: REI Project # 40210100

All containers needing preservation have been checked and noted below: □Yes □No ☑N/A

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted): Initial when completed: Date/ Time:

	Glass								Plastic					Vials						Jars				General								
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001										1								1					1										2.5 / 5 / 10
002										1								1					1										2.5 / 5 / 10
003										1								1					1										2.5 / 5 / 10
004										1								1					1										2.5 / 5 / 10
005										1								1					1										2.5 / 5 / 10
006										1								1					1										2.5 / 5 / 10
007										1								1					1										2.5 / 5 / 10
008										1								1					1										2.5 / 5 / 10
009										2							3																2.5 / 5 / 10
010										2							3																2.5 / 5 / 10
011										2							3																2.5 / 5 / 10
012										2																							2.5 / 5 / 10
013										2																							2.5 / 5 / 10
014										2																							2.5 / 5 / 10
015										2																							2.5 / 5 / 10
016										2																							2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : □Yes □No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO#: 40210100

Client Name: REI

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Waltco ☐ Client ☐ Pace Other:

Tracking #: 247919 1, -2

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - NA **Type of Ice:** ☑ Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: R01 /Corr:

Person examining contents: Date: 6/25/20 /Initials: SMW

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Labeled By Initials: SMW 6/25/20

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1. Pg #3 is a Copy of COC
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S, W	☐Yes ☑No ☐N/A	12. 007 WPFU ID / SB-4-2(1-2)" SMW 6/25/20
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

Page 2 of 2

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Brian Basten

Project Name: 9259 TRUAX FIELD

Project Number: 40210100

Lot Number:**VF27016**

Date Completed:07/09/2020

07/16/2020 9:33 AM
Approved and released by:
Project Manager II: **Cathy S. Dover**

Case Narrative
Pace Analytical Services, LLC
Lot Number: VF27016

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Pace Analytical Services, LLC ("Pace") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Pace policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W" qualifier.

PFAS 537M ID (WI)
Insufficient sample volume was provided to perform matrix spike/matrix spike duplicate (MS/MSD) for prep batch 58643. An LCS/LCSD was run in lieu of an MS/MSD.

Samples VF27016-009, VF27016-010, VF27016-011, VF27016-012, VF27016-013, VF27016-014, VF27016-015, and VF27016-016 were received in client provided HDPE bottles with foam lined caps.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Sample Summary
Pace Analytical Services, LLC
Lot Number: VF27016
Project Name: 9259 TRUAX FIELD
Project Number: 40210100

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	SB-1-1 (1-2')	Solid	06/23/2020 1000	06/26/2020
002	SB-1-1 4-4.5')	Solid	06/23/2020 1010	06/26/2020
003	SB-2-1 (1-2')	Solid	06/23/2020 1030	06/26/2020
004	SB-2-2 (9-10')	Solid	06/23/2020 1040	06/26/2020
005	SB-3-1 (1-2')	Solid	06/23/2020 1050	06/26/2020
006	SB-3-2 (7.5-8.5')	Solid	06/23/2020 1100	06/26/2020
007	SB-4-1 (1-2')	Solid	06/23/2020 1115	06/26/2020
008	SB-4-1 (3-4')	Solid	06/23/2020 1120	06/26/2020
009	SB-1-W	Aqueous	06/23/2020 1214	06/26/2020
010	SB-4-W	Aqueous	06/23/2020 1305	06/26/2020
011	MW	Aqueous	06/23/2020 1415	06/26/2020
012	DUPLICATE	Aqueous	06/23/2020	06/26/2020
013	EQUIPMENT BLANK-RODS	Aqueous	06/23/2020 1140	06/26/2020
014	EQUIPMENT BLANK-LINER	Aqueous	06/23/2020 1150	06/26/2020
015	EQUIPMENT BLANK-TUBING	Aqueous	06/23/2020 1330	06/26/2020
016	GESTRA DECON	Aqueous	06/23/2020 1500	06/26/2020

(16 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: VF27016

Project Name: 9259 TRUAX FIELD

Project Number: 40210100

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
003	SB-2-1 (1-2')	Solid	PFOS	PFAS by ID	2.2		ug/kg	10
009	SB-1-W	Aqueous	PFBS	PFAS by ID	14		ng/L	22
009	SB-1-W	Aqueous	PFHpS	PFAS by ID	5.0		ng/L	22
009	SB-1-W	Aqueous	PFPeS	PFAS by ID	6.9		ng/L	22
009	SB-1-W	Aqueous	PFHxS	PFAS by ID	170		ng/L	22
009	SB-1-W	Aqueous	PFBA	PFAS by ID	16		ng/L	22
009	SB-1-W	Aqueous	PFHpA	PFAS by ID	7.6		ng/L	22
009	SB-1-W	Aqueous	PFHxA	PFAS by ID	29		ng/L	22
009	SB-1-W	Aqueous	PFOA	PFAS by ID	17		ng/L	22
009	SB-1-W	Aqueous	PFPeA	PFAS by ID	19		ng/L	22
009	SB-1-W	Aqueous	PFOS	PFAS by ID	110		ng/L	22
010	SB-4-W	Aqueous	PFBS	PFAS by ID	11		ng/L	24
010	SB-4-W	Aqueous	PFHpS	PFAS by ID	4.1		ng/L	24
010	SB-4-W	Aqueous	PFPeS	PFAS by ID	14		ng/L	24
010	SB-4-W	Aqueous	PFHxS	PFAS by ID	320		ng/L	24
010	SB-4-W	Aqueous	PFBA	PFAS by ID	8.7		ng/L	24
010	SB-4-W	Aqueous	PFHpA	PFAS by ID	7.1		ng/L	24
010	SB-4-W	Aqueous	PFHxA	PFAS by ID	14		ng/L	24
010	SB-4-W	Aqueous	PFOA	PFAS by ID	11		ng/L	24
010	SB-4-W	Aqueous	PFPeA	PFAS by ID	9.6		ng/L	24
010	SB-4-W	Aqueous	PFOS	PFAS by ID	77		ng/L	24
011	MW	Aqueous	PFBS	PFAS by ID	12		ng/L	26
011	MW	Aqueous	PFPeS	PFAS by ID	11		ng/L	26
011	MW	Aqueous	PFHxS	PFAS by ID	120		ng/L	26
011	MW	Aqueous	PFBA	PFAS by ID	13		ng/L	26
011	MW	Aqueous	PFHpA	PFAS by ID	5.9		ng/L	26
011	MW	Aqueous	PFHxA	PFAS by ID	13		ng/L	26
011	MW	Aqueous	PFOA	PFAS by ID	11		ng/L	26
011	MW	Aqueous	PFPeA	PFAS by ID	13		ng/L	26
011	MW	Aqueous	PFOS	PFAS by ID	41		ng/L	26
012	DUPLICATE	Aqueous	PFBS	PFAS by ID	16		ng/L	28
012	DUPLICATE	Aqueous	PFHpS	PFAS by ID	4.8		ng/L	28
012	DUPLICATE	Aqueous	PFPeS	PFAS by ID	7.2		ng/L	28
012	DUPLICATE	Aqueous	PFHxS	PFAS by ID	190		ng/L	28
012	DUPLICATE	Aqueous	PFBA	PFAS by ID	17		ng/L	28
012	DUPLICATE	Aqueous	PFHpA	PFAS by ID	6.8		ng/L	28
012	DUPLICATE	Aqueous	PFHxA	PFAS by ID	33		ng/L	28
012	DUPLICATE	Aqueous	PFOA	PFAS by ID	15		ng/L	28
012	DUPLICATE	Aqueous	PFPeA	PFAS by ID	19		ng/L	28
012	DUPLICATE	Aqueous	PFOS	PFAS by ID	120		ng/L	28
016	GESTRA DECON	Aqueous	PFOA	PFAS by ID	2.4		ng/L	36

Detection Summary (Continued)

Lot Number: VF27016

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(41 detections)

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-001**

Description: **SB-1-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1000** Project Name: **9259 TRUAX FIELD** % Solids: **81.5** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1402	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.4	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.4	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.4	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.4	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.2	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.4	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.8	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.4	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.4	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.2	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.4	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.4	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.2	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.4	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.2	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		90	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		95	25-150
13C2_PFTeDA		97	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-001**

Description: **SB-1-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1000** Project Name: **9259 TRUAX FIELD** % Solids: **81.5** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		97	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		95	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		108	25-150
d-EtFOSA		100	10-150
d5-EtFOSAA		88	25-150
d9-EtFOSE		103	10-150
d-MeFOSA		102	10-150
d3-MeFOSAA		88	25-150
d7-MeFOSE		103	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-002**

Description: **SB-1-1 4-4.5')** Matrix: **Solid**

Date Sampled: **06/23/2020 1010** Project Name: **9259 TRUAX FIELD** % Solids: **81.8** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1413	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.6	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.6	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.6	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.6	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.3	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.6	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		5.3	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.6	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.6	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.3	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.6	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.6	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.3	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.6	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		107	25-150
13C2_6:2FTS		104	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		112	25-150
13C2_PFHxDA		102	25-150
13C2_PFTeDA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-002**

Description: **SB-1-1 4-4.5')** Matrix: **Solid**

Date Sampled: **06/23/2020 1010** Project Name: **9259 TRUAX FIELD** % Solids: **81.8** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		112	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		119	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		112	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		118	25-150
13C8_PFOA		104	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		112	25-150
d-EtFOSA		108	10-150
d5-EtFOSAA		107	25-150
d9-EtFOSE		103	10-150
d-MeFOSA		112	10-150
d3-MeFOSAA		111	25-150
d7-MeFOSE		107	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-003**

Description: **SB-2-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1030** Project Name: **9259 TRUAX FIELD** % Solids: **94.0** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1445	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.3	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.3	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.3	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.3	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.1	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.3	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.5	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.3	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.3	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.1	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.3	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.3	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.1	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.3	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.2**		**1.1**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		88	25-150
13C2_6:2FTS		92	25-150
13C2_8:2FTS		95	25-150
13C2_PFDoA		98	25-150
13C2_PFHxDA		92	25-150
13C2_PFTeDA		96	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-003**

Description: **SB-2-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1030** Project Name: **9259 TRUAX FIELD** % Solids: **94.0** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		98	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		96	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		96	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		104	25-150
d-EtFOSA		101	10-150
d5-EtFOSAA		77	25-150
d9-EtFOSE		99	10-150
d-MeFOSA		97	10-150
d3-MeFOSAA		78	25-150
d7-MeFOSE		99	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-004**

Description: **SB-2-2 (9-10')** Matrix: **Solid**

Date Sampled: **06/23/2020 1040** Project Name: **9259 TRUAX FIELD** % Solids: **85.2** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1455	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.3	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.3	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.3	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.3	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.1	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.3	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.6	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.3	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.3	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.1	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.3	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.3	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.1	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.3	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		93	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		88	25-150
13C2_PFDoA		104	25-150
13C2_PFHxDA		94	25-150
13C2_PFTeDA		99	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-004**

Description: **SB-2-2 (9-10')** Matrix: **Solid**

Date Sampled: **06/23/2020 1040** Project Name: **9259 TRUAX FIELD** % Solids: **85.2** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		100	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		101	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		106	25-150
d-EtFOSA		104	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		97	10-150
d-MeFOSA		103	10-150
d3-MeFOSAA		101	25-150
d7-MeFOSE		97	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-005**

Description: **SB-3-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1050** Project Name: **9259 TRUAX FIELD** % Solids: **91.0** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1506	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.2	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.2	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.2	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.2	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.1	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.2	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.4	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.2	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.2	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.1	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.2	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.2	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.1	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.2	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		89	25-150
13C2_6:2FTS		94	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		96	25-150
13C2_PFTeDA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-005**

Description: **SB-3-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1050** Project Name: **9259 TRUAX FIELD** % Solids: **91.0** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		99	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		98	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		103	25-150
d-EtFOSA		103	10-150
d5-EtFOSAA		85	25-150
d9-EtFOSE		101	10-150
d-MeFOSA		103	10-150
d3-MeFOSAA		81	25-150
d7-MeFOSE		98	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-006**

Description: **SB-3-2 (7.5-8.5')** Matrix: **Solid**

Date Sampled: **06/23/2020 1100** Project Name: **9259 TRUAX FIELD** % Solids: **74.8** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1528	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.6	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.6	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.6	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.6	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.3	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.6	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		5.2	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.6	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.6	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.3	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.6	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.6	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.3	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.6	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		102	25-150
13C2_6:2FTS		94	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		102	25-150
13C2_PFHxDA		93	25-150
13C2_PFTeDA		99	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-006**

Description: **SB-3-2 (7.5-8.5')** Matrix: **Solid**

Date Sampled: **06/23/2020 1100** Project Name: **9259 TRUAX FIELD** % Solids: **74.8** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		101	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		105	25-150
13C8_PFOA		95	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		101	25-150
d-EtFOSA		100	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		90	10-150
d-MeFOSA		100	10-150
d3-MeFOSAA		93	25-150
d7-MeFOSE		99	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-007**

Description: **SB-4-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1115** Project Name: **9259 TRUAX FIELD** % Solids: **82.0** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1538	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.7	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.7	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.7	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.7	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.3	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.7	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		5.3	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.7	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.7	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.3	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.7	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.7	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.3	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.7	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.3	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.3	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		93	25-150
13C2_6:2FTS		94	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		103	25-150
13C2_PFHxDA		90	25-150
13C2_PFTeDA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-007**

Description: **SB-4-1 (1-2')** Matrix: **Solid**

Date Sampled: **06/23/2020 1115** Project Name: **9259 TRUAX FIELD** % Solids: **82.0** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		103	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		96	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		100	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		78	25-150
d9-EtFOSE		89	10-150
d-MeFOSA		96	10-150
d3-MeFOSAA		84	25-150
d7-MeFOSE		93	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-008**

Description: **SB-4-1 (3-4')** Matrix: **Solid**

Date Sampled: **06/23/2020 1120** Project Name: **9259 TRUAX FIELD** % Solids: **81.5** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 1549	MMM	06/30/2020 1555	58572

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		2.3	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.3	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.3	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.3	ug/kg	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		1.2	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.3	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.7	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.3	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.3	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.2	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.3	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.3	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.2	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.3	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.2	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.2	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		86	25-150
13C2_6:2FTS		83	25-150
13C2_8:2FTS		84	25-150
13C2_PFDoA		93	25-150
13C2_PFHxDA		84	25-150
13C2_PFTeDA		87	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-008**

Description: **SB-4-1 (3-4')** Matrix: **Solid**

Date Sampled: **06/23/2020 1120** Project Name: **9259 TRUAX FIELD** % Solids: **81.5** **06/27/2020 2101**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		90	25-150
13C3_PFHxS		93	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		89	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		85	10-150
13C9_PFNA		93	25-150
d-EtFOSA		95	10-150
d5-EtFOSAA		78	25-150
d9-EtFOSE		88	10-150
d-MeFOSA		87	10-150
d3-MeFOSAA		76	25-150
d7-MeFOSE		87	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-009**

Description: **SB-1-W** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1214** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2132	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		4.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		4.1	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		4.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.1	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		8.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**14**		**4.1**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**5.0**		**4.1**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		8.1	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**6.9**		**4.1**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**170**		**4.1**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**16**		**4.1**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**7.6**		**4.1**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.1	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**29**		**4.1**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**		**2.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**19**		**4.1**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**110**		**4.1**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		127	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		100	25-150
13C2_PFTeDA		99	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-009**

Description: **SB-1-W** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1214** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		112	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		119	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		114	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		112	25-150
d-EtFOSA		68	10-150
d5-EtFOSAA		91	25-150
d9-EtFOSE		84	10-150
d-MeFOSA		70	10-150
d3-MeFOSAA		100	25-150
d7-MeFOSE		89	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-010**

Description: **SB-4-W** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1305** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2143	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.7	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.7	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		3.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		3.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.7	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.7	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		3.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.7	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.7	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		7.7	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.7	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**11**		**3.9**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**4.1**		**3.9**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**14**		**3.9**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**320**		**3.9**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.7**		**3.9**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**7.1**		**3.9**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**14**		**3.9**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**11**		**1.9**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.6**		**3.9**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**77**		**3.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		108	25-150
13C2_PFHxDA		95	25-150
13C2_PFTeDA		101	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-010**

Description: **SB-4-W** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1305** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		116	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		119	25-150
13C5_PFPeA		113	25-150
13C6_PFDA		113	25-150
13C7_PFUdA		112	25-150
13C8_PFOA		118	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		117	25-150
d-EtFOSA		87	10-150
d5-EtFOSAA		99	25-150
d9-EtFOSE		91	10-150
d-MeFOSA		89	10-150
d3-MeFOSAA		108	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-011**

Description: **MW** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1415** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2154	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.7	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.7	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		3.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		3.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.7	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.7	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		3.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.7	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.7	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		7.7	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.7	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**12**		**3.9**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**11**		**3.9**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**120**		**3.9**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**13**		**3.9**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.9**		**3.9**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**13**		**3.9**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.7	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**11**		**1.9**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**13**		**3.9**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**41**		**3.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		116	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		96	25-150
13C2_PFHxDA		86	25-150
13C2_PFTeDA		90	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-011**

Description: **MW** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1415** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		114	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		107	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		109	25-150
d-EtFOSA		81	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		85	10-150
d-MeFOSA		76	10-150
d3-MeFOSAA		95	25-150
d7-MeFOSE		89	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-012**

Description: **DUPLICATE** Matrix: **Aqueous**

Date Sampled: **06/23/2020** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2205	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		3.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		3.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		3.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.8	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		7.8	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.8	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**16**		**3.9**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**4.8**		**3.9**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.8	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**7.2**		**3.9**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.8	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**190**		**3.9**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**3.9**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.8**		**3.9**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.8	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**33**		**3.9**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.8	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**1.9**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**19**		**3.9**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**120**		**3.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		130	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		107	25-150
13C2_PFHxDA		91	25-150
13C2_PFTeDA		96	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-012**

Description: **DUPLICATE** Matrix: **Aqueous**

Date Sampled: **06/23/2020** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		112	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		120	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		108	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		113	25-150
d-EtFOSA		76	10-150
d5-EtFOSAA		93	25-150
d9-EtFOSE		87	10-150
d-MeFOSA		71	10-150
d3-MeFOSAA		95	25-150
d7-MeFOSE		86	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-013**

Description: **EQUIPMENT BLANK-RODS** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1140** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2215	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		3.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		3.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		3.7	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		7.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.8	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		120	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		120	25-150
13C2_PFDoA		114	25-150
13C2_PFHxDA		92	25-150
13C2_PFTeDA		92	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-013**

Description: **EQUIPMENT BLANK-RODS** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1140** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		116	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		114	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		116	25-150
13C7_PFUdA		117	25-150
13C8_PFOA		114	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		113	25-150
d-EtFOSA		105	10-150
d5-EtFOSAA		110	25-150
d9-EtFOSE		82	10-150
d-MeFOSA		113	10-150
d3-MeFOSAA		108	25-150
d7-MeFOSE		92	10-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-014**

Description: **EQUIPMENT BLANK-LINER** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1150** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2226	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		3.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		3.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		3.7	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		7.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.9	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		113	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		112	25-150
13C2_PFHxDA		98	25-150
13C2_PFTeDA		97	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-014**

Description: **EQUIPMENT BLANK-LINER** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1150** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		118	25-150
13C3_PFHxS		117	25-150
13C3-HFPO-DA		117	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		113	25-150
13C8_PFOA		109	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		119	25-150
d-EtFOSA		99	10-150
d5-EtFOSAA		100	25-150
d9-EtFOSE		86	10-150
d-MeFOSA		105	10-150
d3-MeFOSAA		109	25-150
d7-MeFOSE		92	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-015**

Description: **EQUIPMENT BLANK-TUBING** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1330** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2237	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		4.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		4.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.9	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		4.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.9	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		7.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.9	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.9	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.9	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.9	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.9	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		2.0	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		108	25-150
13C2_PFHxDA		95	25-150
13C2_PFTeDA		94	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-015**

Description: **EQUIPMENT BLANK-TUBING** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1330** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		118	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		114	25-150
13C4_PFHpA		120	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		115	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		110	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		115	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		105	25-150
d9-EtFOSE		88	10-150
d-MeFOSA		84	10-150
d3-MeFOSAA		105	25-150
d7-MeFOSE		88	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-016**

Description: **GESTRA DECON** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1500** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	07/02/2020 2248	KMM2	07/01/2020 0850	58643

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.3	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.3	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		4.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		4.1	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.3	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		4.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.3	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.3	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		8.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.3	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.3	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		8.3	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.3	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.3	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.3	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.4**		**2.1**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		100	25-150
13C2_6:2FTS		97	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		96	25-150
13C2_PFHxDA		84	25-150
13C2_PFTeDA		90	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **VF27016-016**

Description: **GESTRA DECON** Matrix: **Aqueous**

Date Sampled: **06/23/2020 1500** Project Name: **9259 TRUAX FIELD**

Date Received: **06/26/2020** Project Number: **40210100**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		102	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		102	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		89	10-150
13C9_PFNA		107	25-150
d-EtFOSA		90	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		83	10-150
d-MeFOSA		84	10-150
d3-MeFOSAA		93	25-150
d7-MeFOSE		89	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
W = Reported on wet weight basis

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: VQ58572-001
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
9Cl-PF3ONS	ND		1	2.0	ug/kg	07/02/2020 1330
11Cl-PF3OUdS	ND		1	2.0	ug/kg	07/02/2020 1330
8:2 FTS	ND		1	2.0	ug/kg	07/02/2020 1330
6:2 FTS	ND		1	2.0	ug/kg	07/02/2020 1330
10:2 FTS	ND		1	1.0	ug/kg	07/02/2020 1330
4:2 FTS	ND		1	2.0	ug/kg	07/02/2020 1330
GenX	ND		1	4.0	ug/kg	07/02/2020 1330
ADONA	ND		1	2.0	ug/kg	07/02/2020 1330
EtFOSA	ND		1	2.0	ug/kg	07/02/2020 1330
EtFOSAA	ND		1	1.0	ug/kg	07/02/2020 1330
EtFOSE	ND		1	2.0	ug/kg	07/02/2020 1330
MeFOSA	ND		1	2.0	ug/kg	07/02/2020 1330
MeFOSAA	ND		1	1.0	ug/kg	07/02/2020 1330
MeFOSE	ND		1	2.0	ug/kg	07/02/2020 1330
PFBS	ND		1	1.0	ug/kg	07/02/2020 1330
PFDS	ND		1	1.0	ug/kg	07/02/2020 1330
PFHpS	ND		1	1.0	ug/kg	07/02/2020 1330
PFNS	ND		1	1.0	ug/kg	07/02/2020 1330
PFOSA	ND		1	1.0	ug/kg	07/02/2020 1330
PFPeS	ND		1	1.0	ug/kg	07/02/2020 1330
PFDOS	ND		1	1.0	ug/kg	07/02/2020 1330
PFHxS	ND		1	1.0	ug/kg	07/02/2020 1330
PFBA	ND		1	1.0	ug/kg	07/02/2020 1330
PFDA	ND		1	1.0	ug/kg	07/02/2020 1330
PFDoA	ND		1	1.0	ug/kg	07/02/2020 1330
PFHpA	ND		1	1.0	ug/kg	07/02/2020 1330
PFHxDA	ND		1	1.0	ug/kg	07/02/2020 1330
PFHxA	ND		1	1.0	ug/kg	07/02/2020 1330
PFNA	ND		1	1.0	ug/kg	07/02/2020 1330
PFODA	ND		1	1.0	ug/kg	07/02/2020 1330
PFOA	ND		1	1.0	ug/kg	07/02/2020 1330
PFPeA	ND		1	1.0	ug/kg	07/02/2020 1330
PFTeDA	ND		1	1.0	ug/kg	07/02/2020 1330
PFTrDA	ND		1	1.0	ug/kg	07/02/2020 1330
PFUdA	ND		1	1.0	ug/kg	07/02/2020 1330
PFOS	ND		1	1.0	ug/kg	07/02/2020 1330

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		95	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		94	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: VQ58572-001
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		99	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		99	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		107	25-150
d-EtFOSA		107	10-150
d5-EtFOSAA		94	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		99	10-150
d3-MeFOSAA		102	25-150
d7-MeFOSE		110	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: VQ58572-002
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
9Cl-PF3ONS	1.9	1.6		1	83	50-150	07/02/2020 1341
11Cl-PF3OUdS	1.9	1.5		1	80	50-150	07/02/2020 1341
8:2 FTS	1.9	1.7		1	86	50-150	07/02/2020 1341
6:2 FTS	1.9	1.7		1	90	50-150	07/02/2020 1341
10:2 FTS	1.9	1.8		1	95	50-150	07/02/2020 1341
4:2 FTS	1.9	1.7		1	88	50-150	07/02/2020 1341
GenX	4.0	4.3		1	108	50-150	07/02/2020 1341
ADONA	1.9	1.6		1	87	50-150	07/02/2020 1341
EtFOSA	2.0	1.7		1	86	50-150	07/02/2020 1341
EtFOSAA	2.0	2.0		1	99	50-150	07/02/2020 1341
EtFOSE	2.0	2.1		1	107	50-150	07/02/2020 1341
MeFOSA	2.0	2.1		1	106	50-150	07/02/2020 1341
MeFOSAA	2.0	1.8		1	90	50-150	07/02/2020 1341
MeFOSE	2.0	1.7		1	84	50-150	07/02/2020 1341
PFBS	1.8	1.6		1	88	50-150	07/02/2020 1341
PFDS	1.9	1.5		1	78	50-150	07/02/2020 1341
PFHpS	1.9	1.7		1	87	50-150	07/02/2020 1341
PFNS	1.9	1.5		1	79	50-150	07/02/2020 1341
PFOSA	2.0	1.8		1	92	50-150	07/02/2020 1341
PFPeS	1.9	1.6		1	87	50-150	07/02/2020 1341
PFDOS	1.9	1.9		1	96	50-150	07/02/2020 1341
PFHxS	1.8	1.5		1	82	50-150	07/02/2020 1341
PFBA	2.0	1.8		1	89	50-150	07/02/2020 1341
PFDA	2.0	1.7		1	87	50-150	07/02/2020 1341
PFDoA	2.0	1.7		1	87	50-150	07/02/2020 1341
PFHpA	2.0	1.9		1	93	50-150	07/02/2020 1341
PFHxDA	2.0	2.2		1	110	50-150	07/02/2020 1341
PFHxA	2.0	1.8		1	89	50-150	07/02/2020 1341
PFNA	2.0	1.7		1	86	50-150	07/02/2020 1341
PFODA	2.0	1.8		1	89	50-150	07/02/2020 1341
PFOA	2.0	1.9		1	95	50-150	07/02/2020 1341
PFPeA	2.0	1.7		1	84	50-150	07/02/2020 1341
PFTeDA	2.0	1.7		1	87	50-150	07/02/2020 1341
PFTrDA	2.0	1.7		1	83	50-150	07/02/2020 1341
PFUdA	2.0	1.8		1	90	50-150	07/02/2020 1341
PFOS	1.9	1.5		1	83	50-150	07/02/2020 1341

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		102	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		108	25-150
13C2_PFHxDA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: VQ58572-002
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		103	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		101	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		109	25-150
d-EtFOSA		105	10-150
d5-EtFOSAA		100	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		95	10-150
d3-MeFOSAA		102	25-150
d7-MeFOSE		105	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: VF27016-002MS
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Parameter	Sample Amount (ug/kg)	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
9Cl-PF3ONS	ND	2.0	1.2		1	63	50-150	07/02/2020 1423
11Cl-PF3OUdS	ND	2.0	1.2		1	61	50-150	07/02/2020 1423
8:2 FTS	ND	2.0	1.3		1	65	50-150	07/02/2020 1423
6:2 FTS	ND	2.0	1.3		1	67	50-150	07/02/2020 1423
10:2 FTS	ND	2.0	1.4		1	70	50-150	07/02/2020 1423
4:2 FTS	ND	2.0	1.3		1	65	50-150	07/02/2020 1423
GenX	ND	4.2	3.3		1	78	50-150	07/02/2020 1423
ADONA	ND	2.0	1.3		1	65	50-150	07/02/2020 1423
EtFOSA	ND	2.1	1.3		1	62	50-150	07/02/2020 1423
EtFOSAA	ND	2.1	1.6		1	76	50-150	07/02/2020 1423
EtFOSE	ND	2.1	1.5		1	73	50-150	07/02/2020 1423
MeFOSA	ND	2.1	1.7		1	82	50-150	07/02/2020 1423
MeFOSAA	ND	2.1	1.3		1	62	50-150	07/02/2020 1423
MeFOSE	ND	2.1	1.4		1	68	50-150	07/02/2020 1423
PFBS	ND	1.9	1.1		1	60	50-150	07/02/2020 1423
PFDS	ND	2.0	1.2		1	59	50-150	07/02/2020 1423
PFHpS	ND	2.0	1.3		1	64	50-150	07/02/2020 1423
PFNS	ND	2.0	1.3		1	63	50-150	07/02/2020 1423
PFOSA	ND	2.1	1.4		1	68	50-150	07/02/2020 1423
PFPeS	ND	2.0	1.2		1	59	50-150	07/02/2020 1423
PFDOS	ND	2.0	1.5		1	72	50-150	07/02/2020 1423
PFHxS	ND	1.9	1.2		1	62	50-150	07/02/2020 1423
PFBA	ND	2.1	1.4		1	65	50-150	07/02/2020 1423
PFDA	ND	2.1	1.4		1	64	50-150	07/02/2020 1423
PFDoA	ND	2.1	1.5		1	71	50-150	07/02/2020 1423
PFHpA	ND	2.1	1.3		1	60	50-150	07/02/2020 1423
PFHxDA	ND	2.1	1.9		1	88	50-150	07/02/2020 1423
PFHxA	ND	2.1	1.5		1	69	50-150	07/02/2020 1423
PFNA	ND	2.1	1.4		1	68	50-150	07/02/2020 1423
PFODA	ND	2.1	1.4		1	65	50-150	07/02/2020 1423
PFOA	ND	58	1.5	N	1	2.5	50-150	07/02/2020 1423
PFPeA	ND	2.1	1.4		1	68	50-150	07/02/2020 1423
PFTeDA	ND	2.1	1.3		1	62	50-150	07/02/2020 1423
PFTrDA	ND	2.1	1.4		1	65	50-150	07/02/2020 1423
PFUdA	ND	2.1	1.3		1	62	50-150	07/02/2020 1423
PFOS	ND	2.0	1.3		1	67	50-150	07/02/2020 1423

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		102	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: VF27016-002MS
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		103	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		102	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		101	25-150
d-EtFOSA		108	10-150
d5-EtFOSAA		97	25-150
d9-EtFOSE		100	10-150
d-MeFOSA		107	10-150
d3-MeFOSAA		100	25-150
d7-MeFOSE		98	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: VF27016-002MD
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Parameter	Sample Amount (ug/kg)	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	2.0	1.8	+	1	90	39	50-150	30	07/02/2020 1434
11Cl-PF3OUdS	ND	2.1	1.8	+	1	87	39	50-150	30	07/02/2020 1434
8:2 FTS	ND	2.1	2.1	+	1	100	45	50-150	30	07/02/2020 1434
6:2 FTS	ND	2.1	2.1	+	1	101	44	50-150	30	07/02/2020 1434
10:2 FTS	ND	2.1	2.3	+	1	108	47	50-150	30	07/02/2020 1434
4:2 FTS	ND	2.0	1.6		1	80	24	50-150	30	07/02/2020 1434
GenX	ND	4.4	4.9	+	1	111	38	50-150	30	07/02/2020 1434
ADONA	ND	2.1	1.9	+	1	91	37	50-150	30	07/02/2020 1434
EtFOSA	ND	2.2	2.1	+	1	97	47	50-150	30	07/02/2020 1434
EtFOSAA	ND	2.2	2.0		1	92	22	50-150	30	07/02/2020 1434
EtFOSE	ND	2.2	2.2	+	1	99	34	50-150	30	07/02/2020 1434
MeFOSA	ND	2.2	2.5	+	1	114	36	50-150	30	07/02/2020 1434
MeFOSAA	ND	2.2	2.0	+	1	90	40	50-150	30	07/02/2020 1434
MeFOSE	ND	2.2	1.7		1	80	20	50-150	30	07/02/2020 1434
PFBS	ND	1.9	1.8	+	1	93	46	50-150	30	07/02/2020 1434
PFDS	ND	2.1	1.9	+	1	91	46	50-150	30	07/02/2020 1434
PFHpS	ND	2.1	1.8	+	1	89	35	50-150	30	07/02/2020 1434
PFNS	ND	2.1	1.8	+	1	84	32	50-150	30	07/02/2020 1434
PFOSA	ND	2.2	2.0	+	1	93	34	50-150	30	07/02/2020 1434
PFPeS	ND	2.0	1.7	+	1	83	37	50-150	30	07/02/2020 1434
PFDOS	ND	2.1	2.2	+	1	104	40	50-150	30	07/02/2020 1434
PFHxS	ND	2.0	1.8	+	1	91	41	50-150	30	07/02/2020 1434
PFBA	ND	2.2	2.0	+	1	93	38	50-150	30	07/02/2020 1434
PFDA	ND	2.2	1.9	+	1	88	35	50-150	30	07/02/2020 1434
PFDoA	ND	2.2	2.1	+	1	95	33	50-150	30	07/02/2020 1434
PFHpA	ND	2.2	1.9	+	1	89	43	50-150	30	07/02/2020 1434
PFHxDA	ND	2.2	2.6	+	1	118	33	50-150	30	07/02/2020 1434
PFHxA	ND	2.2	1.9		1	87	27	50-150	30	07/02/2020 1434
PFNA	ND	2.2	1.8		1	83	23	50-150	30	07/02/2020 1434
PFODA	ND	2.2	1.9	+	1	88	32	50-150	30	07/02/2020 1434
PFOA	ND	60	2.2	N,+	1	3.6	39	50-150	30	07/02/2020 1434
PFPeA	ND	2.2	2.0	+	1	91	31	50-150	30	07/02/2020 1434
PFTeDA	ND	2.2	1.9	+	1	87	37	50-150	30	07/02/2020 1434
PFTrDA	ND	2.2	1.9		1	85	30	50-150	30	07/02/2020 1434
PFUdA	ND	2.2	2.0	+	1	91	42	50-150	30	07/02/2020 1434
PFOS	ND	2.0	2.0	+	1	99	42	50-150	30	07/02/2020 1434

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		98	25-150
13C2_6:2FTS		91	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		100	25-150
13C2_PFHxDA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: VF27016-002MD
Batch: 58572
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 06/30/2020 1555

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		98	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		99	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		97	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		107	25-150
d-EtFOSA		103	10-150
d5-EtFOSAA		95	25-150
d9-EtFOSE		92	10-150
d-MeFOSA		100	10-150
d3-MeFOSAA		99	25-150
d7-MeFOSE		102	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: VQ58643-001
Batch: 58643
Analytical Method: PFAS by ID SOP QSM B-15
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 07/01/2020 0850

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	ng/L	07/02/2020 2100
11Cl-PF3OUdS	ND		1	8.0	ng/L	07/02/2020 2100
8:2 FTS	ND		1	4.0	ng/L	07/02/2020 2100
6:2 FTS	ND		1	4.0	ng/L	07/02/2020 2100
10:2 FTS	ND		1	8.0	ng/L	07/02/2020 2100
4:2 FTS	ND		1	8.0	ng/L	07/02/2020 2100
GenX	ND		1	8.0	ng/L	07/02/2020 2100
ADONA	ND		1	8.0	ng/L	07/02/2020 2100
EtFOSA	ND		1	4.0	ng/L	07/02/2020 2100
EtFOSAA	ND		1	8.0	ng/L	07/02/2020 2100
EtFOSE	ND		1	8.0	ng/L	07/02/2020 2100
MeFOSA	ND		1	8.0	ng/L	07/02/2020 2100
MeFOSAA	ND		1	8.0	ng/L	07/02/2020 2100
MeFOSE	ND		1	8.0	ng/L	07/02/2020 2100
PFBS	ND		1	4.0	ng/L	07/02/2020 2100
PFDS	ND		1	4.0	ng/L	07/02/2020 2100
PFHpS	ND		1	4.0	ng/L	07/02/2020 2100
PFNS	ND		1	8.0	ng/L	07/02/2020 2100
PFOSA	ND		1	4.0	ng/L	07/02/2020 2100
PFPeS	ND		1	4.0	ng/L	07/02/2020 2100
PFDOS	ND		1	8.0	ng/L	07/02/2020 2100
PFHxS	ND		1	4.0	ng/L	07/02/2020 2100
PFBA	ND		1	4.0	ng/L	07/02/2020 2100
PFDA	ND		1	4.0	ng/L	07/02/2020 2100
PFDoA	ND		1	4.0	ng/L	07/02/2020 2100
PFHpA	ND		1	4.0	ng/L	07/02/2020 2100
PFHxDA	ND		1	8.0	ng/L	07/02/2020 2100
PFHxA	ND		1	4.0	ng/L	07/02/2020 2100
PFNA	ND		1	4.0	ng/L	07/02/2020 2100
PFODA	ND		1	8.0	ng/L	07/02/2020 2100
PFOA	ND		1	2.0	ng/L	07/02/2020 2100
PFPeA	ND		1	4.0	ng/L	07/02/2020 2100
PFTeDA	ND		1	4.0	ng/L	07/02/2020 2100
PFTrDA	ND		1	4.0	ng/L	07/02/2020 2100
PFUdA	ND		1	4.0	ng/L	07/02/2020 2100
PFOS	ND		1	4.0	ng/L	07/02/2020 2100

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		104	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		101	25-150
13C2_PFHxDA		84	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: VQ58643-001
Batch: 58643
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 07/01/2020 0850

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		87	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		111	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		103	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		115	25-150
d-EtFOSA		82	10-150
d5-EtFOSAA		96	25-150
d9-EtFOSE		92	10-150
d-MeFOSA		80	10-150
d3-MeFOSAA		95	25-150
d7-MeFOSE		95	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: VQ58643-002
Batch: 58643
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 07/01/2020 0850

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	87	50-150	07/02/2020 2111
11Cl-PF3OUdS	15	13		1	88	50-150	07/02/2020 2111
8:2 FTS	15	16		1	106	50-150	07/02/2020 2111
6:2 FTS	15	13		1	84	50-150	07/02/2020 2111
10:2 FTS	15	18		1	116	50-150	07/02/2020 2111
4:2 FTS	15	14		1	95	50-150	07/02/2020 2111
GenX	32	35		1	108	50-150	07/02/2020 2111
ADONA	15	14		1	92	50-150	07/02/2020 2111
EtFOSA	16	14		1	87	50-150	07/02/2020 2111
EtFOSAA	16	15		1	94	50-150	07/02/2020 2111
EtFOSE	16	15		1	96	50-150	07/02/2020 2111
MeFOSA	16	19		1	117	50-150	07/02/2020 2111
MeFOSAA	16	15		1	92	50-150	07/02/2020 2111
MeFOSE	16	14		1	87	50-150	07/02/2020 2111
PFBS	14	12		1	88	50-150	07/02/2020 2111
PFDS	15	13		1	87	50-150	07/02/2020 2111
PFHpS	15	13		1	85	50-150	07/02/2020 2111
PFNS	15	13		1	84	50-150	07/02/2020 2111
PFOSA	16	15		1	93	50-150	07/02/2020 2111
PFPeS	15	14		1	90	50-150	07/02/2020 2111
PFDOS	15	15		1	96	50-150	07/02/2020 2111
PFHxS	15	12		1	85	50-150	07/02/2020 2111
PFBA	16	15		1	91	50-150	07/02/2020 2111
PFDA	16	13		1	84	50-150	07/02/2020 2111
PFDoA	16	14		1	88	50-150	07/02/2020 2111
PFHpA	16	14		1	85	50-150	07/02/2020 2111
PFHxDA	16	22		1	134	50-150	07/02/2020 2111
PFHxA	16	15		1	91	50-150	07/02/2020 2111
PFNA	16	14		1	90	50-150	07/02/2020 2111
PFODA	16	15		1	93	50-150	07/02/2020 2111
PFOA	16	15		1	94	50-150	07/02/2020 2111
PFPeA	16	14		1	88	50-150	07/02/2020 2111
PFTeDA	16	14		1	86	50-150	07/02/2020 2111
PFTrDA	16	14		1	87	50-150	07/02/2020 2111
PFUdA	16	14		1	86	50-150	07/02/2020 2111
PFOS	15	13		1	86	50-150	07/02/2020 2111

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		115	25-150
13C2_6:2FTS		119	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		110	25-150
13C2_PFHxDA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: VQ58643-002
Batch: 58643
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 07/01/2020 0850

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		99	25-150
13C3_PFBS		121	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		116	25-150
13C4_PFHpA		119	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		113	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		114	25-150
d-EtFOSA		83	10-150
d5-EtFOSAA		107	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		73	10-150
d3-MeFOSAA		104	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCSD

Sample ID: VQ58643-003
Batch: 58643
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 07/01/2020 0850

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	15	13		1	87	0.96	50-150	30	07/02/2020 2122
11Cl-PF3OUdS	15	13		1	88	0.26	50-150	30	07/02/2020 2122
8:2 FTS	15	15		1	100	5.6	50-150	30	07/02/2020 2122
6:2 FTS	15	16		1	105	22	50-150	30	07/02/2020 2122
10:2 FTS	15	18		1	115	0.68	50-150	30	07/02/2020 2122
4:2 FTS	15	15		1	98	2.3	50-150	30	07/02/2020 2122
GenX	32	35		1	110	2.2	50-150	30	07/02/2020 2122
ADONA	15	14		1	95	3.9	50-150	30	07/02/2020 2122
EtFOSA	16	15		1	95	9.0	50-150	30	07/02/2020 2122
EtFOSAA	16	18		1	110	15	50-150	30	07/02/2020 2122
EtFOSE	16	17		1	104	8.0	50-150	30	07/02/2020 2122
MeFOSA	16	19		1	120	2.0	50-150	30	07/02/2020 2122
MeFOSAA	16	17		1	103	12	50-150	30	07/02/2020 2122
MeFOSE	16	14		1	90	2.8	50-150	30	07/02/2020 2122
PFBS	14	13		1	93	5.5	50-150	30	07/02/2020 2122
PFDS	15	12		1	80	9.3	50-150	30	07/02/2020 2122
PFHpS	15	14		1	94	10	50-150	30	07/02/2020 2122
PFNS	15	13		1	85	1.2	50-150	30	07/02/2020 2122
PFOSA	16	15		1	96	3.0	50-150	30	07/02/2020 2122
PFPeS	15	14		1	92	1.7	50-150	30	07/02/2020 2122
PFDOS	15	15		1	96	0.27	50-150	30	07/02/2020 2122
PFHxS	15	13		1	90	6.0	50-150	30	07/02/2020 2122
PFBA	16	16		1	97	6.2	50-150	30	07/02/2020 2122
PFDA	16	15		1	94	11	50-150	30	07/02/2020 2122
PFDoA	16	15		1	93	5.2	50-150	30	07/02/2020 2122
PFHpA	16	16		1	100	16	50-150	30	07/02/2020 2122
PFHxDA	16	22		1	139	3.6	50-150	30	07/02/2020 2122
PFHxA	16	14		1	87	4.4	50-150	30	07/02/2020 2122
PFNA	16	16		1	98	8.1	50-150	30	07/02/2020 2122
PFODA	16	16		1	99	5.7	50-150	30	07/02/2020 2122
PFOA	16	16		1	103	8.9	50-150	30	07/02/2020 2122
PFPeA	16	14		1	89	0.81	50-150	30	07/02/2020 2122
PFTeDA	16	15		1	93	7.7	50-150	30	07/02/2020 2122
PFTrDA	16	14		1	90	3.2	50-150	30	07/02/2020 2122
PFUdA	16	15		1	93	7.7	50-150	30	07/02/2020 2122
PFOS	15	14		1	92	6.4	50-150	30	07/02/2020 2122

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		104	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCSD

Sample ID: VQ58643-003
Batch: 58643
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 07/01/2020 0850

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		97	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		119	25-150
13C5_PFPeA		112	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		112	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		118	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		98	25-150
d9-EtFOSE		90	10-150
d-MeFOSA		83	10-150
d3-MeFOSAA		101	25-150
d7-MeFOSE		98	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

23437 VF27016

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: WI
Cert. Needed: ☒ Yes ☐ No
Owner Received Date: 6/25/2020 Results Requested By: 7/17/2020

Workorder: 40210100 **Workorder Name:** 9259 TRUAX FIELD

Report To	Subcontract To
Brian Basten Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

VF27016
CSD

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	PFAS by ID	LAB USE ONLY
1	SB-1-1 (1-2')	PS	6/23/2020 10:00	40210100001	Solid	1	X	
2	SB-1-1 (4-4.5')	PS	6/23/2020 10:10	40210100002	Solid	1	X	
3	SB-2-1 (1-2')	PS	6/23/2020 10:30	40210100003	Solid	1	X	
4	SB-2-2 (9-10')	PS	6/23/2020 10:40	40210100004	Solid	1	X	
5	SB-3-1 (1-2')	PS	6/23/2020 10:50	40210100005	Solid	1	X	
6	SB-3-2 (7.5-8.5')	PS	6/23/2020 11:00	40210100006	Solid	1	X	
7	SB-4-1 (1-2')	PS	6/23/2020 11:15	40210100007	Solid	1	X	
8	SB-4-1 (3-4')	PS	6/23/2020 11:20	40210100008	Solid	1	X	
9	SB-1-W	PS	6/23/2020 12:14	40210100009	Water	2	X	
10	SB-4-W	PS	6/23/2020 13:05	40210100010	Water	2	X	
11	MW	PS	6/23/2020 14:15	40210100011	Water	2	X	
12	DUPLICATE	PS	6/23/2020 00:00	40210100012	Water	2	X	
13	EQUIPMENT BLANK-RODS	PS	6/23/2020 11:40	40210100013	Water	2	X	
14	EQUIPMENT BLANK-LINER	PS	6/23/2020 11:50	40210100014	Water	2	X	
15	EQUIPMENT BLANK-TUBING	PS	6/23/2020 13:30	40210100015	Water	2	X	
16	GESTRA DECON	PS	6/23/2020 15:00	40210100016	Water	2	X	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

VF27016

Transfers	Relinquished By	Date/Time	Received By	Date/Time
1				
2				
3				

Cooler Temperature on Receipt 3.2 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

FMT-ALL-C-002rev.00 24March2009

Page 2 of 2

Thursday, June 25, 2020 10:46:05 AM

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO#: 40210100

Client Name: REI

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Walco
☐ Client ☐ Pace Other:

Tracking #: 247919 1-2

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Thermometer Used: SR - NA Type of Ice: Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: R 0.1 /Corr:

Temp Blank Present: ☐ yes ☑ no Biological Tissue is Frozen: ☐ yes ☐ no

Person examining contents: Date: 4/22/20 /Initials: SMW

Labeled By Initials:

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1. Pg #3 is a Copy of COC SMW 4/23/20
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume:		8.
For Analysis: ☑Yes ☐No MS/MSD:	☐Yes ☑No ☐N/A	
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. 007 WPFU-ID/SB-4-2(1-2) SMW 4/23/20
-Includes date/time/ID/Analysis Matrix: S, W		
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (If purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample login

Page 2 of 2

Shealy Environmental Services, Inc
Document Number: ME001803-14

Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: PAce Analytical Green Bay Cooler Inspected by/date: MLH2 / 06/25/2020 Lot #: VF27016

Means of receipt: ☐ SESI ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: 20-302

3.2 / 3.2 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: MLH2 Date: 06/27/2020

Comments:

APPENDIX G

LEAD-BEARING PAINT ANALYTICAL REPORT

EMSL Analytical, Inc.
3410 Winnetka Avenue North, New Hope, MN 55427
Phone/Fax: (763) 449-4922 / (763) 449-4924
http://www.EMSL.com minneapolislab@emsl.com

EMSL Order:	352006167
CustomerID:	REIE78
CustomerPO:	
ProjectID:	

Attn: **Matthew Michalski**
REI Engineering, Inc.
4080 North 20th Avenue
Wausau, WI 54401

Phone:	(715) 675-9784
Fax:	(715) 675-4060
Received:	6/25/2020 10:20 AM
Collected:	6/23/2020

Project: **Truax Field/9259**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	Collected	Analyzed	Weight	RDL	Lead Concentration
L1	6/23/2020	6/26/2020	0.2752 g	0.0080 % wt	<0.0080 % wt
352006167-0001	Site: Red Photo Wall (Bar) - Drywall				
L2	6/23/2020	6/26/2020	0.1519 g	0.013 % wt	0.043 % wt
352006167-0002	Site: Brown Photo Wall Base Trim (Bar) - Wood				
L3	6/23/2020	6/26/2020	0.2941 g	0.0080 % wt	<0.0080 % wt
352006167-0003	Site: Grey Back Bar Wall - Drywall				
L4	6/23/2020	6/26/2020	0.2792 g	0.0080 % wt	<0.0080 % wt
352006167-0004	Site: White Kitchen Wall - Drywall				
L5	6/23/2020	6/26/2020	0.2994 g	0.0080 % wt	<0.0080 % wt
352006167-0005	Site: White Office Wall - Drywall				
L6	6/23/2020	6/26/2020	0.0707 g	0.028 % wt	0.083 % wt
352006167-0006	Site: White Janitorial Closet Wall - Drywall/Masonite				
L7	6/23/2020	6/26/2020	0.1515 g	0.013 % wt	0.11 % wt
352006167-0007	Site: White Janitorial Closet Ceiling - Drywall/Masonite				
L8	6/23/2020	6/26/2020	0.3297 g	0.0080 % wt	<0.0080 % wt
352006167-0008	Site: White Storage Room Wall - Drywall				
L9	6/23/2020	6/26/2020	0.1669 g	0.012 % wt	<0.012 % wt
352006167-0009	Site: Black Men's Restroom Wall - Drywall				
L10	6/23/2020	6/26/2020	0.1748 g	0.011 % wt	<0.011 % wt
352006167-0010	Site: White Women's Restroom Wall - Drywall				
L11	6/23/2020	6/26/2020	0.2566 g	0.0080 % wt	0.16 % wt
352006167-0011	Site: Brown Women's Restroom Trim - Wood				

Rachel Travis, Laboratory Manager
or other approved signatory

Initial report from 06/26/2020 16:09:01

EMSL Analytical, Inc.
3410 Winnetka Avenue North, New Hope, MN 55427
Phone/Fax: (763) 449-4922 / (763) 449-4924
http://www.EMSL.com minneapolislab@emsl.com

EMSL Order: 352006167
CustomerID: REIE78
CustomerPO:
ProjectID:

Attn: **Matthew Michalski**
REI Engineering, Inc.
4080 North 20th Avenue
Wausau, WI 54401

Phone: (715) 675-9784
Fax: (715) 675-4060
Received: 6/25/2020 10:20 AM
Collected: 6/23/2020

Project: **Truax Field/9259**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	Collected	Analyzed	Weight	RDL	Lead Concentration
L12	6/23/2020	6/26/2020	0.1118 g	0.018 % wt	<0.018 % wt
352006167-0012	Site: Tan Restroom Stalls - Metal				
L13	6/23/2020	6/26/2020	0.2527 g	0.0080 % wt	0.0083 % wt
352006167-0013	Site: Red Bar Wall - Drywall				
L14	6/23/2020	6/26/2020	0.2653 g	0.0080 % wt	<0.0080 % wt
352006167-0014	Site: Grey Bar Wall - Drywall				
A1	6/23/2020	6/26/2020	0.2541 g	0.0080 % wt	<0.0080 % wt
352006167-0015	Site: White Office Wall - Drywall				
A2	6/23/2020	6/26/2020	0.2470 g	0.0081 % wt	<0.0081 % wt
352006167-0016	Site: White Women's Restroom Wall - Drywall				
A3	6/23/2020	6/26/2020	0.2383 g	0.0084 % wt	<0.0084 % wt
352006167-0017	Site: White Men's Restroom Wall - Drywall				
A4	6/23/2020	6/26/2020	0.2274 g	0.0088 % wt	<0.0088 % wt
352006167-0018	Site: White Breakroom Wall - Drywall				
A5	6/23/2020	6/26/2020	0.2956 g	0.0080 % wt	<0.0080 % wt
352006167-0019	Site: White Office Wall - Drywall				
A6	6/23/2020	6/26/2020	0.2651 g	0.0080 % wt	0.15 % wt
352006167-0020	Site: White Office Wall - Concrete Block				
A7	6/23/2020	6/26/2020	0.2715 g	0.0080 % wt	<0.0080 % wt
352006167-0021	Site: White Storage Room Wall - Drywall				
A8	6/23/2020	6/26/2020	0.2574 g	0.0080 % wt	<0.0080 % wt
352006167-0022	Site: White Storage Room Ceiling - Drywall				

Rachel Travis, Laboratory Manager
or other approved signatory

Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
Samples analyzed by EMSL Analytical, Inc. New Hope, MN AIHA-LAP, LLC--ELLAP Accredited #101103

Initial report from 06/26/2020 16:09:01

EMSL Analytical, Inc.
3410 Winnetka Avenue North, New Hope, MN 55427
Phone/Fax: (763) 449-4922 / (763) 449-4924
http://www.EMSL.com minneapolislab@emsl.com

EMSL Order:	352006167
CustomerID:	REIE78
CustomerPO:	
ProjectID:	

Attn: **Matthew Michalski**
REI Engineering, Inc.
4080 North 20th Avenue
Wausau, WI 54401

Phone:	(715) 675-9784
Fax:	(715) 675-4060
Received:	6/25/2020 10:20 AM
Collected:	6/23/2020

Project: **Truax Field/9259**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
A9	6/23/2020	6/26/2020	0.3205 g	0.0080 % wt	<0.0080 % wt
352006167-0023	Site: White Mechanical Room Wall - Plywood				
A10	6/23/2020	6/26/2020	0.1060 g	0.019 % wt	0.023 % wt
352006167-0024	Site: Black Mechanical Room Wall - Plywood				
A11	6/23/2020	6/26/2020	0.3346 g	0.0080 % wt	<0.0080 % wt
352006167-0025	Site: Brown Metal Door (Mechanical Room)				

Rachel Travis, Laboratory Manager
or other approved signatory

Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
Samples analyzed by EMSL Analytical, Inc. New Hope, MN AIHA-LAP, LLC--ELLAP Accredited #101103

Initial report from 06/26/2020 16:09:01

OrderID: 352006167

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Lead (Pb) Chain of Custody

EMSL Order ID *(Lab Use Only):* 6167

EMSL ANALYTICAL, INC.
14375 23RD AVE NORTH
MINNEAPOLIS, MN 55447
763-449-4922

Company : REI Engineering, Inc.		**EMSL-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments**	
Street: 4080 North 20th Ave		*Third Party Billing requires written authorization from third party*	
City: Wausau	**State/Province: WI**	**Zip/Postal Code: 54401**	**Country: US**
Report To (Name): Matthew C Michalski		**Fax #:**	
Telephone #: 715-393-7758		**Email Address: mmichalski@reiengineering.com**	
Project Name/Number: Truax Field/9259			
Please Provide Results: ☐ Fax ☒ Email	**Purchase Order:**	**U.S. State Samples Taken: WI**	

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hours	☐ 6 Hours	☐ 24 Hours	☐ 48 Hours	☒ 3 Days	☐ 4 Days	☐ 5 Days	☐ 10 Days

**Analysis completed in accordance with EMSL's Terms and Conditions located in the Price Guide*

Matrix	Method	Instrument	Reporting Limit	Check
Chips ☐ mg/cm² ☒ % by wt.	SW846-7000B/7420 or AOAC 974.02	Flame Atomic Absorption	0.01%	☒
Air	NIOSH 7082	Flame Atomic Absorption	4 µg/filter	☐
	NIOSH 7105	Graphite Furnace AA	0.03 µg/filter	☐
	NIOSH 7300 modified	ICP-AES	0.5 µg/filter	☐
Wipe* ☐ ASTM ☐ non ASTM *if no box is checked, non-ASTM Wipe is assumed	SW846-7000B/7420	Flame Atomic Absorption	10 µg/wipe	☐
	SW846-6010B or C	ICP-AES	0.5 µg/wipe	☐
TCLP	SW846-1311/7420/SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	SW846-6010B or C	ICP-AES	0.1 mg/L (ppm)	☐
Soil	SW846-7420	Flame Atomic Absorption	40 mg/kg (ppm)	☐
	SW846-7421	Graphite Furnace AA	0.3 mg/kg (ppm)	☐
	SW86-6010B or C	ICP-AES	1 mg/kg (ppm)	☐
Wastewater	SM3111B or SW846-7000B/7420	Flame Atomic Absorption	0.4 mg/L (ppm)	☐
	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)	☐
	SW846-6010B or C	ICP-AES	1 mg/kg (ppm)	☐
Drinking Water	EPA 200.9	Graphite Furnace AA	0.003 mg/L (ppm)	☐

Other:	**Preservation Method (Water):**
Name of Sampler: Matthew C Michalski	**Signature of Sampler:**

Sample #	Location	Volume/Area	Date/Time Sampled
L1	Red Photo Wall (Bar) - Drywall		06/23/2020 2:10pm
L2	Brown Photo Wall Base Trim (Bar) - Wood		06/23/2020 2:14pm
L3	Grey Back Bar Wall - Drywall		06/23/2020 2:18pm
L4	White Kitchen Wall - Drywall		06/23/2020 2:25pm
L5	White Office Wall - Drywall		06/23/2020 2:30pm
L6	White Janitorial Closet Wall - Drywall/Masonite		06/23/2020 2:38pm

Client Sample #'s	L1 - L14 - A1 - A11			**Total # of Samples:**	25
Relinquished (Client):	Matthew Michalski (REI Engineering)	**Date:**	6/24/2020	**Time:**	9:50am
Received (Lab):	Alinda M FE	**Date:**	6-25-2020	**Time:**	10:20

Comments: 795882188171

Controlled Document – Lead (Pb) COC – R1 – 3/18/2009

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EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

LEAD (Pb) CHAIN OF CUSTODY

EMSL ORDER ID *(Lab Use Only):* 6167

EMSL ANALYTICAL, INC.
14375 23RD AVE NORTH
MINNEAPOLIS, MN 55447
763-449-49220

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Location	Volume/Area	Date/Time Sampled
L7	White Janitorial Closet Ceiling - Drywall/Masonite		06/23/2020 2:40pm
L8	White Storage Room Wall - Drywall		06/23/2020 2:44pm
L9	Black Men's Restroom Wall - Drywall		06/23/2020 2:48pm
L10	White Women's Restroom Wall - Drywall		06/23/2020 2:53pm
L11	Brown Women's Restroom Trim - Wood		06/23/2020 2:55pm
L12	Tan Restroom Stalls - Metal		06/23/2020 2:57pm
L13	Red Bar Wall - Drywall		06/23/2020 3:00pm
L14	Grey Bar Wall - Drywall		06/23/2020 3:04pm
A1	White Office Wall - Drywall		06/23/2020 3:18pm
A2	White Women's Restroom Wall - Drywall		06/23/2020 3:21pm
A3	White Men's Restroom Wall - Drywall		06/23/2020 3:24pm
A4	White Breakroom Wall - Drywall		06/23/2020 3:26pm
A5	White Office Wall - Drywall		06/23/2020 3:28pm
A6	White Office Wall - Concrete Block		06/23/2020 3:32pm
A7	White Storage Room Wall - Drywall		06/23/2020 3:35pm
A8	White Storage Room Ceiling - Drywall		06/23/2020 3:37pm
A9	White Mechanical Room Wall - Plywood		06/23/2020 3:42pm
A10	Black Mechanical Room Wall - Plywood		06/23/2020 3:44pm

Comments/Special Instructions:

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Sample #	Location	Volume/Area	Date/Time Sampled
A11	Brown Metal Door (Mechanical Room)		06/23/2020 3:46pm

Comments/Special Instructions: