Meridian Environmental Consulting, LLC

August 13, 2021

John Hunt
Wisconsin Department of Natural Resources
223 East Steinfest Road
Antigo, WI 54409

Subject: **Progress Report: August 2021**
Wagner Oil Spill – March 12, 2016
Hwy. 45 – Rolling Township, Langlade County, Wisconsin
DNR BRRTS No. 02-34-577387
Meridian No. 05C817

Dear John:

This letter describes work completed since our March 4, 2021 Progress Report for the above referenced spill.

This work included:

- Ground water sampling (April 21, 2021)
- PFAS Sampling (April 21, 2021)

The results of the sampling indicate the extent of petroleum impacted soil and ground water is defined. Based on the data collected, we recommend a Closure Packet be prepared.

The remainder of this report describes the work completed, our interpretation of the data, and recommendations.

BACKGROUND INFORMATION

Please refer to file reports for detailed background information. A brief summary is provided below.

The spill occurred March 12, 2016 on Hwy. 45 near Aniwa, Wisconsin (Figures 1, 2, and 3). An estimated 1787 gallons of gasoline spilled onto the roadway and flowed easterly onto the shoulder and ditch.

The initial response action was conducted by REI Engineering, Inc. Cleanup included using absorbent pads and booms (29 drums), vacuum truck(s) (14,800 gallons of gasoline/water mixture), and soil excavation (670.18 tons). This cleanup effort is estimated to have recovered 1500 gallons (or more) of product. Additionally, a significant portion of the unrecovered product likely evaporated over time (especially during the hot summer months).

Fire-fighting foam was sprayed on the spill during the initial response. This foam flowed into the ditch and mixed with the petroleum. Much of this foam was likely recovered during the initial response action (i.e., soil excavation, pumping of gasoline/water mixture).

Meridian Environmental Consulting, LLC was hired in the summer of 2016 to complete the Site Investigation. A monitoring well network was installed and sampled for several years. This report presents the most recent ground water sampling results.

RECENT WORK

The monitoring well network was sampled April 21, 2021. The samples were analyzed for PVOC, Naphthalene, and PFAS (perfluoralkyl substances).

The analytical reports are provided in Appendix A and summarized in Tables 1 & 2. Ground water levels and natural attenuation field measurements were not collected to avoid potentially cross-contaminating between wells. This was of concern due to the low detection limits of the PFAS samples. Previous ground water level measurements are summarized in Table 3. Previous natural attenuation field measurements (e.g., dissolved oxygen (DO), pH, temperature, conductivity, ORP) are summarized in Table 4.

PFAS are considered an "emerging contaminant", i.e., a contaminant where standards are still being developed. PFAS are sometimes found in fire-fighting foam and, because fire-fighting foam was sprayed on the gasoline spill, the ground water was sampled for the presence of PFAS.

Sampling was completed using currently available practices. Sampling for PFAS compounds requires additional care due to the prevalence of PFAS compounds in everyday items (e.g., it is found in clothing, food wrappers, vehicles, fire-fighting foam).

The PFAS sampling included several quality control samples (referred to as 'blanks')(Table 1):

Equipment Blank (EB) – a container of lab-supplied PFAS-free water was poured into/over the bailer, twine, and nitrile gloves. No PFAS parameters were measured in the equipment blank.

Field Blank (FB) – the field blank consisted of placing a container of PFAS-free water supplied by the lab in the work area (truck tailgate) and removing the lid during the entire time sampling was being conducted. The lid was replaced when the sampling was completed and the bottle returned for analysis.

No PFAS parameters were measured in the field blank.

Trip Blank (TB) – A unopened bottle of PFAS-free water supplied by the lab accompanied the samples to the lab. No PFAS parameters were measured in the trip blank.

DATA EVALUATION

Setting

The site is located in a rural area of Langlade County. The area is forested. The spill occurred in a topographic low with surface water flow to the south/southeast. The remedial excavation created a shallow pond (approximately 1 - 2 feet deep) (Figure 3). A "boulder field" likely from the initial road construction is found east of the pond. This obstacle and the forest affected access and placement of monitoring wells.

The nearest residences are located over ¼ mile away (Figure 2). Area residents rely on private wells for their water supply.

Hydrogeology

According to area well logs, the site is underlain by approximately 50 – 60 feet of silty, fine – coarse sand overlying granite bedrock. Figure 4 is a cross-section illustrating the site hydrogeology.

Soil sampling conducted during the installation of the monitoring wells indicate shallow soils (<25 feet) consist of fine sand with silt and clay. A layer of coarse sediments is found about 25 feet below grade.

The depth to water is typically within 20 feet of grade and varies with topography. Horizontal ground water flow appears to be southerly (Figure 5). There appears to be a downward vertical gradient.

The hydraulic conductivity of the saturated sediments was estimated by conducting slug tests in MW-7A and MW-7B. The slug tests estimated hydraulic conductivity of 5×10^{-4} cm/sec in MW-7A and 9×10^{-4} cm/sec in MW-7B. This is typical of silty-sand sediments. It is noteworthy the hydraulic conductivity in MW-7B is twice as fast as MW-7A. This indicates the soils at depth are more conductive (i.e., more permeable). Ground water flows more readily through the deeper sediments and may explain the downward plume extent.

The average linear horizontal ground water flow velocity (V) can be estimated using the relationship

$$V = KI/N$$

Where

K = hydraulic conductivity (use 9×10^{-4} cm/sec = 931 ft/year)
I = hydraulic gradient (use .013 based on 7/17/18 water level measurements)
N = porosity (use 30%)

This simple analysis estimates the ground water travels 40 ft/year. Due to natural attenuation processes (e.g., dilution, biodegradation, adsorption, etc.), MW-7B appears to represent the leading edge of the contaminant plume.

Extent of Impacted Ground Water

There are two contaminants of concern at this site: petroleum from the initial spill and PFAS from the fire-fighting foam.

Petroleum

The analytical data and ground water flow measurements indicate the petroleum-impacted ground water extends to the MW-7A/-7B well nest (see Figures 5 and 6). Benzene concentrations above NR140 Enforcement Standard (ES) were measured in MW-7B but not in MW-7A consistent with a diving plume.

Based on the analytical data and ground water flow measurements, the extent of petroleum-impacted ground water is defined. The concentrations are stable and/or decreasing.

PFAS

PFAS concentrations were measured within the footprint of the petroleum plume (i.e., MW-1, -2, -3, -4, -6, -7B, -8A, -8B, -9P, pond). There are no Standards for PFAS at this time.

Environmental Risk Analysis

The primary environmental risks at this site are surface water and potential impacts to nearby potable wells. Based on the sampling (i.e., pond, monitoring wells, private wells), the initial remedial actions and subsequent natural attenuation processes appear to have removed the threat to surface water and the downgradient private wells.

The private wells are over 1000 feet away from the site and screened in the granite. These wells are not expected to be impacted from the petroleum spill.

CONCLUSIONS AND RECOMMENDATIONS

Based on the work conducted, we recommend this site be submitted for Closure with GIS Notification for Soil and Ground Water.

- The extent of petroleum impacted soil is defined. The source soils were excavated during the initial response. Although residual impacts were measured in the initial spill area, these concentrations are expected to have decreased due to natural processes (i.e., evaporation, volatilization, biodegradation, dilution, etc.).

- The extent of petroleum impacted ground water is defined. The petroleum concentrations are stable indicating the petroleum contaminant plume is in equilibrium with natural attenuation processes.

- The extent of PFAS is defined generally.

Sincerely,
MERIDIAN ENVIRONMENTAL CONSULTING, LLC

Kenneth Shimko, PG
Project Manager

TABLES

Table 1: Ground Water Sampling Results
Wagner Spill - Hwy 45
Langlade County, Wisconsin

Sample Location	Benzene	Ethylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	TMB (Total)	Xylenes (Total)
NR140 Enforcement Standard	5	700	60	100	800			480	2000
NR140 Preventative Action Limit	0.5	140	12	10	160			96	400
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Soil Borings									
B3	<0.40	<0.39	<0.48	<0.42	<0.39	NR	NR	<0.42	<1.2
B5	**9,620**	**883**	<48.5	*77.6 J*	**15,000**	NR	NR	*326*	**4,240**
B8	***8.6***	1.2	<0.48	<0.42	9.9	NR	NR	<0.42	5.3
B9	**25,800**	**5,050**	**<121**	**676**	**47,600**	NR	NR	**5,490**	**23,200**
B12	**299**	82.8	<4.8	<4.2	**930**	NR	NR	16.3	367
B13	**32.5**	0.80 J	<0.48	<0.42	24.9	NR	NR	3.3	2.8 J
B15	**39.9**	3.3	<0.48	<0.42	46.2	NR	NR	0.56 J	10.5
B16	**3,250**	**2,340**	<48.5	**278**	**17,600**	NR	NR	**2,091**	**10,300**
Monitoring Wells (temporary "T" and 2-inch "MW")									
TW1 (B2) (installed 5/25/16)									
5/25/2016	<0.40	<0.39	<0.48	<0.42	<0.39	NR	NR	<0.42	<1.2
8/29/2016	Could not locate								
11/30/2016	<.4	4	<.48	<.42	<.39	<.42	<.42	<.42	24.1
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
7/31/2017	<.4	1.3	<.48	<.42	<.39	<.42	<.42	<.42	7.5
10/25/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
TW2 (B4) (installed 5/25/16)									
5/25/2016	<0.40	<0.39	<0.48	<0.42	<0.39	NR	NR	<0.42	<1.2
8/29/2016	Could not locate								
11/30/2016	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
7/31/2017	<.4	2.5	<.48	<.42	<.39	<.42	<.42	<.42	10.5
10/25/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
TW3 (B7) (installed 5/25/16)									
5/25/2016	*4.7*	<0.39	<0.48	<0.42	6.2	NR	NR	<0.42	<1.2
8/29/2016	**16.3**	<.39	<.48	<.42	4.8	<.42	0.75	0.75	5.3
11/30/2016	**487**	16	<2.4	<2.1	104	2.9	<2.1	2.9	42.4
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
7/31/2017	**904**	65.3	<4.8	*23.9*	<3.9	43.9	45.7	89.6	231
10/25/2017	Not sampled - dry								
TW4 (B10) (installed 5/25/16)									
5/25/2016	*0.55 J*	<0.39	<0.48	<0.42	1.8	NR	NR	<0.42	<1.2
8/29/2016	*<2*	2.2	<2.4	<2.1	30.9	<2.1	<2.1	<2.1	12.1
11/30/2016	<4	<3.9	<4.8	<4.2	<3.9	<4.2	<4.2	<4.2	<12.5
3/29/2017	Frozen inside well								
7/31/2017	Dry								
10/25/2017	Not sampled - dry								

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Langlade County, Wisconsin

Sample Location	Benzene	Ethylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	TMB (Total)	Xylenes (Total)
NR140 Enforcement Standard	5	700	60	100	800			480	2000
NR140 Preventative Action Limit	0.5	140	12	10	160			96	400
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
TW5 (B14) (installed 5/25/16)									
5/25/2016	**46.5**	7.4	<0.48	<0.42	90.1	NR	NR	1.6	24.8
8/29/2016	<4	<3.9	<4.2	<4.2	<3.9	<4.2	<4.2	<4.2	<12.5
11/30/2016	Not sampled - dry								
3/29/2017	Not Sampled								
7/31/2017	Not sampled - dry								
10/25/2017	Not sampled - dry								
MW-1 (installed August 10, 2016)									
8/29/2016	**6630**	**1980**	<60.6	**299**	**186000**	1500	386	**1886**	**10700**
11/30/2016	**13200**	**2970**	<97	**341**	**32100**	1830	426	**2256**	**15100**
3/29/2017	**2670**	**2070**	*23.1*	**273**	**14200**	1920	528	**2448**	**12700**
7/31/2017	**4250**	**1930**	<48.5	**305**	**12600**	2010	562	**2572**	**11400**
10/25/2017	**6350**	**1980**	<19.4	**287**	**17700**	1620	446	**2066**	**9880**
(MW-6?) 5/10/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.34	<.97
7/17/2018	**2680**	**1640**	<64	**262J**	**13600**	1390	380	**1770**	**7910**
11/28/2018	**900**	**1010**	<12.8	**185**	**4730**	1070	291	**1361**	**4420**
4/24/2019	**59.4**	*379*	<6.2	*55*	**985**	552	173	**725**	*1541*
7/24/2019	**12.5**	109	<6.2	*26.6*	149	191	56.19	*247.19*	390
10/30/2019	**3.7**	31.1	<1.2	7	16.1	47.3	16.8	64.1	96.6
6/4/2020	**10.6**	22.9	<1.2	4.0 J	65.2	27.8	9.3	37.1	73.1
10/7/2020	**246**	*218*	<1.2	*47.5*	*407*	177	54.7	*231.7*	*802*
1/5/2021	**253**	*<1.6*	<6.2	*35.1*	*79.8*	5.1J	84.5	89.6	318
4/21/2021	**111**	*367*	<1.1	*56*	**847**	387	133	**520**	*1237*
MW-2 (installed August 10, 2016)									
8/29/2016	**10100**	**1160**	<60.6	**161**	**18000**	689	160	**849**	**7110**
11/30/2016	**7630**	**853**	<24.2	**102**	**299**	507	120	**627**	**2900**
3/29/2017	**2040**	**350**	<4.8	**48.6**	**62**	94	63.4	**157.4**	**515**
7/31/2017	**1920**	**777**	<9.7	**186**	**51.3**	783	412	**1195**	**1890**
10/25/2017	**1530**	*194*	<9.7	*77.4*	13.5	<8.4	27.5	27.5	<24.9
5/10/2018	**584**	94.3	<6.4	*16.7J*	**1870**	279	221	**500**	**2180**
7/17/2018	**849**	*222*	<3.2	*50.8*	61	463	366	**829**	*1730*
11/28/2018	**213**	*161*	<1.6	*39.5*	4.7J	210	144	*354*	*846*
4/24/2019	*1.1*	.74J	<1.2	*<1.2*	<.17	.97J	<.87	.97J	2.6
7/24/2019	**113**	74.2	<1.2	*28.2*	1.4J	69.7	45.6	*115.3*	125.6
10/30/2019	**432**	61.7	<1.2	*70.3*	4.7J	30.2	71.8	*102*	49.4
6/4/2020	**208**	*178*	<6.2	*45.9*	7.9	166	102	*268*	219.5
10/7/2020	**57.2**	20.2	<1.2	*20.7*	1.4	7.5	10.7	18.2	8.9
1/5/2021	**41.6**	44	<1.2	*3.4J*	2.9	6.2	2.9J		16.1
4/21/2021	**6.8**	23.3	<1.1	*1.4J*	19.4	48.4	40.6		287.7

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NR140 Preventative Action Limit	0.5	140	12	10	160			96	400
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
MW-3 (installed August 10, 2016)									
8/29/2016	**1430**	123	<9.7	*19.5*	**1640**	64.2	16.2	80.4	*818*
11/30/2016	**1800**	118	<4.8	*5.9*	**139**	13.3	12.4	25.7	200
3/29/2017	**1850**	120	<9.7	<8.5	**425**	37.5	24.8	62.3	316
7/31/2017	**1540**	*165*	<12.1	*20.6*	**177**	64.6	39.1	*103.7*	324
10/25/2017	**2370**	101	<12.1	*22.1*	**53.1**	17.2	23	40.2	*113*
5/10/2018	**198**	61.1	<.64	5.7	*187*	29.3	7.3	36.6	200
7/17/2018	**1150**	*269*	<3.2	*38.6*	<3.2	182	61.6	*243.6*	38.6
11/28/2018	**78.9**	9	<.32	3.5	15	10.3	5.1	15.4	45.2
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	.33J	.38J	<1.2	<1.2	<.17	<.84	<.87	<.1.71	1.9J
10/30/2019	**7.9**	17.3	<1.2	*12.5*	2.3J	41.1	9.3	50.4	167
6/4/2020	*2.3*	4.4	<1.2	1.6 J	<.27	1.4 J	1.1 J	2.5	7.6
10/7/2020	**179**	49	<1.2	*22.4*	10.2	27.2	7.5	34.7	56.9
1/5/2021	**192**	19.9	<1.2	*9*	8.3	16.3	13.1		32.7
4/21/2021	**8.7**	8.4	<1.1	*1.5J*	33.9	14.1	4.4		39.6
MW-4 (installed November 14, 2016)									
11/30/2016	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.84	<1.2
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.84	<1.2
7/31/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.84	<1.2
10/25/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.84	<1.2
5/10/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
7/17/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
11/28/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
MW-5 (installed November 14, 2016)									
11/30/2016	<.4	<.39	<.48	0.72	<.39	<.42	<.42	<.42	<1.2
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
7/31/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
10/25/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
5/10/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.34	<.97
7/17/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
11/28/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05

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Wagner Spill - Hwy 45
Langlade County, Wisconsin

Sample Location	Benzene	Ethylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	TMB (Total)	Xylenes (Total)
NR140 Enforcement Standard	5	700	60	100	800			480	2000
NR140 Preventative Action Limit	0.5	140	12	10	160			96	400
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
MW-6 (installed November 14, 2016)									
11/30/2016	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
7/31/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
10/25/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
(MW-1?) 5/10/2018	**461**	**1130**	*15.7J*	**218**	**3600**	1700	500	**2200**	**5740**
7/17/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
11/28/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
MW-7A (installed 3/15/18)									
5/10/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.34	<.97
7/17/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
11/28/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
MW-7B (installed 3/16/18)									
5/10/2018	**277**	1.1	<.32	<.51	1.5J	.58J	<.33	.58J	2.7J
7/17/2018	**993**	<3.3	<3.2	<5.1	<4.9	<3.4	<3.3	<6.7	<9.7
11/28/2018	**365**	<1.6	<1.6	<2.5	<2.4	<1.7	<1.6	<3.3	<4.8
4/24/2019	**59.4**	.53J	<1.2	<1.2	.63J	<.84	<.87	<1.71	.6J
7/24/2019	**83.4**	<.22	<1.2	<1.2	.27J	<.84	<.87	<1.71	<.73
10/30/2019	**14.5**	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	*3.7*	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	**5.2**	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	**12.3**	.5J	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
MW-8A (installed 10/29/18)									
11/28/2018	*1.7*	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05

Table 1: Ground Water Sampling Results
Wagner Spill - Hwy 45
Langlade County, Wisconsin

Sample Location	Benzene	Ethylbenzene	MTBE	Naphthalene	Toluene	1,2,4-TMB	1,3,5-TMB	TMB (Total)	Xylenes (Total)
NR140 Enforcement Standard	5	700	60	100	800			480	2000
NR140 Preventative Action Limit	0.5	140	12	10	160			96	400
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
MW-8B (installed 10/29/18)									
11/28/2018	**6.4**	<.33	<.32	<.51	<.49	.37J	<.33	.37J	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	*.8J*	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	*.88J*	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	.44J	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
MW-9P (installed 10/30/18)									
11/28/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.67	<.97
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	*1.5*	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
1/5/2021	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
Pond									
5/25/2016	**6.2**	4.2	<0.48	2.2	19.9	NR	NR	8.6	22.3
8/29/2016	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
11/30/2016	**11.5**	3.6	<.48	0.82	54.3	9.7	4.2	13.9	61.9
3/29/2017	0.44	<.39	<.48	<.42	1.4	0.69	0.64	1.33	4.3
7/31/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
10/25/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
5/10/2018	<.31	<.33	<.32	<.51	<.49	<.34	<.33	<.34	<.97
7/17/2018	<.31	<.33	<.32	<.51	<.49	.41J	<.33	.41J	<.97
7/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/30/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
6/4/2020	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.25	<.32	<1.2	<1.2	<.27	<.84	<.87	<1.71	<.73
4/21/2021	<.3	<.33	<1.1	<1.1	<.29	<.45	<.36	<.81	<1.05
Pat Stone well									
(REI) 4/4/2016	<.21	<.23	<.16	<.14	<.12	<.16	<.2	<.36	<.55
3/29/2017	<.4	<.39	<.48	<.42	<.39	<.42	<.42	<.42	<1.2
4/24/2019	<.25	<.22	<1.2	<1.2	<.17	<.84	<.87	<1.71	<.73
10/7/2020	<.43	<.27	<.18	<.59	<.21	<.45	<.43	<.87	<.87
Gray well									
10/7/2020	<.43	<.27	<.18	<.59	<.21	<.45	<.43	<.87	<.87

Table 2: PFAS Analytical Results
Wagner Oil Spill

Parameter	EB		FB		TB		MW-1		MW-2		MW-3	
Sample Date	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	ND	ND	ND	ND	ND	ND	**140**	**68**	**42**	**32**	**16**	ND
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	ND	ND	**430**	ND	ND	ND	**980**	**310**	**630**	**910**	**500**	**18**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	ND	ND	ND	ND	ND	ND	**4.1**	**1.8**	**2.5**	**5.6**	**2.0**	ND
Hexafluoropropylene oxide dimer acid (GenX)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-butanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.52**
Perfluoro-1-decanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)	ND	ND	ND	ND	ND	ND	**240**	**140**	**88**	**120**	**65**	**40**
Perfluoro-n-decanoic acid (PFDA)	ND	ND	ND	ND	ND	ND	**4.7**	**5.6**	**0.97**	**1.1**	ND	**0.92**
Perfluoro-n-dodecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	**680**	**440**	**130**	**280**	**94**	**68**
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-hexanoic acid (PFHxA)	ND	ND	ND	ND	ND	ND	**790**	**430**	**220**	**460**	**160**	**71**
Perfluoro-n-nonanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	110	**140**	**13**	**22**	**14**	**7.9**
Perfluoro-n-octadecanoic acid (PFODA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-octanoic acid (PFOA)	ND	ND	ND	ND	ND	ND	**580**	**370**	**75**	**130**	**67**	**32**
Perfluoro-n-pentanoic acid (PFPeA)	ND	ND	**0.99**	ND	ND	ND	**1100**	**760**	**410**	**780**	**240**	**130**
Perfluoro-n-tetradecanoic acid (PFTeDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND	ND	**5.4**	**2.6**	**3.8**	**2.3**	**2.4**	ND

ng/l - nanogram per liter
EB - equipment blank (lab-supplied PFAS-free water poured into bailer, twine, gloves and then poured into sample bottle and analyzed)
FB - field blank (bottle of PFAS-free water supplied by lab left open on truck tailgate during sampling)
TB - Trip Blank (bottle of PFAS-free water supplied by lab - unopened from/to lab)
430 - BOLD - Concentration above Method Detection Limit (see laboratory report for MDL)
ND - Concentration below Method Detection Limit (see laboratory report for MDL)

Table 2: PFAS Analytical Results
Wagner Oil Spill

Parameter	MW-4		MW-5		MW-6		MW-7A		MW-7B		MW-8A	
Sample Date	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	ND	ND	ND	ND	**3.9**	ND	ND	ND	ND	ND	**1.9**	ND
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	ND	ND	ND	**1.7**	**13**	ND	**3.1**	ND	**430**	**660**	**41**	**25**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	ND	ND	ND	ND	ND	ND	ND	ND	**2.0**	**3.8**	ND	ND
Hexafluoropropylene oxide dimer acid (GenX)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-butanesulfonic acid (PFBS)	ND	ND	ND	**0.90**	ND	ND	ND	ND	ND	**0.78**	ND	**0.49**
Perfluoro-1-decanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)	**160**	**27**	**1.9**	**1.1**	**30**	**51**	ND	**9.3**	**75**	**86**	**81**	**120**
Perfluoro-n-decanoic acid (PFDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-dodecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)	**120**	**34**	ND	ND	**68**	**230**	ND	**1.8**	**90**	**100**	**79**	**110**
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-hexanoic acid (PFHxA)	**360**	**72**	ND	ND	**79**	**220**	ND	**21**	**220**	**280**	**210**	**300**
Perfluoro-n-nonanoic acid (PFNA)	ND	ND	ND	ND	**15**	**25**	ND	ND	**1.1**	**2.5**	**1.9**	**1.3**
Perfluoro-n-octadecanoic acid (PFODA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-octanoic acid (PFOA)	**17**	**6.9**	ND	ND	**55**	**140**	ND	ND	**28**	**51**	**34**	**33**
Perfluoro-n-pentanoic acid (PFPeA)	**700**	**120**	ND	ND	**130**	**220**	ND	**32**	**350**	**410**	**380**	**540**
Perfluoro-n-tetradecanoic acid (PFTeDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	**1.9**	ND	ND	ND	ND	ND	ND	ND

ng/l - nanogram per liter
EB - equipment blank (lab-supplied PFAS-free water poured into bailer, twine, gl
FB - field blank (bottle of PFAS-free water supplied by lab left open on truck tailg
TB - Trip Blank (bottle of PFAS-free water supplied by lab - unopened from/to lab
430 - BOLD - Concentration above Method Detection Limit (see laboratory repor
ND - Concentration below Method Detection Limit (see laboratory report for MD

Table 2: PFAS Analytical Results
Wagner Oil Spill

Parameter	MW-8B		MW-9		Pond
Sample Date	*1/5/21*	4/21/2021	*1/5/21*	4/21/2021	4/21/2021
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	ND	ND	ND	ND	ND
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	ND	ND	ND	ND	**29**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**11**	**17**	ND	**2.3**	**140**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	ND	ND	ND	ND	ND
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (GenX)	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	ND	ND	ND	ND	ND
Perfluoro-1-butanesulfonic acid (PFBS)	ND	ND	ND	ND	**0.52**
Perfluoro-1-decanesulfonic acid (PFDS)	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)	**7.9**	**10**	ND	**0.68**	**79**
Perfluoro-n-decanoic acid (PFDA)	ND	ND	ND	ND	**1.7**
Perfluoro-n-dodecanoic acid (PFDoA)	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)	**7.1**	**12**	ND	ND	**170**
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	ND	ND	ND	ND
Perfluoro-n-hexanoic acid (PFHxA)	**19**	**29**	**1.3**	ND	**210**
Perfluoro-n-nonanoic acid (PFNA)	ND	**0.44**	ND	ND	**37**
Perfluoro-n-octadecanoic acid (PFODA)	ND	ND	ND	ND	ND
Perfluoro-n-octanoic acid (PFOA)	**3.0**	**5.4**	ND	ND	**200**
Perfluoro-n-pentanoic acid (PFPeA)	**35**	**52**	**2.2**	**0.61**	**360**
Perfluoro-n-tetradecanoic acid (PFTeDA)	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND

ng/l - nanogram per liter
EB - equipment blank (lab-supplied PFAS-free water poured into bailer, twine, gl
FB - field blank (bottle of PFAS-free water supplied by lab left open on truck tailg
TB - Trip Blank (bottle of PFAS-free water supplied by lab - unopened from/to lab
430 - BOLD - Concentration above Method Detection Limit (see laboratory repor
ND - Concentration below Method Detection Limit (see laboratory report for MD

Table 3: Ground Water Level Measurements

Wagner Spill - Hwy 45
Langlade County, Wisconsin

MW-1 (installed Aug. 10, 2016)		
Surface Elevation (ft)		92
Top of Casing elevation (ft)*(7/17/18 survey)*		91.67
Top of Screen Elevation (ft)		89
Bottom of Screen Elevation (ft)		79
Meas. Date	DTW (ft)	GW Elev (ft)
8/29/2016	4.99	86.68
11/30/2016	5.95	85.72
3/29/2017	4.13	87.54
7/31/2017	4.56	87.11
10/25/2017	5.62	86.05
Resurvey May 10, 2018		91.67
5/10/2018	2.8	88.87
7/17/2018	5.09	86.58
11/28/2018	4.15	87.52
4/24/2019	0.4	91.27
7/24/2019	1.21	90.46
10/30/2019	2.3	89.37
6/4/2020	2.15	89.52
10/7/2020	5.33	86.34

MW-2 (installed Aug. 10, 2016)		
Surface Elevation (ft)		98
Top of Casing elevation (ft)*(7/17/18 survey)*		97.58
Top of Screen Elevation (ft)		90
Bottom of Screen Elevation (ft)		80
Meas. Date	DTW (ft)	GW Elev (ft)
8/29/2016	11.41	86.17
11/30/2016	12.21	85.37
3/29/2017	10.86	86.72
7/31/2017	10.86	86.72
10/25/2017	11.97	85.61
Resurvey May 10, 2018		97.58
5/10/2018	9.94	87.64
7/17/2018	11.47	86.11
11/28/2018	10.58	87
4/24/2019	7.1	90.48
7/24/2019	8.14	89.44
10/30/2019	8.86	88.72
6/4/2020	8.8	88.78
10/7/2020	11.55	86.03

MW-3 (installed Aug. 10, 2016)		
Surface Elevation (ft)		94
Top of Casing elevation (ft)*(7/17/18 survey)*		93.83
Top of Screen Elevation (ft)		91
Bottom of Screen Elevation (ft)		81
Meas. Date	DTW (ft)	GW Elev (ft)
8/29/2016	7.21	86.62
11/30/2016	8.36	85.47
3/29/2017	6.77	87.06
7/31/2017	6.79	87.04
10/25/2017	7.83	86
Resurvey May 10, 2018		93.83
5/10/2018	5.18	88.65
7/17/2018	7.26	86.57
11/28/2018	6.44	87.39
4/24/2019	2.52	91.31
7/24/2019	3.53	90.3
10/30/2019	4.6	89.23
6/4/2020	4.5	89.33
10/7/2020	7.56	86.27

MW-4 (installed 11/14/16)		
Surface Elevation (ft)		92.5
Top of Casing elevation (ft)*(7/17/18 survey)*		92.05
Top of Screen Elevation (ft)		87.5
Bottom of Screen Elevation (ft)		77.5
Meas. Date	DTW (ft)	GW Elev (ft)
8/29/2016	4.99	86.68
11/30/2016	7.08	84.97
3/29/2017	5.55	86.5
7/31/2017	5.81	86.24
10/25/2017	6.91	85.14
Resurvey May 10, 2018		92.05
5/10/2018	4.8	87.25
7/17/2018	6.53	85.52
11/28/2018	7.52	84.53
4/24/2019	3.15	88.9
7/24/2019	2.83	89.22
10/30/2019	3.6	88.45
6/4/2020	3.58	88.47
10/7/2020	6.43	85.62

MW-5 (installed 11/14/16)		
Surface Elevation (ft)		100.25
Top of Casing elevation (ft)*(7/17/18 survey)*		100
Top of Screen Elevation (ft)		89.25
Bottom of Screen Elevation (ft)		79.25
Meas. Date	DTW (ft)	GW Elev (ft)
8/29/2016	11.41	86.17
11/30/2016	15.39	84.61
3/29/2017	13.94	86.06
7/31/2017	13.87	86.13
10/25/2017	15.04	84.96
Resurvey May 10, 2018		100
5/10/2018	13.18	86.82
7/17/2018	14.6	85.4
11/28/2018	13.62	86.38
4/24/2019	9.84	90.16
7/24/2019	10.9	89.1
10/30/2019	11.68	88.32
6/4/2020	11.67	88.33
10/7/2020	14.49	85.51

MW-6 (installed 11/14/16)		
Surface Elevation (ft)		92
Top of Casing elevation (ft)*(7/17/18 survey)*		91.74
Top of Screen Elevation (ft)		87.5
Bottom of Screen Elevation (ft)		77.5
Meas. Date	DTW (ft)	GW Elev (ft)
8/29/2016	7.21	86.62
11/30/2016	4.02	87.72
3/29/2017	1.99	89.75
7/31/2017	4.36	87.38
10/25/2017	4.36	87.38
Resurvey May 10, 2018		91.74
5/10/2018	1.6	90.14
7/17/2018	4.78	86.96
11/28/2018	2.75	88.99
4/24/2019	0.65	91.09
7/24/2019	1.12	90.62
10/30/2019	1.73	90.01
6/4/2020	1.76	89.98
10/7/2020	4.77	86.97

Table 3: Ground Water Level Measurements

Wagner Spill - Hwy 45
Langlade County, Wisconsin

MW-7A (installed 3/15/18)		
Surface Elevation (ft)		97.5
Top of Casing elevation (ft)*(7/17/18 survey)*		97.02
Top of Screen Elevation (ft)		83.5
Bottom of Screen Elevation (ft)		73.5
Meas. Date	DTW (ft)	GW Elev (ft)
5/10/2018	10.27	86.75
7/17/2018	11.92	85.1
11/28/2018	10.91	86.11
4/24/2019	7.09	89.93
7/24/2019	8.2	88.82
10/30/2019	8.9	88.12
6/4/2020	8.95	88.07
10/7/2020	11.76	85.26

MW-7B (installed 3/16/18)		
Surface Elevation (ft)		97
Top of Casing elevation (ft)*(7/17/18 survey)*		96.84
Top of Screen Elevation (ft)		68
Bottom of Screen Elevation (ft)		63
Meas. Date	DTW (ft)	GW Elev (ft)
5/10/2018	10.41	86.43
7/17/2018	11.73	85.11
11/28/2018	10.75	86.09
4/24/2019	7.16	89.68
7/24/2019	8.18	88.66
10/30/2019	8.82	88.02
6/4/2020	8.89	87.95
10/7/2020	11.57	85.27

MW-8A (installed 10/29/18)		
Surface Elevation (ft)		94
Top of Casing elevation (ft)*(7/17/18 survey)*		93.74
Top of Screen Elevation (ft)		89
Bottom of Screen Elevation (ft)		79
Meas. Date	DTW (ft)	GW Elev (ft)
11/28/2018	6.49	87.25
4/24/2019	2.42	91.32
7/24/2019	3.6	90.14
10/30/2019	4.67	89.07
6/4/2020	4.58	89.16
10/7/2020	7.62	86.12

MW-8B (installed 10/29/18)		
Surface Elevation (ft)		94
Top of Casing elevation (ft)*(7/17/18 survey)*		93.95
Top of Screen Elevation (ft)		64
Bottom of Screen Elevation (ft)		59
Meas. Date	DTW (ft)	GW Elev (ft)
11/28/2018	7.73	86.22
4/24/2019	4.17	89.78
7/24/2019	10.73	83.22
10/30/2019	11.07	82.88
6/4/2020	5.88	88.07
10/7/2020	8.57	85.38

MW-9P (installed 10/30/18)		
Surface Elevation (ft)		99.75
Top of Casing elevation (ft)*(7/17/18 survey)*		99.54
Top of Screen Elevation (ft)		70
Bottom of Screen Elevation (ft)		65
Meas. Date	DTW (ft)	GW Elev (ft)
11/28/2018	13.5	86.04
4/24/2019	9.91	89.63
7/24/2019	10.93	88.61
10/30/2019	11.57	87.97
6/4/2020	11.64	87.9
10/7/2020	14.34	85.2

Table 4: Natural Attenuation Field Measurements

Wagner Oil Spill

Hwy. 45 near Aniwa, Wisconsin

Well	DO	pH	Temp	Conductivity	ORP
MW-1					
8/29/2016	0	7.7	17.6	511	12
11/30/2016	0	7.71	6.7	623	71
3/29/2017	<1	8.94	3.8	802	-95
5/10/2018	<1	8.1	6.2	359	-153
7/17/2018	0	7.53	11.7	606	67
11/28/2018	0	7.18	5.4	390	105
4/24/2019	3	7.58	4.2	388	-112
7/24/2019	0	7.38	14.4	264	-119
10/30/2019	<1	7.21	7.6	237	130
6/4/2020	1	5.95	10.3	259	58
10/7/2020	0	6.02	11.1	425	-5
MW-2					
8/29/2016	0	8.16	15.3	773	31
11/30/2016	0	7.2	8.5	942	-10
3/29/2017	<<1	7.46	5.7	1116	-58
5/10/2018	0	7.9	8	1076	-101
7/17/2018	0	7.51	9.6	983	-51
11/28/2018	<<1	6.67	6.1	872	101
4/24/2019	1	6.58	5	501	-109
7/24/2019	2	7.25	11.4	516	-104
10/30/2019	0	7.18	7.9	522	149
6/4/2020	2	5.76	8	583	100
10/7/2020	0	5.78	9.9	557	nm
MW-3					
8/29/2016	0	too muddy			
11/30/2016	0	7.15	7.5	646	3
3/29/2017	<<1	7.62	4.8	681	-74
5/10/2018	<1	8.24	5.6	301	-127
7/17/2018	1	7.6	11.9	574	-108
11/28/2018	<<1	7.54	4.7	275	57
4/24/2019	3	7.3	4.2	82	-99
7/24/2019	4	7.35	13.6	78.2	-125
10/30/2019	2	7.45	7.9	127	126
6/4/2020	5	6.2	9.6	831	106
10/7/2020	1	6	10.7	352	69
MW-4					
11/30/2016	3	7.72	7.4	108	-8
3/29/2017	4	8.12	4.5	110	-96
5/10/2018	5	8.52	6.1	70.3	-157
7/17/2018	5	7.46	10.8	120.4	-64
11/28/2018	5	7.32	5.8	93.8	35
4/24/2019	5	7.8	5.4	77	-110
7/24/2019	3	7.65	11.5	63.7	-103
10/30/2019	2	7.43	7.6	69	132
6/4/2020	4	6.46	8.6	62	124
10/7/2020	2	6.05	11	81.4	-31
MW-5					
11/30/2016	4	7.78	8.4	507	-35
3/29/2017	4	7.45	6.5	518	-59
5/10/2018	5	8.15	7.3	517	-117
7/17/2018	6	7.64	10.9	522	94
11/28/2018	5	7.72	6	583	53
4/24/2019	6	8	7.3	626	-87
7/24/2019	5	7.89	10.2	687	-76
10/30/2019	4	7.58	7.6	587	145
6/4/2020	8	6.59	8.2	481	143
10/7/2020	4	6.24	10.4	457	22

Table 4: Natural Attenuation Field Measurements
Wagner Oil Spill
Hwy. 45 near Aniwa, Wisconsin

Well	DO	pH	Temp	Conductivity	ORP
MW-6					
11/30/2016	2	7.92	7.5	527	-8
3/29/2017	4	7.86	3.3	494	-65
5/10/2018	5	8.93	6.3	302	-164
7/17/2018	1	7.13	14.2	465	183
11/28/2018	1	7.62	4	280	15
4/24/2019	8	7.88	4.5	346	-94
7/24/2019	4	7.69	15.4	317	-118
10/30/2019	0	7.54	7.7	188	118
6/4/2020	1	6.67	11.1	410	118
10/7/2020	0	6.09	11.8	985	86
MW-7A					
5/10/2018	5	8.34	7.9	302	-106
7/17/2018	5	7.71	9.5	274	85
11/28/2018	6	7.98	5.9	318	47
4/24/2019	6	8	8.2	310	-91
7/24/2019	5	7.7	10.7	263	-113
10/30/2019	5	7.61	7.9	292	128
6/4/2020	6	6.58	9.5	231	127
10/7/2020	4	6.32	9.6	290	18
MW-7B					
5/10/2018	0	8.15	8.6	1272	-126
7/17/2018	<<1	6.84	9.1	1191	57
11/28/2018	<<1	7.9	5.6	1160	75
4/24/2019	2	7.98	10.8	1043	-124
7/24/2019	1	7.81	10	768	-82
10/30/2019	1	7.64	6.2	689	130
6/4/2020	5	6.67	9.5	643	150
10/7/2020	3	6.39	9.1	787	43
MW-8A					
11/28/2018	2	7.58	4.8	205	27
4/24/2019	6	7.68	7.5	176	-111
7/24/2019	3	7.68	13	114.7	-127
10/30/2019	3	7.59	8.2	87.9	100
6/4/2020	5	6.56	9.2	58	114
10/7/2020	0	6.31	10.7	155	15
MW-8B					
11/28/2018	2	7.62	4.7	787	50
4/24/2019	3	7.74	9.4	822	-119
7/24/2019	0	7.75	10.4	823	-112
10/30/2019	<1	7.85	5.7	870	115
6/4/2020	<1	6.68	9.3	793	156
10/7/2020	1	6.46	9	754	44
MW-9P					
11/28/2018	<<1	7.54	4.8	476	38
4/24/2019	6	7.96	9.9	374	-69
7/24/2019	1	7.68	10.6	564	NM
10/30/2019	2	7.87	6.7	1312	71
6/4/2020	2	6.55	9.8	556	122
10/7/2020	<1	6.33	9	466	24

FIGURES

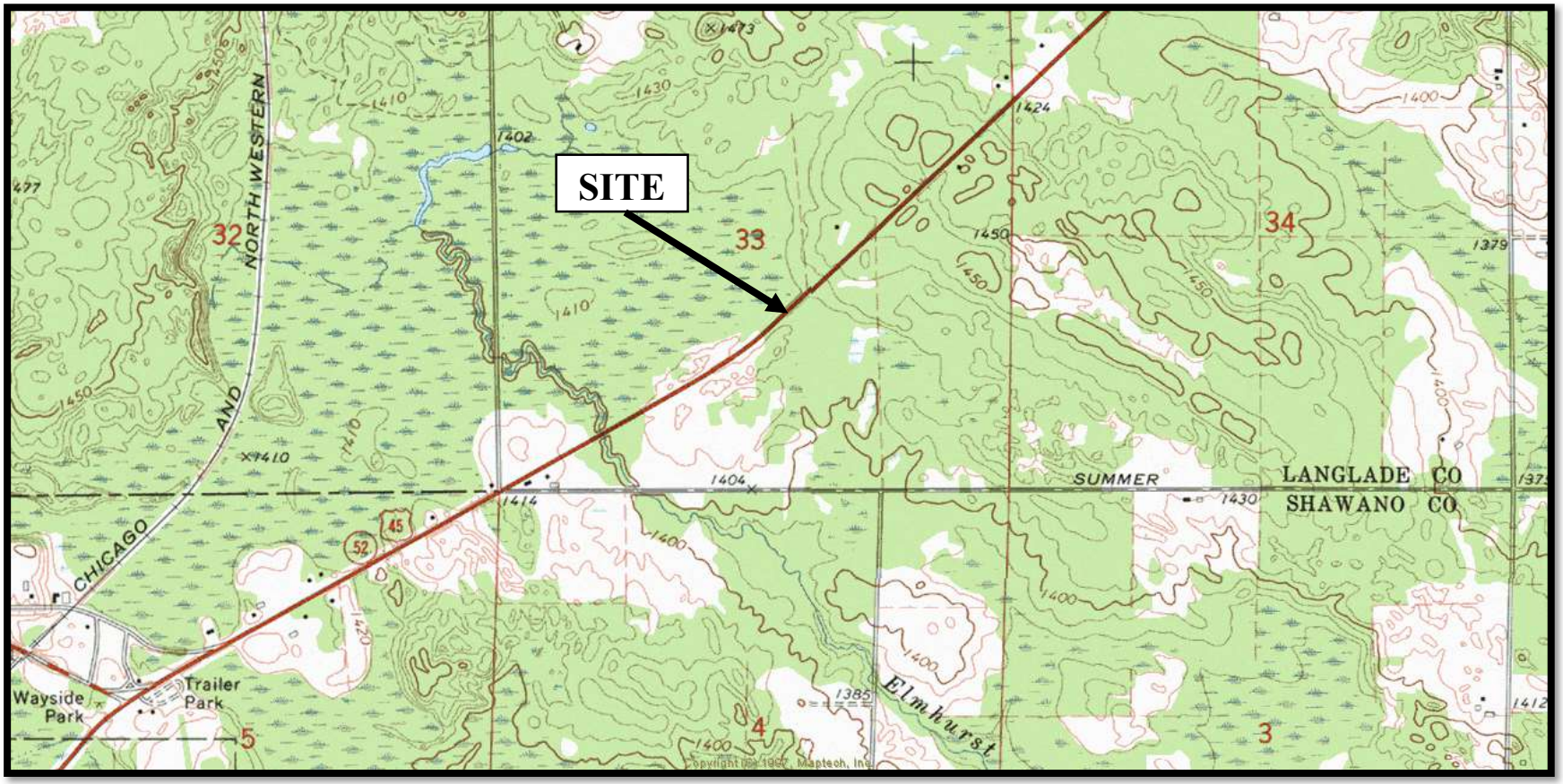
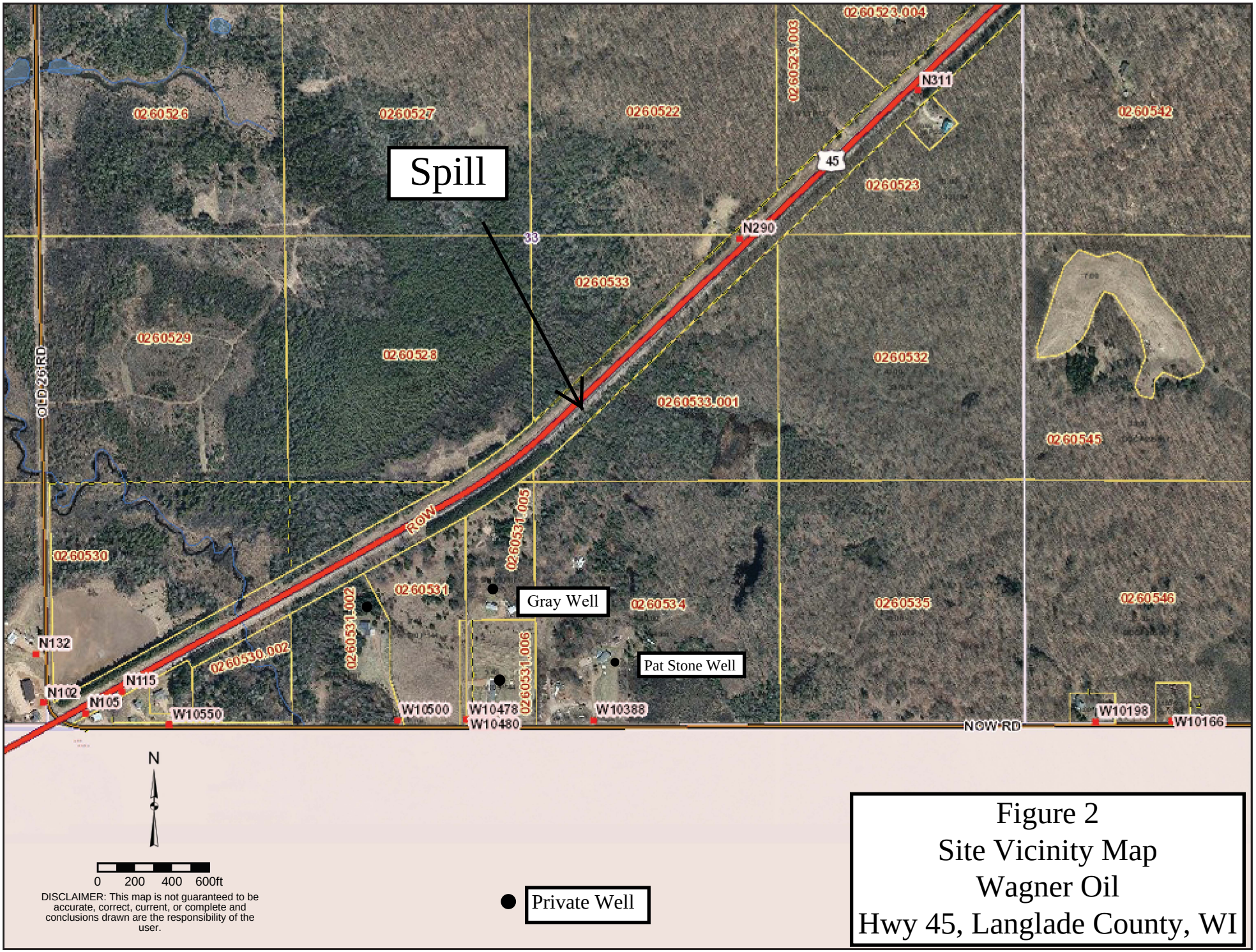


Figure 1: **Site Location Map**
Wagner Oil Spill
Hwy. 45 – Rolling Township – Langlade County


Spill
Gray Well
Pat Stone Well
Private Well
N
0 200 400 600ft
DISCLAIMER: This map is not guaranteed to be accurate, correct, current, or complete and conclusions drawn are the responsibility of the user.
Figure 2
Site Vicinity Map
Wagner Oil
Hwy 45, Langlade County, WI

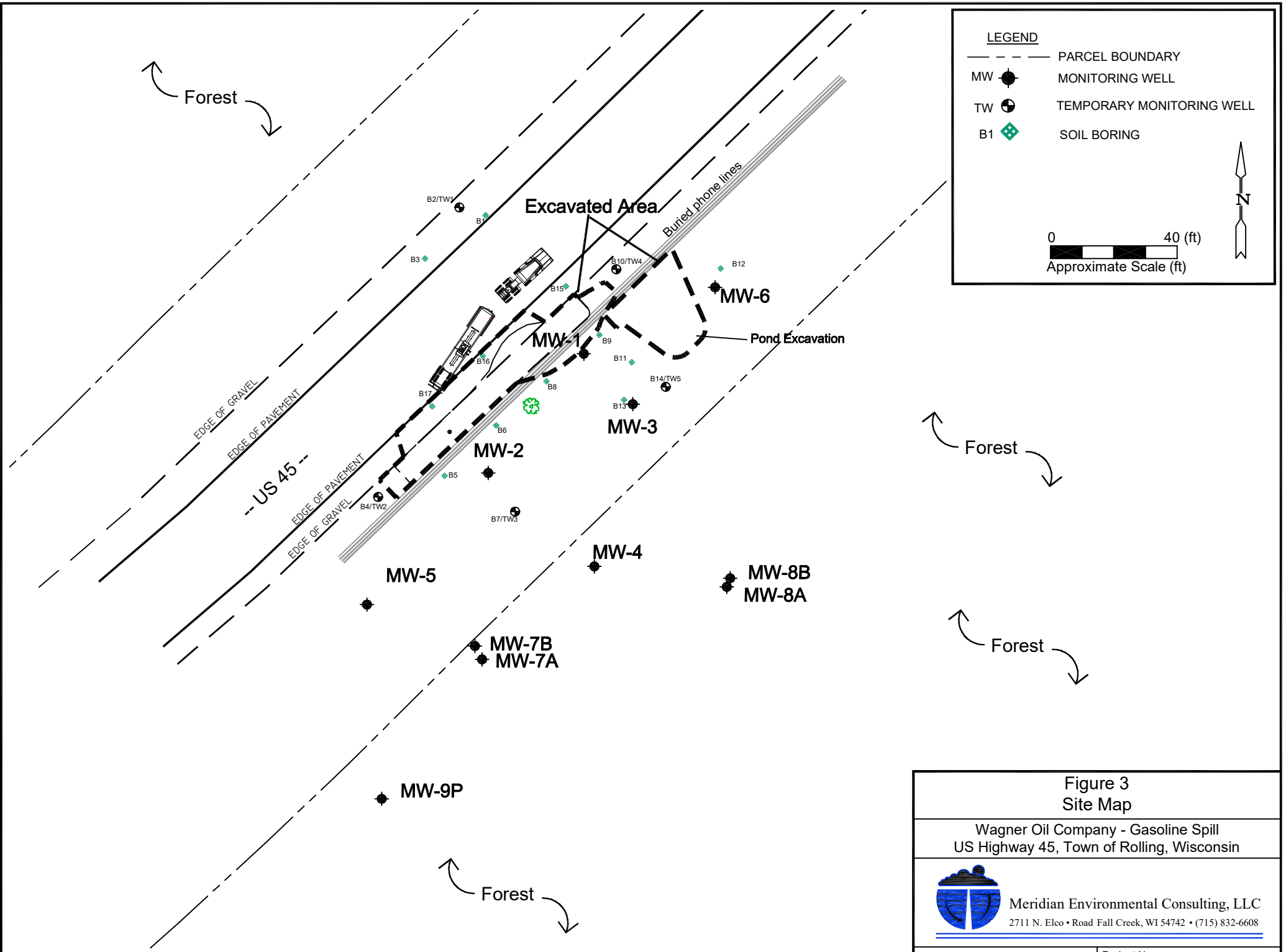


Figure 3
Site Map

Wagner Oil Company - Gasoline Spill
US Highway 45, Town of Rolling, Wisconsin

Meridian Environmental Consulting, LLC
2711 N. Elco • Road Fall Creek, WI 54742 • (715) 832-6608

Date: 3/1/2021 | Project No.

File: WOC-Spill_RollingWI(2000).dwg Date: 10/28/20

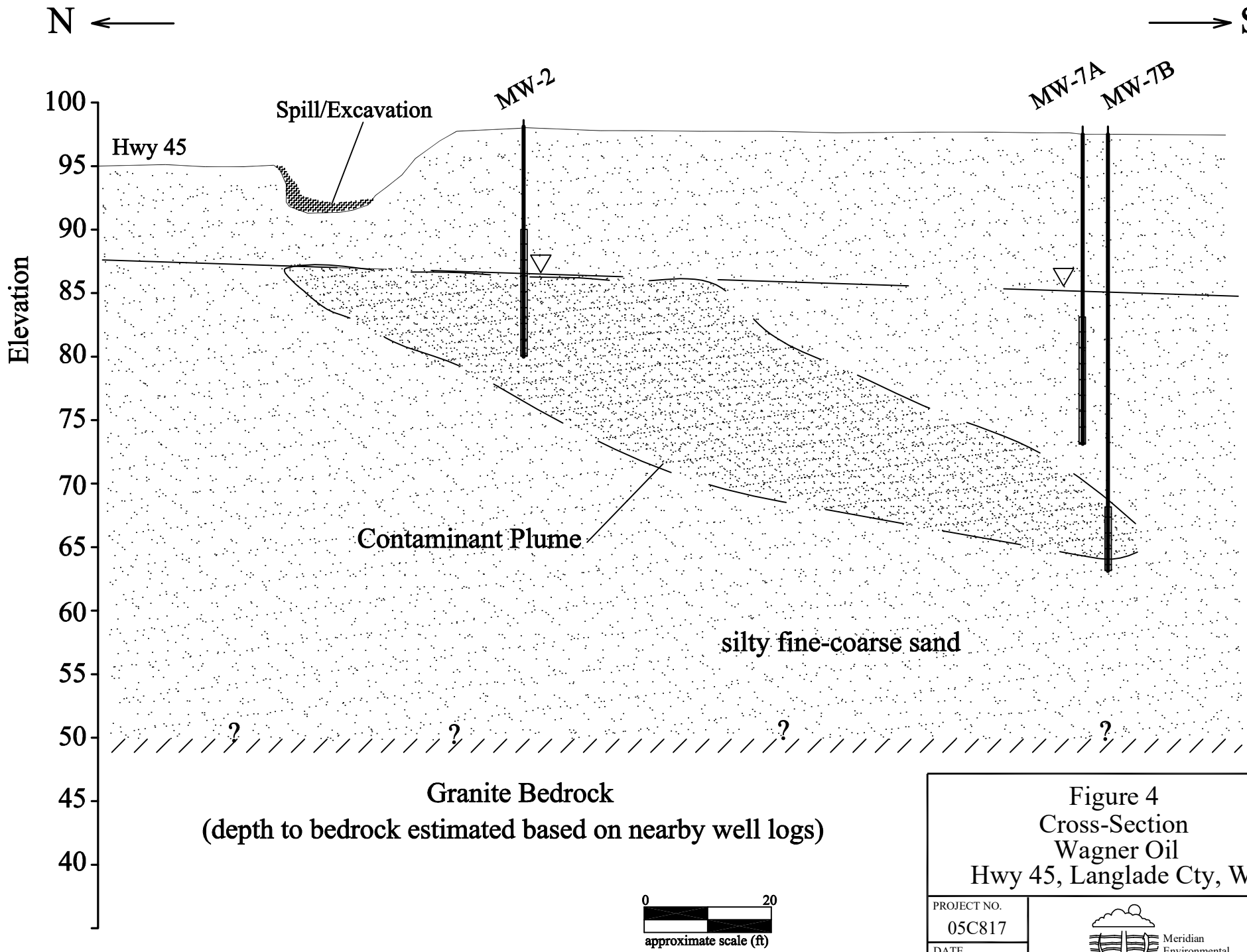


Figure 4
Cross-Section
Wagner Oil
Hwy 45, Langlade Cty, WI

PROJECT NO.	05C817
DATE	3/1/2021

Meridian Environmental Consulting, LLC

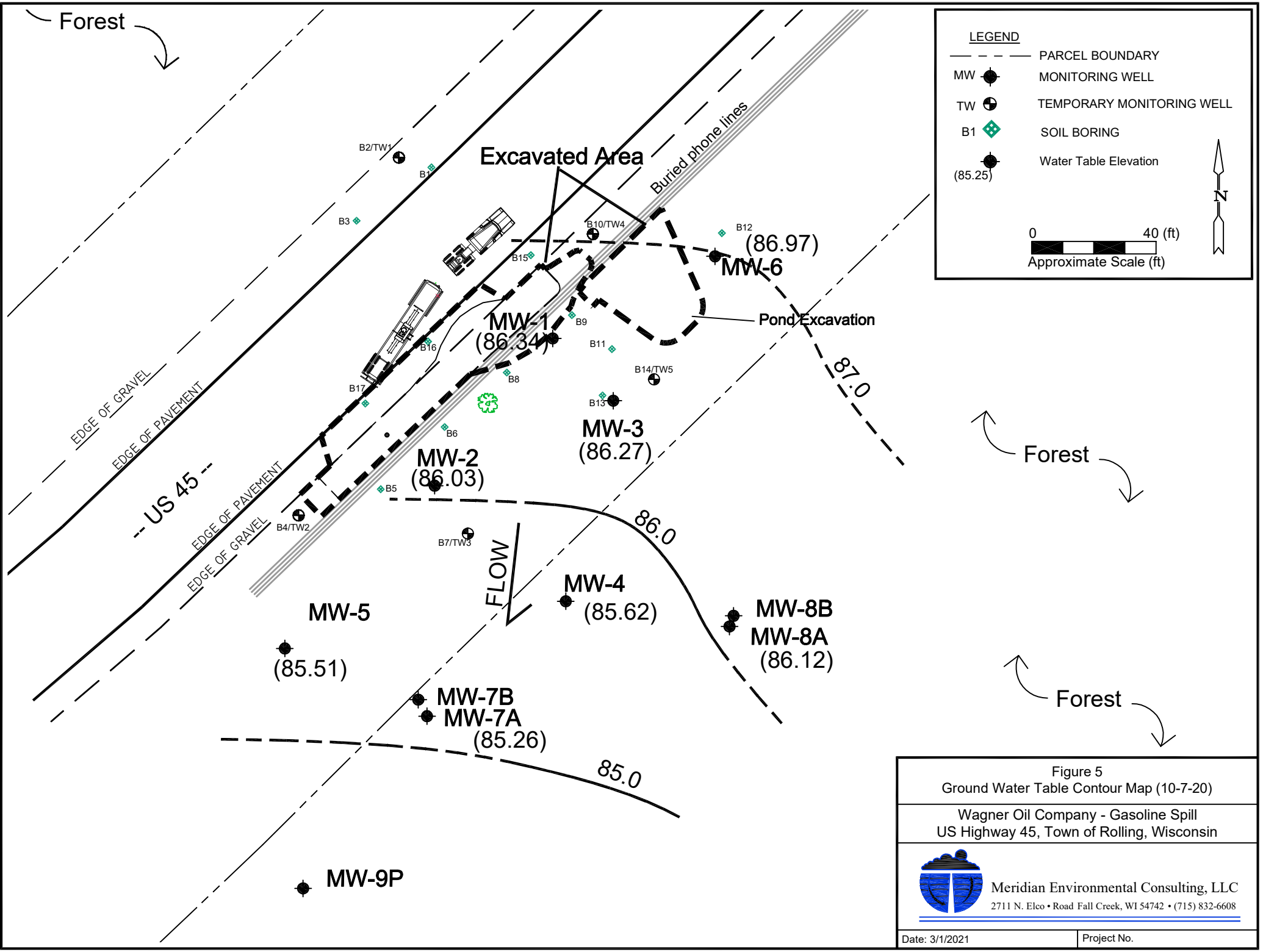


Figure 5
Ground Water Table Contour Map (10-7-20)

Wagner Oil Company - Gasoline Spill
US Highway 45, Town of Rolling, Wisconsin

Meridian Environmental Consulting, LLC
2711 N. Elco • Road Fall Creek, WI 54742 • (715) 832-6608

Date: 3/1/2021 | Project No.

File: WOC-Spill_RollingWI(2000).dwg Date: 10/28/20

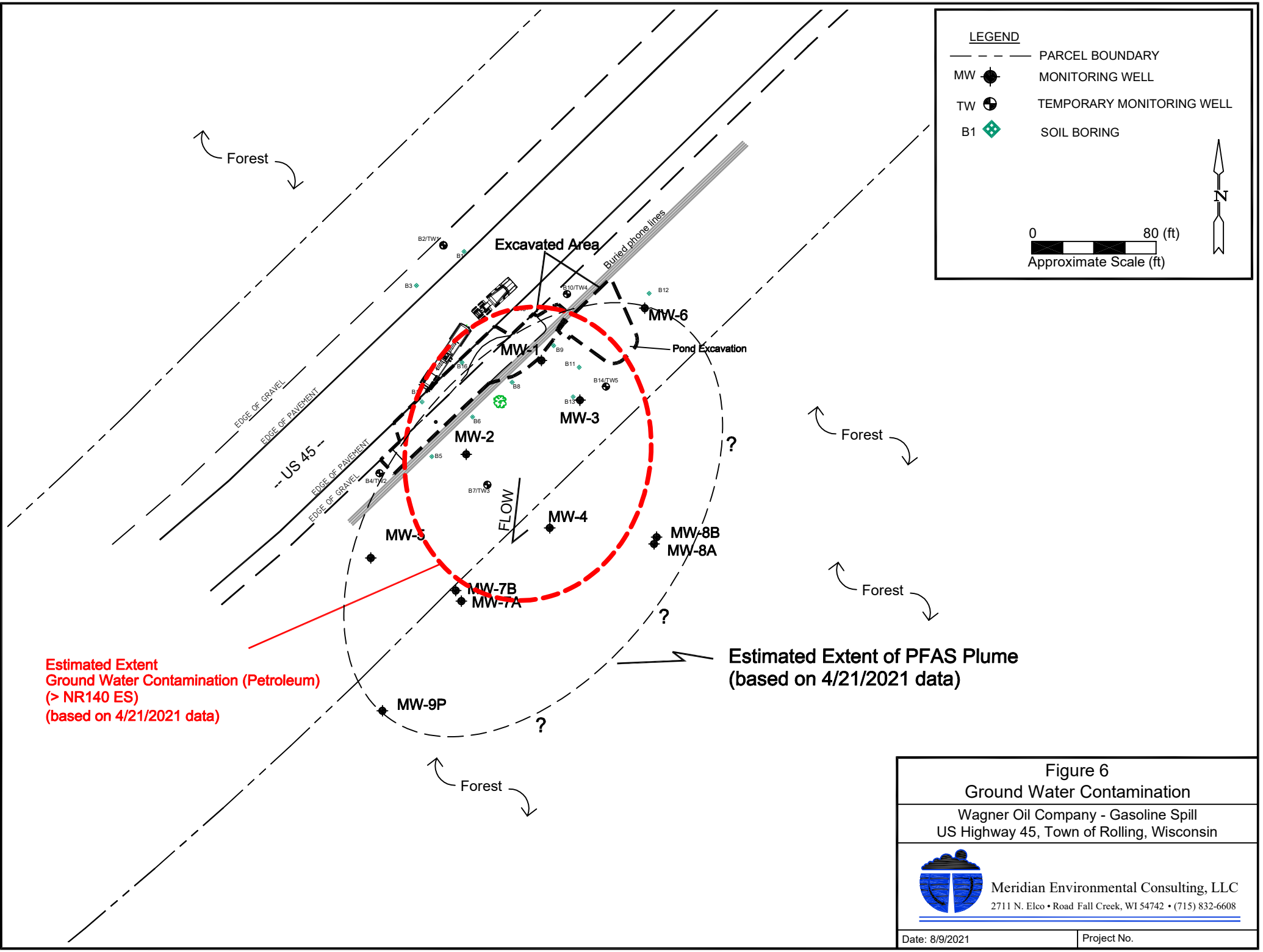


Figure 6
Ground Water Contamination

Wagner Oil Company - Gasoline Spill
US Highway 45, Town of Rolling, Wisconsin

Meridian Environmental Consulting, LLC
2711 N. Elco • Road Fall Creek, WI 54742 • (715) 832-6608

Date: 8/9/2021 | Project No.

File: WOC-Spill_RollingWI(2000).dwg Date: 10/28/20

APPENDIX A

Analytical Reports

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

April 29, 2021

Kenneth Shimko
Meridian Environmental Consulting, LLC
2711 North Elco Rd
Fall Creek, WI 54742

RE: Project: WAGNER
Pace Project No.: 40225703

Dear Kenneth Shimko:

Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 2021. 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: WAGNER
Pace Project No.: 40225703

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: WAGNER
Pace Project No.: 40225703

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40225703001	**MW-1**	Water	04/21/21 00:00	04/23/21 11:00
40225703002	**MW-2**	Water	04/21/21 00:00	04/23/21 11:00
40225703003	**MW-3**	Water	04/21/21 00:00	04/23/21 11:00
40225703004	**MW-4**	Water	04/21/21 00:00	04/23/21 11:00
40225703005	**MW-5**	Water	04/21/21 00:00	04/23/21 11:00
40225703006	**MW-6**	Water	04/21/21 00:00	04/23/21 11:00
40225703007	**MW-7A**	Water	04/21/21 00:00	04/23/21 11:00
40225703008	**MW-7B**	Water	04/21/21 00:00	04/23/21 11:00
40225703009	**MW-8A**	Water	04/21/21 00:00	04/23/21 11:00
40225703010	**MW-8B**	Water	04/21/21 00:00	04/23/21 11:00
40225703011	**MW-9**	Water	04/21/21 00:00	04/23/21 11:00
40225703012	**POND**	Water	04/21/21 00:00	04/23/21 11:00
40225703013	**TRIP BLANK**	Water	04/21/21 00:00	04/23/21 11:00

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

SAMPLE ANALYTE COUNT

Project: WAGNER
Pace Project No.: 40225703

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40225703001	**MW-1**	EPA 8260	LAP	12	PASI-G
40225703002	**MW-2**	EPA 8260	LAP	12	PASI-G
40225703003	**MW-3**	EPA 8260	LAP	12	PASI-G
40225703004	**MW-4**	EPA 8260	LAP	12	PASI-G
40225703005	**MW-5**	EPA 8260	LAP	12	PASI-G
40225703006	**MW-6**	EPA 8260	SMT	12	PASI-G
40225703007	**MW-7A**	EPA 8260	SMT	12	PASI-G
40225703008	**MW-7B**	EPA 8260	SMT	12	PASI-G
40225703009	**MW-8A**	EPA 8260	SMT	12	PASI-G
40225703010	**MW-8B**	EPA 8260	SMT	12	PASI-G
40225703011	**MW-9**	EPA 8260	SMT	12	PASI-G
40225703012	**POND**	EPA 8260	SMT	12	PASI-G
40225703013	**TRIP BLANK**	EPA 8260	SMT	12	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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PROJECT NARRATIVE

Project: WAGNER
Pace Project No.: 40225703

Method: **EPA 8260**
Description: 8260 MSV UST
Client: Meridian Environmental Consulting, LLC
Date: April 29, 2021

General Information:
13 samples were analyzed for EPA 8260 by Pace Analytical Services Green Bay. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 383369

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40225645002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 2212681)
  - Toluene

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: WAGNER
Pace Project No.: 40225703

Sample: MW-1 **Lab ID: 40225703001** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**111**	ug/L	1.0	0.30	1		04/27/21 12:19	71-43-2	
Ethylbenzene	**367**	ug/L	10.0	3.3	10		04/28/21 01:07	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/27/21 12:19	1634-04-4	
Naphthalene	**56.0**	ug/L	5.0	1.1	1		04/27/21 12:19	91-20-3	
Toluene	**847**	ug/L	10.0	2.9	10		04/28/21 01:07	108-88-3	
1,2,4-Trimethylbenzene	**387**	ug/L	10.0	4.5	10		04/28/21 01:07	95-63-6	
1,3,5-Trimethylbenzene	**133**	ug/L	1.0	0.36	1		04/27/21 12:19	108-67-8	
m&p-Xylene	**943**	ug/L	20.0	7.0	10		04/28/21 01:07	179601-23-1	
o-Xylene	**294**	ug/L	10.0	3.5	10		04/28/21 01:07	95-47-6	
Surrogates									
Toluene-d8 (S)	90	%	70-130		1		04/27/21 12:19	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130		1		04/27/21 12:19	460-00-4	
1,2-Dichlorobenzene-d4 (S)	104	%	70-130		1		04/27/21 12:19	2199-69-1	

Sample: MW-2 **Lab ID: 40225703002** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**6.8**	ug/L	1.0	0.30	1		04/28/21 01:26	71-43-2	
Ethylbenzene	**23.3**	ug/L	1.0	0.33	1		04/28/21 01:26	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/28/21 01:26	1634-04-4	
Naphthalene	**1.4J**	ug/L	5.0	1.1	1		04/28/21 01:26	91-20-3	
Toluene	**19.4**	ug/L	1.0	0.29	1		04/28/21 01:26	108-88-3	
1,2,4-Trimethylbenzene	**48.4**	ug/L	1.0	0.45	1		04/28/21 01:26	95-63-6	
1,3,5-Trimethylbenzene	**40.6**	ug/L	1.0	0.36	1		04/28/21 01:26	108-67-8	
m&p-Xylene	**220**	ug/L	2.0	0.70	1		04/28/21 01:26	179601-23-1	
o-Xylene	**67.7**	ug/L	1.0	0.35	1		04/28/21 01:26	95-47-6	
Surrogates									
Toluene-d8 (S)	88	%	70-130		1		04/28/21 01:26	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130		1		04/28/21 01:26	460-00-4	
1,2-Dichlorobenzene-d4 (S)	107	%	70-130		1		04/28/21 01:26	2199-69-1	

Sample: MW-3 **Lab ID: 40225703003** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**8.7**	ug/L	1.0	0.30	1		04/28/21 11:02	71-43-2	
Ethylbenzene	**8.4**	ug/L	1.0	0.33	1		04/28/21 11:02	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WAGNER
Pace Project No.: 40225703

Sample: MW-3 **Lab ID: 40225703003** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/28/21 11:02	1634-04-4	
Naphthalene	**1.5J**	ug/L	5.0	1.1	1		04/28/21 11:02	91-20-3	
Toluene	**33.9**	ug/L	1.0	0.29	1		04/28/21 11:02	108-88-3	
1,2,4-Trimethylbenzene	**14.1**	ug/L	1.0	0.45	1		04/28/21 11:02	95-63-6	
1,3,5-Trimethylbenzene	**4.4**	ug/L	1.0	0.36	1		04/28/21 11:02	108-67-8	
m&p-Xylene	**33.9**	ug/L	2.0	0.70	1		04/28/21 11:02	179601-23-1	
o-Xylene	**5.7**	ug/L	1.0	0.35	1		04/28/21 11:02	95-47-6	
Surrogates									
Toluene-d8 (S)	86	%	70-130		1		04/28/21 11:02	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130		1		04/28/21 11:02	460-00-4	
1,2-Dichlorobenzene-d4 (S)	109	%	70-130		1		04/28/21 11:02	2199-69-1	

Sample: MW-4 **Lab ID: 40225703004** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/28/21 10:25	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/28/21 10:25	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/28/21 10:25	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/28/21 10:25	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/28/21 10:25	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/28/21 10:25	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/28/21 10:25	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/28/21 10:25	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/28/21 10:25	95-47-6	
Surrogates									
Toluene-d8 (S)	87	%	70-130		1		04/28/21 10:25	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		04/28/21 10:25	460-00-4	
1,2-Dichlorobenzene-d4 (S)	111	%	70-130		1		04/28/21 10:25	2199-69-1	

Sample: MW-5 **Lab ID: 40225703005** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/28/21 10:43	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/28/21 10:43	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/28/21 10:43	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/28/21 10:43	91-20-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WAGNER
Pace Project No.: 40225703

Sample: MW-5 **Lab ID: 40225703005** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/28/21 10:43	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/28/21 10:43	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/28/21 10:43	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/28/21 10:43	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/28/21 10:43	95-47-6	
Surrogates									
Toluene-d8 (S)	86	%	70-130		1		04/28/21 10:43	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		1		04/28/21 10:43	460-00-4	
1,2-Dichlorobenzene-d4 (S)	111	%	70-130		1		04/28/21 10:43	2199-69-1	

Sample: MW-6 **Lab ID: 40225703006** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/29/21 01:49	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/29/21 01:49	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 01:49	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 01:49	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 01:49	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 01:49	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 01:49	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 01:49	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 01:49	95-47-6	
Surrogates									
Toluene-d8 (S)	96	%	70-130		1		04/29/21 01:49	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		1		04/29/21 01:49	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		04/29/21 01:49	2199-69-1	

Sample: MW-7A **Lab ID: 40225703007** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/29/21 02:08	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/29/21 02:08	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 02:08	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 02:08	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 02:08	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 02:08	95-63-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WAGNER
Pace Project No.: 40225703

Sample: MW-7A **Lab ID: 40225703007** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 02:08	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 02:08	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 02:08	95-47-6	
Surrogates									
Toluene-d8 (S)	97	%	70-130		1		04/29/21 02:08	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		1		04/29/21 02:08	460-00-4	
1,2-Dichlorobenzene-d4 (S)	102	%	70-130		1		04/29/21 02:08	2199-69-1	

Sample: MW-7B **Lab ID: 40225703008** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**12.3**	ug/L	1.0	0.30	1		04/29/21 02:28	71-43-2	
Ethylbenzene	**0.50J**	ug/L	1.0	0.33	1		04/29/21 02:28	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 02:28	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 02:28	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 02:28	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 02:28	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 02:28	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 02:28	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 02:28	95-47-6	
Surrogates									
Toluene-d8 (S)	98	%	70-130		1		04/29/21 02:28	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		1		04/29/21 02:28	460-00-4	
1,2-Dichlorobenzene-d4 (S)	101	%	70-130		1		04/29/21 02:28	2199-69-1	

Sample: MW-8A **Lab ID: 40225703009** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/29/21 02:48	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/29/21 02:48	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 02:48	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 02:48	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 02:48	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 02:48	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 02:48	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 02:48	179601-23-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WAGNER
Pace Project No.: 40225703

Sample: MW-8A **Lab ID: 40225703009** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 02:48	95-47-6	
Surrogates									
Toluene-d8 (S)	97	%	70-130		1		04/29/21 02:48	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		1		04/29/21 02:48	460-00-4	
1,2-Dichlorobenzene-d4 (S)	102	%	70-130		1		04/29/21 02:48	2199-69-1	

Sample: MW-8B **Lab ID: 40225703010** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/29/21 03:07	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/29/21 03:07	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 03:07	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 03:07	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 03:07	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 03:07	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 03:07	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 03:07	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 03:07	95-47-6	
Surrogates									
Toluene-d8 (S)	96	%	70-130		1		04/29/21 03:07	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130		1		04/29/21 03:07	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		04/29/21 03:07	2199-69-1	

Sample: MW-9 **Lab ID: 40225703011** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/29/21 03:27	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/29/21 03:27	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 03:27	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 03:27	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 03:27	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 03:27	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 03:27	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 03:27	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 03:27	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WAGNER
Pace Project No.: 40225703

Sample: MW-9 **Lab ID: 40225703011** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Surrogates									
Toluene-d8 (S)	96	%	70-130		1		04/29/21 03:27	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130		1		04/29/21 03:27	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		04/29/21 03:27	2199-69-1	

Sample: POND **Lab ID: 40225703012** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/29/21 01:29	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/29/21 01:29	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/29/21 01:29	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/29/21 01:29	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/29/21 01:29	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/29/21 01:29	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/29/21 01:29	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/29/21 01:29	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/29/21 01:29	95-47-6	
Surrogates									
Toluene-d8 (S)	98	%	70-130		1		04/29/21 01:29	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130		1		04/29/21 01:29	460-00-4	
1,2-Dichlorobenzene-d4 (S)	102	%	70-130		1		04/29/21 01:29	2199-69-1	

Sample: TRIP BLANK **Lab ID: 40225703013** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		04/28/21 21:15	71-43-2	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		04/28/21 21:15	100-41-4	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		04/28/21 21:15	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		04/28/21 21:15	91-20-3	
Toluene	**<0.29**	ug/L	1.0	0.29	1		04/28/21 21:15	108-88-3	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		04/28/21 21:15	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		04/28/21 21:15	108-67-8	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		04/28/21 21:15	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		04/28/21 21:15	95-47-6	
Surrogates									
Toluene-d8 (S)	97	%	70-130		1		04/28/21 21:15	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: WAGNER
Pace Project No.: 40225703

Sample: TRIP BLANK **Lab ID: 40225703013** Collected: 04/21/21 00:00 Received: 04/23/21 11:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		04/28/21 21:15	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		04/28/21 21:15	2199-69-1	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WAGNER
Pace Project No.: 40225703

QC Batch: 383369
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV UST-WATER
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40225703001, 40225703002, 40225703003, 40225703004, 40225703005

METHOD BLANK: 2211864 Matrix: Water
Associated Lab Samples: 40225703001, 40225703002, 40225703003, 40225703004, 40225703005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.45	1.0	04/27/21 07:47	
1,3,5-Trimethylbenzene	ug/L	<0.36	1.0	04/27/21 07:47	
Benzene	ug/L	<0.30	1.0	04/27/21 07:47	
Ethylbenzene	ug/L	<0.33	1.0	04/27/21 07:47	
m&p-Xylene	ug/L	<0.70	2.0	04/27/21 07:47	
Methyl-tert-butyl ether	ug/L	<1.1	5.0	04/27/21 07:47	
Naphthalene	ug/L	<1.1	5.0	04/27/21 07:47	
o-Xylene	ug/L	<0.35	1.0	04/27/21 07:47	
Toluene	ug/L	<0.29	1.0	04/27/21 07:47	
1,2-Dichlorobenzene-d4 (S)	%	108	70-130	04/27/21 07:47	
4-Bromofluorobenzene (S)	%	96	70-130	04/27/21 07:47	
Toluene-d8 (S)	%	90	70-130	04/27/21 07:47	

LABORATORY CONTROL SAMPLE: 2211865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	61.8	124	70-132	
Ethylbenzene	ug/L	50	54.9	110	80-123	
m&p-Xylene	ug/L	100	110	110	70-130	
Methyl-tert-butyl ether	ug/L	50	50.0	100	66-130	
o-Xylene	ug/L	50	53.1	106	70-130	
Toluene	ug/L	50	51.6	103	80-121	
1,2-Dichlorobenzene-d4 (S)	%			107	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			89	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2212680 2212681

Parameter	Units	40225645002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	<0.30	50	50	51.5	48.3	103	97	70-132	6	20	
Ethylbenzene	ug/L	<0.33	50	50	44.8	41.8	90	84	80-123	7	20	
m&p-Xylene	ug/L	<0.70	100	100	88.8	82.7	89	83	70-130	7	20	
Methyl-tert-butyl ether	ug/L	<1.1	50	50	43.7	42.3	87	85	66-130	3	20	
o-Xylene	ug/L	<0.35	50	50	43.2	40.4	86	81	70-130	7	20	
Toluene	ug/L	<0.29	50	50	42.0	39.4	84	79	80-121	6	20	M1
1,2-Dichlorobenzene-d4 (S)	%						107	105	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: WAGNER
Pace Project No.: 40225703

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2212680 2212681

Parameter	Units	40225645002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Bromofluorobenzene (S)	%						98	98	70-130			
Toluene-d8 (S)	%						90	89	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: WAGNER
Pace Project No.: 40225703

QC Batch: 383469
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV UST-WATER
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40225703006, 40225703007, 40225703008, 40225703009, 40225703010, 40225703011, 40225703012, 40225703013

METHOD BLANK: 2212266 Matrix: Water
Associated Lab Samples: 40225703006, 40225703007, 40225703008, 40225703009, 40225703010, 40225703011, 40225703012, 40225703013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.45	1.0	04/28/21 17:22	
1,3,5-Trimethylbenzene	ug/L	<0.36	1.0	04/28/21 17:22	
Benzene	ug/L	<0.30	1.0	04/28/21 17:22	
Ethylbenzene	ug/L	<0.33	1.0	04/28/21 17:22	
m&p-Xylene	ug/L	<0.70	2.0	04/28/21 17:22	
Methyl-tert-butyl ether	ug/L	<1.1	5.0	04/28/21 17:22	
Naphthalene	ug/L	<1.1	5.0	04/28/21 17:22	
o-Xylene	ug/L	<0.35	1.0	04/28/21 17:22	
Toluene	ug/L	<0.29	1.0	04/28/21 17:22	
1,2-Dichlorobenzene-d4 (S)	%	101	70-130	04/28/21 17:22	
4-Bromofluorobenzene (S)	%	101	70-130	04/28/21 17:22	
Toluene-d8 (S)	%	97	70-130	04/28/21 17:22	

LABORATORY CONTROL SAMPLE: 2212267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	52.9	106	70-132	
Ethylbenzene	ug/L	50	52.9	106	80-123	
m&p-Xylene	ug/L	100	106	106	70-130	
Methyl-tert-butyl ether	ug/L	50	51.9	104	66-130	
o-Xylene	ug/L	50	53.2	106	70-130	
Toluene	ug/L	50	49.7	99	80-121	
1,2-Dichlorobenzene-d4 (S)	%			90	70-130	
4-Bromofluorobenzene (S)	%			91	70-130	
Toluene-d8 (S)	%			97	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

QUALIFIERS

Project: WAGNER
Pace Project No.: 40225703

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WAGNER
Pace Project No.: 40225703

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40225703001	**MW-1**	EPA 8260	383369		
40225703002	**MW-2**	EPA 8260	383369		
40225703003	**MW-3**	EPA 8260	383369		
40225703004	**MW-4**	EPA 8260	383369		
40225703005	**MW-5**	EPA 8260	383369		
40225703006	**MW-6**	EPA 8260	383469		
40225703007	**MW-7A**	EPA 8260	383469		
40225703008	**MW-7B**	EPA 8260	383469		
40225703009	**MW-8A**	EPA 8260	383469		
40225703010	**MW-8B**	EPA 8260	383469		
40225703011	**MW-9**	EPA 8260	383469		
40225703012	**POND**	EPA 8260	383469		
40225703013	**TRIP BLANK**	EPA 8260	383469		

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

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

40225703

*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:	Meridian Energy
Branch/Location:	
Project Contact:	Ken Shimko
Phone:	715-832-6608
Project Number:	
Project Name:	Wagner
Project State:	WI
Sampled By (Print):	Ken Shimko
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	~~Ken~~ Ken Shimko
Mail To Company:	Meridian Energy
Mail To Address:	7711 N. Elcor Rd Fall Creek, WI 54742
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: PVOC + naph	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-1	4/21		W			X			
002	-2									
003	-3									
004	-4									
005	-5									
006	-6									
007	-7A									
008	-7B									
009	-8A									
010	-8B									
011	-9									
012	Pond									
013	trip blank									

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:
	4/22/2021	Fed Ex	4/22/2021
Fedex	4/23/21 1100	Kendra S pace	4/23/21 1100

PACE Project No. 40225703

Receipt Temp = | °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: Meridian Project # 40225703

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

Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: 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																	2																2.5 / 5 / 10
002																	3																**2.5 / 5 / 10**
003																	4																2.5 / 5 / 10
004																	5																**2.5 / 5 / 10**
005																	6																2.5 / 5 / 10
006																	7																**2.5 / 5 / 10**
007																	8																2.5 / 5 / 10
008																	9																**2.5 / 5 / 10**
009																	10																2.5 / 5 / 10
010																	11																**2.5 / 5 / 10**
011																	12																2.5 / 5 / 10
012																	13																**2.5 / 5 / 10**
013																	14																2.5 / 5 / 10
014																																	**2.5 / 5 / 10**
015																																	2.5 / 5 / 10
016																																	**2.5 / 5 / 10**
017																					VG 4/23/21												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# : 40225703

40225703

Client Name: Meridian

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

Tracking #: 7862 9403 4311

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 - 9 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0 /Corr: 1

Person examining contents:

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

Date: 4/23/21 /Initials: KS

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

Labeled By Initials: KS

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. proj #, po#, quote #, inv info 4/23/21 KS
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: W	☐Yes ☑No ☐N/A	12. No date/time on samples, IDs are different/do not contain "MW" trip blank not on COC KS 4/23/21
Trip Blank Present:	☑Yes ☐No ☐N/A	13.
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 456		

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 logi

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

May 06, 2021

Kenneth Shimko
Meridian Environmental Consulting, LLC
2711 North Elco Rd
Fall Creek, WI 54742

RE: Project: WAGNER
Pace Project No.: 40225702

Dear Kenneth Shimko:

Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 2021. 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:

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

SAMPLE SUMMARY

Project: WAGNER
Pace Project No.: 40225702

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40225702001	**MW-1**	Water	04/21/21 00:00	04/23/21 11:00
40225702002	**MW-2**	Water	04/21/21 00:00	04/23/21 11:00
40225702003	**MW-3**	Water	04/21/21 00:00	04/23/21 11:00
40225702004	**MW-4**	Water	04/21/21 00:00	04/23/21 11:00
40225702005	**MW-5**	Water	04/21/21 00:00	04/23/21 11:00
40225702006	**MW-6**	Water	04/21/21 00:00	04/23/21 11:00
40225702007	**MW-7A**	Water	04/21/21 00:00	04/23/21 11:00
40225702008	**MW-7B**	Water	04/21/21 00:00	04/23/21 11:00
40225702009	**MW-8A**	Water	04/21/21 00:00	04/23/21 11:00
40225702010	**MW-8B**	Water	04/21/21 00:00	04/23/21 11:00
40225702011	**MW-9P**	Water	04/21/21 00:00	04/23/21 11:00
40225702012	**POND**	Water	04/21/21 00:00	04/23/21 11:00
40225702013	**TB**	Water	04/21/21 00:00	04/23/21 11:00
40225702014	**FB**	Water	04/21/21 00:00	04/23/21 11:00
40225702015	**EB**	Water	04/21/21 00:00	04/23/21 11:00

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

PROJECT NARRATIVE

Project:
Pace Project No.:

Method:
Description:
Client:
Date:

This data package has been reviewed for quality and completeness and is approved for release.

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

40225702

Pace Analytical®
www.pacelabs.com

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:	Meridian Env. Cslt
Branch/Location:	
Project Contact:	Ken Shimko
Phone:	715-832-6608
Project Number:	
Project Name:	Wagner
Project State:	WI
Sampled By (Print):	Ken Shimko
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ken Shimko
Mail To Company:	Meridian Env. Cslt
Mail To Address:	2711 N. Elcho Rd Fall Creek WI 54742
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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 = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: PFAS - WI 36	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-1	4/21		W			X			
002	-2									
003	-3									
004	-4									
005	-5									
006	-6									
007	-7A									
008	-7B									
009	-8A									
010	-8B									
011	-9P									
012	Pond									

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:
	4/22/21	Fed Ex	4/22/21
Fedex Ground	4-23 21 1100		

PACE Project No.
40225702

Receipt Temp = 1.0 °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

40225702

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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:	Meridian Env Cs Llc
Branch/Location:	
Project Contact:	Ken Shinko
Phone:	715-832-6608
Project Number:	
Project Name:	Wagner
Project State:	WI
Sampled By (Print):	Ken Shinko
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ken Shinko
Mail To Company:	Meridian Env Sv Llc
Mail To Address:	2711 N. Elco Rd Fall Creek, WI 54742
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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 = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: PFAS-WI536	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
013	TB	4/21		W			X			
014	FB	↓		↓			X			
015	EB	↓		↓			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:
	4/22/21	Fed Ex	4/22/21
Fedex Ground	4-23-21 1100	Madison Hoelscher Pace	4-23-21 1100

PACE Project No. 40225702

Receipt Temp = 1.0 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / ~~Not Present~~ Intact / ~~Not Intact~~

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Sample Preservation Receipt Form

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

Client Name: Meridian Env. Cslty Project # 60225702

All containers needing preservation have been checked and noted below: □Yes □No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

	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										2																						2.5 / 5 / 10
002										2																						2.5 / 5 / 10
003										2																						2.5 / 5 / 10
004										2																						2.5 / 5 / 10
005										2																						2.5 / 5 / 10
006										2																						2.5 / 5 / 10
007										2																						2.5 / 5 / 10
008										2																						2.5 / 5 / 10
009										2																						2.5 / 5 / 10
010										2																						2.5 / 5 / 10
011										2																						2.5 / 5 / 10
012										2																						2.5 / 5 / 10
013										1																						2.5 / 5 / 10
014										1																						2.5 / 5 / 10
015										1																						2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

MK 4-23-21

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#: 40225702

40225702

Client Name: Meridian Env. Csltg

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

Tracking #: Mstr#: 7782 9463 4311

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 cardboard, paper bag

Thermometer Used SR - 99 **Type of Ice:** Wet (Blue) Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 1.0 /Corr: 1.0

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

Person examining contents: Date: 4-23-21 /Initials: MLR

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. +CC MLR 4-23-21
Chain of Custody Filled Out:	☐ Yes ☒ No ☐ N/A	2. Invoice, pws, collection times, proj. # MLR
Chain of Custody Relinquished: MLR 4-23-21	☒ Yes ☐ No ☐ N/A	3. no time MLR 4-23-21 4-23-21
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. +013-015: lab received on 4/23/21. MLR 4-23-21
Sufficient Volume: For Analysis: ☐ Yes ☒ No MS/MSD: ☐ Yes ☐ No ☐ N/A		8. 014 ≈ 230 mL Adequate volume for lab per CDH. MLR 4-23-21 MLR 4-23-21
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. -011 MLR 4-23-21
Sample Labels match COC:	☐ Yes ☒ No ☐ N/A	12. no date, COC IDs missing "MW-" MLR 4-23-21
-Includes date/time/ID/Analysis Matrix: 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 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: WAGNER

Project Number: 40225702

Lot Number:**WD27072**

Date Completed:05/05/2021

05/05/2021 6:03 PM
Approved and released by:
Project Manager II: **Karen L. Coonan**

The electronic signature above is the equivalent of a handwritten signature.

Case Narrative
Pace Analytical Services, LLC
Lot Number: WD27072

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 The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Samples WD27072-004, WD27072-005, WD27072-007, WD27072-008 and WD27072-009, WD27072-010, and WD27072-011 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <10mL and reconstituted to 10mL using MeOH by transfer pipet.

For samples WD27072-001, WD27072-003 (parent and MS), and WD27072-006, sample matrix prevented full volume from being extracted, precluding method mandated bottle rinse. Elution solvent was aliquoted directly into the reservoir, rinsing the inside. Surrogate recovery may be adversely affected.

Surrogate recovery for the following sample was outside control limits: WD27072-001. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary
Pace Analytical Services, LLC
Lot Number: WD27072
Project Name: WAGNER
Project Number: 40225702

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-1	Aqueous	04/21/2021	04/27/2021
002	MW-2	Aqueous	04/21/2021	04/27/2021
003	MW-3	Aqueous	04/21/2021	04/27/2021
004	MW-4	Aqueous	04/21/2021	04/27/2021
005	MW-5	Aqueous	04/21/2021	04/27/2021
006	MW-6	Aqueous	04/21/2021	04/27/2021
007	MW-7A	Aqueous	04/21/2021	04/27/2021
008	MW-7B	Aqueous	04/21/2021	04/27/2021
009	MW-8A	Aqueous	04/21/2021	04/27/2021
010	MW-8B	Aqueous	04/21/2021	04/27/2021
011	MW-9P	Aqueous	04/21/2021	04/27/2021
012	Pond	Aqueous	04/21/2021	04/27/2021
013	TB	Aqueous	04/21/2021	04/27/2021
014	FB	Aqueous	04/21/2021	04/27/2021
015	EB	Aqueous	04/21/2021	04/27/2021

(15 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: WD27072

Project Name: WAGNER

Project Number: 40225702

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-1	Aqueous	8:2 FTS	PFAS by ID	68		ng/L	6
001	MW-1	Aqueous	6:2 FTS	PFAS by ID	310		ng/L	6
001	MW-1	Aqueous	4:2 FTS	PFAS by ID	1.8	J	ng/L	6
001	MW-1	Aqueous	PFBA	PFAS by ID	140		ng/L	6
001	MW-1	Aqueous	PFDA	PFAS by ID	5.6		ng/L	6
001	MW-1	Aqueous	PFHpA	PFAS by ID	440		ng/L	6
001	MW-1	Aqueous	PFHxA	PFAS by ID	430		ng/L	6
001	MW-1	Aqueous	PFNA	PFAS by ID	140		ng/L	6
001	MW-1	Aqueous	PFOA	PFAS by ID	370		ng/L	6
001	MW-1	Aqueous	PFPeA	PFAS by ID	760		ng/L	6
001	MW-1	Aqueous	PFOS	PFAS by ID	2.6	J	ng/L	6
002	MW-2	Aqueous	8:2 FTS	PFAS by ID	32		ng/L	8
002	MW-2	Aqueous	6:2 FTS	PFAS by ID	910		ng/L	8
002	MW-2	Aqueous	4:2 FTS	PFAS by ID	5.6	JQ	ng/L	8
002	MW-2	Aqueous	PFBA	PFAS by ID	120		ng/L	8
002	MW-2	Aqueous	PFDA	PFAS by ID	1.1	J	ng/L	8
002	MW-2	Aqueous	PFHpA	PFAS by ID	280		ng/L	8
002	MW-2	Aqueous	PFHxA	PFAS by ID	460		ng/L	8
002	MW-2	Aqueous	PFNA	PFAS by ID	22		ng/L	8
002	MW-2	Aqueous	PFOA	PFAS by ID	130		ng/L	8
002	MW-2	Aqueous	PFPeA	PFAS by ID	780		ng/L	8
002	MW-2	Aqueous	PFOS	PFAS by ID	2.3	J	ng/L	8
003	MW-3	Aqueous	6:2 FTS	PFAS by ID	18		ng/L	10
003	MW-3	Aqueous	PFBS	PFAS by ID	0.52	J	ng/L	10
003	MW-3	Aqueous	PFBA	PFAS by ID	40		ng/L	10
003	MW-3	Aqueous	PFDA	PFAS by ID	0.92	J	ng/L	10
003	MW-3	Aqueous	PFHpA	PFAS by ID	68		ng/L	10
003	MW-3	Aqueous	PFHxA	PFAS by ID	71		ng/L	10
003	MW-3	Aqueous	PFNA	PFAS by ID	7.9		ng/L	10
003	MW-3	Aqueous	PFOA	PFAS by ID	32		ng/L	10
003	MW-3	Aqueous	PFPeA	PFAS by ID	130		ng/L	10
004	MW-4	Aqueous	PFBA	PFAS by ID	27		ng/L	12
004	MW-4	Aqueous	PFHpA	PFAS by ID	34		ng/L	12
004	MW-4	Aqueous	PFHxA	PFAS by ID	72		ng/L	12
004	MW-4	Aqueous	PFOA	PFAS by ID	6.9		ng/L	12
004	MW-4	Aqueous	PFPeA	PFAS by ID	120		ng/L	12
005	MW-5	Aqueous	6:2 FTS	PFAS by ID	1.7	J	ng/L	14
005	MW-5	Aqueous	PFBS	PFAS by ID	0.90	J	ng/L	14
005	MW-5	Aqueous	PFBA	PFAS by ID	1.1	J	ng/L	14
006	MW-6	Aqueous	PFBA	PFAS by ID	51		ng/L	16
006	MW-6	Aqueous	PFHpA	PFAS by ID	230		ng/L	16
006	MW-6	Aqueous	PFHxA	PFAS by ID	220		ng/L	16
006	MW-6	Aqueous	PFNA	PFAS by ID	25		ng/L	16

Detection Summary (Continued)

Lot Number: WD27072

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
006	MW-6	Aqueous	PFOA	PFAS by ID	140		ng/L	16
006	MW-6	Aqueous	PFPeA	PFAS by ID	220		ng/L	16
007	MW-7A	Aqueous	PFBA	PFAS by ID	9.3		ng/L	18
007	MW-7A	Aqueous	PFHpA	PFAS by ID	1.8	J	ng/L	18
007	MW-7A	Aqueous	PFHxA	PFAS by ID	21		ng/L	18
007	MW-7A	Aqueous	PFPeA	PFAS by ID	32		ng/L	18
008	MW-7B	Aqueous	6:2 FTS	PFAS by ID	660		ng/L	20
008	MW-7B	Aqueous	4:2 FTS	PFAS by ID	3.8	J	ng/L	20
008	MW-7B	Aqueous	PFBS	PFAS by ID	0.78	J	ng/L	20
008	MW-7B	Aqueous	PFBA	PFAS by ID	86		ng/L	20
008	MW-7B	Aqueous	PFHpA	PFAS by ID	100		ng/L	20
008	MW-7B	Aqueous	PFHxA	PFAS by ID	280		ng/L	20
008	MW-7B	Aqueous	PFNA	PFAS by ID	2.5	J	ng/L	20
008	MW-7B	Aqueous	PFOA	PFAS by ID	51		ng/L	20
008	MW-7B	Aqueous	PFPeA	PFAS by ID	410		ng/L	20
009	MW-8A	Aqueous	6:2 FTS	PFAS by ID	25		ng/L	22
009	MW-8A	Aqueous	PFBS	PFAS by ID	0.49	J	ng/L	22
009	MW-8A	Aqueous	PFBA	PFAS by ID	120		ng/L	22
009	MW-8A	Aqueous	PFHpA	PFAS by ID	110		ng/L	22
009	MW-8A	Aqueous	PFHxA	PFAS by ID	300		ng/L	22
009	MW-8A	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	22
009	MW-8A	Aqueous	PFOA	PFAS by ID	33		ng/L	22
009	MW-8A	Aqueous	PFPeA	PFAS by ID	540		ng/L	22
010	MW-8B	Aqueous	6:2 FTS	PFAS by ID	17		ng/L	24
010	MW-8B	Aqueous	PFBA	PFAS by ID	10		ng/L	24
010	MW-8B	Aqueous	PFHpA	PFAS by ID	12		ng/L	24
010	MW-8B	Aqueous	PFHxA	PFAS by ID	29		ng/L	24
010	MW-8B	Aqueous	PFNA	PFAS by ID	0.44	J	ng/L	24
010	MW-8B	Aqueous	PFOA	PFAS by ID	5.4		ng/L	24
010	MW-8B	Aqueous	PFPeA	PFAS by ID	52		ng/L	24
011	MW-9P	Aqueous	6:2 FTS	PFAS by ID	2.3	J	ng/L	26
011	MW-9P	Aqueous	PFBA	PFAS by ID	0.68	J	ng/L	26
011	MW-9P	Aqueous	PFPeA	PFAS by ID	0.61	J	ng/L	26
012	Pond	Aqueous	8:2 FTS	PFAS by ID	29		ng/L	28
012	Pond	Aqueous	6:2 FTS	PFAS by ID	140		ng/L	28
012	Pond	Aqueous	PFBS	PFAS by ID	0.52	J	ng/L	28
012	Pond	Aqueous	PFBA	PFAS by ID	79		ng/L	28
012	Pond	Aqueous	PFDA	PFAS by ID	1.7	J	ng/L	28
012	Pond	Aqueous	PFHpA	PFAS by ID	170		ng/L	28
012	Pond	Aqueous	PFHxA	PFAS by ID	210		ng/L	28
012	Pond	Aqueous	PFNA	PFAS by ID	37		ng/L	28
012	Pond	Aqueous	PFOA	PFAS by ID	200		ng/L	28
012	Pond	Aqueous	PFPeA	PFAS by ID	360		ng/L	28

(86 detections)

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-001**

Description: **MW-1** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	SOP SPE	PFAS by ID SOP	1	05/01/2021 1519	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.1	0.49	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.1	0.67	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**68**		**8.1**	**1.6**	**ng/L**	**2**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**310**		**8.1**	**2.0**	**ng/L**	**2**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.1	1.2	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	**757124-72-4**	**PFAS by ID SOP**	**1.8**	**J**	**8.1**	**0.88**	**ng/L**	**2**
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.1	2.1	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.1	0.49	ng/L	2
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.1	1.4	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.1	0.76	ng/L	2
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.1	0.96	ng/L	2
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.3	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.1	0.94	ng/L	2
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.1	1.3	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.42	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.72	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.62	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	2
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.1	1.1	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.56	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**140**		**4.0**	**0.60**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**5.6**		**4.0**	**0.53**	**ng/L**	**2**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.48	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**440**		**4.0**	**0.45**	**ng/L**	**2**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND	Q	8.1	0.82	ng/L	2
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**430**		**4.0**	**0.69**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**140**		**4.0**	**0.47**	**ng/L**	**2**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND	Q	8.1	1.0	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**370**		**4.0**	**0.84**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**760**		**4.0**	**0.55**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.6**	**J**	**4.0**	**2.0**	**ng/L**	**2**

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS		115	25-150
13C2_6:2FTS		82	25-150
13C2_8:2FTS		76	25-150
13C2_PFDoA		57	25-150
13C2_PFHxDA	N	20	25-150
13C2_PFTeDA		29	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-001**

Description: **MW-1** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
13C3_PFBS		62	25-150
13C3_PFHxS		71	25-150
13C3-HFPO-DA		69	25-150
13C4_PFBA		66	25-150
13C4_PFHpA		74	25-150
13C5_PFHxA		72	25-150
13C5_PFPeA		68	25-150
13C6_PFDA		69	25-150
13C7_PFUdA		66	25-150
13C8_PFOA		73	25-150
13C8_PFOS		66	25-150
13C8_PFOSA		61	10-150
13C9_PFNA		69	25-150
d-EtFOSA		48	10-150
d5-EtFOSAA		64	25-150
d9-EtFOSE		53	10-150
d-MeFOSA		46	10-150
d3-MeFOSAA		64	25-150
d7-MeFOSE		51	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-002**

Description: **MW-2** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2048	JJG	04/28/2021 1236	90445
2	SOP SPE	PFAS by ID SOP	5	05/01/2021 1530	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**32**		**7.0**	**1.4**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**910**		**35**	**8.7**	**ng/L**	**2**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	**757124-72-4**	**PFAS by ID SOP**	**5.6**	**JQ**	**7.0**	**0.76**	**ng/L**	**1**
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.0	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.0	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.0	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**120**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**280**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.0	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**460**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**22**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.0	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**130**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**780**		**17**	**2.4**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.3**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	190	25-150		122	25-150
13C2_6:2FTS		94	25-150		93	25-150
13C2_8:2FTS		82	25-150		89	25-150
13C2_PFDoA		68	25-150		93	25-150
13C2_PFHxDA		29	25-150		89	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-002**

Description: **MW-2** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		37	25-150		84	25-150
13C3_PFBS		69	25-150		85	25-150
13C3_PFHxS		73	25-150		100	25-150
13C3-HFPO-DA		78	25-150		89	25-150
13C4_PFBA		56	25-150		91	25-150
13C4_PFHpA		96	25-150		94	25-150
13C5_PFHxA		88	25-150		96	25-150
13C5_PFPeA		71	25-150		98	25-150
13C6_PFDA		77	25-150		92	25-150
13C7_PFUdA		73	25-150		87	25-150
13C8_PFOA		83	25-150		94	25-150
13C8_PFOS		62	25-150		91	25-150
13C8_PFOSA		80	10-150		86	10-150
13C9_PFNA		81	25-150		91	25-150
d-EtFOSA		67	10-150		106	10-150
d5-EtFOSAA		65	25-150		90	25-150
d9-EtFOSE		64	10-150		101	10-150
d-MeFOSA		68	10-150		92	10-150
d3-MeFOSAA		72	25-150		88	25-150
d7-MeFOSE		76	10-150		97	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-003**

Description: **MW-3** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2109	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.8	0.53	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.8	0.73	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.8	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**18**		**8.8**	**2.2**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.8	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.8	0.96	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.8	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.8	0.53	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.8	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.8	0.82	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.8	1.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.8	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.8	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.52**	**J**	**4.4**	**0.45**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.4	0.85	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.4	0.55	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.4	0.78	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.4	0.67	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.4	0.65	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.8	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.4	0.60	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**40**		**4.4**	**0.66**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.92**	**J**	**4.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.4	0.52	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**68**		**4.4**	**0.49**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.8	0.89	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**71**		**4.4**	**0.75**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**7.9**		**4.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.8	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**32**		**4.4**	**0.91**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**130**		**4.4**	**0.60**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.4	0.66	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.4	0.58	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.4	0.69	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.4	2.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		85	25-150
13C2_6:2FTS		77	25-150
13C2_8:2FTS		70	25-150
13C2_PFDoA		64	25-150
13C2_PFHxDA		42	25-150
13C2_PFTeDA		44	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-003**

Description: **MW-3** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		68	25-150
13C3_PFHxS		76	25-150
13C3-HFPO-DA		77	25-150
13C4_PFBA		76	25-150
13C4_PFHpA		80	25-150
13C5_PFHxA		76	25-150
13C5_PFPeA		77	25-150
13C6_PFDA		69	25-150
13C7_PFUdA		64	25-150
13C8_PFOA		76	25-150
13C8_PFOS		69	25-150
13C8_PFOSA		62	10-150
13C9_PFNA		72	25-150
d-EtFOSA		53	10-150
d5-EtFOSAA		69	25-150
d9-EtFOSE		53	10-150
d-MeFOSA		57	10-150
d3-MeFOSAA		66	25-150
d7-MeFOSE		68	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-004**

Description: **MW-4** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2131	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.6	0.63	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.6	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.6	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.6	0.83	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.6	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.6	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.6	0.71	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.6	0.91	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.2	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.6	0.89	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.6	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.8	0.39	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.74	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.68	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.6	0.99	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**27**		**3.8**	**0.57**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**34**		**3.8**	**0.43**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.6	0.78	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**72**		**3.8**	**0.65**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.6	0.95	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**6.9**		**3.8**	**0.79**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**120**		**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		102	25-150
13C2_6:2FTS		83	25-150
13C2_8:2FTS		75	25-150
13C2_PFDoA		73	25-150
13C2_PFHxDA		62	25-150
13C2_PFTeDA		59	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-004**

Description: **MW-4** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		69	25-150
13C3_PFHxS		73	25-150
13C3-HFPO-DA		82	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		88	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		83	25-150
13C6_PFDA		74	25-150
13C7_PFUdA		76	25-150
13C8_PFOA		80	25-150
13C8_PFOS		65	25-150
13C8_PFOSA		70	10-150
13C9_PFNA		82	25-150
d-EtFOSA		76	10-150
d5-EtFOSAA		68	25-150
d9-EtFOSE		65	10-150
d-MeFOSA		67	10-150
d3-MeFOSAA		71	25-150
d7-MeFOSE		64	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-005**

Description: **MW-5** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2141	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**1.7**	**J**	**6.8**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.8	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.8	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.8	0.81	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.8	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.90**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.8	0.89	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.8	0.70	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.8	0.85	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		94	25-150
13C2_6:2FTS		88	25-150
13C2_8:2FTS		77	25-150
13C2_PFDoA		74	25-150
13C2_PFHxDA		53	25-150
13C2_PFTeDA		58	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-005**

Description: **MW-5** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		69	25-150
13C3_PFHxS		75	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		79	25-150
13C7_PFUdA		74	25-150
13C8_PFOA		85	25-150
13C8_PFOS		62	25-150
13C8_PFOSA		85	10-150
13C9_PFNA		83	25-150
d-EtFOSA		84	10-150
d5-EtFOSAA		68	25-150
d9-EtFOSE		75	10-150
d-MeFOSA		77	10-150
d3-MeFOSAA		77	25-150
d7-MeFOSE		78	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-006**

Description: **MW-6** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2152	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		12	0.73	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		12	1.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		12	2.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		12	3.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		12	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		12	1.3	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		12	3.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		12	0.73	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		12	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		12	1.1	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		12	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		24	1.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		12	1.4	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		12	1.9	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		6.0	0.62	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		6.0	1.2	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		6.0	0.75	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		6.0	1.1	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		6.0	0.92	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		6.0	0.89	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		12	1.6	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		6.0	0.83	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**51**		**6.0**	**0.90**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		6.0	0.79	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		6.0	0.71	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**230**		**6.0**	**0.67**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		12	1.2	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**220**		**6.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**25**		**6.0**	**0.70**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		12	1.5	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**140**		**6.0**	**1.2**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**220**		**6.0**	**0.82**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		6.0	0.90	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		6.0	0.80	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		6.0	0.94	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		6.0	3.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		72	25-150
13C2_6:2FTS		58	25-150
13C2_8:2FTS		52	25-150
13C2_PFDoA		50	25-150
13C2_PFHxDA		28	25-150
13C2_PFTeDA		33	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-006**

Description: **MW-6** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		49	25-150
13C3_PFHxS		53	25-150
13C3-HFPO-DA		54	25-150
13C4_PFBA		57	25-150
13C4_PFHpA		60	25-150
13C5_PFHxA		59	25-150
13C5_PFPeA		57	25-150
13C6_PFDA		54	25-150
13C7_PFUdA		52	25-150
13C8_PFOA		53	25-150
13C8_PFOS		54	25-150
13C8_PFOSA		50	10-150
13C9_PFNA		55	25-150
d-EtFOSA		44	10-150
d5-EtFOSAA		51	25-150
d9-EtFOSE		42	10-150
d-MeFOSA		35	10-150
d3-MeFOSAA		53	25-150
d7-MeFOSE		46	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-007**

Description: **MW-7A** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2203	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		6.9	1.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		6.9	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		6.9	0.83	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		6.9	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		6.9	0.91	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.3**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		6.9	0.71	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**21**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		6.9	0.87	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**32**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		105	25-150
13C2_6:2FTS		86	25-150
13C2_8:2FTS		77	25-150
13C2_PFDoA		74	25-150
13C2_PFHxDA		58	25-150
13C2_PFTeDA		59	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-007**

Description: **MW-7A** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		73	25-150
13C3_PFHxS		78	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		91	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		82	25-150
13C7_PFUdA		77	25-150
13C8_PFOA		82	25-150
13C8_PFOS		68	25-150
13C8_PFOSA		84	10-150
13C9_PFNA		83	25-150
d-EtFOSA		81	10-150
d5-EtFOSAA		72	25-150
d9-EtFOSE		74	10-150
d-MeFOSA		87	10-150
d3-MeFOSAA		76	25-150
d7-MeFOSE		81	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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: **WD27072-008**

Description: **MW-7B** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/29/2021 2213	JJG	04/28/2021 1236	90445

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**660**		**7.3**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.3	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	**757124-72-4**	**PFAS by ID SOP**	**3.8**	**J**	**7.3**	**0.79**	**ng/L**	**1**
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.3	0.87	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.78**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.3	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**86**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**100**		**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.3	0.74	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**280**		**3.6**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.5**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.3	0.91	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**51**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**410**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		139	25-150
13C2_6:2FTS		90	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		69	25-150
13C2_PFHxDA		49	25-150
13C2_PFTeDA		53	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-008**

Description: **MW-7B** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		74	25-150
13C3_PFHxS		81	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		81	25-150
13C7_PFUdA		78	25-150
13C8_PFOA		84	25-150
13C8_PFOS		70	25-150
13C8_PFOSA		87	10-150
13C9_PFNA		87	25-150
d-EtFOSA		71	10-150
d5-EtFOSAA		71	25-150
d9-EtFOSE		67	10-150
d-MeFOSA		67	10-150
d3-MeFOSAA		79	25-150
d7-MeFOSE		76	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-009**

Description: **MW-8A** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2100	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**25**		**7.3**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.3	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.3	0.87	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.3	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.49**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.3	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**120**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**110**		**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.3	0.74	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**300**		**3.6**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.3	0.91	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**33**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**540**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		112	25-150
13C2_6:2FTS		91	25-150
13C2_8:2FTS		82	25-150
13C2_PFDoA		71	25-150
13C2_PFHxDA		63	25-150
13C2_PFTeDA		62	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-009**

Description: **MW-8A** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		74	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		82	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		84	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		83	25-150
13C7_PFUdA		71	25-150
13C8_PFOA		89	25-150
13C8_PFOS		77	25-150
13C8_PFOSA		75	10-150
13C9_PFNA		83	25-150
d-EtFOSA		71	10-150
d5-EtFOSAA		71	25-150
d9-EtFOSE		71	10-150
d-MeFOSA		74	10-150
d3-MeFOSAA		78	25-150
d7-MeFOSE		59	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-010**

Description: **MW-8B** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2111	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**17**		**7.0**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.0	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.0	0.84	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.0	0.92	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**12**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.0	0.72	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**29**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.44**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.0	0.88	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.4**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**52**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		146	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		78	25-150
13C2_PFDoA		67	25-150
13C2_PFHxDA		50	25-150
13C2_PFTeDA		50	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-010**

Description: **MW-8B** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		65	25-150
13C3_PFHxS		71	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		85	25-150
13C4_PFHpA		80	25-150
13C5_PFHxA		81	25-150
13C5_PFPeA		82	25-150
13C6_PFDA		75	25-150
13C7_PFUdA		67	25-150
13C8_PFOA		84	25-150
13C8_PFOS		64	25-150
13C8_PFOSA		81	10-150
13C9_PFNA		78	25-150
d-EtFOSA		77	10-150
d5-EtFOSAA		67	25-150
d9-EtFOSE		70	10-150
d-MeFOSA		78	10-150
d3-MeFOSAA		73	25-150
d7-MeFOSE		72	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-011**

Description: **MW-9P** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2121	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.3**	**J**	**8.0**	**2.0**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.0	1.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.0	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.0	1.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.0	0.95	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	1.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.93	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.0	1.3	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.41	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.55	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.68**	**J**	**4.0**	**0.60**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	0.45	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.0	0.82	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	0.69	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.46	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.0	1.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.0	0.83	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.61**	**J**	**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.0	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		96	25-150
13C2_6:2FTS		83	25-150
13C2_8:2FTS		74	25-150
13C2_PFDoA		56	25-150
13C2_PFHxDA		32	25-150
13C2_PFTeDA		39	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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: **WD27072-011**

Description: **MW-9P** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		66	25-150
13C3_PFHxS		71	25-150
13C3-HFPO-DA		82	25-150
13C4_PFBA		89	25-150
13C4_PFHpA		83	25-150
13C5_PFHxA		79	25-150
13C5_PFPeA		86	25-150
13C6_PFDA		75	25-150
13C7_PFUdA		64	25-150
13C8_PFOA		84	25-150
13C8_PFOS		59	25-150
13C8_PFOSA		73	10-150
13C9_PFNA		78	25-150
d-EtFOSA		70	10-150
d5-EtFOSAA		64	25-150
d9-EtFOSE		57	10-150
d-MeFOSA		56	10-150
d3-MeFOSAA		69	25-150
d7-MeFOSE		54	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-012**

Description: **Pond** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2132	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**29**		**7.0**	**1.4**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**140**		**7.0**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.0	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.0	0.84	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.0	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.52**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.0	0.92	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**79**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**170**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.0	0.72	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**210**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**37**		**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.0	0.88	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**200**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**360**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		132	25-150
13C2_6:2FTS		84	25-150
13C2_8:2FTS		78	25-150
13C2_PFDoA		76	25-150
13C2_PFHxDA		27	25-150
13C2_PFTeDA		43	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-012**

Description: **Pond** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		72	25-150
13C3_PFHxS		76	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		82	25-150
13C5_PFHxA		82	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		80	25-150
13C7_PFUdA		76	25-150
13C8_PFOA		81	25-150
13C8_PFOS		68	25-150
13C8_PFOSA		79	10-150
13C9_PFNA		83	25-150
d-EtFOSA		69	10-150
d5-EtFOSAA		79	25-150
d9-EtFOSE		61	10-150
d-MeFOSA		66	10-150
d3-MeFOSAA		78	25-150
d7-MeFOSE		60	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-013**

Description: **TB** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2143	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.7	0.52	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.7	0.72	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.7	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.7	2.2	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.7	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.7	0.95	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.7	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.7	0.53	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.7	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.7	0.82	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.7	1.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		17	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.7	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.7	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.3	0.45	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.3	0.85	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.3	0.54	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.3	0.77	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.3	0.67	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.7	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.3	0.60	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.3	0.51	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.3	0.49	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.7	0.89	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.3	0.75	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.3	0.50	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.7	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.3	0.90	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.3	0.59	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.3	0.57	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.3	0.68	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.3	2.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		89	25-150
13C2_6:2FTS		94	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		85	25-150
13C2_PFHxDA		90	25-150
13C2_PFTeDA		79	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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H = Out of holding time
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-013**

Description: **TB** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		77	25-150
13C3_PFHxS		89	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		91	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		85	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		84	25-150
13C8_PFOA		97	25-150
13C8_PFOS		82	25-150
13C8_PFOSA		87	10-150
13C9_PFNA		89	25-150
d-EtFOSA		106	10-150
d5-EtFOSAA		89	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		96	10-150
d3-MeFOSAA		85	25-150
d7-MeFOSE		76	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-014**

Description: **FB** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2153	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.9	0.54	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.9	0.74	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.9	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.9	2.2	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.9	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.9	0.98	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.9	2.3	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.9	0.54	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.9	1.5	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.9	0.84	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.9	1.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		18	1.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.9	1.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.9	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.5	0.46	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	0.87	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.5	0.56	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	0.79	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.5	0.68	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.5	0.66	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.9	1.2	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.5	0.62	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	0.53	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.5	0.50	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.9	0.91	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.5	0.77	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.5	0.52	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.9	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.5	0.93	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.5	0.61	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.5	0.67	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.5	0.59	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.5	0.70	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.5	2.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		89	25-150
13C2_6:2FTS		87	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		82	25-150
13C2_PFHxDA		90	25-150
13C2_PFTeDA		79	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-014**

Description: **FB** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		73	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		84	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		83	25-150
13C7_PFUdA		81	25-150
13C8_PFOA		92	25-150
13C8_PFOS		83	25-150
13C8_PFOSA		79	10-150
13C9_PFNA		84	25-150
d-EtFOSA		90	10-150
d5-EtFOSAA		85	25-150
d9-EtFOSE		82	10-150
d-MeFOSA		81	10-150
d3-MeFOSAA		83	25-150
d7-MeFOSE		82	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-015**

Description: **EB** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	05/01/2021 2204	JJG	04/29/2021 1146	90599

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	MDL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.5	0.51	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.5	0.71	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.5	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.5	2.1	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.5	1.3	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.5	0.93	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.5	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.5	0.51	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.5	1.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.5	0.80	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.5	1.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		17	1.3	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.5	0.99	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.5	1.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.3	0.44	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.3	0.83	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.3	0.53	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.3	0.76	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.3	0.65	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.3	0.63	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.5	1.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.3	0.59	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.3	0.56	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.3	0.50	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.3	0.48	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.5	0.87	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.3	0.73	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.3	0.49	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.5	1.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.3	0.88	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.3	0.58	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.3	0.64	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.3	0.56	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.3	0.67	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.3	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		98	25-150
13C2_6:2FTS		92	25-150
13C2_8:2FTS		84	25-150
13C2_PFDoA		78	25-150
13C2_PFHxDA		87	25-150
13C2_PFTeDA		75	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WD27072-015**

Description: **EB** Matrix: **Aqueous**

Date Sampled: **04/21/2021** Project Name: **WAGNER**

Date Received: **04/27/2021** Project Number: **40225702**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		77	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		93	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		75	25-150
13C8_PFOA		98	25-150
13C8_PFOS		75	25-150
13C8_PFOSA		76	10-150
13C9_PFNA		90	25-150
d-EtFOSA		99	10-150
d5-EtFOSAA		78	25-150
d9-EtFOSE		87	10-150
d-MeFOSA		81	10-150
d3-MeFOSAA		82	25-150
d7-MeFOSE		76	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ90445-001
Batch: 90445
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	04/29/2021 2027
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	04/29/2021 2027
8:2 FTS	ND		1	8.0	1.6	ng/L	04/29/2021 2027
6:2 FTS	ND		1	8.0	2.0	ng/L	04/29/2021 2027
10:2 FTS	ND		1	8.0	1.2	ng/L	04/29/2021 2027
4:2 FTS	ND		1	8.0	0.87	ng/L	04/29/2021 2027
GenX	ND		1	8.0	2.1	ng/L	04/29/2021 2027
ADONA	ND		1	8.0	0.48	ng/L	04/29/2021 2027
EtFOSA	ND		1	8.0	1.4	ng/L	04/29/2021 2027
EtFOSAA	ND		1	8.0	0.75	ng/L	04/29/2021 2027
EtFOSE	ND		1	8.0	0.95	ng/L	04/29/2021 2027
MeFOSA	ND		1	16	1.3	ng/L	04/29/2021 2027
MeFOSAA	ND		1	8.0	0.93	ng/L	04/29/2021 2027
MeFOSE	ND		1	8.0	1.3	ng/L	04/29/2021 2027
PFBS	ND		1	4.0	0.41	ng/L	04/29/2021 2027
PFDS	ND		1	4.0	0.78	ng/L	04/29/2021 2027
PFHpS	ND		1	4.0	0.50	ng/L	04/29/2021 2027
PFNS	ND		1	4.0	0.71	ng/L	04/29/2021 2027
PFOSA	ND		1	4.0	0.61	ng/L	04/29/2021 2027
PFPeS	ND		1	4.0	0.59	ng/L	04/29/2021 2027
PFDOS	ND		1	8.0	1.0	ng/L	04/29/2021 2027
PFHxS	ND		1	4.0	0.55	ng/L	04/29/2021 2027
PFBA	ND		1	4.0	0.60	ng/L	04/29/2021 2027
PFDA	ND		1	4.0	0.52	ng/L	04/29/2021 2027
PFDoA	ND		1	4.0	0.47	ng/L	04/29/2021 2027
PFHpA	ND		1	4.0	0.45	ng/L	04/29/2021 2027
PFHxDA	ND		1	8.0	0.82	ng/L	04/29/2021 2027
PFHxA	ND		1	4.0	0.69	ng/L	04/29/2021 2027
PFNA	ND		1	4.0	0.46	ng/L	04/29/2021 2027
PFODA	ND		1	8.0	1.0	ng/L	04/29/2021 2027
PFOA	ND		1	4.0	0.83	ng/L	04/29/2021 2027
PFPeA	ND		1	4.0	0.54	ng/L	04/29/2021 2027
PFTeDA	ND		1	4.0	0.60	ng/L	04/29/2021 2027
PFTrDA	ND		1	4.0	0.53	ng/L	04/29/2021 2027
PFUdA	ND		1	4.0	0.63	ng/L	04/29/2021 2027
PFOS	ND		1	4.0	2.0	ng/L	04/29/2021 2027

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		80	25-150
13C2_6:2FTS		80	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		89	25-150
13C2_PFHxDA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90445-001
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		82	25-150
13C3_PFBS		73	25-150
13C3_PFHxS		79	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		85	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		80	25-150
13C8_PFOA		88	25-150
13C8_PFOS		81	25-150
13C8_PFOSA		84	10-150
13C9_PFNA		82	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		82	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		71	10-150
d3-MeFOSAA		88	25-150
d7-MeFOSE		87	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90445-002
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	95	50-150	04/29/2021 2037
11Cl-PF3OUdS	15	14		1	95	50-150	04/29/2021 2037
8:2 FTS	15	12		1	81	50-150	04/29/2021 2037
6:2 FTS	15	14		1	93	50-150	04/29/2021 2037
10:2 FTS	15	15		1	96	50-150	04/29/2021 2037
4:2 FTS	15	13		1	84	50-150	04/29/2021 2037
GenX	32	32		1	99	50-150	04/29/2021 2037
ADONA	15	15		1	99	50-150	04/29/2021 2037
EtFOSA	16	15		1	93	50-150	04/29/2021 2037
EtFOSAA	16	15		1	94	50-150	04/29/2021 2037
EtFOSE	16	13		1	80	50-150	04/29/2021 2037
MeFOSA	16	14		1	88	50-150	04/29/2021 2037
MeFOSAA	16	16		1	100	50-150	04/29/2021 2037
MeFOSE	16	17		1	104	50-150	04/29/2021 2037
PFBS	14	15		1	108	50-150	04/29/2021 2037
PFDS	15	15		1	94	50-150	04/29/2021 2037
PFHpS	15	14		1	90	50-150	04/29/2021 2037
PFNS	15	15		1	101	50-150	04/29/2021 2037
PFOSA	16	14		1	90	50-150	04/29/2021 2037
PFPeS	15	18		1	117	50-150	04/29/2021 2037
PFDOS	15	14		1	87	50-150	04/29/2021 2037
PFHxS	15	14		1	96	50-150	04/29/2021 2037
PFBA	16	15		1	91	50-150	04/29/2021 2037
PFDA	16	16		1	99	50-150	04/29/2021 2037
PFDoA	16	16		1	101	50-150	04/29/2021 2037
PFHpA	16	15		1	91	50-150	04/29/2021 2037
PFHxDA	16	12		1	78	50-150	04/29/2021 2037
PFHxA	16	15		1	92	50-150	04/29/2021 2037
PFNA	16	15		1	93	50-150	04/29/2021 2037
PFODA	16	13		1	78	50-150	04/29/2021 2037
PFOA	16	16		1	99	50-150	04/29/2021 2037
PFPeA	16	15		1	93	50-150	04/29/2021 2037
PFTeDA	16	16		1	98	50-150	04/29/2021 2037
PFTrDA	16	15		1	94	50-150	04/29/2021 2037
PFUdA	16	15		1	94	50-150	04/29/2021 2037
PFOS	15	14		1	95	50-150	04/29/2021 2037

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		90	25-150
13C2_6:2FTS		85	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		87	25-150
13C2_PFHxDA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90445-002
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		79	25-150
13C3_PFBS		74	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		89	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		85	25-150
13C8_PFOA		84	25-150
13C8_PFOS		84	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		87	25-150
d-EtFOSA		74	10-150
d5-EtFOSAA		86	25-150
d9-EtFOSE		91	10-150
d-MeFOSA		67	10-150
d3-MeFOSAA		88	25-150
d7-MeFOSE		90	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: WD27072-002DU
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	05/01/2021 1541
11Cl-PF3OUdS	ND	ND		1	0.00	20	05/01/2021 1541
8:2 FTS	30	24	+	1	21	20	05/01/2021 1541
6:2 FTS	910	970		1	6.8	20	05/01/2021 1541
10:2 FTS	ND	ND		1	0.00	20	05/01/2021 1541
4:2 FTS	5.6	4.8	J	1	16	20	05/01/2021 1541
GenX	ND	ND		1	0.00	20	05/01/2021 1541
ADONA	ND	ND		1	0.00	20	05/01/2021 1541
EtFOSA	ND	ND		1	0.00	20	05/01/2021 1541
EtFOSAA	ND	ND		1	0.00	20	05/01/2021 1541
EtFOSE	ND	ND		1	0.00	20	05/01/2021 1541
MeFOSA	ND	ND		1	0.00	20	05/01/2021 1541
MeFOSAA	ND	ND		1	0.00	20	05/01/2021 1541
MeFOSE	ND	ND		1	0.00	20	05/01/2021 1541
PFBS	ND	ND		1	0.00	20	05/01/2021 1541
PFDS	ND	ND		1	0.00	20	05/01/2021 1541
PFHpS	ND	ND		1	0.00	20	05/01/2021 1541
PFNS	ND	ND		1	0.00	20	05/01/2021 1541
PFOSA	ND	ND		1	0.00	20	05/01/2021 1541
PFPeS	ND	ND		1	0.00	20	05/01/2021 1541
PFDOS	ND	ND		1	0.00	20	05/01/2021 1541
PFHxS	ND	ND		1	0.00	20	05/01/2021 1541
PFBA	60	69		1	15	20	05/01/2021 1541
PFDA	ND	ND		1	0.00	20	05/01/2021 1541
PFDoA	ND	ND		1	0.00	20	05/01/2021 1541
PFHpA	250	250		1	1.6	20	05/01/2021 1541
PFHxDA	ND	ND		1	0.00	20	05/01/2021 1541
PFHxA	440	450		1	2.4	20	05/01/2021 1541
PFNA	21	21		1	0.89	20	05/01/2021 1541
PFODA	ND	ND		1	0.00	20	05/01/2021 1541
PFOA	120	120		1	3.2	20	05/01/2021 1541
PFPeA	780	790		1	1.3	20	05/01/2021 1541
PFTeDA	ND	ND		1	0.00	20	05/01/2021 1541
PFTrDA	ND	ND		1	0.00	20	05/01/2021 1541
PFUdA	ND	ND		1	0.00	20	05/01/2021 1541
PFOS	ND	ND		1	0.00	20	05/01/2021 1541

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		117	25-150
13C2_6:2FTS		93	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		99	25-150
13C2_PFHxDA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: WD27072-002DU
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		87	25-150
13C3_PFBS		86	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		92	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		97	25-150
13C8_PFOS		94	25-150
13C8_PFOSA		80	10-150
13C9_PFNA		94	25-150
d-EtFOSA		106	10-150
d5-EtFOSAA		95	25-150
d9-EtFOSE		102	10-150
d-MeFOSA		103	10-150
d3-MeFOSAA		90	25-150
d7-MeFOSE		87	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WD27072-003MS
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	15	15		1	97	50-150	04/29/2021 2120
11Cl-PF3OUdS	ND	15	13		1	86	50-150	04/29/2021 2120
8:2 FTS	ND	15	15		1	99	50-150	04/29/2021 2120
6:2 FTS	18	15	33		1	101	50-150	04/29/2021 2120
10:2 FTS	ND	15	15		1	100	50-150	04/29/2021 2120
4:2 FTS	ND	15	13		1	89	50-150	04/29/2021 2120
GenX	ND	32	34		1	106	50-150	04/29/2021 2120
ADONA	ND	15	16		1	105	50-150	04/29/2021 2120
EtFOSA	ND	16	14		1	90	50-150	04/29/2021 2120
EtFOSAA	ND	16	18		1	110	50-150	04/29/2021 2120
EtFOSE	ND	16	14		1	86	50-150	04/29/2021 2120
MeFOSA	ND	16	16		1	101	50-150	04/29/2021 2120
MeFOSAA	ND	16	17		1	106	50-150	04/29/2021 2120
MeFOSE	ND	16	17		1	105	50-150	04/29/2021 2120
PFBS	0.52	14	16		1	108	50-150	04/29/2021 2120
PFDS	ND	15	13		1	85	50-150	04/29/2021 2120
PFHpS	ND	15	15		1	99	50-150	04/29/2021 2120
PFNS	ND	15	15		1	95	50-150	04/29/2021 2120
PFOSA	ND	16	16		1	100	50-150	04/29/2021 2120
PFPeS	ND	15	16		1	109	50-150	04/29/2021 2120
PFDOS	ND	15	9.5		1	61	50-150	04/29/2021 2120
PFHxS	ND	15	15		1	106	50-150	04/29/2021 2120
PFBA	40	16	54		1	90	50-150	04/29/2021 2120
PFDA	0.92	16	18		1	107	50-150	04/29/2021 2120
PFDoA	ND	16	16		1	101	50-150	04/29/2021 2120
PFHpA	68	16	78		1	64	50-150	04/29/2021 2120
PFHxDA	ND	16	13		1	84	50-150	04/29/2021 2120
PFHxA	71	20	84		1	63	50-150	04/29/2021 2120
PFNA	7.9	16	24		1	101	50-150	04/29/2021 2120
PFODA	ND	16	14		1	87	50-150	04/29/2021 2120
PFOA	32	16	49		1	105	50-150	04/29/2021 2120
PFPeA	130	16	140		1	58	50-150	04/29/2021 2120
PFTeDA	ND	16	16		1	100	50-150	04/29/2021 2120
PFTrDA	ND	16	13		1	82	50-150	04/29/2021 2120
PFUdA	ND	16	17		1	107	50-150	04/29/2021 2120
PFOS	ND	15	15		1	102	50-150	04/29/2021 2120

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		91	25-150
13C2_6:2FTS		76	25-150
13C2_8:2FTS		68	25-150
13C2_PFDoA		63	25-150
13C2_PFHxDA		41	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WD27072-003MS
Batch: 90445
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/28/2021 1236

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		41	25-150
13C3_PFBS		69	25-150
13C3_PFHxS		70	25-150
13C3-HFPO-DA		74	25-150
13C4_PFBA		75	25-150
13C4_PFHpA		80	25-150
13C5_PFHxA		75	25-150
13C5_PFPeA		78	25-150
13C6_PFDA		68	25-150
13C7_PFUdA		63	25-150
13C8_PFOA		72	25-150
13C8_PFOS		68	25-150
13C8_PFOSA		64	10-150
13C9_PFNA		71	25-150
d-EtFOSA		46	10-150
d5-EtFOSAA		62	25-150
d9-EtFOSE		46	10-150
d-MeFOSA		52	10-150
d3-MeFOSAA		67	25-150
d7-MeFOSE		52	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90599-001
Batch: 90599
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/29/2021 1146

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	05/01/2021 2007
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	05/01/2021 2007
8:2 FTS	ND		1	8.0	1.6	ng/L	05/01/2021 2007
6:2 FTS	ND		1	8.0	2.0	ng/L	05/01/2021 2007
10:2 FTS	ND		1	8.0	1.2	ng/L	05/01/2021 2007
4:2 FTS	ND		1	8.0	0.87	ng/L	05/01/2021 2007
GenX	ND		1	8.0	2.1	ng/L	05/01/2021 2007
ADONA	ND		1	8.0	0.48	ng/L	05/01/2021 2007
EtFOSA	ND		1	8.0	1.4	ng/L	05/01/2021 2007
EtFOSAA	ND		1	8.0	0.75	ng/L	05/01/2021 2007
EtFOSE	ND		1	8.0	0.95	ng/L	05/01/2021 2007
MeFOSA	ND		1	16	1.3	ng/L	05/01/2021 2007
MeFOSAA	ND		1	8.0	0.93	ng/L	05/01/2021 2007
MeFOSE	ND		1	8.0	1.3	ng/L	05/01/2021 2007
PFBS	ND		1	4.0	0.41	ng/L	05/01/2021 2007
PFDS	ND		1	4.0	0.78	ng/L	05/01/2021 2007
PFHpS	ND		1	4.0	0.50	ng/L	05/01/2021 2007
PFNS	ND		1	4.0	0.71	ng/L	05/01/2021 2007
PFOSA	ND		1	4.0	0.61	ng/L	05/01/2021 2007
PFPeS	ND		1	4.0	0.59	ng/L	05/01/2021 2007
PFDOS	ND		1	8.0	1.0	ng/L	05/01/2021 2007
PFHxS	ND		1	4.0	0.55	ng/L	05/01/2021 2007
PFBA	ND		1	4.0	0.60	ng/L	05/01/2021 2007
PFDA	ND		1	4.0	0.52	ng/L	05/01/2021 2007
PFDoA	ND		1	4.0	0.47	ng/L	05/01/2021 2007
PFHpA	ND		1	4.0	0.45	ng/L	05/01/2021 2007
PFHxDA	ND		1	8.0	0.82	ng/L	05/01/2021 2007
PFHxA	ND		1	4.0	0.69	ng/L	05/01/2021 2007
PFNA	ND		1	4.0	0.46	ng/L	05/01/2021 2007
PFODA	ND		1	8.0	1.0	ng/L	05/01/2021 2007
PFOA	ND		1	4.0	0.83	ng/L	05/01/2021 2007
PFPeA	ND		1	4.0	0.54	ng/L	05/01/2021 2007
PFTeDA	ND		1	4.0	0.60	ng/L	05/01/2021 2007
PFTrDA	ND		1	4.0	0.53	ng/L	05/01/2021 2007
PFUdA	ND		1	4.0	0.63	ng/L	05/01/2021 2007
PFOS	ND		1	4.0	2.0	ng/L	05/01/2021 2007

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		89	25-150
13C2_6:2FTS		89	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		89	25-150
13C2_PFHxDA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90599-001
Batch: 90599
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/29/2021 1146

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		83	25-150
13C3_PFBS		79	25-150
13C3_PFHxS		89	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		92	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		91	25-150
13C6_PFDA		89	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		98	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		87	10-150
13C9_PFNA		89	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		93	25-150
d9-EtFOSE		95	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		93	25-150
d7-MeFOSE		81	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90599-002
Batch: 90599
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/29/2021 1146

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	92	50-150	05/01/2021 2017
11Cl-PF3OUdS	15	13		1	86	50-150	05/01/2021 2017
8:2 FTS	15	17		1	109	50-150	05/01/2021 2017
6:2 FTS	15	15		1	99	50-150	05/01/2021 2017
10:2 FTS	15	16		1	106	50-150	05/01/2021 2017
4:2 FTS	15	13		1	90	50-150	05/01/2021 2017
GenX	32	33		1	103	50-150	05/01/2021 2017
ADONA	15	15		1	97	50-150	05/01/2021 2017
EtFOSA	16	14		1	89	50-150	05/01/2021 2017
EtFOSAA	16	14		1	85	50-150	05/01/2021 2017
EtFOSE	16	13		1	84	50-150	05/01/2021 2017
MeFOSA	16	15		1	93	50-150	05/01/2021 2017
MeFOSAA	16	16		1	100	50-150	05/01/2021 2017
MeFOSE	16	15		1	93	50-150	05/01/2021 2017
PFBS	14	15		1	108	50-150	05/01/2021 2017
PFDS	15	14		1	94	50-150	05/01/2021 2017
PFHpS	15	14		1	92	50-150	05/01/2021 2017
PFNS	15	16		1	103	50-150	05/01/2021 2017
PFOSA	16	15		1	97	50-150	05/01/2021 2017
PFPeS	15	17		1	111	50-150	05/01/2021 2017
PFDOS	15	13		1	87	50-150	05/01/2021 2017
PFHxS	15	14		1	98	50-150	05/01/2021 2017
PFBA	16	15		1	95	50-150	05/01/2021 2017
PFDA	16	15		1	91	50-150	05/01/2021 2017
PFDoA	16	15		1	94	50-150	05/01/2021 2017
PFHpA	16	16		1	99	50-150	05/01/2021 2017
PFHxDA	16	13		1	80	50-150	05/01/2021 2017
PFHxA	16	16		1	99	50-150	05/01/2021 2017
PFNA	16	15		1	96	50-150	05/01/2021 2017
PFODA	16	15		1	91	50-150	05/01/2021 2017
PFOA	16	16		1	101	50-150	05/01/2021 2017
PFPeA	16	16		1	98	50-150	05/01/2021 2017
PFTeDA	16	16		1	98	50-150	05/01/2021 2017
PFTrDA	16	17		1	104	50-150	05/01/2021 2017
PFUdA	16	15		1	96	50-150	05/01/2021 2017
PFOS	15	14		1	96	50-150	05/01/2021 2017

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		85	25-150
13C2_6:2FTS		89	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		86	25-150
13C2_PFHxDA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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: WQ90599-002
Batch: 90599
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/29/2021 1146

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		82	25-150
13C3_PFBS		74	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		86	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		85	25-150
13C5_PFPeA		85	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		84	25-150
13C8_PFOA		88	25-150
13C8_PFOS		88	25-150
13C8_PFOSA		85	10-150
13C9_PFNA		87	25-150
d-EtFOSA		83	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		79	10-150
d3-MeFOSAA		89	25-150
d7-MeFOSE		86	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = 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

Internal Transfer Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: [X] Yes ☐ No
Owner Received Date: 4/23/2021 Results Requested By: 5/14/2021

Workorder: 40225702 **Workorder Name:** WAGNER

WD27072

KLC2

Report To	Subcontract To	Requested Analysis
Brian Bastian Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 108 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700	

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	PFAS WI 36	LAB USE ONLY
1	MW-1	PS	4/21/2021 00:00	40225702001	Water	2	X	
2	MW-2	PS	4/21/2021 00:00	40225702002	Water	2	X	
3	MW-3	PS	4/21/2021 00:00	40225702003	Water	2	X	
4	MW-4	PS	4/21/2021 00:00	40225702004	Water	2	X	
5	MW-5	PS	4/21/2021 00:00	40225702005	Water	2	X	
6	MW-6	PS	4/21/2021 00:00	40225702006	Water	2	X	
7	MW-7A	PS	4/21/2021 00:00	40225702007	Water	2	X	
8	MW-7B	PS	4/21/2021 00:00	40225702008	Water	2	X	
9	MW-8A	PS	4/21/2021 00:00	40225702009	Water	2	X	
10	MW-8B	PS	4/21/2021 00:00	40225702010	Water	2	X	
11	MW-9P	PS	4/21/2021 00:00	40225702011	Water	2	X	
12	POND	PS	4/21/2021 00:00	40225702012	Water	2	X	
13	TB	PS	4/21/2021 00:00	40225702013	Water	2	X	
14	FB	PS	4/21/2021 00:00	40225702014	Water	2	X	
15	EB	PS	4/21/2021 00:00	40225702015	Water	2	X	

mH 4/23/21

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

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1		4/22/21 1600			
2					
3	UPS	4/23/21 0949		4/23/21 0949	

Cooler Temperature on Receipt 4.0 °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.

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

PACE ANALYTICAL SERVICES, LLC

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

Page 1 of 1 2

40225702

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:	Meridian Env. Cslt
Branch/Location:	
Project Contact:	Ken Shimko
Phone:	715-832-6608
Project Number:	
Project Name:	Wagner
Project State:	WI
Sampled By (Print):	Ken Shimko
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ken Shimko
Mail To Company:	Meridian Env. Cslt
Mail To Address:	2711 N. Elcho Rd Fall Creek WI 54742
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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
SL = Sludge WP = Wipe

FILTERED? (Y/N)
PRESERVATION (CODE)*
Analyses Requested: PFAS - WI 336

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Pick Letter	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-1	4/21		W	X			
002	-2							
003	-3							
004	-4							
005	-5							
006	-6							
007	-7A							
008	-7B							
009	-8A							
010	-8B							
011	-9P							
012	Pond							

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:
	4/22/21		4/22/21
Relinquished By:	Date/Time:	Received By:	Date/Time:
	4-23-21 1100		4-23-21 1100
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.
40225702

Receipt Temp = 1.0 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 5.0 05/14/08

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CHAIN OF CUSTODY

40225702

*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:	Meridian Rus Cs Inc
Branch/Location:	
Project Contact:	Ken Shimko
Phone:	715-832-6608
Project Number:	
Project Name:	Wagner
Project State:	WI
Sampled By (Print):	Ken Shimko
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ken Shimko
Mail To Company:	Meridian Rus & Env.
Mail To Address:	2711 N. Elco Rd Fall Creek, WI. 54742
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Date 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 = Wipe

FILTERED? (Y/N)
PRESERVATION (CODE)*
Analyses Requested
PFAS-WI 36

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX			CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
013	TB	4/21		WG		X			
014	FB	↓		↓		X			
015	EB	↓		↓		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:
	4/22/21	Fed Ex	4/22/21
Relinquished By:	Date/Time:	Received By:	Date/Time:
Ted Braund	4/23/21 1100		
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.
40225702

Receipt Temp = 1.0 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / ~~Not Present~~
Intact / ~~Not Intact~~

Version 6.0 06/14/18

ORIGINAL

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

Sample Preservation Receipt Form

Client Name: Meridian Env. Csltg Project # 60225702

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: 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										2																							2.5 / 5 / 10
002										2																							2.5 / 5 / 10
003										2																							2.5 / 5 / 10
004										2																							2.5 / 5 / 10
005										2																							2.5 / 5 / 10
006										2																							2.5 / 5 / 10
007										2																							2.5 / 5 / 10
008										2																							2.5 / 5 / 10
009										2																							2.5 / 5 / 10
010										2																							2.5 / 5 / 10
011										2																							2.5 / 5 / 10
012										2																							2.5 / 5 / 10
013										1																							2.5 / 5 / 10
014										1																							2.5 / 5 / 10
015										1																							2.5 / 5 / 10
016										1																							2.5 / 5 / 10
017										1																							2.5 / 5 / 10
018										1																							2.5 / 5 / 10
019										1																							2.5 / 5 / 10
020										1																							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	

F-GB-C-046-Rev.03 (11Feb2020) Sample Preservation Receipt Form

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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# : 40225702**

40225702

Client Name: Meridian Env. Cslts

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

Tracking #: Mstr#: 7782 9463 4311

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 cardboard, paper box

Thermometer Used SR - 99 **Type of Ice:** Wet (Blue) Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 1.0 /Corr: 1.0

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

Person examining contents: Date: 4-23-21 /Initials: MLR

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. 4°C MLR 4-23-21
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. Invoice, pres, collection time 2 proj # MLR 4-23-21
Chain of Custody Relinquished: MLR 4-23-21	☒Yes ☐No ☐N/A	3. no time MLR 4-23-21
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. -013-015: lab received (1) 5/31. MLR 4-23-21
Sufficient Volume:		8. 014 x 250 mL Adequate MLR 4-23-21
For Analysis: ☐Yes ☒No MS/MSD: ☐Yes ☒No ☐N/A		volume per lab perform. MLR 4-23-21
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. -011 MLR 4-23-21
Sample Labels match COC:	☐Yes ☒No ☐N/A	12. no dates. 001 ~~001~~ IDs missing "MW-" MLR 4-23-21
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

If checked, see attached form for additional comments ☐

Client Notification/ Resolution:
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

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Pace Cooler Inspected by/date: JRG2 / 04/27/2021 Lot #: WD27073

Means of receipt: ☐ Pace ☐ 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: NA

4.0 / 4.0 °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/625.1/608.3 (< 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 #

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: MEJ1 Date: 04/27/2021

Comments: