Moraine Environmental, Inc.
Design • Engineer • Construct

August 25, 2023

Proj. Ref. #5323

John Feeney
WDNR SE Region
1155 Pilgrim Road
Plymouth, WI 53073

RE: Status Report & Proposed Additional Investigative Activities
Thiensville Highway Department Site
132 W Freistadt Road, Thiensville, WI
BRRTS #02-46-000366

Dear Mr. Feeney,

Moraine Environmental, Inc. (Moraine) has completed the activities discussed in our September 20, 2022 "Status Report & Proposed Additional Investigative Activities" letter report. The intent of recently completed work items was to 1) define the extent of polycyclic aromatic hydrocarbon (PAH) soil contamination in the direct contact zone (upper 4' of soil column) in select areas, 2) confirm identified shallow PAH soil contaminants were not a source of groundwater PAH contamination, and 3) assess the impact to soil & groundwater for per- and polyfluoroalkyl substances (PFAS) at the north end of the yard in the firefighting practice area. As previously mentioned, the Village of Thiensville no longer allows the use of foams for firefighting practice sessions.

SUMMARY OF FIELD ACTIVITIES

Moraine supervised installation of 11 soil probes, completed by Horizon Construction & Exploration, on December 21, 2022. Nine (9) soil probes were completed to 5 feet below ground surface (bgs). One soil probe was completed to 10 feet bgs and converted to a small diameter well (SD-25). One 3.25" dual tube probe was completed to 30' bgs and converted to a piezometer (PZ-1) constructed with a 5' screen and 25' of riser. PZ-1 was nested with small diameter well SD/B6, the location with the most elevated shallow groundwater PFAS previously identified, and directly within the former firefighting area where PFAS containing foams had been used. Moraine returned to the site on January 4, 2023, and completed groundwater monitoring, as described in our September 2022 report.

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Soil probe and well locations are provided on Figure B.1.b. in **Attachment A**. Tabulated data tables are provided in **Attachment B**. Boring logs, abandonment forms, and well construction forms are provided in **Attachment C**. Laboratory analytical reports are provided in **Attachment D**.

PAH ASSESSMENT

Soil probes SP-16, 17, and SP-25 were installed to assess unsaturated soil PAH constituents. SP-25 was converted to a small diameter well and used to assess PFAS groundwater quality.

Soil PAH results indicated extents are defined at SP-25 in the northwestern investigated area, yet remain undefined at SP-16 and SP-17, both located along the eastern portion of the investigated interval. Rather than continue with the PAH soil investigation, Moraine recommends defining the PAH contaminated fill extents to the property boundary.

Groundwater PAH analysis was completed for a third time at SD/B28 on January 4, 2023, as B28 contained the most elevated unsaturated PAH soil constituents, with several compounds above industrial direct contact RCLs. Groundwater analysis resulted in a naphthalene detection of 0.29 J ug/L, well below its PAL of 10 ug/L. Moraine recommends no additional soil or groundwater investigation of PAHs.

GROUNDWATER LEAD ASSESSMENT

Moraine had lead analysis performed on groundwater samples collected from small diameter wells SD/B1, SD/B3, and B-4 due to soil lead concentrations at each location above the groundwater pathway RCL. Lead was not detected in shallow groundwater from samples collected at each of SD/B1, SD/B3, and B-4. Therefore, we recommend no additional groundwater lead analysis.

PFAS ASSESSMENT

Soil PFAS analysis was performed on 11 soil samples collected from eight (8) locations. One soil sample each at SP-18 through SP-24, from 3-4 feet bgs, was analyzed for PFAS. Four (4) samples from PZ-1 (3-4', 9-10', 19-20', and 29-30') were analyzed for PFAS. PFOS was detected in each of the shallow soil probe locations, as well as at PZ-1 (3-4) and PZ-1 (9-10). No sample results exceeded the non-industrial direct contact RCL established for both PFOS and PFOA of 1,260 µg/kg. The most elevated PFOS detections observed were at SP-18 (110 µg/kg) on the western side of the PFAS soil investigation, and at SP-24 (210 µg/kg) on the east side of the PFAS soil investigation area. PFAS soil results are provided in Table A.2. and represented on Figure B.2.a.

Groundwater PFAS analysis was completed on January 4, 2023, on water samples collected from nested wells SD/B6 & PZ-1, and new small diameter well SD-25. PFOS was detected in groundwater from SD/B6 at 3,000 nanograms per liter (ng/L), a proposed ES exceedance; groundwater analysis on the sample collected at PZ-1, nested with SD/B6 resulted in PFOS detected at 5 ng/L, a proposed PAL exceedance. Analysis of the groundwater sample collected from new small diameter well SD-25 resulted in a PFOS detection of 980 ng/L, above the proposed ES. PFAS groundwater analytical results and proposed WDNR PFAS standards are provided in Table A.1. The distribution of groundwater PFAS results over the past three (3) sampling events is provided in Figure B.3.b.

SUMMARY & RECOMMENDATIONS

Moraine recommends no additional soil or groundwater investigation for VOCs, PAHs or metals on the subject property. Extents of VOCs, PAHs, and metals at this fill site can be defined to the property boundary.

Groundwater PFAS extents need yet be determined. At this time, Moraine recommends installation of NR141 groundwater monitoring wells at six (6) locations to consist of three (3) new well locations to the north and west of SD-25, which had a PFOS detection of 980 ng/L in January 2023, and at three (3) additional locations to include: 1) near SD/B1 on the southern side of the PFAS plume, 2) near SP/SD-13 on the eastern side of the PFAS plume, and 3) at SD/B3 near the center of the proposed ES extents within the PFAS plume. One soil sample from each of the three wells installed north and west of SD-25 and at the well installed near SP/SD-13 will have one soil sample collected and analyzed for PFAS from near the water table interface (3-4 feet bgs).

Upon completion of NR141 well installations, Moraine proposes groundwater sample collection with PFAS analysis at nine locations including the six (6) new NR 141 wells plus at SP/SD-14, SP/SD-25, and the well/piezo nest of SD/B6 and PZ-1. The initial data will be reviewed, and a brief summary report of findings and additional recommendations will be made, as necessary. If the groundwater PFAS extents are defined with the first post NR141 well installation sampling event, then conduct a second similar event three months later, to confirm the initial results. If warranted, a site investigation report can be submitted to the WDNR for a fee-based review.

If you have any questions, please contact us.

Sincerely,
Moraine Environmental, Inc.

David M. Lennon, P.E.
Senior Project Manager

Thomas C. Sweet
President

Attachments

cc: Andy Lafond, Village of Thiensville

ATTACHMENT A

Figures

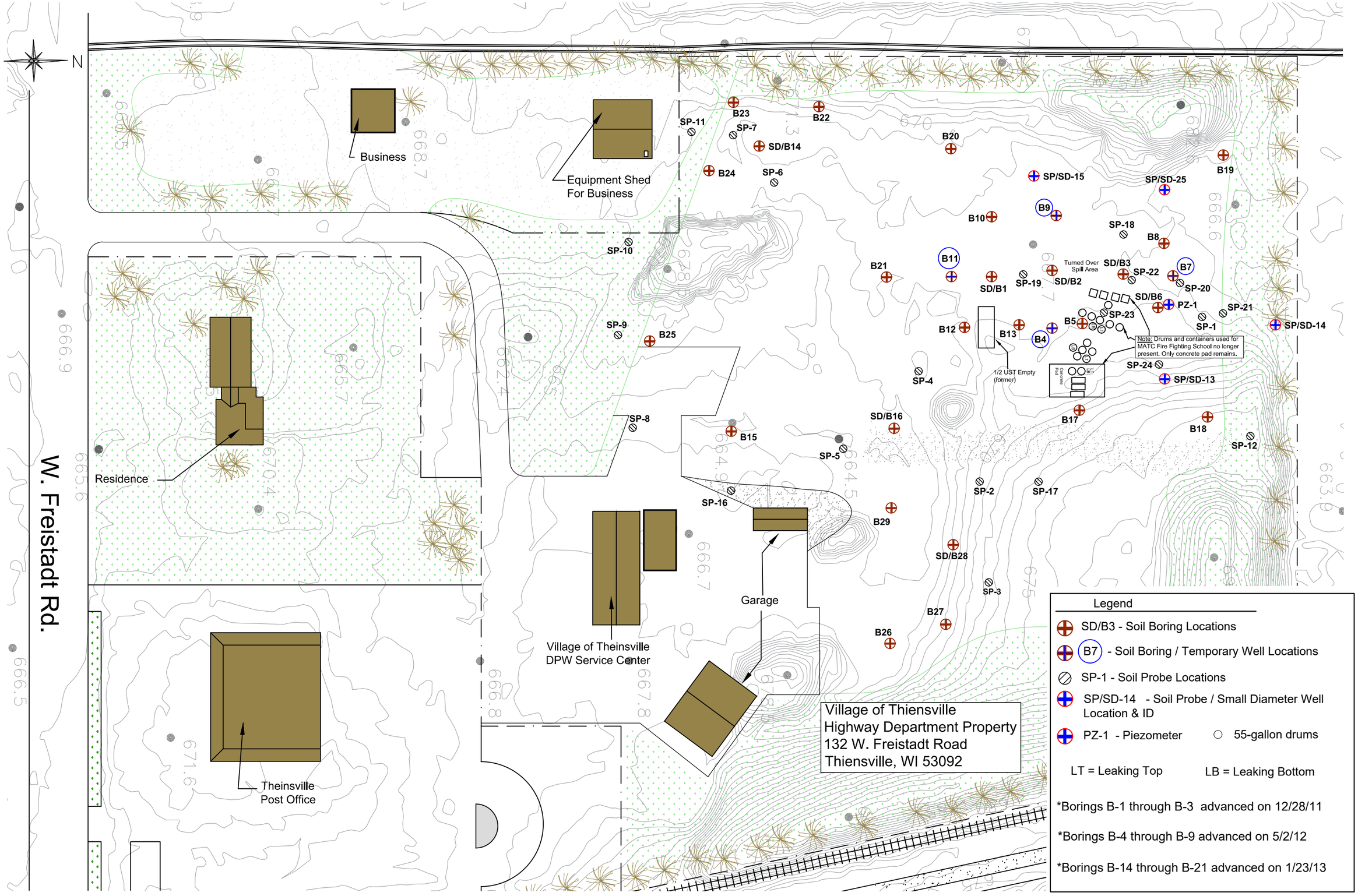

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FIGURE B.1.b
DETAILED SITE MAP

VILLAGE OF THIENSVILLE - DPW SERVICE CENTER
132 W. FREISTADT RD., THIENSVILLE, WI 53092

Graphic Scale 0 50'

Revised by CTS
Revised: 8.1.23

Project File: Mettet\53\5323 Working.dwg

*Note: Depiction prepared from field notes and measurements. Base Contour Map obtained from the City of Mequon Public Works Department.

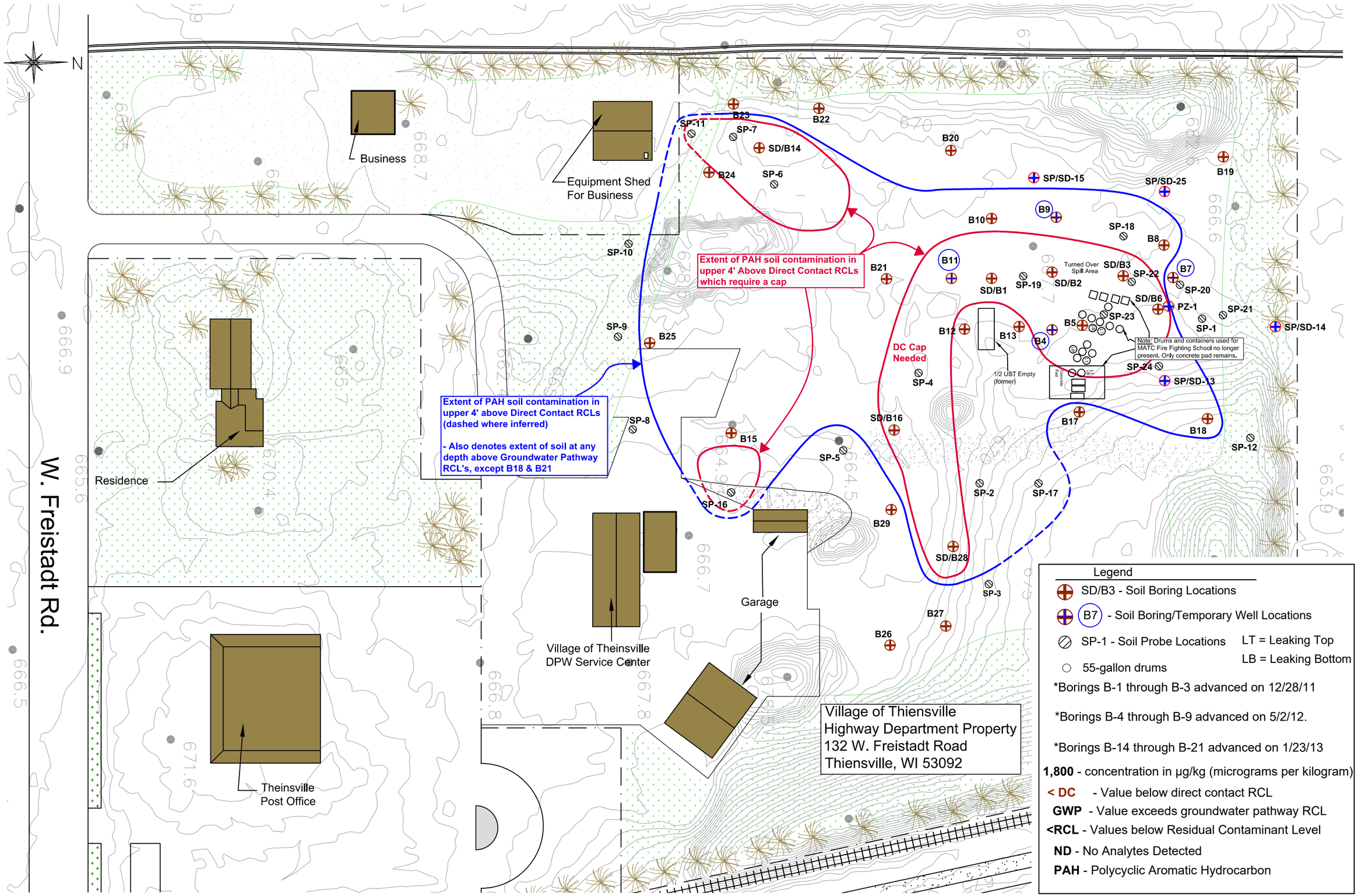

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FIGURE B.2.a.
SOIL CONTAMINATION (PAH)

VILLAGE OF THIENSVILLE - DPW SERVICE CENTER
132 W. FREISTADT RD., THIENSVILLE, WI 53092

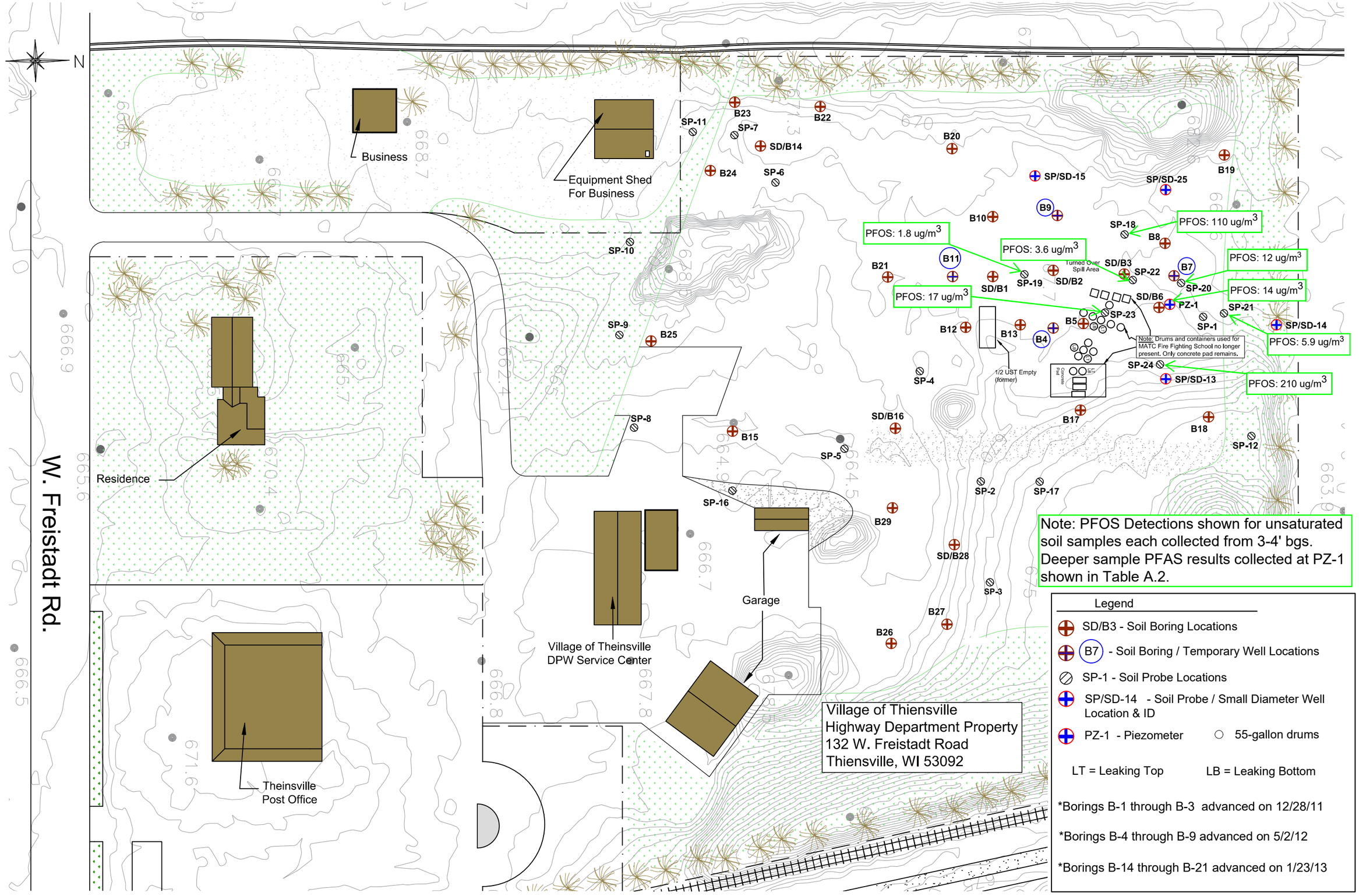

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FIGURE B.2.a.
SOIL CONTAMINATION - PFAS (PFOS)

VILLAGE OF THIENSVILLE - DPW SERVICE CENTER
132 W. FREISTADT RD., THIENSVILLE, WI 53092

Graphic Scale 0 50'

Project File: Meter453, 5323 Working.dwg
Revised: 7.24.23
Revised by CTS

*Note: Depiction prepared from field notes and measurements. Base Contour Map obtained from the City of Mequon Public Works Department.

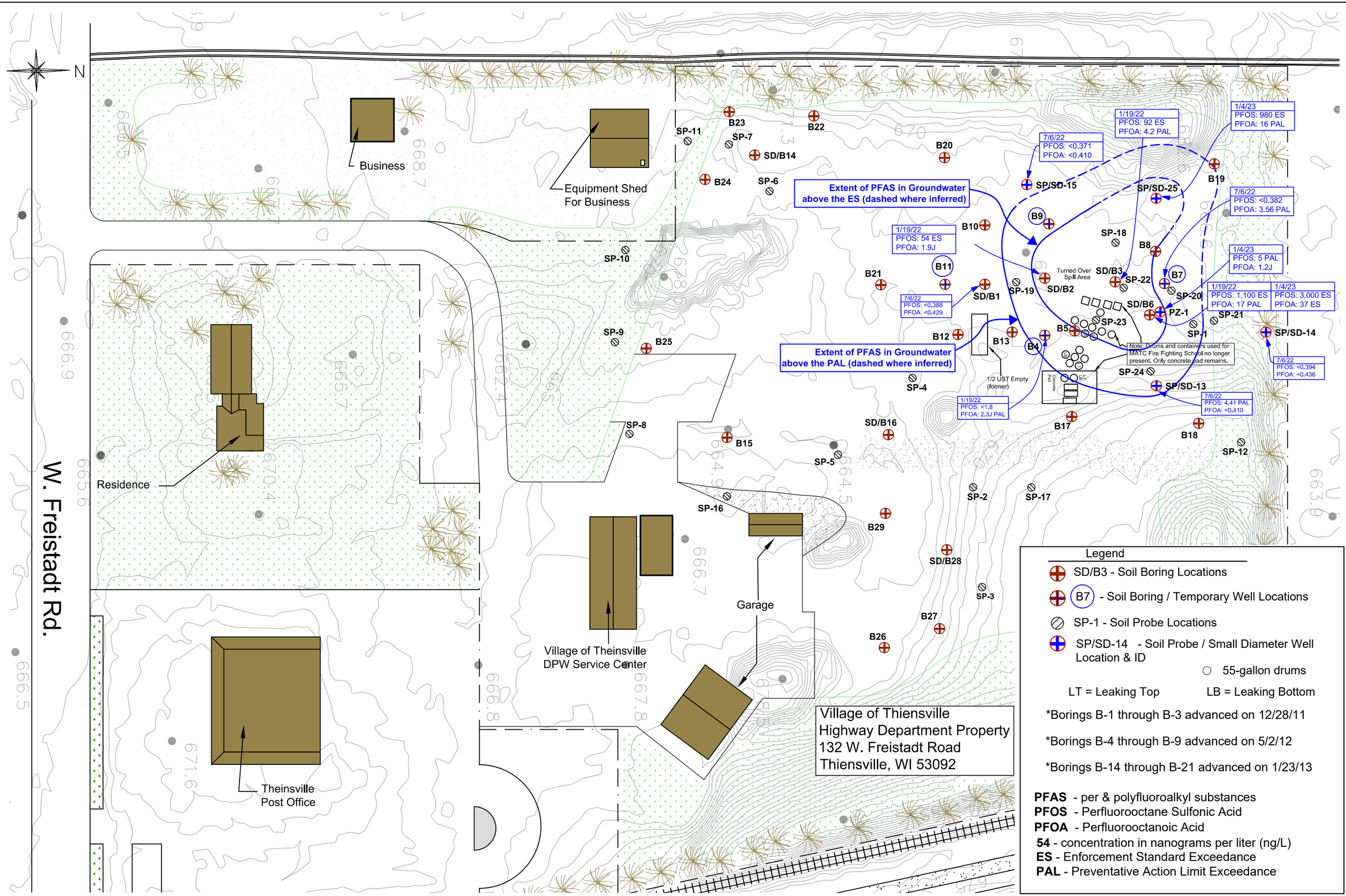

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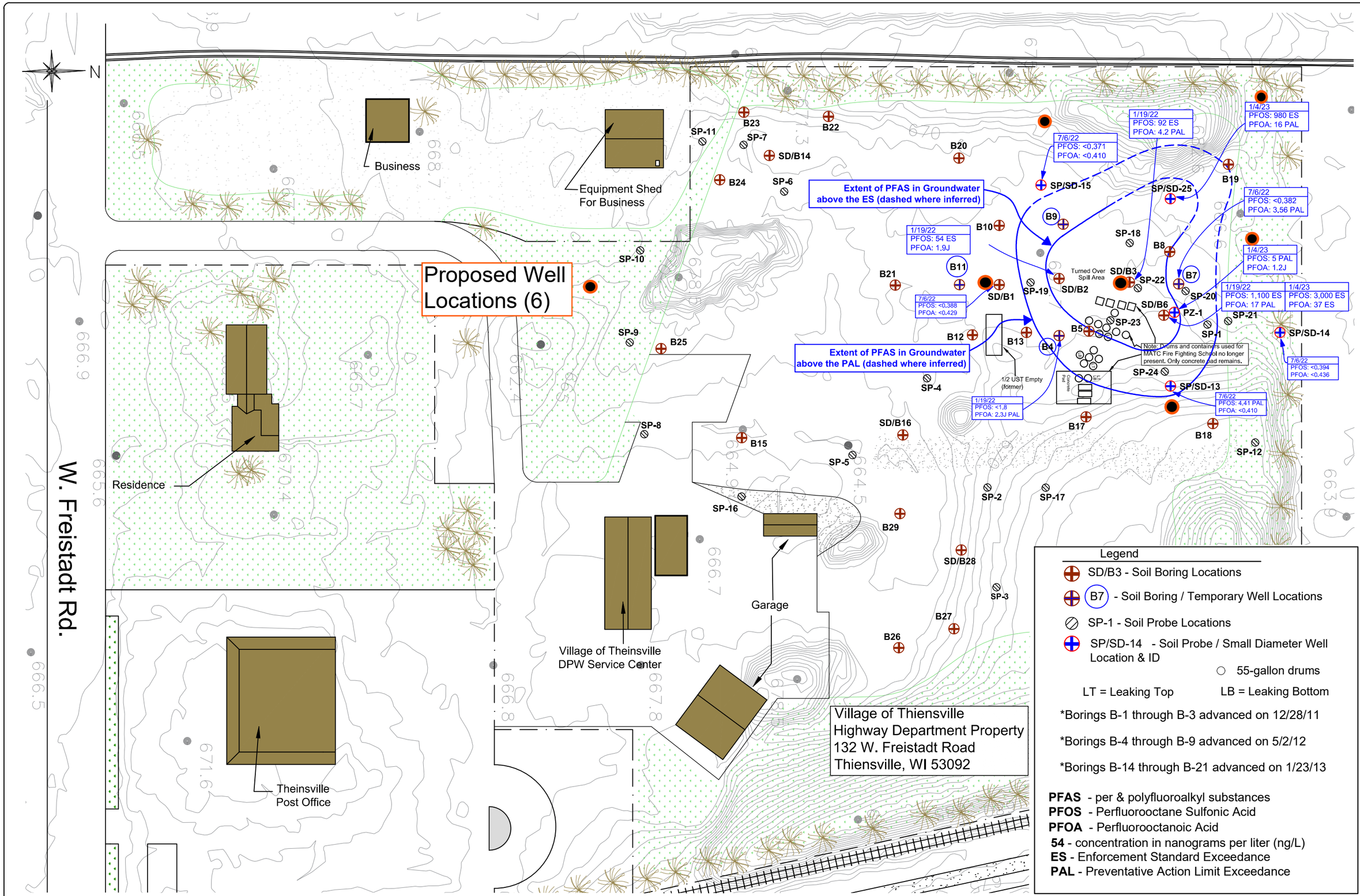
FIGURE B.3.b
GROUNDWATER ISOCONCENTRATION (PFAS) (1/19/22, 7/16/22 & 1/4/23)

VILLAGE OF THIENSVILLE - DPW SERVICE CENTER
132 W. FREISTADT RD., THIENSVILLE, WI 53092



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Proposed Monitoring Well Locations
August 2023

VILLAGE OF THIENSVILLE - DPW SERVICE CENTER
132 W. FREISTADT RD., THIENSVILLE, WI 53092

Graphic Scale 0 50'

Revised by CTS
Revised: 8.1.23

Project File: Mertek53\ 5323 Working.dwg

*Note: Depiction prepared from field notes and measurements. Base Contour Map obtained from the City of Mequon Public Works Department.

ATTACHMENT B

Tables

Table A.1.
Groundwater Analytical Results

Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

Sample ID	B-4		B-7	B-9	B-11	SD/B1			SD/B2	SD/B3			SD/B6		SD/B14		SD/B16		SD/B28			NR 140 Preventive Action Limit (PAL)	NR 140 Enforcement Standard (ES)
Sample Collection Date	5/3/12	1/4/23	5/3/12	5/3/12	5/3/12	12/19/19	1/19/22	1/4/23	12/19/19	12/19/19	1/19/22	1/4/23	12/19/19	1/19/22	12/19/19	1/19/22	12/19/19	1/19/22	12/19/19	1/19/22	1/4/23		
Petroleum Volatile Organic Compounds (µg/l)																							
1,2,4-Trimethylbenzene	<0.43	---	<0.43	<0.43	<0.43	---	---	---	---	<0.84	---	---	---	---	---	---	---	---	---	---	---	NS	NS
1,3,5-Trimethylbenzene	<0.40	---	<0.40	<0.40	<0.40	---	---	---	---	<0.87	---	---	---	---	---	---	---	---	---	---	---	NS	NS
Benzene	<0.39	---	<0.39	<0.39	<0.39	---	---	---	---	<0.25	---	---	---	---	---	---	---	---	---	---	---	*0.5*	**5**
Ethylbenzene	8.3	---	<0.41	<0.41	<0.41	---	---	---	---	<0.22	---	---	---	---	---	---	---	---	---	---	---	*140*	**700**
Methyl-tert-butyl ether	<0.38	---	<0.38	<0.38	<0.38	---	---	---	---	<1.2	---	---	---	---	---	---	---	---	---	---	---	*12*	**60**
Naphthalene	0.019 J	---	0.067	0.043 J	0.32	---	---	---	---	<1.2	---	---	---	---	---	---	---	---	---	---	---	*10*	**100**
Toluene	<0.42	---	<0.42	<0.42	0.77 J	---	---	---	---	1.3 J	---	---	---	---	---	---	---	---	---	---	---	*160*	**800**
m&p-Xylene	2.4	---	<0.87	<0.87	<0.87	---	---	---	---	<0.47	---	---	---	---	---	---	---	---	---	---	---	NS	NS
o-Xylene	2	---	<0.38	<0.38	<0.38	---	---	---	---	<0.26	---	---	---	---	---	---	---	---	---	---	---	NS	NS
Total Trimethylbenzenes	<0.83	---	<0.83	<0.83	<0.83	---	---	---	---	<1.71	---	---	---	---	---	---	---	---	---	---	---	*96*	**480**
Total Xylenes	4.4	---	<1.25	<1.25	<1.25	---	---	---	---	<0.73	---	---	---	---	---	---	---	---	---	---	---	*400*	**2,000**
Polycyclic Aromatic Hydrocarbons (µg/l)																							
1-Methylnaphthalene	0.013 J	---	0.021 J	0.025 J	0.24	---	<0.016	---	0.026 J	---	<0.016	---	0.035	<0.017	0.022 J	<0.017	0.016 J	<0.017	0.019 J	<0.017	<0.016	NS	NS
2-Methylnaphthalene	0.022 J	---	0.037 J	0.041 J	0.4	---	0.018 J	---	0.044	---	0.022 J	---	0.053	0.019 J	0.040	0.023 J	0.034	0.018 J	0.034	0.020 J	0.028 J	NS	NS
Acenaphthene	<0.0048	---	<0.0051	0.041 J	0.014 J	---	<0.013	---	0.026 J	---	<0.013	---	0.030 J	0.033 J	<0.0061	<0.013	<0.0061	<0.013	0.012 J	<0.013	<0.013	NS	NS
Acenaphthylene	<0.0038	---	<0.0040	0.010 J	0.0073 J	---	<0.012	---	<0.0050	---	<0.012	---	0.016 J	0.013 J	<0.0050	<0.012	<0.0050	<0.012	<0.0050	<0.012	<0.012	NS	NS
Anthracene	0.011 J	---	<0.0064	<0.0061	0.0091 J	---	<0.017	---	<0.010	---	<0.017	---	0.033 J	<0.017	<0.010	<0.017	<0.010	<0.017	0.033 J	<0.017	<0.017	*600*	**3,000**
Benzo(a)anthracene	<0.0038	---	<0.0040	0.0084 J	0.0095 J	---	<0.012	---	<0.0076	---	<0.012	---	<0.0076	<0.013	<0.0076	<0.013	<0.0076	<0.013	0.040	<0.013	<0.012	NS	NS
Benzo(a)pyrene	0.0052 J	---	<0.0032	0.012 J	0.016 J	---	<0.018	---	<0.011	---	<0.018	---	0.014 J	<0.018	<0.011	<0.018	<0.011	<0.018	*0.065*	<0.018	<0.012	*0.02*	**0.2**
Benzo(b)fluoranthene	0.0041 J	---	0.0038 J	0.013 J	0.014 J	---	<0.018	---	<0.0057	---	*0.020 J*	---	0.0066 J	<0.018	<0.0057	<0.018	<0.0057	<0.018	*0.077*	<0.018	<0.0083	*0.02*	**0.2**
Benzo(g,h,i)perylene	0.0069 J	---	<0.0054	0.013 J	0.014 J	---	<0.021	---	<0.0068	---	<0.021	---	0.018 J	<0.022	<0.0068	<0.022	<0.0068	<0.022	0.045	<0.022	<0.021	NS	NS
Benzo(k)fluoranthene	<0.0046	---	0.0052 J	0.012 J	0.014 J	---	<0.020	---	<0.0076	---	<0.020	---	0.012 J	<0.021	<0.0076	<0.021	<0.0076	<0.021	0.062	<0.021	<0.020	NS	NS
Chrysene	0.0047 J	---	0.0062 J	0.016 J	0.015 J	---	<0.024	---	<0.013	---	<0.024	---	0.018 J	<0.025	<0.013	<0.025	<0.013	<0.025	*0.13*	<0.025	<0.012	*0.02*	**0.2**
Dibenz(a,h)anthracene	<0.0034	---	<0.0036	<0.0034	<0.0035	---	<0.016	---	<0.010	---	<0.016	---	<0.010	<0.017	<0.010	<0.017	<0.010	<0.017	<0.010	<0.017	<0.016	NS	NS
Fluoranthene	<0.0047	---	<0.0049	0.018 J	0.028 J	---	<0.024	---	<0.011	---	<0.024	---	0.031 J	<0.025	<0.011	<0.024	<0.011	<0.024	0.22	<0.025	<0.024	*80*	**400**
Fluorene	<0.0051	---	<0.0053	0.0075 J	0.027 J	---	<0.022	---	<0.0080	---	<0.022	---	0.018 J	<0.022	<0.0080	<0.022	<0.0080	<0.022	0.011 J	<0.022	<0.021	*80*	**400**
Indeno(1,2,3-cd)pyrene	<0.0050	---	<0.0052	0.0096 J	0.011 J	---	<0.014	---	<0.018	---	<0.014	---	<0.018	<0.015	<0.018	<0.014	<0.018	<0.015	0.038 J	<0.015	<0.014	NS	NS
Naphthalene	0.019 J	---	0.067	0.043 J	0.32	---	<0.018	---	0.050 J	---	<0.018	---	0.052 J	<0.019	0.045 J	<0.019	0.036 J	<0.019	0.036 J	<0.019	0.029 J	*10*	**100**
Phenanthrene	<0.0086	---	<0.0090	0.011 J	0.037 J	---	<0.023	---	0.014 J	---	<0.024	---	0.034 J	<0.024	<0.014	<0.024	<0.014	<0.024	0.14	<0.024	<0.023	NS	NS
Pyrene	<0.0050	---	<0.0053	0.017 J	0.024 J	---	<0.021	---	0.014 J	---	<0.021	---	0.048	<0.021	<0.0076	<0.021	<0.0076	<0.021	0.23	<0.021	<0.021	*50*	**250**
Resource Conservation & Recovery Act (RCRA) Metals (µg/L)																							
Arsenic	<4.7	--	*6.3 J*	*4.7 J*	*5.9 J*	*1.4*	<13.2	---	---	---	---	---	---	---	---	<13.2	---	---	---		---	*1*	**10**
Barium	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	*400*	**2,000**
Cadmium	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	*0.5*	**5**
Chromium	<2.0	--	<2.0	<2.0	<2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	*10*	**100**
Lead	*2.4 J*	<6.4	*3.7 J*	*2.1 J*	<1.7	---	---	<5.9	---	---	---	<6.4	---	---	---	---	---	---	---		---	*1.5*	**15**
Selenium	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	*10*	**50**
Silver	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	*10*	**50**
Mercury	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	*0.2*	**2**

All values expressed in µg/L (micrograms per liter), unless otherwise noted
PAL - Preventive Action Limit
ES - Enforcement Standard
--- - sample not analyzed for this parameter
NS - No Standard established for this analyte
ND - Not Detected
< - less than the laboratory method detection limit (MDL)
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
Bold underlined text - identifies Proposed NR 140 Enforcement Standard Exceedance
Italics underlined text - identifies Proposed NR 140 Preventative Action Limit Exceedance.

Table A.1.
Groundwater Analytical Results - PFAS

Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

	Near or within PFAS Source Area						Stepped Out from Source Area									Proposed WDNR Standards (Cycle 11)		
Well ID				Well/Piezo Nest			SD/B1	B7	SD-13	SD-14	SD-15	SD-25	Field Blank			**NR 140 PAL**	**NR 140 ES**	EPA Health Advisory Level
				SD/B6		PZ-1												
Collection Date	1/19/22	1/19/22	1/19/22	1/19/22	1/4/23	1/4/23	7/6/22	7/6/22	7/6/22	7/6/22	7/6/22	1/4/23	1/19/22	7/6/22	1/4/23			
PFAS Compounds (ng/L)																		
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	<0.41	<0.50	<0.43	<0.48	<0.45	<0.43	<0.459	<0.452	<0.439	<0.467	<0.439	<0.44	<0.53	<0.450	<0.43	**	**	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS	<0.57	<0.68	<0.59	<0.66	<0.61	<0.60	<0.459	<0.452	<0.439	<0.467	<0.439	<0.61	<0.73	<0.450	<0.59	**	**	
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	<1.4	<1.7	<1.4	<1.6	<1.5	<1.4	<0.541	<0.532	<0.518	<0.550	<0.518	<1.5	<1.8	<0.530	<1.4	**	**	
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	10	<2.1	<1.8	<2.0	<1.8	<1.9	<0.765	<0.753	<0.732	<0.778	<0.732	5.4 J	<2.2	<0.750	<1.8	**	**	
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	<0.75	<0.90	<0.78	<0.87	<0.81	<0.79	<0.633	<0.622	<0.605	<0.643	<0.605	<0.80	<0.96	<0.620	<0.78	**	**	
Hexafluoropropylene oxide dimer acid (GenX)	<1.8	<2.1	<1.9	<2.1	<1.9	<1.9	<3.40	<3.35	<3.26	<3.46	<3.26	<1.9	<2.3	<3.34	<1.8	30	300	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	<0.41	<0.50	<0.43	<0.48	<0.45	<0.44	<0.439	<0.432	<0.420	<0.446	<0.420	<0.45	<0.53	<0.430	<0.43	600	3,000	
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	<1.2	<1.4	<1.2	<1.4	<1.3	<1.2	<0.714	<0.703	<0.684	<0.726	<0.684	<1.2	<1.5	<0.700	<1.2	2 *	20 *	
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	<0.64	<0.78	<0.67	1.5 J	*3.8 J*	<0.68	<0.806	<0.793	<0.771	<0.820	<0.771	<0.69	<0.83	<0.790	<0.67	2 *	20 *	
Polycyclic Aromatic Hydrocarbons (µg/l)		<0.98	<0.85	<0.95	<0.88	<0.86	<0.515	<0.507	<0.493	<0.524	<0.493	<0.88	<1.0	<0.505	<0.85	2 *	20 *	
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	<1.1	<1.3	<1.1	<1.3	<1.2	<1.1	<0.847	<0.833	<0.811	<0.861	<0.811	<1.2	<1.4	<0.830	<1.1	**	**	
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	<0.80	<0.96	<0.83	1.2 J	1.8 J	<0.84	<0.459	<0.452	<0.439	<0.467	<0.439	<0.86	<1.0	<0.450	<0.83	**	**	
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	<1.1	<1.3	<1.1	<1.3	<1.2	<1.2	<0.663	<0.653	<0.635	<0.674	<0.635	<1.2	<1.4	<0.650	<1.1	**	**	
Perfluoro-1-butanesulfonic acid (PFBS)	1.6 J	2.6 J	1.5 J	4	5.8	<0.37	5.71	<0.311	<0.303	<0.322	<0.303	34	<0.46	<0.310	<0.37	90,000	450,000	
Perfluoro-1-decanesulfonic acid (PFDS)	<0.66	<0.80	<0.69	1.4 J	1.6 J	<0.70	<0.622	<0.612	<0.596	<0.633	<0.596	<0.72	<0.86	<0.610	<0.69	**	**	
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.64 J	1.3 J	<0.45	9.2	22	<0.45	<0.622	<0.612	<0.596	<0.633	<0.596	13	<0.55	<0.610	<0.44	**	**	
Perfluoro-1-nonanesulfonic acid (PFNS)	<0.61	<0.74	<0.64	<0.71	1.6 J	<0.64	<0.888	<0.873	<0.850	<0.902	<0.850	0.74 J	<0.78	<0.870	<0.63	**	**	
Perfluoro-1-octanesulfonamide (PFOSA)	<0.52	<0.63	<0.55	*2.2 J*	6.1	<0.55	<0.378	<0.371	<0.361	<0.384	<0.361	<0.56	<0.68	<0.370	<0.54	2 *	20 *	
Perfluoro-1-pentanesulfonic acid (PFPeS)	0.70 J	<0.61	<0.53	3.4 J	6.8	<0.54	<0.520	<0.512	<0.498	<0.529	<0.498	66	<0.65	<0.510	<0.53	**	**	
Perfluorododecanesulfonic acid (PFDOS)	<0.89	<1.1	<0.93	<1.0	<0.97	<0.94	<0.668	<0.658	<0.640	<0.679	<0.640	<0.96	<1.2	<0.655	<0.93	**	**	
Perfluorohexanesulfonic acid (PFHxS)	*10*	*25*	<0.49	**76**	**130**	<0.50	<0.633	<0.622	<0.605	<0.643	<0.605	**800**	<0.61	<0.620	<0.49	4	40	
Perfluoro-n-butanoic acid (PFBA)	5.0	7.3	5.7	11	9.1	2.2 J	8.17	4.97	3.6	4.91	3.48	9.2 B	<0.66	<0.760	<0.54	2,000	10,000	
Perfluoro-n-decanoic acid (PFDA)	<0.45	<0.54	<0.47	0.59 J	0.98 J	<0.47	<0.735	<0.723	<0.703	<0.747	<0.703	<0.48	<0.58	<0.720	<0.47	60	300	
Perfluoro-n-dodecanoic acid (PFDoA)	<0.40	<0.49	<0.42	<0.47	<0.44	<0.43	<0.663	<0.653	<0.635	<0.674	<0.635	<0.43	<0.52	<0.650	<0.42	100	500	
Perfluoro-n-heptanoic acid (PFHpA)	0.78 J	3.4 J	1.4 J	4.5	8.3	<0.40	<0.592	2.6	<0.566	<0.602	<0.566	8.7	<0.49	<0.580	<0.40	**	**	
Perfluoro-n-hexanoic acid (PFHxA)	1.8 J	4.6	2.5 J	9.8	8.3	0.75 J	6.55	4.35	<0.459	2.33	<0.459	42	<0.76	<0.470	<0.61	30,000	150,000	
Perfluoro-n-nonanoic acid (PFNA)	<0.39	1.1 J	<0.41	1.6 J	*3.2 J*	<0.42	<0.500	<0.492	<0.479	<0.508	<0.479	1.1 J	<0.51	<0.490	<0.41	3	30	
Perfluoro-n-octanoic acid (PFOA)	1.9 J	*4.2*	*2.3 J*	*17*	**37**	1.2 J	<0.429	*3.56*	<0.410	<0.436	<0.410	*16*	<0.91	<0.420	<0.74	2 *	20 *	70
Resource Conservation & Recovery Act (RCRA) Metals (µg/L)			2.2 J	6.6	9.2	<0.49	4.06	3.05	<0.430	<0.456	<0.430	8.6	<0.60	<0.440	<0.48	**	**	
Perfluoro-n-tetradecanoic acid (PFTeDA)	<0.51	<0.62	<0.54	<0.60	<0.56	<0.54	<0.582	<0.572	<0.557	<0.591	<0.557	<0.55	<0.66	<0.570	<0.53	2,000	10,000	
Perfluoro-n-tridecanoic acid (PFTrDA)	<0.45	<0.55	<0.47	<0.53	<0.49	<0.48	<0.628	<0.617	<0.601	<0.638	<0.601	<0.49	<0.58	<0.615	<0.47	**	**	
Perfluoro-n-undecanoic acid (PFUdA)	<0.53	<0.65	<0.56	<0.63	<0.58	<0.56	<0.633	<0.622	<0.605	<0.643	<0.605	<0.58	<0.68	<0.620	<0.56	600	3,000	
Perfluorooctanesulfonic acid (PFOS)	**54.0**	**92**	<1.8	**1100**	**3000**	*5*	<0.388	<0.382	*4.41*	<0.394	<0.371	**980**	<2.2	<0.380	<1.8	2 *	20 *	70

* **Wisconsin Department of Health Services (DHS) proposed standards for PFOA & PFOS in Cycle 10 would become published and effective Fall 2021**
** **DHS has not yet determined proposed standards for the remaining 34 (Cycle 11) PFAS compounds in this table, but would become effective Fall 2023**

All values expressed in ng/L (nanograms per liter).
PAL - Preventive Action Limit
ES - Enforcement Standard
--- - sample not analyzed for this parameter
NS - No Standard established for this analyte
ND - Not Detected
< - less than the laboratory method detection limit (MDL)
B - Analyte detected in method blank
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
Bold underlined text - identifies Proposed NR 140 Enforcement Standard Exceedance
Italics underlined text - identifies Proposed NR 140 Preventative Action Limit Exceedance.

Table A.2.
Soil Analytical Results
Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

Boring & Sample Information				PAHs & Detected SVOCs (ug/kg)																			Data Review Results					
Borehole No.	Sample Date	Sample Depth (feet)	Saturated (S) Unsaturated (U)	1-Methyl naphthalene	2-Methyl naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluor anthene	Benzo (g,h,i) perylene	Benzo(k) fluor anthene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Naph thalene	Phen anthrene	Pyrene	Carbazole	bis(2-Ethylhexyl) phthalate	GW Pathway Exceedance	DC Exceedance	cPAH Analysis Performed	cPAH Result	Extent Defined	Comments:
Groundwater Pathway RCL				NS	NS	NS	NS	196,949	NS	470	478	NS	NS	144.2	NS	88,878	14,830	NS	658.2	NS	54,546	NS	2,880						
Non-Industrial Direct Contact Pathway RCL				17,600	239,000	3,590,000	NS	17,900,000	1,140	115	1,150	NS	11,500	115,000	115	2,390,000	2,390,000	1,150	5,520	NS	1,790,000	NS	38,800						
Industrial Direct Contact Pathway RCL				72,700	3,010,000	45,200,000	NS	100,000,000	20,800	2,110	21,100	NS	211,000	2,110,000	2,110	30,100,000	30,100,000	21,100	24,100	NS	22,600,000	NS	164,000						
B-1	12/28/11	1	U	--	<38.7	<176	<37.7	<176	339 J	***505***	439	473	472	*458*	**156 J**	335 J	34.5 J	421	<41.1	269 J	868	<36.2	<71.9	Y	Y	X	Fail	Y	**Cap required**; Groundwater Analysis Needed at this Location due to GW Pathway exceedacnes of Arsenic in 7.5' soil sample. **Install 10' Small diameter well and analyze groundwater for Arsenic**. Arsenic in GW was first a PAL then ND. Good!
B-1	12/28/11	3	U	--	<38.3	<174	<37.3	<174	420	**431**	435	342 J	420	*527*	113 J	483	64.7 J	326 J	<40.7	544	1,340	36.5 J	<71.2	Y	Y	X	Fail	Y	
B-1	12/28/11	7.5	S	--	<20.5	<92.7	<19.9	<92.7	<20.9	<22.5	<21.9	<92.7	<29.3	<27.1	<34.0	<32.8	<9.3	<24.9	<21.7	<92.7	<45.2	<19.1	<38.0	N	N	--	--	Y	
B-2	12/28/11	1	U	--	<78.9	<358	<76.8	<358	149 J	***450 J***	319 J	595 J	400 J	*287 J*	<131	<127	<36.0	544 J	<83.7	<358	397 J	<73.8	<147	Y	Y	X	Fail	N	**Cap Required**; **Groundwater Analysis Needed** at this Location due to GW Pathway exceedacnes of PAHs in 5' soil sample. **Install 10' Small diameter well and analyze groundwater for PAH**. GW analysis for PAH resulted in No PAHs above
B-2	12/28/11	5	S	--	266 J	<848	<182	1,190 J	3,960	**4,990**	**5,200**	3,440	5,070	*5,690*	**1,380 J**	8,880	1,020 J	**3,520**	280 J	8,380	17,000	922 J	2,050	Y	Y	X	Fail	N	standards
B-3	12/28/11	1	U	--	<416	<1,890	<405	<1,890	560 J	***1,770 J***	<446	<1,890	<596	*827 J*	<692	<668	<190	**1,820 J**	<442	<1,890	<919	<390	<773	Y	Y	X	Fail	Y	**Cap Required**; **Groundwater Analysis Needed** at this Location due to GW Pathway Exceedance of Toluene in 8' soil sample. **Install 10' Small diameter well and analyze groundwater for PVOC**. GW Analysis resulted in no PVOC detections
B-3	12/28/11	3	U	--	<405	<1,840	<394	<1,840	<414	<446	<434	<1,840	<580	<536	<673	<650	<185	<493	<430	<1,840	<895	<379	*16,600*	N	N	--	--	Y	above standards.
B-3	12/28/11	8	S	--	<23.0	<104	<22.4	<104	37.5 J	37.0 J	33.8 J	<104	45.8 J	42.2 J	<38.2	55.2 J	<10.5	37.0 J	<24.4	<104	79.8 J	<21.5	<42.7	Y	N	--	--	N	
B-4	5/2/12	2	U	<57.6	<57.6	<53.0	78.9 J	597	**1,830**	***2,040***	**2,100**	1410	1,710	*2,250*	**424**	2,960	98 J	**1,240**	<66.0	805	2,520	NA	NA	Y	Y	X	Fail	Y	**Cap required**; No need for additional soil or groundwater analysis around this Location
B-4	5/2/12	5	S	4.5 J	4.2 J	7.7 J	4.0 J	27.2	29.9	42	40.5	15.5 J	30.7	37.7	6.2 J	74.5	9.9 J	15.5 J	6.5 J	77	82.8	NA	NA	N	N	--	--	Y	
B-5	5/2/12	2	U	<11.4	12.9 J	<10.5	107	119	403	***604***	*716*	276	502	*545*	99.2	732	19.6 J	258	<13.1	161	755	NA	NA	Y	Y	X	Fail	Y	**Cap required**; No need for additional soil or groundwater analysis around this Location
B-5	5/2/12	5	S	<2.7	<2.7	<2.5	<2.8	<4.1	<2.5	<2.9	<3.1	<2.3	<3.3	<3.2	<4.8	<8.9	<4.4	<2.5	<3.1	<3.9	<3.2	NA	NA	N	N	--	--	Y	
B-6	5/2/12	2	U	<14.0	<14.0	33.7 J	214	307	650	***944***	*913*	473	807	*768*	**174**	1,350	82.2 J	473	23.0 J	553	1,160	NA	NA	Y	Y	X	Fail	N	**Cap Required**: DC Extents in shallow soil to North of B-6 are undefined. **One 4' probe to N and soil PAH analysis and install 10' SD well at B6. PAH analysis**. Results at SP-1 (soil) to define extents good. SD well at B-6 resulted in no PAH
B-6	5/2/12	5	S	<5.5	<5.5	<5.1	102	125	221	**289**	308	115	257	*246*	44.4	301	13.6 J	110	<6.3	82.1	315	NA	NA	Y	Y	X	PASS	N	detections above standards
B-7	5/2/12	2	U	<2.8	<2.8	<2.6	<2.9	<4.2	4.8 J	5.1 J	5.0 J	2.9 J	5.2 J	5.8 J	<4.9	<9.1	<4.5	2.6 J	<3.2	<4.0	7.6 J	NA	NA	N	N	--	--	Y	
B-7	5/2/12	5	S	<2.8	<2.8	<2.5	<2.9	<4.2	<2.6	<3.0	<3.1	<2.4	<3.4	<3.3	<4.9	<9.1	<4.5	<2.6	<3.2	<4.0	<3.3	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B7
B-8	5/2/12	2	U	5.2 J	9.2 J	4.3 J	109	108	167	**278**	243	176	212	*189*	51.7	239	9.6 J	140	18.1	82	247	NA	NA	Y	Y	X	PASS	Y	
B-8	5/2/12	5	S	<2.9	<2.9	<2.7	<3.0	<4.4	<2.7	<3.1	<3.3	<2.5	<3.5	<3.4	<5.2	<9.5	<4.7	<2.7	<3.3	<4.2	<3.5	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B8
B-9	5/2/12	2	U	<5.7	8.4 J	13.0 J	55.1	114	264	**393**	390	215	364	*352*	74.9	539	27.0 J	194	16.7 J	253	458	NA	NA	Y	Y	X	PASS	Y	
B-9	5/2/12	6	S	<2.8	<2.8	<2.6	<2.9	<4.3	3.4 J	7.5 J	6.2 J	4.4 J	5.6 J	6.4 J	<5.0	<9.2	<4.6	3.6 J	<3.2	<4.0	10.8 J	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B9
B-10	5/2/12	2	U	<5.4	5.5 J	6.5 J	100	154	279	**392**	389	193	299	*350*	73.4	534	24.2 J	183	<6.2	236	532	NA	NA	Y	Y	X	PASS	Y	
B-10	5/2/12	6	S	<2.9	3.6 J	3.5 J	8.6 J	24.4	40.3	44.9	43.4	19.1	39.3	49	7.5 J	84	8.7 J	17.8 J	14.2 J	51.2	74.7	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B10
B-11	5/2/12	2	U	6.4 J	10.0 J	12.3 J	88.1	168	322	**418**	482	174	323	*366*	65.6	616	27.6 J	167	9.9 J	248	543	NA	NA	Y	Y	X	Fail	Y	
B-11	5/2/12	6.5	S	<2.8	<2.8	<2.6	<2.9	<4.3	3.6 J	3.2 J	<3.2	<2.4	<3.4	3.9 J	<5.0	<9.2	<4.6	<2.6	<3.2	5.3 J	7.5 J	NA	NA	N	N	--	--	Y	**Cap required** but extent is defined - No further investigation needed around B11
B-12	5/2/12	2	U	<11.3	<11.3	31.0 J	23.6 J	186	388	**400**	421	141	376	*445*	56.0 J	1,080	44.5 J	146	<13.0	604	897	NA	NA	Y	Y	X	PASS	Y	
B-12	5/2/12	5	S	<2.8	<2.8	<2.6	<2.9	<4.3	7.6 J	8.8 J	9.0 J	4.5 J	9.5 J	11.1 J	<5.0	24	<4.6	4.4 J	<3.2	9.3 J	20.6	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B12
B-13	5/2/12	2	U	<5.5	6.3 J	6.7 J	29.3 J	77.4	164	**219**	241	118	226	*230*	34.2 J	404	13.2 J	95.7	10 J	161	337	NA	NA	Y	Y	X	PASS	Y	
B-13	5/2/12	5	S	<2.8	<2.8	<2.6	<3.0	5.3 J	9.4 J	9.7 J	9.8 J	3.6 J	8.1 J	9.5 J	<5.1	19.5	<4.76	3.6 J	<3.3	10.7 J	17.9 J	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B13
B-14	1/23/13	4	U	<175	51.1 J	352 J	451	2,300	**3,860**	**3,570**	**2,980**	2,210	3,350	*4,260*	810	10,200	710	**2,000**	<72.2	7,070	6,580	NA	NA	Y	Y	X	Fail	N	**Cap Required**, Soil Extents undefined to SW & NE - **Install 2-4' probes accordingly and install 10' SD well at B14. PAH analysis**. Installed SP-6 & SP-7
B-15	1/23/13	4	U	<8.3	4.6 J	<9.1	69.0	58.6	128	**195**	160	101	160	*146*	37.6	184	<9.1	99.0	5.1 J	35.5	197	NA	NA	Y	Y	X	PASS	N	No Cap required but extent is undefined - Installed SP-8 resulting in PAH extent defined to South. Installed SP-16 to East of B15 to define extent. **PAH extent undefined E of SP-16.**
B-16	1/23/13	4	U	<728	377J	<797	3,400	7,230	**8,590**	**8,150**	**5,940**	4,500	7,760	*8,720*	**1,530 J**	22,000	3,590	**4,090**	310 J	18,000	15,500	NA	NA	Y	Y	X	Fail	N	**Cap Required**, Soil Extents undefined to SE & W - **Install 2-4' probes accordingly and install 10' SD well at B16. PAH analysis**. Installed SP-4 & SP-5 SD Well at B16
B-17	1/23/13	4	U	<8.6	<1.8	<9.4	<9.4	8.1 J	16.4 J	23.3	24.9	24.1	18.5 J	20.9	<9.4	29.3	<9.4	17.8 J	<3.5	10.4 J	23.2	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B17
B-18	1/23/13	4	U	<8.7	6.4 J	<9.6	24.7	69.9	134	**147**	124	82.9	158	145	32.0	318	12.7 J	77.3	9.4 J	179	263	NA	NA	N	Y	X	PASS	N	No Cap required but extent is undefined - **Install 1-4'probe to Northeast of B18. PAH Analysis**. Installed SP-12 leading to Extent Defined
B-19	1/23/13	4	U	<8.8	5.1 J	<9.6	<9.6	3.7 J	<9.6	<9.6	6.3 J	<9.6	10.8 J	9.7 J	<9.6	15.9 J	<9.6	<9.6	9.9 J	10.0 J	12.9 J	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B19
B-20	1/23/13	4	U	<9.0	4.9 J	<9.9	30.5	20.4	48.4	81.2	72.5	62.5	59.7	60.4	19.0 J	64.5	<9.9	49.7	8.4 J	17.0 J	72.7	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B20
B-21	1/23/13	4	U	<8.6	<1.8	<9.5	<9.5	3.9 J	11.7 J	12.1 J	12.3 J	10.3 J	12.1 J	14.5 J	<9.5	26.5	<9.5	<9.5	<3.6	11.0 J	18.7 J	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B21
B-22	10/16/13	3-4	U	<3.5	<9.9	<9.9	13.9 J	43.3	111	130	109	73.8	122	133	26.9	262	<9.9	63.9	<9.9	116	210	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B22
B-23	10/16/13	3-4	U	<3.4	<9.6	<9.6	<9.6	<9.6	10.7 J	12.4 J	15.7 J	<9.6	9.4 J	15.7 J	<9.6	29.3	<9.6	<9.6	<9.6	20.4	26.4	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B23
B-24	10/16/13	3-4	U	6.8 J	<19.2	<19.2	47.8	93.1	248	**293**	260	210	271	*313*	67.5	598	29.8 J	176	<19.2	273	470	NA	NA	N	Y	X	PASS	N	No Cap required and extent is defined - No further investigation needed around B24
B-25	10/16/13	3-4	U	6.1 J	<9.6	<9.6	96.3	69.1	193	**286**	211	194	269	*236*	71.7	292	21.1	160	14.3 J	139	267	NA	NA	N	Y	X	PASS	N	No Cap required but extent is undefined - **Install 1-4'probe to South of B25. PAH Analysis**. Installed SP-9 resulting in extent defined
B-26	10/16/13	3-4	U	<3.1	<8.8	<8.8	<8.8	<8.8	9.3 J	7.1 J	8.9 J	<8.8	6.2 J	10.2 J	<8.8	22.5	<8.8	<8.8	<8.8	16.7 J	17.0 J	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B26
B-27	10/16/13	3-4	U	3.9 J	<8.7	<8.7	<8.7	<8.7	<8.7	<3.1	<8.7	<8.7	<3.1	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	<8.7	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B27
B-28	10/16/13	3-4	U	<626	<1,770	<1,770	3,570	15,300	**35,400**	**36,000**	**31,700**	19,900	**31,100**	*37,900*	**6,260**	80,300	3,190 J	**17,200**	<1,770	30,800	*64,700*	NA	NA	Y	Y	X	Fail	N	**Cap Required**, Soil Extents undefined to NW & NE - **Install 2-4' probes accordingly and install 10' SD well at B28. PAH analysis**. Installed SP-2 & SP-3
B-29	10/16/13	3-4	U	<3.2	<8.9	<8.9	<8.9	<8.9	<8.9	3.9 J	<8.9	<8.9	3.4 J	<8.9	<8.9	9.4 J	<8.9	<8.9	<8.9	<8.9	<8.9	NA	NA	N	N	--	--	Y	No Cap required and extent is defined - No further investigation needed around B29
SP-1 (2-4)	12/16/19	2-4	U	<2.9	<2.9	<2.6	10.5 J	8.4 J	28.0	28.7	45.3	19.5 J	22.2	41.7	6.5 J	55.3	<2.4	17.2 J	<2.0	9.9 J	50.6	NA	NA	N	N	--	--	Y	Installed to define PAH DC extents N of B6; Results = no RCL or DC Exceedances - EXTENT DEFINED
SP-2 (2-4)	12/16/19	2-4	U	3.2 J	7.4 J	3.9 J	55.8	61.5	164	**219**	274	157	110	*185*	55.3	241	6.1 J	126	14.3 J	77.3	207	NA	NA	Y	Y	--	PASS	Y	Installed to define extents NW of B28; Only Chrysene above GW Pathway RCL - EXTENT of DC (BaP) Undefined - Installed SP-17 to north of SP-2 with PAH Soil Analysis.
SP-3 (2-4)	12/16/19	2-4	U	<2.6	<2.6	<2.3	9.3 J	10.3 J	25.6	35.3	50.1	27.2	22.2	33.4	8.3 J	47.6	<2.1	22.2	<1.7	19.2	38.6	NA	NA	N	N	--	--	Y	Installed to define extents NE of B28; No GWP or DC exceedances - EXTENT of DC Defined
SP-4 (2-4)	12/16/19	2-4	U	34.2 J	45.2 J	74.5	191	290	832	***1320***	**1950**	923	616	*1120*	**264**	1900	108	776	101	926	1420	NA	NA	Y	Y	X	Fail	Y	Installed to define DC extents W of B16; DC exceedances present, but below IDC - cPAH Calculator results in Cap required
SP-5 (2-4)	12/16/19	2-4	U	<2.6	<2.6	<2.3	<2.2	<2.2	<2.3	<2.0	<2.4	<3.1	<2.2	<3.3	<2.4	<2.1	<2.1	<3.7	<1.7	<2.0	<2.6	NA	NA	N	N	--	--	Y	Installed to define DC Extents S/SE of B16; EXTENT Defined to S/SE of B16
SP-6 (2-4)	12/16/19	2-4	U	27.5 J	29.7 J	141	79.0	345	865	***1020***	**1520**	715	508	*1080*	**199**	2320	178	596	98.9	1400	1590	NA	NA	Y	Y	X	Fail	N	Installed to define DC extents NE of B14; DC Exceedances present, but below IDC - cPAH Calculator results in Cap required:
SP-7 (2-4)	12/16/19	2-4	U	<8.3	16.2 J	45.2 J	143	207	540	***652***	**839**	467	358	*640*	**126**	1290	90.5	383	24.4 J	688	951	NA	NA	Y	Y	X	Fail	N	Installed to define DC extents SW of B14; DC Exceedances present, but below IDC - cPAH Calculator results in Cap required. One or two 4'probes to S of SP-7 with PAH soil analysis. Installed SP-11 resulting in PAH extents UNDEFINED
SP-8 (2-4)	6/17/22	2-4	U	<2.5	<2.5	<2.3	12.0 J	2.2 J	26.8	38.2	47.2	23.2	20.8	38.1	7.3 J	41.1	<2.1	20.3	<1.7	6.5 J	48.4	NA	NA	N	N	--	--	Y	Installed S of B15 to define PAH extents. No GWP or DC exceedances; Extent Defined
SP-9 (2-4)	6/17/22	2-4	U	<2.8	<2.8	<2.5	3.4 J	4.7 J	12.4 J	28.8	55.3	36.2	20.8	38.8	6.5 J	56.0	<2.3	27.4	2.5 J	24.4	51.9	NA	NA	N	N	--	--	Y	Installed to S of B25 to define extents of GWP. No GWP exceedances in SP-9. Extent Defined
SP-10 (2-4)	6/17/22	2-4	U	<2.8	<2.8	<2.5	<2.4	<2.4	3.5 J	3.3 J	7.0 J	5.8 J	2.9 J	6.0 J	<2.6	6.7 J	<2.3	<4.0	<1.9	4.2 J	5.2 J	NA	NA	N	N	--	--	Y	Installed SW of B25 to define extents. No GWP or DC exceedances. Extent Defined
SP-11 (2-4)	6/17/22	2-4	U	<56.7	<56.8	194 J	196 J	607	1210	***1540***	**1760**	1110	874	*1730*	**249 J**	3180	342 J	882	65.6 J	1520	2680	NA	NA	Y	Y	X	Fail	N	Installed S of SP-7 to define PAH Extents. GWP & DC exceedacnes present. Failed cPAH calculator. Extent undefined. **Define extents to property line. No additional PAH soil analysis.**
SP-12 (2-4)	6/17/22	2-4	U	<2.5	<2.5	<2.2	<2.2	<2.1	<2.2	<2.0	<2.4	<3.0	<2.2	<3.3	<2.4	<2.0	<2.1	<3.6	<1.7	<2.0	<2.5	NA	NA	N	N	--	--	Y	Installed NE of B18 to define PAH extents. Extents defined
SP-16(3-4)	12/21/22	3-4	U	<66.7	<66.8	92.6 J	74.7 J	671	**2050**	**1890**	**2650**	1170	928	*2340*	364 J	4790	68.6 J	1040	<44.5	2010	3180	NA	NA	Y	Y	X	Fail	N	Installed E of SP-15 to define PAH Extents. GWP & DC exceedances present. **Failed cPAH calculator. Extent undefined. Define extents to property line. No additional PAH soil analysis.**
SP-17(3-4)	12/21/22	3-4	U	16.5 J	26.2 J	23.0 J	45.5 J	132	242	***235***	294	151	124	*277*	37.1 J	688	60.5 J	124	94.4	545	466	NA	NA	Y	Y	X	PASS	N	Installed N of SP-2 to define PAH extents. GWP & DC exceedances present. **Passed cPAH Calculator. Define extents to property line. No additional PAH soil analysis.**
SP-25(3-4)	12/21/22	3-4	U	3.4 J	4.5 J	<2.4	3.0 J	2.6 J	8.1 J	9.8 J	12.9 J	13.3 J	5.5 J	10.2 J	<2.6	12.1 J	<2.2	7.3 J	2.4 J	5.6 J	10.2 J	NA	NA	N	N	--	--	Y	Installed W of B9 to define PAH extents. Extents defined

Groundwater Pathway and Direct Contact RCLs calculated u

All values expressed in µg/kg (micrograms per kilogram). ~ equivalent to parts per billion (ppb)
BGS - feet below ground surface
DC - Direct Contact
RCL - Residual Contaminant Level
NS - No Standard established for this analyte
NA - sample Not Analyzed for this parameter
"---" - sample not analyzed for this parameter
" --" - no sample collected from this location
< - less than the specified detection limit
J - Estimated concentration at or above the limit of detection and below the limit of quantitation
Italics - value exceeds Groundwater Pathway RCL
Bold - value exceeds Non-Industrial Direct Contact RCL
Bold Underlined - value exceeds Industrial Direct Contact RCL

Table A.2.
Soil Analytical Results
Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

Boring & Sample Information				RCRA Metals (mg/kg)							
Borehole No.	**Sample Date**	**Sample Depth (feet)**	**Saturated (S)/Unstaurated (U)**	**Arsenic**	**Barium**	**Cadmium**	**Total Chromium**	**Lead**	**Selenium**	**Silver**	**Mercury**
Groundwater Pathway RCL				0.584	164.8	0.752	360,000	27	0.52	0.8497	0.208
Non-Industrial DC Pathway RCL				0.614	15,300	71.1	NS	400	391	391	3.13
Industrial DC Pathway RCL				0.614	15,300	985	NS	800	391	391	3.13
Background Threshold Value				8.3	364	1.07	44.0	51.6	NS	NS	NS
B-1	12/28/11	1	U	2.5	25.8	0.18 J	7.5	12.2	<0.31	<0.092	0.012
B-1	12/28/11	3	U	3.0	35.9	0.32 J	10.4	*63.7*	<0.29	<0.087	0.030
B-1	12/28/11	7.5	S	**12.4**	13.3	0.29 J	5.9	31.4	<0.31	<0.093	0.0089
B-2	12/28/11	1	U	4.3	64.0	0.29 J	19.9	26.5	<0.30	<0.089	0.022
B-2	12/28/11	5	S	3.8	79.9	0.31 J	17.5	34.5	<0.35	<0.10	0.030
B-3	12/28/11	1	U	3.6	12.0	0.10 J	7.6	4.7	<0.31	<0.091	0.0063
B-3	12/28/11	3	U	3.4	35.6	0.32 J	17.3	*54.9*	<0.32	0.16 J	0.051
B-3	12/28/11	8	S	3.3	13.4	0.23 J	4.5	5.7	<0.32	<0.096	0.011
B-4	5/2/12	2	U	3.8	--	--	11.8	43.4	--	--	--
B-4	5/2/12	5	S	3.3	--	--	6.7	12.9	--	--	--
B-5	5/2/12	2	U	2.6	--	--	4.8	23.9	--	--	--
B-5	5/2/12	5	S	3.7	--	--	3.8	8.3	--	--	--
B-6	5/2/12	2	U	3.6	--	--	13.3	15.5	--	--	--
B-6	5/2/12	5	S	3.7	--	--	15.5	17.4	--	--	--
B-7	5/2/12	2	U	3.6	--	--	12.3	22.7	--	--	--
B-7	5/2/12	5	S	4.7	--	--	5.0	8.3	--	--	--
B-8	5/2/12	2	U	3.9	--	--	15.1	17.1	--	--	--
B-8	5/2/12	5	S	3.0	--	--	5.4	12.4	--	--	--
B-9	5/2/12	2	U	4.1	--	--	22.5	10.3	--	--	--
B-9	5/2/12	6	S	2.6	--	--	5.8	4.9	--	--	--
B-10	5/2/12	2	U	3.4	--	--	23.2	18.5	--	--	--
B-10	5/2/12	6	S	4.5	--	--	7.2	19.1	--	--	--
B-11	5/2/12	2	U	3.3	--	--	9.0	16.0	--	--	--
B-11	5/2/12	6.5	S	4.1	--	--	4.8	5.9	--	--	--
B-12	5/2/12	2	U	2.9	--	--	10.7	20.7	--	--	--
B-12	5/2/12	5	S	3.9	--	--	5.4	11.2	--	--	--
B-13	5/2/12	2	U	3.0	--	--	8.8	*85.5*	--	--	--
B-13	5/2/12	5	S	4.0	--	--	5.1	5.4	--	--	--
B-14	1/23/13	4	U	4.5	--	--	16.5	--	--	--	--
B-15	1/23/13	4	U	3.7	--	--	11.2	--	--	--	--
B-16	1/23/13	4	U	6.8	--	--	16.0	--	--	--	--
B-17	1/23/13	4	U	5.2	--	--	15.0	--	--	--	--
B-18	1/23/13	4	U	7.0	--	--	25.4	--	--	--	--
B-19	1/23/13	4	U	3.9	--	--	13.0	--	--	--	--
B-20	1/23/13	4	U	3.7	--	--	25.5	--	--	--	--
B-21	1/23/13	4	U	6.6	--	--	9.7	--	--	--	--
B-22	10/16/13	3-4	U	6.7	--	--	--	--	--	--	--
B-23	10/16/13	3-4	U	**12.6**	--	--	--	--	--	--	--
B-24	10/16/13	3-4	U	4.7	--	--	--	--	--	--	--
B-25	10/16/13	3-4	U	5.0	--	--	--	--	--	--	--
B-26	10/16/13	3-4	U	4.7	--	--	--	--	--	--	--
B-27	10/16/13	3-4	U	4.0	--	--	--	--	--	--	--
B-28	10/16/13	3-4	U	8.6	--	--	--	--	--	--	--
B-29	10/16/13	3-4	U	4.0 J	--	--	--	--	--	--	--

Groundwater Pathway and Direct Contact RCLs calculated using the USEPA Regional Screening Level Web Calculator (PUB-RR-890)

All values expressed in mg/kg (milligrams per kilogram).

BGS - feet below ground surface

DC - Direct Contact

PAHs - Polycyclic Aromatic Hydrocarbons

RCL - Residual Contaminant Level

NS - No Standard established for this analyte

< - less than the specified detection limit

J - Estimated concentration at or above the limit of detection and below the limit of quantitation

-- - sample not analyzed for this parameter

- - no sample collected from this location

Italics - concentration exceeds Groundwater Pathway RCL

Bold - concentration exceeds Non-Industrial Direct Contact RCL or Background Threshold Value

Bold Underlined - concentration exceeds Industrial Direct Contact

Table A.2.
Soil Analytical Results - PFAS

Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

Sample I.D.	SP-18	SP-19	SP-20	SP-21	SP-22	SP-23	SP-24	PZ-1				Groundwater Pathway RCLs	Non-Industrial DC Pathway RCLs	Industrial DC Pathway RCLs
Sample Depth (feet-bgs)	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	9-10	19-20	29-30			
Saturated (S)/Unsaturated (U)	U	U		U	U	U	U	U	S	S	S			
Collection Date	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22	12/21/22			
PFAS Compounds (µg/kg)														
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	<0.17	<0.17	<0.16	<0.20	<0.16	<0.15	<0.14	<0.16	<0.16	<0.17	<0.16			
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS	<0.19	<0.19	<0.17	<0.22	<0.17	<0.16	<0.16	<0.18	<0.17	<0.19	<0.17			
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	<0.30	<0.30	<0.28	<0.36	<0.27	<0.26	<0.25	<0.29	<0.28	<0.30	<0.28			
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	<0.34	<0.33	<0.31	<0.40	<0.30	<0.29	<0.28	<0.32	<0.31	<0.33	<0.31			
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	<0.24	<0.24	<0.22	<0.28	<0.21	<0.20	<0.20	<0.23	<0.22	<0.24	<0.22			
Hexafluoropropylene oxide dimer acid (GenX)	<0.64	<0.63	<0.59	<0.75	<0.57	<0.54	<0.53	<0.60	<0.59	<0.63	<0.59			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	<0.17	<0.16	<0.15	<0.19	<0.15	<0.14	<0.14	<0.16	<0.15	<0.16	<0.15			
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	<0.39	<0.39	<0.36	<0.46	<0.35	<0.33	<0.33	<0.37	<0.36	<0.39	<0.36			
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	<0.32	<0.32	<0.29	<0.38	<0.29	<0.27	<0.27	<0.30	<0.29	<0.31	<0.29			
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	<0.25	<0.25	<0.23	<0.30	<0.23	<0.21	<0.21	<0.24	<0.23	<0.25	<0.23			
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	<0.38	<0.38	<0.35	<0.45	<0.34	<0.32	<0.32	<0.36	<0.35	<0.38	<0.35			
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	<0.43	<0.43	<0.40	<0.51	<0.39	<0.37	<0.36	<0.41	<0.40	<0.43	<0.40			
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	<0.37	<0.37	<0.34	<0.43	<0.33	<0.31	<0.31	<0.35	<0.34	<0.36	<0.34			
Perfluoro-1-butanesulfonic acid (PFBS)	<0.14	<0.14	<0.13	<0.17	<0.13	<0.12	0.33 J	<0.14	<0.13	<0.14	<0.13			
Perfluoro-1-decanesulfonic acid (PFDS)	2.0	<0.24	<0.23	<0.29	<0.22	<0.21	1.2	<0.23	<0.23	<0.24	<0.23			
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.39 J	<0.19	<0.18	<0.23	<0.17	<0.16	1.6	<0.18	<0.18	<0.19	<0.18			
Perfluoro-1-nonanesulfonic acid (PFNS)	0.66 J	<0.24	<0.22	<0.29	<0.22	<0.21	0.38 J	<0.23	<0.22	<0.24	<0.22			
Perfluoro-1-octanesulfonamide (PFOSA)	0.92 J	<0.19	<0.18	<0.23	<0.17	<0.16	0.29 J	<0.18	<0.18	<0.19	<0.18			
Perfluoro-1-pentanesulfonic acid (PFPeS)	<0.20	<0.20	<0.19	<0.24	<0.18	<0.17	0.65 J	<0.19	<0.19	<0.20	<0.19			
Perfluorododecanesulfonic acid (PFDOS)	0.62 J	<0.28	<0.26	<0.34	<0.26	<0.24	<0.24	<0.27	<0.26	<0.28	<0.26			
Perfluorohexanesulfonic acid (PFHxS)	1.8	1.5	0.50 J	0.93 J	<0.17	0.42 J	11	0.36 J	<0.18	<0.19	<0.18			
Perfluoro-n-butanoic acid (PFBA)	<0.46	<0.45	<0.42	<0.54	<0.41	<0.39	<0.38	<0.43	<0.42	<0.45	<0.42			
Perfluoro-n-decanoic acid (PFDA)	<0.17	<0.17	<0.16	<0.20	<0.16	<0.15	<0.14	<0.16	<0.16	<0.17	<0.16			
Perfluoro-n-dodecanoic acid (PFDoA)	<0.19	<0.19	<0.18	<0.23	<0.17	<0.16	<0.16	<0.18	<0.18	<0.19	<0.18			
Perfluoro-n-heptanoic acid (PFHpA)	<0.16	<0.16	<0.15	0.23 J	<0.14	<0.13	0.15 J	<0.15	<0.14	<0.16	<0.15			
Perfluoro-n-hexanoic acid (PFHxA)	0.31 J	<0.20	<0.19	<0.24	<0.18	<0.17	0.37 J	<0.19	<0.19	<0.20	<0.19			
Perfluoro-n-nonanoic acid (PFNA)	<0.16	<0.16	<0.15	<0.19	<0.15	<0.14	<0.14	<0.16	<0.15	<0.16	<0.15			
Perfluoro-n-octanoic acid (**PFOA**)	<0.23	<0.23	<0.22	<0.28	<0.21	<0.20	0.81 J	0.29 J	<0.21	<0.23	<0.22		1,260	16,400
Perfluoro-n-pentanoic acid (PFPeA)	<0.17	<0.17	<0.16	<0.21	<0.16	<0.15	<0.15	<0.16	<0.16	<0.17	<0.16			
Perfluoro-n-tetradecanoic acid (PFTeDA)	<0.21	<0.21	<0.19	<0.25	<0.19	<0.18	<0.17	<0.20	<0.19	<0.21	<0.19			
Perfluoro-n-tridecanoic acid (PFTrDA)	<0.19	<0.19	<0.17	<0.22	<0.17	<0.16	<0.16	<0.18	<0.17	<0.19	<0.17			
Perfluoro-n-undecanoic acid (PFUdA)	<0.20	<0.20	<0.19	<0.24	<0.18	<0.17	<0.17	<0.19	<0.19	<0.20	<0.19			
Perfluorooctanesulfonic acid (**PFOS**)	110	1.8	12	5.9	3.6	17	210	14	2.7	<0.39	<0.36		1,260	16,400

All values expressed in µg/kg (micrograms per kilogram)
BGS - feet below ground surface
DC - Direct Contact
RCL - Residual Contaminant Level
NS - No Standard established for this analyte
NA - sample Not Analyzed for this parameter
"---" - sample not analyzed for this parameter
< - less than the specified detection limit
J - Estimated concentration at or above the limit of detection and below the limit of quantitation
Italics - value exceeds Groundwater Pathway RCL
Bold - value exceeds Non-Industrial Direct Contact RCL
Bold Underlined - value exceeds Industrial Direct Contact RCL

A.6.
Water Level Elevations
Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

Monitoring Well No./ Date	Ground Surface (ft-MSL)	Top of PVC Well Casing (ft-MSL)	Depth to Groundwater (ft)	Groundwater Elevation (ft-MSL)
SD/B1	665.28	665.28		
12/19/19			5.00	660.28
1/19/22	Well Screened	660.78	5.20	660.08
7/6/22	to	655.78	4.90	660.38
1/4/23			4.85	660.43
SD/B2	665.29	665.29		
12/19/19			5.00	660.29
1/19/22	Well Screened	660.79	5.26	660.03
7/6/22	to	655.79	5.00	660.29
1/4/23			---	---
SD/B3	664.54	664.54		
12/19/19			5.15	659.39
1/19/22	Well Screened	660.04	4.60	659.94
7/6/22	to	655.04	4.30	660.24
1/4/23			4.27	660.27
B4	665.36	665.36		
12/19/19			---	---
1/19/22	Well Screened	660.86	5.30	660.06
7/6/22	to	655.86	5.00	660.36
1/4/23			4.85	660.51
SD/B6	665.08	665.28		
12/19/19			5.00	660.28
1/19/22	Well Screened	660.58	5.38	659.90
7/6/22	to	655.58	5.05	660.23
1/4/23		666.59	6.39	660.20
		Repair - New TOC		
PZ-1	665.08	667.58		
12/19/19			---	---
1/19/22	Well Screened	640.08	---	---
7/6/22	to	635.08	---	---
1/4/23			5.20	662.38
B7			NO WLI or SURVEY 7/6/22	
12/19/19			---	---
1/19/22	Well Screened	-4.50	---	---
7/6/22	to	-9.50	---	---
1/4/23			---	---

A.6.
Water Level Elevations
Village of Thiensville - DPW Service Center
132 W Freistadt Rd., Thiensville, WI 53092

Monitoring Well No./ Date	Ground Surface (ft-MSL)	Top of PVC Well Casing (ft-MSL)	Depth to Groundwater (ft)	Groundwater Elevation (ft-MSL)
SP/SD-13	666.32	668.18		
12/19/19			---	---
1/19/22	Well Screened	661.82	---	---
7/6/22	to	656.82	7.90	660.28
1/4/23			---	---
SP/SD-14	663.36	665.41		
12/19/19			---	---
1/19/22	Well Screened	658.86	---	---
7/6/22	to	653.86	5.20	660.21
1/4/23			---	
SD/B14	664.83	665.37		
12/19/19			5.29	661.17
1/19/22	Well Screened	660.33	5.74	660.72
7/6/22	to	655.33	5.25	661.21
1/4/23			---	---
SP/SD-15	666.53	668.66		
12/19/19			---	---
1/19/22	Well Screened	662.03	---	---
7/6/22	to	657.03	8.50	660.16
1/4/23			---	---
SD/B16	662.88	662.88		
12/19/19			3.10	659.78
1/19/22	Well Screened	658.38	3.25	659.63
7/6/22	to	653.38	3.00	659.88
1/4/23			---	
SD/B28	663.20	666.46		
12/19/19			6.15	660.31
1/19/22	Well Screened	658.70	6.50	659.96
7/6/22	to	653.70	6.28	660.18
1/4/23			6.15	660.31
SP/SD-25	663.38	665.19		
12/19/19			---	---
1/19/22	Well Screened	660.24	---	---
7/6/22	to	655.24	---	---
1/4/23			5.13	660.06

ft-MSL - feet Mean Sea Level
BGS - feet below ground surface

ATTACHMENT C

Boring Logs & Abandonment Forms

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐ _____

Page 1 of 2

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		PZ-1

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Swoat Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _ _	_ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Village of Fredonia

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				3" Silty Sand & Gravel										
	48/60			45" Gravely Silty Clay fill				0		D				
								0		M				
5'														
				12" Silty Clay										
	24/60			12" Sand + Gravel fill				0		M				
								0		W				
10'				Continued										

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

Signature	Firm
	Moraine Environmental, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

PZ-1

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
	60/60			4" Gravel 26" Gravely Silty Clay 30" Silty Clay w/ some Pea Stone				0 0		W W				
15'														
	60/60			60" Silty Clay w/ some pebbles				0 0		W W				
20'														
	60/60			60" Silty Clay				0 0		W W				
25'														
	60/60			42" Silty Clay 28" Silty Fine Sand				0 0		W W				
30'				EOB @ 30' BGS										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-16

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				30" Sand & Gravel Fill				0		D				
	30/60							0		M				
5'				EOB @ 5' BGS										

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

Signature _____ Firm Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-17

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
				3" Top soil										
				15" Sandy Gravely Clay				0		D				
	34/60			16" Sand & Gravel Fill										
								0		M				
5'														

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

Signature _____ Firm Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-18

Boring Drilled By: Name of crew chief (first/last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _ _	_ _ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
				42" Gravel + Clay fill				0		D				
	42/60													
								0		M				
5'				EOB @ 5' BGS										

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

Signature _____ Firm Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name: Thiensville Highway Department	License/Permit/Monitoring Number	Boring Number: SP-19
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	Date Drilling Started: 12/21/2022	Date Drilling Completed: 12/21/2022 — Drilling Method: Direct Push
WI Unique Well No.	DNR Well ID No.	Well Name
Final Static Water Level: _____ Feet MSL	Surface Elevation: _____ Feet MSL	Borehole Diameter: _____ inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane _____ N, _____ E _____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____	Lat ° ' " Long ° ' "	Local Grid Location _____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W
Facility ID: 246090900	County: Ozaukee	County Code: _____ Civil Town/City/ or Village: Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	48/60			48" Clay + Gravel fill				0		D				
								0		M				
5'				EOB @ 5' BGS										

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

Signature: _____ Firm: Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-20

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022	12/21/2022	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
	40/60			40" Clay + Gravel Fill				0		D				
								0		M				
5'				EOB @ 5' BGS										

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

Signature _____ Firm Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-21

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
	36/60			36" Clay Fill				0		D				
								0		M				
5'				EOB@5'BGS										

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

Signature _____ Firm Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name: Thiensville Highway Department	License/Permit/Monitoring Number	Boring Number: SP-22
Boring Drilled By: Name of crew chief (first/last) and Firm First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	Date Drilling Started: 12/21/2022 (m m d d y y y y)	Date Drilling Completed: 12/21/2022 (m m d d y y y y) — Drilling Method: Direct Push
WI Unique Well No. _ _ _ _ _ _ _	DNR Well ID No. _ _ _ _ _	Well Name
Final Static Water Level _____ Feet MSL	Surface Elevation _____ Feet MSL	Borehole Diameter _____ inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane _____ N, _____ E _____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____	Lat ° ' " Long ° ' "	Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W
Facility ID: 246090900	County: Ozaukee	County Code: _____ — Civil Town/City/ or Village: Thiensville

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	42/60			42" Clay Fill				0		D				
								0		M				
5'				EOB @ 5' BGS										

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

Signature _____ Firm: Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-23

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐	Lat ___ ___ ___	Local Grid Location
State Plane _____ N, _____ E	Long ___ ___ ___	☐ N ☐ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____		_____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
	46/60			46" Clay Fill				0		D				
								0		M				
5'				EOB @ 5' BGS										

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

Signature	Firm
	Moraine Environmental, Inc.

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-24

Boring Drilled By: Name of crew chief (first/last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____
Lat ___ ° ___ ' ___ "
Long ___ ° ___ ' ___ "
Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
	24/60			24" Clay Fill				0		D				
								0		M				
5'				EOB @ 5' BGS										

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

Signature _____ Firm Moraine Environmental, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Thiensville Highway Department		SP-25

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Adam Last Name: Sweet Firm: Horizon Construction + Exploration	12/21/2022 (m m d d y y y y)	12/21/2022 (m m d d y y y y)	Direct Push

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _		_____ Feet MSL	_____ Feet MSL	_____ inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane _____ N, _____ E
_____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____

Lat ° ' "
Long ° ' "

Local Grid Location
_____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
246090900	Ozaukee		Thiensville

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	36/60			18" Clay Gravel Wood Fill 18" Sand + Gravel		3'	2" PVC Riser #1 Coarse Sand	0 0 0		D M W	W5'			
5'	44/60			44" Sand + Gravel		8'	#1 Coarse Sand	0 0		W W				
10'				EOB @ 10' BGS										

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

Signature _____ Firm Moraine Environmental, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

lotice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In ccordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment or up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other urpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Ozaukee		

atitude / Longitude (see instructions) — Format Code: ☐ DD ☐ DDM — Method Code: ☐ GPS008 ☐ SCR002 ☐ OTH001

N
W

¼ / ¼	¼	Section	Township	Range
r Gov't Lot #			N	☐ E ☐ W

Well Street Address

Well City, Village or Town	Well ZIP Code
Village of Thiensville	
ubdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
Exploratory Probe	

. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)?	Depth to Water (feet)

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-16

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

. Material Used to Fill Well / Drillhole

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Rospichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

ounty	WI Unique Well # of Removed Well	Hicap #
Ozaukee		

atitude / Longitude (see instructions)	Format Code	Method Code
N	☐ DD	☐ GPS008
W	☐ DDM	☐ SCR002 ☐ OTH001

¼ / ¼	¼	Section	Township	Range
			N	☐ E ☐ W

r Gov't Lot #

/ell Street Address

/ell City, Village or Town	Well ZIP Code
Village of Thiensville	
ubdivision Name	Lot #

eason for Removal from Service	WI Unique Well # of Replacement Well
Exploratory Probe	

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)?	Depth to Water (feet)

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-17

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Rospichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By
Comments	

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

Well Location Information

ounty	WI Unique Well # of Removed Well	Hicap #
Kewaukee		

atitude / Longitude (see instructions)	Format Code	Method Code
N	☐ DD	☐ GPS008
W	☐ DDM	☐ SCR002 ☐ OTH001

/ ¼	¼	Section	Township	Range
Gov't Lot #			N	☐ E ☐ W

/ell Street Address

/ell City, Village or Town: Village of Thiensville | Well ZIP Code

ubdivision Name | Lot #

eason for Removal from Service: Exploratory Probe | WI Unique Well # of Replacement Well

Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

'as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)?	Depth to Water (feet)

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-18

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Pospichal		12/21/2022

reet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ty	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Kewaunee		

Latitude / Longitude (see instructions)	Format Code	Method Code
N	☐ DD	☐ GPS008
W	☐ DDM	☐ SCR002
		☐ OTH001

¼ / ¼	¼	Section	Township	Range
			N	☐ E ☐ W

Gov't Lot #

Well Street Address

Well City, Village or Town	Well ZIP Code
Village of Thiensville	
Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
Exploratory Probe	

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-19

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

Formation Type:
☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
Lower Drillhole Diameter (in.)	**Casing Depth (ft.)**
2.25	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)? | Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Rospichal		12/21/2022

Street or Route	Telephone Number
766 Tower Drive	(262) 692-3545

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

Well Location Information

ounty	WI Unique Well # of Removed Well	Hicap #
Ozaukee		

atitude / Longitude (see instructions)	Format Code	Method Code
N	☐ DD	☐ GPS008
W	☐ DDM	☐ SCR002 ☐ OTH001

¼ / ¼	¼	Section	Township	Range
r Gov't Lot #			N	☐ E ☐ W

/ell Street Address

/ell City, Village or Town	Well ZIP Code
Village of Thiensville	
ubdivision Name	Lot #

eason for Removal from Service	WI Unique Well # of Replacement Well
Exploratory Probe	

Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)?	Depth to Water (feet)

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-20

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Bospichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

otice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In ccordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment ır up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other urpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

ounty	WI Unique Well # of Removed Well	Hicap #
Ozaukee		

atitude / Longitude (see instructions) | Format Code | Method Code
_____ N ☐ DD ☐ GPS008
_____ W ☐ DDM ☐ SCR002 ☐ OTH001

¼ / ¼	¼	Section	Township	Range
r Gov't Lot #			N	☐ E ☐ W

Vell Street Address

Vell City, Village or Town: Village of Thiensville | Well ZIP Code

ubdivision Name | Lot #

eason for Removal from Service: Exploratory Probe | WI Unique Well # of Replacement Well

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-21

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner | State | ZIP Code

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.): 5 | Casing Diameter (in.)

ower Drillhole Diameter (in.): 2.25 | Casing Depth (ft.)

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)? | Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks, Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments:

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Pospichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

otice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In ccordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment or up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other urpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Rawkee		

atitude / Longitude (see instructions)	Format Code	Method Code
N	☐ DD	☐ GPS008
W	☐ DDM	☐ SCR002
		☐ OTH001

¼ / ¼	¼	Section	Township	Range
r Gov't Lot #			N	☐ E ☐ W

Well Street Address

Well City, Village or Town	Well ZIP Code
Village of Thiensville	
ubdivision Name	Lot #

eason for Removal from Service	WI Unique Well # of Replacement Well
Exploratory Probe	

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)?	Depth to Water (feet)

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-22

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Pospichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

ounty	WI Unique Well # of Removed Well	Hicap #
Ozaukee		

atitude / Longitude (see instructions) — Format Code: ☐ DD ☐ DDM — Method Code: ☐ GPS008 ☐ SCR002 ☐ OTH001

_____ N
_____ W

¼ / ¼	¼	Section	Township	Range
r Gov't Lot #			N	☐ E ☐ W

/ell Street Address

/ell City, Village or Town: Village of Thiensville — Well ZIP Code

ubdivision Name — Lot #

eason for Removal from Service: Exploratory Probe — WI Unique Well # of Replacement Well

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-23

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner | State | ZIP Code

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)? — Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments

Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Bosichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

tate of Wis., Dept. of Natural Resources
nr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Rawkee		

atitude / Longitude (see instructions)	Format Code	Method Code
N	☐ DD	☐ GPS008
W	☐ DDM	☐ SCR002
		☐ OTH001

¼ / ¼	¼	Section	Township	Range
r Gov't Lot #			N	☐ E ☐ W

Well Street Address

Well City, Village or Town	Well ZIP Code
Village of Thiensville	
ubdivision Name	Lot #

eason for Removal from Service	WI Unique Well # of Replacement Well
Exploratory Probe	

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/21/2022

If a Well Construction Report is available, please attach.

onstruction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Direct Push

ormation Type:
☐ Unconsolidated Formation ☐ Bedrock

otal Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
5	
ower Drillhole Diameter (in.)	Casing Depth (ft.)
2.25	

/as well annular space grouted? ☐ Yes ☐ No ☐ Unknown

yes, to what depth (feet)?	Depth to Water (feet)

2. Facility / Owner Information

Facility Name: Thiensville Highway Department

Facility ID (FID or PWS): 246090900

License/Permit/Monitoring #: SD-24

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☐ No	☒ N/A
Casing left in place?	☐ Yes	☐ No	☒ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☒ Other (Explain): Gravity

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Material Used to Fill Well / Drillhole	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
3/8" Bentonite chips	Surface	5		

Comments:

5. Supervision of Work

ame of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Joe Pospichal		12/21/2022

treet or Route	Telephone Number
766 Tower Drive	(262) 692-3545

ity	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021		1/3/2023

DNR Use Only

Date Received	Noted By

Comments

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Thiensville Highway Dept.	Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W.	Well Name: PZ-1
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID: 246090900	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 12/21/2022 (m m d d y y y y)
Type of Well — Well Code: 12 / PZ	Section Location of Waste/Source: SE 1/4 of SE 1/4 of Sec. 15, T. 09 N, R. 21 ☒ E ☐ W	Well Installed By: Name (first, last) and Firm: Adam Sweet — Horizon Const. & Exploration
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number

A. Protective pipe, top elevation +2.5 ft. MSL
B. Well casing, top elevation +2.5 ft. MSL
C. Land surface elevation 0 ft. MSL
D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50
3.25" Dual Tube — Hollow Stem Auger ☐ 41
Other ☒

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
_____

E. Bentonite seal, top _____ ft. MSL or 19 ft.
F. Fine sand, top _____ ft. MSL or 21 ft.
G. Filter pack, top _____ ft. MSL or 23 ft.
H. Screen joint, top _____ ft. MSL or 25 ft.
I. Well bottom _____ ft. MSL or 30 ft.
J. Filter pack, bottom _____ ft. MSL or 30 ft.
K. Borehole, bottom _____ ft. MSL or 30 ft.
L. Borehole, diameter 3.25 in.
M. O.D. well casing 1.25 in.
N. I.D. well casing 1.0 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4 in.
b. Length: 5 ft.
c. Material: Steel ☒ 04 Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____
3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐
4. Material between well casing and protective pipe: Bentonite ☒ 30 Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. 10 % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☒ 02 Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. R.W. Sidley #4000
b. Volume added 15 lbs
8. Filter pack material: Manufacturer, product name & mesh size
a. R.W. Sidley #1
b. Volume added 50 lbs
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐
10. Screen material: SCH40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14 Other ☐

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

Signature: Dave Lennon — Firm: Moraine Environmental, Inc.

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Thiensville Hwy Dept.	Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W.	Well Name: SD-25
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID: 246090900	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 12/21/2022 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: SE 1/4 of SE 1/4 of Sec. 15, T. 09 N, R. 21 ☒ E ☐ W	Well Installed By: Name (first, last) and Firm: Adam Sweet, Horizon Const. & Excavation
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: _____

A. Protective pipe, top elevation 2.5 ft. MSL
B. Well casing, top elevation 2.2 ft. MSL
C. Land surface elevation 0 ft. MSL
D. Surface seal, bottom _____ ft. MSL or 1 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☒ — Direct Push

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):

E. Bentonite seal, top _____ ft. MSL or 1 ft.
F. Fine sand, top _____ ft. MSL or 2.0 ft.
G. Filter pack, top _____ ft. MSL or 2.5 ft.
H. Screen joint, top _____ ft. MSL or 3 ft.
I. Well bottom _____ ft. MSL or 8 ft.
J. Filter pack, bottom _____ ft. MSL or 8 ft.
K. Borehole, bottom _____ ft. MSL or 10 ft.
L. Borehole, diameter 2.25 in.
M. O.D. well casing 1.25 in.
N. I.D. well casing 1.0 in.

1. Cap and lock? ☐ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4 in.
b. Length: 5 ft.
c. Material: Steel ☒ 04 / Other ☐ ____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Bentonite ☐ 30 / Concrete ☒ 01 / Other ☐ ____
4. Material between well casing and protective pipe: Bentonite ☒ 30 / Other ☐ ____
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. RW Sidley #4000
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. RW Sidley #15
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ ____
10. Screen material: SCH40 PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ ____
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14 / Other ☐ ____

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

Signature	Firm
Dave Lennon	Moraine Environmental, Inc.

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

ATTACHMENT D

Laboratory Reports

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

January 06, 2023

Tom Sweet
Moraine Environmental, Inc.
766 Tower Drive
Fredonia, WI 53021

RE: Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Dear Tom Sweet:

Enclosed are the analytical results for sample(s) received by the laboratory on December 23, 2022. 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,

Steven Mleczko
steve.mleczko@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: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

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
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40256436001	**SP-16 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256436002	**SP-17 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256436003	**SP-25 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50

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

SAMPLE ANALYTE COUNT

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40256436001	**SP-16 (3-4)**	EPA 8270E by SIM	TPO	20	PASI-G
		ASTM D2974-87	TMP	1	PASI-G
40256436002	**SP-17 (3-4)**	EPA 8270E by SIM	TPO	20	PASI-G
		ASTM D2974-87	TMP	1	PASI-G
40256436003	**SP-25 (3-4)**	EPA 8270E by SIM	TPO	20	PASI-G
		ASTM D2974-87	TMP	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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

SUMMARY OF DETECTION

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40256436001	**SP-16 (3-4)**					
EPA 8270E by SIM	Acenaphthene	92.6J	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Acenaphthylene	74.7J	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Anthracene	671	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Benzo(a)anthracene	2050	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Benzo(a)pyrene	1890	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Benzo(b)fluoranthene	2650	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Benzo(g,h,i)perylene	1170	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Benzo(k)fluoranthene	928	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Chrysene	2340	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Dibenz(a,h)anthracene	364J	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Fluoranthene	4790	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Fluorene	68.6J	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Indeno(1,2,3-cd)pyrene	1040	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Phenanthrene	2010	ug/kg	457	01/04/23 15:22	
EPA 8270E by SIM	Pyrene	3180	ug/kg	457	01/04/23 15:22	
ASTM D2974-87	Percent Moisture	8.7	%	0.10	12/27/22 11:27	
40256436002	**SP-17 (3-4)**					
EPA 8270E by SIM	Acenaphthene	23.0J	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Acenaphthylene	45.5J	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Anthracene	132	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Benzo(a)anthracene	242	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Benzo(a)pyrene	235	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Benzo(b)fluoranthene	294	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Benzo(g,h,i)perylene	151	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Benzo(k)fluoranthene	124	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Chrysene	277	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Dibenz(a,h)anthracene	37.1J	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Fluoranthene	688	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Fluorene	60.5J	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Indeno(1,2,3-cd)pyrene	124	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	1-Methylnaphthalene	16.5J	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	2-Methylnaphthalene	26.2J	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Naphthalene	94.4	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Phenanthrene	545	ug/kg	73.9	01/04/23 15:39	
EPA 8270E by SIM	Pyrene	466	ug/kg	73.9	01/04/23 15:39	
ASTM D2974-87	Percent Moisture	9.6	%	0.10	12/27/22 11:27	
40256436003	**SP-25 (3-4)**					
EPA 8270E by SIM	Acenaphthylene	3.0J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Anthracene	2.6J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Benzo(a)anthracene	8.1J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Benzo(a)pyrene	9.8J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Benzo(b)fluoranthene	12.9J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Benzo(g,h,i)perylene	13.3J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Benzo(k)fluoranthene	5.5J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Chrysene	10.2J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Fluoranthene	12.1J	ug/kg	18.5	01/04/23 15:57	

REPORT OF LABORATORY ANALYSIS

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

SUMMARY OF DETECTION

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40256436003	**SP-25 (3-4)**					
EPA 8270E by SIM	Indeno(1,2,3-cd)pyrene	7.3J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	1-Methylnaphthalene	3.4J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	2-Methylnaphthalene	4.5J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Naphthalene	2.4J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Phenanthrene	5.6J	ug/kg	18.5	01/04/23 15:57	
EPA 8270E by SIM	Pyrene	10.2J	ug/kg	18.5	01/04/23 15:57	
ASTM D2974-87	Percent Moisture	9.7	%	0.10	12/27/22 11:28	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Sample: SP-16 (3-4) **Lab ID: 40256436001** Collected: 12/21/22 00:00 Received: 12/23/22 07:50 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**92.6J**	ug/kg	457	59.2	25	01/04/23 08:03	01/04/23 15:22	83-32-9	
Acenaphthylene	**74.7J**	ug/kg	457	57.6	25	01/04/23 08:03	01/04/23 15:22	208-96-8	
Anthracene	**671**	ug/kg	457	56.7	25	01/04/23 08:03	01/04/23 15:22	120-12-7	
Benzo(a)anthracene	**2050**	ug/kg	457	59.0	25	01/04/23 08:03	01/04/23 15:22	56-55-3	
Benzo(a)pyrene	**1890**	ug/kg	457	51.9	25	01/04/23 08:03	01/04/23 15:22	50-32-8	
Benzo(b)fluoranthene	**2650**	ug/kg	457	63.4	25	01/04/23 08:03	01/04/23 15:22	205-99-2	
Benzo(g,h,i)perylene	**1170**	ug/kg	457	80.1	25	01/04/23 08:03	01/04/23 15:22	191-24-2	
Benzo(k)fluoranthene	**928**	ug/kg	457	58.4	25	01/04/23 08:03	01/04/23 15:22	207-08-9	
Chrysene	**2340**	ug/kg	457	86.1	25	01/04/23 08:03	01/04/23 15:22	218-01-9	
Dibenz(a,h)anthracene	**364J**	ug/kg	457	63.2	25	01/04/23 08:03	01/04/23 15:22	53-70-3	
Fluoranthene	**4790**	ug/kg	457	54.0	25	01/04/23 08:03	01/04/23 15:22	206-44-0	
Fluorene	**68.6J**	ug/kg	457	54.7	25	01/04/23 08:03	01/04/23 15:22	86-73-7	
Indeno(1,2,3-cd)pyrene	**1040**	ug/kg	457	95.1	25	01/04/23 08:03	01/04/23 15:22	193-39-5	
1-Methylnaphthalene	**<66.7**	ug/kg	457	66.7	25	01/04/23 08:03	01/04/23 15:22	90-12-0	
2-Methylnaphthalene	**<66.8**	ug/kg	457	66.8	25	01/04/23 08:03	01/04/23 15:22	91-57-6	
Naphthalene	**<44.5**	ug/kg	457	44.5	25	01/04/23 08:03	01/04/23 15:22	91-20-3	
Phenanthrene	**2010**	ug/kg	457	52.3	25	01/04/23 08:03	01/04/23 15:22	85-01-8	
Pyrene	**3180**	ug/kg	457	67.1	25	01/04/23 08:03	01/04/23 15:22	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	59	%	41-98		25	01/04/23 08:03	01/04/23 15:22	321-60-8	
Terphenyl-d14 (S)	58	%	37-106		25	01/04/23 08:03	01/04/23 15:22	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**8.7**	%	0.10	0.10	1		12/27/22 11:27		

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Sample: SP-17 (3-4) **Lab ID: 40256436002** Collected: 12/21/22 00:00 Received: 12/23/22 07:50 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**23.0J**	ug/kg	73.9	9.6	4	01/04/23 08:03	01/04/23 15:39	83-32-9	
Acenaphthylene	**45.5J**	ug/kg	73.9	9.3	4	01/04/23 08:03	01/04/23 15:39	208-96-8	
Anthracene	**132**	ug/kg	73.9	9.2	4	01/04/23 08:03	01/04/23 15:39	120-12-7	
Benzo(a)anthracene	**242**	ug/kg	73.9	9.5	4	01/04/23 08:03	01/04/23 15:39	56-55-3	
Benzo(a)pyrene	**235**	ug/kg	73.9	8.4	4	01/04/23 08:03	01/04/23 15:39	50-32-8	
Benzo(b)fluoranthene	**294**	ug/kg	73.9	10.3	4	01/04/23 08:03	01/04/23 15:39	205-99-2	
Benzo(g,h,i)perylene	**151**	ug/kg	73.9	13.0	4	01/04/23 08:03	01/04/23 15:39	191-24-2	
Benzo(k)fluoranthene	**124**	ug/kg	73.9	9.4	4	01/04/23 08:03	01/04/23 15:39	207-08-9	
Chrysene	**277**	ug/kg	73.9	13.9	4	01/04/23 08:03	01/04/23 15:39	218-01-9	
Dibenz(a,h)anthracene	**37.1J**	ug/kg	73.9	10.2	4	01/04/23 08:03	01/04/23 15:39	53-70-3	
Fluoranthene	**688**	ug/kg	73.9	8.7	4	01/04/23 08:03	01/04/23 15:39	206-44-0	
Fluorene	**60.5J**	ug/kg	73.9	8.9	4	01/04/23 08:03	01/04/23 15:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**124**	ug/kg	73.9	15.4	4	01/04/23 08:03	01/04/23 15:39	193-39-5	
1-Methylnaphthalene	**16.5J**	ug/kg	73.9	10.8	4	01/04/23 08:03	01/04/23 15:39	90-12-0	
2-Methylnaphthalene	**26.2J**	ug/kg	73.9	10.8	4	01/04/23 08:03	01/04/23 15:39	91-57-6	
Naphthalene	**94.4**	ug/kg	73.9	7.2	4	01/04/23 08:03	01/04/23 15:39	91-20-3	
Phenanthrene	**545**	ug/kg	73.9	8.5	4	01/04/23 08:03	01/04/23 15:39	85-01-8	
Pyrene	**466**	ug/kg	73.9	10.9	4	01/04/23 08:03	01/04/23 15:39	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	41-98		4	01/04/23 08:03	01/04/23 15:39	321-60-8	
Terphenyl-d14 (S)	70	%	37-106		4	01/04/23 08:03	01/04/23 15:39	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**9.6**	%	0.10	0.10	1		12/27/22 11:27		

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Sample: SP-25 (3-4) **Lab ID: 40256436003** Collected: 12/21/22 00:00 Received: 12/23/22 07:50 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**<2.4**	ug/kg	18.5	2.4	1	01/04/23 08:03	01/04/23 15:57	83-32-9	
Acenaphthylene	**3.0J**	ug/kg	18.5	2.3	1	01/04/23 08:03	01/04/23 15:57	208-96-8	
Anthracene	**2.6J**	ug/kg	18.5	2.3	1	01/04/23 08:03	01/04/23 15:57	120-12-7	
Benzo(a)anthracene	**8.1J**	ug/kg	18.5	2.4	1	01/04/23 08:03	01/04/23 15:57	56-55-3	
Benzo(a)pyrene	**9.8J**	ug/kg	18.5	2.1	1	01/04/23 08:03	01/04/23 15:57	50-32-8	
Benzo(b)fluoranthene	**12.9J**	ug/kg	18.5	2.6	1	01/04/23 08:03	01/04/23 15:57	205-99-2	
Benzo(g,h,i)perylene	**13.3J**	ug/kg	18.5	3.2	1	01/04/23 08:03	01/04/23 15:57	191-24-2	
Benzo(k)fluoranthene	**5.5J**	ug/kg	18.5	2.4	1	01/04/23 08:03	01/04/23 15:57	207-08-9	
Chrysene	**10.2J**	ug/kg	18.5	3.5	1	01/04/23 08:03	01/04/23 15:57	218-01-9	
Dibenz(a,h)anthracene	**<2.6**	ug/kg	18.5	2.6	1	01/04/23 08:03	01/04/23 15:57	53-70-3	
Fluoranthene	**12.1J**	ug/kg	18.5	2.2	1	01/04/23 08:03	01/04/23 15:57	206-44-0	
Fluorene	**<2.2**	ug/kg	18.5	2.2	1	01/04/23 08:03	01/04/23 15:57	86-73-7	
Indeno(1,2,3-cd)pyrene	**7.3J**	ug/kg	18.5	3.9	1	01/04/23 08:03	01/04/23 15:57	193-39-5	
1-Methylnaphthalene	**3.4J**	ug/kg	18.5	2.7	1	01/04/23 08:03	01/04/23 15:57	90-12-0	
2-Methylnaphthalene	**4.5J**	ug/kg	18.5	2.7	1	01/04/23 08:03	01/04/23 15:57	91-57-6	
Naphthalene	**2.4J**	ug/kg	18.5	1.8	1	01/04/23 08:03	01/04/23 15:57	91-20-3	
Phenanthrene	**5.6J**	ug/kg	18.5	2.1	1	01/04/23 08:03	01/04/23 15:57	85-01-8	
Pyrene	**10.2J**	ug/kg	18.5	2.7	1	01/04/23 08:03	01/04/23 15:57	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%	41-98		1	01/04/23 08:03	01/04/23 15:57	321-60-8	
Terphenyl-d14 (S)	75	%	37-106		1	01/04/23 08:03	01/04/23 15:57	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**9.7**	%	0.10	0.10	1		12/27/22 11:28		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

QC Batch: 435053
QC Batch Method: EPA 3546
Analysis Method: EPA 8270E by SIM
Analysis Description: 8270E/3546 MSSV PAH by SIM
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40256436001, 40256436002, 40256436003

METHOD BLANK: 2503010 Matrix: Solid
Associated Lab Samples: 40256436001, 40256436002, 40256436003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<2.4	16.7	01/04/23 10:11	
2-Methylnaphthalene	ug/kg	<2.4	16.7	01/04/23 10:11	
Acenaphthene	ug/kg	<2.2	16.7	01/04/23 10:11	
Acenaphthylene	ug/kg	<2.1	16.7	01/04/23 10:11	
Anthracene	ug/kg	<2.1	16.7	01/04/23 10:11	
Benzo(a)anthracene	ug/kg	<2.2	16.7	01/04/23 10:11	
Benzo(a)pyrene	ug/kg	<1.9	16.7	01/04/23 10:11	
Benzo(b)fluoranthene	ug/kg	<2.3	16.7	01/04/23 10:11	
Benzo(g,h,i)perylene	ug/kg	<2.9	16.7	01/04/23 10:11	
Benzo(k)fluoranthene	ug/kg	<2.1	16.7	01/04/23 10:11	
Chrysene	ug/kg	<3.1	16.7	01/04/23 10:11	
Dibenz(a,h)anthracene	ug/kg	<2.3	16.7	01/04/23 10:11	
Fluoranthene	ug/kg	<2.0	16.7	01/04/23 10:11	
Fluorene	ug/kg	<2.0	16.7	01/04/23 10:11	
Indeno(1,2,3-cd)pyrene	ug/kg	<3.5	16.7	01/04/23 10:11	
Naphthalene	ug/kg	<1.6	16.7	01/04/23 10:11	
Phenanthrene	ug/kg	<1.9	16.7	01/04/23 10:11	
Pyrene	ug/kg	<2.5	16.7	01/04/23 10:11	
2-Fluorobiphenyl (S)	%	74	41-98	01/04/23 10:11	
Terphenyl-d14 (S)	%	77	37-106	01/04/23 10:11	

LABORATORY CONTROL SAMPLE: 2503011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	334	260	78	64-110	
2-Methylnaphthalene	ug/kg	334	250	75	60-110	
Acenaphthene	ug/kg	334	265	79	69-120	
Acenaphthylene	ug/kg	334	267	80	63-120	
Anthracene	ug/kg	334	301	90	71-112	
Benzo(a)anthracene	ug/kg	334	275	82	62-120	
Benzo(a)pyrene	ug/kg	334	318	95	71-111	
Benzo(b)fluoranthene	ug/kg	334	268	80	59-112	
Benzo(g,h,i)perylene	ug/kg	334	302	91	64-115	
Benzo(k)fluoranthene	ug/kg	334	340	102	72-117	
Chrysene	ug/kg	334	298	89	75-120	
Dibenz(a,h)anthracene	ug/kg	334	296	89	67-114	
Fluoranthene	ug/kg	334	317	95	70-110	
Fluorene	ug/kg	334	283	85	64-104	
Indeno(1,2,3-cd)pyrene	ug/kg	334	303	91	71-114	

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: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

LABORATORY CONTROL SAMPLE: 2503011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	334	235	70	62-120	
Phenanthrene	ug/kg	334	279	84	59-106	
Pyrene	ug/kg	334	277	83	69-120	
2-Fluorobiphenyl (S)	%			78	41-98	
Terphenyl-d14 (S)	%			84	37-106	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2503012 2503013

Parameter	Units	40256641003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/kg	<2.4	333	333	260	235	78	70	51-110	10	34	
2-Methylnaphthalene	ug/kg	<2.4	333	333	251	226	75	68	45-110	10	29	
Acenaphthene	ug/kg	<2.2	333	333	254	230	76	69	52-120	10	26	
Acenaphthylene	ug/kg	<2.1	333	333	256	229	77	69	46-120	11	22	
Anthracene	ug/kg	2.9J	333	333	272	244	81	72	50-112	11	25	
Benzo(a)anthracene	ug/kg	37.6	333	333	272	253	70	65	41-120	7	37	
Benzo(a)pyrene	ug/kg	41.1	333	333	302	282	78	72	44-114	7	33	
Benzo(b)fluoranthene	ug/kg	58.8	333	333	282	266	67	62	41-112	6	43	
Benzo(g,h,i)perylene	ug/kg	29.3	333	333	285	264	77	70	40-115	8	36	
Benzo(k)fluoranthene	ug/kg	27.5	333	333	318	295	87	80	56-117	8	30	
Chrysene	ug/kg	52.3	333	333	296	272	73	66	45-120	8	28	
Dibenz(a,h)anthracene	ug/kg	9.3J	333	333	265	242	77	70	44-114	9	33	
Fluoranthene	ug/kg	74.8	333	333	338	315	79	72	55-110	7	43	
Fluorene	ug/kg	<2.0	333	333	266	239	80	72	47-104	11	27	
Indeno(1,2,3-cd)pyrene	ug/kg	24.9	333	333	282	258	77	70	45-114	9	33	
Naphthalene	ug/kg	<1.6	333	333	233	212	70	63	47-120	10	26	
Phenanthrene	ug/kg	14.0J	333	333	264	242	75	68	38-106	9	24	
Pyrene	ug/kg	53.0	333	333	284	267	69	64	51-120	6	41	
2-Fluorobiphenyl (S)	%						80	71	41-98			
Terphenyl-d14 (S)	%						76	68	37-106			

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: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

QC Batch: 434645
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40256436001, 40256436002, 40256436003

SAMPLE DUPLICATE: 2501203

Parameter	Units	40256431003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.1	18.6	3	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256436

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40256436001	**SP-16 (3-4)**	EPA 3546	435053	EPA 8270E by SIM	435086
40256436002	**SP-17 (3-4)**	EPA 3546	435053	EPA 8270E by SIM	435086
40256436003	**SP-25 (3-4)**	EPA 3546	435053	EPA 8270E by SIM	435086
40256436001	**SP-16 (3-4)**	ASTM D2974-87	434645		
40256436002	**SP-17 (3-4)**	ASTM D2974-87	434645		
40256436003	**SP-25 (3-4)**	ASTM D2974-87	434645		

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www.pacelabs.com

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

COC No. 4025643.0

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:	Moraine Environmental, Inc.
Branch/Location:	Fredonia, WI
Project Contact:	Dave Lennon
Phone:	(262) 692-3345
Project Number:	53232
Project Name:	Village of Thiensville
Project State:	Wisconsin
Sampled By (Print):	Joe Pospichal
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	Moraine Environmental, Inc.
Mail To Address:	766 Tower Drive Fredonia, WI 53021
Invoice To Contact:	same
Invoice To Company:	as
Invoice To Address:	above
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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: PAH, Dry Wt	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	SP-16 (3-4)	12/21/22		S		A	X			
002	SP-17 (3-4)	12/21/22		S		A	X			
003	SP-25 (3-4)	12/21/22		S		A	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:
	12/22/2022 8:00		
CS logistics	12/23/22 0750		12/23/22 0750

PACE Project No. 4025643.0

Receipt Temp = 1.5 °C

Sample Receipt pH OK / Adjusted

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

Version 6.0 06/14/06

Sample Preservation Receipt Form

Client Name: Moraine Env Project # L1025643C

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	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	Vials: VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm)*	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																				1														2.5 / 5
002																				1														2.5 / 5
003																																		2.5 / 5
004																																		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

12/12/2022

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	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	
						GN 2	

Page 1 of 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Moraine Env

WO# : 40256436

40256436

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

Tracking #:

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 - 118 Type of Ice: (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 1.0 /Corr: 1.5

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

Person examining contents:
Date: 12/23/22 Initials: TP

Labeled By Initials: MP

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.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI 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.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S	☐Yes ☑No ☐N/A	12. no times TP 12/23/22
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 logi

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

January 25, 2023

Tom Sweet
Moraine Environmental, Inc.
766 Tower Drive
Fredonia, WI 53021

RE: Project: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256437

Dear Tom Sweet:

Enclosed are the analytical results for sample(s) received by the laboratory on December 23, 2022. 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,

Steven Mleczko
steve.mleczko@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: 53232 VILLAGE OF THIENSVILLE
Pace Project No.: 40256437

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40256437001	**PZ-1 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437002	**PZ-1 (9-10)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437003	**PZ-1 (19-20)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437004	**PZ-1 (29-30)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437005	**SP-18 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437006	**SP-19 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437007	**SP-20 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437008	**SP-21 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437009	**SP-22 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437010	**SP-23 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50
40256437011	**SP-24 (3-4)**	Solid	12/21/22 00:00	12/23/22 07:50

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

COC No. 40256437

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:	Moraine Environmental, Inc.
Branch/Location:	Fredonia, WI
Project Contact:	Dave Lennon
Phone:	(262) 692-3345
Project Number:	53232
Project Name:	Village of Thiensville
Project State:	Wisconsin
Sampled By (Print):	Joe Pospichal
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	Moraine Environmental, Inc.
Mail To Address:	766 Tower Drive Fredonia, WI 53021
Invoice To Contact:	same
Invoice To Company:	as
Invoice To Address:	above
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: WI PFAS	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	PZ-1 (3-4)	12/21/22		S		A	X			
002	PZ-1 (9-10)	12/21/22		S		A	X			
003	PZ-1 (19-20)	12/21/22		S		A	X			
004	PZ-1 (29-30)	12/21/22		S		A	X			
005	SP-18 (3-4)	12/21/22		S		A	X			
006	SP-19 (3-4)	12/21/22		S		A	X			
007	SP-20 (3-4)	12/21/22		S		A	X			
008	SP-21 (3-4)	12/21/22		S		A	X			
009	SP-22 (3-4)	12/21/22		S		A	X			
010	SP-23 (3-4)	12/21/22		S		A	X			
011	SP-24 (3-4)	12/21/22		S		A	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:
	12/22/2022 8:00		
CS Logistics	12/23/22 0750	[illegible]	12/23/22 0750

PACE Project No. 40256437

Receipt Temp = 1.5 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / ~~Not Present~~

Intact / Not Intact

Version 6.0 06/14/06

Sample Preservation Receipt Form

Client Name: Moraine Env Project # L1256437

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	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																																		2.5 / 5
002																																		2.5 / 5
003																																		2.5 / 5
004																																		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

12/23/22

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	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	60mL plastic jar unpres
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40256437

40256437

Client Name: Moraine Env

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

Tracking #: _____

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 - 118 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 1.0 /Corr: 1.5

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

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

Person examining contents:
Date: 12/23/22 Initials: TP

Labeled By Initials: MC

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI 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.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S	☐Yes ☑No ☐N/A	12. no times TP 12/23/22
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 logi

Report of Analysis

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

Project Name: 53232 Village of Thiensville

Project Number: 40256437

Lot Number:**XL29012**

Date Completed:01/25/2023
Revision Date: 01/25/2023

Project Manager:**Jenna S. Holliday**

01/25/2023 10:18 AM
Approved and released by:
Project Manager II: **Edward Barnett**

Case Narrative
Pace Analytical Services, LLC
Lot Number: XL29012

Revised report – 01/25/23
This report has been revised to update the sample IDs incorrectly logged upon receipt.

All other sample results are as reported in the original PDF report. This report supersedes and replaces any prior reports issued under this lot number.

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. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

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.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

Where applicable, all soil sample results (including LOQ and DL if requested) are corrected for dry weight unless flagged with a "W" qualifier.

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

PFAS analysis by Isotope Dilution
Sample associated with lot XL29012 were collected in client provided HDPE bottles. While this is method compliant, the sample bottles were not provided by the laboratory.

Surrogate recovery for sample XL29012-011 was outside the acceptance limits. This sample did not contain any detects for the target analyte; therefore, the data has been reported.

The matrix spike (MS) for batch 63995 recovered outside of the acceptance limits. The associated laboratory control sample (LCS) passed acceptance criteria. Therefore, the data has been reported.

Sample Summary

Pace Analytical Services, LLC

Lot Number: XL29012

Project Name: 53232 Village of Thiensville

Project Number: 40256437

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	PZ-1 (3-4)	Solid	12/21/2022	12/29/2022
002	PZ-1 (9-10)	Solid	12/21/2022	12/29/2022
003	PZ-1 (19-20)	Solid	12/21/2022	12/29/2022
004	PZ-1 (29-30)	Solid	12/21/2022	12/29/2022
005	SP-18 (3-4)	Solid	12/21/2022	12/29/2022
006	SP-19 (3-4)	Solid	12/21/2022	12/29/2022
007	SP-20 (3-4)	Solid	12/21/2022	12/29/2022
008	SP-21 (3-4)	Solid	12/21/2022	12/29/2022
009	SP-22 (3-4)	Solid	12/21/2022	12/29/2022
010	SP-23 (3-4)	Solid	12/21/2022	12/29/2022
011	SP-24 (3-4)	Solid	12/21/2022	12/29/2022

(11 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: XL29012

Project Name: 53232 Village of Thiensville

Project Number: 40256437

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	PZ-1 (3-4)	Solid	PFHxS	PFAS by ID	0.36	J	ug/kg	6
001	PZ-1 (3-4)	Solid	PFOA	PFAS by ID	0.29	J	ug/kg	6
001	PZ-1 (3-4)	Solid	PFOS	PFAS by ID	14		ug/kg	6
002	PZ-1 (9-10)	Solid	PFOS	PFAS by ID	2.7		ug/kg	8
005	SP-18 (3-4)	Solid	PFDS	PFAS by ID	2.0		ug/kg	14
005	SP-18 (3-4)	Solid	PFHpS	PFAS by ID	0.39	J	ug/kg	14
005	SP-18 (3-4)	Solid	PFNS	PFAS by ID	0.66	J	ug/kg	14
005	SP-18 (3-4)	Solid	PFOSA	PFAS by ID	0.92	J	ug/kg	14
005	SP-18 (3-4)	Solid	PFDOS	PFAS by ID	0.62	J	ug/kg	14
005	SP-18 (3-4)	Solid	PFHxS	PFAS by ID	1.8		ug/kg	14
005	SP-18 (3-4)	Solid	PFHxA	PFAS by ID	0.31	J	ug/kg	14
005	SP-18 (3-4)	Solid	PFOS	PFAS by ID	110		ug/kg	14
006	SP-19 (3-4)	Solid	PFHxS	PFAS by ID	1.5		ug/kg	16
006	SP-19 (3-4)	Solid	PFOS	PFAS by ID	1.8		ug/kg	16
007	SP-20 (3-4)	Solid	PFHxS	PFAS by ID	0.50	J	ug/kg	18
007	SP-20 (3-4)	Solid	PFOS	PFAS by ID	12		ug/kg	18
008	SP-21 (3-4)	Solid	PFHxS	PFAS by ID	0.93	J	ug/kg	20
008	SP-21 (3-4)	Solid	PFHpA	PFAS by ID	0.23	J	ug/kg	20
008	SP-21 (3-4)	Solid	PFOS	PFAS by ID	5.9		ug/kg	20
009	SP-22 (3-4)	Solid	PFOS	PFAS by ID	3.6		ug/kg	22
010	SP-23 (3-4)	Solid	PFHxS	PFAS by ID	0.42	J	ug/kg	24
010	SP-23 (3-4)	Solid	PFOS	PFAS by ID	17		ug/kg	24
011	SP-24 (3-4)	Solid	PFBS	PFAS by ID	0.33	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFDS	PFAS by ID	1.2		ug/kg	26
011	SP-24 (3-4)	Solid	PFHpS	PFAS by ID	1.6		ug/kg	26
011	SP-24 (3-4)	Solid	PFNS	PFAS by ID	0.38	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFOSA	PFAS by ID	0.29	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFPeS	PFAS by ID	0.65	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFHxS	PFAS by ID	11		ug/kg	26
011	SP-24 (3-4)	Solid	PFHpA	PFAS by ID	0.15	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFHxA	PFAS by ID	0.37	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFOA	PFAS by ID	0.81	J	ug/kg	26
011	SP-24 (3-4)	Solid	PFOS	PFAS by ID	210		ug/kg	26

(33 detections)

PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC | Laboratory ID: XL29012-001
Description: PZ-1 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 89.9 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/06/2023 1815	BWS	12/30/2022 1414	63812

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		2.1	0.16	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.1	0.18	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.1	0.29	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.1	0.32	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.1	0.23	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.2	0.60	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.1	0.16	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.1	0.37	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.1	0.30	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.1	0.24	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.1	0.36	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.1	0.41	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.1	0.35	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.0	0.14	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.0	0.23	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.0	0.23	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.0	0.27	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.36	J	1.0	0.18	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.0	0.43	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.0	0.15	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	0.29	J	1.0	0.22	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.0	0.20	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	14		1.0	0.37	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		83	25-150
13C2_6:2FTS		88	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		87	25-150
13C3_PFHxS		85	25-150
13C3-HFPO-DA		80	25-150
13C4_PFBA		78	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: XL29012-001	
Description: PZ-1 (3-4)		Matrix: Solid	
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville	% Solids: 89.9	12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		80	25-150
13C5_PFHxA		81	25-150
13C5_PFPeA		81	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		95	25-150
13C8_PFOA		84	25-150
13C8_PFOS		84	25-150
13C8_PFOSA		79	10-150
13C9_PFNA		86	25-150
d-EtFOSA		74	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		71	10-150
d-MeFOSA		75	10-150
d3-MeFOSAA		87	25-150
d7-MeFOSE		74	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: XL29012-002
Description: PZ-1 (9-10)			Matrix: Solid
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville		% Solids: 83.9 12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/06/2023 1828	BWS	12/30/2022 1414	63812

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		2.0	0.16	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.0	0.17	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.0	0.28	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.0	0.31	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.0	0.22	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.0	0.59	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.0	0.15	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.0	0.36	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.0	0.29	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.0	0.23	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.0	0.35	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.0	0.40	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.0	0.34	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.0	0.13	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.0	0.23	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.0	0.22	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.0	0.26	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.0	0.42	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.0	0.14	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.0	0.15	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.0	0.21	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.0	0.17	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	2.7		1.0	0.36	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		69	25-150
13C2_6:2FTS		73	25-150
13C2_8:2FTS		73	25-150
13C2_PFDoA		69	25-150
13C2_PFTeDA		74	25-150
13C3_PFBS		69	25-150
13C3_PFHxS		70	25-150
13C3-HFPO-DA		71	25-150
13C4_PFBA		70	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: XL29012-002	
Description: PZ-1 (9-10)		Matrix: Solid	
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville	% Solids: 83.9	12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		69	25-150
13C5_PFHxA		70	25-150
13C5_PFPeA		69	25-150
13C6_PFDA		70	25-150
13C7_PFUdA		74	25-150
13C8_PFOA		73	25-150
13C8_PFOS		68	25-150
13C8_PFOSA		68	10-150
13C9_PFNA		73	25-150
d-EtFOSA		71	10-150
d5-EtFOSAA		71	25-150
d9-EtFOSE		68	10-150
d-MeFOSA		70	10-150
d3-MeFOSAA		70	25-150
d7-MeFOSE		70	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: XL29012-003
Description: PZ-1 (19-20) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 84.5 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/06/2023 1841	BWS	12/30/2022 1414	63812

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		2.2	0.17	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.2	0.19	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.2	0.30	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.2	0.33	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.2	0.24	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.3	0.63	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.2	0.16	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.2	0.39	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.2	0.31	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.2	0.25	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.2	0.38	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.2	0.43	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.2	0.36	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	0.14	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	0.28	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	0.45	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.23	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	0.39	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		91	25-150
13C2_6:2FTS		86	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		90	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		88	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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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: Pace Analytical Services, LLC			Laboratory ID: XL29012-003
Description: PZ-1 (19-20)			Matrix: Solid
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville		% Solids: 84.5 12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		89	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		91	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		93	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		89	10-150
13C9_PFNA		93	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		86	10-150
d-MeFOSA		88	10-150
d3-MeFOSAA		86	25-150
d7-MeFOSE		90	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

Client: Pace Analytical Services, LLC | Laboratory ID: XL29012-004
Description: PZ-1 (29-30) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 83.4 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2151	BWS	01/03/2023 1230	63995

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		2.0	0.16	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.0	0.17	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.0	0.28	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.0	0.31	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.0	0.22	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.1	0.59	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.0	0.15	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.0	0.36	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.0	0.29	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND	S	2.0	0.23	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.0	0.35	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.0	0.40	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.0	0.34	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.0	0.13	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.0	0.23	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.0	0.22	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.0	0.26	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.0	0.42	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.0	0.15	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.0	0.15	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.0	0.22	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.0	0.17	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.0	0.36	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		98	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		108	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		102	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: XL29012-004	
Description: PZ-1 (29-30)		Matrix: Solid	
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville	% Solids: 83.4	12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		100	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		101	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		105	25-150
d-EtFOSA		98	10-150
d5-EtFOSAA		99	25-150
d9-EtFOSE		94	10-150
d-MeFOSA		91	10-150
d3-MeFOSAA		94	25-150
d7-MeFOSE		104	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: XL29012-005
Description: SP-18 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 90.1 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2224	BWS	01/03/2023 1230	63995
2	SOP SPE	PFAS by ID SOP	5	01/20/2023 1412	BWS	01/03/2023 1230	63995

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		2.2	0.17	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.2	0.19	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.2	0.30	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.2	0.34	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.2	0.24	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.4	0.64	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.2	0.17	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.2	0.39	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.2	0.32	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.2	0.25	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.2	0.38	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.2	0.43	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.2	0.37	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	0.14	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	2.0		1.1	0.25	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	0.39	J	1.1	0.19	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	0.66	J	1.1	0.24	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	0.92	J	1.1	0.19	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	0.62	J	1.1	0.28	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1.8		1.1	0.19	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	0.46	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.31	J	1.1	0.20	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.23	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	110		5.5	2.0	ug/kg	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		114	25-150		79	25-150
13C2_6:2FTS		100	25-150		92	25-150
13C2_8:2FTS		119	25-150		86	25-150
13C2_PFDoA		117	25-150		97	25-150
13C2_PFTeDA		119	25-150		98	25-150
13C3_PFBS		106	25-150		94	25-150
13C3_PFHxS		99	25-150		94	25-150
13C3-HFPO-DA		87	25-150		86	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: XL29012-005
Description: SP-18 (3-4)			Matrix: Solid
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville		% Solids: 90.1 12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C4_PFBA		102	25-150		89	25-150
13C4_PFHpA		100	25-150		83	25-150
13C5_PFHxA		96	25-150		90	25-150
13C5_PFPeA		96	25-150		93	25-150
13C6_PFDA		108	25-150		95	25-150
13C7_PFUdA		110	25-150		89	25-150
13C8_PFOA		102	25-150		91	25-150
13C8_PFOS		109	25-150		87	25-150
13C8_PFOSA		92	10-150		81	10-150
13C9_PFNA		103	25-150		83	25-150
d-EtFOSA		85	10-150		75	10-150
d5-EtFOSAA		116	25-150		89	25-150
d9-EtFOSE		79	10-150		73	10-150
d-MeFOSA		83	10-150		77	10-150
d3-MeFOSAA		108	25-150		88	25-150
d7-MeFOSE		89	10-150		80	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: XL29012-006
Description: SP-19 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 82.4 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2235	BWS	01/03/2023 1230	63995

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		2.2	0.17	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.2	0.19	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.2	0.30	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.2	0.33	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.2	0.24	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.4	0.63	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.2	0.16	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.2	0.39	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.2	0.32	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.2	0.25	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.2	0.38	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.2	0.43	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.2	0.37	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.1	0.14	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.1	0.24	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.1	0.28	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	1.5		1.1	0.19	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.1	0.45	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.1	0.16	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.23	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.1	0.17	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.1	0.21	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.1	0.19	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.1	0.20	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	1.8		1.1	0.39	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		98	25-150
13C2_6:2FTS		97	25-150
13C2_8:2FTS		126	25-150
13C2_PFDoA		113	25-150
13C2_PFTeDA		115	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		95	25-150

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

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PFAS by LC/MS/MS

Client: Pace Analytical Services, LLC		Laboratory ID: XL29012-006	
Description: SP-19 (3-4)		Matrix: Solid	
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville	% Solids: 82.4	12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		97	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		107	25-150
13C8_PFOA		89	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		99	25-150
d-EtFOSA		85	10-150
d5-EtFOSAA		114	25-150
d9-EtFOSE		80	10-150
d-MeFOSA		79	10-150
d3-MeFOSAA		101	25-150
d7-MeFOSE		84	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: XL29012-007
Description: SP-20 (3-4)			Matrix: Solid
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville		% Solids: 93.7 12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2246	BWS	01/03/2023 1230	63995

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		2.0	0.16	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.0	0.17	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.0	0.28	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.0	0.31	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.0	0.22	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.1	0.59	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.0	0.15	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.0	0.36	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.0	0.29	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.0	0.23	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.0	0.35	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.0	0.40	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.0	0.34	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.0	0.13	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.0	0.23	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.0	0.22	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.0	0.26	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.50	J	1.0	0.18	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.0	0.42	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.0	0.18	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		1.0	0.15	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.0	0.15	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.0	0.22	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.0	0.16	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.0	0.17	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.0	0.19	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	12		1.0	0.36	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		100	25-150
13C2_6:2FTS		95	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		98	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: XL29012-007	
Description: SP-20 (3-4)		Matrix: Solid	
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville	% Solids: 93.7	12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		100	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		96	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		103	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		105	25-150
d9-EtFOSE		86	10-150
d-MeFOSA		89	10-150
d3-MeFOSAA		93	25-150
d7-MeFOSE		91	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: XL29012-008
Description: SP-21 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 71.4 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2256	BWS	01/03/2023 1230	63995

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		2.6	0.20	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.6	0.22	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.6	0.36	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.6	0.40	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.6	0.28	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		5.2	0.75	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.6	0.19	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.6	0.46	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.6	0.38	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.6	0.30	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.6	0.45	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.6	0.51	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.6	0.43	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		1.3	0.17	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		1.3	0.29	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		1.3	0.23	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		1.3	0.29	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		1.3	0.23	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		1.3	0.24	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		1.3	0.34	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.93	J	1.3	0.23	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		1.3	0.54	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		1.3	0.20	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		1.3	0.23	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.23	J	1.3	0.19	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		1.3	0.24	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		1.3	0.19	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.3	0.28	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		1.3	0.21	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		1.3	0.25	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		1.3	0.22	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		1.3	0.24	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	5.9		1.3	0.46	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		108	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		123	25-150
13C2_PFDoA		114	25-150
13C2_PFTeDA		124	25-150
13C3_PFBS		113	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		109	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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Client: Pace Analytical Services, LLC			Laboratory ID: XL29012-008
Description: SP-21 (3-4)			Matrix: Solid
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville		% Solids: 71.4 12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		114	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		116	25-150
13C8_PFOA		107	25-150
13C8_PFOS		121	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		121	25-150
d-EtFOSA		108	10-150
d5-EtFOSAA		112	25-150
d9-EtFOSE		107	10-150
d-MeFOSA		107	10-150
d3-MeFOSAA		107	25-150
d7-MeFOSE		108	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: XL29012-009
Description: SP-22 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 88.0 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2307	BWS	01/03/2023 1230	63995

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		2.0	0.16	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		2.0	0.17	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		2.0	0.27	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		2.0	0.30	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		2.0	0.21	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		4.0	0.57	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		2.0	0.15	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		2.0	0.35	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		2.0	0.29	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		2.0	0.23	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		2.0	0.34	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		2.0	0.39	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		2.0	0.33	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		0.99	0.13	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		0.99	0.22	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		0.99	0.17	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		0.99	0.22	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		0.99	0.17	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		0.99	0.18	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		0.99	0.26	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		0.99	0.17	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		0.99	0.41	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		0.99	0.16	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		0.99	0.17	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		0.99	0.14	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		0.99	0.18	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		0.99	0.15	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		0.99	0.21	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		0.99	0.16	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		0.99	0.19	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		0.99	0.17	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		0.99	0.18	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	3.6		0.99	0.35	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		116	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		118	25-150
13C2_PFTeDA		123	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		108	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: XL29012-009	
Description: SP-22 (3-4)		Matrix: Solid	
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville	% Solids: 88.0	12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		108	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		111	25-150
13C8_PFOA		105	25-150
13C8_PFOS		118	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		109	25-150
d-EtFOSA		103	10-150
d5-EtFOSAA		103	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		101	10-150
d3-MeFOSAA		100	25-150
d7-MeFOSE		103	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	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: XL29012-010
Description: SP-23 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 91.8 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2318	BWS	01/03/2023 1230	63995

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		1.9	0.15	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		1.9	0.16	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		1.9	0.26	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		1.9	0.29	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		1.9	0.20	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		3.7	0.54	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		1.9	0.14	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		1.9	0.33	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		1.9	0.27	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		1.9	0.21	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		1.9	0.32	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		1.9	0.37	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		1.9	0.31	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		0.93	0.12	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		0.93	0.21	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		0.93	0.16	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		0.93	0.21	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		0.93	0.16	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		0.93	0.17	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		0.93	0.24	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	0.42	J	0.93	0.16	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		0.93	0.39	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		0.93	0.15	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		0.93	0.16	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		0.93	0.13	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		0.93	0.17	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		0.93	0.14	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		0.93	0.20	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		0.93	0.15	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		0.93	0.18	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		0.93	0.16	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		0.93	0.17	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	17		0.93	0.33	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		126	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		147	25-150
13C2_PFDoA		136	25-150
13C2_PFTeDA		140	25-150
13C3_PFBS		125	25-150
13C3_PFHxS		122	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		116	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: XL29012-010
Description: SP-23 (3-4)			Matrix: Solid
Date Sampled: 12/21/2022	Project Name: 53232 Village of Thiensville		% Solids: 91.8 12/30/2022 1827
Date Received: 12/29/2022	Project Number: 40256437		

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C4_PFHpA		123	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		126	25-150
13C7_PFUdA		131	25-150
13C8_PFOA		114	25-150
13C8_PFOS		131	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		125	25-150
d-EtFOSA		93	10-150
d5-EtFOSAA		138	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		89	10-150
d3-MeFOSAA		120	25-150
d7-MeFOSE		93	10-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	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: XL29012-011
Description: SP-24 (3-4) | Matrix: Solid
Date Sampled: 12/21/2022 | Project Name: 53232 Village of Thiensville | % Solids: 95.8 12/30/2022 1827
Date Received: 12/29/2022 | Project Number: 40256437

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/19/2023 2329	BWS	01/03/2023 1230	63995
2	SOP SPE	PFAS by ID SOP	5	01/20/2023 1423	BWS	01/03/2023 1230	63995

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		1.8	0.14	ug/kg	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		1.8	0.16	ug/kg	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	1.8	0.25	ug/kg	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		1.8	0.28	ug/kg	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		1.8	0.20	ug/kg	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		3.7	0.53	ug/kg	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		1.8	0.14	ug/kg	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		1.8	0.33	ug/kg	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	1.8	0.27	ug/kg	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		1.8	0.21	ug/kg	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		1.8	0.32	ug/kg	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	Q	1.8	0.36	ug/kg	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		1.8	0.31	ug/kg	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	0.33	J	0.92	0.12	ug/kg	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	1.2		0.92	0.20	ug/kg	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	1.6		0.92	0.16	ug/kg	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	0.38	J	0.92	0.20	ug/kg	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	0.29	J	0.92	0.16	ug/kg	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	0.65	J	0.92	0.17	ug/kg	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		0.92	0.24	ug/kg	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	11		0.92	0.16	ug/kg	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		0.92	0.38	ug/kg	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		0.92	0.14	ug/kg	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	0.15	J	0.92	0.13	ug/kg	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	0.37	J	0.92	0.17	ug/kg	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		0.92	0.14	ug/kg	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	0.81	J	0.92	0.19	ug/kg	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		0.92	0.15	ug/kg	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		0.92	0.16	ug/kg	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		0.92	0.17	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	210		4.6	1.6	ug/kg	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		126	25-150		84	25-150
13C2_6:2FTS		126	25-150		96	25-150
13C2_8:2FTS	N	236	25-150		91	25-150
13C2_PFDoA		147	25-150		109	25-150
13C2_PFTeDA		132	25-150		107	25-150
13C3_PFBS		115	25-150		98	25-150
13C3_PFHxS		119	25-150		100	25-150
13C3-HFPO-DA		96	25-150		85	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

Client: Pace Analytical Services, LLC
Laboratory ID: XL29012-011
Description: SP-24 (3-4)
Matrix: Solid
Date Sampled: 12/21/2022
Project Name: 53232 Village of Thiensville
% Solids: 95.8 12/30/2022 1827
Date Received: 12/29/2022
Project Number: 40256437

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C4_PFBA		109	25-150		94	25-150
13C4_PFHpA		117	25-150		91	25-150
13C5_PFHxA		109	25-150		87	25-150
13C5_PFPeA		105	25-150		93	25-150
13C6_PFDA		135	25-150		106	25-150
13C7_PFUdA		135	25-150		99	25-150
13C8_PFOA		105	25-150		92	25-150
13C8_PFOS		120	25-150		95	25-150
13C8_PFOSA		102	10-150		87	10-150
13C9_PFNA		117	25-150		83	25-150
d-EtFOSA		88	10-150		75	10-150
d5-EtFOSAA	N	178	25-150		97	25-150
d9-EtFOSE		88	10-150		82	10-150
d-MeFOSA		86	10-150		72	10-150
d3-MeFOSAA	N	156	25-150		99	25-150
d7-MeFOSE		94	10-150		71	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

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ63812-001
Batch: 63812
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 12/30/2022 1414

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	2.0	0.16	ug/kg	01/06/2023 1322
11Cl-PF3OUdS	ND		1	2.0	0.17	ug/kg	01/06/2023 1322
8:2 FTS	ND		1	2.0	0.27	ug/kg	01/06/2023 1322
6:2 FTS	ND		1	2.0	0.31	ug/kg	01/06/2023 1322
4:2 FTS	ND		1	2.0	0.22	ug/kg	01/06/2023 1322
GenX	ND		1	4.0	0.58	ug/kg	01/06/2023 1322
ADONA	ND		1	2.0	0.15	ug/kg	01/06/2023 1322
EtFOSA	ND		1	2.0	0.36	ug/kg	01/06/2023 1322
EtFOSAA	ND		1	2.0	0.29	ug/kg	01/06/2023 1322
EtFOSE	ND		1	2.0	0.23	ug/kg	01/06/2023 1322
MeFOSA	ND		1	2.0	0.35	ug/kg	01/06/2023 1322
MeFOSAA	ND		1	2.0	0.40	ug/kg	01/06/2023 1322
MeFOSE	ND		1	2.0	0.33	ug/kg	01/06/2023 1322
PFBS	ND		1	1.0	0.13	ug/kg	01/06/2023 1322
PFDS	ND		1	1.0	0.22	ug/kg	01/06/2023 1322
PFHpS	ND		1	1.0	0.18	ug/kg	01/06/2023 1322
PFNS	ND		1	1.0	0.22	ug/kg	01/06/2023 1322
PFOSA	ND		1	1.0	0.18	ug/kg	01/06/2023 1322
PFPeS	ND		1	1.0	0.19	ug/kg	01/06/2023 1322
PFDOS	ND		1	1.0	0.26	ug/kg	01/06/2023 1322
PFHxS	ND		1	1.0	0.18	ug/kg	01/06/2023 1322
PFBA	ND		1	1.0	0.42	ug/kg	01/06/2023 1322
PFDA	ND		1	1.0	0.16	ug/kg	01/06/2023 1322
PFDoA	ND		1	1.0	0.18	ug/kg	01/06/2023 1322
PFHpA	ND		1	1.0	0.14	ug/kg	01/06/2023 1322
PFHxA	ND		1	1.0	0.18	ug/kg	01/06/2023 1322
PFNA	ND		1	1.0	0.15	ug/kg	01/06/2023 1322
PFOA	ND		1	1.0	0.21	ug/kg	01/06/2023 1322
PFPeA	ND		1	1.0	0.16	ug/kg	01/06/2023 1322
PFTeDA	ND		1	1.0	0.19	ug/kg	01/06/2023 1322
PFTrDA	ND		1	1.0	0.17	ug/kg	01/06/2023 1322
PFUdA	ND		1	1.0	0.18	ug/kg	01/06/2023 1322
PFOS	ND		1	1.0	0.36	ug/kg	01/06/2023 1322

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		88	25-150
13C2_6:2FTS		89	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		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 - MB

Sample ID: XQ63812-001
Batch: 63812
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 12/30/2022 1414

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		88	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		91	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		94	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		92	25-150
d-EtFOSA		86	10-150
d5-EtFOSAA		91	25-150
d9-EtFOSE		88	10-150
d-MeFOSA		86	10-150
d3-MeFOSAA		90	25-150
d7-MeFOSE		89	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: XQ63812-002
Batch: 63812
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 12/30/2022 1414

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	1.9	2.0		1	105	50-150	01/07/2023 0038
11Cl-PF3OUdS	1.9	2.0		1	107	50-150	01/07/2023 0038
8:2 FTS	1.9	2.0		1	105	50-150	01/07/2023 0038
6:2 FTS	1.9	2.0		1	108	50-150	01/07/2023 0038
4:2 FTS	1.9	2.0		1	108	50-150	01/07/2023 0038
GenX	4.0	4.3		1	107	50-150	01/07/2023 0038
ADONA	1.9	2.0		1	109	50-150	01/07/2023 0038
EtFOSA	2.0	2.0		1	98	50-150	01/07/2023 0038
EtFOSAA	2.0	2.2		1	109	50-150	01/07/2023 0038
EtFOSE	2.0	2.1		1	104	50-150	01/07/2023 0038
MeFOSA	2.0	1.9		1	97	50-150	01/07/2023 0038
MeFOSAA	2.0	2.3		1	115	50-150	01/07/2023 0038
MeFOSE	2.0	1.9		1	94	50-150	01/07/2023 0038
PFBS	1.8	1.9		1	108	50-150	01/07/2023 0038
PFDS	1.9	2.1		1	107	50-150	01/07/2023 0038
PFHpS	1.9	2.0		1	103	50-150	01/07/2023 0038
PFNS	1.9	2.0		1	106	50-150	01/07/2023 0038
PFOSA	2.0	2.2		1	109	50-150	01/07/2023 0038
PFPeS	1.9	2.0		1	108	50-150	01/07/2023 0038
PFDOS	1.9	1.8		1	95	50-150	01/07/2023 0038
PFHxS	1.8	1.9		1	104	50-150	01/07/2023 0038
PFBA	2.0	2.2		1	109	50-150	01/07/2023 0038
PFDA	2.0	2.2		1	108	50-150	01/07/2023 0038
PFDoA	2.0	2.3		1	115	50-150	01/07/2023 0038
PFHpA	2.0	2.1		1	103	50-150	01/07/2023 0038
PFHxA	2.0	2.1		1	106	50-150	01/07/2023 0038
PFNA	2.0	2.1		1	103	50-150	01/07/2023 0038
PFOA	2.0	2.1		1	106	50-150	01/07/2023 0038
PFPeA	2.0	2.1		1	107	50-150	01/07/2023 0038
PFTeDA	2.0	2.2		1	108	50-150	01/07/2023 0038
PFTrDA	2.0	2.1		1	106	50-150	01/07/2023 0038
PFUdA	2.0	2.2		1	108	50-150	01/07/2023 0038
PFOS	1.9	1.9		1	105	50-150	01/07/2023 0038

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		89	25-150
13C2_6:2FTS		87	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		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 - LCS

Sample ID: XQ63812-002
Batch: 63812
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 12/30/2022 1414

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		92	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		95	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		95	25-150
d-EtFOSA		88	10-150
d5-EtFOSAA		94	25-150
d9-EtFOSE		88	10-150
d-MeFOSA		88	10-150
d3-MeFOSAA		92	25-150
d7-MeFOSE		94	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: YQ63995-001
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	2.0	0.16	ug/kg	01/19/2023 2129
11Cl-PF3OUdS	ND		1	2.0	0.17	ug/kg	01/19/2023 2129
8:2 FTS	ND		1	2.0	0.27	ug/kg	01/19/2023 2129
6:2 FTS	ND		1	2.0	0.31	ug/kg	01/19/2023 2129
4:2 FTS	ND		1	2.0	0.22	ug/kg	01/19/2023 2129
GenX	ND		1	4.0	0.58	ug/kg	01/19/2023 2129
ADONA	ND		1	2.0	0.15	ug/kg	01/19/2023 2129
EtFOSA	ND		1	2.0	0.36	ug/kg	01/19/2023 2129
EtFOSAA	ND		1	2.0	0.29	ug/kg	01/19/2023 2129
EtFOSE	ND		1	2.0	0.23	ug/kg	01/19/2023 2129
MeFOSA	ND		1	2.0	0.35	ug/kg	01/19/2023 2129
MeFOSAA	ND		1	2.0	0.40	ug/kg	01/19/2023 2129
MeFOSE	ND		1	2.0	0.33	ug/kg	01/19/2023 2129
PFBS	ND		1	1.0	0.13	ug/kg	01/19/2023 2129
PFDS	ND		1	1.0	0.22	ug/kg	01/19/2023 2129
PFHpS	ND		1	1.0	0.18	ug/kg	01/19/2023 2129
PFNS	ND		1	1.0	0.22	ug/kg	01/19/2023 2129
PFOSA	ND		1	1.0	0.18	ug/kg	01/19/2023 2129
PFPeS	ND		1	1.0	0.19	ug/kg	01/19/2023 2129
PFDOS	ND		1	1.0	0.26	ug/kg	01/19/2023 2129
PFHxS	ND		1	1.0	0.18	ug/kg	01/19/2023 2129
PFBA	ND		1	1.0	0.42	ug/kg	01/19/2023 2129
PFDA	ND		1	1.0	0.16	ug/kg	01/19/2023 2129
PFDoA	ND		1	1.0	0.18	ug/kg	01/19/2023 2129
PFHpA	ND		1	1.0	0.14	ug/kg	01/19/2023 2129
PFHxA	ND		1	1.0	0.18	ug/kg	01/19/2023 2129
PFNA	ND		1	1.0	0.15	ug/kg	01/19/2023 2129
PFOA	ND		1	1.0	0.21	ug/kg	01/19/2023 2129
PFPeA	ND		1	1.0	0.16	ug/kg	01/19/2023 2129
PFTeDA	ND		1	1.0	0.19	ug/kg	01/19/2023 2129
PFTrDA	ND		1	1.0	0.17	ug/kg	01/19/2023 2129
PFUdA	ND		1	1.0	0.18	ug/kg	01/19/2023 2129
PFOS	ND		1	1.0	0.36	ug/kg	01/19/2023 2129

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		117	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		117	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		103	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: YQ63995-001
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		114	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		107	25-150
13C8_PFOA		110	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		116	25-150
d-EtFOSA		109	10-150
d5-EtFOSAA		111	25-150
d9-EtFOSE		106	10-150
d-MeFOSA		112	10-150
d3-MeFOSAA		107	25-150
d7-MeFOSE		103	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: YQ63995-002
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	1.9	1.7		1	89	50-150	01/19/2023 2140
11Cl-PF3OUdS	1.9	1.7		1	93	50-150	01/19/2023 2140
8:2 FTS	1.9	2.2		1	117	50-150	01/19/2023 2140
6:2 FTS	1.9	1.9		1	101	50-150	01/19/2023 2140
4:2 FTS	1.9	2.0		1	110	50-150	01/19/2023 2140
GenX	4.0	4.3		1	108	50-150	01/19/2023 2140
ADONA	1.9	1.8		1	95	50-150	01/19/2023 2140
EtFOSA	2.0	2.5		1	124	50-150	01/19/2023 2140
EtFOSAA	2.0	2.1		1	105	50-150	01/19/2023 2140
EtFOSE	2.0	2.6		1	131	50-150	01/19/2023 2140
MeFOSA	2.0	2.4		1	118	50-150	01/19/2023 2140
MeFOSAA	2.0	2.0		1	98	50-150	01/19/2023 2140
MeFOSE	2.0	2.3		1	113	50-150	01/19/2023 2140
PFBS	1.8	1.8		1	100	50-150	01/19/2023 2140
PFDS	1.9	1.9		1	99	50-150	01/19/2023 2140
PFHpS	1.9	1.9		1	101	50-150	01/19/2023 2140
PFNS	1.9	1.8		1	91	50-150	01/19/2023 2140
PFOSA	2.0	2.1		1	107	50-150	01/19/2023 2140
PFPeS	1.9	1.7		1	91	50-150	01/19/2023 2140
PFDOS	1.9	1.7		1	86	50-150	01/19/2023 2140
PFHxS	1.8	1.6		1	90	50-150	01/19/2023 2140
PFBA	2.0	2.0		1	98	50-150	01/19/2023 2140
PFDA	2.0	2.0		1	98	50-150	01/19/2023 2140
PFDoA	2.0	2.1		1	103	50-150	01/19/2023 2140
PFHpA	2.0	2.0		1	99	50-150	01/19/2023 2140
PFHxA	2.0	1.9		1	93	50-150	01/19/2023 2140
PFNA	2.0	2.0		1	100	50-150	01/19/2023 2140
PFOA	2.0	1.9		1	97	50-150	01/19/2023 2140
PFPeA	2.0	2.0		1	100	50-150	01/19/2023 2140
PFTeDA	2.0	1.9		1	97	50-150	01/19/2023 2140
PFTrDA	2.0	1.6		1	80	50-150	01/19/2023 2140
PFUdA	2.0	1.9		1	96	50-150	01/19/2023 2140
PFOS	1.9	1.8		1	98	50-150	01/19/2023 2140

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		109	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		113	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		98	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: YQ63995-002
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		110	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		106	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		110	25-150
d-EtFOSA		112	10-150
d5-EtFOSAA		110	25-150
d9-EtFOSE		107	10-150
d-MeFOSA		109	10-150
d3-MeFOSAA		108	25-150
d7-MeFOSE		115	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

Sample ID: XL29012-004MS
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Parameter	Sample Amount (ug/kg)	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	1.9	1.7		1	89	50-150	01/19/2023 2202
11Cl-PF3OUdS	ND	1.9	1.6		1	84	50-150	01/19/2023 2202
8:2 FTS	ND	2.0	2.4		1	123	50-150	01/19/2023 2202
6:2 FTS	ND	2.0	2.2		1	112	50-150	01/19/2023 2202
4:2 FTS	ND	1.9	2.3		1	117	50-150	01/19/2023 2202
GenX	ND	4.1	4.5		1	109	50-150	01/19/2023 2202
ADONA	ND	1.9	1.8		1	94	50-150	01/19/2023 2202
EtFOSA	ND	2.1	2.6		1	128	50-150	01/19/2023 2202
EtFOSAA	ND	2.1	2.3		1	111	50-150	01/19/2023 2202
EtFOSE	ND	2.1	3.2	N	1	153	50-150	01/19/2023 2202
MeFOSA	ND	2.1	2.6		1	127	50-150	01/19/2023 2202
MeFOSAA	ND	2.1	2.4		1	117	50-150	01/19/2023 2202
MeFOSE	ND	2.1	2.6		1	127	50-150	01/19/2023 2202
PFBS	ND	1.8	1.7		1	96	50-150	01/19/2023 2202
PFDS	ND	2.0	1.7		1	85	50-150	01/19/2023 2202
PFHpS	ND	2.0	2.2		1	111	50-150	01/19/2023 2202
PFNS	ND	2.0	1.8		1	92	50-150	01/19/2023 2202
PFOSA	ND	2.1	2.2		1	107	50-150	01/19/2023 2202
PFPeS	ND	1.9	1.7		1	89	50-150	01/19/2023 2202
PFDOS	ND	2.0	1.7		1	83	50-150	01/19/2023 2202
PFHxS	ND	1.9	1.8		1	99	50-150	01/19/2023 2202
PFBA	ND	2.1	2.1		1	104	50-150	01/19/2023 2202
PFDA	ND	2.1	2.2		1	106	50-150	01/19/2023 2202
PFDoA	ND	2.1	2.0		1	98	50-150	01/19/2023 2202
PFHpA	ND	2.1	2.2		1	106	50-150	01/19/2023 2202
PFHxA	ND	2.1	1.9		1	94	50-150	01/19/2023 2202
PFNA	ND	2.1	2.2		1	105	50-150	01/19/2023 2202
PFOA	ND	2.1	2.2		1	107	50-150	01/19/2023 2202
PFPeA	ND	2.1	2.2		1	105	50-150	01/19/2023 2202
PFTeDA	ND	2.1	2.1		1	102	50-150	01/19/2023 2202
PFTrDA	ND	2.1	1.7		1	80	50-150	01/19/2023 2202
PFUdA	ND	2.1	2.0		1	99	50-150	01/19/2023 2202
PFOS	ND	1.9	1.8		1	94	50-150	01/19/2023 2202

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		110	25-150
13C2_6:2FTS		97	25-150
13C2_8:2FTS		113	25-150
13C2_PFDoA		114	25-150
13C2_PFTeDA		114	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		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

Sample ID: XL29012-004MS
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		106	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		102	25-150
13C8_PFOS		120	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		111	25-150
d-EtFOSA		108	10-150
d5-EtFOSAA		107	25-150
d9-EtFOSE		99	10-150
d-MeFOSA		100	10-150
d3-MeFOSAA		100	25-150
d7-MeFOSE		107	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

Sample ID: XL29012-004MD
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Parameter	Sample Amount (ug/kg)	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	2.0	1.8		1	89	4.7	50-150	30	01/19/2023 2213
11Cl-PF3OUdS	ND	2.0	1.9		1	92	13	50-150	30	01/19/2023 2213
8:2 FTS	ND	2.1	2.2		1	108	9.3	50-150	30	01/19/2023 2213
6:2 FTS	ND	2.0	2.0		1	99	8.7	50-150	30	01/19/2023 2213
4:2 FTS	ND	2.0	2.4		1	118	5.2	50-150	30	01/19/2023 2213
GenX	ND	4.3	4.5		1	104	0.38	50-150	30	01/19/2023 2213
ADONA	ND	2.0	2.0		1	99	9.0	50-150	30	01/19/2023 2213
EtFOSA	ND	2.2	2.8		1	128	4.6	50-150	30	01/19/2023 2213
EtFOSAA	ND	2.2	2.6		1	119	11	50-150	30	01/19/2023 2213
EtFOSE	ND	2.2	3.1		1	142	3.2	50-150	30	01/19/2023 2213
MeFOSA	ND	2.2	2.4		1	111	8.5	50-150	30	01/19/2023 2213
MeFOSAA	ND	2.2	2.2		1	103	8.1	50-150	30	01/19/2023 2213
MeFOSE	ND	2.2	2.9		1	136	12	50-150	30	01/19/2023 2213
PFBS	ND	1.9	1.7		1	90	1.8	50-150	30	01/19/2023 2213
PFDS	ND	2.1	1.9		1	90	9.6	50-150	30	01/19/2023 2213
PFHpS	ND	2.1	2.3		1	111	4.0	50-150	30	01/19/2023 2213
PFNS	ND	2.1	2.2		1	105	18	50-150	30	01/19/2023 2213
PFOSA	ND	2.2	2.3		1	105	3.2	50-150	30	01/19/2023 2213
PFPeS	ND	2.0	2.1		1	105	22	50-150	30	01/19/2023 2213
PFDOS	ND	2.1	1.9		1	89	11	50-150	30	01/19/2023 2213
PFHxS	ND	2.0	1.9		1	97	2.8	50-150	30	01/19/2023 2213
PFBA	ND	2.2	2.2		1	101	1.5	50-150	30	01/19/2023 2213
PFDA	ND	2.2	2.1		1	98	2.6	50-150	30	01/19/2023 2213
PFDoA	ND	2.2	2.1		1	99	6.2	50-150	30	01/19/2023 2213
PFHpA	ND	2.2	2.1		1	97	4.1	50-150	30	01/19/2023 2213
PFHxA	ND	2.2	2.1		1	99	9.2	50-150	30	01/19/2023 2213
PFNA	ND	2.2	2.2		1	100	0.0056	50-150	30	01/19/2023 2213
PFOA	ND	2.2	2.2		1	100	1.4	50-150	30	01/19/2023 2213
PFPeA	ND	2.2	2.3		1	107	5.9	50-150	30	01/19/2023 2213
PFTeDA	ND	2.2	2.2		1	102	4.1	50-150	30	01/19/2023 2213
PFTrDA	ND	2.2	1.9		1	87	13	50-150	30	01/19/2023 2213
PFUdA	ND	2.2	2.0		1	94	1.1	50-150	30	01/19/2023 2213
PFOS	ND	2.0	2.0		1	98	9.0	50-150	30	01/19/2023 2213

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS		100	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		112	25-150
13C2_PFTeDA		114	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		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

Sample ID: XL29012-004MD
Batch: 63995
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 01/03/2023 1230

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		107	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		106	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		116	25-150
d-EtFOSA		104	10-150
d5-EtFOSAA		107	25-150
d9-EtFOSE		102	10-150
d-MeFOSA		109	10-150
d3-MeFOSAA		104	25-150
d7-MeFOSE		102	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: ☒ Yes ☐ No
Owner Received Date: 12/23/2022 Results Requested By: 1/10/2023

Workorder: 40256437 **Workorder Name:** 53232 VILLAGE OF THIENSVILLE

XL29012

JSK

Report To	Subcontract To
Steven Mleczko Pace Analytical Green Bay 2241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	PFAS WI 33	LAB USE ONLY
	PZ-1 (3-4)	PS	12/21/2022 00:00	40256437001	Solid	1	X	
	PZ-1 (9-10)	PS	12/21/2022 00:00	40256437002	Solid	1	X	
	PZ-1 (19-20)	PS	12/21/2022 00:00	40256437003	Solid	1	X	
	PZ-1 (29-30)	PS	12/21/2022 00:00	40256437004	Solid	1	X	
	SP-18 (3-4)	PS	12/21/2022 00:00	40256437005	Solid	1	X	
	SP-19 (3-4)	PS	12/21/2022 00:00	40256437006	Solid	1	X	
	SP-20 (3-4)	PS	12/21/2022 00:00	40256437007	Solid	1	X	
	SP-21 (3-4)	PS	12/21/2022 00:00	40256437008	Solid	1	X	
	SP-22 (3-4)	PS	12/21/2022 00:00	40256437009	Solid	1	X	
	SP-23 (3-4)	PS	12/21/2022 00:00	40256437010	Solid	1	X	
	SP-24 (3-4)	PS	12/21/2022 00:00	40256437011	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
	[signature]	12/21/22 1600		
	[signature]	12/22/22 1050	[signature]	12/22/22 1050

Comments: Dry weight in SC

Cooler Temperature on Receipt 0.4 °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

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Pace Cooler Inspected by/date: BRB / 12/29/2022 Lot #: XL29012

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: 22-2027

0.4 / 0.4 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, 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 and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☐ Yes	☑ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☑ No	☐ NA	18. 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 Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

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

January 16, 2023

Tom Sweet
Moraine Environmental, Inc.
766 Tower Drive
Fredonia, WI 53021

RE: Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Dear Tom Sweet:

Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2023. 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,

Steven Mleczko
steve.mleczko@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: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

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
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40256803001	**SD/B1**	Water	01/04/23 00:00	01/06/23 07:45
40256803002	**SD/B3**	Water	01/04/23 00:00	01/06/23 07:45
40256803003	**B4**	Water	01/04/23 00:00	01/06/23 07:45
40256803004	**SD/B28**	Water	01/04/23 00:00	01/06/23 07:45

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

SAMPLE ANALYTE COUNT

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40256803001	**SD/B1**	EPA 6010D	SIS	1	PASI-G
40256803002	**SD/B3**	EPA 6010D	SIS	1	PASI-G
40256803003	**B4**	EPA 6010D	SIS	1	PASI-G
40256803004	**SD/B28**	EPA 8270E by SIM	RJN	20	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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

SUMMARY OF DETECTION

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40256803004	**SD/B28**					
EPA 8270E by SIM	2-Methylnaphthalene	0.028J	ug/L	0.046	01/11/23 13:39	
EPA 8270E by SIM	Naphthalene	0.029J	ug/L	0.046	01/11/23 13:39	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Sample: SD/B1 **Lab ID: 40256803001** Collected: 01/04/23 00:00 Received: 01/06/23 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, Dissolved	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Lead, Dissolved	**<5.9**	ug/L	20.0	5.9	1	01/11/23 10:18	01/12/23 11:47	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Sample: SD/B3 **Lab ID: 40256803002** Collected: 01/04/23 00:00 Received: 01/06/23 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, Dissolved	Analytical Method: EPA 6010D Pace Analytical Services - Green Bay								
Lead, Dissolved	**<6.4**	ug/L	20.0	6.4	1		01/12/23 13:22	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Sample: B4 **Lab ID: 40256803003** Collected: 01/04/23 00:00 Received: 01/06/23 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, Dissolved	Analytical Method: EPA 6010D Pace Analytical Services - Green Bay								
Lead, Dissolved	**<6.4**	ug/L	20.0	6.4	1		01/12/23 13:24	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Sample: SD/B28 **Lab ID: 40256803004** Collected: 01/04/23 00:00 Received: 01/06/23 07:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3510 Pace Analytical Services - Green Bay								
Acenaphthene	**<0.013**	ug/L	0.046	0.013	1	01/10/23 09:24	01/11/23 13:39	83-32-9	
Acenaphthylene	**<0.012**	ug/L	0.046	0.012	1	01/10/23 09:24	01/11/23 13:39	208-96-8	
Anthracene	**<0.017**	ug/L	0.046	0.017	1	01/10/23 09:24	01/11/23 13:39	120-12-7	
Benzo(a)anthracene	**<0.012**	ug/L	0.046	0.012	1	01/10/23 09:24	01/11/23 13:39	56-55-3	
Benzo(a)pyrene	**<0.012**	ug/L	0.046	0.012	1	01/10/23 09:24	01/11/23 13:39	50-32-8	
Benzo(b)fluoranthene	**<0.0083**	ug/L	0.046	0.0083	1	01/10/23 09:24	01/11/23 13:39	205-99-2	
Benzo(g,h,i)perylene	**<0.021**	ug/L	0.046	0.021	1	01/10/23 09:24	01/11/23 13:39	191-24-2	
Benzo(k)fluoranthene	**<0.020**	ug/L	0.046	0.020	1	01/10/23 09:24	01/11/23 13:39	207-08-9	
Chrysene	**<0.012**	ug/L	0.046	0.012	1	01/10/23 09:24	01/11/23 13:39	218-01-9	
Dibenz(a,h)anthracene	**<0.016**	ug/L	0.046	0.016	1	01/10/23 09:24	01/11/23 13:39	53-70-3	
Fluoranthene	**<0.024**	ug/L	0.046	0.024	1	01/10/23 09:24	01/11/23 13:39	206-44-0	
Fluorene	**<0.021**	ug/L	0.046	0.021	1	01/10/23 09:24	01/11/23 13:39	86-73-7	
Indeno(1,2,3-cd)pyrene	**<0.014**	ug/L	0.046	0.014	1	01/10/23 09:24	01/11/23 13:39	193-39-5	
1-Methylnaphthalene	**<0.016**	ug/L	0.046	0.016	1	01/10/23 09:24	01/11/23 13:39	90-12-0	
2-Methylnaphthalene	**0.028J**	ug/L	0.046	0.013	1	01/10/23 09:24	01/11/23 13:39	91-57-6	
Naphthalene	**0.029J**	ug/L	0.046	0.018	1	01/10/23 09:24	01/11/23 13:39	91-20-3	
Phenanthrene	**<0.023**	ug/L	0.046	0.023	1	01/10/23 09:24	01/11/23 13:39	85-01-8	
Pyrene	**<0.021**	ug/L	0.046	0.021	1	01/10/23 09:24	01/11/23 13:39	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	84	%	44-120		1	01/10/23 09:24	01/11/23 13:39	321-60-8	
Terphenyl-d14 (S)	100	%	49-120		1	01/10/23 09:24	01/11/23 13:39	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

QC Batch: 435530
QC Batch Method: EPA 6010D
Analysis Method: EPA 6010D
Analysis Description: ICP Metals, Trace, Dissolved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40256803002, 40256803003

METHOD BLANK: 2505378 Matrix: Water
Associated Lab Samples: 40256803002, 40256803003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	<6.4	20.0	01/12/23 13:00	

LABORATORY CONTROL SAMPLE: 2505379

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	250	263	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2505380 2505381

Parameter	Units	40256820002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead, Dissolved	ug/L	<6.4	250	250	240	240	96	96	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

QC Batch: 435501
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET Dissolved
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40256803001

METHOD BLANK: 2505194 Matrix: Water
Associated Lab Samples: 40256803001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead, Dissolved	ug/L	<5.9	20.0	01/12/23 11:35	

LABORATORY CONTROL SAMPLE: 2505195

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead, Dissolved	ug/L	250	260	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2505196 2505197

Parameter	Units	40256820001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead, Dissolved	ug/L	<5.9	250	250	262	263	103	103	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

QC Batch: 435402
QC Batch Method: EPA 3510
Analysis Method: EPA 8270E by SIM
Analysis Description: 8270E Water PAH
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40256803004

METHOD BLANK: 2504786 Matrix: Water
Associated Lab Samples: 40256803004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	<0.018	0.050	01/11/23 08:20	
2-Methylnaphthalene	ug/L	<0.014	0.050	01/11/23 08:20	
Acenaphthene	ug/L	<0.014	0.050	01/11/23 08:20	
Acenaphthylene	ug/L	<0.013	0.050	01/11/23 08:20	
Anthracene	ug/L	<0.018	0.050	01/11/23 08:20	
Benzo(a)anthracene	ug/L	<0.014	0.050	01/11/23 08:20	
Benzo(a)pyrene	ug/L	<0.013	0.050	01/11/23 08:20	
Benzo(b)fluoranthene	ug/L	<0.0091	0.050	01/11/23 08:20	
Benzo(g,h,i)perylene	ug/L	<0.023	0.050	01/11/23 08:20	
Benzo(k)fluoranthene	ug/L	<0.022	0.050	01/11/23 08:20	
Chrysene	ug/L	<0.013	0.050	01/11/23 08:20	
Dibenz(a,h)anthracene	ug/L	<0.018	0.050	01/11/23 08:20	
Fluoranthene	ug/L	<0.026	0.050	01/11/23 08:20	
Fluorene	ug/L	<0.024	0.050	01/11/23 08:20	
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	0.050	01/11/23 08:20	
Naphthalene	ug/L	<0.020	0.050	01/11/23 08:20	
Phenanthrene	ug/L	<0.026	0.050	01/11/23 08:20	
Pyrene	ug/L	<0.023	0.050	01/11/23 08:20	
2-Fluorobiphenyl (S)	%	86	44-120	01/11/23 08:20	
Terphenyl-d14 (S)	%	89	49-120	01/11/23 08:20	

LABORATORY CONTROL SAMPLE & LCSD: 2504787 2504788

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/L	2	1.5	1.6	75	78	51-120	4	20	
2-Methylnaphthalene	ug/L	2	1.5	1.5	74	77	50-120	4	20	
Acenaphthene	ug/L	2	1.6	1.7	82	85	65-120	4	20	
Acenaphthylene	ug/L	2	1.7	1.7	85	87	61-120	3	20	
Anthracene	ug/L	2	1.7	1.8	85	89	61-104	4	20	
Benzo(a)anthracene	ug/L	2	1.7	1.7	85	85	51-96	1	20	
Benzo(a)pyrene	ug/L	2	1.6	1.7	80	86	68-120	7	20	
Benzo(b)fluoranthene	ug/L	2	1.7	1.7	83	86	55-97	4	20	
Benzo(g,h,i)perylene	ug/L	2	1.6	1.5	82	76	69-120	8	20	
Benzo(k)fluoranthene	ug/L	2	1.7	1.7	86	87	73-120	2	20	
Chrysene	ug/L	2	1.8	1.9	88	93	72-126	5	20	
Dibenz(a,h)anthracene	ug/L	2	1.8	1.7	88	85	57-115	4	20	
Fluoranthene	ug/L	2	1.7	1.8	87	89	58-111	2	20	
Fluorene	ug/L	2	1.7	1.7	85	87	62-120	2	20	
Indeno(1,2,3-cd)pyrene	ug/L	2	1.7	1.6	83	79	66-120	5	20	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

LABORATORY CONTROL SAMPLE & LCSD: 2504787 2504788

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Naphthalene	ug/L	2	1.6	1.6	79	82	53-120	4	20	
Phenanthrene	ug/L	2	1.7	1.7	85	87	59-120	2	20	
Pyrene	ug/L	2	1.7	1.7	85	86	59-120	1	20	
2-Fluorobiphenyl (S)	%				80	85	44-120			
Terphenyl-d14 (S)	%				88	94	49-120			

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: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

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.

BATCH QUALIFIERS

Batch: 435431

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 5323 VILLAGE OF THIENSVILLE
Pace Project No.: 40256803

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40256803001	**SD/B1**	EPA 3010A	435501	EPA 6010D	435602
40256803002	**SD/B3**	EPA 6010D	435530		
40256803003	**B4**	EPA 6010D	435530		
40256803004	**SD/B28**	EPA 3510	435402	EPA 8270E by SIM	435431

Pace Analytical®
www.pacelabs.com

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

COC No. 402560803

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:	Moraine Environmental, Inc.
Branch/Location:	Fredonia, WI
Project Contact:	Dave Lennon
Phone:	(262) 692-3345
Project Number:	5323
Project Name:	Village of Thiensville
Project State:	Wisconsin
Sampled By (Print):	Joe Pospichal
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	Moraine Environmental, Inc.
Mail To Address:	766 Tower Drive Fredonia, WI 53021
Invoice To Contact:	same
Invoice To Company:	as
Invoice To Address:	above
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	Y	N						
					PRESERVATION (CODE)* Pick Letter	D	A						
					Analyses Requested	Dissolved Lead	PAH						
001	SD/B1	1/4/23		GW		X							
002	SD/B3	1/4/23		GW		X							
003	B4	1/4/23		GW		X							
004	SD/B28	1/4/23		GW			X						

CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #

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
	1/5/2022 8:00		
Relinquished By	Date/Time	Received By	Date/Time
Cs logistics	1/6/23 745		1/6/23 745
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. 402560803

Receipt Temp = °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

Client Name: Moraine Env.

Sample Preservation Receipt Form

Project # 405568803

All containers needing preservation have been checked and noted below: ☒Yes ☐No ~~☐N/A~~ 1/6/23 up

Lab Lot# of pH paper: 1050727 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: MP Date/Time:

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	Vials: VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001											1																					X		2.5 / 5
002											1																					X		2.5 / 5
003											1																					X		2.5 / 5
004					2																													2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																				1/6/23														2.5 / 5
015																																		2.5 / 5
016																				up														2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

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	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	
						GN 2	

Page 1 of 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40256803

40256803

Client Name: Moraine Env.

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

Tracking #: _____

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 - 110 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr. 0.5 /Corr: 0.5

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

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

Person examining contents:
Date: 1/6/23 Initials: MP
Labeled By Initials: AB

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. collect times
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.
- DI 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.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-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 logi

Page 2 of 2

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

January 25, 2023

Tom Sweet
Moraine Environmental, Inc.
766 Tower Drive
Fredonia, WI 53021

RE: Project: VILLAGE OF THIENSVILLE
Pace Project No.: 40256804

Dear Tom Sweet:

Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2023. 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,

Steven Mleczko
steve.mleczko@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: VILLAGE OF THIENSVILLE
Pace Project No.: 40256804

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40256804001	**SD/B6**	Water	01/04/23 00:00	01/06/23 07:45
40256804002	**SD-25**	Water	01/04/23 00:00	01/06/23 07:45
40256804003	**PZ-1**	Water	01/04/23 00:00	01/06/23 07:45
40256804004	**FIELD BLANK**	Water	01/04/23 00:00	01/06/23 07:45

Pace Analytical®
www.pacelabs.com

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

COC No. 4102368041

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:	Moraine Environmental, Inc.
Branch/Location:	Fredonia, WI
Project Contact:	Dave Lennon
Phone:	(262) 692-3345
Project Number:	5323
Project Name:	Village of Thiensville
Project State:	Wisconsin
Sampled By (Print):	Joe Pospichal
Sampled By (Sign):	
PO #:	Regulatory Program.

Quote #:	
Mail To Contact:	
Mail To Company:	Moraine Environmental, Inc.
Mail To Address:	766 Tower Drive Fredonia, WI 53021
Invoice To Contact:	same
Invoice To Company:	as
Invoice To Address:	above
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: WI PFAS	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					N	A				
001	SD/B6	1/4/23		GW			X			
002	SD-25	1/4/23		GW			X			
003	PZ-1	1/4/23		GW			X			
004	Field Blank	1/4/23		GW			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
	1/5/2022 8:00		
Cologistics	1/6/23 745		1/6/23 745

PACE Project No.

Receipt Temp = 0.5 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6 0 06/14/06

Client Name: Moraine Env.

Sample Preservation Receipt Form

Project # ~~X~~ 402568804

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

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

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	Initial when completed: H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	Date/ Time: pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001									2																								2.5 / 5
002									2																								2.5 / 5
003									2																								2.5 / 5
004									2																								2.5 / 5
005																																	2.5 / 5
006																																	2.5 / 5
007																																	2.5 / 5
008																																	2.5 / 5
009																																	2.5 / 5
010																																	2.5 / 5
011																																	2.5 / 5
012																																	2.5 / 5
013																																	2.5 / 5
014																																	2.5 / 5
015																																	2.5 / 5
016																																	2.5 / 5
017																																	2.5 / 5
018																																	2.5 / 5
019																																	2.5 / 5
020																																	2.5 / 5

1/6/23 MP

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	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40256804

40256804

Client Name: Moraine Env.

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

Tracking #:

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 - 110 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 0.5 /Corr: 0.5

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

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

Person examining contents:
Date: 1/6/23 Initials: MP
Labeled By Initials: MF

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. collect times
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.
- DI 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.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
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.
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:

no time on COC + sample 1/6/23 MF

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

Report of Analysis

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

Project Name: Village of Thiensville

Project Number: 40256804

Lot Number:**YA10007**

Date Completed:01/25/2023

Project Manager:**Jenna S. Holliday**

01/25/2023 8:25 AM
Approved and released by:
Project Manager II: **Edward Barnett**

Case Narrative
Pace Analytical Services, LLC
Lot Number: YA10007

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. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

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.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

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

PFAS

Samples YA10007-001, YA10007-003 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 <5mL and reconstituted to 5mL using MeOH by transfer pipet.

The method blank associated with prep batch 64640 contained 6:2 FTS greater than the method criteria. For the following sample there was an insufficient amount to perform a re-extraction or re-analysis: YA10007-002. The data has been reported.

Surrogate recovery for the following samples was outside the upper control limit: YA10007-001, YA10007-002 and YA10007-003. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following sample was outside control limits: YA10007-002. A matrix spike (MS) was performed with concurring results. The original analysis has been reported.

Sample Summary
Pace Analytical Services, LLC
Lot Number: YA10007
Project Name: Village of Thiensville
Project Number: 40256804

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	SD/B6	Aqueous	01/04/2023	01/10/2023
002	SD-25	Aqueous	01/04/2023	01/10/2023
003	PZ-1	Aqueous	01/04/2023	01/10/2023
004	Field Blank	Aqueous	01/04/2023	01/10/2023

(4 samples)

Detection Summary

Pace Analytical Services, LLC

Lot Number: YA10007

Project Name: Village of Thiensville

Project Number: 40256804

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	SD/B6	Aqueous	EtFOSAA	PFAS by ID	3.8	J	ng/L	6
001	SD/B6	Aqueous	MeFOSAA	PFAS by ID	1.8	J	ng/L	6
001	SD/B6	Aqueous	PFBS	PFAS by ID	5.8		ng/L	6
001	SD/B6	Aqueous	PFDS	PFAS by ID	1.6	J	ng/L	6
001	SD/B6	Aqueous	PFHpS	PFAS by ID	22		ng/L	6
001	SD/B6	Aqueous	PFNS	PFAS by ID	1.6	J	ng/L	6
001	SD/B6	Aqueous	PFOSA	PFAS by ID	6.1		ng/L	6
001	SD/B6	Aqueous	PFPeS	PFAS by ID	6.8		ng/L	6
001	SD/B6	Aqueous	PFHxS	PFAS by ID	130		ng/L	6
001	SD/B6	Aqueous	PFBA	PFAS by ID	9.1		ng/L	6
001	SD/B6	Aqueous	PFDA	PFAS by ID	0.98	J	ng/L	6
001	SD/B6	Aqueous	PFHpA	PFAS by ID	8.3		ng/L	6
001	SD/B6	Aqueous	PFHxA	PFAS by ID	17		ng/L	6
001	SD/B6	Aqueous	PFNA	PFAS by ID	3.2	J	ng/L	6
001	SD/B6	Aqueous	PFOA	PFAS by ID	37		ng/L	6
001	SD/B6	Aqueous	PFPeA	PFAS by ID	9.2		ng/L	6
001	SD/B6	Aqueous	PFOS	PFAS by ID	3000		ng/L	6
002	SD-25	Aqueous	6:2 FTS	PFAS by ID	5.4	BJQL	ng/L	8
002	SD-25	Aqueous	PFBS	PFAS by ID	34		ng/L	8
002	SD-25	Aqueous	PFHpS	PFAS by ID	13		ng/L	8
002	SD-25	Aqueous	PFNS	PFAS by ID	0.74	J	ng/L	8
002	SD-25	Aqueous	PFPeS	PFAS by ID	66		ng/L	8
002	SD-25	Aqueous	PFHxS	PFAS by ID	800		ng/L	8
002	SD-25	Aqueous	PFBA	PFAS by ID	9.2	B	ng/L	8
002	SD-25	Aqueous	PFHpA	PFAS by ID	8.7		ng/L	8
002	SD-25	Aqueous	PFHxA	PFAS by ID	42		ng/L	8
002	SD-25	Aqueous	PFNA	PFAS by ID	1.1	J	ng/L	8
002	SD-25	Aqueous	PFOA	PFAS by ID	16		ng/L	8
002	SD-25	Aqueous	PFPeA	PFAS by ID	8.6		ng/L	8
002	SD-25	Aqueous	PFOS	PFAS by ID	980		ng/L	8
003	PZ-1	Aqueous	PFBA	PFAS by ID	2.2	J	ng/L	10
003	PZ-1	Aqueous	PFHxA	PFAS by ID	0.75	J	ng/L	10
003	PZ-1	Aqueous	PFOA	PFAS by ID	1.2	J	ng/L	10
003	PZ-1	Aqueous	PFOS	PFAS by ID	5.0		ng/L	10

(34 detections)

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **YA10007-001**

Description: **SD/B6** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/16/2023 1357	ALM	01/12/2023 1031	64640
2	SOP SPE	PFAS by ID SOP	10	01/17/2023 1443	BWS	01/12/2023 1031	64640
3	SOP SPE	PFAS by ID SOP	1	01/23/2023 1701	ALM	01/20/2023 0948	65352

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		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	3
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.3	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**3.8**	**J**	**7.4**	**0.70**	**ng/L**	**1**
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	0.88	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**	**1.8**	**J**	**7.4**	**0.86**	**ng/L**	**1**
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.8**		**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**1.6**	**J**	**3.7**	**0.72**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**22**		**3.7**	**0.46**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	**68259-12-1**	**PFAS by ID SOP**	**1.6**	**J**	**3.7**	**0.66**	**ng/L**	**1**
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**6.1**		**3.7**	**0.57**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**6.8**		**3.7**	**0.55**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.97	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**130**		**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.1**		**3.6**	**0.54**	**ng/L**	**3**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.98**	**J**	**3.7**	**0.49**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.3**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**17**		**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.2**	**J**	**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**37**		**3.7**	**0.77**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.2**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3000**		**37**	**19**	**ng/L**	**2**

Surrogate	Q	Run 1 % Recovery	Run 1 Acceptance Limits	Q	Run 2 % Recovery	Run 2 Acceptance Limits	Q	Run 3 % Recovery	Run 3 Acceptance Limits
13C2_4:2FTS	N	241	25-150		114	25-150	N	236	25-150
13C2_6:2FTS	N	178	25-150		92	25-150		139	25-150
13C2_8:2FTS		124	25-150		100	25-150		115	25-150
13C2_PFDoA		76	25-150		78	25-150		93	25-150
13C2_PFTeDA		78	25-150		82	25-150		85	25-150
13C3_PFBS		80	25-150		90	25-150		101	25-150
13C3_PFHxS		92	25-150		96	25-150		103	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: **YA10007-001**

Description: **SD/B6** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
13C3-HFPO-DA		104	25-150		88	25-150		87	25-150
13C4_PFBA		55	25-150		96	25-150		61	25-150
13C4_PFHpA		98	25-150		93	25-150		107	25-150
13C5_PFHxA		87	25-150		98	25-150		102	25-150
13C5_PFPeA		75	25-150		95	25-150		89	25-150
13C6_PFDA		94	25-150		85	25-150		112	25-150
13C7_PFUdA		85	25-150		87	25-150		96	25-150
13C8_PFOA		97	25-150		91	25-150		105	25-150
13C8_PFOS		69	25-150		90	25-150		87	25-150
13C8_PFOSA		92	10-150		95	10-150		100	10-150
13C9_PFNA		82	25-150		97	25-150		86	25-150
d-EtFOSA		60	10-150		76	10-150		50	10-150
d5-EtFOSAA		90	25-150		88	25-150		92	25-150
d9-EtFOSE		69	10-150		67	10-150		67	10-150
d-MeFOSA		64	10-150		65	10-150		58	10-150
d3-MeFOSAA		102	25-150		84	25-150		96	25-150
d7-MeFOSE		73	10-150		67	10-150		70	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

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: **YA10007-002**

Description: **SD-25** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/16/2023 1407	ALM	01/12/2023 1031	64640
2	SOP SPE	PFAS by ID SOP	5	01/17/2023 1454	BWS	01/12/2023 1031	64640

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		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**5.4**	**BJQL**	**7.4**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	0.88	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		7.4	0.86	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**34**		**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**13**		**3.7**	**0.46**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	**68259-12-1**	**PFAS by ID SOP**	**0.74**	**J**	**3.7**	**0.66**	**ng/L**	**1**
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**66**		**3.7**	**0.55**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	0.96	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**800**		**18**	**2.5**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.2**	**B**	**3.7**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.7**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**42**		**3.7**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**3.7**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**8.6**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**980**		**18**	**9.2**	**ng/L**	**2**

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	254	25-150		148	25-150
13C2_6:2FTS	N	185	25-150		112	25-150
13C2_8:2FTS		104	25-150		115	25-150
13C2_PFDoA		87	25-150		95	25-150
13C2_PFTeDA		91	25-150		98	25-150
13C3_PFBS		86	25-150		107	25-150
13C3_PFHxS		100	25-150		105	25-150
13C3-HFPO-DA		103	25-150		102	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: **YA10007-002**

Description: **SD-25** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C4_PFBA		62	25-150		109	25-150
13C4_PFHpA		95	25-150		105	25-150
13C5_PFHxA		99	25-150		108	25-150
13C5_PFPeA		82	25-150		108	25-150
13C6_PFDA		99	25-150		101	25-150
13C7_PFUdA		100	25-150		95	25-150
13C8_PFOA		111	25-150		103	25-150
13C8_PFOS		83	25-150		99	25-150
13C8_PFOSA		103	10-150		102	10-150
13C9_PFNA		99	25-150		102	25-150
d-EtFOSA		77	10-150		83	10-150
d5-EtFOSAA		96	25-150		102	25-150
d9-EtFOSE		92	10-150		95	10-150
d-MeFOSA		75	10-150		89	10-150
d3-MeFOSAA		113	25-150		100	25-150
d7-MeFOSE		93	10-150		89	10-150

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
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **YA10007-003**

Description: **PZ-1** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/16/2023 1429	ALM	01/12/2023 1031	64640
2	SOP SPE	PFAS by ID SOP	1	01/23/2023 1712	ALM	01/20/2023 0948	65352

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		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.9	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.2	0.86	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		7.2	0.84	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.2	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	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	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	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		7.2	0.94	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**	**2.2**	**J**	**3.7**	**0.56**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	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	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.75**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	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	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.0**		**3.6**	**1.8**	**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	162	25-150		147	25-150
13C2_6:2FTS	N	170	25-150		135	25-150
13C2_8:2FTS		108	25-150		107	25-150
13C2_PFDoA		93	25-150		99	25-150
13C2_PFTeDA		89	25-150		86	25-150
13C3_PFBS		101	25-150		111	25-150
13C3_PFHxS		102	25-150		104	25-150
13C3-HFPO-DA		115	25-150		93	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: **YA10007-003**

Description: **PZ-1** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C4_PFBA		102	25-150		110	25-150
13C4_PFHpA		115	25-150		111	25-150
13C5_PFHxA		100	25-150		107	25-150
13C5_PFPeA		97	25-150		109	25-150
13C6_PFDA		113	25-150		109	25-150
13C7_PFUdA		104	25-150		96	25-150
13C8_PFOA		98	25-150		109	25-150
13C8_PFOS		93	25-150		102	25-150
13C8_PFOSA		102	10-150		96	10-150
13C9_PFNA		102	25-150		106	25-150
d-EtFOSA		76	10-150		60	10-150
d5-EtFOSAA		106	25-150		91	25-150
d9-EtFOSE		90	10-150		72	10-150
d-MeFOSA		76	10-150		67	10-150
d3-MeFOSAA		122	25-150		103	25-150
d7-MeFOSE		83	10-150		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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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **YA10007-004**

Description: **Field Blank** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/16/2023 1439	ALM	01/12/2023 1031	64640
2	SOP SPE	PFAS by ID SOP	1	01/23/2023 1723	ALM	01/20/2023 0948	65352

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		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.1	1.2	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.1	0.85	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		7.1	0.83	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.1	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.1	0.93	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	2
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	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	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS		103	25-150		100	25-150
13C2_6:2FTS		101	25-150		98	25-150
13C2_8:2FTS		85	25-150		96	25-150
13C2_PFDoA		71	25-150		88	25-150
13C2_PFTeDA		72	25-150		87	25-150
13C3_PFBS		82	25-150		102	25-150
13C3_PFHxS		88	25-150		103	25-150
13C3-HFPO-DA		99	25-150		92	25-150

LOQ = Limit of Quantitation
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DL = Detection Limit
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **YA10007-004**

Description: **Field Blank** Matrix: **Aqueous**

Date Sampled: **01/04/2023** Project Name: **Village of Thiensville**

Date Received: **01/10/2023** Project Number: **40256804**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C4_PFBA		91	25-150		109	25-150
13C4_PFHpA		75	25-150		104	25-150
13C5_PFHxA		81	25-150		101	25-150
13C5_PFPeA		80	25-150		106	25-150
13C6_PFDA		81	25-150		104	25-150
13C7_PFUdA		73	25-150		85	25-150
13C8_PFOA		82	25-150		100	25-150
13C8_PFOS		73	25-150		93	25-150
13C8_PFOSA		80	10-150		87	10-150
13C9_PFNA		83	25-150		102	25-150
d-EtFOSA		60	10-150		44	10-150
d5-EtFOSAA		84	25-150		80	25-150
d9-EtFOSE		73	10-150		70	10-150
d-MeFOSA		57	10-150		49	10-150
d3-MeFOSAA		89	25-150		104	25-150
d7-MeFOSE		68	10-150		74	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

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

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: YQ64640-001
Batch: 64640
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/12/2023 1031

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	01/16/2023 1325
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	01/16/2023 1325
8:2 FTS	ND		1	8.0	1.6	ng/L	01/16/2023 1325
6:2 FTS	**5.4**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**01/16/2023 1325**
4:2 FTS	ND		1	8.0	0.87	ng/L	01/16/2023 1325
GenX	ND		1	8.0	2.1	ng/L	01/16/2023 1325
ADONA	ND		1	8.0	0.48	ng/L	01/16/2023 1325
EtFOSA	ND		1	8.0	1.4	ng/L	01/16/2023 1325
EtFOSAA	ND		1	8.0	0.75	ng/L	01/16/2023 1325
EtFOSE	ND		1	8.0	0.95	ng/L	01/16/2023 1325
MeFOSA	ND		1	16	1.3	ng/L	01/16/2023 1325
MeFOSAA	ND		1	8.0	0.93	ng/L	01/16/2023 1325
MeFOSE	ND		1	8.0	1.3	ng/L	01/16/2023 1325
PFBS	ND		1	4.0	0.41	ng/L	01/16/2023 1325
PFDS	ND		1	4.0	0.78	ng/L	01/16/2023 1325
PFHpS	ND		1	4.0	0.50	ng/L	01/16/2023 1325
PFNS	ND		1	4.0	0.71	ng/L	01/16/2023 1325
PFOSA	ND		1	4.0	0.61	ng/L	01/16/2023 1325
PFPeS	ND		1	4.0	0.59	ng/L	01/16/2023 1325
PFDOS	ND		1	8.0	1.0	ng/L	01/16/2023 1325
PFHxS	ND		1	4.0	0.55	ng/L	01/16/2023 1325
PFBA	**2.4**	**J**	**1**	**4.0**	**0.60**	**ng/L**	**01/16/2023 1325**
PFDA	ND		1	4.0	0.52	ng/L	01/16/2023 1325
PFDoA	ND		1	4.0	0.47	ng/L	01/16/2023 1325
PFHpA	ND		1	4.0	0.45	ng/L	01/16/2023 1325
PFHxA	ND		1	4.0	0.69	ng/L	01/16/2023 1325
PFNA	ND		1	4.0	0.46	ng/L	01/16/2023 1325
PFOA	ND		1	4.0	0.83	ng/L	01/16/2023 1325
PFPeA	ND		1	4.0	0.54	ng/L	01/16/2023 1325
PFTeDA	ND		1	4.0	0.60	ng/L	01/16/2023 1325
PFTrDA	ND		1	4.0	0.53	ng/L	01/16/2023 1325
PFUdA	ND		1	4.0	0.63	ng/L	01/16/2023 1325
PFOS	ND		1	4.0	2.0	ng/L	01/16/2023 1325

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		97	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		76	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		88	25-150
13C3_PFHxS		81	25-150
13C3-HFPO-DA		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 - MB

Sample ID: YQ64640-001
Batch: 64640
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/12/2023 1031

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		88	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		91	25-150
13C6_PFDA		85	25-150
13C7_PFUdA		85	25-150
13C8_PFOA		86	25-150
13C8_PFOS		80	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		89	25-150
d-EtFOSA		56	10-150
d5-EtFOSAA		91	25-150
d9-EtFOSE		74	10-150
d-MeFOSA		56	10-150
d3-MeFOSAA		94	25-150
d7-MeFOSE		77	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: YQ64640-002
Batch: 64640
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/12/2023 1031

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	18		1	120	50-150	01/16/2023 1335
11Cl-PF3OUdS	15	16		1	109	50-150	01/16/2023 1335
8:2 FTS	15	16		1	106	50-150	01/16/2023 1335
6:2 FTS	15	23	N	1	152	50-150	01/16/2023 1335
4:2 FTS	15	18		1	123	50-150	01/16/2023 1335
GenX	32	38		1	119	50-150	01/16/2023 1335
ADONA	15	20		1	135	50-150	01/16/2023 1335
EtFOSA	16	17		1	106	50-150	01/16/2023 1335
EtFOSAA	16	18		1	111	50-150	01/16/2023 1335
EtFOSE	16	18		1	114	50-150	01/16/2023 1335
MeFOSA	16	16		1	100	50-150	01/16/2023 1335
MeFOSAA	16	17		1	108	50-150	01/16/2023 1335
MeFOSE	16	20		1	124	50-150	01/16/2023 1335
PFBS	14	16		1	114	50-150	01/16/2023 1335
PFDS	15	17		1	113	50-150	01/16/2023 1335
PFHpS	15	20		1	135	50-150	01/16/2023 1335
PFNS	15	19		1	121	50-150	01/16/2023 1335
PFOSA	16	19		1	121	50-150	01/16/2023 1335
PFPeS	15	22		1	145	50-150	01/16/2023 1335
PFDOS	15	18		1	115	50-150	01/16/2023 1335
PFHxS	15	18		1	124	50-150	01/16/2023 1335
PFBA	16	21		1	131	50-150	01/16/2023 1335
PFDA	16	18		1	114	50-150	01/16/2023 1335
PFDoA	16	21		1	133	50-150	01/16/2023 1335
PFHpA	16	21		1	130	50-150	01/16/2023 1335
PFHxA	16	19		1	119	50-150	01/16/2023 1335
PFNA	16	19		1	118	50-150	01/16/2023 1335
PFOA	16	19		1	117	50-150	01/16/2023 1335
PFPeA	16	18		1	111	50-150	01/16/2023 1335
PFTeDA	16	19		1	116	50-150	01/16/2023 1335
PFTrDA	16	18		1	111	50-150	01/16/2023 1335
PFUdA	16	19		1	117	50-150	01/16/2023 1335
PFOS	15	17		1	117	50-150	01/16/2023 1335

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		117	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		95	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		88	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		107	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: YQ64640-002
Batch: 64640
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/12/2023 1031

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		89	25-150
13C4_PFHpA		87	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		86	25-150
13C8_PFOA		87	25-150
13C8_PFOS		85	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		90	25-150
d-EtFOSA		66	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		82	10-150
d-MeFOSA		71	10-150
d3-MeFOSAA		98	25-150
d7-MeFOSE		76	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: YA10007-002MS
Batch: 64640
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/12/2023 1031

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	14	18		1	135	50-150	01/16/2023 1418
11Cl-PF3OUdS	ND	14	18		1	130	50-150	01/16/2023 1418
8:2 FTS	ND	14	15		1	108	50-150	01/16/2023 1418
6:2 FTS	5.4	14	20		1	110	50-150	01/16/2023 1418
4:2 FTS	ND	14	15		1	111	50-150	01/16/2023 1418
GenX	ND	29	36		1	125	50-150	01/16/2023 1418
ADONA	ND	14	20		1	150	50-150	01/16/2023 1418
EtFOSA	ND	14	17		1	115	50-150	01/16/2023 1418
EtFOSAA	ND	14	16		1	113	50-150	01/16/2023 1418
EtFOSE	ND	14	16		1	111	50-150	01/16/2023 1418
MeFOSA	ND	14	14		1	95	50-150	01/16/2023 1418
MeFOSAA	ND	14	17		1	114	50-150	01/16/2023 1418
MeFOSE	ND	14	15		1	107	50-150	01/16/2023 1418
PFBS	34	13	47		1	103	50-150	01/16/2023 1418
PFDS	ND	14	17		1	123	50-150	01/16/2023 1418
PFHpS	13	14	33		1	146	50-150	01/16/2023 1418
PFNS	0.74	14	19		1	129	50-150	01/16/2023 1418
PFOSA	ND	14	16		1	110	50-150	01/16/2023 1418
PFPeS	66	14	78		1	95	50-150	01/16/2023 1418
PFDOS	ND	14	18		1	128	50-150	01/16/2023 1418
PFHxS	750	13	910	N	1	1180	50-150	01/16/2023 1418
PFBA	9.2	14	26		1	118	50-150	01/16/2023 1418
PFDA	ND	14	17		1	116	50-150	01/16/2023 1418
PFDoA	ND	14	18		1	124	50-150	01/16/2023 1418
PFHpA	8.7	14	26		1	123	50-150	01/16/2023 1418
PFHxA	42	14	61		1	125	50-150	01/16/2023 1418
PFNA	1.1	14	18		1	115	50-150	01/16/2023 1418
PFOA	16	14	37		1	146	50-150	01/16/2023 1418
PFPeA	8.6	14	26		1	123	50-150	01/16/2023 1418
PFTeDA	ND	14	16		1	111	50-150	01/16/2023 1418
PFTrDA	ND	14	18		1	128	50-150	01/16/2023 1418
PFUdA	ND	14	17		1	120	50-150	01/16/2023 1418
PFOS	990	13	1000	N	1	372	50-150	01/16/2023 1418

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	246	25-150
13C2_6:2FTS	N	185	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		85	25-150
13C3_PFHxS		85	25-150
13C3-HFPO-DA		101	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: YA10007-002MS
Batch: 64640
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/12/2023 1031

Surrogate	Q	% Rec	Acceptance Limit
13C4_PFBA		63	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		82	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		102	25-150
13C8_PFOS		83	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		104	25-150
d-EtFOSA		82	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		86	10-150
d-MeFOSA		83	10-150
d3-MeFOSAA		110	25-150
d7-MeFOSE		92	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: YQ65352-001
Batch: 65352
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/20/2023 0948

Parameter	Result	Q	Dil	LOQ	MDL	Units	Analysis Date
6:2 FTS	ND		1	8.0	2.0	ng/L	01/23/2023 1556
PFBA	ND		1	4.0	0.60	ng/L	01/23/2023 1556

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		107	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		107	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		110	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		109	25-150
d-EtFOSA		80	10-150
d5-EtFOSAA		93	25-150
d9-EtFOSE		97	10-150
d-MeFOSA		75	10-150
d3-MeFOSAA		97	25-150
d7-MeFOSE		95	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: YQ65352-002
Batch: 65352
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/20/2023 0948

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
6:2 FTS	15	15		1	96	50-150	01/23/2023 1607
PFBA	16	15		1	95	50-150	01/23/2023 1607

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		92	25-150
13C2_6:2FTS		87	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		100	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		99	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		103	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		89	10-150
13C9_PFNA		101	25-150
d-EtFOSA		74	10-150
d5-EtFOSAA		93	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		72	10-150
d3-MeFOSAA		87	25-150
d7-MeFOSE		88	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

[x] Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: [x] Yes [ ] No
Owner Received Date: 1/6/2023 Results Requested By: 2/01/2023

Pace Analytical
www.pacelabs.com

Workorder: 40256804 **Workorder Name:** VILLAGE OF THIENSVILLE

Report To	Subcontract To
Steven Mlaczko Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

YA10007

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: PFAS WI 33	LAB USE ONLY
	SD/B6	PS	1/4/2023 00:00	40256804001	Water	2	X	
	SD-25	PS	1/4/2023 00:00	40256804002	Water	2	X	
	PZ-1	PS	1/4/2023 00:00	40256804003	Water	2	X	
	FIELD BLANK	PS	1/4/2023 00:00	40256804004	Water	2	X	

Transfers	Released By	Date/Time	Received By	Date/Time
	[illegible]	1/9/23 1600		
	FedEx	1-10-23 1000	[illegible]	1-10-23 1038

Comments: WI PFAS 33 compounds

Cooler Temperature on Receipt 2.1 °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

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: PACE Cooler Inspected by/date: BRB / 01/10/2023 Lot #: YA10607

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

2.6 / 2.6 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, 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 and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☐ Yes	☑ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of< 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☑ No	☐ NA	18. 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 Unique ID: NA.

Comments: Sample collection time not listed on sample containers

Qualtrax ID: 56360

Pace® Analytical Services, LLC

Page 1 of 1