From: Peter, Alexis K - DNR
Sent: Thursday, August 19, 2021 3:27 PM
To: Sellwood, Alyssa A - DNR; Krueger, Sarah E - DNR
Subject: RESPONSE NEEDED - FW: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Good afternoon,

I received notification from the City of Marinette regarding the proposed road reconstruction project for Ludington St. Besides the three of us, please let me know if there are other calendars I should consult before offering meeting times for the City.

I will alert Tim and Adrian to the meeting but I anticipate a request for a summary following the meeting. Wastewater's recommendation will be consistent with other projects in the area.

Thank you,
Alexis

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Alexis Heim Peter
Pronouns: she/her/hers
Wastewater Specialist – Water Quality Bureau
NER Land Application & Septage Coordinator
Phone: 920/391-9526
Alexis.Peter@wisconsin.gov

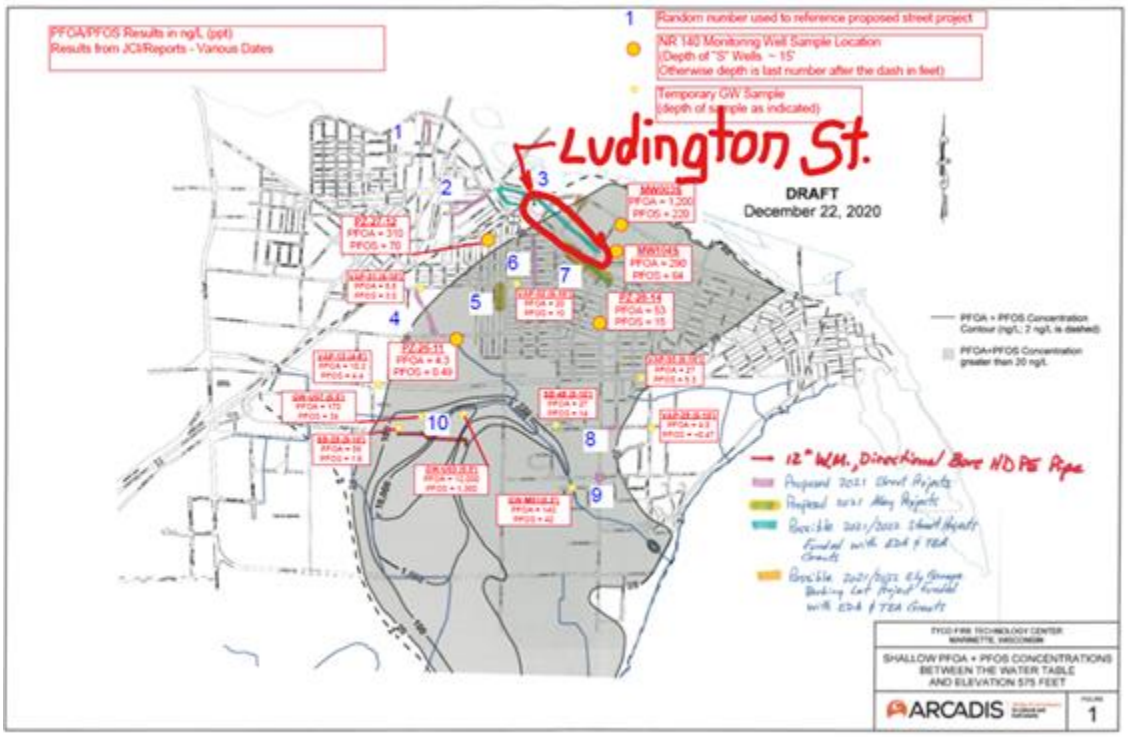
From: Brian Miller <bmiller@marinette.wi.us>
Sent: Thursday, August 19, 2021 2:55 PM
To: Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>
Cc: Mayor Genisot <sgenisot@marinette.wi.us>; Peter Kolaszewski <KolaszewskiP@AyresAssociates.com>
Subject: RE: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Alexis,
The city will reconstruct Ludington Street in 2022. Below is a map showing the general project location. The reconstruction project is near JCI's Stanton Street Site, which is known to have elevated concentrations of PFOA and PFOS in the groundwater, as well as other contaminants. The project will include underground excavation and dewatering.

AYRES Associates is the City's engineering consultant working on this project. The design is just starting. The project will be bid Winter 2022 with construction starting early Spring 2022.

We would like to set up a meeting with you to discuss how the groundwater and soils should be managed during this project.

Please provide a couple dates and times that work best for you (and your Team) during the next two weeks. We will then schedule a Teams Meeting to discuss this project.



Thanks.

Brian R. Miller
City Engineer
City of Marinette

Office: (715) 732-5135
bmiller@marinette.wi.us

From: Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>
Sent: Wednesday, August 18, 2021 4:13 PM
To: Mayor Genisot <sgenisot@marinette.wi.us>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>
Cc: Brian Miller <bmiller@marinette.wi.us>; Warren Howard <whoward@marinette.wi.us>
Subject: RE: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Good afternoon,

As discussed on the call yesterday, the City has decided to haul all wastewater generated from the Prairie St reconstruction project to the wastewater treatment facility. This determination was based on the sample results and volume of anticipated discharge for the project.

Please find attached the Notice of Termination that can be completed and sent back to me to close out the general permit coverage for this project.

If you have any questions or clarifications, please reach out to me right away.

Best,
Alexis

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Alexis Heim Peter
Pronouns: she/her/hers
Wastewater Specialist – Water Quality Bureau
NER Land Application & Septage Coordinator
Phone: 920/391-9526
Alexis.Peter@wisconsin.gov

From: Mayor Genisot <sgenisot@marinette.wi.us>
Sent: Monday, August 16, 2021 3:58 PM
To: Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>
Subject: RE: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Alexis,

Lets plan on 11:30 tomorrow. Let me know what number to call. Thanks.

Mayor Genisot
City of Marinette

From: Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>
Sent: Monday, August 16, 2021 12:07 PM
To: Mayor Genisot <sgenisot@marinette.wi.us>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>
Subject: RE: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Good afternoon Mayor,

I was able to review with the program and touch base with Alyssa. Our meeting schedule today is such that we do not have much for availability.

Tomorrow (8/17) at 11:30am is available for Alyssa and I. Please let me know if that works for you and I can send out a meeting invite.

Thank you,
Alexis

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Alexis Heim Peter
Pronouns: she/her/hers
Wastewater Specialist – Water Quality Bureau
NER Land Application & Septage Coordinator
Phone: 920/391-9526
Alexis.Peter@wisconsin.gov

From: Mayor Genisot <sgenisot@marinette.wi.us>
Sent: Monday, August 16, 2021 8:49 AM
To: Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>
Subject: RE: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Morning Alexis,

See attached results from sampling we received Friday. I was out of the office so wanted to get to you this morning. If possible can we set up short call to discuss this project and best steps going forward?

Mayor Genisot
City of Marinette

From: Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>
Sent: Wednesday, August 11, 2021 3:07 PM
To: Mayor Genisot <sgenisot@marinette.wi.us>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>
Subject: RE: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

Thank you Mayor.

As discussed, please provide the sample results of the groundwater as you receive them.

I want to thank you and your team for the proactive efforts to address the situation at hand. We look forward to subsequent discussions and providing assistance and guidance as much as we can.

Have a good evening,

Alexis

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

Alexis Heim Peter
Pronouns: she/her/hers
Wastewater Specialist – Water Quality Bureau
NER Land Application & Septage Coordinator
Phone: 920/391-9526
Alexis.Peter@wisconsin.gov

From: Mayor Genisot <sgenisot@marinette.wi.us>
Sent: Wednesday, August 11, 2021 2:41 PM
To: Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>; Peter, Alexis K - DNR <Alexis.Peter@wisconsin.gov>
Subject: FW: Foam In Dewatering Discharge - Prairie Street Reconstruction Project

See below.

Mayor Genisot
City of Marinette

From: Brian Miller
Sent: Friday, August 6, 2021 2:41 PM
Mayor,
Barley Trucking and Excavating is under contract with the City to reconstruct Prairie Street. Replacing a section of deep sanitary sewer is included in the project scope. Barley had two deep wells installed to reduce the groundwater head so a well point dewatering system could be used to pump groundwater when the sewer pipe is replaced. The pumps in the two deep wells were started Wednesday. Thursday morning, foam was observed at the discharge point of the well dewatering system.

Barley contacted TYCO and me about the foam Thursday morning. I visited the construction site, I saw the groundwater dewatering discharge, and I observed the foam at the end of the pipe.

When I arrived on-site, an ARCADIS field staff (Mike Cobb) was there observing the situation. He said he was calling Scott Wahl and Scott Potter to brief them on the situation. He said Scott Wahl would call me to explain TYCO's course of action.

Jordan Barley was also on-site. Jordan said they were instructed by TYCO to install a boom to capture the foam. The pictures below show the end of the dewatering pipe, the water discharging into the

nearby ditch, the foam on the water surface, and the boom. I asked Jordan to turn off the pumps to stop the flow of water. Jordan turned off the pumps at 10:00am Thursday.

This morning (Friday) I contacted Joe Barley to see if he heard from TYCO. He said he received a telephone call from Scott Wahl. Scott asked Barley to collect the foam, place the foam in barrels, and deliver the barrels to the TYCO storage site. Barley collects foam from other ditch locations for TYCO so they are accustom to doing this for TYCO. Scott told Joe to not do anything else on the project until he talks to me.

I talked to Scott this morning. Scott told me the following:

- Foam in the ditch is not from AFFF
- Foam in the ditch is naturally occurring
- The pumps from the groundwater wells might be mixing the water through cavitation and causing the foam
- TYCO is not sampling/testing the groundwater discharge for PFAS because they already know the concentration of PFAS in the groundwater at this location and they do not believe PFAS is in the water.

The city has a WPDES discharge permit for this project. With foam forming at the discharge point of the deep well dewatering system, I have concerns continuing pumping the groundwater into the ditch without knowing if it contains PFAS.

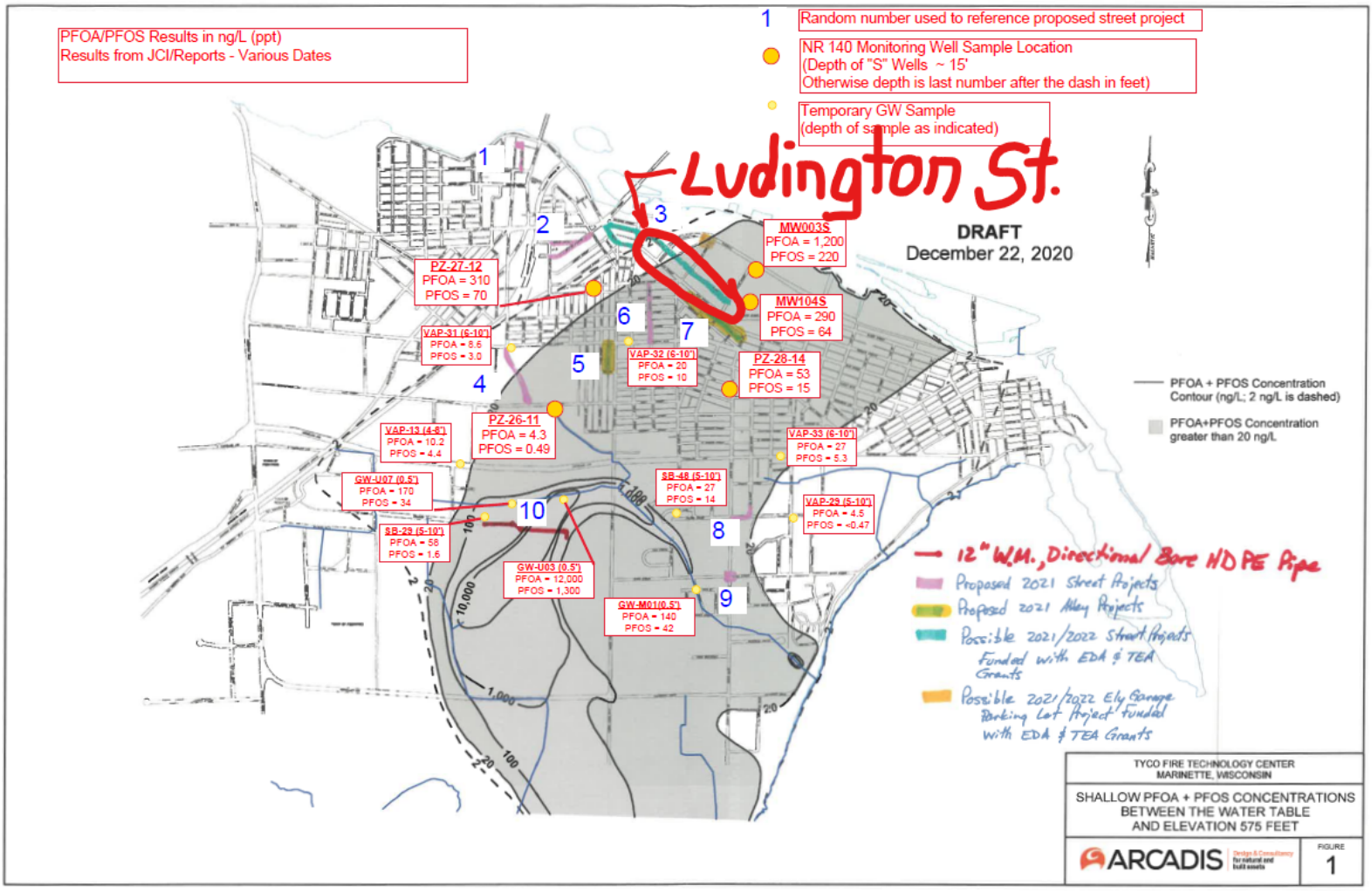
We need to discuss this.

Thanks.

Brian R. Miller
City Engineer
City of Marinette

Office: (715) 732-5135
bmiller@marinette.wi.us

image001.png



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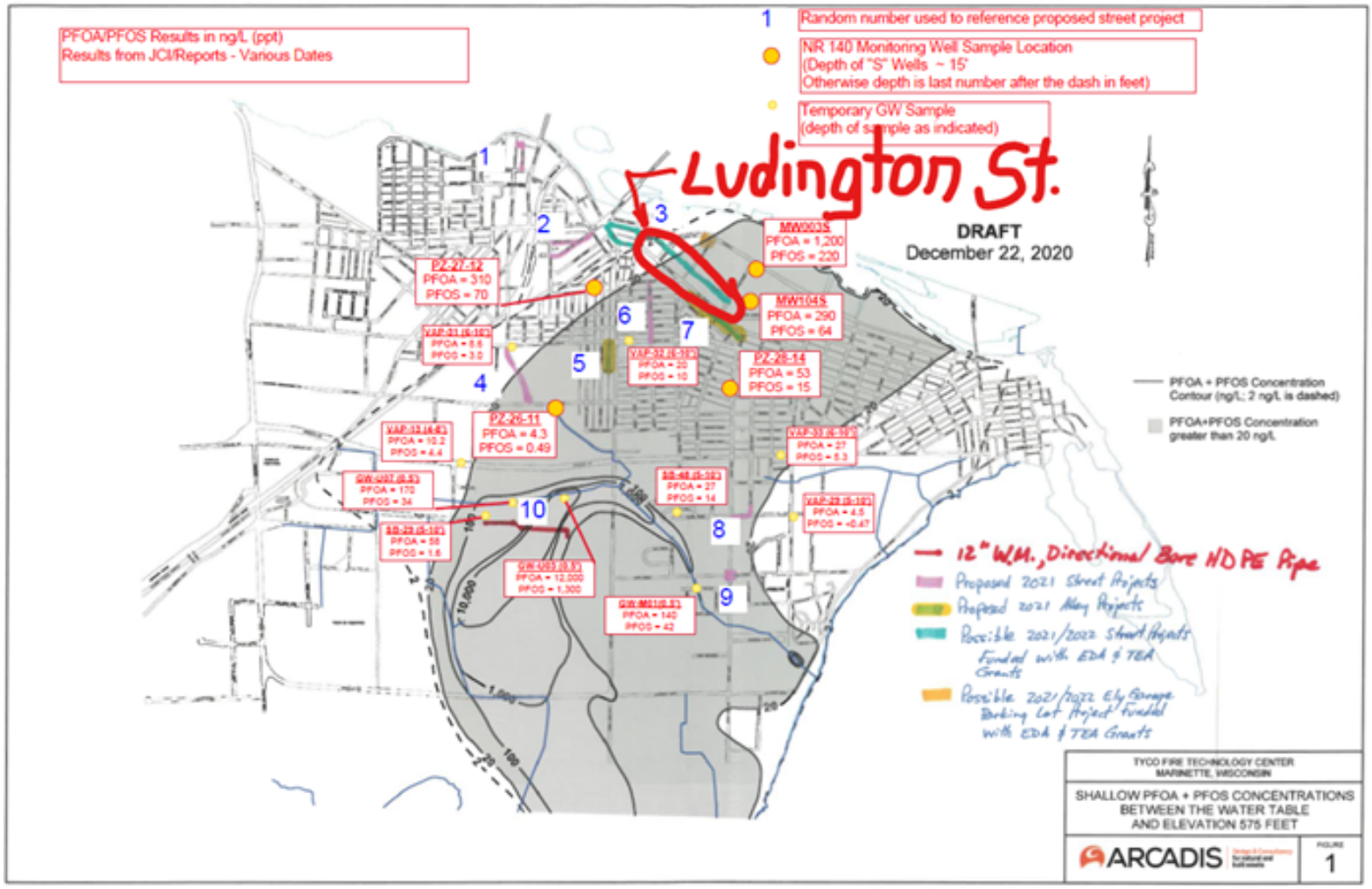

Subject:	Marinette Ludington Street groundwater discussion
Location:	Microsoft Teams Meeting
Start:	Thu 8/26/2021 2:00 PM
End:	Thu 8/26/2021 3:00 PM
Recurrence:	(none)
Meeting Status:	Accepted
Organizer:	Kolaszewski, Peter

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
+1 715-318-5006,,424738568# United States, Eau Claire

Phone Conference ID: 424 738 568#
Find a local number | Reset PIN

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Name	Attendance	Response
Kolaszewski, Peter	Meeting Organizer	None
Peter, Alexis K - DNR	Required Attendee	None
Sellwood, Alyssa A - DNR	Required Attendee	None
Krueger, Sarah E - DNR	Required Attendee	None
Carey, Angela J - DNR	Required Attendee	None
Mayor Genisot	Required Attendee	None
Brian Miller	Required Attendee	None

From: Fitzsimmons, Alise <FitzsimmonsA@AyresAssociates.com>
Sent: Wednesday, November 3, 2021 7:54 AM
To: Krueger, Sarah E - DNR
Cc: Hubbard, Trace
Subject: BRRTS Activity 02-38-000047

Good morning Sarah,

As you may already know, the City of Marinette is proposing a roadway reconstruction project along Ludington Street from Hall Avenue/USH 41 to Stanton Street. Adjacent to the proposed project is the WPSC Marinette MGP (Alt SF) site, an open ERP site. As part of the project, a Categorical Exclusion Checklist (CEC) form is required to be completed, including information regarding obligations or restrictions required for the site. In effort to maintain coordination and obtain all the necessary information regarding the contaminated site, we are reaching out to confirm what obligations, if any, will be required of the project.

The proposed work in the area includes constructing a new roadway 16-inch roadway section and curb and gutter.

Please let us know if you have any questions. Thanks.

Alise

AYRES CIVIL+MUNICIPAL ENGINEERING

Alise Fitzsimmons | Civil Engineering Staff
Office: 920.498.1200
3376 Packerland Drive | Ashwaubenon, WI 54115
Ayres Associates Inc | www.AyresAssociates.com

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Soil and Groundwater Testing

WisDOT Project ID: 9995-00-65
Ludington Street, Marinette, WI
Hall Avenue to Stanton Street

Prepared for:

City of Marinette

January 2022

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Soil and Groundwater Testing

WisDOT Project ID: 9995-00-65
Ludington Street, Marinette, WI
Hall Avenue to Stanton Street

3376 Packerland Drive
Ashwaubenon, WI 54115
920.498.1200
www.AyresAssociates.com

Ayres Project No. 51-0712.00
File: \\ayres_active\51\gb\city of marinette\51-0712.00 ludington street soil and groundwater testing\ludington street soil and groundwater testing report_draft.docx

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1.0 Introduction

The City of Marinette retained Ayres to perform soil and groundwater testing for the proposed Ludington Street reconstruction project in Marinette, Wisconsin. The project includes the complete replacement of Ludington Street between Hall Avenue and Stanton Street (project limits) and new storm sewer, sanitary sewer, and water main. The limit of construction disturbance and utility locations are shown on the Site Plan (Figure 2).

Ayres conducted a Phase I Hazardous Materials Assessment (Phase I HMA) in October 2021, which identified eight sites adjoining the project limits with potential or documented contamination from manufactured gas plant (MGP) operations, leaking underground storage tanks (LUST), buried solid waste (refuse), and solvent spills. Additionally, environmental investigations on two adjoining sites documented the presence of per- and polyfluoroalkyl substances (PFAS) and arsenic in groundwater above regulatory standards.

Ayres performed soil and groundwater testing within the project limits for the following objectives:

- Develop knowledge of the presence, extent, and degree of contamination, specifically within the right-of-way adjoining remediation sites and where previous subsurface explorations encountered refuse.
- Evaluate the need for special management practices and permits for dewatering excavations that intersect PFAS- and arsenic-contaminated groundwater or other contaminants from adjoining remediation sites. The data collected will assist with estimating influent concentrations for dewatering and treatment processes.
- Gather information needed to prepare remediation plans or construction special provisions for management and disposal of contaminated material within the construction zone and submitting a materials handling plan to the Wisconsin Department of Natural Resources (WDNR) for approval.

To meet these objectives, Ayres gathered information through sampling and chemical testing. There were no significant limitations or conditions that affected the ability of the assessment to achieve its objectives. The objectives and scope of work were defined in an agreement between Ayres and the City of Marinette, dated October 7, 2021.

2.0 Background

The City of Marinette intends to reconstruct Ludington Street between Hall Avenue and Stanton Street. Ludington Street is in Section 6, Township 30 North, Range 24 East, in the City of Marinette, Marinette County, Wisconsin (Figure 1).

Project Description

The proposed project includes the reconstruction of the Ludington Street roadway and installing new water main, sanitary sewer, and storm sewer. Soil and groundwater disturbance activities within the zone of construction are expected to include:

- Grading for Ludington Street and sidewalks extending up to 2 ½ feet beneath the existing pavement surface.
- Water main and sanitary sewer excavations between Hall Avenue and Mann Street (including Wells Street) extending from 8 ½ to 11 feet below the existing grade.
- Storm sewer excavations between Hall Avenue and Mann Street and between Ely and Stanton Street. The proposed storm sewer excavations extend up to 7 ½ feet below the existing grade.

We anticipate subsurface utilities will be installed using open trench construction methods. Furthermore, we expect the pavement section will include concrete or asphalt pavement, and the vertical alignment of the roadway will approximately match the existing grade (less than a 2-foot change).

Physical Setting

Elevations within the project limits range from 596 to 588 feet above mean sea level, with topography gently dipping northeast toward the Menominee River. Earlier geotechnical and test pit investigations in the Ludington Street right-of-way encountered four distinct stratigraphic units: fill material, glacial outwash, alluvium, and glacial till. These investigations did not intersect the underlying Ordovician dolomite bedrock, which is estimated to be less than 50 feet below the surface (ECS Midwest, LLC, 2021).

Fill materials consist of varying amounts of silt, sand, organic sediments, and refuse. Between Hall Avenue and Mann Street, the fill is primarily brown and comprised of less than two feet of sand with silt. From Mann Street, the fill layer thickens to the east, reaching a maximum of 14 feet near Ely Street, where geotechnical borings intersected a buried layer of black organic sediments mixed with wood debris. The fill composition changes between Ely and Stanton Street to include a mix of silt, sand, organics, and general refuse.

Glacial outwash characterized by deposits of poorly graded fine sand underlies the fill throughout most of the project limits. The sand is brown with occasional alluvial deposits of silty sand. These sandy deposits of glacial outwash and alluvium extend more than 20 feet below the surface in some areas but were generally found atop a very stiff to hard layer of clayey glacial till. The clay is typically brown and presumably extends to bedrock.

Groundwater first occurs within the fill and glacial outwash at depths between 4 to 12 feet below the surface. The general groundwater flow direction is toward the Menomonee River, which is 400 to 1,900 feet to the northeast. During previous environmental investigations on adjacent properties, the hydraulic conductivities of shallow soils and fill were measured between 1×10^{-4} and 7×10^{-4} feet per minute (ft/min). Estimated flow velocities ranged from 0.04 and 29 feet per year (Natural Resource Technology, 2015).

Site History and Land Use

Sanborn fire insurance maps from 1884 to 1935 show Ludington Street between Hall Avenue and Mann Street with adjacent properties developed for residential and commercial use. Ludington Street from Mann to Stanton Street was not yet constructed. However, the area was developed for industrial use by the North Ludington Company Sawmill and Lumberyard, Marinette & Menominee Light & Traction Company Gas Works, Marinette Ironworks, Hamilton & Merryman Company Shingle and Lumber Mill, and Malmstadt Coal Yard.

Between 1884 and 1935, the existing Ludington Street right-of-way between Ely and Stanton Street was occupied by an artificial waterway identified on historical maps as the "Log Run or Log Boom." This waterway transported logs from the Menomonee River to sawmills and lumberyards north of the project limits. The shape of the log run changed several times but generally intersected the existing right-of-way from 300 feet west of Ely Street to about 300 feet west of Stanton Street. A portion of the log run was filled in 1935, and the remainder is believed to have been filled by 1938.

Around 1910, Marinette & Menominee Light & Traction Company Gas Works began operating an MGP north of the project limits between Mann and Ely Street. By 1935, the MGP site expanded into the existing Ludington Street right-of-way. Structures within the right-of-way included scales, a meter room, a pump house, and a 300,000 cubic foot above ground holding tank. These structures were between 100 and 300 feet east of Mann Street. The Marinette Wastewater Treatment Plant (WWTP) currently occupies the former MGP site.

Marinette Ironworks adjoined the south side of the project limits between Ely and Stanton Street from at least 1884 to 1921. A rail spur serviced the ironworks from the east and was surrounded by various buildings, including an automotive repair shop, coal shed, machine shop, a lime and cement warehouse, the Malmstadt coal yard, an icehouse, a filling station with three gasoline underground storage tanks (USTs), and three USTs (contents unidentified) along the rail spur. The ironworks building was demolished by 1935, but the surrounding structures and USTs remained. Scaling on the 1935 Sanborn map indicates the USTs were between 80 and 215 feet south of the existing Ludington Street right-of-way.

Adjacent Contaminated Sites

The Phase 1 HMA revealed eight sites with documented or suspected contamination adjoining the project limits. These sites are shown in Figure 2.

Rydahls 76 Site 1 and 2 – 432 Bridge Street

BRRTS No: 03-38-002191 and 03-38-098693

Responsible Party: Herman Potratz, 55 Hosmer Street, Marinette, WI 54143

Regulatory Status: Closed LUST

Continuing Obligations: Groundwater use at this site is restricted due to the presence of benzene and xylene contamination exceeding NR 140 groundwater quality enforcement standards. No well can be constructed on the property without obtaining WDNR approval. Similarly, if construction activities on this property require dewatering or groundwater is to be otherwise extracted, it must first be sampled and analyzed for contaminants that were previously detected on the property.

Site Description: Rydahls was a gas station on the north side of Ludington Street at the intersection of Hall Avenue and Bridge Street. This site was investigated and remediated in the mid- to late-1990s following the discovery of petroleum contamination during the removal of USTs. WDNR granted regulatory closure to the site in 1999 with residual groundwater contamination above groundwater quality standards.

Farmers & Merchants Bank & Trust – 1644 Ludington Street

DATCP Facility ID: 456252

Owner: Farmers & Merchants Bank & Trust, 1644 Ludington Street, Marinette, WI 54143

Storage Tanks: three 8,000-gal fuel oil USTs (Tank IDs 29336, 40293, and 40303)

Regulatory Status: Located on the north side of Ludington Street between Hall Avenue and Wells Street, this site has three registered USTs that were closed-in-place. All three tanks contained fuel oil, tank 29336 was abandoned-in-place with product, and tanks 40293 and 40303 were closed-in-place by filling them with inert material. Ayres was unable to locate information indicating that site assessments or sampling were performed during the closure of these tanks.

Marinette Marine Building 34 – 1600 Ely Street

BRRTS No: 02-38-587281

Responsible Party: Fincantieri Marinette Marine, 1600 Ely Street, Marinette, WI 54143

Regulatory Status: Open ERP

Continuing Obligations: Continuing obligations refer to actions that responsible parties must follow after an environmental cleanup is complete. As indicated by its open regulatory status, the cleanup at this site is not complete—however, an *Approval to Manage Contaminated Soil under Wis. Admin. Code NR 718.12 on Site* dated March 19, 2021, restricts soil disturbance, and identifies a barrier cap requirement. Ayres could not locate WDNR correspondence documenting groundwater use restrictions for this property. However, activity details listed in BRRTS on the Web indicate WDNR approval is required to construct a well on the property.

Site Description: This site is located on the north side of Ludington Street between Ely and Stanton Street. Substances of concern include polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), arsenic, lead, and PFAS.

Wisconsin Public Service Marinette MGP – 1603 Ely Street

BRRTS No: 02-38-000047

Responsible Party: Wisconsin Public Service Corp, 333 W Everett Street, Milwaukee, WI 53203

Regulatory Status: Open ERP

Continuing Obligations: Although the cleanup at this site is not complete, institutional, and engineering controls for contaminated soil and groundwater are identified in the Superfund Record of Decision document signed by the EPA on November 9, 2017. These include contaminated soil removal, capping, and signage.

Site Description: Currently occupied by the City of Marinette WWTP, an MGP previously occupied this property. Substances of concern at this site include petroleum products (PAHs), VOCs, and metals. Per the report dated February 2, 2015, by Natural Resource Technology Environmental Consultants, contamination in the Ludington Street right-of-way is possible.

Village Pump II – 1368 Main Street

BRRTS No: 03-38-177834

Responsible Party: Jon Isakson, Cookeville, TN 38502

Regulatory Status: Closed LUST

Continuing Obligations: This site has residual petroleum contamination above NR 720 soil standards. If disturbed, the contaminated soil must be managed or disposed of following applicable state and federal regulations.

Site Description: Located south of Ludington Street between Ely and Stanton Street, this LUST site received regulatory closure with residual soil contamination. According to the closure files, the soil was contaminated with leaded and unleaded gasoline.

MACBI-TYCO Redevelopment Site – 1310 to 1330 Main Street

BRRTS No: 02-38-564236

Responsible Party: Tyco Fire Protection Products, 1 Stanton Street, Marinette, WI 54143

Regulatory Status: Open ERP

Continuing Obligations: Cleanup activities at this site are not complete, but it has documented contamination above NR 720 soil standards and NR 140 groundwater quality standards. If contaminated soil is disturbed, it must be managed or disposed of following applicable state and federal regulations.

Site Description: Located on the south side of Ludington Street between Ely and Stanton Street, the substances of concern at this site include petroleum products (PAHs), VOCs, arsenic, and lead. Soil and groundwater contamination from this site is known to extend into the Ludington Street right-of-way.

Goodwill Industries – 1428 Main Street

BRRTS No: 02-38-557492

Responsible Party: Goodwill Industries, 1428 Main Street, Marinette, WI 54143

Regulatory Status: Closed ERP

Continuing Obligations: This site has residual soil and groundwater contamination above regulatory standards. Residual soil contamination must be appropriately managed if excavated or removed. Pavement, an engineered cover, or soil barrier must be maintained over the contaminated soil, and the WDNR must approve any changes to the barrier.

Site Description: Substances identified at this site include petroleum products (PAHs), cyanide, arsenic, and lead. Soil contamination associated with this site is known to extend within the Ludington Street right-of-way.

3.0 Assessment Activities

A Phase I HMA completed by Ayres in October 2021 found eight sites with potential or documented residual contamination from past MGP operations, petroleum releases from storage tanks, fill containing refuse, and solvent spills. Regulatory file reviews identified potential contaminants of concern included PAHs, VOCs, polychlorinated biphenyls (PCBs), arsenic, lead, cyanide, asbestos, and PFAS.

The assessment aimed to determine the extent and degree of contamination within the proposed construction zone and evaluate its impacts on the project. Ayres used a combination of preliminary construction designs, information from environmental investigations on adjoining properties, and historical sources to guide the selection of sample locations and support data collection.

Scope of Assessment

The scope of this assessment included:

- Ten direct-push soil probes to collect soil and groundwater samples from the proposed grading and excavation depths.
- Continuous field screening with a photoionization detector (PID) for organic vapors and for visual or olfactory indicators of contamination.
- Analysis of 17 soil samples and four groundwater samples at a Wisconsin-certified laboratory.

Exploration, Sampling, and Test Screening Methods

On October 13, 2021, Ayres oversaw the advancement of 10 direct-push soil probes (GP-1 through GP-10) by environmental drilling contractor Geiss Soil & Samples, LLC. Probes were placed where excavations or grading could intersect contamination from adjoining properties and where previous geotechnical borings intersected buried refuse within the Ludington Street right-of-way. The probes were advanced to planned grading and excavation depths for subsurface utilities, ranging from 2 ½ to 12 feet below the existing surface.

Ayres collected continuous soil cores from each probe and logged the cores using the Unified Soils Classification System (USCS). The soil was field screened for organic vapors using a PID equipped with an 11.7 eV lamp calibrated to 100 parts per million (ppm) isobutylene gas. Ayres submitted one soil sample within the proposed grading zone from each probe, and where applicable, an additional soil sample from proposed utility excavations for chemical testing. Grading zone samples were acquired beneath the aggregate road base, and the selected depth interval was partially dependent on the available sample volume. Samples acquired from the proposed utility excavations were selected for the chemical testing using the following priority: highest PID response (if above background), visual or olfactory evidence of contamination, anticipated depth of contamination, or bottom of the proposed excavation zone. Soil descriptions, probe locations, and sample depths were recorded on the soil boring logs in Appendix B and are summarized in Table 1. PID responses and the corresponding sample depths were recorded on the soil boring logs in Appendix B.

Five probes were converted to temporary groundwater sampling points by inserting a 1-in diameter PVC casing with a 5-foot factory slotted screen that intersected groundwater. Annual space between the screen and probe walls was filled with a coarse silica-sand filter pack. Ayres purged groundwater from the sampling points with a peristaltic pump until the water was relatively sediment-free. Groundwater samples were acquired using a peristaltic pump with dedicated disposable high-density polyethylene (HDPE) tubing. Samples collected for metals analysis were field filtered using disposable 0.45-micron in-line filters. Only four of the five probes produced enough groundwater for sample collection. Groundwater

sample locations, boring depths, and water level measurements are summarized in Table 2 and on the boring logs in Appendix B.

Following sample collection, all ten probes were abandoned per the Wis. Admin Code NR141 using 3/8-in diameter bentonite chips. The abandonment procedures were documented on the borehole abandonment forms in Appendix B.

Chemical Testing Plan and Rationale

Ayres submitted 17 soil samples and four groundwater samples to Pace Analytical in Green Bay for chemical testing. The samples were collected in pre-preserved laboratory-supplied containers, placed on ice, and delivered to the laboratory under chain-of-custody procedures.

Soil samples were analyzed as follows:

Area of Investigation	Suspected Sources/ Known Contamination	Probe ID	Sample Depth	Soil Analyses						
				As, Pb (6010)	Cyanide (9012)	PFAS (isotope)	VOCs (8260)	PAHs (8270)	PCBs (8082)	Asbestos (PLM)
Hall Avenue to Wells Street	Rydahls 76 petroleum LUST site and closed-in-place USTs at Farmers & Merchants Bank & Trust	GP-1	2 to 4 ft	1			1			
			9 to 11 ft	1			1			
		GP-2	2 to 4 ft	1			1			
			9 to 11 ft	1			1			
Wells Street to Mann Street	None	GP-3	1.5 to 2.5 ft	1						
			8 to 10 ft	1						
		GP-4	1.5 to 2.5 ft	1						
			8 to 10 ft	1						
Mann Street to Ely Street	WPS Marinette MGP site and Goodwill Industries site	GP-5	1.5 to 2.5 ft	1	1		1	1	1	
		GP-6	2 to 4 ft	1	1		1	1	1	
		GP-7	2 to 4 ft	1	1		1	1	1	
Ely Street to Stanton Street	Village Pump II petroleum LUST, Marinette Marine Building 34, and MACBI-Tyco sites, and buried refuse	GP-8	2 to 4 ft	1			1	1		1
			7 to 8 ft	1		1	1	1		1
		GP-9	1.5 to 3.5 ft	1		1	1	1		1
			5.5 to 7.5 ft	1		1	1	1		1
		GP-10	1.5 to 2.5 ft	1			1	1		1
			6.5 to 7.5 ft	1		1	1	1		1

Groundwater samples were analyzed as follows:

Area of Investigation	Suspected Sources/ Known Contamination	Probe ID	Groundwater Analyses			
			Diss As, Pb (6010)	PFAS (isotope)	VOCs (8260)	PAHs (8270
Hall Avenue to Wells Street	Rydahls 76 petroleum LUST site and closed-in-place USTs at Farmers & Merchants Bank & Trust	GP-1	1	1	1	
Wells Street to Mann Street	None	GP-3		1		
Ely Street to Stanton Street	Village Pump II petroleum LUST, Marinette Marine Building 34, and MACBI-Tyco site, and buried refuse	GP-8	1	1	1	1
		GP-10	1	1	1	1

Quality Assurance and Quality Control

Ayres followed internal quality assurance/quality control (QA/QC) procedures to ensure the samples were representative of the media tested and that the integrity of the samples was not compromised. The plan required appropriate sample handling before delivery to the laboratory, ensuring that samples were preserved correctly (e.g., refrigerated or combined with appropriate preservative chemicals), available for testing within required holding times, and that chain of custody was documented before being relinquished to the laboratory. Ayres also requested the analytical laboratory report any non-routine events during sample analysis and flag testing results that did not meet the laboratory's quality control standards.

4.0 Presentation and Evaluation of Results

Subsurface Conditions

Subsurface materials encountered beneath the western portion of Ludington Street (Hall Avenue to Mann Street) consisted of 0 to 5 ½ feet of sandy fill followed by glacial outwash deposits of poorly graded sand over a layer of hard silty glacial till. The fill in this section of the site was brown and contained trace amounts of cinders.

The central portion of Ludington Street (Mann to Ely Street) resides on over three feet of fill. The fill was primarily sand but contained trace amounts of cinders and exhibited black staining with naphtha- or petroleum-like odors. The depth of exploration in this area was four feet because the planned soil disturbance activities between Mann and Ely Street are limited to grading and shallow storm sewer excavations.

The eastern section of Ludington Street overlies more than 6 ½ to 14 feet of fill from Ely to Stanton Street. Fill in this section is primarily dark gray to brown silty sand with black staining and contains varying amounts of general refuse, including styrofoam, paper, plastic, wood, glass, brick fragments, and cinders. The fill emitted a petroleum-like odor near the groundwater table. Figures 2 and 3 show the sample locations in plain view and cross-section.

Groundwater first occurs four to 12 feet below the existing surface within the fill and outwash sands underlying Ludington Street. Measurements from GP-1, GP-3, GP-8, and GP10 indicate groundwater flow is to the northeast, toward the Menomonee River. The flow direction likely varies slightly throughout the project limits, and minor seasonal changes in groundwater levels are anticipated. Table 2 presents a summary of water level measurements.

Field Screening Results

Soil field screening measurements collected with the PID ranged between 0 and 4 ppm. Although these measurements do not indicate elevated levels of organic vapors, black staining coupled with naphtha- and petroleum-like odors were present at depths less than four feet below the surface in GP-5 through GP-7 (Mann to Ely Street) and up to eight feet below the surface in GP-8 through GP-10 (Ely to Stanton Street). Field screening measurements and observations were recorded on the boring logs in Appendix B.

Soil Analytical Results

Chemical testing results were compared to Wis. Admin Code Ch. NR 720 residual contaminant levels (RCLs) for the direct-contact pathway, protection of groundwater RCLs, and background threshold values (BTVs). A full copy of the laboratory analytical results is available in Appendix C.

Soil contaminated with substances that attain or exceed direct-contact RCLs could pose a risk to future site workers or pedestrians if exposed at the surface or in subsurface excavations. Similarly, substances that exceed the protection of groundwater RCLs are considered a potential threat for contaminant mobilization to groundwater in soils exposed to infiltration from precipitation or in direct contact with groundwater. Contaminated soil and other solid waste containing substances at levels above direct-contact or protection of groundwater RCLs are subject to special disposal and management practices in Wis. Admin Codes Ch. NR 718 and NR 500.

The WDNR has published BTVs for several metals that occur naturally in Wisconsin soils. Metal concentrations that exceed BTVs are generally considered to be elevated above natural levels. There are several metals, specifically arsenic and lead, with BTVs greater than direct-contact RCLs or protection of groundwater values. In these cases, the BTV serves as the applicable standard. Table 3 summarizes the

substances found in the soil above the laboratory limit of detection. Detections that exceeded the relevant screening criteria are noted in the table.

Arsenic and Lead

Ayres collected 17 soil samples for arsenic and lead analysis. The samples were distributed throughout the project limits and acquired from fill and native soil. Arsenic exceeded the soil screening standards in two samples and lead exceeded standards in six samples.

Arsenic levels in the project limits ranged from <1.4 to 287 milligrams per kilogram (mg/Kg), with samples from GP-8 and GP-10 exceeding the direct-contact RCL, protection of groundwater RCL, and naturally occurring background level of 8 mg/Kg. These exceedances occurred between Ely and Stanton Street in samples containing refuse.

Lead concentrations ranged from 0.64 to 353 mg/Kg, with levels at GP-5, GP-8, GP-9, and GP-10 exceeding the protection of groundwater RCL and the BTV of 52 mg/Kg. These exceedances occurred in fill material between Mann and Stanton Street. Although above naturally occurring levels and a potential threat to groundwater, the detected lead concentrations are not considered a direct-contact risk.

Contaminated soil and other solid wastes containing lead or arsenic concentrations greater than 100 mg/Kg should be tested using the toxicity characteristic leaching procedure (TCLP) to determine if it is considered characteristically hazardous waste for disposal. The concentrations of arsenic and lead found in samples from GP-8 and GP-10 were sufficiently elevated that TCLP analysis was warranted. At the request of Ayres, Pace Analytical tested the remaining sample volume from GP-8 (7-8'), which had the highest arsenic (287 mg/Kg) and lead (353 mg/Kg) concentrations, using the TCLP method. Arsenic and lead results from the TCLP analysis were 0.12 milligrams per liter (mg/L) and 3.3 mg/L, respectively. Both results were below the 5 mg/L toxicity characteristic threshold for hazardous waste. Based on the TCLP results, the levels of arsenic and lead are considered non-hazardous for disposal purposes. The laboratory report for TCLP analysis is included in Appendix C.

Polycyclic Aromatic Hydrocarbons

A total of nine samples were analyzed for PAHs. The samples were collected between Mann and Stanton Street at locations intersected by the former Marinette MGP site, Goodwill Industries site, and buried refuse.

PAHs exceeded direct-contact and protection of groundwater RCLs in seven samples. Compounds that surpassed direct-contact RCLs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene. Compounds that exceeded protection of groundwater RCLs included benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, and naphthalene.

Volatile Organic Compounds

Ayres submitted 13 samples for VOC analysis. The samples were collected adjacent to sites with potential or documented residual contamination from past MGP operations, petroleum releases from storage tanks, fill containing refuse, and solvent spills. VOCs were found in six samples. Of the compounds detected, only naphthalene and benzene exceeded RCLs.

Naphthalene (analyzed by EPA methods 8270 and 8260) was detected at concentrations of 0.0019 to 34.1 mg/Kg. This compound exceeded the protection of groundwater standard in four samples between Mann and Stanton Street and the direct-contact RCL in two samples between Ely and Stanton Street. Additionally, naphthalene concentrations between Ely and Stanton Street exceeded the 5 mg/Kg threshold that is considered an indicator of non-aqueous phase liquid (NAPL) in the WDNR guidance for addressing vapor intrusion at remediation and redevelopment sites (RR-800). Subsurface utilities that intersect NAPL are potential pathways for vapor migration.

Benzene was found in four samples between Mann and Stanton Street at concentrations from 0.0149 to 0.0683 mg/Kg, with concentrations at GP-5, GP-6, and GP-8 exceeding the protection of groundwater RCL. Although these concentrations pose a potential threat to groundwater, they are not considered a direct-contact risk. Utilities that transect soil contaminated with benzene could provide a preferential pathway for vapor migration.

Cyanide

Three samples were submitted for cyanide analysis. The samples were collected from the proposed grading zone adjacent to the Marinette MGP and Goodwill Industries sites between Mann and Ely Street. Two soil samples contained detectable levels of cyanide with concentrations ranging from 7 to 9.4 mg/Kg. These levels exceed the protection of groundwater RCL but are not considered a direct-contact threat.

Polychlorinated Biphenyls

Ayres collected three PCB samples between Mann and Ely Street at locations adjoining the former Marinette MGP and Goodwill Industries sites. No PCBs were detected.

Asbestos

Six soil samples containing buried refuse from Ely and Stanton Street were submitted for asbestos analysis via polarized light microscopy (PLM). Asbestos was not detected.

Per- and polyfluoroalkyl substances

Four soil samples were submitted for PFAS analysis. The samples were collected from the area containing buried refuse between Ely and Stanton Street. All four samples contained low levels of several PFAS compounds, including perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The WDNR has established direct-contact RCLs for PFOA and PFOS, but there is no pre-determined protection of groundwater RCL for these compounds. Neither PFOA nor PFOS exceeded direct contact RCLs. Although other PFAS compounds were detected, the WDNR has not yet established regulatory standards for comparison.

Groundwater Analytical Results

Chemical testing results were compared to Ch. NR 140, Wis. Admin. Code groundwater quality enforcement standards and preventive action limits (PALs). Volatile organic compound results were also compared to vapor risk screening levels (VRSLs) calculated per WDNR guidance document RR-800. Where applicable, analytes were compared to specific pollutant limits listed in City of Marinette Ordinance Chapter 7.02113 for discharge to the sanitary sewer. A full copy of the laboratory analytical results is provided in Appendix C.

Groundwater quality enforcement standards are the levels at which substances in groundwater become regulated. The exceedance of an enforcement standard is likely to require remedial action or the application of institutional or engineering controls. Preventive action limits are typically the levels regulators use to determine if action is needed to prevent levels from reaching or exceeding the enforcement standard. The attainment of PALs can indicate the need for additional groundwater assessment or monitoring. Similarly, VRSLs are used to determine if VOCs are present in groundwater at sufficient concentrations to create a potential vapor intrusion concern. The exceedance of VRSLs indicates the need to evaluate the vapor intrusion pathway. Table 4 summarizes the compounds found in groundwater above the laboratory method detection limit. Table 5 provides a summary of VOCs in groundwater compared to VRSLs. Detections that exceeded the applicable screening criteria are denoted in the tables.

Dissolved Arsenic and Lead

Ayres attempted to collect samples from five locations distributed across the project limits. However, only three probes produced sufficient water for dissolved arsenic and lead analysis. Dissolved concentrations

of arsenic exceeded NR 140 groundwater quality standards at two locations and lead exceeded standards in two locations.

Dissolved arsenic concentrations in the project limits ranged from <8.3 to 78.1 micrograms per liter (µg/L), with samples from GP-1 and GP-10 exceeding the enforcement standard. These exceedances occurred on opposite ends of Ludington Street. Although these concentrations were greater than groundwater quality standards, they are below the specific pollutant limitation of 100 µg/L listed in City of Marinette Ordinance Chapter 7.02113 for discharge to the sanitary sewer.

Concentrations of dissolved lead in groundwater ranged from <6.4 to 50 µg/L, with levels exceeding the PAL at GP-1 and the enforcement standard at GP-8. Like arsenic, the detected lead concentrations are below the specific pollutant limitation of 2,020 µg/L for discharge to the sanitary sewer.

Polycyclic Aromatic Hydrocarbons

Two samples were submitted for PAH analysis. The samples were collected where planned storm sewer excavations intersect groundwater between Ely and Stanton Street. This area contains buried refuse and adjoins the Marinette Marine and MACBI-Tyco redevelopment sites.

PAHs were found in both groundwater samples, but only one compound (chrysene) exceeded its PAL. The exceedance occurred in sample GP-8 in a lens of buried refuse that exhibited black staining and a petroleum-like odor. The acceptance of petroleum-contaminated groundwater discharges to the sanitary sewer, such as PAHs, is evaluated by the WWTP on a case-by-case basis.

Volatile Organic Compounds

Ayres submitted three samples for VOC analysis. The samples were collected adjacent to the Rydahls 76 LUST site and from buried refuse between Ely and Stanton Street. VOCs were found in one sample, but the compounds detected, 1,2,4-trimethylbenzene and chlorobenzene, did not exceed NR 140 groundwater quality standards. The specific pollutant discharge limitations for discharging petroleum-contaminated groundwater to the sanitary sewer require that total benzene, toluene, ethylbenzene, xylene (BTEX) concentrations are below 150 µg/L. The VOC testing results from all three samples indicate that BTEX concentrations are within the acceptance criteria.

Per- and polyfluoroalkyl substances

Ayres collected four groundwater samples for PFAS analysis. The samples were distributed throughout the project limits to evaluate the need to treat dewatering discharges from excavations that intersect PFAS-contaminated groundwater.

State groundwater quality standards have not been established for PFAS compounds. The WDNR requested that the Wisconsin Department of Health Services (DHS) recommend a groundwater health standard for two PFAS compounds, PFOA and PFOS. Wisconsin DHS recommended that an enforcement standard of 20 nanograms per liter (ng/L) and a PAL of 2 ng/L be used for PFOA and PFOS individually and combined. Similarly, the Marinette WWTP evaluates the acceptance of PFAS discharges to the sanitary sewer on a case-by-case basis. Initial discussions with WWTP staff indicated that contaminated groundwater may require treatment before discharge to the sanitary sewer.

PFOA concentrations in the project limits ranged from 3.2 to 350 ng/L. Samples collected between Hall Avenue and Mann Street (GP-1 and GP-3) attained the proposed PAL, and samples acquired between Ely and Stanton Street (GP-8 and GP-10) exceeded the proposed enforcement standard. Although PFOA concentrations exceeded the proposed groundwater quality standards throughout the project limits, these levels were potentially acceptable for discharge to the sanitary sewer.

PFOS concentrations ranged from 4.5 to 31 ng/L, with levels at GP-1, GP-3, and GP-8 exceeding the proposed PAL and the concentration at GP-10 exceeding the proposed enforcement standard. PFOS

concentrations throughout the project limits exceeded the proposed groundwater quality standards and would likely require treatment to meet before discharge to the sanitary sewer.

Data Validation

Ayres evaluated the laboratory results to determine whether the quality of the analytical testing data was satisfactory. The data quality was determined to be acceptable to interpret the assessment results and for comparison to applicable regulatory standards, with the following considerations.

Naphthalene and PFOS were identified in laboratory method blanks for groundwater analysis. Naphthalene was detected in the blank at 0.038 µg/L, and PFOS was detected at 1.7 ng/L. Although the reported groundwater concentrations for PFOS and naphthalene may be partially attributable to laboratory-induced contamination, the sample concentrations were several times the levels found in the corresponding method blanks, indicating the detections were primarily attributable to substances at the site rather than sampling handling or testing artifacts.

The reported absence of detectable analytes from samples was evaluated against the detection limits and surrogate recoveries achieved in the analyses. The laboratory was unable to evaluate surrogate recoveries for PCBs in soil sample GP-6 (2-4') and PAHs in soil samples GP-9 (1.5-3.5') and GP-10 (2-4') because the samples were diluted for analysis due to high levels of non-target analytes or other matrix interference. Although the dilution of samples significantly increased the method detection limits, the reported concentrations of PAHs were several times the applicable regulatory standards. Thus, lower detection limits were not required to determine that regulatory standards were exceeded. Alternatively, PCBs were not detected in soil sample GP-6 (2-4'), but the elevated detection limits were not comparable to regulatory standards. As a result, this assessment could not verify that PCBs are not present above regulatory standards in sample GP-6 (2-4').

5.0 Interpretations and Conclusions

Degree and Extent of Contaminants

A layer of fill covering the project limits from Mann to Stanton Street contains concentrations of lead above the protection of groundwater RCL. The fill is mainly comprised of brown silty sand and exhibits black staining with naphtha- and petroleum-like odors. In general, the fill depth increases to the east, from less than four feet near Mann Street to 14 feet in the former log run near Ely Street. Additionally, the fill between Ely and Stanton is mixed with varying amounts of refuse, including styrofoam, paper, plastic, wood, glass, brick fragments, and cinders. Levels of arsenic in the refuse and fill between Ely and Stanton exceed the direct-contact RCL. Groundwater near the east and west extent of the project limits contained dissolved concentrations of arsenic and lead above groundwater enforcement standards. Although probes GP-3 and GP-4 didn't produce enough water to collect samples for metals analysis, levels of dissolved arsenic and lead throughout the project limits likely exceed groundwater quality standards.

Polycyclic aromatic hydrocarbons exceed direct contact and protection of groundwater RCLs within four feet of the surface where the project limits intersect the former Marinette MGP site and within fill containing refuse (1 ½ to 8 feet) between Ely and Stanton Street. The compounds found above direct contact RCLs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene. Compounds that exceed protection of groundwater standards include benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, and naphthalene. Groundwater in contact with the buried refuse contained PAHs, but chrysene was the only compound that attained a PAL.

Volatile organic compounds are present above direct-contact and protection of groundwater RCLs in fill that is 1 ½ to 8 feet beneath the surface between Mann and Stanton Street. Specifically, naphthalene exceeds the direct-contact RCL, and benzene exceeds the protection of groundwater RCL. Levels of naphthalene above 5 mg/Kg, coupled with black staining and odors, indicate NAPL is potentially present within the fill and refuse between Ely and Stanton Street. Although NAPL indicators were present, groundwater is not significantly impacted by VOCs. Only two compounds, 1,2,4-trimethlybenzene and chlorobenzene, were detected, and neither exceeded groundwater quality standards.

Cyanide is present in the fill between Mann and Ely Street (GP-5 and GP-6) at levels above the protection of groundwater RCL but below the direct-contact RCL. Groundwater was not assessed for cyanide. However, planned grading and excavation activities do not intersect groundwater in this area.

Several PFAS compounds, including PFOA and PFOS, were detected in the fill and refuse between Ely and Stanton Street. However, these detections were well below direct-contact RCLs. Currently, there is no pre-determined protection of groundwater RCL for these compounds. Although the fill does not appear to be a significant source of PFAS, both PFOS and PFOA exceeded the proposed groundwater quality standards throughout the project limits.

Conclusions

Contamination detected beneath Ludington Street is consistent with past industrial operations within and adjoining the project limits. Fill and soil containing contamination above direct contact RCLs was confirmed in samples collected adjacent to the Marinette MGP and Goodwill Industry sites (GP-5 and GP-6) and within fill containing refuse adjacent to the MACBI-Tyco and Marinette Marine redevelopment sites (GP-8, GP-9, and GP-10). Groundwater contamination exceeding enforcement standards was found beneath Ludington Street throughout the project limits.

Contaminated soil and fill containing refuse within the project limits are considered solid waste and must be managed following a WDNR-approved material handling plan. Solid waste that is removed from the

site should be disposed of at a licensed solid waste landfill. Based on testing results, including TCLP analysis for lead and arsenic, the contaminant concentrations are considered non-hazardous for disposal purposes. Currently, PFAS-contaminated soil is considered solid waste but not hazardous waste. However, it is up to the receiving landfill to determine whether to accept the waste.

Groundwater contamination exceeding enforcement standards exists throughout the project limits, including where planned excavations intersect groundwater. Due to the levels of contamination present, groundwater encountered in excavations at the site must either be dewatered to the sanitary sewer with permission from the Marinette WWTP or to the surface (i.e., storm sewer or surface water) with WDNR approval under a Wisconsin Pollutant Discharge Elimination System (WPDES) individual permit. Based on the testing results, it's likely that both options will require treatment before discharge. However, because surface discharges from within the project limits will be received by surface waters in the Great Lakes system, the effluent limitations set by WDNR under an individual permit will be more restrictive than sanitary sewer acceptance limits. Specifically, WDNR staff indicated that effluent limits for arsenic under an individual permit would be 0.2 µg/L, while the acceptance criteria for sanitary discharge is 100 µg/L. Additionally, the treatment criteria for PFOA and PFOS would likely be lower than levels required for discharge to the sanitary sewer.

Subsurface utilities that intersect NAPL or benzene contaminated fill potentially provide preferential pathways for vapor migration to nearby buildings. Benzene contamination was found in fill between Mann and Stanton Street, and NAPL indicators were observed in fill and refuse between Ely and Stanton Street.

6.0 Recommendations

Based on the assessment results and the proposed project design, Ayres recommends the following:

- Notify the WDNR that arsenic, lead, PFAS, PAHs, cyanide, and VOCs were found in soil and/or groundwater above regulatory standards. Hazardous substance discharges identified through analytical testing, as in this case, can be reported through WDNR's online Submittal Portal by submitting a *Notification for Hazardous Substance Discharge Form – Non-Emergency Only* (Form 4400-225).
- Submit this report to the WisDOT Environmental Coordinator and project design team. The proposed road grading and utility excavations intersect contaminated soil, buried refuse, and groundwater between Mann Street and Stanton Street. WDNR must review and approve a material handling plan and construction special provisions for the beneficial reuse or removal of contaminated materials before work can begin.
- Submit a *Permit Application for Wastewater Discharge to City of Marinette Sanitary Sewer System* to the pretreatment coordinator at the Marinette WWTP. Contaminated groundwater meeting the specific pollutant limitations listed in City of Marinette Ordinance Chapter 7.02113 can be dewatered to the sanitary sewer with approval from the WWTP. The approval of PFAS discharges is evaluated on a case-by-case basis. Initial conversations between Ayres and WWTP staff indicated that the levels of PFOS found in groundwater would require treatment before discharge to the sanitary sewer.
- The City can apply for an individual WPDES permit to discharge to the storm sewer or surface water as an alternative to dewatering excavations to the sanitary sewer. The WDNR reviews and approves individual permits on a case-by-case basis. Dewatering discharges from within the project limits will be received by surface waters in the Great Lakes system, which is subject to restrictive water quality criteria. Initial discussions with WDNR staff, coupled with sampling results, indicate that dewatering discharges would require treatment to meet effluent limitations set under an individual permit. The discussed individual permit effluent limitation for arsenic was 0.2 µg/L, which is significantly lower than the sanitary sewer acceptance limit of 100 µg/L. Attaining individual permit effluent limitations would likely require a higher level of treatment than needed to meet sanitary sewer discharge criteria.
- Develop construction special provisions for dewatering excavations and project specifications for a system to treat PFAS-contaminated groundwater to levels that meet acceptance criteria for discharge method selected (sanitary sewer or WPDES individual permit).
- Contact licensed solid waste landfills in the surrounding area to determine if they are willing to accept contaminated soil and solid waste from the project. Planned grading and storm sewer excavations between Ely and Stanton Street intersect contaminated fill containing refuse that is impacted with levels of PFAS below direct-contact RCLs. The physical properties of the fill and refuse are likely unsuitable for beneficial reuse as backfill, and the excavated material will require disposal at a licensed solid waste landfill. Although the testing results indicate the waste is considered non-hazardous for disposal purposes, it is up to the receiving landfill to decide if it will accept the waste. Currently, landfills make this determination for PFAS-contaminated materials on a case-by-case basis.
- Consider incorporating trench seals into the storm sewer design between Ely and Stanton Street. Cement bentonite collars extending into the surrounding subgrade inhibit vapor and contaminated groundwater migration through pipe bedding and trench backfill material.

7.0 Signature

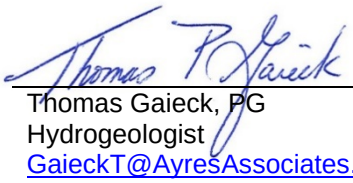
Ayres performed this testing in conformance with accepted industry practices. The objectives of this assessment and scope of work were defined and completed under the agreement between Ayres and the City of Marinette, dated October 7, 2021.

"I, William Honea, herby certify that I am a scientist as that term is defined in s. NR 712.03 (3), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct that the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

January 6, 2022
Date

William Honea, PG
Geologist
HoneaW@AyresAssociates.com
920.327.7815

"I, Thomas Gaieck, herby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."



January 6, 2022
Date

Thomas Gaieck, PG
Hydrogeologist
GaieckT@AyresAssociates.com
608.443.1292

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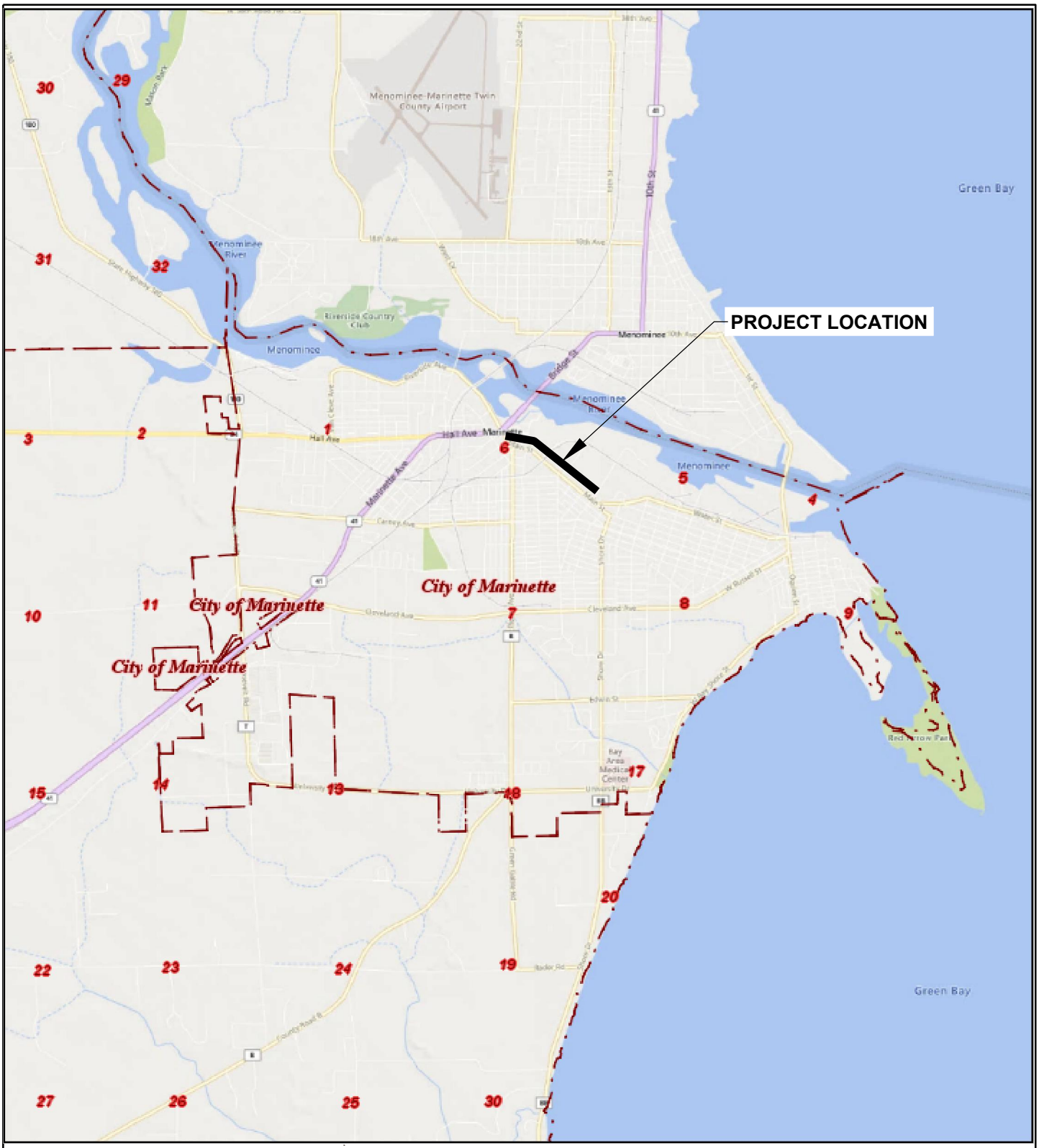
Figure 1: Location Map



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DR.BY T. Shupert CHK.BY B. Honea DATE DEC. 2021	SOIL AND GROUNDWATER TESTING LUDINGTON ROAD MARINETTE, WISCONSIN	AYRES Eau Claire, Wisconsin	LOCATION MAP	FIGURE NO. 1

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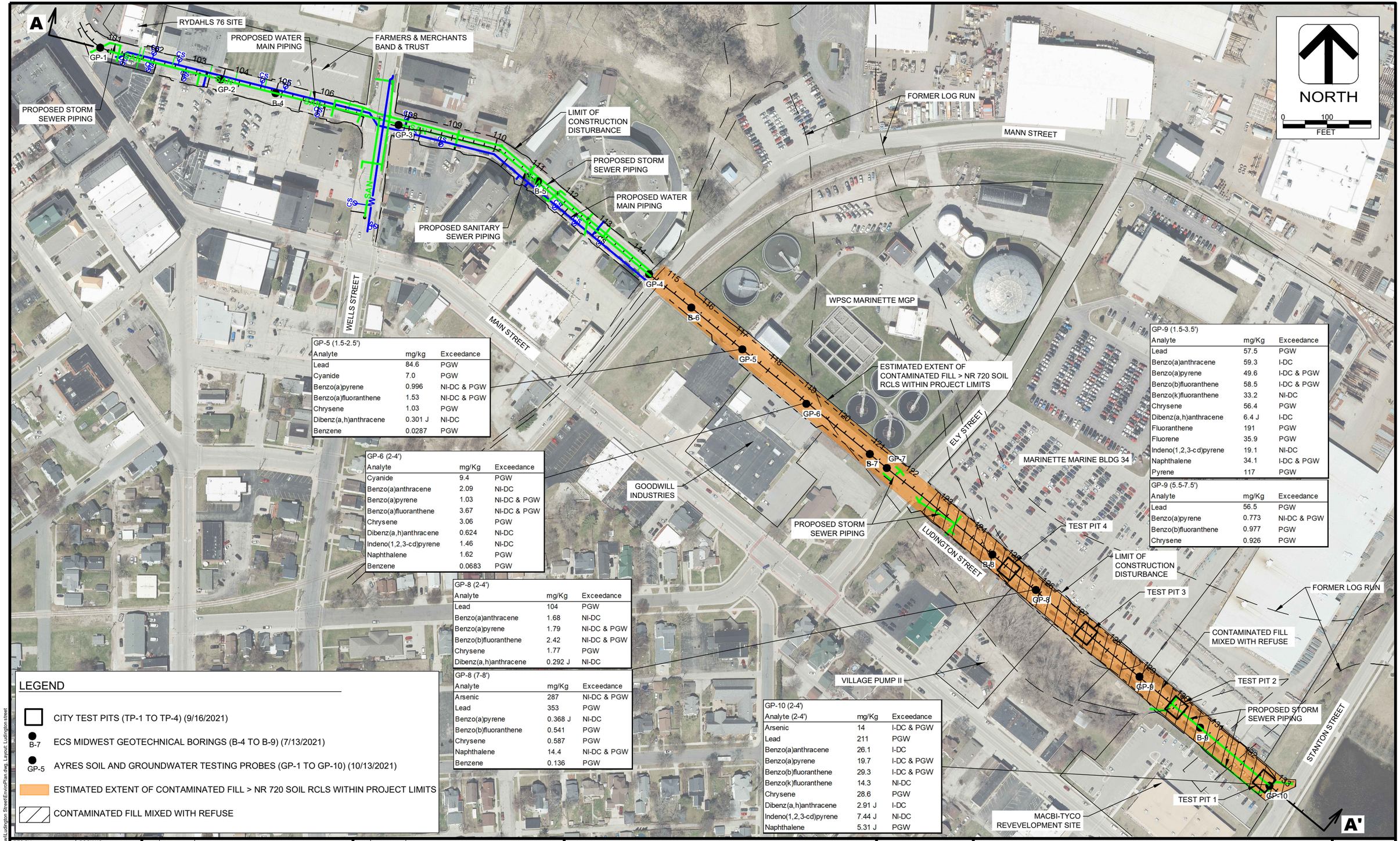
Figure 2: Site Plan with Sample Locations



GP-5 (1.5-2.5')

Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW

GP-6 (2-4')

Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (2-4')

Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-8 (7-8')

Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-10 (2-4')

Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-9 (1.5-3.5')

Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')

Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

LEGEND

- CITY TEST PITS (TP-1 TO TP-4) (9/16/2021)
- B-7 ECS MIDWEST GEOTECHNICAL BORINGS (B-4 TO B-9) (7/13/2021)
- GP-5 AYRES SOIL AND GROUNDWATER TESTING PROBES (GP-1 TO GP-10) (10/13/2021)
- ESTIMATED EXTENT OF CONTAMINATED FILL > NR 720 SOIL RCLS WITHIN PROJECT LIMITS
- CONTAMINATED FILL MIXED WITH REFUSE

DES BY	BOOK NO
B. HONEA	
DR BY	PROJ NO
T. SHUPERT	52-0712.00
CHK BY	DATE
B. HONEA	DEC. 2021

NO	DATE	REVISION

NO	DATE	REVISION

SOIL AND GROUNDWATER TESTING
LUDINGTON ROAD
MARINETTE, WISCONSIN

AYRES
Eau Claire, WI 54701

SITE PLAN

SHEET NO
2

AA-Standard.stb
12/23/2021
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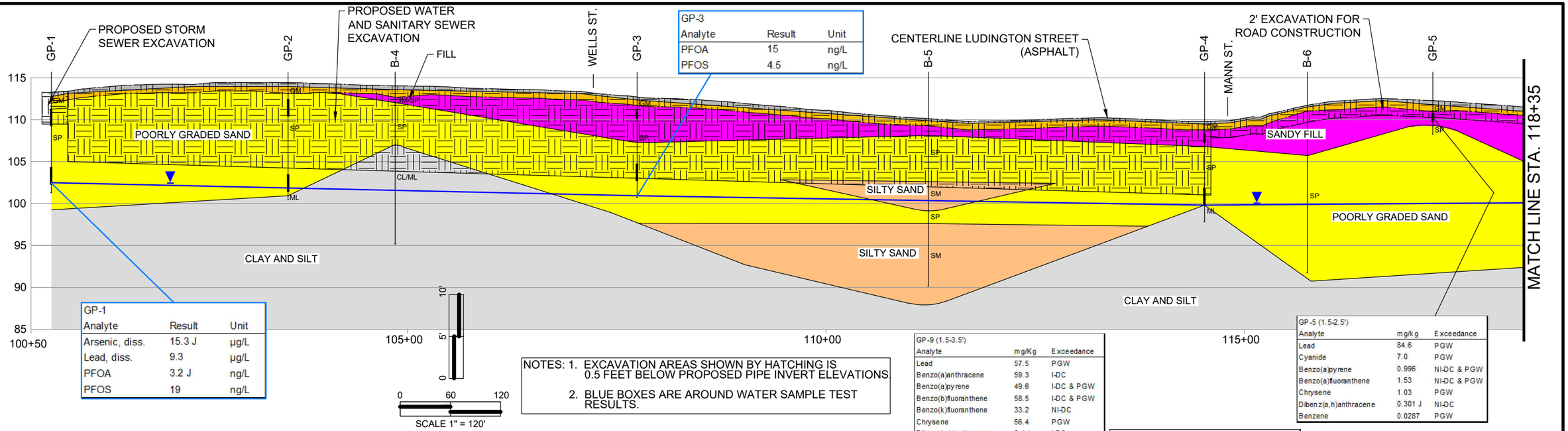
Figure 3: Geologic Section A – A’ (Centerline of Roadway)



GP-3		
Analyte	Result	Unit
PFOA	15	ng/L
PFOS	4.5	ng/L

GP-1		
Analyte	Result	Unit
Arsenic, diss.	15.3 J	µg/L
Lead, diss.	9.3	µg/L
PFOA	3.2 J	ng/L
PFOS	19	ng/L

NOTES: 1. EXCAVATION AREAS SHOWN BY HATCHING IS 0.5 FEET BELOW PROPOSED PIPE INVERT ELEVATIONS.

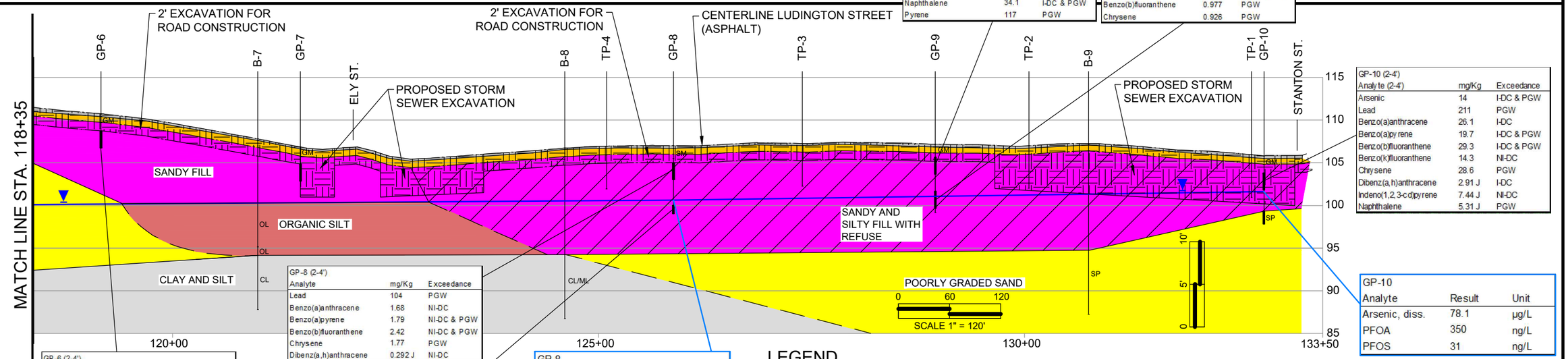
2. BLUE BOXES ARE AROUND WATER SAMPLE TEST RESULTS.

GEOLOGIC CROSS-SECTION A-A'

GP-9 (1.5-3.5')		
Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')		
Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

GP-5 (1.5-2.5')		
Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW



GP-10 (2-4')		
Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-10		
Analyte	Result	Unit
Arsenic, diss.	78.1	µg/L
PFOA	350	ng/L
PFOS	31	ng/L

GP-8 (2-4')		
Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-6 (2-4')		
Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (7-8')		
Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-8		
Analyte	Result	Unit
Lead, diss.	50	µg/L
PFOA	28	ng/L
PFOS	16	ng/L
Chrysene	0.029 J	µg/L

GEOLOGIC CROSS-SECTION A-A'

LEGEND

CL	INORGANIC CLAYS OF LOW PLASTICITY
ML	INORGANIC SILTS AND VERY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SM	SILTY SANDS, SAND-SILT MIXTURES
SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
PGW	PROTECTION OF GROUNDWATER
NI-DC	NON-INDUSTRIAL DIRECT-CONTACT RCL
I-DC	INDUSTRIAL DIRECT-CONTACT RCL

EXCAVATION AREAS

WATER LEVEL

DES BY	B. HONEA	BOOK NO					
DR BY	T. SHUPERT	PROJ NO	52-0712.00				
CHK BY	B. HONEA	DATE	DEC. 2021	NO	DATE	REVISION	

SOIL AND GROUNDWATER TESTING
LUDINGTON ROAD
MARINETTE, WISCONSIN

AYRES
Eau Claire, WI 54701

GEOLOGIC SECTION A - A' (CENTERLINE OF ROADWAY)

SHEET NO 3

AA-Standard.stb
12/20/2021
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Table 1: List of Soil Explorations, Samples Collected, and Analytes Sought

Table 1
Soil Explorations, Samples Collected, and Analytes Sought

Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

Boring	Boring Depth (ft bgs)	Sample Depth (ft bgs)	Soil Type	As and Pb (EPA 6010)	Cyanide (EPA 9012)	PFAS (Isotope)	VOCs (EPA 8260)	PAHs (SIM 8270)	PCBs (EPA 8081)	Asbestos (PLM)
GP-1	12	2 - 4	Sand	✓			✓			
GP-1	12	9 - 11	Sand	✓			✓			
GP-2	12	2 - 4	Sand	✓			✓			
GP-2	12	9 - 11	Sand	✓			✓			
GP-3	12	1.5 - 2.5	Sand	✓						
GP-3	12	8 - 10	Sand	✓						
GP-4	12	1.5 - 2.5	Sand	✓						
GP-4	12	8 - 10	Sand	✓						
GP-5	4	1.5 - 2.5	Sand	✓	✓		✓	✓	✓	
GP-6	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-7	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-8	8	2 - 4	Sand	✓		✓	✓	✓		✓
GP-8	8	7 - 8	Refuse	✓			✓	✓		✓
GP-9	8	1.5 - 3.5	Sand	✓		✓	✓	✓		✓
GP-9	8	5.5 - 7.5	Sand	✓		✓	✓	✓		✓
GP-10	8	2 - 4	Refuse	✓		✓	✓	✓		✓
GP-10	8	6.5 - 8	Sand	✓			✓	✓		✓

Notes: bgs - below ground surface. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds. PCB - Polychlorinated biphenyls. PFAS - Per- and Polyfluoroalkyl substances.

Table 2: List of Groundwater Sample Locations, Water Level Measurements, and Analytes Sought

Table 2

Groundwater Sample Locations, Water Level Measurements, and Analytes Sought

Ludingtion Street

Hall Avenue to Stanton Street, Marinette, WI

Boring	Total Depth (ft bgs)	Screened Interval (ft bgs)	Depth to Water (ft bgs)	Dissolved As and Pb (EPA 6010)	PFAS	VOCs (EPA 8260)	PAHs (SIM 8270)
GP-1	12	7 - 12	10.8	✓	✓	✓	
GP-3	12	7 - 12	11.8		✓		
GP-4	12	7 - 12	Dry				
GP-8	8	3 - 8	6.4	✓	✓	✓	✓
GP-10	8	3 - 8	4.2	✓	✓	✓	✓

Notes: bgs - below ground surface. PFAS - Per- and polyfluoroalkyl substances. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds.

Table 3: Soil Analyte Detection Summary

Table 5
Previous Soil Analyte Detection Summary
Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

						Hall Avenue to Wells Street				*Wells Street to Mann Street*				*Mann Street to Ely Street*			*Ely Street to Stanton Street*					
		NR 720 Soil Cleanup Standards				GP-1	GP-1	GP-2	GP-2	GP-3	GP-3	GP-4	GP-4	GP-5	GP-6	GP-7	GP-8	GP-8	GP-9	GP-9	GP-10	GP-10
						10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
		Industrial Direct Contact	Non-Industrial Direct Contact	Protection of Groundwater	Background Threshold Value	2 - 4	9 - 11	2 - 4	9 - 11	1.5 - 2.5	8 - 10	1.5 - 2.5	8 - 10	1.5 - 2.5	2 - 4	2 - 4	2 - 4	7 - 8	1.5 - 3.5	5.5 - 7.5	2 - 4	6.5 - 8
						Sand	Sand	Sand	Sand	Sand	Sand	Fill	Sand	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Sand
mg/Kg	Arsenic	3.0	0.677	0.584	8	2.4 J	1.9 J	<1.4	3.4	2.6	<1.5	3.5	1.8 J	2.3 J	2.8	2.7	6.3	**287**	3.6	3.4	**14.0**	1.7 J
	Lead	800	400	27	52	1.0 J	0.64 J	0.74 J	1.2 J	11.9	0.88 J	42.4	6.2	*84.6*	47.1	4.6	*104*	*353*	*57.5*	*56.5*	*211*	2.9
	Cyanide	195	27.1	4.04	NS	NA	NA	NA	NA	NA	NA	NA	NA	*7.0*	*9.4*	<0.18	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances PFAS (mg/Kg)	PFBA (Perfluorobutanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.00003 J	0.000068 J	0.000051 J	NA
	PFPeA (Perfluoropentanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00007 J	NA	0.000054 J	0.0001	0.00016	NA
	PFHxA (Perfluorohexanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00003	NA	<0.00003	0.000042 IJ	0.000098 IJ	NA
	PFHpA (Perfluoroheptanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000026	NA	<0.000022	0.000044 J	0.00007 J	NA
	PFXxS (Perfluorohexanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000051 IJ	NA	0.000067 IJ	0.000290 I	0.000027 IJ	NA
	PFOA (Perfluorooctanoic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.000034 J	0.000057 J	0.00022	NA
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000068 J	NA	0.000044 J	0.000038 J	<0.000022	NA
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000025	NA	<0.000025	<0.000025	0.000063 IJ	NA
	PFNA (Perfluorononanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000028	NA	<0.000028	<0.000028	0.00017	NA
	PFOS (Perfluorooctanesulfonic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00033	NA	0.00031	0.00038	0.0032	NA
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000077 J	NA	<0.000024	<0.000024	0.00017	NA
	PFTrDA (Perfluorotridecanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000021	NA	<0.000021	<0.000021	0.000068 IJ	NA
Polycyclic Aromatic Hydrocarbons (mg/kg)	1-Methylnaphthalene	72.7	17.6	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0718 J	0.282 J	<0.0026	0.0543 J	8.58	8.52 J	0.124 J	2.36 J	<0.0029
	2-Methylnaphthalene	3,010	239	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.109 J	0.665	<0.0026	0.0752 J	13.0	12.3	0.150 J	3.09 J	<0.0029
	Acenaphthene	45,200	3,590	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	<0.0452	<0.0472	<0.0023	0.0585 J	0.555	17.0	0.154 J	2.93 J	<0.0026
	Acenaphthylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.78	2.0	0.003 J	0.0339 J	0.748	1.61	0.122 J	3.57 J	<0.0025
	Anthracene	100,000	17,900	197	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.317 J	0.456	0.0032 J	0.0352 J	0.458 J	63.6	0.301 J	14.3	<0.0025
	Benzo(a)anthracene	20.8	1.14	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.867	**2.09**	0.0185	**1.68**	0.655	**59.3**	0.861	**26.1**	0.0045 J
	Benzo(a)pyrene	2.11	0.115	0.47	NS	NA	NA	NA	NA	NA	NA	NA	NA	**0.996**	**1.03**	0.0251	**1.79**	**0.368 J**	**49.6**	**0.773**	**19.7**	0.0026 J
	Benzo(b)fluoranthene	21.1	1.15	0.4781	NS	NA	NA	NA	NA	NA	NA	NA	NA	**1.53**	**3.67**	0.0375	**2.42**	*0.541*	**58.5**	*0.977*	**29.3**	0.0036 J
	Benzo(g,h,i)perylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.09	1.6	0.0157 J	0.949	0.146 J	20.9	0.469	7.53 J	<0.0035
	Benzo(k)fluoranthene	211	11.5	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.597	1.74	0.0144 J	1.21	0.183 J	**33.2**	0.324 J	**14.3**	<0.0026
	Chrysene	2,110	115	0.1442	NS	NA	NA	NA	NA	NA	NA	NA	NA	*1.03*	*3.06*	0.0307	*1.77*	*0.587*	*56.4*	*0.926*	*28.6*	<0.0038
	Dibenz(a,h)anthracene	2.11	0.115	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	**0.301 J**	**0.624**	0.0046 J	**0.292 J**	<0.0659	**6.4 J**	0.100 J	**2.91 J**	<0.0028
	Fluoranthene	30,100	2,390	88.9	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.16	1.01	0.0431	3.35	1.25	*191*	1.39	65.4	0.0072 J
	Fluorene	30,100	2,390	14.8	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0667 J	0.1 J	<0.0021	0.117 J	0.937	*35.9*	0.236 J	13.2	<0.0024
	Indeno(1,2,3-cd)pyrene	21.1	1.15	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.893	**1.46**	0.0104 J	0.858	0.123 J	**19.1**	0.345 J	**7.44 J**	<0.0042
	Naphthalene	24.1	5.52	0.6582	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.388	*1.62*	0.0019 J	0.111 J	**14.4**	**34.1**	0.118 J	*5.31 J*	<0.0020
	Phenanthrene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.519	0.372	0.013 J	1.04	2.14	184	1.8	71.6	0.0061 J
	Pyrene	22,600	1,790	55	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.31	1.09	0.0351	2.76	1.47	*117*	3.89	41.5	0.0045 J
Volatile Organic Compounds (mg/Kg)	1,2,4-Trimethylbenzene	219	219	NS	NS	<0.0158	<0.0168	<0.0155	<0.0163	NA	NA	NA	NA	<0.0162	<0.0175	<0.0170	<0.0169	0.306	<0.0164	0.0210 J	<0.0286	<0.0210
	1,3,5-Trimethylbenzene	182	182	NS	NS	<0.0170	<0.0182	<0.0168	<0.0176	NA	NA	NA	NA	<0.0175	<0.0190	<0.0184	<0.0182	0.18	<0.0177	<0.0187	<0.0309	<0.0226
	Benzene	7.07	1.6	0.0051	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	*0.0287*	*0.0683*	<0.0136	<0.0135	*0.0458*	<0.0131	0.0149 J	<0.0228	<0.0167
	Chlorobenzene	761	370	0.1358	NS	<0.0063	<0.0068	<0.0062	<0.0065	NA	NA	NA	NA	<0.0065	<0.0071	<0.0068	<0.0068	0.0230 J	<0.0066	<0.0070	<0.0115	<0.0084
	Ethylbenzene	35.4	8.02	1.57	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	<0.0130	<0.0140	<0.0136	<0.0135	0.11	<0.0131	<0.0138	0.0288 J	<0.0167
	Isopropylbenzene (Cumene)	268	268	NS	NS	<0.0143	<0.0152	<0.0141	<0.0148	NA	NA	NA	NA	<0.0147	<0.0159	<0.0154	<0.0153	0.379	<0.0148	<0.0157	<0.0259	<0.0190
	m&p-Xylene	388	388	NS	NS	<0.0223	<0.0238	<0.0220	<0.0231	NA	NA	NA	NA	0.0243 J	0.0467 J	<0.0241	<0.0239	0.0716 J	<0.0232	0.0277 J	0.239	<0.0297
	Naphthalene	24.1	5.52	0.6582	NS	<0.0165	<0.0176	<0.0163	<0.0171	NA	NA	NA	NA	0.240 J	*0.819*	<0.0178	<0.0177	*4.84*	0.611	0.136 J	0.0666 J	<0.0219
	n-Butylbenzene	108	108	NS	NS	<0.0242	<0.0258	<0.0239	<0.0250	NA	NA	NA	NA	<0.0249	<0.0270	<0.0261	<0.0260	1.01	<0.0251	<0.0267	<0.0439	<0.0322
	n-Propylbenzene	264	264	NS	NS	<0.0127	<0.0135	<0.0125	<0.0131	NA	NA	NA	NA	<0.0131	<0.0141	<0.0137	<0.0136	0.137	<0.0132	<0.0140	<0.0230	<0.0169
	o-Xylene	434	434	NS	NS	<0.0159	<0.0169	<0.0156	<0.0164	NA	NA	NA	NA	<0.0163	0.0194 J	<0.0171	<0.0170	0.0682 J	<0.0165	<0.0175	0.0487 J	<0.0211
	p-Isopropyltoluene	162	162	NS	NS	<0.0161	<0.0172	<0.0159	<0.0166	NA	NA	NA	NA	<0.0165	<0.0179	<0.0173	<0.0172	0.164	<0.0167	<0.0177	<0.0291	<0.0214
	sec-Butylbenzene	145	145	NS	NS	<0.0129	<0.0138	<0.0127	<0.0133	NA	NA	NA	NA	<0.0133	<0.0144	<0.0139	<0.0138	0.198	<0.0134	<0.0142	<0.0234	<0.0172
	Styrene	867	867	0.22	NS	<0.0136	<0.0144	<0.0134	<0.0140	NA	NA	NA	NA	0.0143 J	0.0328 J	<0.0146	<0.0145	<0.0237	<0.0141	<0.0149	<0.0245	<0.0180
	tert-Butylbenzene	183	183	NS	NS	<0.0166	<0.0177	<0.0164	<0.0172	NA	NA	NA	NA	<0.0171	<0.0185	<0.0179	<0.0178	0.0348 J	<0.0172	<0.0183	<0.0301	<0.0221
	Toluene	818	818	1.1072	NS	<0.0133	<0.0142	<0.0131	<0.0138	NA	NA	NA	NA	0.0458 J	0.0959	<0.0144	<0.0143	0.146	<0.0138	0.0348 J	0.0366 J	<0.0177
	Trimethylbenzene (total)	NS	NS	1.3787	NS	<0.0328	<0.035	<0.0323	<0.0339	NA	NA	NA	NA	<0.0337	<0.0365	<0.0354	<0.0351	0.486	<0.0341	0.0397	<0.0595	<0.0436
	Xylene (total)	NS	NS	3.96	NS	<0.0382	<0.0407	<0.0376	<0.0395	NA	NA	NA	NA	<0.0406	<0.0661	<0.0412	<0.0409	0.1398	<0.0397	0.0452	<0.2877	<0.0508
Number of Protection of Groundwater Exceedances		NA	0	NA	NA	0	0	0	0	0	0	0	0	**6**	**6**	0	**4**	**6**	**8**	**4**	**6**	0
Number of Non-Industrial Direct Contact Exceedances		NA	0	NA	NA	0	0	0	0	0	0	0	0	**3**	**5**	0	**4**	**3**	**7**	**1**	**7**	0
Non-Industrial Cumulative Hazard Index		NA	1.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.1	0.4	**9.3**	**3.4**	0.2	**2.2**	0.0
Non-Industrial Cumulative Cancer Risk		NA	1.0E-05	NA	NA	7.7E-07	8.2E-07	7.6E-07	8.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**1.6E-05**	**2.2E-05**	1.7E-06	**2.3E-05**	**4.3E-04**	**6.2E-04**	**1.0E-05**	**2.8E-04**	1.2E-06

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NR 720 Soil Standards updated December 2018. NA - not analyzed. NS - no standard. ND - none detected. *Underlined italic* values are greater than protection of groundwater standards. **Bold** values are greater than non-industrial direct contact standards. **Bold underlined** values are greater than industrial direct contact standards. Background threshold values from USGS Report at http://pubs.usgs.gov/sir/2011/5202. 1,2-dibromo-3-chloropropane was not detected at the site but the laboratory limit of detection are greater than cleanup standards, as a result these compounds were excluded from cumulative exceedance calculations.

Table 4: Groundwater Analyte Detection Summary

Table 4
Groundwater
Analyte Detection Summary
Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

		NR 140 Groundwater Quality Standards		*Hall Avenue to Mann Street*			*Ely Street to Stanton Street*	
		Preventive Action Limit	**Enforcement Standard**	**GP-1** 10/13/2021	**GP-3** 10/13/2021	**GP-4** 10/13/2021	**GP-8** 10/13/2021	**GP-10** 10/13/2021
µg/L	Arsenic, Dissolved	1	10	**15.3 J**	NA	NA	<8.3	**78.1**
	Lead, Dissolved	1.5	15	*9.3*	NA	NA	**50**	<6.4
PFAS ng/L	PFBA (Perfluorobutanoic acid)	NS	NS	2.2 J	21	NA	60	49
	PFPeA (Perfluoropentanoic acid)	NS	NS	3.5 J	30	NA	150	140
	PFBS (Perfluorobutanesulfonic acid)	NS	NS	4.8 J	8.3	NA	6	6.8
	PFHxA (Perfluorohexanoic acid)	NS	NS	<2.2	18	NA	120	120
	PFPeS (Perfluoropentanesulfonic acid)	NS	NS	<2.1	<1.1	NA	<1.2	6.0
	PFHpA (Perfluoroheptanoic acid)	NS	NS	4.0 J	12	NA	72	130
	PFHxS (Perfluorohexanesulfonic acid)	NS	NS	<2.3	2.5 J	NA	6.8	22
	PFOA (Perfluorooctanoic acid)	2	20	*3.2 IJ*	*15*	NA	**28**	**350**
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	4.4 J	11
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	<1.8	<0.99	NA	<1.0	1.6 J
	PFNA (Perfluorononanoic acid)	NS	NS	<3.3	3.9 J	NA	3.3 J	<1.9
	PFOS (Perfluorooctanesulfonic acid)	2	20	*19*	*4.5*	NA	*16*	**31**
	PFDA (Perfluorodecanoic acid)	NS	NS	3.8 J	<1.4	NA	1.7 J	<1.4
	8:2 FTS (8:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	<1.6	4.7 J
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	<2.5	<1.3	NA	7.5	<1.4
PAH (µg/L)	1-Methylnaphthalene	NS	NS	NA	NA	NA	0.78	<0.017
	2-Methylnaphthalene	NS	NS	NA	NA	NA	0.47	0.016 J
	Acenaphthene	NS	NS	NA	NA	NA	0.47	0.021 J
	Benzo(a)anthracene	NS	NS	NA	NA	NA	0.014 J	<0.013
	Chrysene	0.02	0.2	NA	NA	NA	0.029 J	<0.025
	Fluoranthene	80	400	NA	NA	NA	0.043 J	<0.025
	Fluorene	80	400	NA	NA	NA	0.024 J	<0.022
	Naphthalene	10	100	NA	NA	NA	0.37	0.046 J
	Phenanthrene	NS	NS	NA	NA	NA	0.093	0.044 J
	Pyrene	50	250	NA	NA	NA	0.035 J	<0.021
VOC (µg/L)	1,2,4-Trimethylbenzene	96	480	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	NS	NS	<0.86	NA	NA	2.8	<0.86

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NA - not analyzed. ND - none detected. NS - no standard. *Underlined italic* values are greater than preventive action limits. **Bold** values are greater than enforcement standards.

Table 5: Groundwater Vapor Risk Screening Level Summary

Table 5 - Groundwater Vapor Risk Screening Level Summary

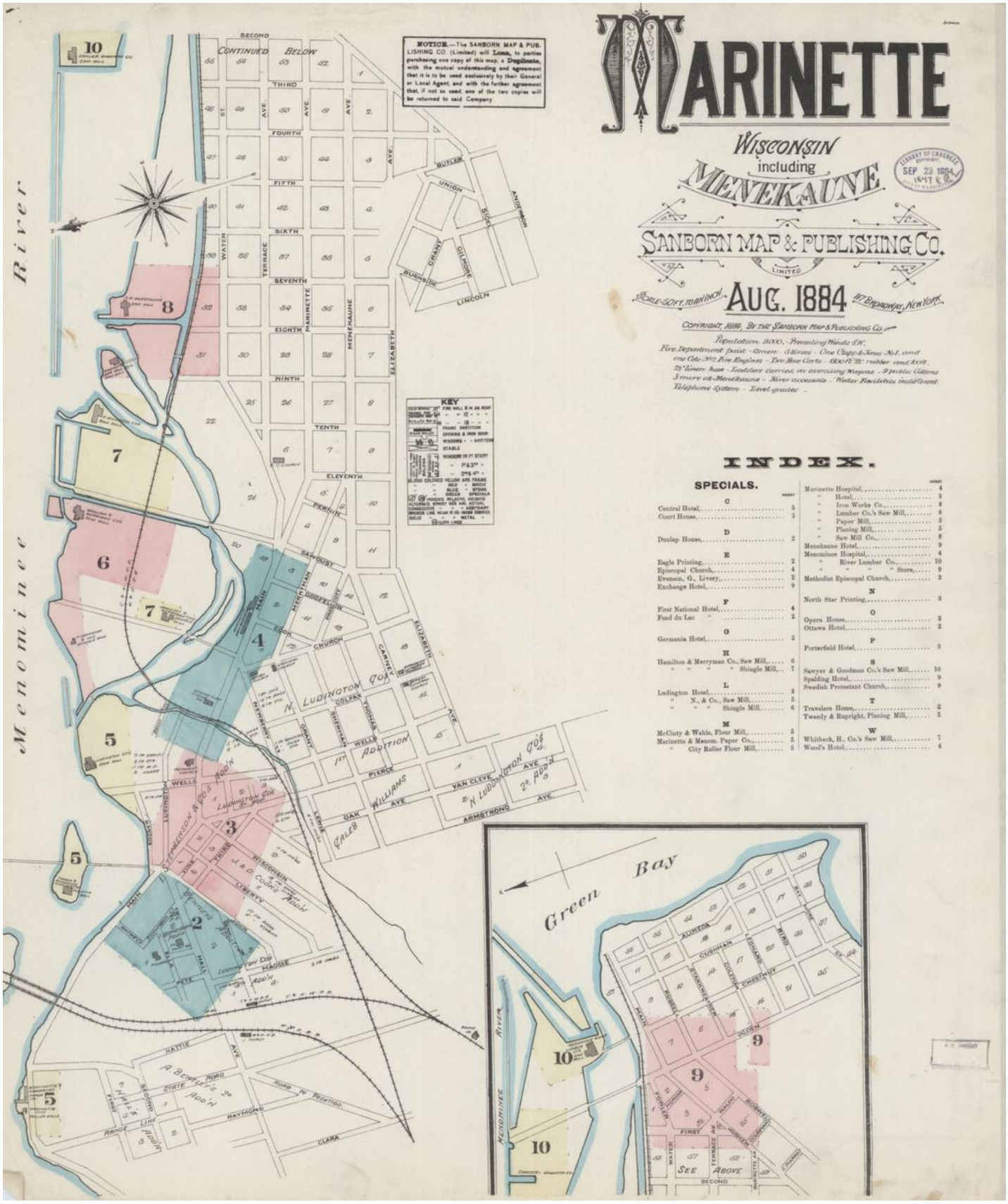
Ludington Street

Hall Avenue to Stanton Street, Marinette, WI

			Groundwater VRSL		Groundwater Samples				
					GP-1	GP-3	GP-4	GP-8	GP-10
		U.S. EPA RSL Basis	Residental	Non-residental	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
VOCs (µg/L)	1,2,4-Trimethylbenzene	n	250	10,317	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	n	409	17,323	<0.86	NA	NA	2.8	<0.86
	Naphthalene	c	46	2,000	<1.1	NA	NA	0.37	0.046 J

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. Bold values are greater than or equal to residential VRSLs. Bold underlined values are greater than or equal to small commercial VRSLs. Bold Underlined Italic values are greater than or equal to large commerical/industrial VRSLs. c - carcinogenic based RSL. n - non-carcinogenic based RSL. VAL - Vapor action level. VRSL - Vapor risk screening level. RSL - Regional screening level.

Appendix A
Historical Reference and Scoping Documents


MARINETTE
WISCONSIN
including
MENEKAUNE
SANBORN MAP & PUBLISHING CO.
LIMITED
SCALE 50 FT. TO AN INCH. AUG. 1884 117 BROADWAY, NEW YORK.
COPYRIGHT, 1884, BY THE SANBORN MAP & PUBLISHING CO.
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KEY
INDEX.
SPECIALS.
Menominee River
Green Bay
SEE ABOVE

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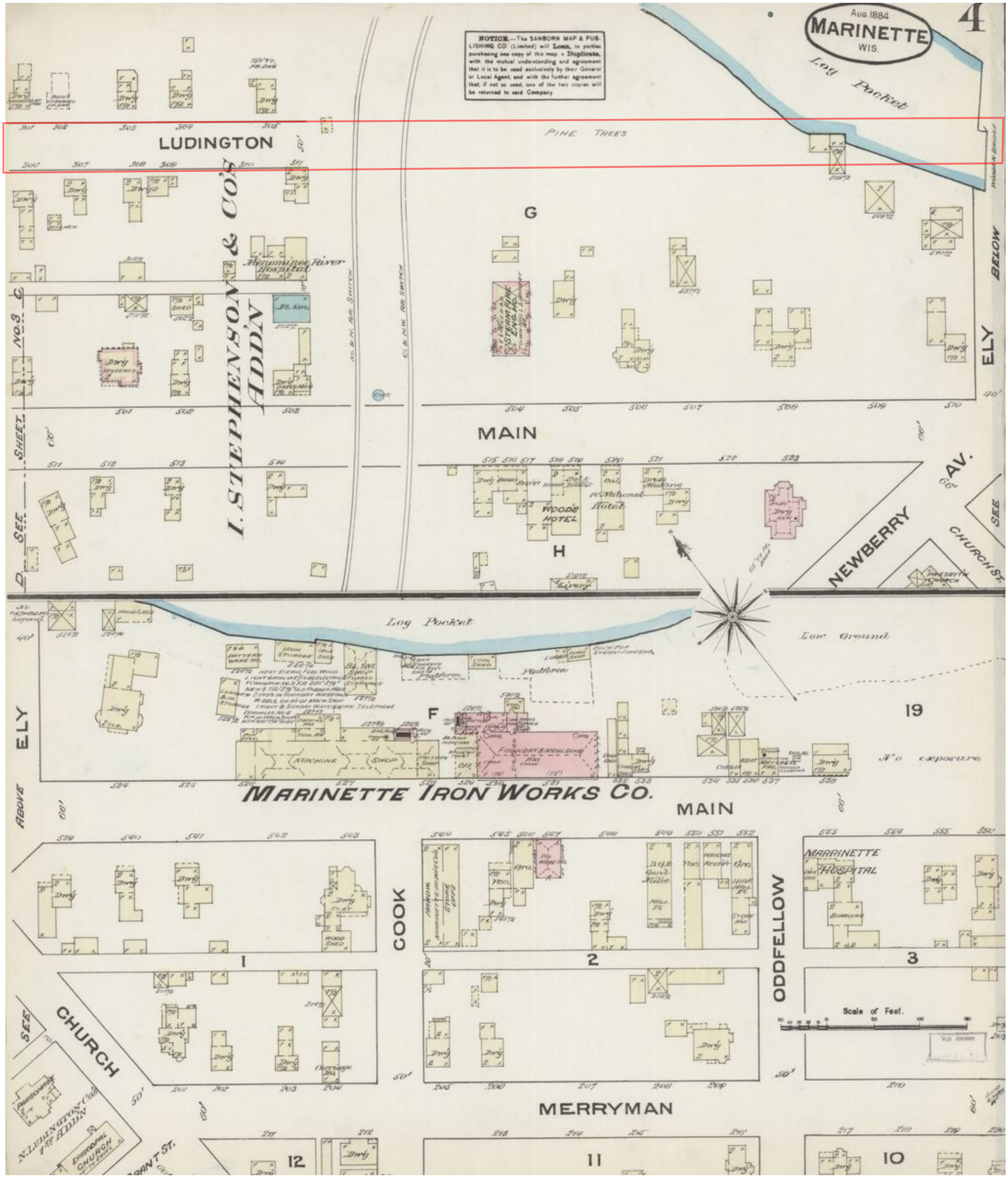
Aug. 1884
MARINETTE
WIS.
4
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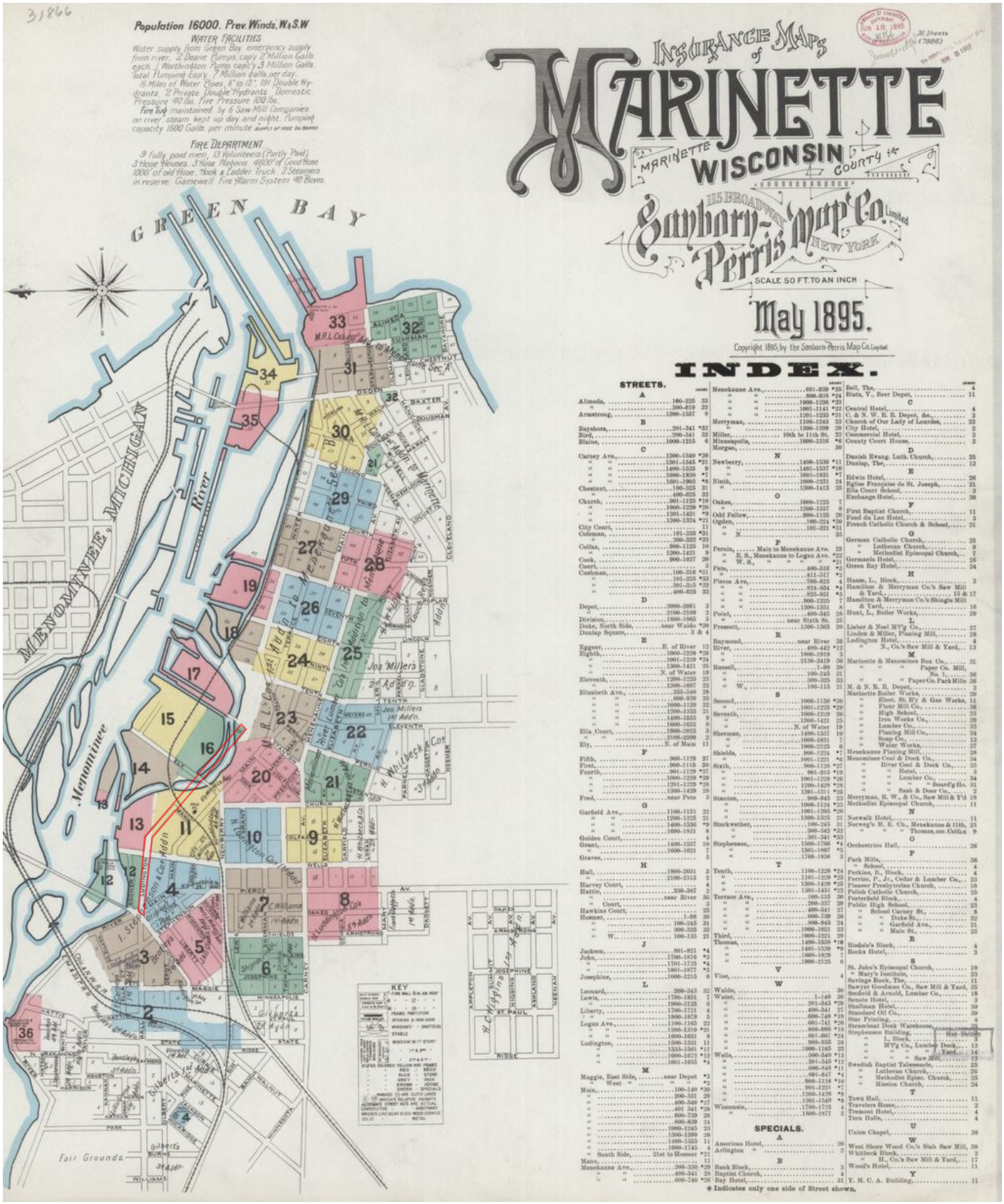
Log Pocket
LUDINGTON
PINE TREES
I. STEPHENSON & CO'S ADD'N
Menominee River Hospital
G
MAIN
WOOD'S HOTEL
National Hotel
H
NEWBERRY
AV.
CHURCH ST.
ELY
Log Pocket
Low Ground
F
19
MARINETTE IRON WORKS CO.
MACHINE SHOP
FOUNDRY & MOULDING
MAIN
MARINETTE HOSPITAL
COOK
ODDFELLOW
CHURCH
1
2
3
Scale of Feet.
MERRYMAN
12
11
10


31866
Population 16000. Prev. Winds, W. & S.W.
WATER FACILITIES
Water supply from Green Bay, emergency supply from river. 2 Deane Pumps, capy 2 Million Galls each. 1 Worthington Pump capcy 3 Million Galls. Total Pumpend Capy. 7 Million Galls per day. 16 Miles of Water Pipes, 6" to 12". 191 Double Hydrants. 2 Private Double Hydrants. Domestic Pressure 90 lbs. Fire Pressure 100 lbs.
Fire Tug maintained by 6 Saw Mill Companies on river, steam kept up day and night. Pumping capacity 1500 Galls. per minute.
FIRE DEPARTMENT
9 fully paid men, 13 Volunteers (Partly Paid) 3 Hose Reuses. 3 Hose Wagons. 4600' of Good Hose 1000' of old Hose. 1 Hook & Ladder Truck. 2 Steamers in reserve. Gamewell Fire Alarm System. 40 Boxes.
INSURANCE MAPS of MARINETTE
MARINETTE COUNTY WISCONSIN
115 BROADWAY Sanborn-Perris Map Co. Limited NEW YORK
SCALE 50 FT. TO AN INCH
May 1895.
Copyright 1895 by the Sanborn-Perris Map Co. Limited
GREEN BAY
MENOMINEE, MICHIGAN
Menominee River
INDEX.
STREETS.
SPECIALS.
KEY

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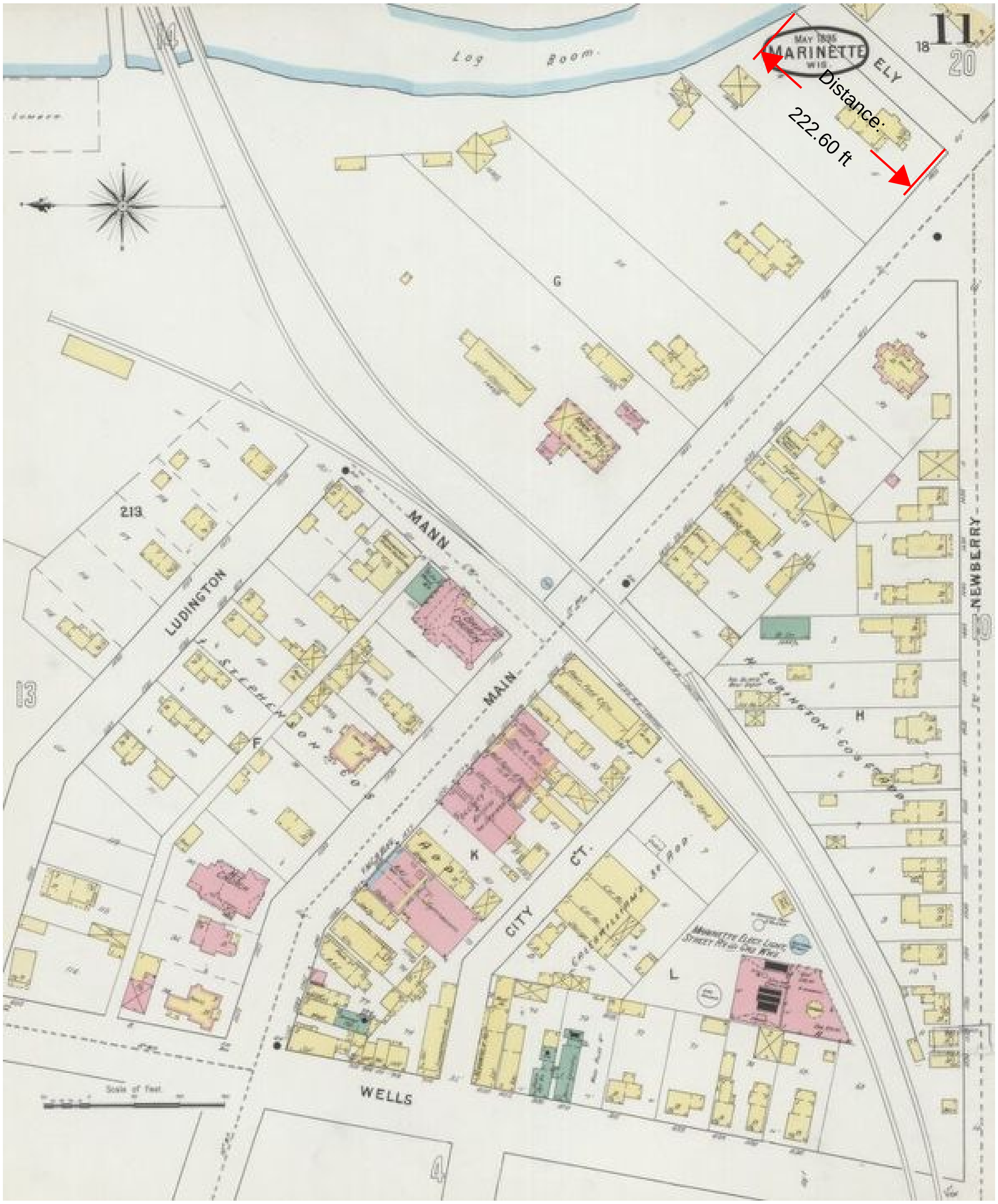
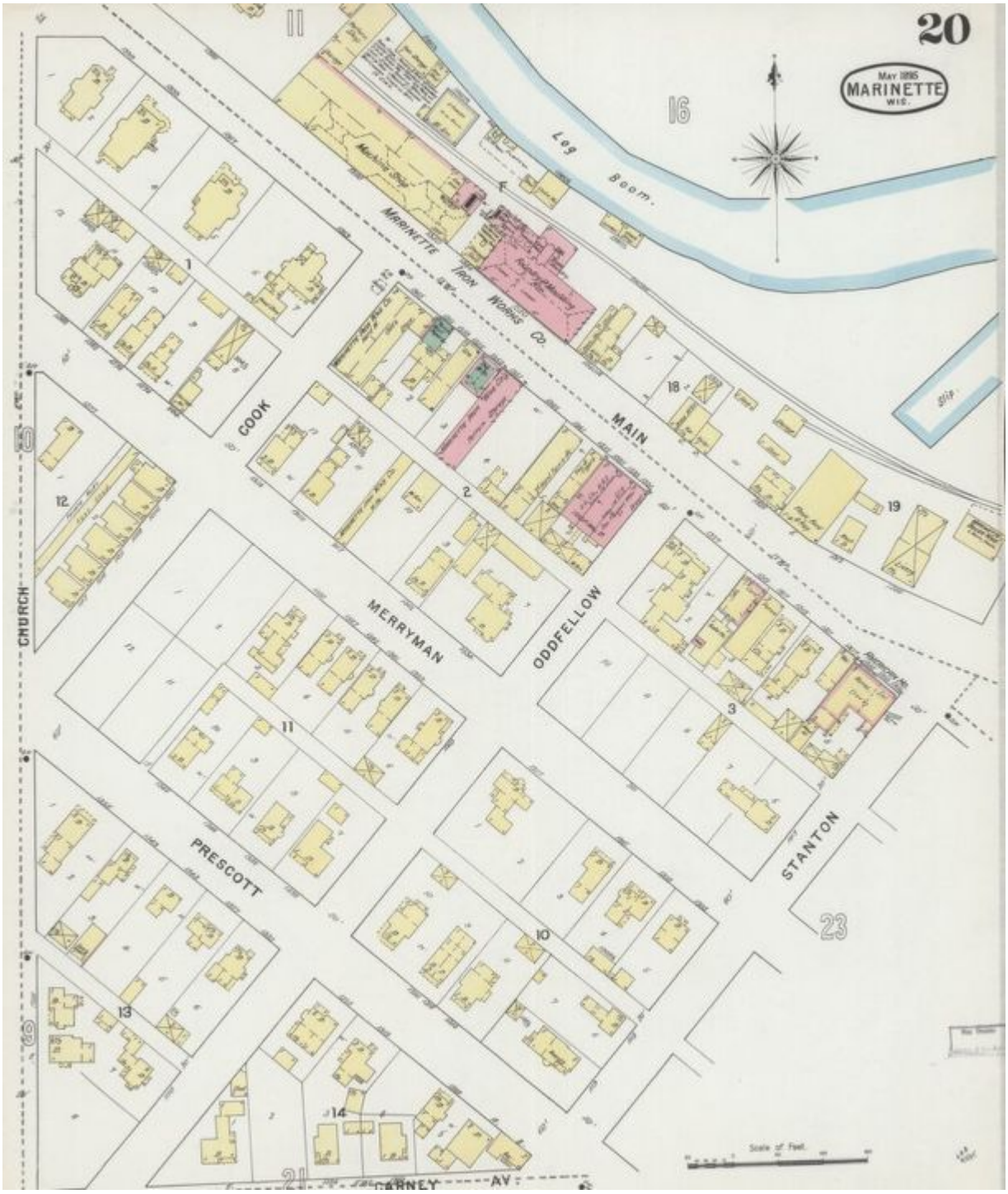
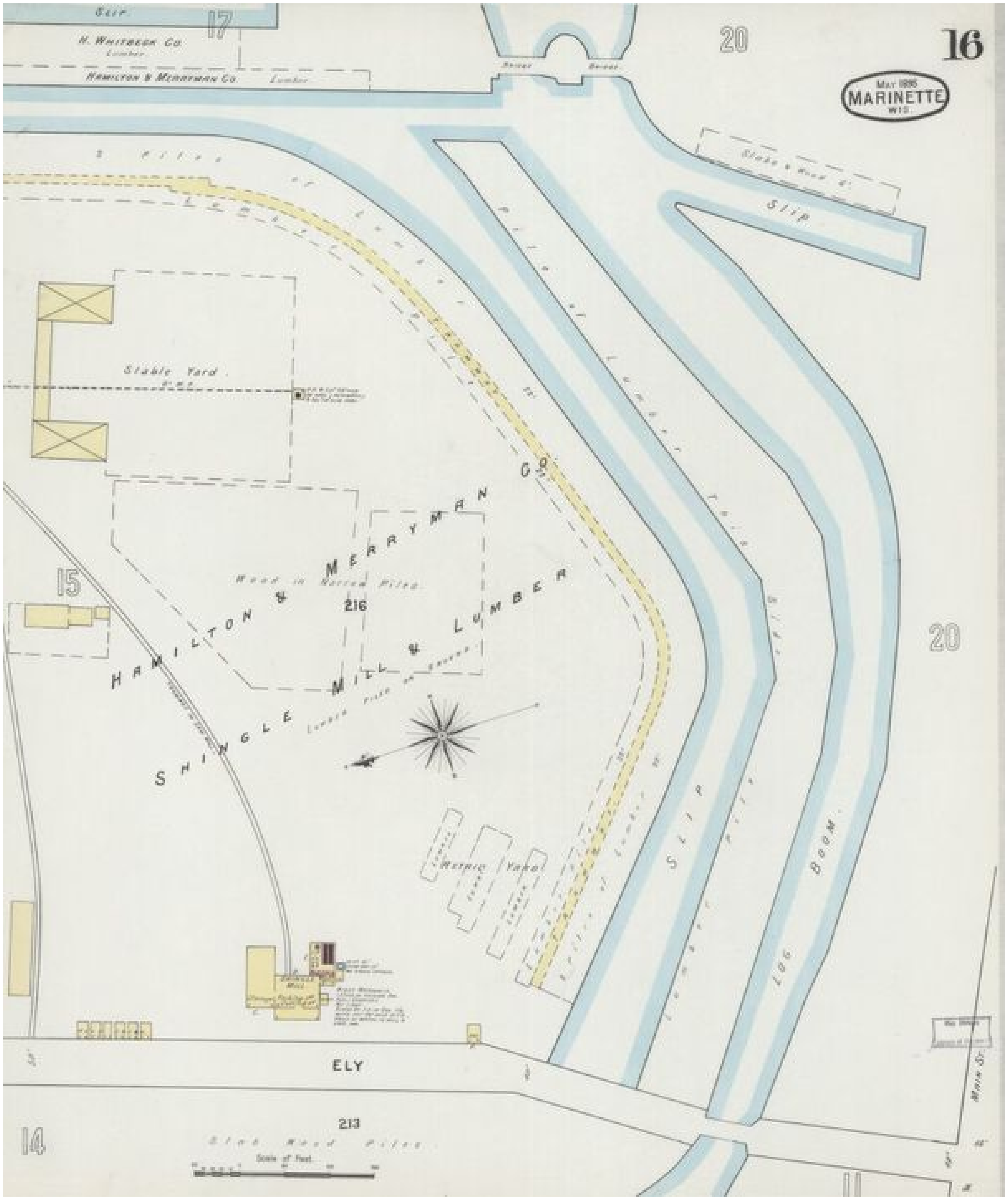

MAY 1895
MARINETTE
WIS
11
18
20
ELY
Distance:
222.60 ft
Log Boom
G
213
MANN
LUDINGTON
MAIN
NEWBERRY
13
F
K
H
CITY CT.
L
WELLS
4
Scale of Feet

Share


20
MARINETTE
Log Boom.
MARINETTE IRON WORKS CO.
MAIN
COOK
CHURCH
MERRYMAN
ODDFELLOW
PRESCOTT
STANTON
CARNEY AV.
16
11
23

Share


16
May 1895
MARINETTE
WIS.
H. WHITBECK CO.
HAMILTON & MERRYMAN CO.
Slip
Stable Yard.
HAMILTON & MERRYMAN CO.
SHINGLE MILL & LUMBER
216
Wood in Narrow Piles
Lumber Piled on Ground
Retail Yard
SLIP
LOG BOOM.
ELY
MAIN ST.
213
Slab Wood Piles
Scale of Feet.
17
20
15
14
11

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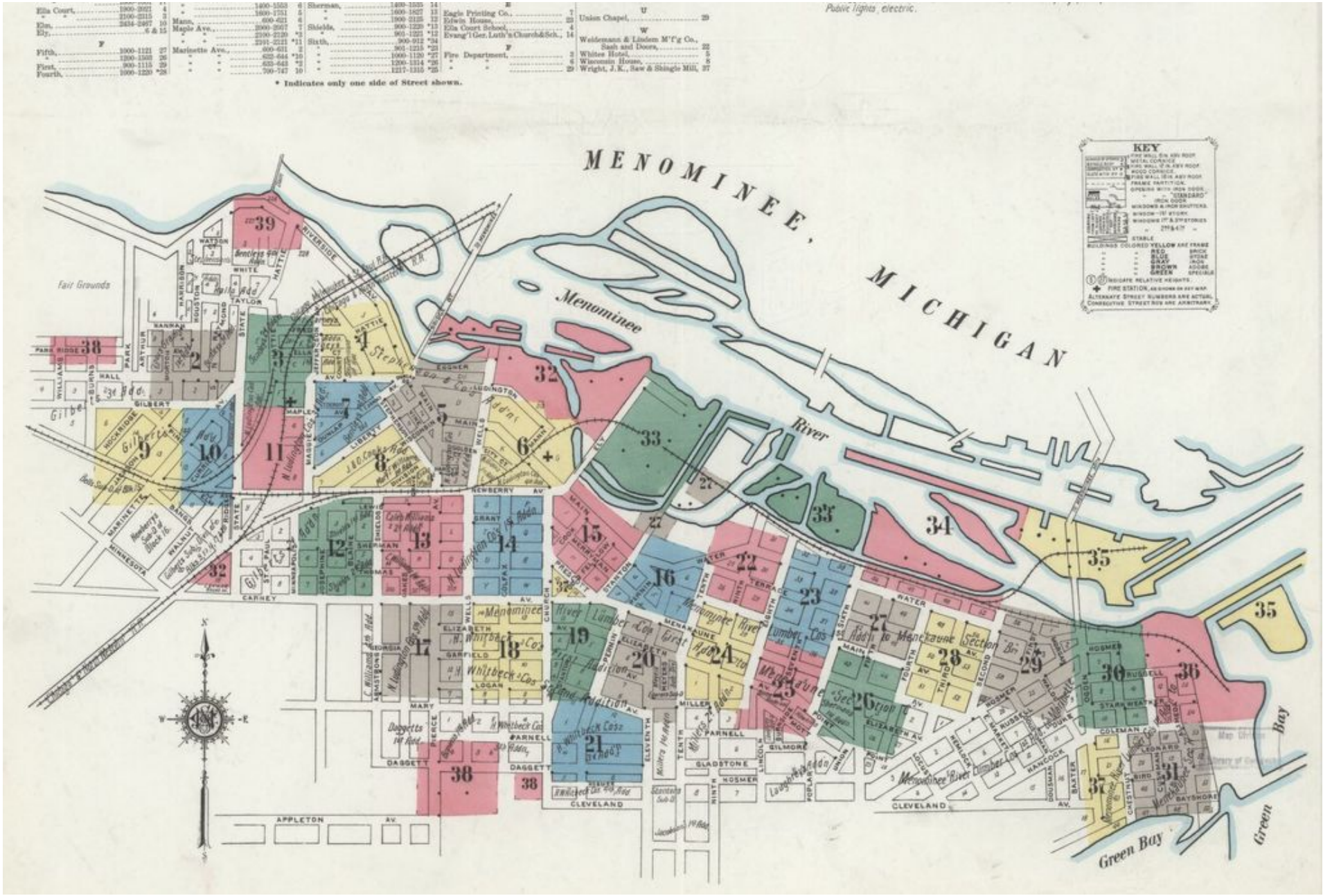
MENOMINEE, MICHIGAN
Menominee River
Green Bay
Fair Grounds
KEY
* Indicates only one side of Street shown.

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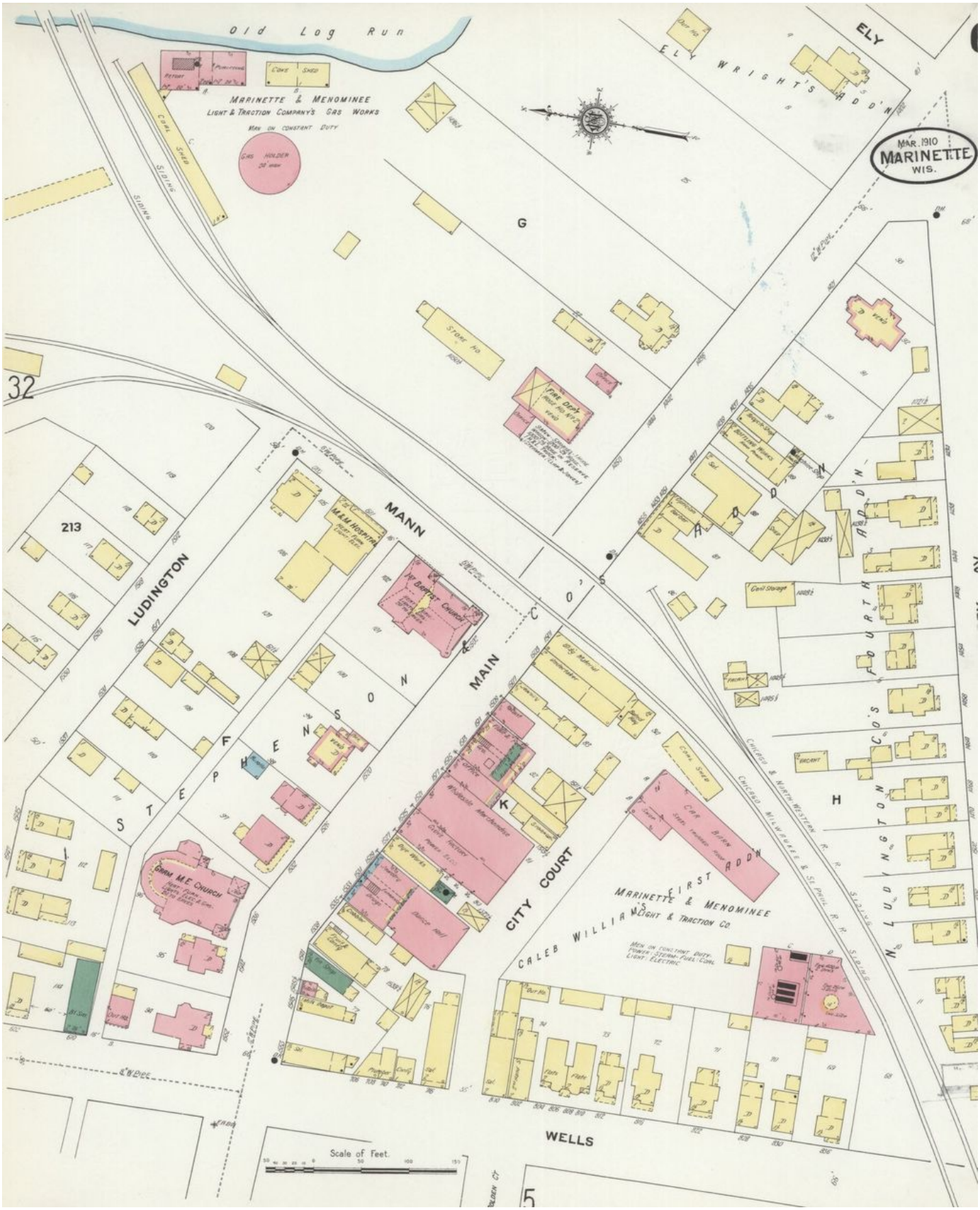
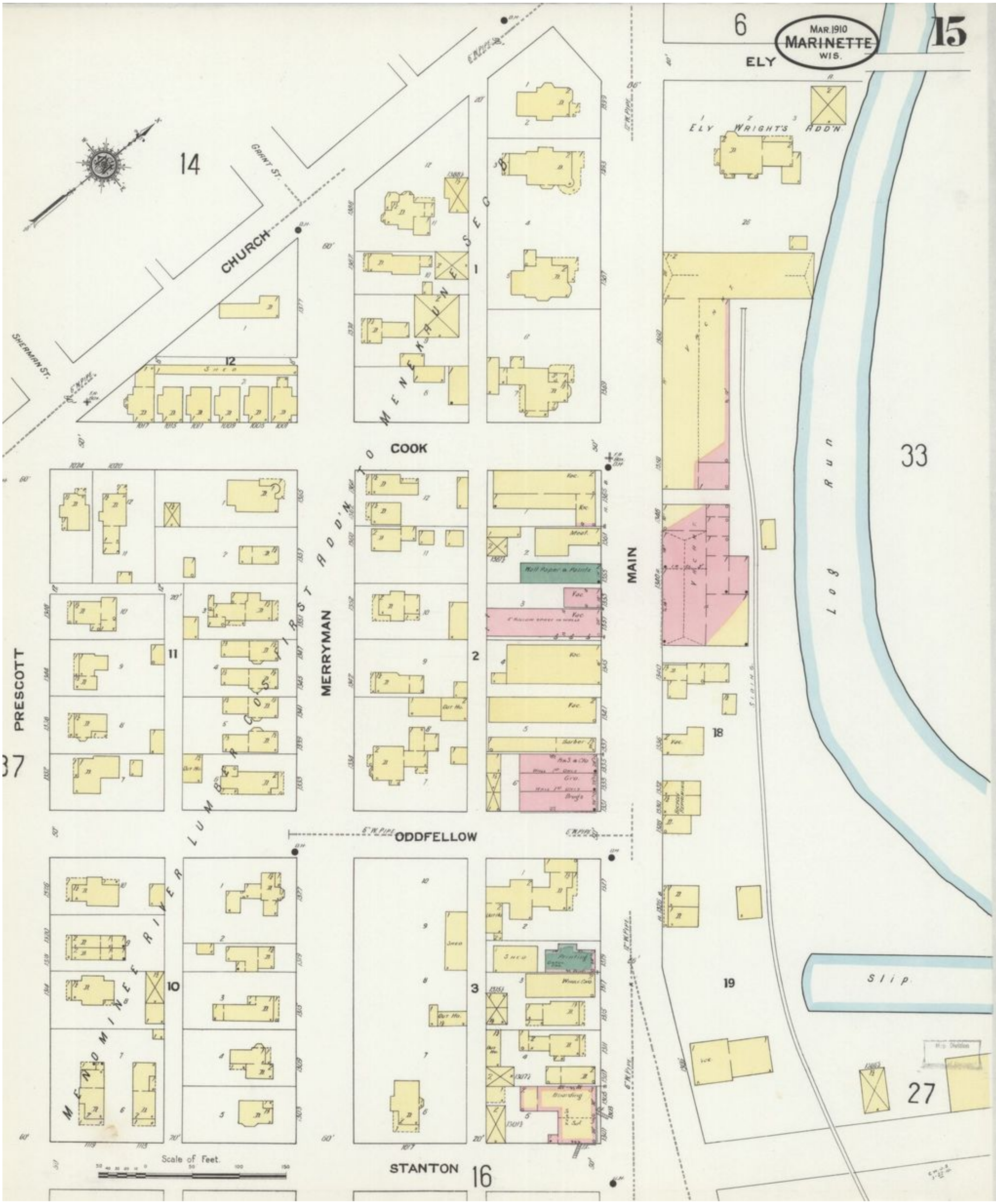

Old Log Run
MARINETTE & MENOMINEE
LIGHT & TRACTION COMPANY'S GAS WORKS
MAR. 1910
MARINETTE
WIS.
ELY
ELY WRIGHT'S ADD'N
MANN
LUDINGTON
MAIN
STEPHENSON
CITY COURT
WELLS
FIRST ADD'N
CALEB WILLIAMS
MARINETTE & MENOMINEE
LIGHT & TRACTION CO.
M.E. CHURCH
M. & M. HOSPITAL
1st BAPTIST CHURCH
FIRE DEPT.
Scale of Feet.

Share


MAR. 1910
MARINETTE
WIS.
15
6
ELY
ELY WRIGHT'S ADD'N.
14
CHURCH
GRANT ST.
SHERMAN ST.
12
1
COOK
MAIN
MERRYMAN
PRESCOTT
37
33
Log Run
11
2
18
ODDFELLOW
10
3
19
Slip
27
STANTON
16
Scale of Feet.
Wall Paper & Paints
Meat
Barber
Gro.
Drugs
Printing
Boarding
Shed
Out Ho.

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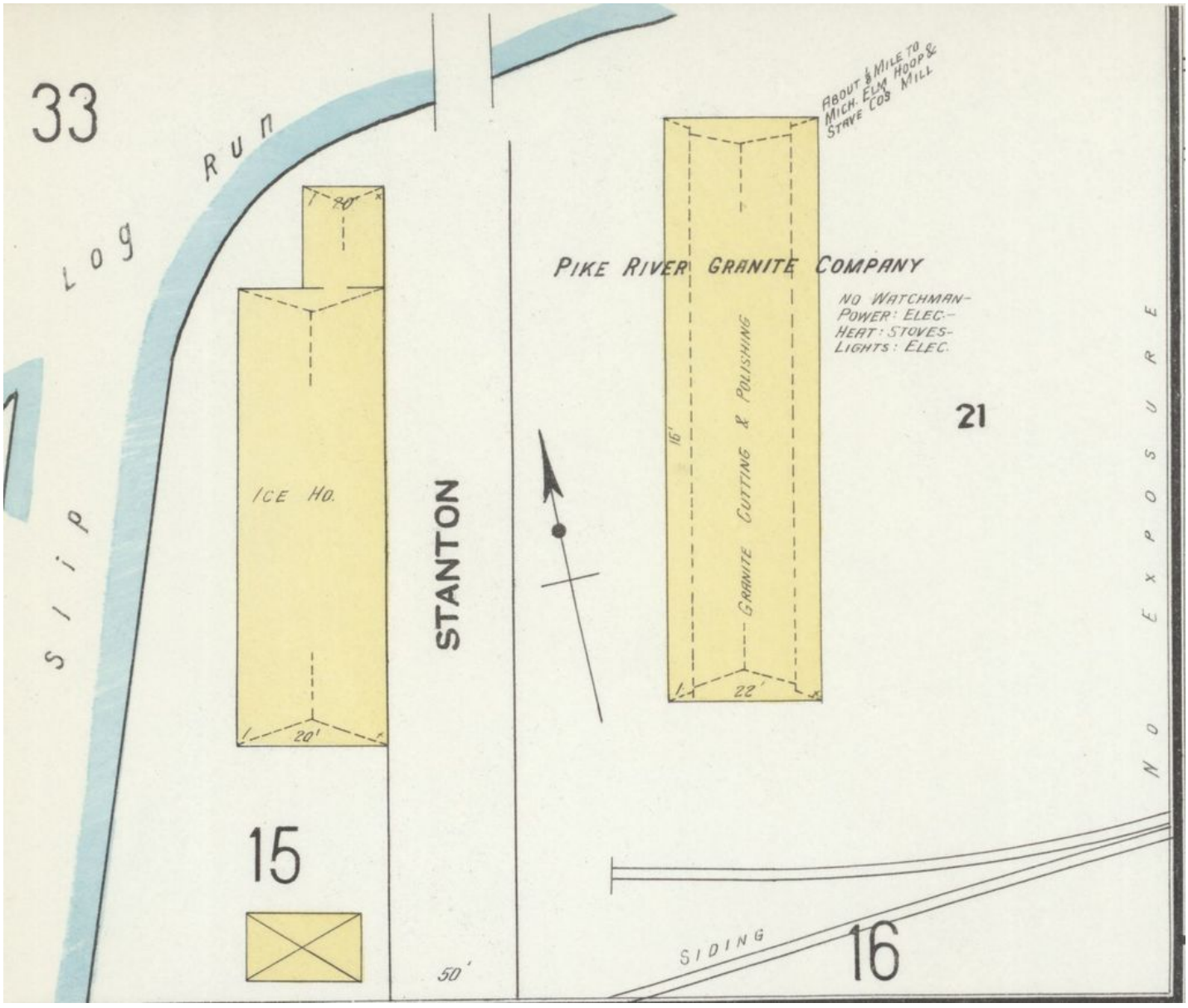
MAP

Image 28 of Sanborn Fire Insurance Map from Marinette, Marinette County, Wisconsin.

Image provided by: **Library of Congress, Washington, DC**

Link to the full image: https://www.loc.gov/resource/g4124mm.g096051910/?sp=28



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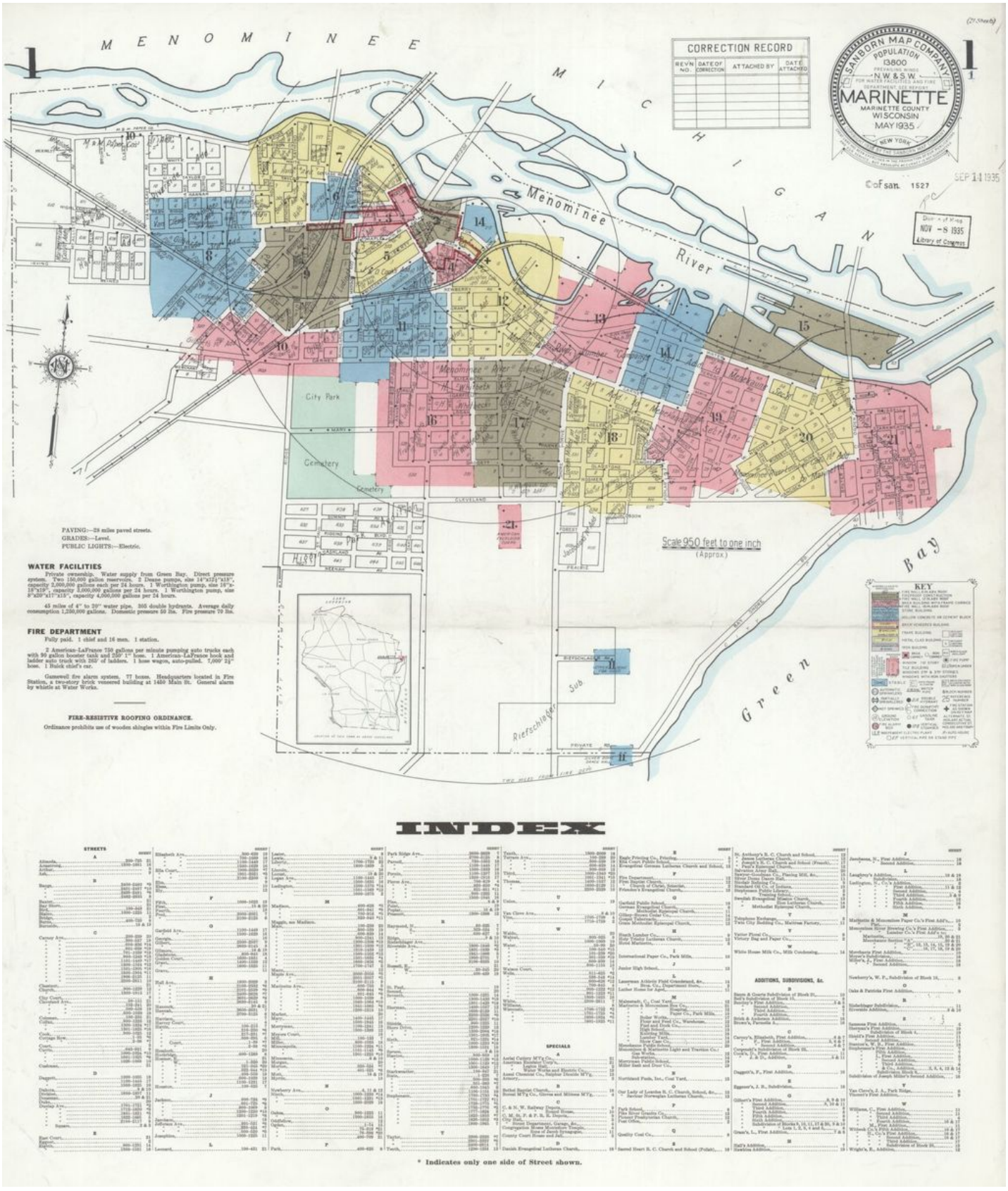
MENOMINEE
MICHIGAN
Menominee River
Green Bay
CORRECTION RECORD
REVN NO.
DATE OF CORRECTION
ATTACHED BY
DATE ATTACHED
SANBORN MAP COMPANY
POPULATION 13800
N.W. & S.W.
MARINETTE
MARINETTE COUNTY
WISCONSIN
MAY 1935
NEW YORK
SEP 14 1935
NOV -8 1935
Library of Congress
City Park
Cemetery
Scale 950 feet to one inch
(Approx.)
KEY
PAVING:—28 miles paved streets.
GRADES:—Level.
PUBLIC LIGHTS:—Electric.
WATER FACILITIES
Private ownership. Water supply from Green Bay. Direct pressure system. Two 150,000 gallon reservoirs. 2 Deane pumps, size 14"x21"x18", capacity 2,000,000 gallons each per 24 hours. 1 Worthington pump, size 19"b-18"x19", capacity 3,000,000 gallons per 24 hours. 1 Worthington pump, size 8"x20"x11"x15", capacity 4,000,000 gallons per 24 hours.
45 miles of 4" to 20" water pipe. 305 double hydrants. Average daily consumption 1,250,000 gallons. Domestic pressure 50 lbs. Fire pressure 70 lbs.
FIRE DEPARTMENT
Fully paid. 1 chief and 16 men. 1 station.
2 American-LaFrance 750 gallons per minute pumping auto trucks each with 90 gallon booster tank and 250' 1" hose. 1 American-LaFrance hook and ladder auto truck with 265' of ladders. 1 hose wagon, auto-pulled. 1,000' 2½" hose. 1 Buick chief's car.
Gamewell fire alarm system. 77 boxes. Headquarters located in Fire Station, a two-story brick veneered building at 1400 Main St. General alarm by whistle at Water Works.
FIRE-RESISTIVE ROOFING ORDINANCE.
Ordinance prohibits use of wooden shingles within Fire Limits Only.
INDEX
STREETS
SPECIALS
ADDITIONS, SUBDIVISIONS, &c.
* Indicates only one side of Street shown.

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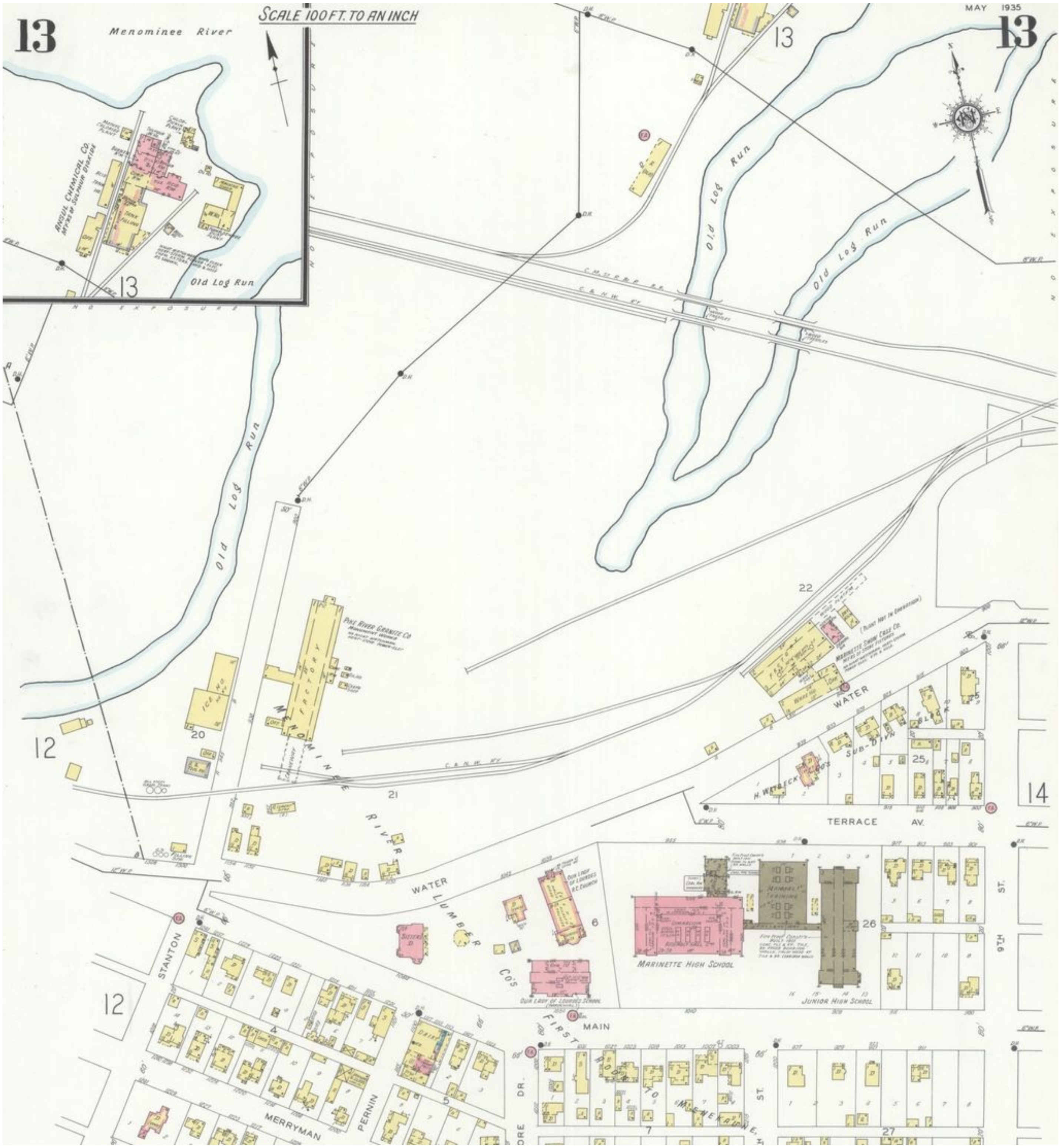
MAP

Image 12 of Sanborn Fire Insurance Map from Marinette, Marinette County, Wisconsin.

Image provided by: **Library of Congress, Washington, DC**

Link to the full image: https://www.loc.gov/resource/g4124mm.g096051935/?sp=12


13
SCALE 100 FT. TO AN INCH
MAY 1935
13
Menominee River
Old Log Run
Old Log Run
Old Log Run
Old Log Run
MENOMINEE RIVER
LUMBER COS
WATER
WATER
TERRACE AV.
MAIN
STANTON
MERRYMAN
PERNIN
FIRST
9TH ST.
MARINETTE HIGH SCHOOL
JUNIOR HIGH SCHOOL
OUR LADY OF LOURDES SCHOOL
FACTORY
ICE HO.
12
12
14
20
21
22
25
26
27

Share


MARINETTE, WIS.
MAY 1935
14
Menominee River
SCALE 100 FT. TO AN INCH.
MENOMINEE & MARINETTE LIGHT & TRACTION CO. SUB-STA.
MARINETTE LUMBER YARD
WHITE HOUSE MILK CO. MILK CONDENSING
I. STEPHENSON'S CO. ADDN
LUDINGTON
GILKEY - BROWN CEDAR CO.
POLE YARD
LAUERMAN ATHLETIC FIELD
BULK OIL STA.
WATER
TERRACE AV.
MAIN
CARNEY AV.
9TH ST.
8TH ST.
7TH ST.
6TH ST.
MENEKAUNEE SEC.
ADD TO MENEKAUNEE
FIRST ADD
MENOMINEE RIVER LUMBER CO'S
12
13
15
18
19

BORING LOCATION DIAGRAM
DOWNTOWN AREA ROADWAY AND UTILITY IMPROVEMENTS

MAIN ST, WELLS ST, AND LUDINGTON ST, MARINETTE, WISCONSIN

AYRES ASSOCIATES, INC.

ENGINEER	MEK
SCALE	AS NOTED
PROJECT NO.	59:2769
SHEET	1 OF 1
DATE	7/30/2021

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Ayres Associates, Inc.	**59:2769**	**B-04**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Downtown Area Roadway and Utility Improvements	**Geotechnical Drilling Contractors, LLC**		
SITE LOCATION: **Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **596.0+/-**

BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

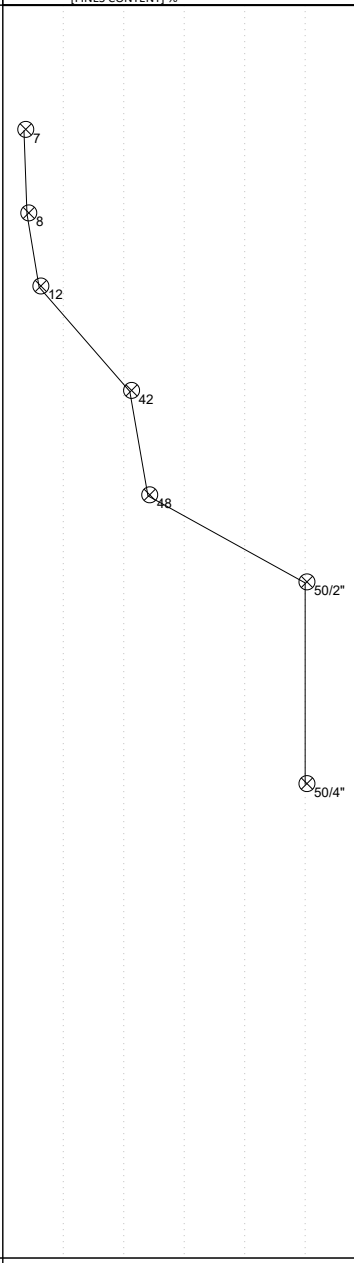
RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	BS	24	24	Asphalt Thickness [5.5"] Base Course Thickness [11"]			
	S-2	SS	24	16	(SP-SM) {A-3} FILL, FINE SAND WITH SILT, trace gravel, dark brown, moist			3-3-4-4 (7)
5	S-3	SS	24	16	(SP) {A-3} Glacial outwash, FINE SAND, yellowish brown, moist, loose to medium dense		591	4-4-4-4 (8)
	S-4	SS	18	12				4-4-8 (12)
	S-5	SS	18	12	(CL/ML) {A-4} Glacial till, SANDY SILTY CLAY WITH GRAVEL, brown, moist, hard to very hard			10-15-27 (42)
10	S-6	SS	18	12			586	14-19-29 (48)
	S-7	SS	8	6				27-50/2" (50/2")
15							581	
	S-8	SS	4	4				50/4" (50/4")
					END OF DRILLING AT 18.9 FT			
20							576	
25							571	
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

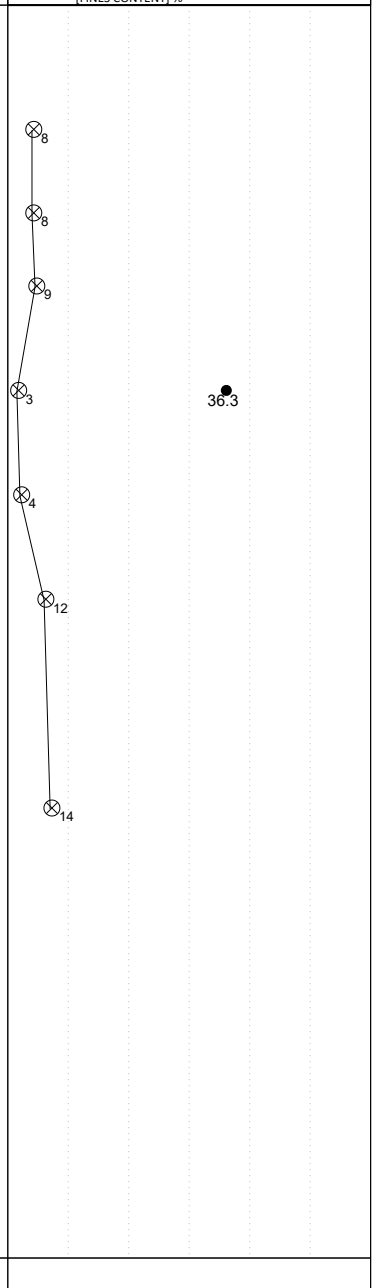
WL (First Encountered) **None**	BORING STARTED: **Jul 13 2021**		CAVE IN DEPTH:
WL (Completion) **None**	BORING COMPLETED: **Jul 13 2021**		HAMMER TYPE: **Auto**
WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY:	DRILLING METHOD: **4 1/4" HSA 0' to 18.5' (AH)**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Ayres Associates, Inc.	**59:2769**	**B-05**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Downtown Area Roadway and Utility Improvements	**Geotechnical Drilling Contractors, LLC**		
SITE LOCATION: **Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **594.0**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	BS	24	24	Asphalt Thickness [3"] Base Course Thickness [7"]			
	S-2	SS	24	16	(SP-SM) {A-3} FILL, FINE SAND WITH SILT, trace gravel, very dark brown, moist			3-4-4-4 (8)
5	S-3	SS	24	16	(SP) {A-3} Glacial outwash, FINE SAND, yellowish brown, moist, loose		589	4-4-4-5 (8)
	S-4	SS	18	14				4-4-5 (9)
	S-5	SS	18	12	(SM) {A-2-4} Alluvium, SILTY SAND, trace organics, very dark gray and grayish brown, wet, very loose Organic Content = 2.6%	▽		1-1-2 (3)
10	S-6	SS	18	12	(SP) {A-3} Glacial outwash, FINE SAND, dark yellowish brown, wet, very loose		584	1-2-2 (4)
	S-7	SS	18	10	(SM) {A-2-4} Glacial outwash, SILTY SAND, brown, wet, medium dense			4-6-6 (12)
15							579	
	S-8	SS	18	12				5-6-8 (14)
20					**END OF DRILLING AT 20.0 FT**		574	
25							569	
30								

Plastic Limit Water Content Liquid Limit
X———●———△
⊗ STANDARD PENETRATION BLOWS/FT
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
○ CALIBRATED PENETROMETER TON/SF
[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **8.20**	BORING STARTED: **Jul 13 2021**		CAVE IN DEPTH: **10.00**
▼ WL (Completion)	BORING COMPLETED: **Jul 13 2021**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY: **MEK1**	DRILLING METHOD: **4 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Ayres Associates, Inc.	**59:2769**	**B-06**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Downtown Area Roadway and Utility Improvements	**Geotechnical Drilling Contractors, LLC**		
SITE LOCATION: **Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **594.0**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	BS	24	24	Asphalt Thickness [2.5"] Base Course Thickness [6"]			
	S-2	SS	24	0	(SP) {A-3} FILL, FINE SAND, trace gravel and cobbles, dark grayish brown, moist, very dense			50/3" (50/3")
5	S-3	SS	24	8	(SP-SM) {A-1-b} FILL, SAND WITH SILT AND GRAVEL, gray, moist, medium dense		589	17-12-6-2 (18)
	S-4	SS	18	8	(SP) {A-3} Glacial outwash, FINE SAND, dark yellowish brown to yellowish brown, moist to wet, loose to medium dense			2-2-3 (5)
10	S-5	SS	18	14			584	4-4-4 (8)
	S-6	SS	18	16		▽		3-4-5 (9)
15	S-7	SS	18	14			579	4-5-9 (14)
	S-8	SS	18	14				5-5-7 (12)
20					**END OF DRILLING AT 20.0 FT**		574	
25							569	
30								

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

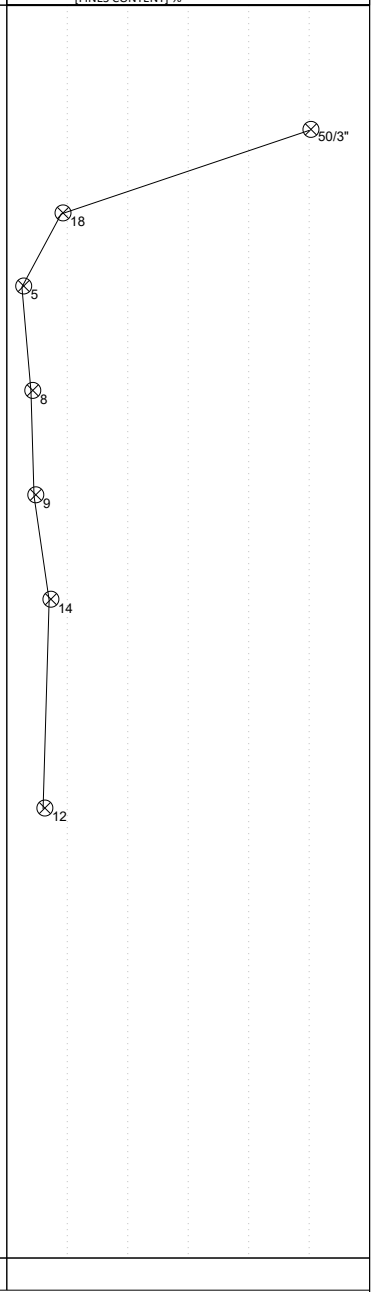
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

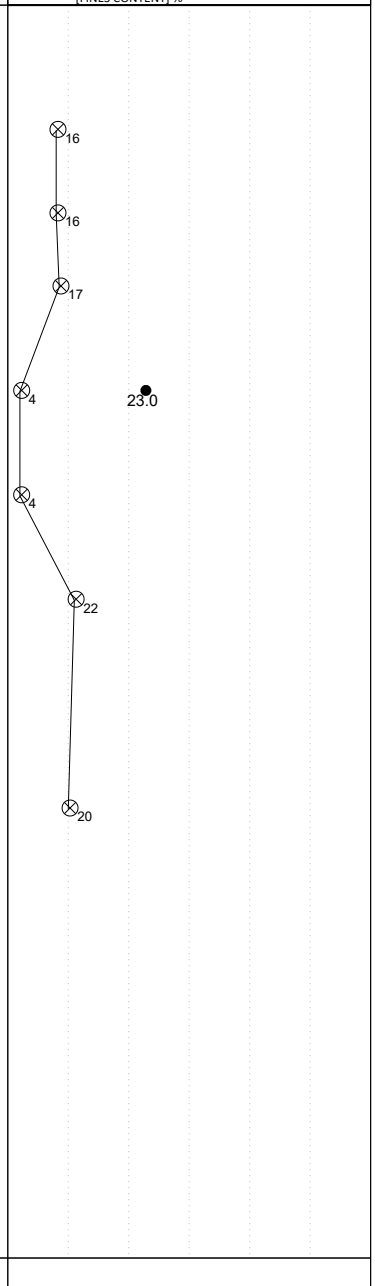
▽ WL (First Encountered) **12.30**	BORING STARTED: **Jul 13 2021**		CAVE IN DEPTH: **14.00**
▼ WL (Completion)	BORING COMPLETED: **Jul 13 2021**		HAMMER TYPE: **Auto**
▽ WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY: **MEK1**	DRILLING METHOD: **4 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Ayres Associates, Inc.	**59:2769**	**B-07**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Downtown Area Roadway and Utility Improvements	**Geotechnical Drilling Contractors, LLC**		
SITE LOCATION: **Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **590.0**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	BS	24	24	Asphalt Thickness [2"] Base Course Thickness [8"]			
	S-2	SS	24	12	(SP-SM) {A-3} FILL, FINE SAND WITH SILT, trace gravel, dark brown to brown, moist to wet, medium dense			6-8-8-8 (16)
5	S-3	SS	24	14			585	8-8-8-9 (16)
	S-4	SS	18	12		▽		8-8-9 (17)
	S-5	SS	18	16	(OL) {A-8} FILL, ORGANIC SILTY SAND, black to very dark brown, wet, very loose Organic Content = 7.3%			2-2-2 (4)
10	S-6	SS	18	10			580	1-2-2 (4)
	S-7	SS	18	8	(OL) {A-8} FILL, ORGANIC SILT WITH SAND AND WOOD, black and dark brown, wet, medium dense, strong odor			14-10-12 (22)
15					(CL) {A-6} Glacial till, SANDY LEAN CLAY WITH GRAVEL, brown, wet, very stiff		575	
	S-8	SS	18	14				6-8-12 (20)
20					**END OF DRILLING AT 20.0 FT**		570	
25							565	
30								

Plastic Limit Water Content Liquid Limit
X———●———△
⊗ STANDARD PENETRATION BLOWS/FT
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
○ CALIBRATED PENETROMETER TON/SF
[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **6.90**	BORING STARTED: **Jul 13 2021**		CAVE IN DEPTH: **8.50**
▼ WL (Completion)	BORING COMPLETED: **Jul 13 2021**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY: **MEK1**	DRILLING METHOD: **4 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Ayres Associates, Inc.	**59:2769**	**B-08**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Downtown Area Roadway and Utility Improvements	**Geotechnical Drilling Contractors, LLC**

SITE LOCATION: **Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **590.0**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	BS	24	24	Asphalt Thickness [2"] Base Course Thickness [10"]			
	S-2	SS	24	4	(ML) {A-4} FILL, SANDY SILT WITH ORGANICS, trace gravel and trash debris, black, moist to wet, very loose to medium dense			1-2-1-1 (3)
5	S-3	SS	24	0	Organic Content = 3.7%	▽	585	1-1-1-1 (2)
	S-4	SS	18	3				2-7-8 (15)
	S-5	SS	18	3				2-9-5 (14)
10	S-6	SS	18	8			580	2-5-7 (12)
	S-7	SS	18	5	(CL/ML) {A-4} Glacial till, SILTY CLAY WITH SAND, trace gravel, brown, wet, very stiff to hard			4-8-10 (18)
15							575	
	S-8	SS	18	3				12-17-25 (42)
20					**END OF DRILLING AT 20.0 FT**		570	
25							565	
30								

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

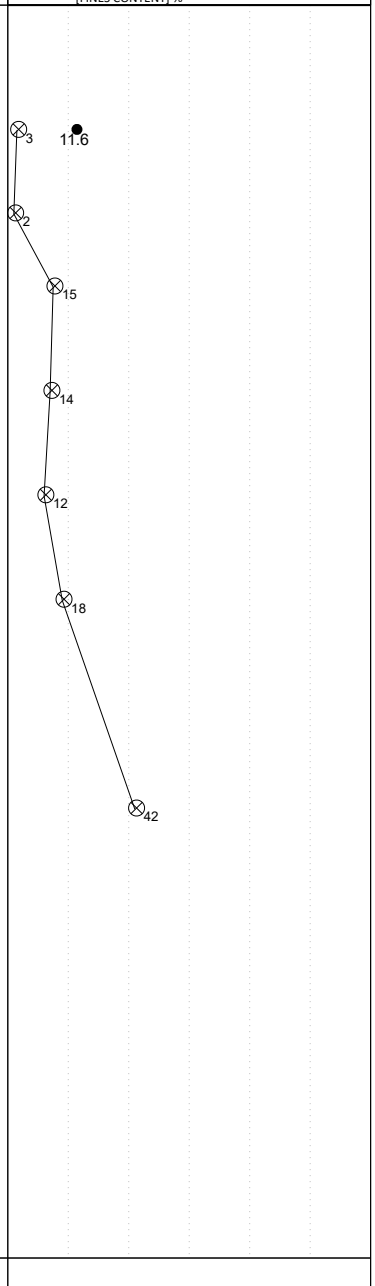
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

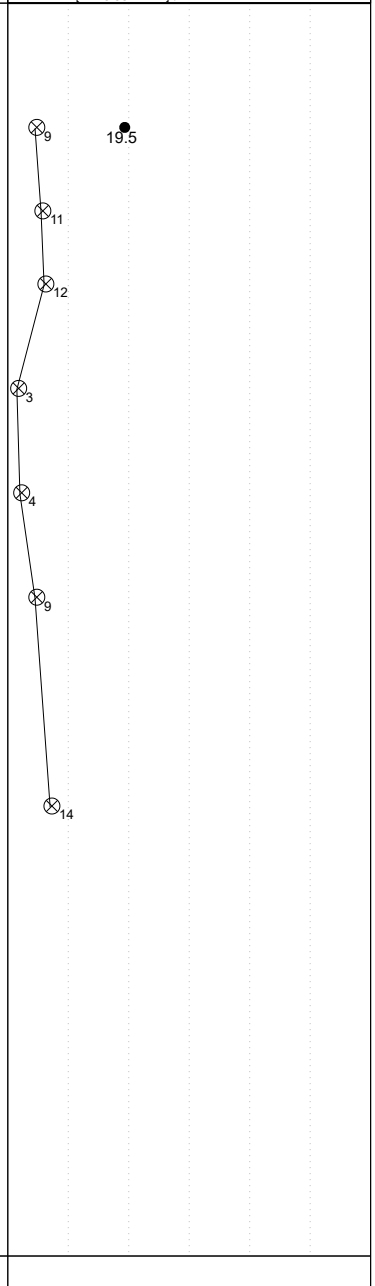
▽ WL (First Encountered) **5.20**	BORING STARTED: **Jul 13 2021**		CAVE IN DEPTH: **5.50**
▼ WL (Completion)	BORING COMPLETED: **Jul 13 2021**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY: **MEK1**	DRILLING METHOD: **4 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Ayres Associates, Inc.	**59:2769**	**B-09**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Downtown Area Roadway and Utility Improvements	**Geotechnical Drilling Contractors, LLC**		
SITE LOCATION: **Main St, Wells St, and Ludington St, Marinette, Wisconsin 54143**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **590.0**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	BS	24	24	Asphalt Thickness [2"] Gravel Thickness [8"]			
	S-2	SS	24	12	(SM) {A-2-4} FILL, SILTY SAND, trace gravel and organics, very dark brown and black, moist to wet, medium dense to very loose			2-4-5-5 (9)
5	S-3	SS	24	12	Organic Content = 1.2%		585	4-5-6-8 (11)
	S-4	SS	18	12		▽		5-5-7 (12)
	S-5	SS	18	3				1-1-2 (3)
10	S-6	SS	18	4			580	1-2-2 (4)
	S-7	SS	18	6	(SP) {A-3} Glacial outwash, FINE SAND, dark brown, wet, loose			2-4-5 (9)
15							575	
	S-8	SS	18	8				3-6-8 (14)
20					**END OF DRILLING AT 20.0 FT**		570	
25							565	
30								

Plastic Limit Water Content Liquid Limit
X———●———△
⊗ STANDARD PENETRATION BLOWS/FT
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
○ CALIBRATED PENETROMETER TON/SF
[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **6.70**	BORING STARTED: **Jul 14 2021**		CAVE IN DEPTH: **8.50**
▼ WL (Completion)	BORING COMPLETED: **Jul 14 2021**		HAMMER TYPE: **Auto**
▽ WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY: **MEK1**	DRILLING METHOD: **4 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG


Approx Location of Previously completed Boring.
4
3
2
1

TEST HOLES FOR STREET PROJECTS

PROJECT NAME:	LUDINGTON ST
DATE:	9/16/21
OBSERVED BY:	JAKE HEARLEY

TEST HOLE NO. 1		**RANGE IN DEPTH**	**DESCRIPTION OF MATERIAL**
COMMENTS: FUEL OIL SMELL 4.5' GROUND WATER		5"	ASPHALT
		4'	GRAVEL
		4.5'	GARBAGE (LANDFILL)

TEST HOLE NO. 2		**RANGE IN DEPTH**	**DESCRIPTION OF MATERIAL**
COMMENTS: FUEL OIL SMELL NO GROUND WATER		3"	ASPHALT
		1'	GRAVEL
		1'	GARBAGE
		1'	SAND
		1.5'	GARBAGE

TEST HOLE NO. 3		**RANGE IN DEPTH**	**DESCRIPTION OF MATERIAL**
COMMENTS: FUEL OIL SMELL (WORST) NO GROUND WATER		2.5"	ASPHALT
		8"	GRAVEL
		4'	SAND FILL
		6' TO BOTTOM	GARBAGE

TEST HOLES FOR STREET PROJECTS

PROJECT NAME:	LUDINGTON ST.
DATE:	9/16/21
OBSERVED BY:	JACE HEDLEY

TEST HOLE NO. 4		**RANGE IN DEPTH**	**DESCRIPTION OF MATERIAL**
COMMENTS:	SLIGHT FUEL OIL SMELL GROUND WATER @ 5'	2.75" 1' 4'	ASPHALT GRAVEL SAND FILL W/GARBAGE & WOOD

TEST HOLE NO.		**RANGE IN DEPTH**	**DESCRIPTION OF MATERIAL**
COMMENTS:			

TEST HOLE NO.		**RANGE IN DEPTH**	**DESCRIPTION OF MATERIAL**
COMMENTS:			

Appendix B
Subsurface Exploration Logs and Borehole Abandonment Forms

State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name: Ludington Street	License/Permit/Monitoring Numbe: NA	Boring Number: GP-1
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name: Firm: Geiss	Date Drilling Started: 10/13/21 M/D/Y	Date Drilling Completed: 10/13/21 M/D/Y Drilling Method: DPT
WI Unique Well No. _____ DNR Well Id No. _____ Well Name: _____	Final Static Water Level: 10.8' bgs	Surface Elevation: ~598 Borehole Dia.: 2.25"
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 (If applicable) ____ Feet ☐ N ☐ S ____ Feet ☐ E ☐ W
Facility Id.: NA	County: Marinette County Code: 38	Civil Town/City/or Village: Marinette

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
			-1	ASPHALT 6" silty GRAVEL, lt. gray, dry 10"	GM			NA						FILL
			-2	poorly-graded med SAND, brown moist, loose	SP									NATIVE
GP-1 2-4'	30/48		-3					0.2						
			-4											
			-5					0.0						
	30/48		-6											
			-7					0.1						
			-8											
			-9					0.1						
GP-1 9-11'	30/48		-10											
			-11	wet @ 11'										
			-12	EOB @ 12'				0.1						
			-13											
			-14											
			-15											
			-16											
			-17											
			-18											
			-19											
			-20											
			-21											
			-22											
			-23											
			-24											
			-25											

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

Signature: William Honea Firm: AYRES ASSOCIATES

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis.Stats. Completion of this report 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 conductu involved. Personally indentifiable 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 Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name: Ludington Street	License/Permit/Monitoring Numbe: NA	Boring Number: GP-2
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name: Firm: Geiss	Date Drilling Started: 10/13/21 M/D/Y	Date Drilling Completed: 10/13/21 M/D/Y Drilling Method: DPT
WI Unique Well No. / DNR Well Id No. / Well Name	Final Static Water Level: NA	Surface Elevation: ~597 / Borehole Dia.: 2.25"
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 (If applicable) ____ Feet ☐ N ☐ S ____ Feet ☐ E ☐ W
Facility Id.: NA	County: Marinette / County Code: 38	Civil Town/City/or Village: Marinette

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	SOIL PROPERTIES: PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/Comments
			-1	ASPHALT 6" silty GRAVEL, lt. gray, moist 10"	GM		NA	NA						FILL
GP-2 2-4'	32/48		-2	poorly-graded med SAND, brown moist, loose	SP									NATIVE
			-3											
			-4					0.1						
			-5											
	30/48		-6					0.2						
			-7											
			-8					0.1						
			-9											
GP-2 9-11'	24/48		-10					0.2						
			-11	wet @ 11.5'				0.2						
			-12	SILT, ~~lt. gray~~ brown, moist, hard EOB @ 12'	ML									
			-13											
			-14											
			-15											
			-16											
			-17											
			-18											
			-19											
			-20											
			-21											
			-22											
			-23											
			-24											
			-25											

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

Signature: William Honea Firm: AYRES ASSOCIATES

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis.Stats. Completion of this report 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 conductu involved. Personally indentifiable 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 Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name: Ludington Street	License/Permit/Monitoring Numbe: NA	Boring Number: GP-3
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name: Firm: Geiss	Date Drilling Started: 10/13/21 M/D/Y Date Drilling Completed: 10/13/21 M/D/Y	Drilling Method: DPT
WI Unique Well No.	DNR Well Id No.	Well Name
Final Static Water Level: 11.8' bgs	Surface Elevation: ~595	Borehole Dia.: 2.25"
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 (If applicable) ☐ N ☐ E ____ Feet ☐ S ____ Feet ☐ W
Facility Id.: NA	County: Marinette County Code: 38	Civil Town/City/or Village: Marinette

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
				ASPHALT 4"										
			-1	silty GRAVEL, lt. gray, dry	GM			NA						
GP-3 1.5'-2.5'	30/48		-2	poorly-graded med SAND, dk. brown, moist, trace cinders @ 4'	SP			0.1						
			-3											
			-4					0.0						FILL
			-5											
			-6	- color change to brown @ 5.5'				0.1						NATIVE
	32/48		-7											
			-8					0.1						
GP-3 8-10'			-9											
	36/48		-10					0.0						
			-11	- wet @ 11.5'										
			-12	EOB @ 12'				0.2						
			-13	groundwater sampling difficult, casing purges dry ~ 200 mL takes about 3-5 min to recharge										
			-14											
			-15											
			-16											
			-17											
			-18											
			-19											
			-20											
			-21											
			-22											
			-23											
			-24											
			-25											

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

Signature: William Honea
Firm: AYRES ASSOCIATES

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State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name: Ludington Street	License/Permit/Monitoring Numbe: NA	Boring Number: GP-4
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name: Firm: Geiss	Date Drilling Started: 10/13/21 M/D/Y Date Drilling Completed: 10/13/21 M/D/Y	Drilling Method: DPT
WI Unique Well No. / DNR Well Id No. / Well Name	Final Static Water Level: DRY Surface Elevation: ~594	Borehole Dia.: 2.25"
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 (If applicable) ____ Feet ☐ N ☐ S ____ Feet ☐ E ☐ W
Facility Id.: NA	County: Marinette County Code: 38	Civil Town/City/or Village: Marinette

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
			0	ASPHALT 4"										
			-1	silty GRAVEL, lt. gray, dry 8"	GM			NA						
GP-4 1.5'-2.5'	32/48		-2	silty SAND, brown, moist, loose trace cinders	SM			0.1						FILL
			-3											
			-4	poorly-graded SAND, brown, moist loose	SP			0.1						NATIVE
			-5											
	30/48		-6					0.4						
			-7											
			-8					0.0						
GP-4 8-10'			-9											
	48/48		-10	- Wet @ 9.5'				0.1						
			-11	SILT, brown, moist, hard	ML			0.2						
			-12	EOB @ 12'										
			-13	No water produced after 30 min										
			-14											
			-15											
			-16											
			-17											
			-18											
			-19											
			-20											
			-21											
			-22											
			-23											
			-24											
			-25											

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State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name: Ludington Street	License/Permit/Monitoring Numbe: NA	Boring Number: GP-5
Boring Drilled By: Name of crew chief (first,last) and Firm First Name: Last Name: Firm: Geiss	Date Drilling Started: 10/13/21 M/D/Y	Date Drilling Completed: 10/13/21 M/D/Y Drilling Method: DPT
WI Unique Well No.	DNR Well Id No.	Well Name
Final Static Water Level: NA	Surface Elevation: ~593	Borehole Dia.: 2.25"
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 (If applicable) ☐ N ☐ E ____ Feet ☐ S ____ Feet ☐ W
Facility Id.: NA	County: Marinette	County Code: 38
		Civil Town/City/or Village: Marinette

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	SOIL PROPERTIES PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/Comments
				ASPHALT 6"										
			-1	silty GRAVEL, lt gray, moist 10"	GM			NA						
GP5 1:1 2:5	30/48		-2	silty ~~Sand~~SAND, brown, moist, loose, trace cinders, bands of black staining, slight naphtha odor	SM			0.1						FILL
			-3											
			-4	poorly-graded med. SAND, brown moist, loose	SP			0.1						NATIVE
			-5	EOB @ 4'										
			-6											
			-7											
			-8											
			-9											
			-10											
			-11											
			-12											
			-13											
			-14											
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			-25											

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State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Numbe	Boring Number
Ludington Street	NA	GP-6

Boring Drilled By: Name of crew chief (first,last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Last Name: Firm: Geiss	10/13/21 M/D/Y	10/13/21 M/D/Y	DPT

WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Dia.
			NA	~ 592	2.25"

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐	Lat. ° ' "	Local Grid Location (If applicable)
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
NA	Marinette	38	Marinette

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	SOIL PROPERTIES PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/Comments
			-1	ASPHALT 4"										
			-1	silty GRAVEL, lt.gray, moist 8"	GM			NA						
			-2	poorly-graded med. SAND, brown, moist, loose	SP			0.1						
GP-6 2-4'	36/48		-3	black staining from 2-4' with strong naptha-like oder				0.3						Possible FILL
			-4	EOB @ 4'										
			-5											
			-6											
			-7											
			-8											
			-9											
			-10											
			-11											
			-12											
			-13											
			-14											
			-15											
			-16											
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			-21											
			-22											
			-23											
			-24											
			-25											

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Signature	Firm
William Honea	AYRES ASSOCIATES

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State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Numbe	Boring Number
Ludington Street	NA	GP-7

Boring Drilled By: Name of crew chief (first,last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Last Name: Firm: Geiss	10/13/21 M/D/Y	10/13/21 M/D/Y	DPT

WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Dia.
			NA	~ 590	2.25"

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

Facility Id.	County	County Code	Civil Town/City/or Village
NA	Marinette	38	Marinette

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
			-1	ASPHALT 3"										
				silty GRAVEL, lt gray, moist 10"	GM			0.1						
GP-7 2-4'	26/48		-2	silty SAND with trace gravel, brown, moist, loose,	SM			0.4						FILL
			-3	- black staining from 2-4' with a slight napthalene-like odor										
			-4	EOB @ 4'										
			-5											
			-6											
			-7											
			-8											
			-9											
			-10											
			-11											
			-12											
			-13											
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			-23											
			-24											
			-25											

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State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Numbe	Boring Number
Ludington Street	NA	GP-8

Boring Drilled By: Name of crew chief (first,last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Last Name: Firm: Geiss	10/13/21 M/D/Y	10/13/21 M/D/Y	DPT

WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Dia.
_ _ _ _ _ _ _	_ _ _		6.4' bgs	~590	2.25"

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

Facility Id.	County	County Code	Civil Town/City/or Village
NA	Marinette	38	Marinette

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	ROD/Comments
			-1	ASPHALT 4" SAND with gravel, brown, moist,	SM			0.4						
GP-8 2-4'	30/48		-2 -3	silty SAND, dk. gray with black staining, moist loose	SM			0.4						
			-4 -5											
	24/48		-6	- wet @ 6'				0.8						FILL
GP-8 7-8'			-7 -8	REFUSE with sand, glass, plastic, black staining with a strong petroleum-like odor EOB @ 8'	REFUSE			4.8						
			-9 -10 -11 -12 -13 -14 -15 -16 -17 -18 -19 -20 -21 -22 -23 -24 -25											

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Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Numbe	Boring Number
Ludington Street	NA	GP-9

Boring Drilled By: Name of crew chief (first,last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Last Name: Firm: Geiss	10/13/21 M/D/Y	10/13/21 M/D/Y	DPT

WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Dia.
			NA	~590	

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

Facility Id.	County	County Code	Civil Town/City/or Village
NA	Marinette	38	Marinette

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
			-1	ASPHALT 4" silty GRAVEL, lt gray, moist 8"	GM			0.6						
GP-9 1.5-3.5'	30/48		-2	silty SAND, dk gray with black staining, moist, loose, trace fragments of brick, cinders, and glass	SM									
			-3					1.1						
			-4											
			-5	- slight petroleum-like oder from 4-8'				0.9						FILL
GP-9 5.5-7.5'	28/48		-6											
			-7					0.7						
			-8	EOB @ 8'										
			-9											
			-10											
			-11											
			-12											
			-13											
			-14											
			-15											
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			-23											
			-24											
			-25											

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William Honea	AYRES ASSOCIATES

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State of Wiscosnin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 7-98

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

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Numbe	Boring Number
Ludington Street	NA	GP-16

Boring Drilled By: Name of crew chief (first,last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Last Name: Firm: Geiss	10/13/21 M/D/Y	10/13/21 M/D/Y	DPT

WI Unique Well No.	DNR Well Id No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Dia.
_ _ _ _ _ _ _	_ _ _		4.2' bgs	~590	2

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

Facility Id.	County	County Code	Civil Town/City/or Village
NA	Marinette	38	Marinette

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
			0	ASPHALT 4"										
			-1	silty GRAVEL, lt. gray, moist 8"	GM			6.5						
			-2	REFUSE with silt and sand, brown with black staining, some wood, styrofoam, paper, plastic, and organics.	Refuse									
GP-16 2-4'	24/48		-3					0.7						
			-4											
			-5											Fill
			-6	- wet @ 6'				0.5						
GP-16 6.5-8'	24/48		-7	poorly-graded med SAND, brown, moist, loose				0.5						Native
			-8	EOB @ 8'										
			-9											
			-10											
			-11											
			-12											
			-13											
			-14											
			-15											
			-16											
			-17											
			-18											
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			-23											
			-24											
			-25											

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Signature	Firm
William Hosea	AYRES ASSOCIATES

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: 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 accordance 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 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. 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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

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

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well ☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 10/13/2021
If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	~~NA~~ 12

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

If yes, to what depth (feet)?	Depth to Water (feet)
	11

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite chips	Surface	12	4	

6. Comments

GP-1

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Jon	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: 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 accordance 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 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. 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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021
If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	NA

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

If yes, to what depth (feet)?	Depth to Water (feet)
	11.5

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	12	1/4	

6. Comments

GP-2

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Ayres	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021

If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	12

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

If yes, to what depth (feet)?	Depth to Water (feet)
	11.8

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.

Facility ID (FID or PWS):

License/Permit/Monitoring #:

Original Well Owner: City of Marinette

Present Well Owner: City of Marinette

Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	12	1/4	

6. Comments

GP-3

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Hansen	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.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 #
Marinette	_ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021

If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	12

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

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

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	12	¼	

6. Comments

GP

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Hansen	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021

If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	NA

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

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

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	4	1/3	

6. Comments

GP-5

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Hein	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

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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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021

If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	NA

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

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

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite chips	Surface	4	1/8	

6. Comments

GP-6

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Hafs	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021
If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	NA

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

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

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	4	1/8	

6. Comments

GP-7

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Ameen	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: 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 accordance 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 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. 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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

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

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 10/13/2021
If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	8

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

If yes, to what depth (feet)?	Depth to Water (feet)
	6

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	8	1/4	

6. Comments

GP-8

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Hanea	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: 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 accordance 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 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. 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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143
Subdivision Name	Lot #

Reason 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): 10/13/2021

If a Well Construction Report is available, please attach.

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2
Lower Drillhole Diameter (in.)	**Casing Depth (ft.)**
2	NA

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

If yes, to what depth (feet)?	Depth to Water (feet)
	6

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

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

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	8	1/4	

6. Comments

CP-9

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Honea	10/14/2021

DNR Use Only

Date Received	Noted By
Comments	

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: 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 accordance 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 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. 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 #
Marinette	_ _ _ _ _ _	

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

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #		6	30 N	24 ☒ E ☐ W

Well Street Address: Ludington St. between Hall Ave. and Stanton St.

Well City, Village or Town	Well ZIP Code
Marinette	54143

Subdivision Name	Lot #

Reason 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): 10/13/2021

If a Well Construction Report is available, please attach.

Construction Type:
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☐ Other (specify): _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	NA

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

If yes, to what depth (feet)?	Depth to Water (feet)
	4.2

2. Facility / Owner Information

Facility Name: Ludington St. between Hall Ave. and Stanton St.
Facility ID (FID or PWS):
License/Permit/Monitoring #:
Original Well Owner: City of Marinette
Present Well Owner: City of Marinette
Mailing Address of Present Owner: 1905 Hall Ave.

City of Present Owner	State	ZIP Code
Marinette	WI	54143

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): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
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For Monitoring Wells and Monitoring Well Boreholes Only:
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☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	8	1/4	

6. Comments

GP-10

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ayres Associates		10/13/2021

Street or Route	Telephone Number
3376 Packerland Dr.	(920) 498-1200

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Ashwaubenon	WI	54115	William Jones	10/14/2021

DNR Use Only

Date Received	Noted By

Comments:

Appendix C
Laboratory Reports with Quality Control Information

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

November 12, 2021

Bill Honea
AYRES & ASSOCIATES, INC.
3376 Packerland Avenue
De Pere, WI 54115

RE: Project: LUDINGTON ST
Pace Project No.: 40235054

Dear Bill Honea:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@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: LUDINGTON ST
Pace Project No.: 40235054

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: LUDINGTON ST
Pace Project No.: 40235054

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40235054001	**GP-1**	Water	10/13/21 09:55	10/13/21 16:40
40235054002	**GP-3**	Water	10/13/21 11:25	10/13/21 16:40
40235054003	**GP-8**	Water	10/13/21 13:30	10/13/21 16:40
40235054004	**GP-10**	Water	10/13/21 15:05	10/13/21 16:40

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

SAMPLE ANALYTE COUNT

Project: LUDINGTON ST
Pace Project No.: 40235054

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40235054001	**GP-1**	EPA 6010D	TXW	2	PASI-G
		EPA 8260	LAP	64	PASI-G
40235054003	**GP-8**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	LAP	64	PASI-G
40235054004	**GP-10**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	LAP	64	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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

ANALYTICAL RESULTS

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-1 **Lab ID: 40235054001** Collected: 10/13/21 09:55 Received: 10/13/21 16:40 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								
Arsenic, Dissolved	**15.3J**	ug/L	25.0	8.3	1	10/25/21 05:49	10/25/21 14:37	7440-38-2	
Lead, Dissolved	**9.3J**	ug/L	20.0	5.9	1	10/25/21 05:49	10/25/21 14:37	7439-92-1	
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:04	71-43-2	
Bromobenzene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:04	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		10/15/21 01:04	74-97-5	
Bromodichloromethane	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:04	75-27-4	
Bromoform	**<3.8**	ug/L	5.0	3.8	1		10/15/21 01:04	75-25-2	
Bromomethane	**<1.2**	ug/L	5.0	1.2	1		10/15/21 01:04	74-83-9	
n-Butylbenzene	**<0.86**	ug/L	1.0	0.86	1		10/15/21 01:04	104-51-8	
sec-Butylbenzene	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:04	135-98-8	
tert-Butylbenzene	**<0.59**	ug/L	1.0	0.59	1		10/15/21 01:04	98-06-6	
Carbon tetrachloride	**<0.37**	ug/L	1.0	0.37	1		10/15/21 01:04	56-23-5	
Chlorobenzene	**<0.86**	ug/L	1.0	0.86	1		10/15/21 01:04	108-90-7	
Chloroethane	**<1.4**	ug/L	5.0	1.4	1		10/15/21 01:04	75-00-3	
Chloroform	**<1.2**	ug/L	5.0	1.2	1		10/15/21 01:04	67-66-3	
Chloromethane	**<1.6**	ug/L	5.0	1.6	1		10/15/21 01:04	74-87-3	
2-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		10/15/21 01:04	95-49-8	
4-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		10/15/21 01:04	106-43-4	
1,2-Dibromo-3-chloropropane	**<2.4**	ug/L	5.0	2.4	1		10/15/21 01:04	96-12-8	
Dibromochloromethane	**<2.6**	ug/L	5.0	2.6	1		10/15/21 01:04	124-48-1	
1,2-Dibromoethane (EDB)	**<0.31**	ug/L	1.0	0.31	1		10/15/21 01:04	106-93-4	
Dibromomethane	**<0.99**	ug/L	5.0	0.99	1		10/15/21 01:04	74-95-3	
1,2-Dichlorobenzene	**<0.33**	ug/L	1.0	0.33	1		10/15/21 01:04	95-50-1	
1,3-Dichlorobenzene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:04	541-73-1	
1,4-Dichlorobenzene	**<0.89**	ug/L	1.0	0.89	1		10/15/21 01:04	106-46-7	
Dichlorodifluoromethane	**<0.46**	ug/L	5.0	0.46	1		10/15/21 01:04	75-71-8	
1,1-Dichloroethane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:04	75-34-3	
1,2-Dichloroethane	**<0.29**	ug/L	1.0	0.29	1		10/15/21 01:04	107-06-2	
1,1-Dichloroethene	**<0.58**	ug/L	1.0	0.58	1		10/15/21 01:04	75-35-4	
cis-1,2-Dichloroethene	**<0.47**	ug/L	1.0	0.47	1		10/15/21 01:04	156-59-2	
trans-1,2-Dichloroethene	**<0.53**	ug/L	1.0	0.53	1		10/15/21 01:04	156-60-5	
1,2-Dichloropropane	**<0.45**	ug/L	1.0	0.45	1		10/15/21 01:04	78-87-5	
1,3-Dichloropropane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:04	142-28-9	
2,2-Dichloropropane	**<4.2**	ug/L	5.0	4.2	1		10/15/21 01:04	594-20-7	
1,1-Dichloropropene	**<0.41**	ug/L	1.0	0.41	1		10/15/21 01:04	563-58-6	
cis-1,3-Dichloropropene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:04	10061-01-5	
trans-1,3-Dichloropropene	**<3.5**	ug/L	5.0	3.5	1		10/15/21 01:04	10061-02-6	
Diisopropyl ether	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:04	108-20-3	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		10/15/21 01:04	100-41-4	
Hexachloro-1,3-butadiene	**<2.7**	ug/L	5.0	2.7	1		10/15/21 01:04	87-68-3	
Isopropylbenzene (Cumene)	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:04	98-82-8	
p-Isopropyltoluene	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:04	99-87-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-1 **Lab ID: 40235054001** Collected: 10/13/21 09:55 Received: 10/13/21 16:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Methylene Chloride	**<0.32**	ug/L	5.0	0.32	1		10/15/21 01:04	75-09-2	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:04	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:04	91-20-3	
n-Propylbenzene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:04	103-65-1	
Styrene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:04	100-42-5	
1,1,1,2-Tetrachloroethane	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:04	630-20-6	
1,1,2,2-Tetrachloroethane	**<0.38**	ug/L	1.0	0.38	1		10/15/21 01:04	79-34-5	
Tetrachloroethene	**<0.41**	ug/L	1.0	0.41	1		10/15/21 01:04	127-18-4	
Toluene	**<0.29**	ug/L	1.0	0.29	1		10/15/21 01:04	108-88-3	
1,2,3-Trichlorobenzene	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:04	87-61-6	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		10/15/21 01:04	120-82-1	
1,1,1-Trichloroethane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:04	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/L	5.0	0.34	1		10/15/21 01:04	79-00-5	
Trichloroethene	**<0.32**	ug/L	1.0	0.32	1		10/15/21 01:04	79-01-6	
Trichlorofluoromethane	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:04	75-69-4	
1,2,3-Trichloropropane	**<0.56**	ug/L	5.0	0.56	1		10/15/21 01:04	96-18-4	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		10/15/21 01:04	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:04	108-67-8	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		10/15/21 01:04	75-01-4	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		10/15/21 01:04	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:04	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	95	%	70-130		1		10/15/21 01:04	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	70-130		1		10/15/21 01:04	2199-69-1	
Toluene-d8 (S)	103	%	70-130		1		10/15/21 01:04	2037-26-5	

Sample: GP-8 **Lab ID: 40235054003** Collected: 10/13/21 13:30 Received: 10/13/21 16:40 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								
Arsenic, Dissolved	**<8.3**	ug/L	25.0	8.3	1	10/25/21 05:49	10/25/21 14:40	7440-38-2	
Lead, Dissolved	**50.0**	ug/L	20.0	5.9	1	10/25/21 05:49	10/25/21 14:40	7439-92-1	
8270E MSSV PAH	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3510 Pace Analytical Services - Green Bay								
Acenaphthene	**0.47**	ug/L	0.048	0.013	1	10/15/21 12:34	10/18/21 16:37	83-32-9	
Acenaphthylene	**<0.012**	ug/L	0.048	0.012	1	10/15/21 12:34	10/18/21 16:37	208-96-8	
Anthracene	**<0.018**	ug/L	0.048	0.018	1	10/15/21 12:34	10/18/21 16:37	120-12-7	
Benzo(a)anthracene	**0.014J**	ug/L	0.048	0.013	1	10/15/21 12:34	10/18/21 16:37	56-55-3	
Benzo(a)pyrene	**<0.019**	ug/L	0.048	0.019	1	10/15/21 12:34	10/18/21 16:37	50-32-8	
Benzo(b)fluoranthene	**<0.019**	ug/L	0.048	0.019	1	10/15/21 12:34	10/18/21 16:37	205-99-2	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-8 **Lab ID: 40235054003** Collected: 10/13/21 13:30 Received: 10/13/21 16:40 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								
Benzo(g,h,i)perylene	**<0.022**	ug/L	0.048	0.022	1	10/15/21 12:34	10/18/21 16:37	191-24-2	
Benzo(k)fluoranthene	**<0.021**	ug/L	0.048	0.021	1	10/15/21 12:34	10/18/21 16:37	207-08-9	
Chrysene	**0.029J**	ug/L	0.048	0.025	1	10/15/21 12:34	10/18/21 16:37	218-01-9	
Dibenz(a,h)anthracene	**<0.017**	ug/L	0.048	0.017	1	10/15/21 12:34	10/18/21 16:37	53-70-3	
Fluoranthene	**0.043J**	ug/L	0.048	0.025	1	10/15/21 12:34	10/18/21 16:37	206-44-0	
Fluorene	**0.024J**	ug/L	0.048	0.022	1	10/15/21 12:34	10/18/21 16:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**<0.015**	ug/L	0.048	0.015	1	10/15/21 12:34	10/18/21 16:37	193-39-5	
1-Methylnaphthalene	**0.78**	ug/L	0.048	0.017	1	10/15/21 12:34	10/18/21 16:37	90-12-0	
2-Methylnaphthalene	**0.47**	ug/L	0.048	0.013	1	10/15/21 12:34	10/18/21 16:37	91-57-6	
Naphthalene	**0.37**	ug/L	0.048	0.019	1	10/15/21 12:34	10/18/21 16:37	91-20-3	B
Phenanthrene	**0.093**	ug/L	0.048	0.024	1	10/15/21 12:34	10/18/21 16:37	85-01-8	
Pyrene	**0.035J**	ug/L	0.048	0.021	1	10/15/21 12:34	10/18/21 16:37	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	73	%	10-113		1	10/15/21 12:34	10/18/21 16:37	321-60-8	
Terphenyl-d14 (S)	78	%	28-124		1	10/15/21 12:34	10/18/21 16:37	1718-51-0	
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:23	71-43-2	
Bromobenzene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:23	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		10/15/21 01:23	74-97-5	
Bromodichloromethane	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:23	75-27-4	
Bromoform	**<3.8**	ug/L	5.0	3.8	1		10/15/21 01:23	75-25-2	
Bromomethane	**<1.2**	ug/L	5.0	1.2	1		10/15/21 01:23	74-83-9	
n-Butylbenzene	**<0.86**	ug/L	1.0	0.86	1		10/15/21 01:23	104-51-8	
sec-Butylbenzene	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:23	135-98-8	
tert-Butylbenzene	**<0.59**	ug/L	1.0	0.59	1		10/15/21 01:23	98-06-6	
Carbon tetrachloride	**<0.37**	ug/L	1.0	0.37	1		10/15/21 01:23	56-23-5	
Chlorobenzene	**2.8**	ug/L	1.0	0.86	1		10/15/21 01:23	108-90-7	
Chloroethane	**<1.4**	ug/L	5.0	1.4	1		10/15/21 01:23	75-00-3	
Chloroform	**<1.2**	ug/L	5.0	1.2	1		10/15/21 01:23	67-66-3	
Chloromethane	**<1.6**	ug/L	5.0	1.6	1		10/15/21 01:23	74-87-3	
2-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		10/15/21 01:23	95-49-8	
4-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		10/15/21 01:23	106-43-4	
1,2-Dibromo-3-chloropropane	**<2.4**	ug/L	5.0	2.4	1		10/15/21 01:23	96-12-8	
Dibromochloromethane	**<2.6**	ug/L	5.0	2.6	1		10/15/21 01:23	124-48-1	
1,2-Dibromoethane (EDB)	**<0.31**	ug/L	1.0	0.31	1		10/15/21 01:23	106-93-4	
Dibromomethane	**<0.99**	ug/L	5.0	0.99	1		10/15/21 01:23	74-95-3	
1,2-Dichlorobenzene	**<0.33**	ug/L	1.0	0.33	1		10/15/21 01:23	95-50-1	
1,3-Dichlorobenzene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:23	541-73-1	
1,4-Dichlorobenzene	**<0.89**	ug/L	1.0	0.89	1		10/15/21 01:23	106-46-7	
Dichlorodifluoromethane	**<0.46**	ug/L	5.0	0.46	1		10/15/21 01:23	75-71-8	
1,1-Dichloroethane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:23	75-34-3	
1,2-Dichloroethane	**<0.29**	ug/L	1.0	0.29	1		10/15/21 01:23	107-06-2	
1,1-Dichloroethene	**<0.58**	ug/L	1.0	0.58	1		10/15/21 01:23	75-35-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-8 **Lab ID: 40235054003** Collected: 10/13/21 13:30 Received: 10/13/21 16:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
cis-1,2-Dichloroethene	**<0.47**	ug/L	1.0	0.47	1		10/15/21 01:23	156-59-2	
trans-1,2-Dichloroethene	**<0.53**	ug/L	1.0	0.53	1		10/15/21 01:23	156-60-5	
1,2-Dichloropropane	**<0.45**	ug/L	1.0	0.45	1		10/15/21 01:23	78-87-5	
1,3-Dichloropropane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:23	142-28-9	
2,2-Dichloropropane	**<4.2**	ug/L	5.0	4.2	1		10/15/21 01:23	594-20-7	
1,1-Dichloropropene	**<0.41**	ug/L	1.0	0.41	1		10/15/21 01:23	563-58-6	
cis-1,3-Dichloropropene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:23	10061-01-5	
trans-1,3-Dichloropropene	**<3.5**	ug/L	5.0	3.5	1		10/15/21 01:23	10061-02-6	
Diisopropyl ether	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:23	108-20-3	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		10/15/21 01:23	100-41-4	
Hexachloro-1,3-butadiene	**<2.7**	ug/L	5.0	2.7	1		10/15/21 01:23	87-68-3	
Isopropylbenzene (Cumene)	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:23	98-82-8	
p-Isopropyltoluene	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:23	99-87-6	
Methylene Chloride	**<0.32**	ug/L	5.0	0.32	1		10/15/21 01:23	75-09-2	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:23	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:23	91-20-3	
n-Propylbenzene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:23	103-65-1	
Styrene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:23	100-42-5	
1,1,1,2-Tetrachloroethane	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:23	630-20-6	
1,1,2,2-Tetrachloroethane	**<0.38**	ug/L	1.0	0.38	1		10/15/21 01:23	79-34-5	
Tetrachloroethene	**<0.41**	ug/L	1.0	0.41	1		10/15/21 01:23	127-18-4	
Toluene	**<0.29**	ug/L	1.0	0.29	1		10/15/21 01:23	108-88-3	
1,2,3-Trichlorobenzene	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:23	87-61-6	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		10/15/21 01:23	120-82-1	
1,1,1-Trichloroethane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:23	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/L	5.0	0.34	1		10/15/21 01:23	79-00-5	
Trichloroethene	**<0.32**	ug/L	1.0	0.32	1		10/15/21 01:23	79-01-6	
Trichlorofluoromethane	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:23	75-69-4	
1,2,3-Trichloropropane	**<0.56**	ug/L	5.0	0.56	1		10/15/21 01:23	96-18-4	
1,2,4-Trimethylbenzene	**1.4**	ug/L	1.0	0.45	1		10/15/21 01:23	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:23	108-67-8	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		10/15/21 01:23	75-01-4	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		10/15/21 01:23	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:23	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	95	%	70-130		1		10/15/21 01:23	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		10/15/21 01:23	2199-69-1	
Toluene-d8 (S)	102	%	70-130		1		10/15/21 01:23	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-10 **Lab ID: 40235054004** Collected: 10/13/21 15:05 Received: 10/13/21 16:40 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								
Arsenic, Dissolved	**78.1**	ug/L	25.0	13.2	1		10/22/21 12:34	7440-38-2	
Lead, Dissolved	**<6.4**	ug/L	20.0	6.4	1		10/22/21 12:34	7439-92-1	
8270E MSSV PAH	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3510 Pace Analytical Services - Green Bay								
Acenaphthene	**0.021J**	ug/L	0.047	0.013	1	10/18/21 08:16	10/19/21 14:31	83-32-9	
Acenaphthylene	**<0.012**	ug/L	0.047	0.012	1	10/18/21 08:16	10/19/21 14:31	208-96-8	
Anthracene	**<0.017**	ug/L	0.047	0.017	1	10/18/21 08:16	10/19/21 14:31	120-12-7	
Benzo(a)anthracene	**<0.013**	ug/L	0.047	0.013	1	10/18/21 08:16	10/19/21 14:31	56-55-3	
Benzo(a)pyrene	**<0.018**	ug/L	0.047	0.018	1	10/18/21 08:16	10/19/21 14:31	50-32-8	
Benzo(b)fluoranthene	**<0.018**	ug/L	0.047	0.018	1	10/18/21 08:16	10/19/21 14:31	205-99-2	
Benzo(g,h,i)perylene	**<0.022**	ug/L	0.047	0.022	1	10/18/21 08:16	10/19/21 14:31	191-24-2	
Benzo(k)fluoranthene	**<0.021**	ug/L	0.047	0.021	1	10/18/21 08:16	10/19/21 14:31	207-08-9	
Chrysene	**<0.025**	ug/L	0.047	0.025	1	10/18/21 08:16	10/19/21 14:31	218-01-9	
Dibenz(a,h)anthracene	**<0.017**	ug/L	0.047	0.017	1	10/18/21 08:16	10/19/21 14:31	53-70-3	
Fluoranthene	**<0.025**	ug/L	0.047	0.025	1	10/18/21 08:16	10/19/21 14:31	206-44-0	
Fluorene	**<0.022**	ug/L	0.047	0.022	1	10/18/21 08:16	10/19/21 14:31	86-73-7	
Indeno(1,2,3-cd)pyrene	**<0.015**	ug/L	0.047	0.015	1	10/18/21 08:16	10/19/21 14:31	193-39-5	
1-Methylnaphthalene	**<0.017**	ug/L	0.047	0.017	1	10/18/21 08:16	10/19/21 14:31	90-12-0	
2-Methylnaphthalene	**0.016J**	ug/L	0.047	0.013	1	10/18/21 08:16	10/19/21 14:31	91-57-6	
Naphthalene	**0.046J**	ug/L	0.047	0.019	1	10/18/21 08:16	10/19/21 14:31	91-20-3	B
Phenanthrene	**0.044J**	ug/L	0.047	0.024	1	10/18/21 08:16	10/19/21 14:31	85-01-8	
Pyrene	**<0.021**	ug/L	0.047	0.021	1	10/18/21 08:16	10/19/21 14:31	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	10-113		1	10/18/21 08:16	10/19/21 14:31	321-60-8	
Terphenyl-d14 (S)	80	%	28-124		1	10/18/21 08:16	10/19/21 14:31	1718-51-0	
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Benzene	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:43	71-43-2	
Bromobenzene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:43	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		10/15/21 01:43	74-97-5	
Bromodichloromethane	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:43	75-27-4	
Bromoform	**<3.8**	ug/L	5.0	3.8	1		10/15/21 01:43	75-25-2	
Bromomethane	**<1.2**	ug/L	5.0	1.2	1		10/15/21 01:43	74-83-9	
n-Butylbenzene	**<0.86**	ug/L	1.0	0.86	1		10/15/21 01:43	104-51-8	
sec-Butylbenzene	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:43	135-98-8	
tert-Butylbenzene	**<0.59**	ug/L	1.0	0.59	1		10/15/21 01:43	98-06-6	
Carbon tetrachloride	**<0.37**	ug/L	1.0	0.37	1		10/15/21 01:43	56-23-5	
Chlorobenzene	**<0.86**	ug/L	1.0	0.86	1		10/15/21 01:43	108-90-7	
Chloroethane	**<1.4**	ug/L	5.0	1.4	1		10/15/21 01:43	75-00-3	
Chloroform	**<1.2**	ug/L	5.0	1.2	1		10/15/21 01:43	67-66-3	
Chloromethane	**<1.6**	ug/L	5.0	1.6	1		10/15/21 01:43	74-87-3	
2-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		10/15/21 01:43	95-49-8	
4-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		10/15/21 01:43	106-43-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
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ANALYTICAL RESULTS

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-10 **Lab ID: 40235054004** Collected: 10/13/21 15:05 Received: 10/13/21 16:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,2-Dibromo-3-chloropropane	**<2.4**	ug/L	5.0	2.4	1		10/15/21 01:43	96-12-8	
Dibromochloromethane	**<2.6**	ug/L	5.0	2.6	1		10/15/21 01:43	124-48-1	
1,2-Dibromoethane (EDB)	**<0.31**	ug/L	1.0	0.31	1		10/15/21 01:43	106-93-4	
Dibromomethane	**<0.99**	ug/L	5.0	0.99	1		10/15/21 01:43	74-95-3	
1,2-Dichlorobenzene	**<0.33**	ug/L	1.0	0.33	1		10/15/21 01:43	95-50-1	
1,3-Dichlorobenzene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:43	541-73-1	
1,4-Dichlorobenzene	**<0.89**	ug/L	1.0	0.89	1		10/15/21 01:43	106-46-7	
Dichlorodifluoromethane	**<0.46**	ug/L	5.0	0.46	1		10/15/21 01:43	75-71-8	
1,1-Dichloroethane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:43	75-34-3	
1,2-Dichloroethane	**<0.29**	ug/L	1.0	0.29	1		10/15/21 01:43	107-06-2	
1,1-Dichloroethene	**<0.58**	ug/L	1.0	0.58	1		10/15/21 01:43	75-35-4	
cis-1,2-Dichloroethene	**<0.47**	ug/L	1.0	0.47	1		10/15/21 01:43	156-59-2	
trans-1,2-Dichloroethene	**<0.53**	ug/L	1.0	0.53	1		10/15/21 01:43	156-60-5	
1,2-Dichloropropane	**<0.45**	ug/L	1.0	0.45	1		10/15/21 01:43	78-87-5	
1,3-Dichloropropane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:43	142-28-9	
2,2-Dichloropropane	**<4.2**	ug/L	5.0	4.2	1		10/15/21 01:43	594-20-7	
1,1-Dichloropropene	**<0.41**	ug/L	1.0	0.41	1		10/15/21 01:43	563-58-6	
cis-1,3-Dichloropropene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:43	10061-01-5	
trans-1,3-Dichloropropene	**<3.5**	ug/L	5.0	3.5	1		10/15/21 01:43	10061-02-6	
Diisopropyl ether	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:43	108-20-3	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		10/15/21 01:43	100-41-4	
Hexachloro-1,3-butadiene	**<2.7**	ug/L	5.0	2.7	1		10/15/21 01:43	87-68-3	
Isopropylbenzene (Cumene)	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:43	98-82-8	
p-Isopropyltoluene	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:43	99-87-6	
Methylene Chloride	**<0.32**	ug/L	5.0	0.32	1		10/15/21 01:43	75-09-2	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:43	1634-04-4	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		10/15/21 01:43	91-20-3	
n-Propylbenzene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:43	103-65-1	
Styrene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:43	100-42-5	
1,1,1,2-Tetrachloroethane	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:43	630-20-6	
1,1,2,2-Tetrachloroethane	**<0.38**	ug/L	1.0	0.38	1		10/15/21 01:43	79-34-5	
Tetrachloroethene	**<0.41**	ug/L	1.0	0.41	1		10/15/21 01:43	127-18-4	
Toluene	**<0.29**	ug/L	1.0	0.29	1		10/15/21 01:43	108-88-3	
1,2,3-Trichlorobenzene	**<1.0**	ug/L	5.0	1.0	1		10/15/21 01:43	87-61-6	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		10/15/21 01:43	120-82-1	
1,1,1-Trichloroethane	**<0.30**	ug/L	1.0	0.30	1		10/15/21 01:43	71-55-6	
1,1,2-Trichloroethane	**<0.34**	ug/L	5.0	0.34	1		10/15/21 01:43	79-00-5	
Trichloroethene	**<0.32**	ug/L	1.0	0.32	1		10/15/21 01:43	79-01-6	
Trichlorofluoromethane	**<0.42**	ug/L	1.0	0.42	1		10/15/21 01:43	75-69-4	
1,2,3-Trichloropropane	**<0.56**	ug/L	5.0	0.56	1		10/15/21 01:43	96-18-4	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		10/15/21 01:43	95-63-6	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		10/15/21 01:43	108-67-8	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		10/15/21 01:43	75-01-4	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		10/15/21 01:43	179601-23-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		10/15/21 01:43	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON ST
Pace Project No.: 40235054

Sample: GP-10 **Lab ID: 40235054004** Collected: 10/13/21 15:05 Received: 10/13/21 16:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-130		1		10/15/21 01:43	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	70-130		1		10/15/21 01:43	2199-69-1	
Toluene-d8 (S)	104	%	70-130		1		10/15/21 01:43	2037-26-5	

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

QC Batch: 399389
QC Batch Method: EPA 6010D
Analysis Method: EPA 6010D
Analysis Description: ICP Metals, Trace, Dissolved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235054004

METHOD BLANK: 2305920 Matrix: Water
Associated Lab Samples: 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<13.2	25.0	10/22/21 11:35	
Lead, Dissolved	ug/L	<6.4	20.0	10/22/21 11:35	

LABORATORY CONTROL SAMPLE: 2305921

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	250	244	97	80-120	
Lead, Dissolved	ug/L	250	253	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2305923 2305924

Parameter	Units	40235485014 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	<25.0	250	250	248	260	97	102	75-125	5	20	
Lead, Dissolved	ug/L	<20.0	250	250	250	259	98	102	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

QC Batch: 399476
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET Dissolved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235054001, 40235054003

METHOD BLANK: 2306866 Matrix: Water
Associated Lab Samples: 40235054001, 40235054003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<8.3	25.0	10/25/21 14:08	
Lead, Dissolved	ug/L	<5.9	20.0	10/25/21 14:08	

LABORATORY CONTROL SAMPLE: 2306867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	250	248	99	80-120	
Lead, Dissolved	ug/L	250	260	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2306868 2306869

Parameter	Units	40235634001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	<8.3	250	250	250	247	98	97	75-125	1	20	
Lead, Dissolved	ug/L	<5.9	250	250	260	251	102	99	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

QC Batch: 398518
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235054001, 40235054003, 40235054004

METHOD BLANK: 2300505 Matrix: Water
Associated Lab Samples: 40235054001, 40235054003, 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.36	1.0	10/14/21 17:40	
1,1,1-Trichloroethane	ug/L	<0.30	1.0	10/14/21 17:40	
1,1,2,2-Tetrachloroethane	ug/L	<0.38	1.0	10/14/21 17:40	
1,1,2-Trichloroethane	ug/L	<0.34	5.0	10/14/21 17:40	
1,1-Dichloroethane	ug/L	<0.30	1.0	10/14/21 17:40	
1,1-Dichloroethene	ug/L	<0.58	1.0	10/14/21 17:40	
1,1-Dichloropropene	ug/L	<0.41	1.0	10/14/21 17:40	
1,2,3-Trichlorobenzene	ug/L	<1.0	5.0	10/14/21 17:40	
1,2,3-Trichloropropane	ug/L	<0.56	5.0	10/14/21 17:40	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	10/14/21 17:40	
1,2,4-Trimethylbenzene	ug/L	<0.45	1.0	10/14/21 17:40	
1,2-Dibromo-3-chloropropane	ug/L	<2.4	5.0	10/14/21 17:40	
1,2-Dibromoethane (EDB)	ug/L	<0.31	1.0	10/14/21 17:40	
1,2-Dichlorobenzene	ug/L	<0.33	1.0	10/14/21 17:40	
1,2-Dichloroethane	ug/L	<0.29	1.0	10/14/21 17:40	
1,2-Dichloropropane	ug/L	<0.45	1.0	10/14/21 17:40	
1,3,5-Trimethylbenzene	ug/L	<0.36	1.0	10/14/21 17:40	
1,3-Dichlorobenzene	ug/L	<0.35	1.0	10/14/21 17:40	
1,3-Dichloropropane	ug/L	<0.30	1.0	10/14/21 17:40	
1,4-Dichlorobenzene	ug/L	<0.89	1.0	10/14/21 17:40	
2,2-Dichloropropane	ug/L	<4.2	5.0	10/14/21 17:40	
2-Chlorotoluene	ug/L	<0.89	5.0	10/14/21 17:40	
4-Chlorotoluene	ug/L	<0.89	5.0	10/14/21 17:40	
Benzene	ug/L	<0.30	1.0	10/14/21 17:40	
Bromobenzene	ug/L	<0.36	1.0	10/14/21 17:40	
Bromochloromethane	ug/L	<0.36	5.0	10/14/21 17:40	
Bromodichloromethane	ug/L	<0.42	1.0	10/14/21 17:40	
Bromoform	ug/L	<3.8	5.0	10/14/21 17:40	
Bromomethane	ug/L	<1.2	5.0	10/14/21 17:40	
Carbon tetrachloride	ug/L	<0.37	1.0	10/14/21 17:40	
Chlorobenzene	ug/L	<0.86	1.0	10/14/21 17:40	
Chloroethane	ug/L	<1.4	5.0	10/14/21 17:40	
Chloroform	ug/L	<1.2	5.0	10/14/21 17:40	
Chloromethane	ug/L	<1.6	5.0	10/14/21 17:40	
cis-1,2-Dichloroethene	ug/L	<0.47	1.0	10/14/21 17:40	
cis-1,3-Dichloropropene	ug/L	<0.36	1.0	10/14/21 17:40	
Dibromochloromethane	ug/L	<2.6	5.0	10/14/21 17:40	
Dibromomethane	ug/L	<0.99	5.0	10/14/21 17:40	
Dichlorodifluoromethane	ug/L	<0.46	5.0	10/14/21 17:40	
Diisopropyl ether	ug/L	<1.1	5.0	10/14/21 17:40	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

METHOD BLANK: 2300505 Matrix: Water
Associated Lab Samples: 40235054001, 40235054003, 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/L	<0.33	1.0	10/14/21 17:40	
Hexachloro-1,3-butadiene	ug/L	<2.7	5.0	10/14/21 17:40	
Isopropylbenzene (Cumene)	ug/L	<1.0	5.0	10/14/21 17:40	
m&p-Xylene	ug/L	<0.70	2.0	10/14/21 17:40	
Methyl-tert-butyl ether	ug/L	<1.1	5.0	10/14/21 17:40	
Methylene Chloride	ug/L	<0.32	5.0	10/14/21 17:40	
n-Butylbenzene	ug/L	<0.86	1.0	10/14/21 17:40	
n-Propylbenzene	ug/L	<0.35	1.0	10/14/21 17:40	
Naphthalene	ug/L	<1.1	5.0	10/14/21 17:40	
o-Xylene	ug/L	<0.35	1.0	10/14/21 17:40	
p-Isopropyltoluene	ug/L	<1.0	5.0	10/14/21 17:40	
sec-Butylbenzene	ug/L	<0.42	1.0	10/14/21 17:40	
Styrene	ug/L	<0.36	1.0	10/14/21 17:40	
tert-Butylbenzene	ug/L	<0.59	1.0	10/14/21 17:40	
Tetrachloroethene	ug/L	<0.41	1.0	10/14/21 17:40	
Toluene	ug/L	<0.29	1.0	10/14/21 17:40	
trans-1,2-Dichloroethene	ug/L	<0.53	1.0	10/14/21 17:40	
trans-1,3-Dichloropropene	ug/L	<3.5	5.0	10/14/21 17:40	
Trichloroethene	ug/L	<0.32	1.0	10/14/21 17:40	
Trichlorofluoromethane	ug/L	<0.42	1.0	10/14/21 17:40	
Vinyl chloride	ug/L	<0.17	1.0	10/14/21 17:40	
1,2-Dichlorobenzene-d4 (S)	%	102	70-130	10/14/21 17:40	
4-Bromofluorobenzene (S)	%	97	70-130	10/14/21 17:40	
Toluene-d8 (S)	%	102	70-130	10/14/21 17:40	

LABORATORY CONTROL SAMPLE: 2300506

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	52.9	106	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	58.8	118	66-130	
1,1,2-Trichloroethane	ug/L	50	58.4	117	70-130	
1,1-Dichloroethane	ug/L	50	60.9	122	68-132	
1,1-Dichloroethene	ug/L	50	50.8	102	85-126	
1,2,4-Trichlorobenzene	ug/L	50	50.9	102	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	47.5	95	51-126	
1,2-Dibromoethane (EDB)	ug/L	50	54.7	109	70-130	
1,2-Dichlorobenzene	ug/L	50	58.1	116	70-130	
1,2-Dichloroethane	ug/L	50	54.7	109	70-130	
1,2-Dichloropropane	ug/L	50	59.3	119	78-125	
1,3-Dichlorobenzene	ug/L	50	57.8	116	70-130	
1,4-Dichlorobenzene	ug/L	50	57.8	116	70-130	
Benzene	ug/L	50	56.1	112	70-132	
Bromodichloromethane	ug/L	50	53.3	107	70-130	
Bromoform	ug/L	50	42.5	85	65-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

LABORATORY CONTROL SAMPLE: 2300506

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	38.4	77	44-128	
Carbon tetrachloride	ug/L	50	54.1	108	70-130	
Chlorobenzene	ug/L	50	58.8	118	70-130	
Chloroethane	ug/L	50	57.2	114	73-137	
Chloroform	ug/L	50	54.9	110	80-122	
Chloromethane	ug/L	50	37.8	76	27-148	
cis-1,2-Dichloroethene	ug/L	50	52.3	105	70-130	
cis-1,3-Dichloropropene	ug/L	50	49.7	99	70-130	
Dibromochloromethane	ug/L	50	51.5	103	70-130	
Dichlorodifluoromethane	ug/L	50	22.7	45	22-151	
Ethylbenzene	ug/L	50	58.9	118	80-123	
Isopropylbenzene (Cumene)	ug/L	50	59.7	119	70-130	
m&p-Xylene	ug/L	100	116	116	70-130	
Methyl-tert-butyl ether	ug/L	50	48.1	96	66-130	
Methylene Chloride	ug/L	50	50.2	100	70-130	
o-Xylene	ug/L	50	57.8	116	70-130	
Styrene	ug/L	50	59.5	119	70-130	
Tetrachloroethene	ug/L	50	55.9	112	70-130	
Toluene	ug/L	50	57.4	115	80-121	
trans-1,2-Dichloroethene	ug/L	50	55.1	110	70-130	
trans-1,3-Dichloropropene	ug/L	50	48.4	97	58-125	
Trichloroethene	ug/L	50	54.8	110	70-130	
Trichlorofluoromethane	ug/L	50	47.2	94	84-148	
Vinyl chloride	ug/L	50	45.5	91	63-142	
1,2-Dichlorobenzene-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			103	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300507 2300508

Parameter	Units	40235044003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.30	50	50	52.6	53.3	105	107	70-130	1	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.38	50	50	57.7	57.2	115	114	66-130	1	20	
1,1,2-Trichloroethane	ug/L	<0.34	50	50	58.5	57.1	117	114	70-130	2	20	
1,1-Dichloroethane	ug/L	<0.30	50	50	60.3	60.0	121	120	68-132	1	20	
1,1-Dichloroethene	ug/L	<0.58	50	50	49.9	50.7	100	101	76-132	2	20	
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	53.0	52.5	106	105	70-130	1	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.4	50	50	47.3	46.7	95	93	51-126	1	20	
1,2-Dibromoethane (EDB)	ug/L	<0.31	50	50	55.9	54.7	112	109	70-130	2	20	
1,2-Dichlorobenzene	ug/L	<0.33	50	50	58.7	57.9	117	116	70-130	1	20	
1,2-Dichloroethane	ug/L	<0.29	50	50	53.5	53.8	107	108	70-130	0	20	
1,2-Dichloropropane	ug/L	<0.45	50	50	58.7	59.3	117	119	77-125	1	20	
1,3-Dichlorobenzene	ug/L	<0.35	50	50	56.3	56.5	113	113	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300507 2300508

Parameter	Units	40235044003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/L	<0.89	50	50	58.6	58.5	117	117	70-130	0	20	
Benzene	ug/L	<0.30	50	50	55.7	55.7	111	111	70-132	0	20	
Bromodichloromethane	ug/L	<0.42	50	50	53.4	53.6	107	107	70-130	0	20	
Bromoform	ug/L	<3.8	50	50	42.9	42.9	86	86	65-130	0	20	
Bromomethane	ug/L	<1.2	50	50	45.3	48.9	91	98	44-128	8	21	
Carbon tetrachloride	ug/L	<0.37	50	50	53.7	53.9	107	108	70-132	0	20	
Chlorobenzene	ug/L	<0.86	50	50	58.4	58.5	117	117	70-130	0	20	
Chloroethane	ug/L	<1.4	50	50	55.7	55.6	111	111	70-137	0	20	
Chloroform	ug/L	<1.2	50	50	55.4	56.3	111	113	80-122	2	20	
Chloromethane	ug/L	<1.6	50	50	36.6	36.3	73	73	17-149	1	20	
cis-1,2-Dichloroethene	ug/L	<0.47	50	50	52.9	52.4	106	105	70-130	1	20	
cis-1,3-Dichloropropene	ug/L	<0.36	50	50	50.2	49.5	100	99	70-130	1	20	
Dibromochloromethane	ug/L	<2.6	50	50	52.4	52.2	105	104	70-130	0	20	
Dichlorodifluoromethane	ug/L	<0.46	50	50	22.4	21.5	45	43	22-158	4	20	
Ethylbenzene	ug/L	<0.33	50	50	58.7	57.4	117	115	80-123	2	20	
Isopropylbenzene (Cumene)	ug/L	<1.0	50	50	59.7	59.5	119	119	70-130	0	20	
m&p-Xylene	ug/L	<0.70	100	100	116	115	116	115	70-130	0	20	
Methyl-tert-butyl ether	ug/L	<1.1	50	50	46.5	46.2	93	92	66-130	1	20	
Methylene Chloride	ug/L	<0.32	50	50	49.6	49.7	99	99	70-130	0	20	
o-Xylene	ug/L	<0.35	50	50	57.6	57.2	115	114	70-130	1	20	
Styrene	ug/L	<0.36	50	50	59.7	59.7	119	119	70-130	0	20	
Tetrachloroethene	ug/L	<0.41	50	50	56.2	55.3	112	111	70-130	2	20	
Toluene	ug/L	<0.29	50	50	57.4	56.7	115	113	80-121	1	20	
trans-1,2-Dichloroethene	ug/L	<0.53	50	50	52.1	52.9	104	106	70-134	1	20	
trans-1,3-Dichloropropene	ug/L	<3.5	50	50	49.7	49.1	99	98	58-130	1	20	
Trichloroethene	ug/L	<0.32	50	50	53.4	54.2	107	108	70-130	1	20	
Trichlorofluoromethane	ug/L	<0.42	50	50	46.2	45.6	92	91	82-151	1	20	
Vinyl chloride	ug/L	<0.17	50	50	45.3	43.8	91	88	61-143	3	20	
1,2-Dichlorobenzene-d4 (S)	%						98	96	70-130			
4-Bromofluorobenzene (S)	%						98	98	70-130			
Toluene-d8 (S)	%						103	103	70-130			

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

QC Batch: 398677
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: 40235054003

METHOD BLANK: 2301680 Matrix: Water
Associated Lab Samples: 40235054003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	<0.018	0.050	10/18/21 08:02	
2-Methylnaphthalene	ug/L	<0.014	0.050	10/18/21 08:02	
Acenaphthene	ug/L	<0.014	0.050	10/18/21 08:02	
Acenaphthylene	ug/L	<0.013	0.050	10/18/21 08:02	
Anthracene	ug/L	<0.018	0.050	10/18/21 08:02	
Benzo(a)anthracene	ug/L	<0.014	0.050	10/18/21 08:02	
Benzo(a)pyrene	ug/L	<0.020	0.050	10/18/21 08:02	
Benzo(b)fluoranthene	ug/L	<0.020	0.050	10/18/21 08:02	
Benzo(g,h,i)perylene	ug/L	<0.023	0.050	10/18/21 08:02	
Benzo(k)fluoranthene	ug/L	<0.022	0.050	10/18/21 08:02	
Chrysene	ug/L	<0.027	0.050	10/18/21 08:02	
Dibenz(a,h)anthracene	ug/L	<0.018	0.050	10/18/21 08:02	
Fluoranthene	ug/L	<0.026	0.050	10/18/21 08:02	
Fluorene	ug/L	<0.024	0.050	10/18/21 08:02	
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	0.050	10/18/21 08:02	
Naphthalene	ug/L	0.038J	0.050	10/18/21 08:02	
Phenanthrene	ug/L	<0.026	0.050	10/18/21 08:02	
Pyrene	ug/L	<0.023	0.050	10/18/21 08:02	
2-Fluorobiphenyl (S)	%	71	10-113	10/18/21 08:02	
Terphenyl-d14 (S)	%	64	28-124	10/18/21 08:02	

LABORATORY CONTROL SAMPLE: 2301681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/L	2	1.6	81	71-120	
2-Methylnaphthalene	ug/L	2	1.6	80	68-120	
Acenaphthene	ug/L	2	1.7	83	71-120	
Acenaphthylene	ug/L	2	1.7	87	68-120	
Anthracene	ug/L	2	1.5	73	51-99	
Benzo(a)anthracene	ug/L	2	1.4	71	52-92	
Benzo(a)pyrene	ug/L	2	1.8	88	61-105	
Benzo(b)fluoranthene	ug/L	2	1.5	76	57-102	
Benzo(g,h,i)perylene	ug/L	2	1.7	83	62-120	
Benzo(k)fluoranthene	ug/L	2	2.2	108	70-122	
Chrysene	ug/L	2	2.0	100	71-122	
Dibenz(a,h)anthracene	ug/L	2	1.4	72	41-101	
Fluoranthene	ug/L	2	1.7	84	67-116	
Fluorene	ug/L	2	1.7	84	71-120	
Indeno(1,2,3-cd)pyrene	ug/L	2	1.5	76	59-120	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

LABORATORY CONTROL SAMPLE: 2301681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	2	1.7	83	71-120	
Phenanthrene	ug/L	2	1.6	78	60-102	
Pyrene	ug/L	2	1.7	83	72-120	
2-Fluorobiphenyl (S)	%			74	10-113	
Terphenyl-d14 (S)	%			74	28-124	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2301682 2301683

Parameter	Units	40235060008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/L	<0.018	1.9	2	1.5	1.7	79	82	71-120	9	20	
2-Methylnaphthalene	ug/L	<0.014	1.9	2	1.5	1.6	77	80	68-120	8	20	
Acenaphthene	ug/L	<0.014	1.9	2	1.7	1.9	87	91	71-120	10	20	
Acenaphthylene	ug/L	<0.013	1.9	2	1.6	1.8	82	91	68-120	15	20	
Anthracene	ug/L	<0.019	1.9	2	1.5	1.6	77	80	51-99	8	20	
Benzo(a)anthracene	ug/L	<0.014	1.9	2	1.4	1.6	71	78	52-92	14	20	
Benzo(a)pyrene	ug/L	<0.020	1.9	2	1.7	2.0	87	97	61-105	16	20	
Benzo(b)fluoranthene	ug/L	<0.020	1.9	2	1.4	1.6	72	80	57-102	15	20	
Benzo(g,h,i)perylene	ug/L	<0.024	1.9	2	1.6	1.9	83	95	62-120	18	20	
Benzo(k)fluoranthene	ug/L	<0.023	1.9	2	1.9	2.2	101	110	70-122	14	20	
Chrysene	ug/L	<0.027	1.9	2	1.9	2.2	97	110	71-122	18	20	
Dibenz(a,h)anthracene	ug/L	<0.018	1.9	2	1.5	1.8	79	89	41-101	17	20	
Fluoranthene	ug/L	<0.026	1.9	2	2.0	2.3	103	111	67-116	12	20	
Fluorene	ug/L	<0.024	1.9	2	1.6	2.1	82	101	71-120	25	20	R1
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	1.9	2	1.5	1.9	78	94	59-120	24	20	R1
Naphthalene	ug/L	<0.020	1.9	2	1.6	1.9	84	92	71-120	15	20	
Phenanthrene	ug/L	<0.026	1.9	2	1.6	1.8	81	89	60-102	14	20	
Pyrene	ug/L	<0.023	1.9	2	1.7	1.8	85	86	72-120	6	20	
2-Fluorobiphenyl (S)	%						73	80	10-113			
Terphenyl-d14 (S)	%						71	76	28-124			

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

QC Batch: 398782
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: 40235054004

METHOD BLANK: 2302550 Matrix: Water
Associated Lab Samples: 40235054004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	<0.018	0.050	10/19/21 08:05	
2-Methylnaphthalene	ug/L	<0.014	0.050	10/19/21 08:05	
Acenaphthene	ug/L	<0.014	0.050	10/19/21 08:05	
Acenaphthylene	ug/L	<0.013	0.050	10/19/21 08:05	
Anthracene	ug/L	<0.018	0.050	10/19/21 08:05	
Benzo(a)anthracene	ug/L	<0.014	0.050	10/19/21 08:05	
Benzo(a)pyrene	ug/L	<0.020	0.050	10/19/21 08:05	
Benzo(b)fluoranthene	ug/L	<0.020	0.050	10/19/21 08:05	
Benzo(g,h,i)perylene	ug/L	<0.023	0.050	10/19/21 08:05	
Benzo(k)fluoranthene	ug/L	<0.022	0.050	10/19/21 08:05	
Chrysene	ug/L	<0.027	0.050	10/19/21 08:05	
Dibenz(a,h)anthracene	ug/L	<0.018	0.050	10/19/21 08:05	
Fluoranthene	ug/L	<0.026	0.050	10/19/21 08:05	
Fluorene	ug/L	<0.024	0.050	10/19/21 08:05	
Indeno(1,2,3-cd)pyrene	ug/L	<0.016	0.050	10/19/21 08:05	
Naphthalene	ug/L	0.022J	0.050	10/19/21 08:05	
Phenanthrene	ug/L	<0.026	0.050	10/19/21 08:05	
Pyrene	ug/L	<0.023	0.050	10/19/21 08:05	
2-Fluorobiphenyl (S)	%	73	10-113	10/19/21 08:05	
Terphenyl-d14 (S)	%	77	28-124	10/19/21 08:05	

LABORATORY CONTROL SAMPLE & LCSD: 2302551 2302552

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/L	2	1.6	1.6	82	80	71-120	2	20	
2-Methylnaphthalene	ug/L	2	1.6	1.6	80	79	68-120	2	20	
Acenaphthene	ug/L	2	1.7	1.7	85	84	71-120	1	20	
Acenaphthylene	ug/L	2	1.7	1.7	84	87	68-120	3	20	
Anthracene	ug/L	2	1.6	1.7	79	83	51-99	5	20	
Benzo(a)anthracene	ug/L	2	1.6	1.7	81	83	52-92	2	20	
Benzo(a)pyrene	ug/L	2	1.7	1.8	85	90	61-105	6	20	
Benzo(b)fluoranthene	ug/L	2	1.6	1.6	81	80	57-102	1	20	
Benzo(g,h,i)perylene	ug/L	2	1.8	1.8	92	88	62-120	5	20	
Benzo(k)fluoranthene	ug/L	2	2.0	2.0	101	100	70-122	1	20	
Chrysene	ug/L	2	1.9	2.0	95	99	71-122	4	20	
Dibenz(a,h)anthracene	ug/L	2	1.8	1.8	89	90	41-101	1	20	
Fluoranthene	ug/L	2	2.0	2.0	98	100	67-116	2	20	
Fluorene	ug/L	2	1.7	1.8	87	90	71-120	3	20	
Indeno(1,2,3-cd)pyrene	ug/L	2	1.7	1.8	87	89	59-120	2	20	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON ST
Pace Project No.: 40235054

LABORATORY CONTROL SAMPLE & LCSD: 2302551 2302552

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Naphthalene	ug/L	2	1.7	1.7	87	83	71-120	4	20	
Phenanthrene	ug/L	2	1.7	1.7	84	85	60-102	2	20	
Pyrene	ug/L	2	1.8	1.7	92	86	72-120	7	20	
2-Fluorobiphenyl (S)	%				75	73	10-113			
Terphenyl-d14 (S)	%				83	73	28-124			

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REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: LUDINGTON ST
Pace Project No.: 40235054

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: 398829

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

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
R1	RPD value was outside control limits.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON ST
Pace Project No.: 40235054

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40235054001	**GP-1**	EPA 3010A	399476	EPA 6010D	399558
40235054003	**GP-8**	EPA 3010A	399476	EPA 6010D	399558
40235054004	**GP-10**	EPA 6010D	399389		
40235054003	**GP-8**	EPA 3510	398677	EPA 8270E by SIM	398712
40235054004	**GP-10**	EPA 3510	398782	EPA 8270E by SIM	398829
40235054001	**GP-1**	EPA 8260	398518		
40235054003	**GP-8**	EPA 8260	398518		
40235054004	**GP-10**	EPA 8260	398518		

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

40235054

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

(Please Print Clearly)	
Company Name:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Ludington St
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

*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

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@Ayresassociates.com
Invoice To Phone:	

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

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: Diss. As + Pb	PFAS	VOCs	PAHs	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
	FILTERED? (YES/NO)				Y/N: Y	N	N	N		Profile #:
	PRESERVATION (CODE)*				Pick Letter: D	A	B	A		
001	GP-1	10-13-21	9:55	GW	1	2	3			
002	GP-3	10-13-21	11:25	GW		2				
	~~GP-4~~								No Sample	
003	GP-8	10-13-21	13:30	GW	1	2	3	2		
004	GP-10	10-13-21	15:05	GW	1	2	3	1		

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:
William Honea	10/31/21 1640		
			10/13/21 1640

PACE Project No.: 40235054

Receipt Temp = 4 °C

Sample Receipt pH: OK / Adjusted

Cooler Custody Seal: Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Sample Preservation Receipt Form

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

Client Name: Dyes Project # 40235054

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

Lab Lot# of pH paper: 10736004 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: KR Date/ Time:

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

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

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

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

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

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

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

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40235054

40235054

Client Name: Hyrs

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 ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4 /Corr: 4

Person examining contents:
Date: 10/13/24 /Initials:

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

Labeled By Initials:

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

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. proj # mail 10/13/24
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD:	☐Yes ☑No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☐Yes ☑No ☐N/A	12. 002 ID GP-4 10/13/24
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™
www.pacelabs.com

Pace Analytical Services, LLC.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Client Services
PACE Wisconsin
1241 Bellevue Street
Green Bay WI 54302

REPORT OF LABORATORY ANALYSIS FOR PFAAs

Report Information:

Pace Project #: 10583478
Sample Receipt Date: 10/15/2021
Client Project #: 40235054 AYRES & ASSOCIA
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Ashley Williams, your Pace Project Manager.

This report has been reviewed by:

November 12, 2021

Ashley Williams, Project Manager
(612) 346-8158
(612) 607-6444 (fax)
ashley.williams@pacelabs.com

Report Prepared Date:
November 8, 2021

Report of Laboratory Analysis

DISCUSSION

This report presents the results from the analyses performed on four samples submitted by a representative of Pace Wisconsin. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR Guidance for PFAS. Reporting limits were set to MDL.

Laboratory method blanks were prepared and analyzed with each sample batch as part of our routine quality control procedures. With the exception of PFOS in BLANK-93940, the results show the blanks were free of the target perfluorinated compounds at the reporting limits. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged B in the results tables and may be, at least partially, attributed to the background.

Laboratory spike samples were also prepared with each sample batch using clean reference matrix that had been fortified with native standards. The recovery results were within the method limits. These spikes indicate that extraction performed as expected. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from that analysis will be provided upon request.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Elevated extracted internal standard (EIS) recoveries (R Flag) were present in BLANK-94205 and LCS-94206, however, the use of the isotope dilution method generally precludes any adverse impact on those individual native compounds that have a directly associated standard.

Values were flagged "I" where incorrect isotope ratios were obtained. Results below the calibration range were flagged "J".

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

Internal Transfer Chain of Custody

Pace Analytical® www.pacelabs.com

[x] Samples Pre-Logged into eCOC.

State Of Origin: WI

Cert. Needed: [x] Yes [ ] No

Workorder: 40235054 Workorder Name: LUDINGTON ST

Owner Received Date: 10/13/2021 Results Requested By: 11/04/2021

Report To	Subcontract To
Dan Milewsky Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved					Requested Analysis: PFAS (WDNR 33 Targets)												LAB USE ONLY
1	GP-1	PS	10/13/2021 09:55	40235054001	Water	2					X												001
2	GP-3	PS	10/13/2021 11:25	40235054002	Water	2					X												002
3	GP-8	PS	10/13/2021 13:30	40235054003	Water	2					X												003
4	GP-10	PS	10/13/2021 15:05	40235054004	Water	2					X												004
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	10/14/21 1700	[signature] Pace	10/15/21 0925
2				
3				

Comments

Cooler Temperature on Receipt 1.9 °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.*

WO#: 10583478

10583478

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14Apr2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Pace Green Bay

Project #: WO#: 10583478

PM: AW1 Due Date: 11/03/21

CLIENT: PASI-WI

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☑Commercial

Tracking Number: _____ See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☑Yes ☐No **Seals Intact?** ☑Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☑Bubble Wrap ☑Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☑Yes ☐No

Thermometer: ☑T1(0461) ☐T2(1336) ☐T3(0459) ☐OS418-LS ☐T4(0254) ☐T5(0489) ☐160285052 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Did Samples Originate in West Virginia? ☐Yes ☑No **Were All Container Temps Taken?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 1.9 °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 1.9 °C

Average Corrected Temp (no temp blank only): _____ °C ☐See Exceptions ENV-FRM-MIN4-0142 ☐1 Container

USDA Regulated Soil: (☑N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

Date/Initials of Person Examining Contents: CJS 10/15/21

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☐No	☑N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☑No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☑Yes ☑Yes	☐No ☐No		8.
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☑Water ☐Soil ☐Oil ☐Other_____	☑Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐Yes	☐No	☑N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐ ENV-FRM-MIN4-0142
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐Yes	☐No	☑N/A	13. **See Exception** ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	
Trip Blank Present?	☐Yes	☐No	☑N/A	14. Pace Trip Blank Lot # (if purchased):_____
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Ashley Williams **Date:** 10/18/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: CJS 10

Report No.....10583478_ID36_DFR

Page 7 of 58

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

Page 1 of 1

40235054

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:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Ludington St
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@Ayresassociates.com
Invoice To Phone:	

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

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested								CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
FILTERED? (YES/NO)					Y/N	Y	N	N	N						
PRESERVATION (CODE)*					Pick Letter	D	A	B	A						
					Diss. As + Pb	PFAS	VOCs	PAHs							
001	GP-1	10-13-21	9:55	GW	1	2	3								
002	GP-3	10-13-21	11:25	GW		2									
	~~GP-4~~												No Sample		
003	GP-8	10-13-21	13:30	GW	1	2	3	2							
004	GP-10	10-13-21	15:05	GW	1	2	3	1							

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:
William Honea	10/31/21 1640		
		Allen	10/13/21 1640

PACE Project No.: 40235054

Receipt Temp = 4 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

ORIGINAL

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

Sample Preservation Receipt Form

Client Name: Ayres Project # 40235054

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

Lab Lot# of pH paper: 10D3604 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: [initials] Date/ Time:

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

4/1/21

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

AG1U	1 liter amber glass	**BP1U**	1 liter plastic unpres	**VG9A**	40 mL clear ascorbic	**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
AG4U	120 mL amber glass unpres	**BP3S**	250 mL plastic H2SO4	**VG9M**	40 mL clear vial MeOH	**SP5T**	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			**VG9D**	40 mL clear vial DI	**ZPLC**	ziploc bag
AG2S	500 mL amber glass H2SO4					**GN**	
BG3U	250 mL clear glass unpres						

Page 1 of 2

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

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO#: 40235054

40235054

Client Name: Ayres

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 ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 4 /Corr: 4

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: 10/13/21 /Initials:
Labeled By Initials:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☐No ☐N/A	2. proj # mail 10/13/21
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. 002 ID GP-4 10/13/21
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

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

Person Contacted: Date/Time:

Comments/ Resolution:

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

Page 2 of 2

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	2.2 J	8.9	2.0	2.0	1	375-22-4	
PFPeA	3.5 J	8.9	2.0	2.0	1	2706-90-3	
HFPO-DA	ND	8.9	2.4	2.4	1	13252-13-6	
PFBS	4.8 J	7.9	2.1	2.1	1	375-73-5	
PFHxA	ND	8.9	2.0	2.0	1	307-24-4	
4:2 FTS	ND	8.4	2.5	2.5	1	757124-72-4	
PFPeS	ND	8.4	2.1	2.1	1	2706-91-4	
PFHpA	4.0 J	8.9	2.5	2.5	1	375-85-9	
DONA	ND	8.5	2.3	2.3	1	919005-14-4	
PFHxS	ND	8.1	2.3	2.3	1	355-46-4	
PFOA	3.2 IJ	8.9	2.6	2.6	1	335-67-1	
6:2 FTS	ND	8.5	2.9	2.9	1	27619-97-2	
PFHpS	ND	8.5	1.8	1.8	1	375-92-8	
PFNA	ND	8.9	3.3	3.3	1	375-95-1	
PFOSAm	ND	8.9	3.7	3.7	1	754-91-6	
PFOS	19	8.3	2.5	2.5	1	1763-23-1	
MeFOSA	ND	8.9	2.3	2.3	1	31506-32-8	
PFDA	3.8 J	8.9	2.5	2.5	1	335-76-2	
EtFOSAm	ND	8.9	2.7	2.7	1	4151-50-2	
8:2 FTS	ND	8.6	2.9	2.9	1	39108-34-4	
9-Cl-PF3ON	ND	8.3	1.4	1.4	1	756426-58-1	
PFNS	ND	8.6	2.0	2.0	1	68259-12-1	
PFUnDA	ND	8.9	2.4	2.4	1	2058-94-8	
NMeFOSAA	ND	8.9	1.9	1.9	1	2355-31-9	
NEtFOSAA	ND	8.9	2.5	2.5	1	2991-50-6	
PFDS	ND	8.6	2.0	2.0	1	335-77-3	
PFDOA	ND	8.9	2.2	2.2	1	307-55-1	
MeFOSE	ND	8.9	1.5	1.5	1	24448-09-7	
EtFOSE	ND	8.9	2.2	2.2	1	1691-99-2	
11-Cl-PF3OUdS	ND	8.4	1.9	1.9	1	763051-92-9	
PFTrDA	ND	8.9	2.8	2.8	1	72629-94-8	
PFDoS	ND	8.7	2.1	2.1	1	79780-39-5	
PFTDA	ND	8.9	2.1	2.1	1	376-06-7	

REPORT OF LABORATORY ANALYSIS

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	89	91	102	50-150	
13C4_PFOA	89	100	116	50-150	
13C2_PFDA	89	93	104	50-150	
13C4_PFOS	86	90	105	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	89	92	103	25-150	
13C5_PFPeA	89	90	101	25-150	
13C3_PFBS	83	82	98	25-150	
13C2_4:2FTS	84	81	97	25-150	
13C5_PFHxA	89	94	105	25-150	
13C4_PFHpA	89	89	100	25-150	
13C3_PFHxS	85	92	109	25-150	
13C2_6:2FTS	85	91	107	25-150	
13C8_PFOA	89	92	103	25-150	
13C9_PFNA	89	90	101	25-150	
13C8_PFOS	86	79	92	25-150	
13C2_8:2FTS	86	88	103	25-150	
13C6_PFDA	89	84	94	25-150	
d3-MeFOSAA	89	65	73	25-150	
13C8_PFOSA	89	68	76	25-150	
d5-EtFOSAA	89	76	85	25-150	
13C7_PFUdA	89	84	94	25-150	
13C2_PFDoA	89	73	82	25-150	
13C2_PFTeDA	89	86	97	25-150	
13C3_HFPO-DA	89	84	94	25-150	
d7-N-MeFOSE	89	59	66	10-150	
d9-N-EtFOSE	89	62	69	10-150	
d3-N-MeFOSA	89	32	35	10-150	
d5-N-EtFOSA	89	31	35	10-150	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	6.21	6.18	
13C4_PFOA	N/A	N/A	7.54	7.51	
13C2_PFDA	N/A	N/A	8.89	8.89	
13C4_PFOS	N/A	N/A	9.36	9.34	

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PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	4.78	4.77	
13C5_PFPeA	N/A	N/A	5.56	5.53	
13C3_PFBS	N/A	N/A	6.48	6.46	
13C2_4:2FTS	N/A	N/A	5.93	5.92	
13C5_PFHxA	N/A	N/A	6.21	6.20	
13C4_PFHpA	N/A	N/A	6.87	6.86	
13C3_PFHxS	N/A	N/A	7.96	7.95	
13C2_6:2FTS	N/A	N/A	7.19	7.18	
13C8_PFOA	N/A	N/A	7.54	7.53	
13C9_PFNA	N/A	N/A	8.21	8.20	
13C8_PFOS	N/A	N/A	9.37	9.36	
13C2_8:2FTS	N/A	N/A	8.50	8.50	
13C6_PFDA	N/A	N/A	8.89	8.86	
d3-MeFOSAA	N/A	N/A	8.76	8.73	
13C8_PFOSA	N/A	N/A	11.28	11.26	
d5-EtFOSAA	N/A	N/A	9.07	9.06	
13C7_PFUdA	N/A	N/A	9.56	9.54	
13C2_PFDoA	N/A	N/A	10.24	10.23	
13C2_PFTeDA	N/A	N/A	11.54	11.53	
13C3_HFPO-DA	N/A	N/A	6.49	6.47	
d7-N-MeFOSE	N/A	N/A	13.02	12.99	
d9-N-EtFOSE	N/A	N/A	13.50	13.47	
d3-N-MeFOSA	N/A	N/A	13.22	13.20	
d5-N-EtFOSA	N/A	N/A	13.67	13.65	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-1	Extraction Date	10/22/2021 08:58
Lab Sample ID	40235054001	Total Amount Extracted	55.9mL
Lab File ID	Q211027B_025	Ical ID	211027A01
Matrix	Non_Potable_Water	CCal File	Q211027B_019
Collected	10/13/2021 09:55	Ending CCal File	Q211027B_030
Received	10/15/2021 09:25	Blank File	Q211028A_004

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.79	4.80	J
PFPeA	N/A	N/A	5.56	5.57	J
HFPO-DA	0.000	0.570	0.00	6.44	
PFBS	0.310	0.370	6.48	6.52	J
PFHxA	0.000	0.0730	6.22	6.22	
4:2 FTS	0.000	1.10	0.00	5.94	
PFPeS	0.000	0.450	7.24	7.23	
PFHpA	0.680	0.510	6.88	6.85	J
DONA	0.000	0.490	0.00	7.04	
PFHxS	0.000	0.280	0.00	7.91	
PFOA	0.000	0.320	7.54	7.47	IJ
6:2 FTS	0.890	1.40	7.18	7.18	
PFHpS	0.000	0.430	0.00	8.66	
PFNA	0.260	0.260	8.22	8.19	
PFOSAm	N/A	N/A	11.29	11.26	
PFOS	0.260	0.220	9.38	9.25	
MeFOSA	0.000	0.520	0.00	13.20	
PFDA	0.190	0.190	8.90	8.88	J
EtFOSAm	0.000	0.500	0.00	13.65	
8:2 FTS	2.20	1.40	8.50	8.49	
9-Cl-PF3ON	0.000	0.0400	0.00	9.77	
PFNS	0.230	0.250	10.04	10.03	
PFUnDA	0.000	0.150	0.00	9.58	
NMeFOSAA	0.000	0.690	0.00	8.76	
NEtFOSAA	0.000	0.500	0.00	9.08	
PFDS	0.000	0.300	0.00	10.69	
PFDOA	0.000	0.180	0.00	10.17	
MeFOSE	N/A	N/A	0.00	13.03	
EtFOSE	0.000	0.000	0.00	13.51	
11-Cl-PF3OUdS	0.000	0.0290	0.00	11.15	
PFTrDA	0.000	0.200	0.00	10.89	
PFDoS	0.000	0.250	0.00	11.91	
PFTDA	0.000	0.150	0.00	11.47	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	21	4.8	1.1	1.1	1	375-22-4	
PFPeA	30	4.8	1.1	1.1	1	2706-90-3	
HFPO-DA	ND	4.8	1.3	1.3	1	13252-13-6	
PFBS	8.3	4.3	1.1	1.1	1	375-73-5	
PFHxA	18	4.8	1.1	1.1	1	307-24-4	
4:2 FTS	ND	4.5	1.3	1.3	1	757124-72-4	
PFPeS	ND	4.5	1.1	1.1	1	2706-91-4	
PFHpA	12	4.8	1.3	1.3	1	375-85-9	
DONA	ND	4.6	1.2	1.2	1	919005-14-4	
PFHxS	2.5 J	4.4	1.2	1.2	1	355-46-4	
PFOA	15	4.8	1.4	1.4	1	335-67-1	
6:2 FTS	ND	4.6	1.6	1.6	1	27619-97-2	
PFHpS	ND	4.6	0.99	0.99	1	375-92-8	
PFNA	3.9 J	4.8	1.8	1.8	1	375-95-1	
PFOSAm	ND	4.8	2.0	2.0	1	754-91-6	
PFOS	4.5	4.5	1.3	1.3	1	1763-23-1	
MeFOSA	ND	4.8	1.2	1.2	1	31506-32-8	
PFDA	ND	4.8	1.4	1.4	1	335-76-2	
EtFOSAm	ND	4.8	1.5	1.5	1	4151-50-2	
8:2 FTS	ND	4.6	1.6	1.6	1	39108-34-4	
9-Cl-PF3ON	ND	4.5	0.73	0.73	1	756426-58-1	
PFNS	ND	4.6	1.1	1.1	1	68259-12-1	
PFUnDA	ND	4.8	1.3	1.3	1	2058-94-8	
NMeFOSAA	ND	4.8	1.0	1.0	1	2355-31-9	
NEtFOSAA	ND	4.8	1.3	1.3	1	2991-50-6	
PFDS	ND	4.6	1.1	1.1	1	335-77-3	
PFDOA	ND	4.8	1.2	1.2	1	307-55-1	
MeFOSE	ND	4.8	0.79	0.79	1	24448-09-7	
EtFOSE	ND	4.8	1.2	1.2	1	1691-99-2	
11-Cl-PF3OUdS	ND	4.5	1.1	1.1	1	763051-92-9	
PFTrDA	ND	4.8	1.5	1.5	1	72629-94-8	
PFDoS	ND	4.7	1.1	1.1	1	79780-39-5	
PFTDA	ND	4.8	1.1	1.1	1	376-06-7	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	48	44	91	50-150	
13C4_PFOA	48	42	88	50-150	
13C2_PFDA	48	48	100	50-150	
13C4_PFOS	46	46	99	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	48	45	94	50-150	
13C5_PFPeA	48	44	91	50-150	
13C3_PFBS	45	41	92	50-150	
13C2_4:2FTS	45	44	98	50-150	
13C5_PFHxA	48	44	92	50-150	
13C4_PFHpA	48	44	92	50-150	
13C3_PFHxS	46	43	95	50-150	
13C2_6:2FTS	46	49	107	50-150	
13C8_PFOA	48	44	91	50-150	
13C9_PFNA	48	45	93	50-150	
13C8_PFOS	46	44	96	50-150	
13C2_8:2FTS	46	38	82	50-150	
13C6_PFDA	48	42	88	50-150	
d3-MeFOSAA	48	38	79	50-150	
13C8_PFOSA	48	35	72	50-150	
d5-EtFOSAA	48	36	74	50-150	
13C7_PFUdA	48	40	84	50-150	
13C2_PFDoA	48	37	77	50-150	
13C2_PFTeDA	48	38	80	50-150	
13C3_HFPO-DA	48	42	87	50-150	
d7-N-MeFOSE	48	29	60	10-150	
d9-N-EtFOSE	48	32	66	10-150	
d3-N-MeFOSA	48	16	34	10-150	
d5-N-EtFOSA	48	16	34	10-150	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.04	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.19	7.21	

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Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.82	5.83	
13C8_PFOA	N/A	N/A	6.04	6.05	
13C9_PFNA	N/A	N/A	6.47	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.32	7.34	
13C2_PFDoA	N/A	N/A	7.75	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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PFAS by Isotope Dilution

Client Sample ID	GP-3	Extraction Date	11/02/2021 11:46
Lab Sample ID	40235054002-R	Total Amount Extracted	104mL
Lab File ID	A211104A_040	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211104A_039
Collected	10/13/2021 11:25	Ending CCal File	A211104A_050
Received	10/15/2021 09:25	Blank File	A211104A_019

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.460	0.00	5.33	
PFBS	0.300	0.340	5.29	5.29	
PFHxA	0.069	0.0680	5.12	5.12	
4:2 FTS	0.000	0.560	0.00	4.90	
PFPeS	0.460	0.310	5.83	5.84	
PFHpA	0.300	0.290	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.260	0.270	6.32	6.32	J
PFOA	0.410	0.390	6.05	6.06	
6:2 FTS	0.000	0.520	5.83	5.83	
PFHpS	0.000	0.220	6.76	6.78	
PFNA	0.230	0.180	6.48	6.49	J
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.170	0.210	7.17	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.000	0.0720	0.00	6.92	
EtFOSAm	0.000	0.710	0.00	11.03	
8:2 FTS	0.000	0.790	0.00	6.68	
9-Cl-PF3ON	0.000	0.0230	0.00	7.53	
PFNS	0.000	0.240	0.00	7.65	
PFUnDA	0.000	0.110	0.00	7.35	
NMeFOSAA	0.000	0.530	0.00	6.86	
NEtFOSAA	0.000	0.740	0.00	7.10	
PFDS	0.000	0.220	0.00	8.07	
PFDOA	0.000	0.140	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0130	0.00	8.37	
PFTrDA	0.000	0.150	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	60	5.0	1.1	1.1	1	375-22-4	
PFPeA	150	5.0	1.1	1.1	1	2706-90-3	
HFPO-DA	ND	5.0	1.3	1.3	1	13252-13-6	
PFBS	6.0	4.4	1.2	1.2	1	375-73-5	
PFHxA	120	5.0	1.1	1.1	1	307-24-4	
4:2 FTS	ND	4.7	1.4	1.4	1	757124-72-4	
PFPeS	ND	4.7	1.2	1.2	1	2706-91-4	
PFHpA	72	5.0	1.4	1.4	1	375-85-9	
DONA	ND	4.7	1.3	1.3	1	919005-14-4	
PFHxS	6.8	4.5	1.3	1.3	1	355-46-4	
PFOA	28	5.0	1.5	1.5	1	335-67-1	
6:2 FTS	4.4 J	4.7	1.6	1.6	1	27619-97-2	
PFHpS	ND	4.7	1.0	1.0	1	375-92-8	
PFNA	3.3 J	5.0	1.8	1.8	1	375-95-1	
PFOSAm	ND	5.0	2.0	2.0	1	754-91-6	
PFOS	16	4.6	1.4	1.4	1	1763-23-1	
MeFOSA	ND	5.0	1.3	1.3	1	31506-32-8	
PFDA	1.7 J	5.0	1.4	1.4	1	335-76-2	
EtFOSAm	ND	5.0	1.5	1.5	1	4151-50-2	
8:2 FTS	ND	4.8	1.6	1.6	1	39108-34-4	
9-Cl-PF3ON	ND	4.6	0.76	0.76	1	756426-58-1	
PFNS	ND	4.8	1.1	1.1	1	68259-12-1	
PFUnDA	ND	5.0	1.3	1.3	1	2058-94-8	
NMeFOSAA	ND	5.0	1.1	1.1	1	2355-31-9	
NEtFOSAA	7.5	5.0	1.4	1.4	1	2991-50-6	
PFDS	ND	4.8	1.1	1.1	1	335-77-3	
PFDOA	ND	5.0	1.2	1.2	1	307-55-1	
MeFOSE	ND	5.0	0.82	0.82	1	24448-09-7	
EtFOSE	ND	5.0	1.2	1.2	1	1691-99-2	
11-Cl-PF3OUdS	ND	4.7	1.1	1.1	1	763051-92-9	
PFTrDA	ND	5.0	1.5	1.5	1	72629-94-8	
PFDoS	ND	4.8	1.1	1.1	1	79780-39-5	
PFTDA	ND	5.0	1.2	1.2	1	376-06-7	

REPORT OF LABORATORY ANALYSIS

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	50	51	103	50-150	
13C4_PFOA	50	53	106	50-150	
13C2_PFDA	50	47	95	50-150	
13C4_PFOS	48	50	105	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	50	49	99	50-150	
13C5_PFPeA	50	52	105	50-150	
13C3_PFBS	46	47	103	50-150	
13C2_4:2FTS	47	46	99	50-150	
13C5_PFHxA	50	48	97	50-150	
13C4_PFHpA	50	48	97	50-150	
13C3_PFHxS	47	49	103	50-150	
13C2_6:2FTS	47	49	103	50-150	
13C8_PFOA	50	51	102	50-150	
13C9_PFNA	50	51	102	50-150	
13C8_PFOS	48	46	96	50-150	
13C2_8:2FTS	48	40	85	50-150	
13C6_PFDA	50	46	92	50-150	
d3-MeFOSAA	50	42	85	50-150	
13C8_PFOSA	50	34	67	50-150	
d5-EtFOSAA	50	47	94	50-150	
13C7_PFUdA	50	43	87	50-150	
13C2_PFDoA	50	42	84	50-150	
13C2_PFTeDA	50	41	83	50-150	
13C3_HFPO-DA	50	47	95	50-150	
d7-N-MeFOSE	50	27	55	10-150	
d9-N-EtFOSE	50	26	53	10-150	
d3-N-MeFOSA	50	19	39	10-150	
d5-N-EtFOSA	50	19	39	10-150	

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Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.04	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.19	7.21	

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Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.82	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.47	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.32	7.34	
13C2_PFDoA	N/A	N/A	7.75	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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PFAS by Isotope Dilution

Client Sample ID	GP-8	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054003	Total Amount Extracted	100mL
Lab File ID	A211103B_030	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 13:30	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.460	5.32	5.33	
PFBS	0.320	0.360	5.29	5.29	
PFHxA	0.064	0.0630	5.12	5.12	
4:2 FTS	0.000	0.570	4.87	4.87	
PFPeS	0.360	0.310	5.84	5.84	
PFHpA	0.300	0.300	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.260	0.270	6.32	6.32	
PFOA	0.350	0.380	6.05	6.06	
6:2 FTS	0.610	0.500	5.83	5.83	J
PFHpS	0.000	0.230	6.76	6.78	
PFNA	0.200	0.210	6.48	6.49	J
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.190	0.210	7.20	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.078	0.0970	6.90	6.92	J
EtFOSAm	1.00	0.680	11.05	11.03	
8:2 FTS	0.560	0.640	6.66	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.250	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.540	0.00	6.86	
NEtFOSAA	0.680	0.720	7.06	7.10	
PFDS	0.000	0.230	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0140	8.35	8.37	
PFTrDA	0.000	0.150	0.00	8.20	
PFDoS	0.000	0.240	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	49	5.1	1.1	1.1	1	375-22-4	
PFPeA	140	5.1	1.1	1.1	1	2706-90-3	
HFPO-DA	ND	5.1	1.4	1.4	1	13252-13-6	
PFBS	6.8	4.5	1.2	1.2	1	375-73-5	
PFHxA	120	5.1	1.1	1.1	1	307-24-4	
4:2 FTS	ND	4.8	1.4	1.4	1	757124-72-4	
PFPeS	6.0	4.8	1.2	1.2	1	2706-91-4	
PFHpA	130	5.1	1.4	1.4	1	375-85-9	
DONA	ND	4.9	1.3	1.3	1	919005-14-4	
PFHxS	22	4.7	1.3	1.3	1	355-46-4	
PFOA	350	5.1	1.5	1.5	1	335-67-1	
6:2 FTS	11	4.9	1.7	1.7	1	27619-97-2	
PFHpS	1.6 J	4.9	1.1	1.1	1	375-92-8	
PFNA	ND	5.1	1.9	1.9	1	375-95-1	
PFOSAm	ND	5.1	2.1	2.1	1	754-91-6	
PFOS	31	4.8	1.4	1.4	1	1763-23-1	
MeFOSA	ND	5.1	1.3	1.3	1	31506-32-8	
PFDA	ND	5.1	1.4	1.4	1	335-76-2	
EtFOSAm	ND	5.1	1.6	1.6	1	4151-50-2	
8:2 FTS	4.7 J	4.9	1.7	1.7	1	39108-34-4	
9-Cl-PF3ON	ND	4.8	0.78	0.78	1	756426-58-1	
PFNS	ND	4.9	1.1	1.1	1	68259-12-1	
PFUnDA	ND	5.1	1.4	1.4	1	2058-94-8	
NMeFOSAA	ND	5.1	1.1	1.1	1	2355-31-9	
NEtFOSAA	ND	5.1	1.4	1.4	1	2991-50-6	
PFDS	ND	5.0	1.2	1.2	1	335-77-3	
PFDOA	ND	5.1	1.2	1.2	1	307-55-1	
MeFOSE	ND	5.1	0.85	0.85	1	24448-09-7	
EtFOSE	ND	5.1	1.3	1.3	1	1691-99-2	
11-Cl-PF3OUdS	ND	4.8	1.1	1.1	1	763051-92-9	
PFTrDA	ND	5.1	1.6	1.6	1	72629-94-8	
PFDoS	ND	5.0	1.2	1.2	1	79780-39-5	
PFTDA	ND	5.1	1.2	1.2	1	376-06-7	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	51	54	104	50-150	
13C4_PFOA	51	53	104	50-150	
13C2_PFDA	51	48	93	50-150	
13C4_PFOS	49	48	97	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	51	51	100	50-150	
13C5_PFPeA	51	53	103	50-150	
13C3_PFBS	48	48	101	50-150	
13C2_4:2FTS	48	57	118	50-150	
13C5_PFHxA	51	53	103	50-150	
13C4_PFHpA	51	50	98	50-150	
13C3_PFHxS	49	52	107	50-150	
13C2_6:2FTS	49	53	108	50-150	
13C8_PFOA	51	53	103	50-150	
13C9_PFNA	51	53	103	50-150	
13C8_PFOS	49	48	98	50-150	
13C2_8:2FTS	49	40	80	50-150	
13C6_PFDA	51	49	96	50-150	
d3-MeFOSAA	51	42	82	50-150	
13C8_PFOSA	51	34	67	50-150	
d5-EtFOSAA	51	40	78	50-150	
13C7_PFUdA	51	44	86	50-150	
13C2_PFDoA	51	37	73	50-150	
13C2_PFTeDA	51	35	69	50-150	
13C3_HFPO-DA	51	50	96	50-150	
d7-N-MeFOSE	51	23	46	10-150	
d9-N-EtFOSE	51	22	44	10-150	
d3-N-MeFOSA	51	6.6	13	10-150	
d5-N-EtFOSA	51	6.1	12	10-150	

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Sample Analysis Summary

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Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

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Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.32	7.34	
13C2_PFDoA	N/A	N/A	7.75	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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Client Sample ID	GP-10	Extraction Date	10/29/2021 10:08
Lab Sample ID	40235054004	Total Amount Extracted	97.3mL
Lab File ID	A211103B_031	Ical ID	211103A03
Matrix	Non_Potable_Water	CCal File	A211103B_029
Collected	10/13/2021 15:05	Ending CCal File	A211103B_040
Received	10/15/2021 09:25	Blank File	A211101C_008

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.460	5.33	5.33	
PFBS	0.360	0.360	5.30	5.29	
PFHxA	0.068	0.0630	5.12	5.12	
4:2 FTS	0.000	0.570	4.91	4.90	
PFPeS	0.320	0.310	5.84	5.84	
PFHpA	0.300	0.300	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.250	0.270	6.32	6.32	
PFOA	0.390	0.380	6.05	6.06	
6:2 FTS	0.470	0.500	5.83	5.83	
PFHpS	0.270	0.230	6.77	6.78	J
PFNA	0.220	0.210	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.130	0.210	7.06	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.000	0.0970	0.00	6.92	
EtFOSAm	0.000	0.680	0.00	11.03	
8:2 FTS	0.600	0.640	6.67	6.68	J
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.250	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.540	0.00	6.86	
NEtFOSAA	0.000	0.720	0.00	7.10	
PFDS	0.000	0.230	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0140	0.00	8.37	
PFTrDA	0.000	0.150	0.00	8.20	
PFDoS	0.000	0.240	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

REPORT OF LABORATORY ANALYSIS

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	ND	1.9	0.42	0.42	1	375-22-4	
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3	
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6	
PFBS	ND	1.7	0.45	0.45	1	375-73-5	
PFHxA	ND	1.9	0.42	0.42	1	307-24-4	
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4	
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4	
PFHpA	ND	1.9	0.52	0.52	1	375-85-9	
DONA	ND	1.8	0.49	0.49	1	919005-14-4	
PFHxS	ND	1.7	0.48	0.48	1	355-46-4	
PFOA	ND	1.9	0.56	0.56	1	335-67-1	
6:2 FTS	ND	1.8	0.61	0.61	1	27619-97-2	
PFHpS	ND	1.8	0.39	0.39	1	375-92-8	
PFNA	ND	1.9	0.71	0.71	1	375-95-1	
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6	
PFOS	1.7 J	1.8	0.52	0.52	1	1763-23-1	
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8	
PFDA	ND	1.9	0.54	0.54	1	335-76-2	
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2	
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4	
9-Cl-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1	
PFNS	ND	1.8	0.43	0.43	1	68259-12-1	
PFUnDA	ND	1.9	0.51	0.51	1	2058-94-8	
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9	
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6	
PFDS	ND	1.8	0.43	0.43	1	335-77-3	
PFDOA	ND	1.9	0.46	0.46	1	307-55-1	
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7	
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2	
11-Cl-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9	
PFTrDA	ND	1.9	0.59	0.59	1	72629-94-8	
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5	
PFTDA	ND	1.9	0.45	0.45	1	376-06-7	

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Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	18	92	50-150	
13C4_PFOA	19	17	88	50-150	
13C2_PFDA	19	20	106	50-150	
13C4_PFOS	18	18	96	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	19	18	96	50-150	
13C5_PFPeA	19	18	96	50-150	
13C3_PFBS	18	17	97	50-150	
13C2_4:2FTS	18	18	101	50-150	
13C5_PFHxA	19	18	94	50-150	
13C4_PFHpA	19	17	88	50-150	
13C3_PFHxS	18	17	92	50-150	
13C2_6:2FTS	18	17	95	50-150	
13C8_PFOA	19	18	97	50-150	
13C9_PFNA	19	19	97	50-150	
13C8_PFOS	18	16	90	50-150	
13C2_8:2FTS	18	16	87	50-150	
13C6_PFDA	19	20	105	50-150	
d3-MeFOSAA	19	15	78	50-150	
13C8_PFOSA	19	16	83	50-150	
d5-EtFOSAA	19	16	83	50-150	
13C7_PFUdA	19	18	94	50-150	
13C2_PFDoA	19	17	90	50-150	
13C2_PFTeDA	19	20	105	50-150	
13C3_HFPO-DA	19	17	91	50-150	
d7-N-MeFOSE	19	14	73	20-150	
d9-N-EtFOSE	19	15	77	20-150	
d3-N-MeFOSA	19	9.4	49	20-150	
d5-N-EtFOSA	19	10.0	52	20-150	

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Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	6.22	6.19	
13C4_PFOA	N/A	N/A	7.56	7.52	
13C2_PFDA	N/A	N/A	8.91	8.87	
13C4_PFOS	N/A	N/A	9.39	9.34	

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Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	4.78	4.77	
13C5_PFPeA	N/A	N/A	5.56	5.53	
13C3_PFBS	N/A	N/A	6.49	6.45	
13C2_4:2FTS	N/A	N/A	5.94	5.91	
13C5_PFHxA	N/A	N/A	6.22	6.19	
13C4_PFHpA	N/A	N/A	6.90	6.85	
13C3_PFHxS	N/A	N/A	7.99	7.94	
13C2_6:2FTS	N/A	N/A	7.21	7.17	
13C8_PFOA	N/A	N/A	7.57	7.52	
13C9_PFNA	N/A	N/A	8.24	8.19	
13C8_PFOS	N/A	N/A	9.39	9.34	
13C2_8:2FTS	N/A	N/A	8.53	8.48	
13C6_PFDA	N/A	N/A	8.92	8.87	
d3-MeFOSAA	N/A	N/A	8.79	8.74	
13C8_PFOSA	N/A	N/A	11.30	11.24	
d5-EtFOSAA	N/A	N/A	9.10	9.05	
13C7_PFUdA	N/A	N/A	9.59	9.55	
13C2_PFDoA	N/A	N/A	10.26	10.22	
13C2_PFTeDA	N/A	N/A	11.55	11.52	
13C3_HFPO-DA	N/A	N/A	6.50	6.46	
d7-N-MeFOSE	N/A	N/A	13.02	12.97	
d9-N-EtFOSE	N/A	N/A	13.51	13.46	
d3-N-MeFOSA	N/A	N/A	13.23	13.18	
d5-N-EtFOSA	N/A	N/A	13.68	13.63	

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Client Sample ID	BLKGY	Extraction Date	10/22/2021 08:58
Lab Sample ID	BLANK-93940	Total Amount Extracted	262mL
Lab File ID	Q211028A_004	Ical ID	211027A01
Matrix	Water	CCal File	Q211028A_002
Collected	10/19/2021 14:13	Ending CCal File	Q211028A_008
Received	10/19/2021 14:13	Blank File	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	0.00	4.77	
PFPeA	N/A	N/A	0.00	5.54	
HFPO-DA	0.000	0.660	0.00	6.48	
PFBS	0.230	0.360	6.50	6.46	
PFHxA	0.000	0.0790	0.00	6.22	
4:2 FTS	0.000	0.950	0.00	5.91	
PFPeS	0.000	0.380	7.25	7.22	
PFHpA	0.000	0.590	0.00	6.85	
DONA	0.000	0.470	0.00	7.10	
PFHxS	0.460	0.290	7.99	7.91	
PFOA	0.000	0.300	0.00	7.53	
6:2 FTS	1.10	1.50	7.21	7.17	
PFHpS	0.000	0.460	0.00	8.66	
PFNA	0.000	0.260	0.00	8.20	
PFOSAm	N/A	N/A	11.30	11.25	
PFOS	0.280	0.220	9.40	9.25	J
MeFOSA	0.000	0.540	0.00	13.20	
PFDA	0.000	0.160	8.92	8.88	
EtFOSAm	0.000	0.480	0.00	13.65	
8:2 FTS	0.000	1.30	0.00	8.49	
9-Cl-PF3ON	0.000	0.0440	0.00	9.84	
PFNS	0.000	0.240	0.00	10.03	
PFUnDA	0.000	0.130	0.00	9.55	
NMeFOSAA	0.000	0.640	0.00	8.76	
NEtFOSAA	0.000	0.540	0.00	9.08	
PFDS	0.000	0.300	0.00	10.69	
PFDOA	0.000	0.170	0.00	10.22	
MeFOSE	N/A	N/A	0.00	13.02	
EtFOSE	0.000	0.000	0.00	13.50	
11-Cl-PF3OUdS	0.000	0.0240	0.00	11.15	
PFTrDA	0.000	0.180	0.00	10.89	
PFDoS	0.000	0.230	0.00	11.91	
PFTDA	0.000	0.140	0.00	11.52	

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	ND	2.0	0.44	0.44	1	375-22-4	
PFPeA	ND	2.0	0.44	0.44	1	2706-90-3	
HFPO-DA	ND	2.0	0.53	0.53	1	13252-13-6	
PFBS	ND	1.8	0.47	0.47	1	375-73-5	
PFHxA	ND	2.0	0.44	0.44	1	307-24-4	
4:2 FTS	ND	1.9	0.56	0.56	1	757124-72-4	
PFPeS	ND	1.9	0.48	0.48	1	2706-91-4	
PFHpA	ND	2.0	0.55	0.55	1	375-85-9	
DONA	ND	1.9	0.51	0.51	1	919005-14-4	
PFHxS	ND	1.8	0.51	0.51	1	355-46-4	
PFOA	ND	2.0	0.59	0.59	1	335-67-1	
6:2 FTS	ND	1.9	0.65	0.65	1	27619-97-2	
PFHpS	ND	1.9	0.41	0.41	1	375-92-8	
PFNA	ND	2.0	0.74	0.74	1	375-95-1	
PFOSAm	ND	2.0	0.82	0.82	1	754-91-6	
PFOS	ND	1.9	0.55	0.55	1	1763-23-1	
MeFOSA	ND	2.0	0.51	0.51	1	31506-32-8	
PFDA	ND	2.0	0.56	0.56	1	335-76-2	
EtFOSAm	ND	2.0	0.61	0.61	1	4151-50-2	
8:2 FTS	ND	1.9	0.65	0.65	1	39108-34-4	
9-Cl-PF3ON	ND	1.9	0.31	0.31	1	756426-58-1	
PFNS	ND	1.9	0.45	0.45	1	68259-12-1	
PFUnDA	ND	2.0	0.54	0.54	1	2058-94-8	
NMeFOSAA	ND	2.0	0.43	0.43	1	2355-31-9	
NEtFOSAA	ND	2.0	0.56	0.56	1	2991-50-6	
PFDS	ND	1.9	0.45	0.45	1	335-77-3	
PFDOA	ND	2.0	0.48	0.48	1	307-55-1	
MeFOSE	ND	2.0	0.33	0.33	1	24448-09-7	
EtFOSE	ND	2.0	0.50	0.50	1	1691-99-2	
11-Cl-PF3OUdS	ND	1.9	0.44	0.44	1	763051-92-9	
PFTrDA	ND	2.0	0.62	0.62	1	72629-94-8	
PFDoS	ND	1.9	0.46	0.46	1	79780-39-5	
PFTDA	ND	2.0	0.48	0.48	1	376-06-7	

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKK	Extraction Date	10/29/2021 10:08
Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	19	95	50-150	
13C4_PFOA	20	18	92	50-150	
13C2_PFDA	20	19	96	50-150	
13C4_PFOS	19	17	91	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	20	19	96	50-150	
13C5_PFPeA	20	20	100	50-150	
13C3_PFBS	19	18	97	50-150	
13C2_4:2FTS	19	17	93	50-150	
13C5_PFHxA	20	20	99	50-150	
13C4_PFHpA	20	19	96	50-150	
13C3_PFHxS	19	19	100	50-150	
13C2_6:2FTS	19	21	111	50-150	
13C8_PFOA	20	20	102	50-150	
13C9_PFNA	20	21	106	50-150	
13C8_PFOS	19	18	96	50-150	
13C2_8:2FTS	19	18	92	50-150	
13C6_PFDA	20	19	93	50-150	
d3-MeFOSAA	20	18	90	50-150	
13C8_PFOSA	20	15	76	50-150	
d5-EtFOSAA	20	15	75	50-150	
13C7_PFUdA	20	19	93	50-150	
13C2_PFDoA	20	16	78	50-150	
13C2_PFTeDA	20	16	82	50-150	
13C3_HFPO-DA	20	19	95	50-150	
d7-N-MeFOSE	20	13	64	10-150	
d9-N-EtFOSE	20	13	63	10-150	
d3-N-MeFOSA	20	9.7	48	10-150	
d5-N-EtFOSA	20	9.2	46	10-150	

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Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.91	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

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Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.32	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.21	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.60	8.61	
13C3_HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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Lab Sample ID	BLANK-94161	Total Amount Extracted	250mL
Lab File ID	A211101C_008	Ical ID	211026A03
Matrix	Water	CCal File	A211101C_006
Collected	10/28/2021 12:07	Ending CCal File	A211101C_022
Received	10/28/2021 12:07	Blank File	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	0.00	4.54	
HFPO-DA	0.000	0.460	0.00	5.33	
PFBS	0.780	0.290	5.30	5.29	
PFHxA	0.000	0.0760	5.12	5.12	
4:2 FTS	0.000	0.660	0.00	4.90	
PFPeS	0.000	0.330	0.00	5.84	
PFHpA	0.000	0.300	0.00	5.61	
DONA	0.000	0.540	0.00	5.78	
PFHxS	0.000	0.250	6.32	6.32	
PFOA	0.000	0.370	0.00	6.06	
6:2 FTS	0.000	0.600	0.00	5.83	
PFHpS	0.000	0.230	0.00	6.78	
PFNA	0.000	0.170	0.00	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.340	0.240	7.22	7.17	
MeFOSA	0.000	0.860	0.00	10.34	
PFDA	0.000	0.0940	0.00	6.92	
EtFOSAm	0.000	0.680	0.00	11.03	
8:2 FTS	0.000	0.630	0.00	6.68	
9-Cl-PF3ON	0.000	0.0220	0.00	7.53	
PFNS	0.000	0.240	0.00	7.65	
PFUnDA	0.000	0.0800	0.00	7.35	
NMeFOSAA	0.000	0.450	0.00	6.86	
NEtFOSAA	0.000	0.630	7.14	7.10	
PFDS	0.000	0.250	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0100	0.00	8.37	
PFTrDA	0.000	0.140	0.00	8.20	
PFDoS	0.000	0.220	0.00	8.87	
PFTDA	0.000	0.170	0.00	8.61	

REPORT OF LABORATORY ANALYSIS

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

Compound	Concentration (ng/L)	QL (ng/L)	RL (ng/L)	DL (ng/L)	Dil.	CAS No.	Qual.
PFBA	ND	1.9	0.42	0.42	1	375-22-4	
PFPeA	ND	1.9	0.42	0.42	1	2706-90-3	
HFPO-DA	ND	1.9	0.50	0.50	1	13252-13-6	
PFBS	ND	1.7	0.45	0.45	1	375-73-5	
PFHxA	ND	1.9	0.42	0.42	1	307-24-4	
4:2 FTS	ND	1.8	0.53	0.53	1	757124-72-4	
PFPeS	ND	1.8	0.45	0.45	1	2706-91-4	
PFHpA	ND	1.9	0.52	0.52	1	375-85-9	
DONA	ND	1.8	0.49	0.49	1	919005-14-4	
PFHxS	ND	1.7	0.48	0.48	1	355-46-4	
PFOA	ND	1.9	0.56	0.56	1	335-67-1	
6:2 FTS	ND	1.8	0.62	0.62	1	27619-97-2	
PFHpS	ND	1.8	0.39	0.39	1	375-92-8	
PFNA	ND	1.9	0.71	0.71	1	375-95-1	
PFOSAm	ND	1.9	0.78	0.78	1	754-91-6	
PFOS	ND	1.8	0.52	0.52	1	1763-23-1	
MeFOSA	ND	1.9	0.49	0.49	1	31506-32-8	
PFDA	ND	1.9	0.54	0.54	1	335-76-2	
EtFOSAm	ND	1.9	0.58	0.58	1	4151-50-2	
8:2 FTS	ND	1.8	0.62	0.62	1	39108-34-4	
9-Cl-PF3ON	ND	1.8	0.29	0.29	1	756426-58-1	
PFNS	ND	1.8	0.43	0.43	1	68259-12-1	
PFUnDA	ND	1.9	0.52	0.52	1	2058-94-8	
NMeFOSAA	ND	1.9	0.41	0.41	1	2355-31-9	
NEtFOSAA	ND	1.9	0.53	0.53	1	2991-50-6	
PFDS	ND	1.8	0.43	0.43	1	335-77-3	
PFDOA	ND	1.9	0.46	0.46	1	307-55-1	
MeFOSE	ND	1.9	0.31	0.31	1	24448-09-7	
EtFOSE	ND	1.9	0.47	0.47	1	1691-99-2	
11-Cl-PF3OUdS	ND	1.8	0.42	0.42	1	763051-92-9	
PFTrDA	ND	1.9	0.59	0.59	1	72629-94-8	
PFDoS	ND	1.8	0.44	0.44	1	79780-39-5	
PFTDA	ND	1.9	0.45	0.45	1	376-06-7	

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Method Blank Analysis Summary

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Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	20	106	50-150	
13C4_PFOA	19	26	134	50-150	
13C2_PFDA	19	26	135	50-150	
13C4_PFOS	18	14	74	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	19	19	97	50-150	
13C5_PFPeA	19	20	104	50-150	
13C3_PFBS	18	20	114	50-150	
13C2_4:2FTS	18	23	127	50-150	
13C5_PFHxA	19	20	107	50-150	
13C4_PFHpA	19	22	113	50-150	
13C3_PFHxS	18	17	95	50-150	
13C2_6:2FTS	18	28	**154**	50-150	R
13C8_PFOA	19	24	124	50-150	
13C9_PFNA	19	24	127	50-150	
13C8_PFOS	18	11	62	50-150	
13C2_8:2FTS	18	31	**170**	50-150	R
13C6_PFDA	19	23	122	50-150	
d3-MeFOSAA	19	27	142	50-150	
13C8_PFOSA	19	17	91	50-150	
d5-EtFOSAA	19	26	136	50-150	
13C7_PFUdA	19	22	113	50-150	
13C2_PFDoA	19	24	125	50-150	
13C2_PFTeDA	19	26	137	50-150	
13C3_HFPO-DA	19	20	105	50-150	
d7-N-MeFOSE	19	16	85	20-150	
d9-N-EtFOSE	19	16	85	20-150	
d3-N-MeFOSA	19	11	56	20-150	
d5-N-EtFOSA	19	11	56	20-150	

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Client Sample ID	BLKLA	Extraction Date	11/02/2021 11:46
Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
Lab File ID	A211104A_019	Ical ID	211103A03
Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

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Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
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Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.55	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.61	5.61	
13C3_PFHxS	N/A	N/A	6.32	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	R
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	R
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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Lab Sample ID	BLANK-94205	Total Amount Extracted	262mL
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Matrix	Water	CCal File	A211104A_017
Collected	11/01/2021 20:58	Ending CCal File	A211104A_028
Received	11/01/2021 20:58	Blank File	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.430	0.00	5.33	
PFBS	0.420	0.340	5.30	5.29	
PFHxA	0.000	0.0670	5.13	5.12	
4:2 FTS	0.000	0.580	5.10	4.90	
PFPeS	0.000	0.310	5.84	5.84	
PFHpA	0.000	0.290	5.62	5.61	
DONA	0.000	0.490	0.00	5.78	
PFHxS	0.370	0.240	6.32	6.32	
PFOA	0.150	0.370	6.05	6.06	
6:2 FTS	0.000	0.450	5.83	5.83	
PFHpS	0.000	0.210	0.00	6.78	
PFNA	0.000	0.200	6.48	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.360	0.230	7.21	7.17	
MeFOSA	0.000	0.910	0.00	10.34	
PFDA	0.000	0.0910	0.00	6.92	
EtFOSAm	0.000	0.680	0.00	11.03	
8:2 FTS	0.000	0.510	0.00	6.68	
9-Cl-PF3ON	0.000	0.0240	0.00	7.53	
PFNS	0.000	0.230	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.560	0.00	6.86	
NEtFOSAA	0.000	0.680	0.00	7.10	
PFDS	0.000	0.260	0.00	8.07	
PFDOA	0.000	0.140	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0130	0.00	8.37	
PFTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.210	0.00	8.87	
PFTDA	0.000	0.130	0.00	8.61	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-93941	Instrument ID	10LCMS01
Run File Name	Q211027B_006	Column ID	118AB10133
Analyzed	10/27/2021 14:16	Ical ID	211027A01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	16	83	50-150	
13C4_PFOA	19	15	81	50-150	
13C2_PFDA	19	16	83	50-150	
13C4_PFOS	18	15	80	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	19	16	82	50-150	
13C5_PFPeA	19	15	82	50-150	
13C3_PFBS	18	15	86	50-150	
13C2_4:2FTS	18	14	81	50-150	
13C5_PFHxA	19	15	80	50-150	
13C4_PFHpA	19	15	77	50-150	
13C3_PFHxS	18	15	85	50-150	
13C2_6:2FTS	18	16	87	50-150	
13C8_PFOA	19	15	77	50-150	
13C9_PFNA	19	15	80	50-150	
13C8_PFOS	18	14	78	50-150	
13C2_8:2FTS	18	14	76	50-150	
13C6_PFDA	19	15	82	50-150	
d3-MeFOSAA	19	13	71	50-150	
13C8_PFOSA	19	13	67	50-150	
d5-EtFOSAA	19	15	78	50-150	
13C7_PFUdA	19	14	72	50-150	
13C2_PFDoA	19	14	73	50-150	
13C2_PFTeDA	19	15	79	50-150	
13C3_HFPO-DA	19	15	81	50-150	
d7-N-MeFOSE	19	12	64	20-150	
d9-N-EtFOSE	19	12	64	20-150	
d3-N-MeFOSA	19	9.4	50	20-150	
d5-N-EtFOSA	19	9.9	52	20-150	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-93941	Instrument ID	10LCMS01
Run File Name	Q211027B_006	Column ID	118AB10133
Analyzed	10/27/2021 14:16	Ical ID	211027A01
Injected By	NH	Level	L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.8	3.8	101	50-150		375-22-4
PFPeA	3.8	4.0	106	50-150		2706-90-3
HFPO-DA	3.8	3.3	87	50-150		13252-13-6
PFBS	3.3	3.3	98	50-150		375-73-5
PFHxA	3.8	4.2	110	50-150		307-24-4
4:2 FTS	3.5	3.0	86	50-150		757124-72-4
PFPeS	3.5	3.5	100	50-150		2706-91-4
PFHpA	3.8	4.0	107	50-150		375-85-9
DONA	3.6	3.4	97	50-150		919005-14-4
PFHxS	3.4	3.7	107	50-150		355-46-4
PFOA	3.8	4.2	112	50-150		335-67-1
6:2 FTS	3.6	3.2	88	50-150		27619-97-2
PFHpS	3.6	3.7	102	50-150		375-92-8
PFNA	3.8	3.5	93	50-150		375-95-1
PFOSAm	3.8	4.2	112	50-150		754-91-6
PFOS	3.5	4.3	124	50-150	B	1763-23-1
MeFOSA	3.8	3.5	93	50-150		31506-32-8
PFDA	3.8	3.6	96	50-150		335-76-2
EtFOSAm	3.8	3.5	93	50-150		4151-50-2
8:2 FTS	3.6	3.1	85	50-150		39108-34-4
9-Cl-PF3ON	3.5	3.5	99	50-150		756426-58-1
PFNS	3.6	3.5	96	50-150		68259-12-1
PFUnDA	3.8	3.8	101	50-150		2058-94-8
NMeFOSAA	3.8	3.4	90	50-150		2355-31-9
NEtFOSAA	3.8	3.0	78	50-150		2991-50-6
PFDS	3.6	3.3	91	50-150		335-77-3
PFDOA	3.8	3.9	103	50-150		307-55-1
MeFOSE	3.8	3.9	103	50-150		24448-09-7
EtFOSE	3.8	3.5	93	50-150		1691-99-2
11-Cl-PF3OUdS	3.6	3.1	88	50-150		763051-92-9
PFTrDA	3.8	3.5	92	50-150		72629-94-8
PFDoS	3.7	3.7	102	50-150		79780-39-5
PFTDA	3.8	3.0	79	50-150		376-06-7

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-93941	Instrument ID	10LCMS01
Run File Name	Q211027B_006	Column ID	118AB10133
Analyzed	10/27/2021 14:16	Ical ID	211027A01
Injected By	NH	Level	L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	6.19	6.18	
13C4_PFOA	N/A	N/A	7.52	7.51	
13C2_PFDA	N/A	N/A	8.88	8.89	
13C4_PFOS	N/A	N/A	9.35	9.34	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	4.78	4.77	
13C5_PFPeA	N/A	N/A	5.54	5.53	
13C3_PFBS	N/A	N/A	6.46	6.46	
13C2_4:2FTS	N/A	N/A	5.91	5.92	
13C5_PFHxA	N/A	N/A	6.20	6.20	
13C4_PFHpA	N/A	N/A	6.86	6.86	
13C3_PFHxS	N/A	N/A	7.95	7.95	
13C2_6:2FTS	N/A	N/A	7.17	7.18	
13C8_PFOA	N/A	N/A	7.52	7.53	
13C9_PFNA	N/A	N/A	8.20	8.20	
13C8_PFOS	N/A	N/A	9.35	9.36	
13C2_8:2FTS	N/A	N/A	8.49	8.50	
13C6_PFDA	N/A	N/A	8.88	8.86	
d3-MeFOSAA	N/A	N/A	8.75	8.73	
13C8_PFOSA	N/A	N/A	11.26	11.26	
d5-EtFOSAA	N/A	N/A	9.06	9.06	
13C7_PFUdA	N/A	N/A	9.55	9.54	
13C2_PFDoA	N/A	N/A	10.23	10.23	
13C2_PFTeDA	N/A	N/A	11.53	11.53	
13C3_HFPO-DA	N/A	N/A	6.47	6.47	
d7-N-MeFOSE	N/A	N/A	12.99	12.99	
d9-N-EtFOSE	N/A	N/A	13.47	13.47	
d3-N-MeFOSA	N/A	N/A	13.19	13.20	
d5-N-EtFOSA	N/A	N/A	13.64	13.65	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-93941	Instrument ID	10LCMS01
Run File Name	Q211027B_006	Column ID	118AB10133
Analyzed	10/27/2021 14:16	Ical ID	211027A01
Injected By	NH	Level	L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	4.78	4.80	
PFPeA	N/A	N/A	5.54	5.57	
HFPO-DA	0.74	0.62	6.48	6.44	
PFBS	0.35	0.34	6.46	6.52	
PFHxA	0.06	0.09	6.20	6.22	
4:2 FTS	1.00	0.90	5.92	5.94	
PFPeS	0.43	0.45	7.23	7.23	
PFHpA	0.52	0.56	6.87	6.85	
DONA	0.52	0.49	7.11	7.04	
PFHxS	0.25	0.31	7.96	7.91	
PFOA	0.28	0.27	7.53	7.47	
6:2 FTS	1.30	1.10	7.18	7.18	
PFHpS	0.37	0.49	8.67	8.66	
PFNA	0.27	0.23	8.21	8.19	
PFOSAm	N/A	N/A	11.27	11.26	
PFOS	0.26	0.25	9.37	9.25	B
MeFOSA	0.48	0.46	13.22	13.20	
PFDA	0.16	0.16	8.89	8.88	
EtFOSAm	0.48	0.45	13.66	13.65	
8:2 FTS	1.60	1.50	8.50	8.49	
9-Cl-PF3ON	0.03	0.03	9.85	9.77	
PFNS	0.24	0.24	10.04	10.03	
PFUnDA	0.15	0.15	9.56	9.58	
NMeFOSAA	0.55	0.86	8.77	8.76	
NEtFOSAA	0.52	0.59	9.08	9.08	
PFDS	0.29	0.29	10.70	10.69	
PFDOA	0.20	0.17	10.23	10.17	
MeFOSE	N/A	N/A	13.03	13.03	
EtFOSE	0.00	0.00	13.52	13.51	
11-Cl-PF3OUdS	0.02	0.02	11.17	11.15	
PFTrDA	0.18	0.20	10.90	10.89	
PFDoS	0.24	0.23	11.92	11.91	
PFTDA	0.16	0.15	11.54	11.47	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94162	Instrument ID	10LCMS03
Run File Name	A211101C_009	Column ID	118AB10133
Analyzed	11/01/2021 19:50	Ical ID	211026A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	19	19	97	50-150	
13C4_PFOA	19	19	96	50-150	
13C2_PFDA	19	18	94	50-150	
13C4_PFOS	18	17	94	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	19	18	95	50-150	
13C5_PFPeA	19	18	96	50-150	
13C3_PFBS	18	17	97	50-150	
13C2_4:2FTS	18	16	92	50-150	
13C5_PFHxA	19	18	94	50-150	
13C4_PFHpA	19	18	92	50-150	
13C3_PFHxS	18	18	97	50-150	
13C2_6:2FTS	18	18	97	50-150	
13C8_PFOA	19	18	95	50-150	
13C9_PFNA	19	19	96	50-150	
13C8_PFOS	18	17	92	50-150	
13C2_8:2FTS	18	19	101	50-150	
13C6_PFDA	19	17	89	50-150	
d3-MeFOSAA	19	15	80	50-150	
13C8_PFOSA	19	15	76	50-150	
d5-EtFOSAA	19	14	74	50-150	
13C7_PFUdA	19	17	88	50-150	
13C2_PFDoA	19	16	85	50-150	
13C2_PFTeDA	19	15	79	50-150	
13C3_HFPO-DA	19	18	94	50-150	
d7-N-MeFOSE	19	14	74	20-150	
d9-N-EtFOSE	19	17	90	20-150	
d3-N-MeFOSA	19	10	53	20-150	
d5-N-EtFOSA	19	10	54	20-150	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94162	Instrument ID	10LCMS03
Run File Name	A211101C_009	Column ID	118AB10133
Analyzed	11/01/2021 19:50	Ical ID	211026A03
Injected By	NH	Level	L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.9	4.0	103	50-150		375-22-4
PFPeA	3.9	3.9	101	50-150		2706-90-3
HFPO-DA	3.9	3.9	100	50-150		13252-13-6
PFBS	3.4	3.7	108	50-150		375-73-5
PFHxA	3.9	4.3	112	50-150		307-24-4
4:2 FTS	3.6	3.9	109	50-150		757124-72-4
PFPeS	3.6	3.8	105	50-150		2706-91-4
PFHpA	3.9	4.3	110	50-150		375-85-9
DONA	3.6	3.9	107	50-150		919005-14-4
PFHxS	3.5	3.7	105	50-150		355-46-4
PFOA	3.9	3.9	102	50-150		335-67-1
6:2 FTS	3.7	4.3	117	50-150		27619-97-2
PFHpS	3.7	3.3	91	50-150		375-92-8
PFNA	3.9	3.8	99	50-150		375-95-1
PFOSAm	3.9	3.8	100	50-150		754-91-6
PFOS	3.6	3.4	94	50-150		1763-23-1
MeFOSA	3.9	3.8	98	50-150		31506-32-8
PFDA	3.9	3.6	93	50-150		335-76-2
EtFOSAm	3.9	3.8	98	50-150		4151-50-2
8:2 FTS	3.7	4.1	110	50-150		39108-34-4
9-Cl-PF3ON	3.6	3.5	98	50-150		756426-58-1
PFNS	3.7	3.6	98	50-150		68259-12-1
PFUnDA	3.9	4.2	109	50-150		2058-94-8
NMeFOSAA	3.9	3.7	96	50-150		2355-31-9
NEtFOSAA	3.9	4.5	117	50-150		2991-50-6
PFDS	3.7	3.5	95	50-150		335-77-3
PFDOA	3.9	4.0	105	50-150		307-55-1
MeFOSE	3.9	4.0	104	50-150		24448-09-7
EtFOSE	3.9	3.0	79	50-150		1691-99-2
11-Cl-PF3OUdS	3.6	3.3	90	50-150	I	763051-92-9
PFTrDA	3.9	4.1	107	50-150		72629-94-8
PFDoS	3.7	3.1	83	50-150		79780-39-5
PFTDA	3.9	3.9	100	50-150		376-06-7

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94162	Instrument ID	10LCMS03
Run File Name	A211101C_009	Column ID	118AB10133
Analyzed	11/01/2021 19:50	Ical ID	211026A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.06	6.05	
13C2_PFDA	N/A	N/A	6.91	6.91	
13C4_PFOS	N/A	N/A	7.21	7.21	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.55	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.61	5.61	
13C3_PFHxS	N/A	N/A	6.32	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.06	6.05	
13C9_PFNA	N/A	N/A	6.49	6.48	
13C8_PFOS	N/A	N/A	7.21	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.86	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.34	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.60	8.61	
13C3_HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94162	Instrument ID	10LCMS03
Run File Name	A211101C_009	Column ID	118AB10133
Analyzed	11/01/2021 19:50	Ical ID	211026A03
Injected By	NH	Level	L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.70	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.46	0.46	5.33	5.33	
PFBS	0.32	0.29	5.30	5.29	
PFHxA	0.07	0.07	5.13	5.12	
4:2 FTS	0.53	0.66	4.92	4.90	
PFPeS	0.30	0.33	5.85	5.84	
PFHpA	0.26	0.30	5.62	5.61	
DONA	0.49	0.54	5.78	5.78	
PFHxS	0.26	0.25	6.33	6.32	
PFOA	0.44	0.37	6.06	6.06	
6:2 FTS	0.43	0.60	5.84	5.83	
PFHpS	0.23	0.23	6.78	6.78	
PFNA	0.20	0.17	6.49	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.24	0.24	7.22	7.17	
MeFOSA	0.92	0.86	10.35	10.34	
PFDA	0.09	0.09	6.92	6.92	
EtFOSAm	0.68	0.68	11.04	11.03	
8:2 FTS	0.59	0.63	6.68	6.68	
9-Cl-PF3ON	0.01	0.02	7.53	7.53	
PFNS	0.24	0.24	7.65	7.65	
PFUnDA	0.12	0.08	7.34	7.35	
NMeFOSAA	0.61	0.45	6.86	6.86	
NEtFOSAA	0.61	0.63	7.06	7.10	
PFDS	0.25	0.25	8.06	8.07	
PFDOA	0.11	0.13	7.77	7.77	
MeFOSE	N/A	N/A	10.13	10.12	
EtFOSE	0.00	0.00	10.77	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.37	8.37	I
PFTrDA	0.13	0.14	8.19	8.20	
PFDoS	0.24	0.22	8.86	8.87	
PFTDA	0.15	0.17	8.61	8.61	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94206	Instrument ID	10LCMS03
Run File Name	A211104A_020	Column ID	118AB10133
Analyzed	11/04/2021 14:12	Ical ID	211103A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	20	23	115	50-150	
13C4_PFOA	20	25	125	50-150	
13C2_PFDA	20	30	150	50-150	
13C4_PFOS	19	20	106	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	20	18	93	50-150	
13C5_PFPeA	20	19	99	50-150	
13C3_PFBS	18	20	110	50-150	
13C2_4:2FTS	18	21	113	50-150	
13C5_PFHxA	20	20	103	50-150	
13C4_PFHpA	20	21	108	50-150	
13C3_PFHxS	19	20	106	50-150	
13C2_6:2FTS	19	23	125	50-150	
13C8_PFOA	20	22	113	50-150	
13C9_PFNA	20	23	118	50-150	
13C8_PFOS	19	17	92	50-150	
13C2_8:2FTS	19	30	**159**	50-150	R
13C6_PFDA	20	24	122	50-150	
d3-MeFOSAA	20	22	110	50-150	
13C8_PFOSA	20	14	74	50-150	
d5-EtFOSAA	20	21	107	50-150	
13C7_PFUdA	20	23	116	50-150	
13C2_PFDoA	20	20	100	50-150	
13C2_PFTeDA	20	19	97	50-150	
13C3_HFPO-DA	20	19	99	50-150	
d7-N-MeFOSE	20	15	77	20-150	
d9-N-EtFOSE	20	15	75	20-150	
d3-N-MeFOSA	20	8.4	43	20-150	
d5-N-EtFOSA	20	8.1	41	20-150	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94206	Instrument ID	10LCMS03
Run File Name	A211104A_020	Column ID	118AB10133
Analyzed	11/04/2021 14:12	Ical ID	211103A03
Injected By	NH	Level	L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	3.9	4.7	119	50-150		375-22-4
PFPeA	3.9	4.6	117	50-150		2706-90-3
HFPO-DA	3.9	4.2	108	50-150		13252-13-6
PFBS	3.5	4.2	120	50-150		375-73-5
PFHxA	3.9	4.6	116	50-150		307-24-4
4:2 FTS	3.7	4.3	118	50-150		757124-72-4
PFPeS	3.7	3.8	103	50-150		2706-91-4
PFHpA	3.9	4.6	117	50-150		375-85-9
DONA	3.7	4.0	107	50-150		919005-14-4
PFHxS	3.6	4.3	120	50-150		355-46-4
PFOA	3.9	4.6	116	50-150		335-67-1
6:2 FTS	3.7	4.5	120	50-150		27619-97-2
PFHpS	3.7	4.9	130	50-150		375-92-8
PFNA	3.9	4.5	115	50-150		375-95-1
PFOSAm	3.9	4.4	112	50-150		754-91-6
PFOS	3.6	4.2	114	50-150		1763-23-1
MeFOSA	3.9	4.6	116	50-150		31506-32-8
PFDA	3.9	4.3	108	50-150		335-76-2
EtFOSAm	3.9	4.2	106	50-150		4151-50-2
8:2 FTS	3.8	4.2	111	50-150		39108-34-4
9-Cl-PF3ON	3.7	3.9	105	50-150		756426-58-1
PFNS	3.8	3.1	83	50-150		68259-12-1
PFUnDA	3.9	4.2	107	50-150		2058-94-8
NMeFOSAA	3.9	4.3	109	50-150		2355-31-9
NEtFOSAA	3.9	3.6	90	50-150		2991-50-6
PFDS	3.8	2.2	59	50-150		335-77-3
PFDOA	3.9	4.3	109	50-150		307-55-1
MeFOSE	3.9	3.8	97	50-150		24448-09-7
EtFOSE	3.9	3.9	100	50-150		1691-99-2
11-Cl-PF3OUdS	3.7	2.7	74	50-150		763051-92-9
PFTrDA	3.9	4.1	103	50-150		72629-94-8
PFDoS	3.8	2.6	67	50-150		79780-39-5
PFTDA	3.9	4.5	115	50-150		376-06-7

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94206	Instrument ID	10LCMS03
Run File Name	A211104A_020	Column ID	118AB10133
Analyzed	11/04/2021 14:12	Ical ID	211103A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.19	7.21	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.47	6.48	
13C8_PFOS	N/A	N/A	7.19	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	R
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.32	7.34	
13C2_PFDoA	N/A	N/A	7.75	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94206	Instrument ID	10LCMS03
Run File Name	A211104A_020	Column ID	118AB10133
Analyzed	11/04/2021 14:12	Ical ID	211103A03
Injected By	NH	Level	L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.46	0.43	5.32	5.33	
PFBS	0.32	0.34	5.30	5.29	
PFHxA	0.06	0.06	5.12	5.12	
4:2 FTS	0.54	0.58	4.91	4.90	
PFPeS	0.33	0.31	5.84	5.84	
PFHpA	0.28	0.29	5.61	5.61	
DONA	0.50	0.49	5.77	5.78	
PFHxS	0.24	0.24	6.32	6.32	
PFOA	0.34	0.37	6.05	6.06	
6:2 FTS	0.59	0.45	5.83	5.83	
PFHpS	0.22	0.21	6.77	6.78	
PFNA	0.19	0.20	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.20	0.23	7.20	7.17	
MeFOSA	0.82	0.91	10.34	10.34	
PFDA	0.08	0.09	6.90	6.92	
EtFOSAm	0.74	0.68	11.03	11.03	
8:2 FTS	0.60	0.51	6.66	6.68	
9-Cl-PF3ON	0.02	0.02	7.51	7.53	
PFNS	0.23	0.23	7.63	7.65	
PFUnDA	0.09	0.10	7.33	7.35	
NMeFOSAA	0.49	0.56	6.85	6.86	
NEtFOSAA	0.78	0.68	7.05	7.10	
PFDS	0.23	0.26	8.05	8.07	
PFDOA	0.13	0.14	7.75	7.77	
MeFOSE	N/A	N/A	10.13	10.12	
EtFOSE	0.00	0.00	10.76	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.35	8.37	
PFTrDA	0.15	0.16	8.17	8.20	
PFDoS	0.21	0.21	8.85	8.87	
PFTDA	0.13	0.13	8.59	8.61	

REPORT OF LABORATORY ANALYSIS

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

November 18, 2021

Bill Honea
AYRES & ASSOCIATES, INC.
3376 Packerland Avenue
De Pere, WI 54115

RE: Project: LUDINGTON
Pace Project No.: 40235057

Dear Bill Honea:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@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: LUDINGTON
Pace Project No.: 40235057

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: LUDINGTON
Pace Project No.: 40235057

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40235057001	**GP-1 (2-4)**	Solid	10/13/21 09:35	10/13/21 16:40
40235057002	**GP-1 (9-11)**	Solid	10/13/21 09:45	10/13/21 16:40
40235057003	**GP-2 (2-4)**	Solid	10/13/21 10:15	10/13/21 16:40
40235057004	**GP-2 (9-11)**	Solid	10/13/21 10:20	10/13/21 16:40
40235057005	**GP-3 (1.5-2.5)**	Solid	10/13/21 10:45	10/13/21 16:40
40235057006	**GP-3 (8-10)**	Solid	10/13/21 10:50	10/13/21 16:40
40235057007	**GP-5 (1.5-2.5)**	Solid	10/13/21 12:00	10/13/21 16:40
40235057008	**GP-6 (2-4)**	Solid	10/13/21 12:20	10/13/21 16:40
40235057009	**GP-7 (2-4)**	Solid	10/13/21 12:35	10/13/21 16:40
40235057010	**GP-8 (2-4)**	Solid	10/13/21 13:05	10/13/21 16:40
40235057011	**GP-8 (7-8)**	Solid	10/13/21 13:10	10/13/21 16:40
40235057012	**GP-9 (1.5-3.5)**	Solid	10/13/21 14:05	10/13/21 16:40
40235057013	**GP-9 (5.5-7.5)**	Solid	10/13/21 14:10	10/13/21 16:40
40235057014	**GP-10 (2-4)**	Solid	10/13/21 14:40	10/13/21 16:40
40235057015	**GP-10 (6.5-8)**	Solid	10/13/21 14:45	10/13/21 16:40
40235057016	**GP-4 (1.5-2.5)**	Solid	10/13/21 11:15	10/13/21 16:40
40235057017	**GP-4 (8-10)**	Solid	10/13/21 11:20	10/13/21 16:40

Pace Analytical Services, LLC
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Green Bay, WI 54302
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SAMPLE ANALYTE COUNT

Project: LUDINGTON
Pace Project No.: 40235057

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40235057001	**GP-1 (2-4)**	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057002	**GP-1 (9-11)**	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057003	**GP-2 (2-4)**	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057004	**GP-2 (9-11)**	EPA 6010D	TXW	2	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057005	**GP-3 (1.5-2.5)**	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057006	**GP-3 (8-10)**	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057007	**GP-5 (1.5-2.5)**	EPA 8082	BLM	10	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
		EPA 9012B	DAW	1	PASI-G
40235057008	**GP-6 (2-4)**	EPA 8082	BLM	10	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
		EPA 9012B	DAW	1	PASI-G
40235057009	**GP-7 (2-4)**	EPA 8082	BLM	10	PASI-G
		EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
		EPA 9012B	DAW	1	PASI-G
40235057010	**GP-8 (2-4)**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: LUDINGTON
Pace Project No.: 40235057

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	K1S	1	PASI-G
40235057011	**GP-8 (7-8)**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057012	**GP-9 (1.5-3.5)**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057013	**GP-9 (5.5-7.5)**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	K1S	1	PASI-G
40235057014	**GP-10 (2-4)**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40235057015	**GP-10 (6.5-8)**	EPA 6010D	TXW	2	PASI-G
		EPA 8270E by SIM	RJN	20	PASI-G
		EPA 8260	ALD	64	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40235057016	**GP-4 (1.5-2.5)**	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	SKW	1	PASI-G
40235057017	**GP-4 (8-10)**	EPA 6010D	TXW	2	PASI-G
		ASTM D2974-87	SKW	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-1 (2-4) **Lab ID: 40235057001** Collected: 10/13/21 09:35 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**2.4J**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:24	7440-38-2	
Lead	**1.0J**	mg/kg	2.1	0.61	1	10/19/21 06:21	10/19/21 21:24	7439-92-1	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<12.6**	ug/kg	21.2	12.6	1	10/21/21 08:15	10/22/21 12:50	71-43-2	
Bromobenzene	**<20.6**	ug/kg	52.9	20.6	1	10/21/21 08:15	10/22/21 12:50	108-86-1	
Bromochloromethane	**<14.5**	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	74-97-5	
Bromodichloromethane	**<12.6**	ug/kg	52.9	12.6	1	10/21/21 08:15	10/22/21 12:50	75-27-4	
Bromoform	**<233**	ug/kg	265	233	1	10/21/21 08:15	10/22/21 12:50	75-25-2	
Bromomethane	**<74.2**	ug/kg	265	74.2	1	10/21/21 08:15	10/22/21 12:50	74-83-9	
n-Butylbenzene	**<24.2**	ug/kg	52.9	24.2	1	10/21/21 08:15	10/22/21 12:50	104-51-8	
sec-Butylbenzene	**<12.9**	ug/kg	52.9	12.9	1	10/21/21 08:15	10/22/21 12:50	135-98-8	
tert-Butylbenzene	**<16.6**	ug/kg	52.9	16.6	1	10/21/21 08:15	10/22/21 12:50	98-06-6	
Carbon tetrachloride	**<11.6**	ug/kg	52.9	11.6	1	10/21/21 08:15	10/22/21 12:50	56-23-5	
Chlorobenzene	**<6.3**	ug/kg	52.9	6.3	1	10/21/21 08:15	10/22/21 12:50	108-90-7	
Chloroethane	**<22.3**	ug/kg	265	22.3	1	10/21/21 08:15	10/22/21 12:50	75-00-3	
Chloroform	**<37.9**	ug/kg	265	37.9	1	10/21/21 08:15	10/22/21 12:50	67-66-3	
Chloromethane	**<20.1**	ug/kg	52.9	20.1	1	10/21/21 08:15	10/22/21 12:50	74-87-3	
2-Chlorotoluene	**<17.2**	ug/kg	52.9	17.2	1	10/21/21 08:15	10/22/21 12:50	95-49-8	
4-Chlorotoluene	**<20.1**	ug/kg	52.9	20.1	1	10/21/21 08:15	10/22/21 12:50	106-43-4	
1,2-Dibromo-3-chloropropane	**<41.1**	ug/kg	265	41.1	1	10/21/21 08:15	10/22/21 12:50	96-12-8	
Dibromochloromethane	**<181**	ug/kg	265	181	1	10/21/21 08:15	10/22/21 12:50	124-48-1	
1,2-Dibromoethane (EDB)	**<14.5**	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	106-93-4	
Dibromomethane	**<15.7**	ug/kg	52.9	15.7	1	10/21/21 08:15	10/22/21 12:50	74-95-3	
1,2-Dichlorobenzene	**<16.4**	ug/kg	52.9	16.4	1	10/21/21 08:15	10/22/21 12:50	95-50-1	
1,3-Dichlorobenzene	**<14.5**	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	541-73-1	
1,4-Dichlorobenzene	**<14.5**	ug/kg	52.9	14.5	1	10/21/21 08:15	10/22/21 12:50	106-46-7	
Dichlorodifluoromethane	**<22.8**	ug/kg	52.9	22.8	1	10/21/21 08:15	10/22/21 12:50	75-71-8	
1,1-Dichloroethane	**<13.6**	ug/kg	52.9	13.6	1	10/21/21 08:15	10/22/21 12:50	75-34-3	
1,2-Dichloroethane	**<12.2**	ug/kg	52.9	12.2	1	10/21/21 08:15	10/22/21 12:50	107-06-2	
1,1-Dichloroethene	**<17.6**	ug/kg	52.9	17.6	1	10/21/21 08:15	10/22/21 12:50	75-35-4	
cis-1,2-Dichloroethene	**<11.3**	ug/kg	52.9	11.3	1	10/21/21 08:15	10/22/21 12:50	156-59-2	
trans-1,2-Dichloroethene	**<11.4**	ug/kg	52.9	11.4	1	10/21/21 08:15	10/22/21 12:50	156-60-5	
1,2-Dichloropropane	**<12.6**	ug/kg	52.9	12.6	1	10/21/21 08:15	10/22/21 12:50	78-87-5	
1,3-Dichloropropane	**<11.5**	ug/kg	52.9	11.5	1	10/21/21 08:15	10/22/21 12:50	142-28-9	
2,2-Dichloropropane	**<14.3**	ug/kg	52.9	14.3	1	10/21/21 08:15	10/22/21 12:50	594-20-7	
1,1-Dichloropropene	**<17.2**	ug/kg	52.9	17.2	1	10/21/21 08:15	10/22/21 12:50	563-58-6	
cis-1,3-Dichloropropene	**<34.9**	ug/kg	265	34.9	1	10/21/21 08:15	10/22/21 12:50	10061-01-5	
trans-1,3-Dichloropropene	**<151**	ug/kg	265	151	1	10/21/21 08:15	10/22/21 12:50	10061-02-6	
Diisopropyl ether	**<13.1**	ug/kg	52.9	13.1	1	10/21/21 08:15	10/22/21 12:50	108-20-3	
Ethylbenzene	**<12.6**	ug/kg	52.9	12.6	1	10/21/21 08:15	10/22/21 12:50	100-41-4	
Hexachloro-1,3-butadiene	**<105**	ug/kg	265	105	1	10/21/21 08:15	10/22/21 12:50	87-68-3	
Isopropylbenzene (Cumene)	**<14.3**	ug/kg	52.9	14.3	1	10/21/21 08:15	10/22/21 12:50	98-82-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-1 (2-4) **Lab ID: 40235057001** Collected: 10/13/21 09:35 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
p-Isopropyltoluene	**<16.1**	ug/kg	52.9	16.1	1	10/21/21 08:15	10/22/21 12:50	99-87-6	
Methylene Chloride	**<14.7**	ug/kg	52.9	14.7	1	10/21/21 08:15	10/22/21 12:50	75-09-2	
Methyl-tert-butyl ether	**<15.6**	ug/kg	52.9	15.6	1	10/21/21 08:15	10/22/21 12:50	1634-04-4	
Naphthalene	**<16.5**	ug/kg	265	16.5	1	10/21/21 08:15	10/22/21 12:50	91-20-3	
n-Propylbenzene	**<12.7**	ug/kg	52.9	12.7	1	10/21/21 08:15	10/22/21 12:50	103-65-1	
Styrene	**<13.6**	ug/kg	52.9	13.6	1	10/21/21 08:15	10/22/21 12:50	100-42-5	
1,1,1,2-Tetrachloroethane	**<12.7**	ug/kg	52.9	12.7	1	10/21/21 08:15	10/22/21 12:50	630-20-6	
1,1,2,2-Tetrachloroethane	**<19.2**	ug/kg	52.9	19.2	1	10/21/21 08:15	10/22/21 12:50	79-34-5	
Tetrachloroethene	**<20.5**	ug/kg	52.9	20.5	1	10/21/21 08:15	10/22/21 12:50	127-18-4	
Toluene	**<13.3**	ug/kg	52.9	13.3	1	10/21/21 08:15	10/22/21 12:50	108-88-3	
1,2,3-Trichlorobenzene	**<59.0**	ug/kg	265	59.0	1	10/21/21 08:15	10/22/21 12:50	87-61-6	
1,2,4-Trichlorobenzene	**<43.6**	ug/kg	265	43.6	1	10/21/21 08:15	10/22/21 12:50	120-82-1	
1,1,1-Trichloroethane	**<13.6**	ug/kg	52.9	13.6	1	10/21/21 08:15	10/22/21 12:50	71-55-6	
1,1,2-Trichloroethane	**<19.3**	ug/kg	52.9	19.3	1	10/21/21 08:15	10/22/21 12:50	79-00-5	
Trichloroethene	**<19.8**	ug/kg	52.9	19.8	1	10/21/21 08:15	10/22/21 12:50	79-01-6	
Trichlorofluoromethane	**<15.4**	ug/kg	52.9	15.4	1	10/21/21 08:15	10/22/21 12:50	75-69-4	
1,2,3-Trichloropropane	**<25.7**	ug/kg	52.9	25.7	1	10/21/21 08:15	10/22/21 12:50	96-18-4	
1,2,4-Trimethylbenzene	**<15.8**	ug/kg	52.9	15.8	1	10/21/21 08:15	10/22/21 12:50	95-63-6	
1,3,5-Trimethylbenzene	**<17.0**	ug/kg	52.9	17.0	1	10/21/21 08:15	10/22/21 12:50	108-67-8	
Vinyl chloride	**<10.7**	ug/kg	52.9	10.7	1	10/21/21 08:15	10/22/21 12:50	75-01-4	
m&p-Xylene	**<22.3**	ug/kg	106	22.3	1	10/21/21 08:15	10/22/21 12:50	179601-23-1	
o-Xylene	**<15.9**	ug/kg	52.9	15.9	1	10/21/21 08:15	10/22/21 12:50	95-47-6	
Surrogates									
Toluene-d8 (S)	122	%	67-159		1	10/21/21 08:15	10/22/21 12:50	2037-26-5	
4-Bromofluorobenzene (S)	127	%	66-153		1	10/21/21 08:15	10/22/21 12:50	460-00-4	
1,2-Dichlorobenzene-d4 (S)	119	%	82-158		1	10/21/21 08:15	10/22/21 12:50	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**2.9**	%	0.10	0.10	1		10/14/21 13:23		

Sample: GP-1 (9-11) **Lab ID: 40235057002** Collected: 10/13/21 09:45 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**1.9J**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:38	7440-38-2	
Lead	**0.64J**	mg/kg	2.1	0.63	1	10/19/21 06:21	10/19/21 21:38	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-1 (9-11) **Lab ID: 40235057002** Collected: 10/13/21 09:45 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<13.4**	ug/kg	22.6	13.4	1	10/21/21 08:15	10/22/21 13:09	71-43-2	
Bromobenzene	**<22.0**	ug/kg	56.4	22.0	1	10/21/21 08:15	10/22/21 13:09	108-86-1	
Bromochloromethane	**<15.5**	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	74-97-5	
Bromodichloromethane	**<13.4**	ug/kg	56.4	13.4	1	10/21/21 08:15	10/22/21 13:09	75-27-4	
Bromoform	**<248**	ug/kg	282	248	1	10/21/21 08:15	10/22/21 13:09	75-25-2	
Bromomethane	**<79.1**	ug/kg	282	79.1	1	10/21/21 08:15	10/22/21 13:09	74-83-9	
n-Butylbenzene	**<25.8**	ug/kg	56.4	25.8	1	10/21/21 08:15	10/22/21 13:09	104-51-8	
sec-Butylbenzene	**<13.8**	ug/kg	56.4	13.8	1	10/21/21 08:15	10/22/21 13:09	135-98-8	
tert-Butylbenzene	**<17.7**	ug/kg	56.4	17.7	1	10/21/21 08:15	10/22/21 13:09	98-06-6	
Carbon tetrachloride	**<12.4**	ug/kg	56.4	12.4	1	10/21/21 08:15	10/22/21 13:09	56-23-5	
Chlorobenzene	**<6.8**	ug/kg	56.4	6.8	1	10/21/21 08:15	10/22/21 13:09	108-90-7	
Chloroethane	**<23.8**	ug/kg	282	23.8	1	10/21/21 08:15	10/22/21 13:09	75-00-3	
Chloroform	**<40.4**	ug/kg	282	40.4	1	10/21/21 08:15	10/22/21 13:09	67-66-3	
Chloromethane	**<21.4**	ug/kg	56.4	21.4	1	10/21/21 08:15	10/22/21 13:09	74-87-3	
2-Chlorotoluene	**<18.3**	ug/kg	56.4	18.3	1	10/21/21 08:15	10/22/21 13:09	95-49-8	
4-Chlorotoluene	**<21.4**	ug/kg	56.4	21.4	1	10/21/21 08:15	10/22/21 13:09	106-43-4	
1,2-Dibromo-3-chloropropane	**<43.8**	ug/kg	282	43.8	1	10/21/21 08:15	10/22/21 13:09	96-12-8	
Dibromochloromethane	**<193**	ug/kg	282	193	1	10/21/21 08:15	10/22/21 13:09	124-48-1	
1,2-Dibromoethane (EDB)	**<15.5**	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	106-93-4	
Dibromomethane	**<16.7**	ug/kg	56.4	16.7	1	10/21/21 08:15	10/22/21 13:09	74-95-3	
1,2-Dichlorobenzene	**<17.5**	ug/kg	56.4	17.5	1	10/21/21 08:15	10/22/21 13:09	95-50-1	
1,3-Dichlorobenzene	**<15.5**	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	541-73-1	
1,4-Dichlorobenzene	**<15.5**	ug/kg	56.4	15.5	1	10/21/21 08:15	10/22/21 13:09	106-46-7	
Dichlorodifluoromethane	**<24.3**	ug/kg	56.4	24.3	1	10/21/21 08:15	10/22/21 13:09	75-71-8	
1,1-Dichloroethane	**<14.4**	ug/kg	56.4	14.4	1	10/21/21 08:15	10/22/21 13:09	75-34-3	
1,2-Dichloroethane	**<13.0**	ug/kg	56.4	13.0	1	10/21/21 08:15	10/22/21 13:09	107-06-2	
1,1-Dichloroethene	**<18.7**	ug/kg	56.4	18.7	1	10/21/21 08:15	10/22/21 13:09	75-35-4	
cis-1,2-Dichloroethene	**<12.1**	ug/kg	56.4	12.1	1	10/21/21 08:15	10/22/21 13:09	156-59-2	
trans-1,2-Dichloroethene	**<12.2**	ug/kg	56.4	12.2	1	10/21/21 08:15	10/22/21 13:09	156-60-5	
1,2-Dichloropropane	**<13.4**	ug/kg	56.4	13.4	1	10/21/21 08:15	10/22/21 13:09	78-87-5	
1,3-Dichloropropane	**<12.3**	ug/kg	56.4	12.3	1	10/21/21 08:15	10/22/21 13:09	142-28-9	
2,2-Dichloropropane	**<15.2**	ug/kg	56.4	15.2	1	10/21/21 08:15	10/22/21 13:09	594-20-7	
1,1-Dichloropropene	**<18.3**	ug/kg	56.4	18.3	1	10/21/21 08:15	10/22/21 13:09	563-58-6	
cis-1,3-Dichloropropene	**<37.2**	ug/kg	282	37.2	1	10/21/21 08:15	10/22/21 13:09	10061-01-5	
trans-1,3-Dichloropropene	**<161**	ug/kg	282	161	1	10/21/21 08:15	10/22/21 13:09	10061-02-6	
Diisopropyl ether	**<14.0**	ug/kg	56.4	14.0	1	10/21/21 08:15	10/22/21 13:09	108-20-3	
Ethylbenzene	**<13.4**	ug/kg	56.4	13.4	1	10/21/21 08:15	10/22/21 13:09	100-41-4	
Hexachloro-1,3-butadiene	**<112**	ug/kg	282	112	1	10/21/21 08:15	10/22/21 13:09	87-68-3	
Isopropylbenzene (Cumene)	**<15.2**	ug/kg	56.4	15.2	1	10/21/21 08:15	10/22/21 13:09	98-82-8	
p-Isopropyltoluene	**<17.2**	ug/kg	56.4	17.2	1	10/21/21 08:15	10/22/21 13:09	99-87-6	
Methylene Chloride	**<15.7**	ug/kg	56.4	15.7	1	10/21/21 08:15	10/22/21 13:09	75-09-2	
Methyl-tert-butyl ether	**<16.6**	ug/kg	56.4	16.6	1	10/21/21 08:15	10/22/21 13:09	1634-04-4	
Naphthalene	**<17.6**	ug/kg	282	17.6	1	10/21/21 08:15	10/22/21 13:09	91-20-3	
n-Propylbenzene	**<13.5**	ug/kg	56.4	13.5	1	10/21/21 08:15	10/22/21 13:09	103-65-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-1 (9-11) **Lab ID: 40235057002** Collected: 10/13/21 09:45 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<14.4**	ug/kg	56.4	14.4	1	10/21/21 08:15	10/22/21 13:09	100-42-5	
1,1,1,2-Tetrachloroethane	**<13.5**	ug/kg	56.4	13.5	1	10/21/21 08:15	10/22/21 13:09	630-20-6	
1,1,2,2-Tetrachloroethane	**<20.4**	ug/kg	56.4	20.4	1	10/21/21 08:15	10/22/21 13:09	79-34-5	
Tetrachloroethene	**<21.9**	ug/kg	56.4	21.9	1	10/21/21 08:15	10/22/21 13:09	127-18-4	
Toluene	**<14.2**	ug/kg	56.4	14.2	1	10/21/21 08:15	10/22/21 13:09	108-88-3	
1,2,3-Trichlorobenzene	**<62.9**	ug/kg	282	62.9	1	10/21/21 08:15	10/22/21 13:09	87-61-6	
1,2,4-Trichlorobenzene	**<46.5**	ug/kg	282	46.5	1	10/21/21 08:15	10/22/21 13:09	120-82-1	
1,1,1-Trichloroethane	**<14.4**	ug/kg	56.4	14.4	1	10/21/21 08:15	10/22/21 13:09	71-55-6	
1,1,2-Trichloroethane	**<20.5**	ug/kg	56.4	20.5	1	10/21/21 08:15	10/22/21 13:09	79-00-5	
Trichloroethene	**<21.1**	ug/kg	56.4	21.1	1	10/21/21 08:15	10/22/21 13:09	79-01-6	
Trichlorofluoromethane	**<16.4**	ug/kg	56.4	16.4	1	10/21/21 08:15	10/22/21 13:09	75-69-4	
1,2,3-Trichloropropane	**<27.4**	ug/kg	56.4	27.4	1	10/21/21 08:15	10/22/21 13:09	96-18-4	
1,2,4-Trimethylbenzene	**<16.8**	ug/kg	56.4	16.8	1	10/21/21 08:15	10/22/21 13:09	95-63-6	
1,3,5-Trimethylbenzene	**<18.2**	ug/kg	56.4	18.2	1	10/21/21 08:15	10/22/21 13:09	108-67-8	
Vinyl chloride	**<11.4**	ug/kg	56.4	11.4	1	10/21/21 08:15	10/22/21 13:09	75-01-4	
m&p-Xylene	**<23.8**	ug/kg	113	23.8	1	10/21/21 08:15	10/22/21 13:09	179601-23-1	
o-Xylene	**<16.9**	ug/kg	56.4	16.9	1	10/21/21 08:15	10/22/21 13:09	95-47-6	
Surrogates									
Toluene-d8 (S)	124	%	67-159		1	10/21/21 08:15	10/22/21 13:09	2037-26-5	
4-Bromofluorobenzene (S)	126	%	66-153		1	10/21/21 08:15	10/22/21 13:09	460-00-4	
1,2-Dichlorobenzene-d4 (S)	124	%	82-158		1	10/21/21 08:15	10/22/21 13:09	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**6.0**	%	0.10	0.10	1		10/14/21 13:24		

Sample: GP-2 (2-4) **Lab ID: 40235057003** Collected: 10/13/21 10:15 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**<1.4**	mg/kg	2.4	1.4	1	10/19/21 06:21	10/19/21 21:43	7440-38-2	
Lead	**0.74J**	mg/kg	2.0	0.59	1	10/19/21 06:21	10/19/21 21:43	7439-92-1	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<12.4**	ug/kg	20.9	12.4	1	10/21/21 08:15	10/22/21 13:29	71-43-2	
Bromobenzene	**<20.3**	ug/kg	52.2	20.3	1	10/21/21 08:15	10/22/21 13:29	108-86-1	
Bromochloromethane	**<14.3**	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	74-97-5	
Bromodichloromethane	**<12.4**	ug/kg	52.2	12.4	1	10/21/21 08:15	10/22/21 13:29	75-27-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-2 (2-4) **Lab ID: 40235057003** Collected: 10/13/21 10:15 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Bromoform	**<229**	ug/kg	261	229	1	10/21/21 08:15	10/22/21 13:29	75-25-2	
Bromomethane	**<73.1**	ug/kg	261	73.1	1	10/21/21 08:15	10/22/21 13:29	74-83-9	
n-Butylbenzene	**<23.9**	ug/kg	52.2	23.9	1	10/21/21 08:15	10/22/21 13:29	104-51-8	
sec-Butylbenzene	**<12.7**	ug/kg	52.2	12.7	1	10/21/21 08:15	10/22/21 13:29	135-98-8	
tert-Butylbenzene	**<16.4**	ug/kg	52.2	16.4	1	10/21/21 08:15	10/22/21 13:29	98-06-6	
Carbon tetrachloride	**<11.5**	ug/kg	52.2	11.5	1	10/21/21 08:15	10/22/21 13:29	56-23-5	
Chlorobenzene	**<6.2**	ug/kg	52.2	6.2	1	10/21/21 08:15	10/22/21 13:29	108-90-7	
Chloroethane	**<22.0**	ug/kg	261	22.0	1	10/21/21 08:15	10/22/21 13:29	75-00-3	
Chloroform	**<37.3**	ug/kg	261	37.3	1	10/21/21 08:15	10/22/21 13:29	67-66-3	
Chloromethane	**<19.8**	ug/kg	52.2	19.8	1	10/21/21 08:15	10/22/21 13:29	74-87-3	
2-Chlorotoluene	**<16.9**	ug/kg	52.2	16.9	1	10/21/21 08:15	10/22/21 13:29	95-49-8	
4-Chlorotoluene	**<19.8**	ug/kg	52.2	19.8	1	10/21/21 08:15	10/22/21 13:29	106-43-4	
1,2-Dibromo-3-chloropropane	**<40.5**	ug/kg	261	40.5	1	10/21/21 08:15	10/22/21 13:29	96-12-8	
Dibromochloromethane	**<178**	ug/kg	261	178	1	10/21/21 08:15	10/22/21 13:29	124-48-1	
1,2-Dibromoethane (EDB)	**<14.3**	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	106-93-4	
Dibromomethane	**<15.4**	ug/kg	52.2	15.4	1	10/21/21 08:15	10/22/21 13:29	74-95-3	
1,2-Dichlorobenzene	**<16.2**	ug/kg	52.2	16.2	1	10/21/21 08:15	10/22/21 13:29	95-50-1	
1,3-Dichlorobenzene	**<14.3**	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	541-73-1	
1,4-Dichlorobenzene	**<14.3**	ug/kg	52.2	14.3	1	10/21/21 08:15	10/22/21 13:29	106-46-7	
Dichlorodifluoromethane	**<22.4**	ug/kg	52.2	22.4	1	10/21/21 08:15	10/22/21 13:29	75-71-8	
1,1-Dichloroethane	**<13.4**	ug/kg	52.2	13.4	1	10/21/21 08:15	10/22/21 13:29	75-34-3	
1,2-Dichloroethane	**<12.0**	ug/kg	52.2	12.0	1	10/21/21 08:15	10/22/21 13:29	107-06-2	
1,1-Dichloroethene	**<17.3**	ug/kg	52.2	17.3	1	10/21/21 08:15	10/22/21 13:29	75-35-4	
cis-1,2-Dichloroethene	**<11.2**	ug/kg	52.2	11.2	1	10/21/21 08:15	10/22/21 13:29	156-59-2	
trans-1,2-Dichloroethene	**<11.3**	ug/kg	52.2	11.3	1	10/21/21 08:15	10/22/21 13:29	156-60-5	
1,2-Dichloropropane	**<12.4**	ug/kg	52.2	12.4	1	10/21/21 08:15	10/22/21 13:29	78-87-5	
1,3-Dichloropropane	**<11.4**	ug/kg	52.2	11.4	1	10/21/21 08:15	10/22/21 13:29	142-28-9	
2,2-Dichloropropane	**<14.1**	ug/kg	52.2	14.1	1	10/21/21 08:15	10/22/21 13:29	594-20-7	
1,1-Dichloropropene	**<16.9**	ug/kg	52.2	16.9	1	10/21/21 08:15	10/22/21 13:29	563-58-6	
cis-1,3-Dichloropropene	**<34.4**	ug/kg	261	34.4	1	10/21/21 08:15	10/22/21 13:29	10061-01-5	
trans-1,3-Dichloropropene	**<149**	ug/kg	261	149	1	10/21/21 08:15	10/22/21 13:29	10061-02-6	
Diisopropyl ether	**<12.9**	ug/kg	52.2	12.9	1	10/21/21 08:15	10/22/21 13:29	108-20-3	
Ethylbenzene	**<12.4**	ug/kg	52.2	12.4	1	10/21/21 08:15	10/22/21 13:29	100-41-4	
Hexachloro-1,3-butadiene	**<104**	ug/kg	261	104	1	10/21/21 08:15	10/22/21 13:29	87-68-3	
Isopropylbenzene (Cumene)	**<14.1**	ug/kg	52.2	14.1	1	10/21/21 08:15	10/22/21 13:29	98-82-8	
p-Isopropyltoluene	**<15.9**	ug/kg	52.2	15.9	1	10/21/21 08:15	10/22/21 13:29	99-87-6	
Methylene Chloride	**<14.5**	ug/kg	52.2	14.5	1	10/21/21 08:15	10/22/21 13:29	75-09-2	
Methyl-tert-butyl ether	**<15.3**	ug/kg	52.2	15.3	1	10/21/21 08:15	10/22/21 13:29	1634-04-4	
Naphthalene	**<16.3**	ug/kg	261	16.3	1	10/21/21 08:15	10/22/21 13:29	91-20-3	
n-Propylbenzene	**<12.5**	ug/kg	52.2	12.5	1	10/21/21 08:15	10/22/21 13:29	103-65-1	
Styrene	**<13.4**	ug/kg	52.2	13.4	1	10/21/21 08:15	10/22/21 13:29	100-42-5	
1,1,1,2-Tetrachloroethane	**<12.5**	ug/kg	52.2	12.5	1	10/21/21 08:15	10/22/21 13:29	630-20-6	
1,1,2,2-Tetrachloroethane	**<18.9**	ug/kg	52.2	18.9	1	10/21/21 08:15	10/22/21 13:29	79-34-5	
Tetrachloroethene	**<20.2**	ug/kg	52.2	20.2	1	10/21/21 08:15	10/22/21 13:29	127-18-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-2 (2-4) **Lab ID: 40235057003** Collected: 10/13/21 10:15 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Toluene	**<13.1**	ug/kg	52.2	13.1	1	10/21/21 08:15	10/22/21 13:29	108-88-3	
1,2,3-Trichlorobenzene	**<58.1**	ug/kg	261	58.1	1	10/21/21 08:15	10/22/21 13:29	87-61-6	
1,2,4-Trichlorobenzene	**<43.0**	ug/kg	261	43.0	1	10/21/21 08:15	10/22/21 13:29	120-82-1	
1,1,1-Trichloroethane	**<13.4**	ug/kg	52.2	13.4	1	10/21/21 08:15	10/22/21 13:29	71-55-6	
1,1,2-Trichloroethane	**<19.0**	ug/kg	52.2	19.0	1	10/21/21 08:15	10/22/21 13:29	79-00-5	
Trichloroethene	**<19.5**	ug/kg	52.2	19.5	1	10/21/21 08:15	10/22/21 13:29	79-01-6	
Trichlorofluoromethane	**<15.1**	ug/kg	52.2	15.1	1	10/21/21 08:15	10/22/21 13:29	75-69-4	
1,2,3-Trichloropropane	**<25.3**	ug/kg	52.2	25.3	1	10/21/21 08:15	10/22/21 13:29	96-18-4	
1,2,4-Trimethylbenzene	**<15.5**	ug/kg	52.2	15.5	1	10/21/21 08:15	10/22/21 13:29	95-63-6	
1,3,5-Trimethylbenzene	**<16.8**	ug/kg	52.2	16.8	1	10/21/21 08:15	10/22/21 13:29	108-67-8	
Vinyl chloride	**<10.5**	ug/kg	52.2	10.5	1	10/21/21 08:15	10/22/21 13:29	75-01-4	
m&p-Xylene	**<22.0**	ug/kg	104	22.0	1	10/21/21 08:15	10/22/21 13:29	179601-23-1	
o-Xylene	**<15.6**	ug/kg	52.2	15.6	1	10/21/21 08:15	10/22/21 13:29	95-47-6	
Surrogates									
Toluene-d8 (S)	120	%	67-159		1	10/21/21 08:15	10/22/21 13:29	2037-26-5	
4-Bromofluorobenzene (S)	122	%	66-153		1	10/21/21 08:15	10/22/21 13:29	460-00-4	
1,2-Dichlorobenzene-d4 (S)	118	%	82-158		1	10/21/21 08:15	10/22/21 13:29	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**2.1**	%	0.10	0.10	1		10/14/21 13:24		

Sample: GP-2 (9-11) **Lab ID: 40235057004** Collected: 10/13/21 10:20 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**3.4**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:45	7440-38-2	
Lead	**1.2J**	mg/kg	2.1	0.62	1	10/19/21 06:21	10/19/21 21:45	7439-92-1	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<13.0**	ug/kg	21.9	13.0	1	10/21/21 08:15	10/22/21 13:49	71-43-2	
Bromobenzene	**<21.3**	ug/kg	54.7	21.3	1	10/21/21 08:15	10/22/21 13:49	108-86-1	
Bromochloromethane	**<15.0**	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	74-97-5	
Bromodichloromethane	**<13.0**	ug/kg	54.7	13.0	1	10/21/21 08:15	10/22/21 13:49	75-27-4	
Bromoform	**<241**	ug/kg	273	241	1	10/21/21 08:15	10/22/21 13:49	75-25-2	
Bromomethane	**<76.6**	ug/kg	273	76.6	1	10/21/21 08:15	10/22/21 13:49	74-83-9	
n-Butylbenzene	**<25.0**	ug/kg	54.7	25.0	1	10/21/21 08:15	10/22/21 13:49	104-51-8	
sec-Butylbenzene	**<13.3**	ug/kg	54.7	13.3	1	10/21/21 08:15	10/22/21 13:49	135-98-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-2 (9-11) **Lab ID: 40235057004** Collected: 10/13/21 10:20 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
tert-Butylbenzene	**<17.2**	ug/kg	54.7	17.2	1	10/21/21 08:15	10/22/21 13:49	98-06-6	
Carbon tetrachloride	**<12.0**	ug/kg	54.7	12.0	1	10/21/21 08:15	10/22/21 13:49	56-23-5	
Chlorobenzene	**<6.5**	ug/kg	54.7	6.5	1	10/21/21 08:15	10/22/21 13:49	108-90-7	
Chloroethane	**<23.1**	ug/kg	273	23.1	1	10/21/21 08:15	10/22/21 13:49	75-00-3	
Chloroform	**<39.1**	ug/kg	273	39.1	1	10/21/21 08:15	10/22/21 13:49	67-66-3	
Chloromethane	**<20.8**	ug/kg	54.7	20.8	1	10/21/21 08:15	10/22/21 13:49	74-87-3	
2-Chlorotoluene	**<17.7**	ug/kg	54.7	17.7	1	10/21/21 08:15	10/22/21 13:49	95-49-8	
4-Chlorotoluene	**<20.8**	ug/kg	54.7	20.8	1	10/21/21 08:15	10/22/21 13:49	106-43-4	
1,2-Dibromo-3-chloropropane	**<42.4**	ug/kg	273	42.4	1	10/21/21 08:15	10/22/21 13:49	96-12-8	
Dibromochloromethane	**<187**	ug/kg	273	187	1	10/21/21 08:15	10/22/21 13:49	124-48-1	
1,2-Dibromoethane (EDB)	**<15.0**	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	106-93-4	
Dibromomethane	**<16.2**	ug/kg	54.7	16.2	1	10/21/21 08:15	10/22/21 13:49	74-95-3	
1,2-Dichlorobenzene	**<16.9**	ug/kg	54.7	16.9	1	10/21/21 08:15	10/22/21 13:49	95-50-1	
1,3-Dichlorobenzene	**<15.0**	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	541-73-1	
1,4-Dichlorobenzene	**<15.0**	ug/kg	54.7	15.0	1	10/21/21 08:15	10/22/21 13:49	106-46-7	
Dichlorodifluoromethane	**<23.5**	ug/kg	54.7	23.5	1	10/21/21 08:15	10/22/21 13:49	75-71-8	
1,1-Dichloroethane	**<14.0**	ug/kg	54.7	14.0	1	10/21/21 08:15	10/22/21 13:49	75-34-3	
1,2-Dichloroethane	**<12.6**	ug/kg	54.7	12.6	1	10/21/21 08:15	10/22/21 13:49	107-06-2	
1,1-Dichloroethene	**<18.1**	ug/kg	54.7	18.1	1	10/21/21 08:15	10/22/21 13:49	75-35-4	
cis-1,2-Dichloroethene	**<11.7**	ug/kg	54.7	11.7	1	10/21/21 08:15	10/22/21 13:49	156-59-2	
trans-1,2-Dichloroethene	**<11.8**	ug/kg	54.7	11.8	1	10/21/21 08:15	10/22/21 13:49	156-60-5	
1,2-Dichloropropane	**<13.0**	ug/kg	54.7	13.0	1	10/21/21 08:15	10/22/21 13:49	78-87-5	
1,3-Dichloropropane	**<11.9**	ug/kg	54.7	11.9	1	10/21/21 08:15	10/22/21 13:49	142-28-9	
2,2-Dichloropropane	**<14.8**	ug/kg	54.7	14.8	1	10/21/21 08:15	10/22/21 13:49	594-20-7	
1,1-Dichloropropene	**<17.7**	ug/kg	54.7	17.7	1	10/21/21 08:15	10/22/21 13:49	563-58-6	
cis-1,3-Dichloropropene	**<36.1**	ug/kg	273	36.1	1	10/21/21 08:15	10/22/21 13:49	10061-01-5	
trans-1,3-Dichloropropene	**<156**	ug/kg	273	156	1	10/21/21 08:15	10/22/21 13:49	10061-02-6	
Diisopropyl ether	**<13.6**	ug/kg	54.7	13.6	1	10/21/21 08:15	10/22/21 13:49	108-20-3	
Ethylbenzene	**<13.0**	ug/kg	54.7	13.0	1	10/21/21 08:15	10/22/21 13:49	100-41-4	
Hexachloro-1,3-butadiene	**<109**	ug/kg	273	109	1	10/21/21 08:15	10/22/21 13:49	87-68-3	
Isopropylbenzene (Cumene)	**<14.8**	ug/kg	54.7	14.8	1	10/21/21 08:15	10/22/21 13:49	98-82-8	
p-Isopropyltoluene	**<16.6**	ug/kg	54.7	16.6	1	10/21/21 08:15	10/22/21 13:49	99-87-6	
Methylene Chloride	**<15.2**	ug/kg	54.7	15.2	1	10/21/21 08:15	10/22/21 13:49	75-09-2	
Methyl-tert-butyl ether	**<16.1**	ug/kg	54.7	16.1	1	10/21/21 08:15	10/22/21 13:49	1634-04-4	
Naphthalene	**<17.1**	ug/kg	273	17.1	1	10/21/21 08:15	10/22/21 13:49	91-20-3	
n-Propylbenzene	**<13.1**	ug/kg	54.7	13.1	1	10/21/21 08:15	10/22/21 13:49	103-65-1	
Styrene	**<14.0**	ug/kg	54.7	14.0	1	10/21/21 08:15	10/22/21 13:49	100-42-5	
1,1,1,2-Tetrachloroethane	**<13.1**	ug/kg	54.7	13.1	1	10/21/21 08:15	10/22/21 13:49	630-20-6	
1,1,2,2-Tetrachloroethane	**<19.8**	ug/kg	54.7	19.8	1	10/21/21 08:15	10/22/21 13:49	79-34-5	
Tetrachloroethene	**<21.2**	ug/kg	54.7	21.2	1	10/21/21 08:15	10/22/21 13:49	127-18-4	
Toluene	**<13.8**	ug/kg	54.7	13.8	1	10/21/21 08:15	10/22/21 13:49	108-88-3	
1,2,3-Trichlorobenzene	**<60.9**	ug/kg	273	60.9	1	10/21/21 08:15	10/22/21 13:49	87-61-6	
1,2,4-Trichlorobenzene	**<45.0**	ug/kg	273	45.0	1	10/21/21 08:15	10/22/21 13:49	120-82-1	
1,1,1-Trichloroethane	**<14.0**	ug/kg	54.7	14.0	1	10/21/21 08:15	10/22/21 13:49	71-55-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-2 (9-11) **Lab ID: 40235057004** Collected: 10/13/21 10:20 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
1,1,2-Trichloroethane	**<19.9**	ug/kg	54.7	19.9	1	10/21/21 08:15	10/22/21 13:49	79-00-5	
Trichloroethene	**<20.4**	ug/kg	54.7	20.4	1	10/21/21 08:15	10/22/21 13:49	79-01-6	
Trichlorofluoromethane	**<15.9**	ug/kg	54.7	15.9	1	10/21/21 08:15	10/22/21 13:49	75-69-4	
1,2,3-Trichloropropane	**<26.6**	ug/kg	54.7	26.6	1	10/21/21 08:15	10/22/21 13:49	96-18-4	
1,2,4-Trimethylbenzene	**<16.3**	ug/kg	54.7	16.3	1	10/21/21 08:15	10/22/21 13:49	95-63-6	
1,3,5-Trimethylbenzene	**<17.6**	ug/kg	54.7	17.6	1	10/21/21 08:15	10/22/21 13:49	108-67-8	
Vinyl chloride	**<11.0**	ug/kg	54.7	11.0	1	10/21/21 08:15	10/22/21 13:49	75-01-4	
m&p-Xylene	**<23.1**	ug/kg	109	23.1	1	10/21/21 08:15	10/22/21 13:49	179601-23-1	
o-Xylene	**<16.4**	ug/kg	54.7	16.4	1	10/21/21 08:15	10/22/21 13:49	95-47-6	
Surrogates									
Toluene-d8 (S)	113	%	67-159		1	10/21/21 08:15	10/22/21 13:49	2037-26-5	
4-Bromofluorobenzene (S)	121	%	66-153		1	10/21/21 08:15	10/22/21 13:49	460-00-4	
1,2-Dichlorobenzene-d4 (S)	112	%	82-158		1	10/21/21 08:15	10/22/21 13:49	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**4.5**	%	0.10	0.10	1		10/14/21 13:24		

Sample: GP-3 (1.5-2.5) **Lab ID: 40235057005** Collected: 10/13/21 10:45 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**2.6**	mg/kg	2.4	1.4	1	10/19/21 06:21	10/19/21 21:48	7440-38-2	
Lead	**11.9**	mg/kg	1.9	0.58	1	10/19/21 06:21	10/19/21 21:48	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**3.3**	%	0.10	0.10	1		10/14/21 13:24		

Sample: GP-3 (8-10) **Lab ID: 40235057006** Collected: 10/13/21 10:50 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**<1.5**	mg/kg	2.5	1.5	1	10/19/21 06:21	10/19/21 21:50	7440-38-2	
Lead	**0.88J**	mg/kg	2.0	0.60	1	10/19/21 06:21	10/19/21 21:50	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: LUDINGTON
Pace Project No.: 40235057

Sample: GP-3 (8-10) **Lab ID: 40235057006** Collected: 10/13/21 10:50 Received: 10/13/21 16:40 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
Percent Moisture	Analytical Method: ASTM D2974-87								
	Pace Analytical Services - Green Bay								
Percent Moisture	**4.1**	%	0.10	0.10	1		10/14/21 13:24		

Sample: GP-5 (1.5-2.5) **Lab ID: 40235057007** Collected: 10/13/21 12:00 Received: 10/13/21 16:40 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
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3541								
	Pace Analytical Services - Green Bay								
PCB-1016 (Aroclor 1016)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	12674-11-2	
PCB-1221 (Aroclor 1221)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11104-28-2	
PCB-1232 (Aroclor 1232)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11141-16-5	
PCB-1242 (Aroclor 1242)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	53469-21-9	
PCB-1248 (Aroclor 1248)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	12672-29-6	
PCB-1254 (Aroclor 1254)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11097-69-1	
PCB-1260 (Aroclor 1260)	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	11096-82-5	
PCB, Total	**<15.9**	ug/kg	52.1	15.9	1	10/14/21 16:03	10/16/21 00:34	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	90	%	67-102		1	10/14/21 16:03	10/16/21 00:34	877-09-8	
Decachlorobiphenyl (S)	88	%	47-114		1	10/14/21 16:03	10/16/21 00:34	2051-24-3	
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B								
	Pace Analytical Services - Green Bay								
Arsenic	**2.3J**	mg/kg	2.5	1.5	1	10/19/21 06:21	10/19/21 21:52	7440-38-2	
Lead	**84.6**	mg/kg	2.0	0.61	1	10/19/21 06:21	10/19/21 21:52	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Green Bay								
Acenaphthene	**<45.2**	ug/kg	348	45.2	20	10/21/21 07:37	10/21/21 18:33	83-32-9	
Acenaphthylene	**780**	ug/kg	348	43.9	20	10/21/21 07:37	10/21/21 18:33	208-96-8	
Anthracene	**317J**	ug/kg	348	43.2	20	10/21/21 07:37	10/21/21 18:33	120-12-7	
Benzo(a)anthracene	**867**	ug/kg	348	45.0	20	10/21/21 07:37	10/21/21 18:33	56-55-3	
Benzo(a)pyrene	**996**	ug/kg	348	39.6	20	10/21/21 07:37	10/21/21 18:33	50-32-8	
Benzo(b)fluoranthene	**1530**	ug/kg	348	48.4	20	10/21/21 07:37	10/21/21 18:33	205-99-2	
Benzo(g,h,i)perylene	**1090**	ug/kg	348	61.1	20	10/21/21 07:37	10/21/21 18:33	191-24-2	
Benzo(k)fluoranthene	**597**	ug/kg	348	44.5	20	10/21/21 07:37	10/21/21 18:33	207-08-9	
Chrysene	**1030**	ug/kg	348	65.7	20	10/21/21 07:37	10/21/21 18:33	218-01-9	
Dibenz(a,h)anthracene	**301J**	ug/kg	348	48.2	20	10/21/21 07:37	10/21/21 18:33	53-70-3	
Fluoranthene	**1160**	ug/kg	348	41.2	20	10/21/21 07:37	10/21/21 18:33	206-44-0	
Fluorene	**66.7J**	ug/kg	348	41.8	20	10/21/21 07:37	10/21/21 18:33	86-73-7	
Indeno(1,2,3-cd)pyrene	**893**	ug/kg	348	72.6	20	10/21/21 07:37	10/21/21 18:33	193-39-5	
1-Methylnaphthalene	**71.8J**	ug/kg	348	50.9	20	10/21/21 07:37	10/21/21 18:33	90-12-0	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-5 (1.5-2.5) **Lab ID: 40235057007** Collected: 10/13/21 12:00 Received: 10/13/21 16:40 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								
2-Methylnaphthalene	**109J**	ug/kg	348	50.9	20	10/21/21 07:37	10/21/21 18:33	91-57-6	
Naphthalene	**388**	ug/kg	348	33.9	20	10/21/21 07:37	10/21/21 18:33	91-20-3	
Phenanthrene	**519**	ug/kg	348	39.9	20	10/21/21 07:37	10/21/21 18:33	85-01-8	
Pyrene	**1310**	ug/kg	348	51.2	20	10/21/21 07:37	10/21/21 18:33	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	49	%	36-86		20	10/21/21 07:37	10/21/21 18:33	321-60-8	
Terphenyl-d14 (S)	57	%	41-97		20	10/21/21 07:37	10/21/21 18:33	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**28.7**	ug/kg	21.8	13.0	1	10/21/21 08:15	10/22/21 14:08	71-43-2	
Bromobenzene	**<21.2**	ug/kg	54.4	21.2	1	10/21/21 08:15	10/22/21 14:08	108-86-1	
Bromochloromethane	**<14.9**	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	74-97-5	
Bromodichloromethane	**<13.0**	ug/kg	54.4	13.0	1	10/21/21 08:15	10/22/21 14:08	75-27-4	
Bromoform	**<240**	ug/kg	272	240	1	10/21/21 08:15	10/22/21 14:08	75-25-2	
Bromomethane	**<76.3**	ug/kg	272	76.3	1	10/21/21 08:15	10/22/21 14:08	74-83-9	
n-Butylbenzene	**<24.9**	ug/kg	54.4	24.9	1	10/21/21 08:15	10/22/21 14:08	104-51-8	
sec-Butylbenzene	**<13.3**	ug/kg	54.4	13.3	1	10/21/21 08:15	10/22/21 14:08	135-98-8	
tert-Butylbenzene	**<17.1**	ug/kg	54.4	17.1	1	10/21/21 08:15	10/22/21 14:08	98-06-6	
Carbon tetrachloride	**<12.0**	ug/kg	54.4	12.0	1	10/21/21 08:15	10/22/21 14:08	56-23-5	
Chlorobenzene	**<6.5**	ug/kg	54.4	6.5	1	10/21/21 08:15	10/22/21 14:08	108-90-7	
Chloroethane	**<23.0**	ug/kg	272	23.0	1	10/21/21 08:15	10/22/21 14:08	75-00-3	
Chloroform	**<39.0**	ug/kg	272	39.0	1	10/21/21 08:15	10/22/21 14:08	67-66-3	
Chloromethane	**<20.7**	ug/kg	54.4	20.7	1	10/21/21 08:15	10/22/21 14:08	74-87-3	
2-Chlorotoluene	**<17.6**	ug/kg	54.4	17.6	1	10/21/21 08:15	10/22/21 14:08	95-49-8	
4-Chlorotoluene	**<20.7**	ug/kg	54.4	20.7	1	10/21/21 08:15	10/22/21 14:08	106-43-4	
1,2-Dibromo-3-chloropropane	**<42.2**	ug/kg	272	42.2	1	10/21/21 08:15	10/22/21 14:08	96-12-8	
Dibromochloromethane	**<186**	ug/kg	272	186	1	10/21/21 08:15	10/22/21 14:08	124-48-1	
1,2-Dibromoethane (EDB)	**<14.9**	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	106-93-4	
Dibromomethane	**<16.1**	ug/kg	54.4	16.1	1	10/21/21 08:15	10/22/21 14:08	74-95-3	
1,2-Dichlorobenzene	**<16.9**	ug/kg	54.4	16.9	1	10/21/21 08:15	10/22/21 14:08	95-50-1	
1,3-Dichlorobenzene	**<14.9**	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	541-73-1	
1,4-Dichlorobenzene	**<14.9**	ug/kg	54.4	14.9	1	10/21/21 08:15	10/22/21 14:08	106-46-7	
Dichlorodifluoromethane	**<23.4**	ug/kg	54.4	23.4	1	10/21/21 08:15	10/22/21 14:08	75-71-8	
1,1-Dichloroethane	**<13.9**	ug/kg	54.4	13.9	1	10/21/21 08:15	10/22/21 14:08	75-34-3	
1,2-Dichloroethane	**<12.5**	ug/kg	54.4	12.5	1	10/21/21 08:15	10/22/21 14:08	107-06-2	
1,1-Dichloroethene	**<18.1**	ug/kg	54.4	18.1	1	10/21/21 08:15	10/22/21 14:08	75-35-4	
cis-1,2-Dichloroethene	**<11.6**	ug/kg	54.4	11.6	1	10/21/21 08:15	10/22/21 14:08	156-59-2	
trans-1,2-Dichloroethene	**<11.8**	ug/kg	54.4	11.8	1	10/21/21 08:15	10/22/21 14:08	156-60-5	
1,2-Dichloropropane	**<13.0**	ug/kg	54.4	13.0	1	10/21/21 08:15	10/22/21 14:08	78-87-5	
1,3-Dichloropropane	**<11.9**	ug/kg	54.4	11.9	1	10/21/21 08:15	10/22/21 14:08	142-28-9	
2,2-Dichloropropane	**<14.7**	ug/kg	54.4	14.7	1	10/21/21 08:15	10/22/21 14:08	594-20-7	
1,1-Dichloropropene	**<17.6**	ug/kg	54.4	17.6	1	10/21/21 08:15	10/22/21 14:08	563-58-6	
cis-1,3-Dichloropropene	**<35.9**	ug/kg	272	35.9	1	10/21/21 08:15	10/22/21 14:08	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-5 (1.5-2.5) **Lab ID: 40235057007** Collected: 10/13/21 12:00 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
trans-1,3-Dichloropropene	**<156**	ug/kg	272	156	1	10/21/21 08:15	10/22/21 14:08	10061-02-6	
Diisopropyl ether	**<13.5**	ug/kg	54.4	13.5	1	10/21/21 08:15	10/22/21 14:08	108-20-3	
Ethylbenzene	**<13.0**	ug/kg	54.4	13.0	1	10/21/21 08:15	10/22/21 14:08	100-41-4	
Hexachloro-1,3-butadiene	**<108**	ug/kg	272	108	1	10/21/21 08:15	10/22/21 14:08	87-68-3	
Isopropylbenzene (Cumene)	**<14.7**	ug/kg	54.4	14.7	1	10/21/21 08:15	10/22/21 14:08	98-82-8	
p-Isopropyltoluene	**<16.5**	ug/kg	54.4	16.5	1	10/21/21 08:15	10/22/21 14:08	99-87-6	
Methylene Chloride	**<15.1**	ug/kg	54.4	15.1	1	10/21/21 08:15	10/22/21 14:08	75-09-2	
Methyl-tert-butyl ether	**<16.0**	ug/kg	54.4	16.0	1	10/21/21 08:15	10/22/21 14:08	1634-04-4	
Naphthalene	**240J**	ug/kg	272	17.0	1	10/21/21 08:15	10/22/21 14:08	91-20-3	
n-Propylbenzene	**<13.1**	ug/kg	54.4	13.1	1	10/21/21 08:15	10/22/21 14:08	103-65-1	
Styrene	**14.3J**	ug/kg	54.4	13.9	1	10/21/21 08:15	10/22/21 14:08	100-42-5	
1,1,1,2-Tetrachloroethane	**<13.1**	ug/kg	54.4	13.1	1	10/21/21 08:15	10/22/21 14:08	630-20-6	
1,1,2,2-Tetrachloroethane	**<19.7**	ug/kg	54.4	19.7	1	10/21/21 08:15	10/22/21 14:08	79-34-5	
Tetrachloroethene	**<21.1**	ug/kg	54.4	21.1	1	10/21/21 08:15	10/22/21 14:08	127-18-4	
Toluene	**45.8J**	ug/kg	54.4	13.7	1	10/21/21 08:15	10/22/21 14:08	108-88-3	
1,2,3-Trichlorobenzene	**<60.6**	ug/kg	272	60.6	1	10/21/21 08:15	10/22/21 14:08	87-61-6	
1,2,4-Trichlorobenzene	**<44.9**	ug/kg	272	44.9	1	10/21/21 08:15	10/22/21 14:08	120-82-1	
1,1,1-Trichloroethane	**<13.9**	ug/kg	54.4	13.9	1	10/21/21 08:15	10/22/21 14:08	71-55-6	
1,1,2-Trichloroethane	**<19.8**	ug/kg	54.4	19.8	1	10/21/21 08:15	10/22/21 14:08	79-00-5	
Trichloroethene	**<20.4**	ug/kg	54.4	20.4	1	10/21/21 08:15	10/22/21 14:08	79-01-6	
Trichlorofluoromethane	**<15.8**	ug/kg	54.4	15.8	1	10/21/21 08:15	10/22/21 14:08	75-69-4	
1,2,3-Trichloropropane	**<26.5**	ug/kg	54.4	26.5	1	10/21/21 08:15	10/22/21 14:08	96-18-4	
1,2,4-Trimethylbenzene	**<16.2**	ug/kg	54.4	16.2	1	10/21/21 08:15	10/22/21 14:08	95-63-6	
1,3,5-Trimethylbenzene	**<17.5**	ug/kg	54.4	17.5	1	10/21/21 08:15	10/22/21 14:08	108-67-8	
Vinyl chloride	**<11.0**	ug/kg	54.4	11.0	1	10/21/21 08:15	10/22/21 14:08	75-01-4	
m&p-Xylene	**24.3J**	ug/kg	109	23.0	1	10/21/21 08:15	10/22/21 14:08	179601-23-1	
o-Xylene	**<16.3**	ug/kg	54.4	16.3	1	10/21/21 08:15	10/22/21 14:08	95-47-6	
Surrogates									
Toluene-d8 (S)	116	%	67-159		1	10/21/21 08:15	10/22/21 14:08	2037-26-5	
4-Bromofluorobenzene (S)	125	%	66-153		1	10/21/21 08:15	10/22/21 14:08	460-00-4	
1,2-Dichlorobenzene-d4 (S)	116	%	82-158		1	10/21/21 08:15	10/22/21 14:08	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**4.2**	%	0.10	0.10	1		10/14/21 13:24		
9012 Cyanide, Total	Analytical Method: EPA 9012B Preparation Method: EPA 9012B Pace Analytical Services - Green Bay								
Cyanide	**7.0**	mg/kg	0.86	0.29	1	10/21/21 12:15	10/21/21 15:06	57-12-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-6 (2-4) **Lab ID: 40235057008** Collected: 10/13/21 12:20 Received: 10/13/21 16:40 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
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3541 Pace Analytical Services - Green Bay								
PCB-1016 (Aroclor 1016)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	12674-11-2	D3
PCB-1221 (Aroclor 1221)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11104-28-2	
PCB-1232 (Aroclor 1232)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11141-16-5	
PCB-1242 (Aroclor 1242)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	53469-21-9	
PCB-1248 (Aroclor 1248)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	12672-29-6	
PCB-1254 (Aroclor 1254)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11097-69-1	
PCB-1260 (Aroclor 1260)	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	11096-82-5	
PCB, Total	**<8310**	ug/kg	27300	8310	500	10/14/21 16:03	10/16/21 02:01	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	0	%	67-102		500	10/14/21 16:03	10/16/21 02:01	877-09-8	S4
Decachlorobiphenyl (S)	0	%	47-114		500	10/14/21 16:03	10/16/21 02:01	2051-24-3	S4
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**2.8**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 21:55	7440-38-2	
Lead	**47.1**	mg/kg	2.1	0.63	1	10/19/21 06:21	10/19/21 21:55	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**<47.2**	ug/kg	364	47.2	20	10/20/21 06:47	10/20/21 17:12	83-32-9	
Acenaphthylene	**2000**	ug/kg	364	45.8	20	10/20/21 06:47	10/20/21 17:12	208-96-8	
Anthracene	**456**	ug/kg	364	45.1	20	10/20/21 06:47	10/20/21 17:12	120-12-7	
Benzo(a)anthracene	**2090**	ug/kg	364	47.0	20	10/20/21 06:47	10/20/21 17:12	56-55-3	
Benzo(a)pyrene	**1030**	ug/kg	364	41.3	20	10/20/21 06:47	10/20/21 17:12	50-32-8	
Benzo(b)fluoranthene	**3670**	ug/kg	364	50.5	20	10/20/21 06:47	10/20/21 17:12	205-99-2	
Benzo(g,h,i)perylene	**1600**	ug/kg	364	63.8	20	10/20/21 06:47	10/20/21 17:12	191-24-2	
Benzo(k)fluoranthene	**1740**	ug/kg	364	46.5	20	10/20/21 06:47	10/20/21 17:12	207-08-9	
Chrysene	**3060**	ug/kg	364	68.6	20	10/20/21 06:47	10/20/21 17:12	218-01-9	
Dibenz(a,h)anthracene	**624**	ug/kg	364	50.3	20	10/20/21 06:47	10/20/21 17:12	53-70-3	
Fluoranthene	**1010**	ug/kg	364	43.0	20	10/20/21 06:47	10/20/21 17:12	206-44-0	
Fluorene	**100J**	ug/kg	364	43.6	20	10/20/21 06:47	10/20/21 17:12	86-73-7	
Indeno(1,2,3-cd)pyrene	**1460**	ug/kg	364	75.8	20	10/20/21 06:47	10/20/21 17:12	193-39-5	
1-Methylnaphthalene	**282J**	ug/kg	364	53.1	20	10/20/21 06:47	10/20/21 17:12	90-12-0	
2-Methylnaphthalene	**665**	ug/kg	364	53.2	20	10/20/21 06:47	10/20/21 17:12	91-57-6	
Naphthalene	**1620**	ug/kg	364	35.4	20	10/20/21 06:47	10/20/21 17:12	91-20-3	
Phenanthrene	**372**	ug/kg	364	41.6	20	10/20/21 06:47	10/20/21 17:12	85-01-8	
Pyrene	**1090**	ug/kg	364	53.4	20	10/20/21 06:47	10/20/21 17:12	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	55	%	36-86		20	10/20/21 06:47	10/20/21 17:12	321-60-8	
Terphenyl-d14 (S)	64	%	41-97		20	10/20/21 06:47	10/20/21 17:12	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**68.3**	ug/kg	23.6	14.0	1	10/21/21 08:15	10/22/21 14:28	71-43-2	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-6 (2-4) **Lab ID: 40235057008** Collected: 10/13/21 12:20 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Bromobenzene	**<23.0**	ug/kg	58.9	23.0	1	10/21/21 08:15	10/22/21 14:28	108-86-1	
Bromochloromethane	**<16.1**	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	74-97-5	
Bromodichloromethane	**<14.0**	ug/kg	58.9	14.0	1	10/21/21 08:15	10/22/21 14:28	75-27-4	
Bromoform	**<259**	ug/kg	294	259	1	10/21/21 08:15	10/22/21 14:28	75-25-2	
Bromomethane	**<82.5**	ug/kg	294	82.5	1	10/21/21 08:15	10/22/21 14:28	74-83-9	
n-Butylbenzene	**<27.0**	ug/kg	58.9	27.0	1	10/21/21 08:15	10/22/21 14:28	104-51-8	
sec-Butylbenzene	**<14.4**	ug/kg	58.9	14.4	1	10/21/21 08:15	10/22/21 14:28	135-98-8	
tert-Butylbenzene	**<18.5**	ug/kg	58.9	18.5	1	10/21/21 08:15	10/22/21 14:28	98-06-6	
Carbon tetrachloride	**<13.0**	ug/kg	58.9	13.0	1	10/21/21 08:15	10/22/21 14:28	56-23-5	
Chlorobenzene	**<7.1**	ug/kg	58.9	7.1	1	10/21/21 08:15	10/22/21 14:28	108-90-7	
Chloroethane	**<24.8**	ug/kg	294	24.8	1	10/21/21 08:15	10/22/21 14:28	75-00-3	
Chloroform	**<42.2**	ug/kg	294	42.2	1	10/21/21 08:15	10/22/21 14:28	67-66-3	
Chloromethane	**<22.4**	ug/kg	58.9	22.4	1	10/21/21 08:15	10/22/21 14:28	74-87-3	
2-Chlorotoluene	**<19.1**	ug/kg	58.9	19.1	1	10/21/21 08:15	10/22/21 14:28	95-49-8	
4-Chlorotoluene	**<22.4**	ug/kg	58.9	22.4	1	10/21/21 08:15	10/22/21 14:28	106-43-4	
1,2-Dibromo-3-chloropropane	**<45.7**	ug/kg	294	45.7	1	10/21/21 08:15	10/22/21 14:28	96-12-8	
Dibromochloromethane	**<201**	ug/kg	294	201	1	10/21/21 08:15	10/22/21 14:28	124-48-1	
1,2-Dibromoethane (EDB)	**<16.1**	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	106-93-4	
Dibromomethane	**<17.4**	ug/kg	58.9	17.4	1	10/21/21 08:15	10/22/21 14:28	74-95-3	
1,2-Dichlorobenzene	**<18.3**	ug/kg	58.9	18.3	1	10/21/21 08:15	10/22/21 14:28	95-50-1	
1,3-Dichlorobenzene	**<16.1**	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	541-73-1	
1,4-Dichlorobenzene	**<16.1**	ug/kg	58.9	16.1	1	10/21/21 08:15	10/22/21 14:28	106-46-7	
Dichlorodifluoromethane	**<25.3**	ug/kg	58.9	25.3	1	10/21/21 08:15	10/22/21 14:28	75-71-8	
1,1-Dichloroethane	**<15.1**	ug/kg	58.9	15.1	1	10/21/21 08:15	10/22/21 14:28	75-34-3	
1,2-Dichloroethane	**<13.5**	ug/kg	58.9	13.5	1	10/21/21 08:15	10/22/21 14:28	107-06-2	
1,1-Dichloroethene	**<19.5**	ug/kg	58.9	19.5	1	10/21/21 08:15	10/22/21 14:28	75-35-4	
cis-1,2-Dichloroethene	**<12.6**	ug/kg	58.9	12.6	1	10/21/21 08:15	10/22/21 14:28	156-59-2	
trans-1,2-Dichloroethene	**<12.7**	ug/kg	58.9	12.7	1	10/21/21 08:15	10/22/21 14:28	156-60-5	
1,2-Dichloropropane	**<14.0**	ug/kg	58.9	14.0	1	10/21/21 08:15	10/22/21 14:28	78-87-5	
1,3-Dichloropropane	**<12.8**	ug/kg	58.9	12.8	1	10/21/21 08:15	10/22/21 14:28	142-28-9	
2,2-Dichloropropane	**<15.9**	ug/kg	58.9	15.9	1	10/21/21 08:15	10/22/21 14:28	594-20-7	
1,1-Dichloropropene	**<19.1**	ug/kg	58.9	19.1	1	10/21/21 08:15	10/22/21 14:28	563-58-6	
cis-1,3-Dichloropropene	**<38.9**	ug/kg	294	38.9	1	10/21/21 08:15	10/22/21 14:28	10061-01-5	
trans-1,3-Dichloropropene	**<168**	ug/kg	294	168	1	10/21/21 08:15	10/22/21 14:28	10061-02-6	
Diisopropyl ether	**<14.6**	ug/kg	58.9	14.6	1	10/21/21 08:15	10/22/21 14:28	108-20-3	
Ethylbenzene	**<14.0**	ug/kg	58.9	14.0	1	10/21/21 08:15	10/22/21 14:28	100-41-4	
Hexachloro-1,3-butadiene	**<117**	ug/kg	294	117	1	10/21/21 08:15	10/22/21 14:28	87-68-3	
Isopropylbenzene (Cumene)	**<15.9**	ug/kg	58.9	15.9	1	10/21/21 08:15	10/22/21 14:28	98-82-8	
p-Isopropyltoluene	**<17.9**	ug/kg	58.9	17.9	1	10/21/21 08:15	10/22/21 14:28	99-87-6	
Methylene Chloride	**<16.4**	ug/kg	58.9	16.4	1	10/21/21 08:15	10/22/21 14:28	75-09-2	
Methyl-tert-butyl ether	**<17.3**	ug/kg	58.9	17.3	1	10/21/21 08:15	10/22/21 14:28	1634-04-4	
Naphthalene	**819**	ug/kg	294	18.4	1	10/21/21 08:15	10/22/21 14:28	91-20-3	
n-Propylbenzene	**<14.1**	ug/kg	58.9	14.1	1	10/21/21 08:15	10/22/21 14:28	103-65-1	
Styrene	**32.8J**	ug/kg	58.9	15.1	1	10/21/21 08:15	10/22/21 14:28	100-42-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-6 (2-4) **Lab ID: 40235057008** Collected: 10/13/21 12:20 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<14.1**	ug/kg	58.9	14.1	1	10/21/21 08:15	10/22/21 14:28	630-20-6	
1,1,2,2-Tetrachloroethane	**<21.3**	ug/kg	58.9	21.3	1	10/21/21 08:15	10/22/21 14:28	79-34-5	
Tetrachloroethene	**<22.8**	ug/kg	58.9	22.8	1	10/21/21 08:15	10/22/21 14:28	127-18-4	
Toluene	**95.9**	ug/kg	58.9	14.8	1	10/21/21 08:15	10/22/21 14:28	108-88-3	
1,2,3-Trichlorobenzene	**<65.6**	ug/kg	294	65.6	1	10/21/21 08:15	10/22/21 14:28	87-61-6	
1,2,4-Trichlorobenzene	**<48.5**	ug/kg	294	48.5	1	10/21/21 08:15	10/22/21 14:28	120-82-1	
1,1,1-Trichloroethane	**<15.1**	ug/kg	58.9	15.1	1	10/21/21 08:15	10/22/21 14:28	71-55-6	
1,1,2-Trichloroethane	**<21.4**	ug/kg	58.9	21.4	1	10/21/21 08:15	10/22/21 14:28	79-00-5	
Trichloroethene	**<22.0**	ug/kg	58.9	22.0	1	10/21/21 08:15	10/22/21 14:28	79-01-6	
Trichlorofluoromethane	**<17.1**	ug/kg	58.9	17.1	1	10/21/21 08:15	10/22/21 14:28	75-69-4	
1,2,3-Trichloropropane	**<28.6**	ug/kg	58.9	28.6	1	10/21/21 08:15	10/22/21 14:28	96-18-4	
1,2,4-Trimethylbenzene	**<17.5**	ug/kg	58.9	17.5	1	10/21/21 08:15	10/22/21 14:28	95-63-6	
1,3,5-Trimethylbenzene	**<19.0**	ug/kg	58.9	19.0	1	10/21/21 08:15	10/22/21 14:28	108-67-8	
Vinyl chloride	**<11.9**	ug/kg	58.9	11.9	1	10/21/21 08:15	10/22/21 14:28	75-01-4	
m&p-Xylene	**46.7J**	ug/kg	118	24.8	1	10/21/21 08:15	10/22/21 14:28	179601-23-1	
o-Xylene	**19.4J**	ug/kg	58.9	17.7	1	10/21/21 08:15	10/22/21 14:28	95-47-6	
Surrogates									
Toluene-d8 (S)	127	%	67-159		1	10/21/21 08:15	10/22/21 14:28	2037-26-5	
4-Bromofluorobenzene (S)	130	%	66-153		1	10/21/21 08:15	10/22/21 14:28	460-00-4	
1,2-Dichlorobenzene-d4 (S)	122	%	82-158		1	10/21/21 08:15	10/22/21 14:28	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**8.2**	%	0.10	0.10	1		10/14/21 13:24		
9012 Cyanide, Total	Analytical Method: EPA 9012B Preparation Method: EPA 9012B Pace Analytical Services - Green Bay								
Cyanide	**9.4**	mg/kg	0.85	0.28	1	10/21/21 12:15	10/21/21 15:07	57-12-5	

Sample: GP-7 (2-4) **Lab ID: 40235057009** Collected: 10/13/21 12:35 Received: 10/13/21 16:40 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
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3541 Pace Analytical Services - Green Bay								
PCB-1016 (Aroclor 1016)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	12674-11-2	
PCB-1221 (Aroclor 1221)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11104-28-2	
PCB-1232 (Aroclor 1232)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11141-16-5	
PCB-1242 (Aroclor 1242)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	53469-21-9	
PCB-1248 (Aroclor 1248)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	12672-29-6	
PCB-1254 (Aroclor 1254)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11097-69-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-7 (2-4) **Lab ID: 40235057009** Collected: 10/13/21 12:35 Received: 10/13/21 16:40 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
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3541 Pace Analytical Services - Green Bay								
PCB-1260 (Aroclor 1260)	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	11096-82-5	
PCB, Total	**<16.3**	ug/kg	53.6	16.3	1	10/14/21 16:03	10/16/21 01:17	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	97	%	67-102		1	10/14/21 16:03	10/16/21 01:17	877-09-8	
Decachlorobiphenyl (S)	90	%	47-114		1	10/14/21 16:03	10/16/21 01:17	2051-24-3	
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**2.7**	mg/kg	2.7	1.6	1	10/19/21 06:21	10/19/21 21:57	7440-38-2	
Lead	**4.6**	mg/kg	2.1	0.64	1	10/19/21 06:21	10/19/21 21:57	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**<2.3**	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	83-32-9	
Acenaphthylene	**3.0J**	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	208-96-8	
Anthracene	**3.2J**	ug/kg	17.9	2.2	1	10/20/21 06:47	10/20/21 17:29	120-12-7	
Benzo(a)anthracene	**18.5**	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	56-55-3	
Benzo(a)pyrene	**25.1**	ug/kg	17.9	2.0	1	10/20/21 06:47	10/20/21 17:29	50-32-8	
Benzo(b)fluoranthene	**37.5**	ug/kg	17.9	2.5	1	10/20/21 06:47	10/20/21 17:29	205-99-2	
Benzo(g,h,i)perylene	**15.7J**	ug/kg	17.9	3.1	1	10/20/21 06:47	10/20/21 17:29	191-24-2	
Benzo(k)fluoranthene	**14.4J**	ug/kg	17.9	2.3	1	10/20/21 06:47	10/20/21 17:29	207-08-9	
Chrysene	**30.7**	ug/kg	17.9	3.4	1	10/20/21 06:47	10/20/21 17:29	218-01-9	
Dibenz(a,h)anthracene	**4.6J**	ug/kg	17.9	2.5	1	10/20/21 06:47	10/20/21 17:29	53-70-3	
Fluoranthene	**43.1**	ug/kg	17.9	2.1	1	10/20/21 06:47	10/20/21 17:29	206-44-0	
Fluorene	**<2.1**	ug/kg	17.9	2.1	1	10/20/21 06:47	10/20/21 17:29	86-73-7	
Indeno(1,2,3-cd)pyrene	**10.4J**	ug/kg	17.9	3.7	1	10/20/21 06:47	10/20/21 17:29	193-39-5	
1-Methylnaphthalene	**<2.6**	ug/kg	17.9	2.6	1	10/20/21 06:47	10/20/21 17:29	90-12-0	
2-Methylnaphthalene	**<2.6**	ug/kg	17.9	2.6	1	10/20/21 06:47	10/20/21 17:29	91-57-6	
Naphthalene	**1.9J**	ug/kg	17.9	1.7	1	10/20/21 06:47	10/20/21 17:29	91-20-3	
Phenanthrene	**13.0J**	ug/kg	17.9	2.0	1	10/20/21 06:47	10/20/21 17:29	85-01-8	
Pyrene	**35.1**	ug/kg	17.9	2.6	1	10/20/21 06:47	10/20/21 17:29	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%	36-86		1	10/20/21 06:47	10/20/21 17:29	321-60-8	
Terphenyl-d14 (S)	79	%	41-97		1	10/20/21 06:47	10/20/21 17:29	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<13.6**	ug/kg	22.8	13.6	1	10/21/21 08:15	10/22/21 09:15	71-43-2	
Bromobenzene	**<22.2**	ug/kg	57.0	22.2	1	10/21/21 08:15	10/22/21 09:15	108-86-1	
Bromochloromethane	**<15.6**	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	74-97-5	
Bromodichloromethane	**<13.6**	ug/kg	57.0	13.6	1	10/21/21 08:15	10/22/21 09:15	75-27-4	
Bromoform	**<251**	ug/kg	285	251	1	10/21/21 08:15	10/22/21 09:15	75-25-2	
Bromomethane	**<79.9**	ug/kg	285	79.9	1	10/21/21 08:15	10/22/21 09:15	74-83-9	
n-Butylbenzene	**<26.1**	ug/kg	57.0	26.1	1	10/21/21 08:15	10/22/21 09:15	104-51-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-7 (2-4) **Lab ID: 40235057009** Collected: 10/13/21 12:35 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
sec-Butylbenzene	**<13.9**	ug/kg	57.0	13.9	1	10/21/21 08:15	10/22/21 09:15	135-98-8	
tert-Butylbenzene	**<17.9**	ug/kg	57.0	17.9	1	10/21/21 08:15	10/22/21 09:15	98-06-6	
Carbon tetrachloride	**<12.5**	ug/kg	57.0	12.5	1	10/21/21 08:15	10/22/21 09:15	56-23-5	
Chlorobenzene	**<6.8**	ug/kg	57.0	6.8	1	10/21/21 08:15	10/22/21 09:15	108-90-7	
Chloroethane	**<24.1**	ug/kg	285	24.1	1	10/21/21 08:15	10/22/21 09:15	75-00-3	
Chloroform	**<40.8**	ug/kg	285	40.8	1	10/21/21 08:15	10/22/21 09:15	67-66-3	
Chloromethane	**<21.7**	ug/kg	57.0	21.7	1	10/21/21 08:15	10/22/21 09:15	74-87-3	
2-Chlorotoluene	**<18.5**	ug/kg	57.0	18.5	1	10/21/21 08:15	10/22/21 09:15	95-49-8	
4-Chlorotoluene	**<21.7**	ug/kg	57.0	21.7	1	10/21/21 08:15	10/22/21 09:15	106-43-4	
1,2-Dibromo-3-chloropropane	**<44.2**	ug/kg	285	44.2	1	10/21/21 08:15	10/22/21 09:15	96-12-8	
Dibromochloromethane	**<195**	ug/kg	285	195	1	10/21/21 08:15	10/22/21 09:15	124-48-1	
1,2-Dibromoethane (EDB)	**<15.6**	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	106-93-4	
Dibromomethane	**<16.9**	ug/kg	57.0	16.9	1	10/21/21 08:15	10/22/21 09:15	74-95-3	
1,2-Dichlorobenzene	**<17.7**	ug/kg	57.0	17.7	1	10/21/21 08:15	10/22/21 09:15	95-50-1	
1,3-Dichlorobenzene	**<15.6**	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	541-73-1	
1,4-Dichlorobenzene	**<15.6**	ug/kg	57.0	15.6	1	10/21/21 08:15	10/22/21 09:15	106-46-7	
Dichlorodifluoromethane	**<24.5**	ug/kg	57.0	24.5	1	10/21/21 08:15	10/22/21 09:15	75-71-8	
1,1-Dichloroethane	**<14.6**	ug/kg	57.0	14.6	1	10/21/21 08:15	10/22/21 09:15	75-34-3	
1,2-Dichloroethane	**<13.1**	ug/kg	57.0	13.1	1	10/21/21 08:15	10/22/21 09:15	107-06-2	
1,1-Dichloroethene	**<18.9**	ug/kg	57.0	18.9	1	10/21/21 08:15	10/22/21 09:15	75-35-4	
cis-1,2-Dichloroethene	**<12.2**	ug/kg	57.0	12.2	1	10/21/21 08:15	10/22/21 09:15	156-59-2	
trans-1,2-Dichloroethene	**<12.3**	ug/kg	57.0	12.3	1	10/21/21 08:15	10/22/21 09:15	156-60-5	
1,2-Dichloropropane	**<13.6**	ug/kg	57.0	13.6	1	10/21/21 08:15	10/22/21 09:15	78-87-5	
1,3-Dichloropropane	**<12.4**	ug/kg	57.0	12.4	1	10/21/21 08:15	10/22/21 09:15	142-28-9	
2,2-Dichloropropane	**<15.4**	ug/kg	57.0	15.4	1	10/21/21 08:15	10/22/21 09:15	594-20-7	
1,1-Dichloropropene	**<18.5**	ug/kg	57.0	18.5	1	10/21/21 08:15	10/22/21 09:15	563-58-6	
cis-1,3-Dichloropropene	**<37.6**	ug/kg	285	37.6	1	10/21/21 08:15	10/22/21 09:15	10061-01-5	
trans-1,3-Dichloropropene	**<163**	ug/kg	285	163	1	10/21/21 08:15	10/22/21 09:15	10061-02-6	
Diisopropyl ether	**<14.1**	ug/kg	57.0	14.1	1	10/21/21 08:15	10/22/21 09:15	108-20-3	
Ethylbenzene	**<13.6**	ug/kg	57.0	13.6	1	10/21/21 08:15	10/22/21 09:15	100-41-4	
Hexachloro-1,3-butadiene	**<113**	ug/kg	285	113	1	10/21/21 08:15	10/22/21 09:15	87-68-3	
Isopropylbenzene (Cumene)	**<15.4**	ug/kg	57.0	15.4	1	10/21/21 08:15	10/22/21 09:15	98-82-8	
p-Isopropyltoluene	**<17.3**	ug/kg	57.0	17.3	1	10/21/21 08:15	10/22/21 09:15	99-87-6	
Methylene Chloride	**<15.8**	ug/kg	57.0	15.8	1	10/21/21 08:15	10/22/21 09:15	75-09-2	
Methyl-tert-butyl ether	**<16.8**	ug/kg	57.0	16.8	1	10/21/21 08:15	10/22/21 09:15	1634-04-4	
Naphthalene	**<17.8**	ug/kg	285	17.8	1	10/21/21 08:15	10/22/21 09:15	91-20-3	
n-Propylbenzene	**<13.7**	ug/kg	57.0	13.7	1	10/21/21 08:15	10/22/21 09:15	103-65-1	
Styrene	**<14.6**	ug/kg	57.0	14.6	1	10/21/21 08:15	10/22/21 09:15	100-42-5	
1,1,1,2-Tetrachloroethane	**<13.7**	ug/kg	57.0	13.7	1	10/21/21 08:15	10/22/21 09:15	630-20-6	
1,1,2,2-Tetrachloroethane	**<20.6**	ug/kg	57.0	20.6	1	10/21/21 08:15	10/22/21 09:15	79-34-5	
Tetrachloroethene	**<22.1**	ug/kg	57.0	22.1	1	10/21/21 08:15	10/22/21 09:15	127-18-4	
Toluene	**<14.4**	ug/kg	57.0	14.4	1	10/21/21 08:15	10/22/21 09:15	108-88-3	
1,2,3-Trichlorobenzene	**<63.5**	ug/kg	285	63.5	1	10/21/21 08:15	10/22/21 09:15	87-61-6	
1,2,4-Trichlorobenzene	**<47.0**	ug/kg	285	47.0	1	10/21/21 08:15	10/22/21 09:15	120-82-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-7 (2-4) **Lab ID: 40235057009** Collected: 10/13/21 12:35 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
1,1,1-Trichloroethane	**<14.6**	ug/kg	57.0	14.6	1	10/21/21 08:15	10/22/21 09:15	71-55-6	
1,1,2-Trichloroethane	**<20.8**	ug/kg	57.0	20.8	1	10/21/21 08:15	10/22/21 09:15	79-00-5	
Trichloroethene	**<21.3**	ug/kg	57.0	21.3	1	10/21/21 08:15	10/22/21 09:15	79-01-6	
Trichlorofluoromethane	**<16.5**	ug/kg	57.0	16.5	1	10/21/21 08:15	10/22/21 09:15	75-69-4	
1,2,3-Trichloropropane	**<27.7**	ug/kg	57.0	27.7	1	10/21/21 08:15	10/22/21 09:15	96-18-4	
1,2,4-Trimethylbenzene	**<17.0**	ug/kg	57.0	17.0	1	10/21/21 08:15	10/22/21 09:15	95-63-6	
1,3,5-Trimethylbenzene	**<18.4**	ug/kg	57.0	18.4	1	10/21/21 08:15	10/22/21 09:15	108-67-8	
Vinyl chloride	**<11.5**	ug/kg	57.0	11.5	1	10/21/21 08:15	10/22/21 09:15	75-01-4	
m&p-Xylene	**<24.1**	ug/kg	114	24.1	1	10/21/21 08:15	10/22/21 09:15	179601-23-1	
o-Xylene	**<17.1**	ug/kg	57.0	17.1	1	10/21/21 08:15	10/22/21 09:15	95-47-6	
Surrogates									
Toluene-d8 (S)	113	%	67-159		1	10/21/21 08:15	10/22/21 09:15	2037-26-5	
4-Bromofluorobenzene (S)	116	%	66-153		1	10/21/21 08:15	10/22/21 09:15	460-00-4	
1,2-Dichlorobenzene-d4 (S)	111	%	82-158		1	10/21/21 08:15	10/22/21 09:15	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**6.5**	%	0.10	0.10	1		10/14/21 13:24		
9012 Cyanide, Total	Analytical Method: EPA 9012B Preparation Method: EPA 9012B Pace Analytical Services - Green Bay								
Cyanide	**<0.18**	mg/kg	0.53	0.18	1	10/21/21 12:15	10/21/21 15:07	57-12-5	

Sample: GP-8 (2-4) **Lab ID: 40235057010** Collected: 10/13/21 13:05 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**6.3**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:04	7440-38-2	
Lead	**104**	mg/kg	2.1	0.63	1	10/19/21 06:21	10/19/21 22:04	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**58.5J**	ug/kg	356	46.2	20	10/20/21 06:47	10/20/21 17:46	83-32-9	
Acenaphthylene	**339J**	ug/kg	356	44.9	20	10/20/21 06:47	10/20/21 17:46	208-96-8	
Anthracene	**352J**	ug/kg	356	44.2	20	10/20/21 06:47	10/20/21 17:46	120-12-7	
Benzo(a)anthracene	**1680**	ug/kg	356	46.0	20	10/20/21 06:47	10/20/21 17:46	56-55-3	
Benzo(a)pyrene	**1790**	ug/kg	356	40.4	20	10/20/21 06:47	10/20/21 17:46	50-32-8	
Benzo(b)fluoranthene	**2420**	ug/kg	356	49.4	20	10/20/21 06:47	10/20/21 17:46	205-99-2	
Benzo(g,h,i)perylene	**949**	ug/kg	356	62.5	20	10/20/21 06:47	10/20/21 17:46	191-24-2	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-8 (2-4) **Lab ID: 40235057010** Collected: 10/13/21 13:05 Received: 10/13/21 16:40 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								
Benzo(k)fluoranthene	**1210**	ug/kg	356	45.5	20	10/20/21 06:47	10/20/21 17:46	207-08-9	
Chrysene	**1770**	ug/kg	356	67.1	20	10/20/21 06:47	10/20/21 17:46	218-01-9	
Dibenz(a,h)anthracene	**292J**	ug/kg	356	49.3	20	10/20/21 06:47	10/20/21 17:46	53-70-3	
Fluoranthene	**3350**	ug/kg	356	42.1	20	10/20/21 06:47	10/20/21 17:46	206-44-0	
Fluorene	**117J**	ug/kg	356	42.7	20	10/20/21 06:47	10/20/21 17:46	86-73-7	
Indeno(1,2,3-cd)pyrene	**858**	ug/kg	356	74.2	20	10/20/21 06:47	10/20/21 17:46	193-39-5	
1-Methylnaphthalene	**54.3J**	ug/kg	356	52.0	20	10/20/21 06:47	10/20/21 17:46	90-12-0	
2-Methylnaphthalene	**75.2J**	ug/kg	356	52.1	20	10/20/21 06:47	10/20/21 17:46	91-57-6	
Naphthalene	**111J**	ug/kg	356	34.7	20	10/20/21 06:47	10/20/21 17:46	91-20-3	
Phenanthrene	**1040**	ug/kg	356	40.8	20	10/20/21 06:47	10/20/21 17:46	85-01-8	
Pyrene	**2760**	ug/kg	356	52.3	20	10/20/21 06:47	10/20/21 17:46	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	61	%	36-86		20	10/20/21 06:47	10/20/21 17:46	321-60-8	
Terphenyl-d14 (S)	71	%	41-97		20	10/20/21 06:47	10/20/21 17:46	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<13.5**	ug/kg	22.7	13.5	1	10/21/21 08:15	10/22/21 15:46	71-43-2	
Bromobenzene	**<22.1**	ug/kg	56.7	22.1	1	10/21/21 08:15	10/22/21 15:46	108-86-1	
Bromochloromethane	**<15.5**	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	74-97-5	
Bromodichloromethane	**<13.5**	ug/kg	56.7	13.5	1	10/21/21 08:15	10/22/21 15:46	75-27-4	
Bromoform	**<249**	ug/kg	283	249	1	10/21/21 08:15	10/22/21 15:46	75-25-2	
Bromomethane	**<79.5**	ug/kg	283	79.5	1	10/21/21 08:15	10/22/21 15:46	74-83-9	
n-Butylbenzene	**<26.0**	ug/kg	56.7	26.0	1	10/21/21 08:15	10/22/21 15:46	104-51-8	
sec-Butylbenzene	**<13.8**	ug/kg	56.7	13.8	1	10/21/21 08:15	10/22/21 15:46	135-98-8	
tert-Butylbenzene	**<17.8**	ug/kg	56.7	17.8	1	10/21/21 08:15	10/22/21 15:46	98-06-6	
Carbon tetrachloride	**<12.5**	ug/kg	56.7	12.5	1	10/21/21 08:15	10/22/21 15:46	56-23-5	
Chlorobenzene	**<6.8**	ug/kg	56.7	6.8	1	10/21/21 08:15	10/22/21 15:46	108-90-7	
Chloroethane	**<23.9**	ug/kg	283	23.9	1	10/21/21 08:15	10/22/21 15:46	75-00-3	
Chloroform	**<40.6**	ug/kg	283	40.6	1	10/21/21 08:15	10/22/21 15:46	67-66-3	
Chloromethane	**<21.5**	ug/kg	56.7	21.5	1	10/21/21 08:15	10/22/21 15:46	74-87-3	
2-Chlorotoluene	**<18.4**	ug/kg	56.7	18.4	1	10/21/21 08:15	10/22/21 15:46	95-49-8	
4-Chlorotoluene	**<21.5**	ug/kg	56.7	21.5	1	10/21/21 08:15	10/22/21 15:46	106-43-4	
1,2-Dibromo-3-chloropropane	**<44.0**	ug/kg	283	44.0	1	10/21/21 08:15	10/22/21 15:46	96-12-8	
Dibromochloromethane	**<194**	ug/kg	283	194	1	10/21/21 08:15	10/22/21 15:46	124-48-1	
1,2-Dibromoethane (EDB)	**<15.5**	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	106-93-4	
Dibromomethane	**<16.8**	ug/kg	56.7	16.8	1	10/21/21 08:15	10/22/21 15:46	74-95-3	
1,2-Dichlorobenzene	**<17.6**	ug/kg	56.7	17.6	1	10/21/21 08:15	10/22/21 15:46	95-50-1	
1,3-Dichlorobenzene	**<15.5**	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	541-73-1	
1,4-Dichlorobenzene	**<15.5**	ug/kg	56.7	15.5	1	10/21/21 08:15	10/22/21 15:46	106-46-7	
Dichlorodifluoromethane	**<24.4**	ug/kg	56.7	24.4	1	10/21/21 08:15	10/22/21 15:46	75-71-8	
1,1-Dichloroethane	**<14.5**	ug/kg	56.7	14.5	1	10/21/21 08:15	10/22/21 15:46	75-34-3	
1,2-Dichloroethane	**<13.0**	ug/kg	56.7	13.0	1	10/21/21 08:15	10/22/21 15:46	107-06-2	
1,1-Dichloroethene	**<18.8**	ug/kg	56.7	18.8	1	10/21/21 08:15	10/22/21 15:46	75-35-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-8 (2-4) **Lab ID: 40235057010** Collected: 10/13/21 13:05 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
cis-1,2-Dichloroethene	**<12.1**	ug/kg	56.7	12.1	1	10/21/21 08:15	10/22/21 15:46	156-59-2	
trans-1,2-Dichloroethene	**<12.2**	ug/kg	56.7	12.2	1	10/21/21 08:15	10/22/21 15:46	156-60-5	
1,2-Dichloropropane	**<13.5**	ug/kg	56.7	13.5	1	10/21/21 08:15	10/22/21 15:46	78-87-5	
1,3-Dichloropropane	**<12.4**	ug/kg	56.7	12.4	1	10/21/21 08:15	10/22/21 15:46	142-28-9	
2,2-Dichloropropane	**<15.3**	ug/kg	56.7	15.3	1	10/21/21 08:15	10/22/21 15:46	594-20-7	
1,1-Dichloropropene	**<18.4**	ug/kg	56.7	18.4	1	10/21/21 08:15	10/22/21 15:46	563-58-6	
cis-1,3-Dichloropropene	**<37.4**	ug/kg	283	37.4	1	10/21/21 08:15	10/22/21 15:46	10061-01-5	
trans-1,3-Dichloropropene	**<162**	ug/kg	283	162	1	10/21/21 08:15	10/22/21 15:46	10061-02-6	
Diisopropyl ether	**<14.1**	ug/kg	56.7	14.1	1	10/21/21 08:15	10/22/21 15:46	108-20-3	
Ethylbenzene	**<13.5**	ug/kg	56.7	13.5	1	10/21/21 08:15	10/22/21 15:46	100-41-4	
Hexachloro-1,3-butadiene	**<113**	ug/kg	283	113	1	10/21/21 08:15	10/22/21 15:46	87-68-3	
Isopropylbenzene (Cumene)	**<15.3**	ug/kg	56.7	15.3	1	10/21/21 08:15	10/22/21 15:46	98-82-8	
p-Isopropyltoluene	**<17.2**	ug/kg	56.7	17.2	1	10/21/21 08:15	10/22/21 15:46	99-87-6	
Methylene Chloride	**<15.8**	ug/kg	56.7	15.8	1	10/21/21 08:15	10/22/21 15:46	75-09-2	
Methyl-tert-butyl ether	**<16.7**	ug/kg	56.7	16.7	1	10/21/21 08:15	10/22/21 15:46	1634-04-4	
Naphthalene	**<17.7**	ug/kg	283	17.7	1	10/21/21 08:15	10/22/21 15:46	91-20-3	
n-Propylbenzene	**<13.6**	ug/kg	56.7	13.6	1	10/21/21 08:15	10/22/21 15:46	103-65-1	
Styrene	**<14.5**	ug/kg	56.7	14.5	1	10/21/21 08:15	10/22/21 15:46	100-42-5	
1,1,1,2-Tetrachloroethane	**<13.6**	ug/kg	56.7	13.6	1	10/21/21 08:15	10/22/21 15:46	630-20-6	
1,1,2,2-Tetrachloroethane	**<20.5**	ug/kg	56.7	20.5	1	10/21/21 08:15	10/22/21 15:46	79-34-5	
Tetrachloroethene	**<22.0**	ug/kg	56.7	22.0	1	10/21/21 08:15	10/22/21 15:46	127-18-4	
Toluene	**<14.3**	ug/kg	56.7	14.3	1	10/21/21 08:15	10/22/21 15:46	108-88-3	
1,2,3-Trichlorobenzene	**<63.1**	ug/kg	283	63.1	1	10/21/21 08:15	10/22/21 15:46	87-61-6	
1,2,4-Trichlorobenzene	**<46.7**	ug/kg	283	46.7	1	10/21/21 08:15	10/22/21 15:46	120-82-1	
1,1,1-Trichloroethane	**<14.5**	ug/kg	56.7	14.5	1	10/21/21 08:15	10/22/21 15:46	71-55-6	
1,1,2-Trichloroethane	**<20.6**	ug/kg	56.7	20.6	1	10/21/21 08:15	10/22/21 15:46	79-00-5	
Trichloroethene	**<21.2**	ug/kg	56.7	21.2	1	10/21/21 08:15	10/22/21 15:46	79-01-6	
Trichlorofluoromethane	**<16.4**	ug/kg	56.7	16.4	1	10/21/21 08:15	10/22/21 15:46	75-69-4	
1,2,3-Trichloropropane	**<27.5**	ug/kg	56.7	27.5	1	10/21/21 08:15	10/22/21 15:46	96-18-4	
1,2,4-Trimethylbenzene	**<16.9**	ug/kg	56.7	16.9	1	10/21/21 08:15	10/22/21 15:46	95-63-6	
1,3,5-Trimethylbenzene	**<18.2**	ug/kg	56.7	18.2	1	10/21/21 08:15	10/22/21 15:46	108-67-8	
Vinyl chloride	**<11.4**	ug/kg	56.7	11.4	1	10/21/21 08:15	10/22/21 15:46	75-01-4	
m&p-Xylene	**<23.9**	ug/kg	113	23.9	1	10/21/21 08:15	10/22/21 15:46	179601-23-1	
o-Xylene	**<17.0**	ug/kg	56.7	17.0	1	10/21/21 08:15	10/22/21 15:46	95-47-6	
Surrogates									
Toluene-d8 (S)	112	%	67-159		1	10/21/21 08:15	10/22/21 15:46	2037-26-5	
4-Bromofluorobenzene (S)	117	%	66-153		1	10/21/21 08:15	10/22/21 15:46	460-00-4	
1,2-Dichlorobenzene-d4 (S)	112	%	82-158		1	10/21/21 08:15	10/22/21 15:46	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**6.3**	%	0.10	0.10	1		10/14/21 13:24		

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-8 (7-8) **Lab ID: 40235057011** Collected: 10/13/21 13:10 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**287**	mg/kg	6.8	4.0	2	10/19/21 06:21	10/21/21 06:28	7440-38-2	
Lead	**353**	mg/kg	5.4	1.6	2	10/19/21 06:21	10/21/21 06:28	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**555**	ug/kg	476	61.7	20	10/20/21 06:47	10/20/21 18:03	83-32-9	
Acenaphthylene	**748**	ug/kg	476	60.0	20	10/20/21 06:47	10/20/21 18:03	208-96-8	
Anthracene	**458J**	ug/kg	476	59.1	20	10/20/21 06:47	10/20/21 18:03	120-12-7	
Benzo(a)anthracene	**655**	ug/kg	476	61.5	20	10/20/21 06:47	10/20/21 18:03	56-55-3	
Benzo(a)pyrene	**368J**	ug/kg	476	54.1	20	10/20/21 06:47	10/20/21 18:03	50-32-8	
Benzo(b)fluoranthene	**541**	ug/kg	476	66.1	20	10/20/21 06:47	10/20/21 18:03	205-99-2	
Benzo(g,h,i)perylene	**146J**	ug/kg	476	83.5	20	10/20/21 06:47	10/20/21 18:03	191-24-2	
Benzo(k)fluoranthene	**183J**	ug/kg	476	60.8	20	10/20/21 06:47	10/20/21 18:03	207-08-9	
Chrysene	**587**	ug/kg	476	89.8	20	10/20/21 06:47	10/20/21 18:03	218-01-9	
Dibenz(a,h)anthracene	**<65.9**	ug/kg	476	65.9	20	10/20/21 06:47	10/20/21 18:03	53-70-3	
Fluoranthene	**1250**	ug/kg	476	56.3	20	10/20/21 06:47	10/20/21 18:03	206-44-0	
Fluorene	**937**	ug/kg	476	57.1	20	10/20/21 06:47	10/20/21 18:03	86-73-7	
Indeno(1,2,3-cd)pyrene	**123J**	ug/kg	476	99.2	20	10/20/21 06:47	10/20/21 18:03	193-39-5	
1-Methylnaphthalene	**8580**	ug/kg	476	69.5	20	10/20/21 06:47	10/20/21 18:03	90-12-0	
2-Methylnaphthalene	**13000**	ug/kg	476	69.6	20	10/20/21 06:47	10/20/21 18:03	91-57-6	
Naphthalene	**14400**	ug/kg	476	46.4	20	10/20/21 06:47	10/20/21 18:03	91-20-3	
Phenanthrene	**2140**	ug/kg	476	54.5	20	10/20/21 06:47	10/20/21 18:03	85-01-8	
Pyrene	**1470**	ug/kg	476	69.9	20	10/20/21 06:47	10/20/21 18:03	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	56	%	36-86		20	10/20/21 06:47	10/20/21 18:03	321-60-8	
Terphenyl-d14 (S)	70	%	41-97		20	10/20/21 06:47	10/20/21 18:03	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**45.8**	ug/kg	37.0	22.0	1	10/21/21 08:15	10/22/21 16:05	71-43-2	
Bromobenzene	**<36.0**	ug/kg	92.4	36.0	1	10/21/21 08:15	10/22/21 16:05	108-86-1	
Bromochloromethane	**<25.3**	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	74-97-5	
Bromodichloromethane	**<22.0**	ug/kg	92.4	22.0	1	10/21/21 08:15	10/22/21 16:05	75-27-4	
Bromoform	**<407**	ug/kg	462	407	1	10/21/21 08:15	10/22/21 16:05	75-25-2	
Bromomethane	**<130**	ug/kg	462	130	1	10/21/21 08:15	10/22/21 16:05	74-83-9	
n-Butylbenzene	**1010**	ug/kg	92.4	42.3	1	10/21/21 08:15	10/22/21 16:05	104-51-8	
sec-Butylbenzene	**198**	ug/kg	92.4	22.5	1	10/21/21 08:15	10/22/21 16:05	135-98-8	
tert-Butylbenzene	**34.8J**	ug/kg	92.4	29.0	1	10/21/21 08:15	10/22/21 16:05	98-06-6	
Carbon tetrachloride	**<20.3**	ug/kg	92.4	20.3	1	10/21/21 08:15	10/22/21 16:05	56-23-5	
Chlorobenzene	**23.0J**	ug/kg	92.4	11.1	1	10/21/21 08:15	10/22/21 16:05	108-90-7	
Chloroethane	**<39.0**	ug/kg	462	39.0	1	10/21/21 08:15	10/22/21 16:05	75-00-3	
Chloroform	**<66.2**	ug/kg	462	66.2	1	10/21/21 08:15	10/22/21 16:05	67-66-3	
Chloromethane	**<35.1**	ug/kg	92.4	35.1	1	10/21/21 08:15	10/22/21 16:05	74-87-3	
2-Chlorotoluene	**<29.9**	ug/kg	92.4	29.9	1	10/21/21 08:15	10/22/21 16:05	95-49-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-8 (7-8) **Lab ID: 40235057011** Collected: 10/13/21 13:10 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
4-Chlorotoluene	**<35.1**	ug/kg	92.4	35.1	1	10/21/21 08:15	10/22/21 16:05	106-43-4	
1,2-Dibromo-3-chloropropane	**<71.7**	ug/kg	462	71.7	1	10/21/21 08:15	10/22/21 16:05	96-12-8	
Dibromochloromethane	**<316**	ug/kg	462	316	1	10/21/21 08:15	10/22/21 16:05	124-48-1	
1,2-Dibromoethane (EDB)	**<25.3**	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	106-93-4	
Dibromomethane	**<27.4**	ug/kg	92.4	27.4	1	10/21/21 08:15	10/22/21 16:05	74-95-3	
1,2-Dichlorobenzene	**<28.6**	ug/kg	92.4	28.6	1	10/21/21 08:15	10/22/21 16:05	95-50-1	
1,3-Dichlorobenzene	**<25.3**	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	541-73-1	
1,4-Dichlorobenzene	**<25.3**	ug/kg	92.4	25.3	1	10/21/21 08:15	10/22/21 16:05	106-46-7	
Dichlorodifluoromethane	**<39.7**	ug/kg	92.4	39.7	1	10/21/21 08:15	10/22/21 16:05	75-71-8	
1,1-Dichloroethane	**<23.7**	ug/kg	92.4	23.7	1	10/21/21 08:15	10/22/21 16:05	75-34-3	
1,2-Dichloroethane	**<21.3**	ug/kg	92.4	21.3	1	10/21/21 08:15	10/22/21 16:05	107-06-2	
1,1-Dichloroethene	**<30.7**	ug/kg	92.4	30.7	1	10/21/21 08:15	10/22/21 16:05	75-35-4	
cis-1,2-Dichloroethene	**<19.8**	ug/kg	92.4	19.8	1	10/21/21 08:15	10/22/21 16:05	156-59-2	
trans-1,2-Dichloroethene	**<20.0**	ug/kg	92.4	20.0	1	10/21/21 08:15	10/22/21 16:05	156-60-5	
1,2-Dichloropropane	**<22.0**	ug/kg	92.4	22.0	1	10/21/21 08:15	10/22/21 16:05	78-87-5	
1,3-Dichloropropane	**<20.1**	ug/kg	92.4	20.1	1	10/21/21 08:15	10/22/21 16:05	142-28-9	
2,2-Dichloropropane	**<25.0**	ug/kg	92.4	25.0	1	10/21/21 08:15	10/22/21 16:05	594-20-7	
1,1-Dichloropropene	**<29.9**	ug/kg	92.4	29.9	1	10/21/21 08:15	10/22/21 16:05	563-58-6	
cis-1,3-Dichloropropene	**<61.0**	ug/kg	462	61.0	1	10/21/21 08:15	10/22/21 16:05	10061-01-5	
trans-1,3-Dichloropropene	**<264**	ug/kg	462	264	1	10/21/21 08:15	10/22/21 16:05	10061-02-6	
Diisopropyl ether	**<22.9**	ug/kg	92.4	22.9	1	10/21/21 08:15	10/22/21 16:05	108-20-3	
Ethylbenzene	**110**	ug/kg	92.4	22.0	1	10/21/21 08:15	10/22/21 16:05	100-41-4	
Hexachloro-1,3-butadiene	**<184**	ug/kg	462	184	1	10/21/21 08:15	10/22/21 16:05	87-68-3	
Isopropylbenzene (Cumene)	**379**	ug/kg	92.4	25.0	1	10/21/21 08:15	10/22/21 16:05	98-82-8	
p-Isopropyltoluene	**164**	ug/kg	92.4	28.1	1	10/21/21 08:15	10/22/21 16:05	99-87-6	
Methylene Chloride	**<25.7**	ug/kg	92.4	25.7	1	10/21/21 08:15	10/22/21 16:05	75-09-2	
Methyl-tert-butyl ether	**<27.2**	ug/kg	92.4	27.2	1	10/21/21 08:15	10/22/21 16:05	1634-04-4	
Naphthalene	**4840**	ug/kg	462	28.8	1	10/21/21 08:15	10/22/21 16:05	91-20-3	
n-Propylbenzene	**137**	ug/kg	92.4	22.2	1	10/21/21 08:15	10/22/21 16:05	103-65-1	
Styrene	**<23.7**	ug/kg	92.4	23.7	1	10/21/21 08:15	10/22/21 16:05	100-42-5	
1,1,1,2-Tetrachloroethane	**<22.2**	ug/kg	92.4	22.2	1	10/21/21 08:15	10/22/21 16:05	630-20-6	
1,1,2,2-Tetrachloroethane	**<33.5**	ug/kg	92.4	33.5	1	10/21/21 08:15	10/22/21 16:05	79-34-5	
Tetrachloroethene	**<35.9**	ug/kg	92.4	35.9	1	10/21/21 08:15	10/22/21 16:05	127-18-4	
Toluene	**146**	ug/kg	92.4	23.3	1	10/21/21 08:15	10/22/21 16:05	108-88-3	
1,2,3-Trichlorobenzene	**<103**	ug/kg	462	103	1	10/21/21 08:15	10/22/21 16:05	87-61-6	
1,2,4-Trichlorobenzene	**<76.1**	ug/kg	462	76.1	1	10/21/21 08:15	10/22/21 16:05	120-82-1	
1,1,1-Trichloroethane	**<23.7**	ug/kg	92.4	23.7	1	10/21/21 08:15	10/22/21 16:05	71-55-6	
1,1,2-Trichloroethane	**<33.6**	ug/kg	92.4	33.6	1	10/21/21 08:15	10/22/21 16:05	79-00-5	
Trichloroethene	**<34.6**	ug/kg	92.4	34.6	1	10/21/21 08:15	10/22/21 16:05	79-01-6	
Trichlorofluoromethane	**<26.8**	ug/kg	92.4	26.8	1	10/21/21 08:15	10/22/21 16:05	75-69-4	
1,2,3-Trichloropropane	**<44.9**	ug/kg	92.4	44.9	1	10/21/21 08:15	10/22/21 16:05	96-18-4	
1,2,4-Trimethylbenzene	**306**	ug/kg	92.4	27.5	1	10/21/21 08:15	10/22/21 16:05	95-63-6	
1,3,5-Trimethylbenzene	**180**	ug/kg	92.4	29.8	1	10/21/21 08:15	10/22/21 16:05	108-67-8	
Vinyl chloride	**<18.7**	ug/kg	92.4	18.7	1	10/21/21 08:15	10/22/21 16:05	75-01-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-8 (7-8) **Lab ID: 40235057011** Collected: 10/13/21 13:10 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
m&p-Xylene	**71.6J**	ug/kg	185	39.0	1	10/21/21 08:15	10/22/21 16:05	179601-23-1	
o-Xylene	**68.2J**	ug/kg	92.4	27.7	1	10/21/21 08:15	10/22/21 16:05	95-47-6	
Surrogates									
Toluene-d8 (S)	132	%	67-159		1	10/21/21 08:15	10/22/21 16:05	2037-26-5	
4-Bromofluorobenzene (S)	141	%	66-153		1	10/21/21 08:15	10/22/21 16:05	460-00-4	
1,2-Dichlorobenzene-d4 (S)	140	%	82-158		1	10/21/21 08:15	10/22/21 16:05	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**29.8**	%	0.10	0.10	1		10/14/21 13:24		

Sample: GP-9 (1.5-3.5) **Lab ID: 40235057012** Collected: 10/13/21 14:05 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**3.6**	mg/kg	2.4	1.4	1	10/19/21 06:21	10/19/21 22:09	7440-38-2	
Lead	**57.5**	mg/kg	1.9	0.58	1	10/19/21 06:21	10/19/21 22:09	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**17000**	ug/kg	8760	1140	500	10/20/21 06:47	10/20/21 18:20	83-32-9	
Acenaphthylene	**2610J**	ug/kg	8760	1100	500	10/20/21 06:47	10/20/21 18:20	208-96-8	
Anthracene	**63600**	ug/kg	8760	1090	500	10/20/21 06:47	10/20/21 18:20	120-12-7	
Benzo(a)anthracene	**59300**	ug/kg	8760	1130	500	10/20/21 06:47	10/20/21 18:20	56-55-3	
Benzo(a)pyrene	**49600**	ug/kg	8760	995	500	10/20/21 06:47	10/20/21 18:20	50-32-8	
Benzo(b)fluoranthene	**58500**	ug/kg	8760	1220	500	10/20/21 06:47	10/20/21 18:20	205-99-2	
Benzo(g,h,i)perylene	**20900**	ug/kg	8760	1540	500	10/20/21 06:47	10/20/21 18:20	191-24-2	
Benzo(k)fluoranthene	**33200**	ug/kg	8760	1120	500	10/20/21 06:47	10/20/21 18:20	207-08-9	
Chrysene	**56400**	ug/kg	8760	1650	500	10/20/21 06:47	10/20/21 18:20	218-01-9	
Dibenz(a,h)anthracene	**6400J**	ug/kg	8760	1210	500	10/20/21 06:47	10/20/21 18:20	53-70-3	
Fluoranthene	**191000**	ug/kg	8760	1040	500	10/20/21 06:47	10/20/21 18:20	206-44-0	
Fluorene	**35900**	ug/kg	8760	1050	500	10/20/21 06:47	10/20/21 18:20	86-73-7	
Indeno(1,2,3-cd)pyrene	**19100**	ug/kg	8760	1820	500	10/20/21 06:47	10/20/21 18:20	193-39-5	
1-Methylnaphthalene	**8520J**	ug/kg	8760	1280	500	10/20/21 06:47	10/20/21 18:20	90-12-0	
2-Methylnaphthalene	**12300**	ug/kg	8760	1280	500	10/20/21 06:47	10/20/21 18:20	91-57-6	
Naphthalene	**34100**	ug/kg	8760	853	500	10/20/21 06:47	10/20/21 18:20	91-20-3	
Phenanthrene	**184000**	ug/kg	8760	1000	500	10/20/21 06:47	10/20/21 18:20	85-01-8	
Pyrene	**117000**	ug/kg	8760	1290	500	10/20/21 06:47	10/20/21 18:20	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	0	%	36-86		500	10/20/21 06:47	10/20/21 18:20	321-60-8	S4

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-9 (1.5-3.5) **Lab ID: 40235057012** Collected: 10/13/21 14:05 Received: 10/13/21 16:40 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								
Surrogates									
Terphenyl-d14 (S)	0	%	41-97		500	10/20/21 06:47	10/20/21 18:20	1718-51-0	S4
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<13.1**	ug/kg	22.0	13.1	1	10/21/21 08:15	10/22/21 18:57	71-43-2	
Bromobenzene	**<21.4**	ug/kg	54.9	21.4	1	10/21/21 08:15	10/22/21 18:57	108-86-1	
Bromochloromethane	**<15.0**	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	74-97-5	
Bromodichloromethane	**<13.1**	ug/kg	54.9	13.1	1	10/21/21 08:15	10/22/21 18:57	75-27-4	
Bromoform	**<242**	ug/kg	274	242	1	10/21/21 08:15	10/22/21 18:57	75-25-2	
Bromomethane	**<77.0**	ug/kg	274	77.0	1	10/21/21 08:15	10/22/21 18:57	74-83-9	
n-Butylbenzene	**<25.1**	ug/kg	54.9	25.1	1	10/21/21 08:15	10/22/21 18:57	104-51-8	
sec-Butylbenzene	**<13.4**	ug/kg	54.9	13.4	1	10/21/21 08:15	10/22/21 18:57	135-98-8	
tert-Butylbenzene	**<17.2**	ug/kg	54.9	17.2	1	10/21/21 08:15	10/22/21 18:57	98-06-6	
Carbon tetrachloride	**<12.1**	ug/kg	54.9	12.1	1	10/21/21 08:15	10/22/21 18:57	56-23-5	
Chlorobenzene	**<6.6**	ug/kg	54.9	6.6	1	10/21/21 08:15	10/22/21 18:57	108-90-7	
Chloroethane	**<23.2**	ug/kg	274	23.2	1	10/21/21 08:15	10/22/21 18:57	75-00-3	
Chloroform	**<39.3**	ug/kg	274	39.3	1	10/21/21 08:15	10/22/21 18:57	67-66-3	
Chloromethane	**<20.9**	ug/kg	54.9	20.9	1	10/21/21 08:15	10/22/21 18:57	74-87-3	
2-Chlorotoluene	**<17.8**	ug/kg	54.9	17.8	1	10/21/21 08:15	10/22/21 18:57	95-49-8	
4-Chlorotoluene	**<20.9**	ug/kg	54.9	20.9	1	10/21/21 08:15	10/22/21 18:57	106-43-4	
1,2-Dibromo-3-chloropropane	**<42.6**	ug/kg	274	42.6	1	10/21/21 08:15	10/22/21 18:57	96-12-8	
Dibromochloromethane	**<188**	ug/kg	274	188	1	10/21/21 08:15	10/22/21 18:57	124-48-1	
1,2-Dibromoethane (EDB)	**<15.0**	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	106-93-4	
Dibromomethane	**<16.2**	ug/kg	54.9	16.2	1	10/21/21 08:15	10/22/21 18:57	74-95-3	
1,2-Dichlorobenzene	**<17.0**	ug/kg	54.9	17.0	1	10/21/21 08:15	10/22/21 18:57	95-50-1	
1,3-Dichlorobenzene	**<15.0**	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	541-73-1	
1,4-Dichlorobenzene	**<15.0**	ug/kg	54.9	15.0	1	10/21/21 08:15	10/22/21 18:57	106-46-7	
Dichlorodifluoromethane	**<23.6**	ug/kg	54.9	23.6	1	10/21/21 08:15	10/22/21 18:57	75-71-8	
1,1-Dichloroethane	**<14.1**	ug/kg	54.9	14.1	1	10/21/21 08:15	10/22/21 18:57	75-34-3	
1,2-Dichloroethane	**<12.6**	ug/kg	54.9	12.6	1	10/21/21 08:15	10/22/21 18:57	107-06-2	
1,1-Dichloroethene	**<18.2**	ug/kg	54.9	18.2	1	10/21/21 08:15	10/22/21 18:57	75-35-4	
cis-1,2-Dichloroethene	**<11.7**	ug/kg	54.9	11.7	1	10/21/21 08:15	10/22/21 18:57	156-59-2	
trans-1,2-Dichloroethene	**<11.9**	ug/kg	54.9	11.9	1	10/21/21 08:15	10/22/21 18:57	156-60-5	
1,2-Dichloropropane	**<13.1**	ug/kg	54.9	13.1	1	10/21/21 08:15	10/22/21 18:57	78-87-5	
1,3-Dichloropropane	**<12.0**	ug/kg	54.9	12.0	1	10/21/21 08:15	10/22/21 18:57	142-28-9	
2,2-Dichloropropane	**<14.8**	ug/kg	54.9	14.8	1	10/21/21 08:15	10/22/21 18:57	594-20-7	
1,1-Dichloropropene	**<17.8**	ug/kg	54.9	17.8	1	10/21/21 08:15	10/22/21 18:57	563-58-6	
cis-1,3-Dichloropropene	**<36.2**	ug/kg	274	36.2	1	10/21/21 08:15	10/22/21 18:57	10061-01-5	
trans-1,3-Dichloropropene	**<157**	ug/kg	274	157	1	10/21/21 08:15	10/22/21 18:57	10061-02-6	
Diisopropyl ether	**<13.6**	ug/kg	54.9	13.6	1	10/21/21 08:15	10/22/21 18:57	108-20-3	
Ethylbenzene	**<13.1**	ug/kg	54.9	13.1	1	10/21/21 08:15	10/22/21 18:57	100-41-4	
Hexachloro-1,3-butadiene	**<109**	ug/kg	274	109	1	10/21/21 08:15	10/22/21 18:57	87-68-3	
Isopropylbenzene (Cumene)	**<14.8**	ug/kg	54.9	14.8	1	10/21/21 08:15	10/22/21 18:57	98-82-8	

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-9 (1.5-3.5) **Lab ID: 40235057012** Collected: 10/13/21 14:05 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
p-Isopropyltoluene	**<16.7**	ug/kg	54.9	16.7	1	10/21/21 08:15	10/22/21 18:57	99-87-6	
Methylene Chloride	**<15.3**	ug/kg	54.9	15.3	1	10/21/21 08:15	10/22/21 18:57	75-09-2	
Methyl-tert-butyl ether	**<16.1**	ug/kg	54.9	16.1	1	10/21/21 08:15	10/22/21 18:57	1634-04-4	
Naphthalene	**611**	ug/kg	274	17.1	1	10/21/21 08:15	10/22/21 18:57	91-20-3	
n-Propylbenzene	**<13.2**	ug/kg	54.9	13.2	1	10/21/21 08:15	10/22/21 18:57	103-65-1	
Styrene	**<14.1**	ug/kg	54.9	14.1	1	10/21/21 08:15	10/22/21 18:57	100-42-5	
1,1,1,2-Tetrachloroethane	**<13.2**	ug/kg	54.9	13.2	1	10/21/21 08:15	10/22/21 18:57	630-20-6	
1,1,2,2-Tetrachloroethane	**<19.9**	ug/kg	54.9	19.9	1	10/21/21 08:15	10/22/21 18:57	79-34-5	
Tetrachloroethene	**<21.3**	ug/kg	54.9	21.3	1	10/21/21 08:15	10/22/21 18:57	127-18-4	
Toluene	**<13.8**	ug/kg	54.9	13.8	1	10/21/21 08:15	10/22/21 18:57	108-88-3	
1,2,3-Trichlorobenzene	**<61.2**	ug/kg	274	61.2	1	10/21/21 08:15	10/22/21 18:57	87-61-6	
1,2,4-Trichlorobenzene	**<45.2**	ug/kg	274	45.2	1	10/21/21 08:15	10/22/21 18:57	120-82-1	
1,1,1-Trichloroethane	**<14.1**	ug/kg	54.9	14.1	1	10/21/21 08:15	10/22/21 18:57	71-55-6	
1,1,2-Trichloroethane	**<20.0**	ug/kg	54.9	20.0	1	10/21/21 08:15	10/22/21 18:57	79-00-5	
Trichloroethene	**<20.5**	ug/kg	54.9	20.5	1	10/21/21 08:15	10/22/21 18:57	79-01-6	
Trichlorofluoromethane	**<15.9**	ug/kg	54.9	15.9	1	10/21/21 08:15	10/22/21 18:57	75-69-4	
1,2,3-Trichloropropane	**<26.7**	ug/kg	54.9	26.7	1	10/21/21 08:15	10/22/21 18:57	96-18-4	
1,2,4-Trimethylbenzene	**<16.4**	ug/kg	54.9	16.4	1	10/21/21 08:15	10/22/21 18:57	95-63-6	
1,3,5-Trimethylbenzene	**<17.7**	ug/kg	54.9	17.7	1	10/21/21 08:15	10/22/21 18:57	108-67-8	
Vinyl chloride	**<11.1**	ug/kg	54.9	11.1	1	10/21/21 08:15	10/22/21 18:57	75-01-4	
m&p-Xylene	**<23.2**	ug/kg	110	23.2	1	10/21/21 08:15	10/22/21 18:57	179601-23-1	
o-Xylene	**<16.5**	ug/kg	54.9	16.5	1	10/21/21 08:15	10/22/21 18:57	95-47-6	
Surrogates									
Toluene-d8 (S)	109	%	67-159		1	10/21/21 08:15	10/22/21 18:57	2037-26-5	
4-Bromofluorobenzene (S)	115	%	66-153		1	10/21/21 08:15	10/22/21 18:57	460-00-4	
1,2-Dichlorobenzene-d4 (S)	108	%	82-158		1	10/21/21 08:15	10/22/21 18:57	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**4.7**	%	0.10	0.10	1		10/14/21 13:25		

Sample: GP-9 (5.5-7.5) **Lab ID: 40235057013** Collected: 10/13/21 14:10 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**3.4**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:11	7440-38-2	
Lead	**56.5**	mg/kg	2.1	0.62	1	10/19/21 06:21	10/19/21 22:11	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: LUDINGTON
Pace Project No.: 40235057

Sample: GP-9 (5.5-7.5) **Lab ID: 40235057013** Collected: 10/13/21 14:10 Received: 10/13/21 16:40 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	**154J**	ug/kg	361	46.8	20	10/20/21 06:47	10/20/21 18:37	83-32-9	
Acenaphthylene	**122J**	ug/kg	361	45.5	20	10/20/21 06:47	10/20/21 18:37	208-96-8	
Anthracene	**301J**	ug/kg	361	44.8	20	10/20/21 06:47	10/20/21 18:37	120-12-7	
Benzo(a)anthracene	**861**	ug/kg	361	46.6	20	10/20/21 06:47	10/20/21 18:37	56-55-3	
Benzo(a)pyrene	**773**	ug/kg	361	41.0	20	10/20/21 06:47	10/20/21 18:37	50-32-8	
Benzo(b)fluoranthene	**977**	ug/kg	361	50.1	20	10/20/21 06:47	10/20/21 18:37	205-99-2	
Benzo(g,h,i)perylene	**469**	ug/kg	361	63.3	20	10/20/21 06:47	10/20/21 18:37	191-24-2	
Benzo(k)fluoranthene	**324J**	ug/kg	361	46.1	20	10/20/21 06:47	10/20/21 18:37	207-08-9	
Chrysene	**926**	ug/kg	361	68.0	20	10/20/21 06:47	10/20/21 18:37	218-01-9	
Dibenz(a,h)anthracene	**100J**	ug/kg	361	49.9	20	10/20/21 06:47	10/20/21 18:37	53-70-3	
Fluoranthene	**1390**	ug/kg	361	42.7	20	10/20/21 06:47	10/20/21 18:37	206-44-0	
Fluorene	**236J**	ug/kg	361	43.2	20	10/20/21 06:47	10/20/21 18:37	86-73-7	
Indeno(1,2,3-cd)pyrene	**345J**	ug/kg	361	75.2	20	10/20/21 06:47	10/20/21 18:37	193-39-5	
1-Methylnaphthalene	**124J**	ug/kg	361	52.7	20	10/20/21 06:47	10/20/21 18:37	90-12-0	
2-Methylnaphthalene	**150J**	ug/kg	361	52.8	20	10/20/21 06:47	10/20/21 18:37	91-57-6	
Naphthalene	**118J**	ug/kg	361	35.1	20	10/20/21 06:47	10/20/21 18:37	91-20-3	
Phenanthrene	**1800**	ug/kg	361	41.3	20	10/20/21 06:47	10/20/21 18:37	85-01-8	
Pyrene	**3890**	ug/kg	361	53.0	20	10/20/21 06:47	10/20/21 18:37	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	53	%	36-86		20	10/20/21 06:47	10/20/21 18:37	321-60-8	
Terphenyl-d14 (S)	59	%	41-97		20	10/20/21 06:47	10/20/21 18:37	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**14.9J**	ug/kg	23.3	13.8	1	10/21/21 08:15	10/22/21 08:56	71-43-2	
Bromobenzene	**<22.7**	ug/kg	58.2	22.7	1	10/21/21 08:15	10/22/21 08:56	108-86-1	
Bromochloromethane	**<15.9**	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	74-97-5	
Bromodichloromethane	**<13.8**	ug/kg	58.2	13.8	1	10/21/21 08:15	10/22/21 08:56	75-27-4	
Bromoform	**<256**	ug/kg	291	256	1	10/21/21 08:15	10/22/21 08:56	75-25-2	
Bromomethane	**<81.6**	ug/kg	291	81.6	1	10/21/21 08:15	10/22/21 08:56	74-83-9	
n-Butylbenzene	**<26.7**	ug/kg	58.2	26.7	1	10/21/21 08:15	10/22/21 08:56	104-51-8	
sec-Butylbenzene	**<14.2**	ug/kg	58.2	14.2	1	10/21/21 08:15	10/22/21 08:56	135-98-8	
tert-Butylbenzene	**<18.3**	ug/kg	58.2	18.3	1	10/21/21 08:15	10/22/21 08:56	98-06-6	
Carbon tetrachloride	**<12.8**	ug/kg	58.2	12.8	1	10/21/21 08:15	10/22/21 08:56	56-23-5	
Chlorobenzene	**<7.0**	ug/kg	58.2	7.0	1	10/21/21 08:15	10/22/21 08:56	108-90-7	
Chloroethane	**<24.6**	ug/kg	291	24.6	1	10/21/21 08:15	10/22/21 08:56	75-00-3	
Chloroform	**<41.7**	ug/kg	291	41.7	1	10/21/21 08:15	10/22/21 08:56	67-66-3	
Chloromethane	**<22.1**	ug/kg	58.2	22.1	1	10/21/21 08:15	10/22/21 08:56	74-87-3	
2-Chlorotoluene	**<18.9**	ug/kg	58.2	18.9	1	10/21/21 08:15	10/22/21 08:56	95-49-8	
4-Chlorotoluene	**<22.1**	ug/kg	58.2	22.1	1	10/21/21 08:15	10/22/21 08:56	106-43-4	
1,2-Dibromo-3-chloropropane	**<45.2**	ug/kg	291	45.2	1	10/21/21 08:15	10/22/21 08:56	96-12-8	
Dibromochloromethane	**<199**	ug/kg	291	199	1	10/21/21 08:15	10/22/21 08:56	124-48-1	
1,2-Dibromoethane (EDB)	**<15.9**	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	106-93-4	
Dibromomethane	**<17.2**	ug/kg	58.2	17.2	1	10/21/21 08:15	10/22/21 08:56	74-95-3	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-9 (5.5-7.5) **Lab ID: 40235057013** Collected: 10/13/21 14:10 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
1,2-Dichlorobenzene	**<18.0**	ug/kg	58.2	18.0	1	10/21/21 08:15	10/22/21 08:56	95-50-1	
1,3-Dichlorobenzene	**<15.9**	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	541-73-1	
1,4-Dichlorobenzene	**<15.9**	ug/kg	58.2	15.9	1	10/21/21 08:15	10/22/21 08:56	106-46-7	
Dichlorodifluoromethane	**<25.0**	ug/kg	58.2	25.0	1	10/21/21 08:15	10/22/21 08:56	75-71-8	
1,1-Dichloroethane	**<14.9**	ug/kg	58.2	14.9	1	10/21/21 08:15	10/22/21 08:56	75-34-3	
1,2-Dichloroethane	**<13.4**	ug/kg	58.2	13.4	1	10/21/21 08:15	10/22/21 08:56	107-06-2	
1,1-Dichloroethene	**<19.3**	ug/kg	58.2	19.3	1	10/21/21 08:15	10/22/21 08:56	75-35-4	
cis-1,2-Dichloroethene	**<12.5**	ug/kg	58.2	12.5	1	10/21/21 08:15	10/22/21 08:56	156-59-2	
trans-1,2-Dichloroethene	**<12.6**	ug/kg	58.2	12.6	1	10/21/21 08:15	10/22/21 08:56	156-60-5	
1,2-Dichloropropane	**<13.8**	ug/kg	58.2	13.8	1	10/21/21 08:15	10/22/21 08:56	78-87-5	
1,3-Dichloropropane	**<12.7**	ug/kg	58.2	12.7	1	10/21/21 08:15	10/22/21 08:56	142-28-9	
2,2-Dichloropropane	**<15.7**	ug/kg	58.2	15.7	1	10/21/21 08:15	10/22/21 08:56	594-20-7	
1,1-Dichloropropene	**<18.9**	ug/kg	58.2	18.9	1	10/21/21 08:15	10/22/21 08:56	563-58-6	
cis-1,3-Dichloropropene	**<38.4**	ug/kg	291	38.4	1	10/21/21 08:15	10/22/21 08:56	10061-01-5	
trans-1,3-Dichloropropene	**<166**	ug/kg	291	166	1	10/21/21 08:15	10/22/21 08:56	10061-02-6	
Diisopropyl ether	**<14.4**	ug/kg	58.2	14.4	1	10/21/21 08:15	10/22/21 08:56	108-20-3	
Ethylbenzene	**<13.8**	ug/kg	58.2	13.8	1	10/21/21 08:15	10/22/21 08:56	100-41-4	
Hexachloro-1,3-butadiene	**<116**	ug/kg	291	116	1	10/21/21 08:15	10/22/21 08:56	87-68-3	
Isopropylbenzene (Cumene)	**<15.7**	ug/kg	58.2	15.7	1	10/21/21 08:15	10/22/21 08:56	98-82-8	
p-Isopropyltoluene	**<17.7**	ug/kg	58.2	17.7	1	10/21/21 08:15	10/22/21 08:56	99-87-6	
Methylene Chloride	**<16.2**	ug/kg	58.2	16.2	1	10/21/21 08:15	10/22/21 08:56	75-09-2	
Methyl-tert-butyl ether	**<17.1**	ug/kg	58.2	17.1	1	10/21/21 08:15	10/22/21 08:56	1634-04-4	
Naphthalene	**136J**	ug/kg	291	18.2	1	10/21/21 08:15	10/22/21 08:56	91-20-3	
n-Propylbenzene	**<14.0**	ug/kg	58.2	14.0	1	10/21/21 08:15	10/22/21 08:56	103-65-1	
Styrene	**<14.9**	ug/kg	58.2	14.9	1	10/21/21 08:15	10/22/21 08:56	100-42-5	
1,1,1,2-Tetrachloroethane	**<14.0**	ug/kg	58.2	14.0	1	10/21/21 08:15	10/22/21 08:56	630-20-6	
1,1,2,2-Tetrachloroethane	**<21.1**	ug/kg	58.2	21.1	1	10/21/21 08:15	10/22/21 08:56	79-34-5	
Tetrachloroethene	**<22.6**	ug/kg	58.2	22.6	1	10/21/21 08:15	10/22/21 08:56	127-18-4	
Toluene	**34.8J**	ug/kg	58.2	14.7	1	10/21/21 08:15	10/22/21 08:56	108-88-3	
1,2,3-Trichlorobenzene	**<64.8**	ug/kg	291	64.8	1	10/21/21 08:15	10/22/21 08:56	87-61-6	
1,2,4-Trichlorobenzene	**<47.9**	ug/kg	291	47.9	1	10/21/21 08:15	10/22/21 08:56	120-82-1	
1,1,1-Trichloroethane	**<14.9**	ug/kg	58.2	14.9	1	10/21/21 08:15	10/22/21 08:56	71-55-6	
1,1,2-Trichloroethane	**<21.2**	ug/kg	58.2	21.2	1	10/21/21 08:15	10/22/21 08:56	79-00-5	
Trichloroethene	**<21.8**	ug/kg	58.2	21.8	1	10/21/21 08:15	10/22/21 08:56	79-01-6	
Trichlorofluoromethane	**<16.9**	ug/kg	58.2	16.9	1	10/21/21 08:15	10/22/21 08:56	75-69-4	
1,2,3-Trichloropropane	**<28.3**	ug/kg	58.2	28.3	1	10/21/21 08:15	10/22/21 08:56	96-18-4	
1,2,4-Trimethylbenzene	**21.0J**	ug/kg	58.2	17.3	1	10/21/21 08:15	10/22/21 08:56	95-63-6	
1,3,5-Trimethylbenzene	**<18.7**	ug/kg	58.2	18.7	1	10/21/21 08:15	10/22/21 08:56	108-67-8	
Vinyl chloride	**<11.8**	ug/kg	58.2	11.8	1	10/21/21 08:15	10/22/21 08:56	75-01-4	
m&p-Xylene	**27.7J**	ug/kg	116	24.6	1	10/21/21 08:15	10/22/21 08:56	179601-23-1	
o-Xylene	**<17.5**	ug/kg	58.2	17.5	1	10/21/21 08:15	10/22/21 08:56	95-47-6	
Surrogates									
Toluene-d8 (S)	118	%	67-159		1	10/21/21 08:15	10/22/21 08:56	2037-26-5	
4-Bromofluorobenzene (S)	134	%	66-153		1	10/21/21 08:15	10/22/21 08:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-9 (5.5-7.5) **Lab ID: 40235057013** Collected: 10/13/21 14:10 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Surrogates									
1,2-Dichlorobenzene-d4 (S)	124	%	82-158		1	10/21/21 08:15	10/22/21 08:56	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**7.6**	%	0.10	0.10	1		10/14/21 13:25		

Sample: GP-10 (2-4) **Lab ID: 40235057014** Collected: 10/13/21 14:40 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**14.0**	mg/kg	3.4	2.0	1	10/19/21 06:21	10/19/21 22:14	7440-38-2	
Lead	**211**	mg/kg	2.7	0.81	1	10/19/21 06:21	10/19/21 22:14	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**2930J**	ug/kg	9660	1250	400	10/20/21 06:47	10/20/21 18:54	83-32-9	
Acenaphthylene	**3570J**	ug/kg	9660	1220	400	10/20/21 06:47	10/20/21 18:54	208-96-8	
Anthracene	**14300**	ug/kg	9660	1200	400	10/20/21 06:47	10/20/21 18:54	120-12-7	
Benzo(a)anthracene	**26100**	ug/kg	9660	1250	400	10/20/21 06:47	10/20/21 18:54	56-55-3	
Benzo(a)pyrene	**19700**	ug/kg	9660	1100	400	10/20/21 06:47	10/20/21 18:54	50-32-8	
Benzo(b)fluoranthene	**29300**	ug/kg	9660	1340	400	10/20/21 06:47	10/20/21 18:54	205-99-2	
Benzo(g,h,i)perylene	**7530J**	ug/kg	9660	1700	400	10/20/21 06:47	10/20/21 18:54	191-24-2	
Benzo(k)fluoranthene	**14300**	ug/kg	9660	1230	400	10/20/21 06:47	10/20/21 18:54	207-08-9	
Chrysene	**28600**	ug/kg	9660	1820	400	10/20/21 06:47	10/20/21 18:54	218-01-9	
Dibenz(a,h)anthracene	**2910J**	ug/kg	9660	1340	400	10/20/21 06:47	10/20/21 18:54	53-70-3	
Fluoranthene	**65400**	ug/kg	9660	1140	400	10/20/21 06:47	10/20/21 18:54	206-44-0	
Fluorene	**13200**	ug/kg	9660	1160	400	10/20/21 06:47	10/20/21 18:54	86-73-7	
Indeno(1,2,3-cd)pyrene	**7440J**	ug/kg	9660	2010	400	10/20/21 06:47	10/20/21 18:54	193-39-5	
1-Methylnaphthalene	**2360J**	ug/kg	9660	1410	400	10/20/21 06:47	10/20/21 18:54	90-12-0	
2-Methylnaphthalene	**3090J**	ug/kg	9660	1410	400	10/20/21 06:47	10/20/21 18:54	91-57-6	
Naphthalene	**5310J**	ug/kg	9660	941	400	10/20/21 06:47	10/20/21 18:54	91-20-3	
Phenanthrene	**71600**	ug/kg	9660	1110	400	10/20/21 06:47	10/20/21 18:54	85-01-8	
Pyrene	**41500**	ug/kg	9660	1420	400	10/20/21 06:47	10/20/21 18:54	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	0	%	36-86		400	10/20/21 06:47	10/20/21 18:54	321-60-8	S4
Terphenyl-d14 (S)	0	%	41-97		400	10/20/21 06:47	10/20/21 18:54	1718-51-0	S4

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-10 (2-4) **Lab ID: 40235057014** Collected: 10/13/21 14:40 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<22.8**	ug/kg	38.3	22.8	1	10/21/21 08:15	10/22/21 18:37	71-43-2	
Bromobenzene	**<37.4**	ug/kg	95.9	37.4	1	10/21/21 08:15	10/22/21 18:37	108-86-1	
Bromochloromethane	**<26.3**	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	74-97-5	
Bromodichloromethane	**<22.8**	ug/kg	95.9	22.8	1	10/21/21 08:15	10/22/21 18:37	75-27-4	
Bromoform	**<422**	ug/kg	479	422	1	10/21/21 08:15	10/22/21 18:37	75-25-2	
Bromomethane	**<134**	ug/kg	479	134	1	10/21/21 08:15	10/22/21 18:37	74-83-9	
n-Butylbenzene	**<43.9**	ug/kg	95.9	43.9	1	10/21/21 08:15	10/22/21 18:37	104-51-8	
sec-Butylbenzene	**<23.4**	ug/kg	95.9	23.4	1	10/21/21 08:15	10/22/21 18:37	135-98-8	
tert-Butylbenzene	**<30.1**	ug/kg	95.9	30.1	1	10/21/21 08:15	10/22/21 18:37	98-06-6	
Carbon tetrachloride	**<21.1**	ug/kg	95.9	21.1	1	10/21/21 08:15	10/22/21 18:37	56-23-5	
Chlorobenzene	**<11.5**	ug/kg	95.9	11.5	1	10/21/21 08:15	10/22/21 18:37	108-90-7	
Chloroethane	**<40.5**	ug/kg	479	40.5	1	10/21/21 08:15	10/22/21 18:37	75-00-3	
Chloroform	**<68.6**	ug/kg	479	68.6	1	10/21/21 08:15	10/22/21 18:37	67-66-3	
Chloromethane	**<36.4**	ug/kg	95.9	36.4	1	10/21/21 08:15	10/22/21 18:37	74-87-3	
2-Chlorotoluene	**<31.1**	ug/kg	95.9	31.1	1	10/21/21 08:15	10/22/21 18:37	95-49-8	
4-Chlorotoluene	**<36.4**	ug/kg	95.9	36.4	1	10/21/21 08:15	10/22/21 18:37	106-43-4	
1,2-Dibromo-3-chloropropane	**<74.4**	ug/kg	479	74.4	1	10/21/21 08:15	10/22/21 18:37	96-12-8	
Dibromochloromethane	**<328**	ug/kg	479	328	1	10/21/21 08:15	10/22/21 18:37	124-48-1	
1,2-Dibromoethane (EDB)	**<26.3**	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	106-93-4	
Dibromomethane	**<28.4**	ug/kg	95.9	28.4	1	10/21/21 08:15	10/22/21 18:37	74-95-3	
1,2-Dichlorobenzene	**<29.7**	ug/kg	95.9	29.7	1	10/21/21 08:15	10/22/21 18:37	95-50-1	
1,3-Dichlorobenzene	**<26.3**	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	541-73-1	
1,4-Dichlorobenzene	**<26.3**	ug/kg	95.9	26.3	1	10/21/21 08:15	10/22/21 18:37	106-46-7	
Dichlorodifluoromethane	**<41.2**	ug/kg	95.9	41.2	1	10/21/21 08:15	10/22/21 18:37	75-71-8	
1,1-Dichloroethane	**<24.5**	ug/kg	95.9	24.5	1	10/21/21 08:15	10/22/21 18:37	75-34-3	
1,2-Dichloroethane	**<22.0**	ug/kg	95.9	22.0	1	10/21/21 08:15	10/22/21 18:37	107-06-2	
1,1-Dichloroethene	**<31.8**	ug/kg	95.9	31.8	1	10/21/21 08:15	10/22/21 18:37	75-35-4	
cis-1,2-Dichloroethene	**<20.5**	ug/kg	95.9	20.5	1	10/21/21 08:15	10/22/21 18:37	156-59-2	
trans-1,2-Dichloroethene	**<20.7**	ug/kg	95.9	20.7	1	10/21/21 08:15	10/22/21 18:37	156-60-5	
1,2-Dichloropropane	**<22.8**	ug/kg	95.9	22.8	1	10/21/21 08:15	10/22/21 18:37	78-87-5	
1,3-Dichloropropane	**<20.9**	ug/kg	95.9	20.9	1	10/21/21 08:15	10/22/21 18:37	142-28-9	
2,2-Dichloropropane	**<25.9**	ug/kg	95.9	25.9	1	10/21/21 08:15	10/22/21 18:37	594-20-7	
1,1-Dichloropropene	**<31.1**	ug/kg	95.9	31.1	1	10/21/21 08:15	10/22/21 18:37	563-58-6	
cis-1,3-Dichloropropene	**<63.3**	ug/kg	479	63.3	1	10/21/21 08:15	10/22/21 18:37	10061-01-5	
trans-1,3-Dichloropropene	**<274**	ug/kg	479	274	1	10/21/21 08:15	10/22/21 18:37	10061-02-6	
Diisopropyl ether	**<23.8**	ug/kg	95.9	23.8	1	10/21/21 08:15	10/22/21 18:37	108-20-3	
Ethylbenzene	**28.8J**	ug/kg	95.9	22.8	1	10/21/21 08:15	10/22/21 18:37	100-41-4	
Hexachloro-1,3-butadiene	**<191**	ug/kg	479	191	1	10/21/21 08:15	10/22/21 18:37	87-68-3	
Isopropylbenzene (Cumene)	**<25.9**	ug/kg	95.9	25.9	1	10/21/21 08:15	10/22/21 18:37	98-82-8	
p-Isopropyltoluene	**<29.1**	ug/kg	95.9	29.1	1	10/21/21 08:15	10/22/21 18:37	99-87-6	
Methylene Chloride	**<26.6**	ug/kg	95.9	26.6	1	10/21/21 08:15	10/22/21 18:37	75-09-2	
Methyl-tert-butyl ether	**<28.2**	ug/kg	95.9	28.2	1	10/21/21 08:15	10/22/21 18:37	1634-04-4	
Naphthalene	**66.6J**	ug/kg	479	29.9	1	10/21/21 08:15	10/22/21 18:37	91-20-3	
n-Propylbenzene	**<23.0**	ug/kg	95.9	23.0	1	10/21/21 08:15	10/22/21 18:37	103-65-1	

REPORT OF LABORATORY ANALYSIS

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

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-10 (2-4) **Lab ID: 40235057014** Collected: 10/13/21 14:40 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Styrene	**<24.5**	ug/kg	95.9	24.5	1	10/21/21 08:15	10/22/21 18:37	100-42-5	
1,1,1,2-Tetrachloroethane	**<23.0**	ug/kg	95.9	23.0	1	10/21/21 08:15	10/22/21 18:37	630-20-6	
1,1,2,2-Tetrachloroethane	**<34.7**	ug/kg	95.9	34.7	1	10/21/21 08:15	10/22/21 18:37	79-34-5	
Tetrachloroethene	**<37.2**	ug/kg	95.9	37.2	1	10/21/21 08:15	10/22/21 18:37	127-18-4	
Toluene	**36.6J**	ug/kg	95.9	24.2	1	10/21/21 08:15	10/22/21 18:37	108-88-3	
1,2,3-Trichlorobenzene	**<107**	ug/kg	479	107	1	10/21/21 08:15	10/22/21 18:37	87-61-6	
1,2,4-Trichlorobenzene	**<79.0**	ug/kg	479	79.0	1	10/21/21 08:15	10/22/21 18:37	120-82-1	
1,1,1-Trichloroethane	**<24.5**	ug/kg	95.9	24.5	1	10/21/21 08:15	10/22/21 18:37	71-55-6	
1,1,2-Trichloroethane	**<34.9**	ug/kg	95.9	34.9	1	10/21/21 08:15	10/22/21 18:37	79-00-5	
Trichloroethene	**<35.9**	ug/kg	95.9	35.9	1	10/21/21 08:15	10/22/21 18:37	79-01-6	
Trichlorofluoromethane	**<27.8**	ug/kg	95.9	27.8	1	10/21/21 08:15	10/22/21 18:37	75-69-4	
1,2,3-Trichloropropane	**<46.6**	ug/kg	95.9	46.6	1	10/21/21 08:15	10/22/21 18:37	96-18-4	
1,2,4-Trimethylbenzene	**<28.6**	ug/kg	95.9	28.6	1	10/21/21 08:15	10/22/21 18:37	95-63-6	
1,3,5-Trimethylbenzene	**<30.9**	ug/kg	95.9	30.9	1	10/21/21 08:15	10/22/21 18:37	108-67-8	
Vinyl chloride	**<19.4**	ug/kg	95.9	19.4	1	10/21/21 08:15	10/22/21 18:37	75-01-4	
m&p-Xylene	**239**	ug/kg	192	40.5	1	10/21/21 08:15	10/22/21 18:37	179601-23-1	
o-Xylene	**48.7J**	ug/kg	95.9	28.8	1	10/21/21 08:15	10/22/21 18:37	95-47-6	
Surrogates									
Toluene-d8 (S)	105	%	67-159		1	10/21/21 08:15	10/22/21 18:37	2037-26-5	
4-Bromofluorobenzene (S)	106	%	66-153		1	10/21/21 08:15	10/22/21 18:37	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	82-158		1	10/21/21 08:15	10/22/21 18:37	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**30.7**	%	0.10	0.10	1		10/14/21 07:39		

Sample: GP-10 (6.5-8) **Lab ID: 40235057015** Collected: 10/13/21 14:45 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**1.7J**	mg/kg	2.8	1.6	1	10/19/21 06:21	10/19/21 22:16	7440-38-2	
Lead	**2.9**	mg/kg	2.2	0.67	1	10/19/21 06:21	10/19/21 22:16	7439-92-1	
8270E MSSV PAH by SIM	Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3546 Pace Analytical Services - Green Bay								
Acenaphthene	**<2.6**	ug/kg	20.1	2.6	1	10/20/21 06:47	10/20/21 11:28	83-32-9	
Acenaphthylene	**<2.5**	ug/kg	20.1	2.5	1	10/20/21 06:47	10/20/21 11:28	208-96-8	
Anthracene	**<2.5**	ug/kg	20.1	2.5	1	10/20/21 06:47	10/20/21 11:28	120-12-7	
Benzo(a)anthracene	**4.5J**	ug/kg	20.1	2.6	1	10/20/21 06:47	10/20/21 11:28	56-55-3	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-10 (6.5-8) **Lab ID: 40235057015** Collected: 10/13/21 14:45 Received: 10/13/21 16:40 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								
Benzo(a)pyrene	**2.6J**	ug/kg	20.1	2.3	1	10/20/21 06:47	10/20/21 11:28	50-32-8	
Benzo(b)fluoranthene	**3.6J**	ug/kg	20.1	2.8	1	10/20/21 06:47	10/20/21 11:28	205-99-2	
Benzo(g,h,i)perylene	**<3.5**	ug/kg	20.1	3.5	1	10/20/21 06:47	10/20/21 11:28	191-24-2	
Benzo(k)fluoranthene	**<2.6**	ug/kg	20.1	2.6	1	10/20/21 06:47	10/20/21 11:28	207-08-9	
Chrysene	**<3.8**	ug/kg	20.1	3.8	1	10/20/21 06:47	10/20/21 11:28	218-01-9	
Dibenz(a,h)anthracene	**<2.8**	ug/kg	20.1	2.8	1	10/20/21 06:47	10/20/21 11:28	53-70-3	
Fluoranthene	**7.2J**	ug/kg	20.1	2.4	1	10/20/21 06:47	10/20/21 11:28	206-44-0	
Fluorene	**<2.4**	ug/kg	20.1	2.4	1	10/20/21 06:47	10/20/21 11:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**<4.2**	ug/kg	20.1	4.2	1	10/20/21 06:47	10/20/21 11:28	193-39-5	
1-Methylnaphthalene	**<2.9**	ug/kg	20.1	2.9	1	10/20/21 06:47	10/20/21 11:28	90-12-0	
2-Methylnaphthalene	**<2.9**	ug/kg	20.1	2.9	1	10/20/21 06:47	10/20/21 11:28	91-57-6	
Naphthalene	**<2.0**	ug/kg	20.1	2.0	1	10/20/21 06:47	10/20/21 11:28	91-20-3	
Phenanthrene	**6.1J**	ug/kg	20.1	2.3	1	10/20/21 06:47	10/20/21 11:28	85-01-8	
Pyrene	**4.5J**	ug/kg	20.1	3.0	1	10/20/21 06:47	10/20/21 11:28	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	70	%	36-86		1	10/20/21 06:47	10/20/21 11:28	321-60-8	
Terphenyl-d14 (S)	65	%	41-97		1	10/20/21 06:47	10/20/21 11:28	1718-51-0	
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
Benzene	**<16.7**	ug/kg	28.1	16.7	1	10/21/21 08:15	10/22/21 11:12	71-43-2	
Bromobenzene	**<27.4**	ug/kg	70.3	27.4	1	10/21/21 08:15	10/22/21 11:12	108-86-1	
Bromochloromethane	**<19.3**	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	74-97-5	
Bromodichloromethane	**<16.7**	ug/kg	70.3	16.7	1	10/21/21 08:15	10/22/21 11:12	75-27-4	
Bromoform	**<309**	ug/kg	352	309	1	10/21/21 08:15	10/22/21 11:12	75-25-2	
Bromomethane	**<98.6**	ug/kg	352	98.6	1	10/21/21 08:15	10/22/21 11:12	74-83-9	
n-Butylbenzene	**<32.2**	ug/kg	70.3	32.2	1	10/21/21 08:15	10/22/21 11:12	104-51-8	
sec-Butylbenzene	**<17.2**	ug/kg	70.3	17.2	1	10/21/21 08:15	10/22/21 11:12	135-98-8	
tert-Butylbenzene	**<22.1**	ug/kg	70.3	22.1	1	10/21/21 08:15	10/22/21 11:12	98-06-6	
Carbon tetrachloride	**<15.5**	ug/kg	70.3	15.5	1	10/21/21 08:15	10/22/21 11:12	56-23-5	
Chlorobenzene	**<8.4**	ug/kg	70.3	8.4	1	10/21/21 08:15	10/22/21 11:12	108-90-7	
Chloroethane	**<29.7**	ug/kg	352	29.7	1	10/21/21 08:15	10/22/21 11:12	75-00-3	
Chloroform	**<50.4**	ug/kg	352	50.4	1	10/21/21 08:15	10/22/21 11:12	67-66-3	
Chloromethane	**<26.7**	ug/kg	70.3	26.7	1	10/21/21 08:15	10/22/21 11:12	74-87-3	
2-Chlorotoluene	**<22.8**	ug/kg	70.3	22.8	1	10/21/21 08:15	10/22/21 11:12	95-49-8	
4-Chlorotoluene	**<26.7**	ug/kg	70.3	26.7	1	10/21/21 08:15	10/22/21 11:12	106-43-4	
1,2-Dibromo-3-chloropropane	**<54.6**	ug/kg	352	54.6	1	10/21/21 08:15	10/22/21 11:12	96-12-8	
Dibromochloromethane	**<240**	ug/kg	352	240	1	10/21/21 08:15	10/22/21 11:12	124-48-1	
1,2-Dibromoethane (EDB)	**<19.3**	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	106-93-4	
Dibromomethane	**<20.8**	ug/kg	70.3	20.8	1	10/21/21 08:15	10/22/21 11:12	74-95-3	
1,2-Dichlorobenzene	**<21.8**	ug/kg	70.3	21.8	1	10/21/21 08:15	10/22/21 11:12	95-50-1	
1,3-Dichlorobenzene	**<19.3**	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	541-73-1	
1,4-Dichlorobenzene	**<19.3**	ug/kg	70.3	19.3	1	10/21/21 08:15	10/22/21 11:12	106-46-7	
Dichlorodifluoromethane	**<30.2**	ug/kg	70.3	30.2	1	10/21/21 08:15	10/22/21 11:12	75-71-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-10 (6.5-8) **Lab ID: 40235057015** Collected: 10/13/21 14:45 Received: 10/13/21 16:40 Matrix: Solid

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

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B Pace Analytical Services - Green Bay								
1,1-Dichloroethane	**<18.0**	ug/kg	70.3	18.0	1	10/21/21 08:15	10/22/21 11:12	75-34-3	
1,2-Dichloroethane	**<16.2**	ug/kg	70.3	16.2	1	10/21/21 08:15	10/22/21 11:12	107-06-2	
1,1-Dichloroethene	**<23.3**	ug/kg	70.3	23.3	1	10/21/21 08:15	10/22/21 11:12	75-35-4	
cis-1,2-Dichloroethene	**<15.1**	ug/kg	70.3	15.1	1	10/21/21 08:15	10/22/21 11:12	156-59-2	
trans-1,2-Dichloroethene	**<15.2**	ug/kg	70.3	15.2	1	10/21/21 08:15	10/22/21 11:12	156-60-5	
1,2-Dichloropropane	**<16.7**	ug/kg	70.3	16.7	1	10/21/21 08:15	10/22/21 11:12	78-87-5	
1,3-Dichloropropane	**<15.3**	ug/kg	70.3	15.3	1	10/21/21 08:15	10/22/21 11:12	142-28-9	
2,2-Dichloropropane	**<19.0**	ug/kg	70.3	19.0	1	10/21/21 08:15	10/22/21 11:12	594-20-7	
1,1-Dichloropropene	**<22.8**	ug/kg	70.3	22.8	1	10/21/21 08:15	10/22/21 11:12	563-58-6	
cis-1,3-Dichloropropene	**<46.4**	ug/kg	352	46.4	1	10/21/21 08:15	10/22/21 11:12	10061-01-5	
trans-1,3-Dichloropropene	**<201**	ug/kg	352	201	1	10/21/21 08:15	10/22/21 11:12	10061-02-6	
Diisopropyl ether	**<17.4**	ug/kg	70.3	17.4	1	10/21/21 08:15	10/22/21 11:12	108-20-3	
Ethylbenzene	**<16.7**	ug/kg	70.3	16.7	1	10/21/21 08:15	10/22/21 11:12	100-41-4	
Hexachloro-1,3-butadiene	**<140**	ug/kg	352	140	1	10/21/21 08:15	10/22/21 11:12	87-68-3	
Isopropylbenzene (Cumene)	**<19.0**	ug/kg	70.3	19.0	1	10/21/21 08:15	10/22/21 11:12	98-82-8	
p-Isopropyltoluene	**<21.4**	ug/kg	70.3	21.4	1	10/21/21 08:15	10/22/21 11:12	99-87-6	
Methylene Chloride	**<19.6**	ug/kg	70.3	19.6	1	10/21/21 08:15	10/22/21 11:12	75-09-2	
Methyl-tert-butyl ether	**<20.7**	ug/kg	70.3	20.7	1	10/21/21 08:15	10/22/21 11:12	1634-04-4	
Naphthalene	**<21.9**	ug/kg	352	21.9	1	10/21/21 08:15	10/22/21 11:12	91-20-3	
n-Propylbenzene	**<16.9**	ug/kg	70.3	16.9	1	10/21/21 08:15	10/22/21 11:12	103-65-1	
Styrene	**<18.0**	ug/kg	70.3	18.0	1	10/21/21 08:15	10/22/21 11:12	100-42-5	
1,1,1,2-Tetrachloroethane	**<16.9**	ug/kg	70.3	16.9	1	10/21/21 08:15	10/22/21 11:12	630-20-6	
1,1,2,2-Tetrachloroethane	**<25.5**	ug/kg	70.3	25.5	1	10/21/21 08:15	10/22/21 11:12	79-34-5	
Tetrachloroethene	**<27.3**	ug/kg	70.3	27.3	1	10/21/21 08:15	10/22/21 11:12	127-18-4	
Toluene	**<17.7**	ug/kg	70.3	17.7	1	10/21/21 08:15	10/22/21 11:12	108-88-3	
1,2,3-Trichlorobenzene	**<78.3**	ug/kg	352	78.3	1	10/21/21 08:15	10/22/21 11:12	87-61-6	
1,2,4-Trichlorobenzene	**<57.9**	ug/kg	352	57.9	1	10/21/21 08:15	10/22/21 11:12	120-82-1	
1,1,1-Trichloroethane	**<18.0**	ug/kg	70.3	18.0	1	10/21/21 08:15	10/22/21 11:12	71-55-6	
1,1,2-Trichloroethane	**<25.6**	ug/kg	70.3	25.6	1	10/21/21 08:15	10/22/21 11:12	79-00-5	
Trichloroethene	**<26.3**	ug/kg	70.3	26.3	1	10/21/21 08:15	10/22/21 11:12	79-01-6	
Trichlorofluoromethane	**<20.4**	ug/kg	70.3	20.4	1	10/21/21 08:15	10/22/21 11:12	75-69-4	
1,2,3-Trichloropropane	**<34.2**	ug/kg	70.3	34.2	1	10/21/21 08:15	10/22/21 11:12	96-18-4	
1,2,4-Trimethylbenzene	**<21.0**	ug/kg	70.3	21.0	1	10/21/21 08:15	10/22/21 11:12	95-63-6	
1,3,5-Trimethylbenzene	**<22.6**	ug/kg	70.3	22.6	1	10/21/21 08:15	10/22/21 11:12	108-67-8	
Vinyl chloride	**<14.2**	ug/kg	70.3	14.2	1	10/21/21 08:15	10/22/21 11:12	75-01-4	
m&p-Xylene	**<29.7**	ug/kg	141	29.7	1	10/21/21 08:15	10/22/21 11:12	179601-23-1	
o-Xylene	**<21.1**	ug/kg	70.3	21.1	1	10/21/21 08:15	10/22/21 11:12	95-47-6	
Surrogates									
Toluene-d8 (S)	123	%	67-159		1	10/21/21 08:15	10/22/21 11:12	2037-26-5	
4-Bromofluorobenzene (S)	128	%	66-153		1	10/21/21 08:15	10/22/21 11:12	460-00-4	
1,2-Dichlorobenzene-d4 (S)	119	%	82-158		1	10/21/21 08:15	10/22/21 11:12	2199-69-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40235057

Sample: GP-10 (6.5-8) **Lab ID: 40235057015** Collected: 10/13/21 14:45 Received: 10/13/21 16:40 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
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**16.9**	%	0.10	0.10	1		10/14/21 07:39		

Sample: GP-4 (1.5-2.5) **Lab ID: 40235057016** Collected: 10/13/21 11:15 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**3.5**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:19	7440-38-2	
Lead	**42.4**	mg/kg	2.1	0.62	1	10/19/21 06:21	10/19/21 22:19	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**4.5**	%	0.10	0.10	1		10/14/21 07:39		

Sample: GP-4 (8-10) **Lab ID: 40235057017** Collected: 10/13/21 11:20 Received: 10/13/21 16:40 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
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3050B Pace Analytical Services - Green Bay								
Arsenic	**1.8J**	mg/kg	2.6	1.5	1	10/19/21 06:21	10/19/21 22:21	7440-38-2	
Lead	**6.2**	mg/kg	2.0	0.61	1	10/19/21 06:21	10/19/21 22:21	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	**4.0**	%	0.10	0.10	1		10/14/21 07:39		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 398513
QC Batch Method: EPA 3050B
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057005, 40235057006, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015, 40235057016, 40235057017

METHOD BLANK: 2300481 Matrix: Solid
Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057005, 40235057006, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015, 40235057016, 40235057017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<1.5	2.5	10/19/21 21:19	
Lead	mg/kg	<0.60	2.0	10/19/21 21:19	

LABORATORY CONTROL SAMPLE: 2300482

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	25	24.2	97	80-120	
Lead	mg/kg	25	25.8	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300483 2300484

Parameter	Units	40235057001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	2.4J	25.6	25.6	28.6	27.9	102	99	75-125	2	20	
Lead	mg/kg	1.0J	25.6	25.6	26.6	27.9	100	105	75-125	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: LUDINGTON
Pace Project No.: 40235057

QC Batch: 399239
QC Batch Method: EPA 5035/5030B
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Med Level Normal List
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

METHOD BLANK: 2305064
Matrix: Solid
Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<12.0	50.0	10/22/21 08:36	
1,1,1-Trichloroethane	ug/kg	<12.8	50.0	10/22/21 08:36	
1,1,2,2-Tetrachloroethane	ug/kg	<18.1	50.0	10/22/21 08:36	
1,1,2-Trichloroethane	ug/kg	<18.2	50.0	10/22/21 08:36	
1,1-Dichloroethane	ug/kg	<12.8	50.0	10/22/21 08:36	
1,1-Dichloroethene	ug/kg	<16.6	50.0	10/22/21 08:36	
1,1-Dichloropropene	ug/kg	<16.2	50.0	10/22/21 08:36	
1,2,3-Trichlorobenzene	ug/kg	<55.7	250	10/22/21 08:36	
1,2,3-Trichloropropane	ug/kg	<24.3	50.0	10/22/21 08:36	
1,2,4-Trichlorobenzene	ug/kg	<41.2	250	10/22/21 08:36	
1,2,4-Trimethylbenzene	ug/kg	<14.9	50.0	10/22/21 08:36	
1,2-Dibromo-3-chloropropane	ug/kg	<38.8	250	10/22/21 08:36	
1,2-Dibromoethane (EDB)	ug/kg	<13.7	50.0	10/22/21 08:36	
1,2-Dichlorobenzene	ug/kg	<15.5	50.0	10/22/21 08:36	
1,2-Dichloroethane	ug/kg	<11.5	50.0	10/22/21 08:36	
1,2-Dichloropropane	ug/kg	<11.9	50.0	10/22/21 08:36	
1,3,5-Trimethylbenzene	ug/kg	<16.1	50.0	10/22/21 08:36	
1,3-Dichlorobenzene	ug/kg	<13.7	50.0	10/22/21 08:36	
1,3-Dichloropropane	ug/kg	<10.9	50.0	10/22/21 08:36	
1,4-Dichlorobenzene	ug/kg	<13.7	50.0	10/22/21 08:36	
2,2-Dichloropropane	ug/kg	<13.5	50.0	10/22/21 08:36	
2-Chlorotoluene	ug/kg	<16.2	50.0	10/22/21 08:36	
4-Chlorotoluene	ug/kg	<19.0	50.0	10/22/21 08:36	
Benzene	ug/kg	<11.9	20.0	10/22/21 08:36	
Bromobenzene	ug/kg	<19.5	50.0	10/22/21 08:36	
Bromochloromethane	ug/kg	<13.7	50.0	10/22/21 08:36	
Bromodichloromethane	ug/kg	<11.9	50.0	10/22/21 08:36	
Bromoform	ug/kg	<220	250	10/22/21 08:36	
Bromomethane	ug/kg	<70.1	250	10/22/21 08:36	
Carbon tetrachloride	ug/kg	<11.0	50.0	10/22/21 08:36	
Chlorobenzene	ug/kg	<6.0	50.0	10/22/21 08:36	
Chloroethane	ug/kg	<21.1	250	10/22/21 08:36	
Chloroform	ug/kg	<35.8	250	10/22/21 08:36	
Chloromethane	ug/kg	<19.0	50.0	10/22/21 08:36	
cis-1,2-Dichloroethene	ug/kg	<10.7	50.0	10/22/21 08:36	
cis-1,3-Dichloropropene	ug/kg	<33.0	250	10/22/21 08:36	
Dibromochloromethane	ug/kg	<171	250	10/22/21 08:36	
Dibromomethane	ug/kg	<14.8	50.0	10/22/21 08:36	
Dichlorodifluoromethane	ug/kg	<21.5	50.0	10/22/21 08:36	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

METHOD BLANK: 2305064 Matrix: Solid

Associated Lab Samples: 40235057001, 40235057002, 40235057003, 40235057004, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	<12.4	50.0	10/22/21 08:36	
Ethylbenzene	ug/kg	<11.9	50.0	10/22/21 08:36	
Hexachloro-1,3-butadiene	ug/kg	<99.4	250	10/22/21 08:36	
Isopropylbenzene (Cumene)	ug/kg	<13.5	50.0	10/22/21 08:36	
m&p-Xylene	ug/kg	<21.1	100	10/22/21 08:36	
Methyl-tert-butyl ether	ug/kg	<14.7	50.0	10/22/21 08:36	
Methylene Chloride	ug/kg	<13.9	50.0	10/22/21 08:36	
n-Butylbenzene	ug/kg	<22.9	50.0	10/22/21 08:36	
n-Propylbenzene	ug/kg	<12.0	50.0	10/22/21 08:36	
Naphthalene	ug/kg	<15.6	250	10/22/21 08:36	
o-Xylene	ug/kg	<15.0	50.0	10/22/21 08:36	
p-Isopropyltoluene	ug/kg	<15.2	50.0	10/22/21 08:36	
sec-Butylbenzene	ug/kg	<12.2	50.0	10/22/21 08:36	
Styrene	ug/kg	<12.8	50.0	10/22/21 08:36	
tert-Butylbenzene	ug/kg	<15.7	50.0	10/22/21 08:36	
Tetrachloroethene	ug/kg	<19.4	50.0	10/22/21 08:36	
Toluene	ug/kg	<12.6	50.0	10/22/21 08:36	
trans-1,2-Dichloroethene	ug/kg	<10.8	50.0	10/22/21 08:36	
trans-1,3-Dichloropropene	ug/kg	<143	250	10/22/21 08:36	
Trichloroethene	ug/kg	<18.7	50.0	10/22/21 08:36	
Trichlorofluoromethane	ug/kg	<14.5	50.0	10/22/21 08:36	
Vinyl chloride	ug/kg	<10.1	50.0	10/22/21 08:36	
1,2-Dichlorobenzene-d4 (S)	%	102	82-158	10/22/21 08:36	
4-Bromofluorobenzene (S)	%	111	66-153	10/22/21 08:36	
Toluene-d8 (S)	%	101	67-159	10/22/21 08:36	

LABORATORY CONTROL SAMPLE: 2305065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2450	98	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2360	94	65-129	
1,1,2-Trichloroethane	ug/kg	2500	2320	93	70-130	
1,1-Dichloroethane	ug/kg	2500	2250	90	70-130	
1,1-Dichloroethene	ug/kg	2500	2220	89	67-120	
1,2,4-Trichlorobenzene	ug/kg	2500	2230	89	64-130	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2380	95	57-119	
1,2-Dibromoethane (EDB)	ug/kg	2500	2290	92	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2270	91	70-130	
1,2-Dichloroethane	ug/kg	2500	2530	101	70-130	
1,2-Dichloropropane	ug/kg	2500	2270	91	72-118	
1,3-Dichlorobenzene	ug/kg	2500	2230	89	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2200	88	70-130	
Benzene	ug/kg	2500	2290	92	70-130	

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REPORT OF LABORATORY ANALYSIS

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Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

LABORATORY CONTROL SAMPLE: 2305065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromodichloromethane	ug/kg	2500	2430	97	70-130	
Bromoform	ug/kg	2500	2000	80	66-130	
Bromomethane	ug/kg	2500	2000	80	13-153	
Carbon tetrachloride	ug/kg	2500	2390	96	73-134	
Chlorobenzene	ug/kg	2500	2350	94	70-130	
Chloroethane	ug/kg	2500	1830	73	19-170	
Chloroform	ug/kg	2500	2470	99	79-120	
Chloromethane	ug/kg	2500	1200	48	45-117	
cis-1,2-Dichloroethene	ug/kg	2500	2220	89	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2280	91	68-130	
Dibromochloromethane	ug/kg	2500	2190	87	70-130	
Dichlorodifluoromethane	ug/kg	2500	789	32	15-135	
Ethylbenzene	ug/kg	2500	2340	94	78-120	
Isopropylbenzene (Cumene)	ug/kg	2500	2300	92	70-130	
m&p-Xylene	ug/kg	5000	4420	88	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2160	86	65-130	
Methylene Chloride	ug/kg	2500	2290	92	70-130	
o-Xylene	ug/kg	2500	2220	89	70-130	
Styrene	ug/kg	2500	2290	91	70-130	
Tetrachloroethene	ug/kg	2500	2370	95	70-130	
Toluene	ug/kg	2500	2240	89	76-120	
trans-1,2-Dichloroethene	ug/kg	2500	2310	92	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2150	86	70-130	
Trichloroethene	ug/kg	2500	2440	98	70-130	
Trichlorofluoromethane	ug/kg	2500	1860	74	49-153	
Vinyl chloride	ug/kg	2500	1690	68	58-121	
1,2-Dichlorobenzene-d4 (S)	%			106	82-158	
4-Bromofluorobenzene (S)	%			117	66-153	
Toluene-d8 (S)	%			105	67-159	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2305066 2305067

Parameter	Units	40235057015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	<18.0	1410	1410	1320	1380	94	98	70-130	5	20	
1,1,2,2-Tetrachloroethane	ug/kg	<25.5	1410	1410	1540	1510	109	107	65-129	2	20	
1,1,2-Trichloroethane	ug/kg	<25.6	1410	1410	1490	1470	106	105	70-130	1	20	
1,1-Dichloroethane	ug/kg	<18.0	1410	1410	1340	1390	95	99	70-130	4	20	
1,1-Dichloroethene	ug/kg	<23.3	1410	1410	1300	1370	93	97	64-120	5	20	
1,2,4-Trichlorobenzene	ug/kg	<57.9	1410	1410	1570	1500	112	107	64-130	5	20	
1,2-Dibromo-3-chloropropane	ug/kg	<54.6	1410	1410	1490	1530	106	109	57-130	3	21	
1,2-Dibromoethane (EDB)	ug/kg	<19.3	1410	1410	1500	1480	107	105	70-130	1	20	
1,2-Dichlorobenzene	ug/kg	<21.8	1410	1410	1490	1530	106	109	70-130	2	20	
1,2-Dichloroethane	ug/kg	<16.2	1410	1410	1570	1460	112	104	70-130	8	20	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2305066 2305067

Parameter	Units	40235057015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloropropane	ug/kg	<16.7	1410	1410	1370	1330	97	95	72-122	2	20	
1,3-Dichlorobenzene	ug/kg	<19.3	1410	1410	1470	1500	105	107	70-130	2	20	
1,4-Dichlorobenzene	ug/kg	<19.3	1410	1410	1450	1500	103	106	70-130	3	20	
Benzene	ug/kg	<16.7	1410	1410	1360	1370	97	98	70-130	1	20	
Bromodichloromethane	ug/kg	<16.7	1410	1410	1430	1380	101	98	70-130	4	20	
Bromoform	ug/kg	<309	1410	1410	1430	1370	102	97	66-130	4	20	
Bromomethane	ug/kg	<98.6	1410	1410	1460	1450	104	103	13-153	1	20	
Carbon tetrachloride	ug/kg	<15.5	1410	1410	1300	1390	92	99	67-134	7	20	
Chlorobenzene	ug/kg	<8.4	1410	1410	1430	1480	101	105	70-130	4	20	
Chloroethane	ug/kg	<29.7	1410	1410	1370	1400	97	99	11-195	2	20	
Chloroform	ug/kg	<50.4	1410	1410	1480	1440	105	103	79-120	3	20	
Chloromethane	ug/kg	<26.7	1410	1410	1080	1120	76	79	30-136	4	20	
cis-1,2-Dichloroethene	ug/kg	<15.1	1410	1410	1340	1320	95	94	70-130	2	20	
cis-1,3-Dichloropropene	ug/kg	<46.4	1410	1410	1320	1320	94	94	68-130	0	20	
Dibromochloromethane	ug/kg	<240	1410	1410	1360	1360	97	97	70-130	0	20	
Dichlorodifluoromethane	ug/kg	<30.2	1410	1410	1040	1110	74	79	10-158	7	25	
Ethylbenzene	ug/kg	<16.7	1410	1410	1380	1400	98	99	78-120	2	20	
Isopropylbenzene (Cumene)	ug/kg	<19.0	1410	1410	1320	1370	94	98	70-130	4	20	
m&p-Xylene	ug/kg	<29.7	2820	2820	2650	2720	94	97	70-130	2	20	
Methyl-tert-butyl ether	ug/kg	<20.7	1410	1410	1280	1210	91	86	65-130	6	20	
Methylene Chloride	ug/kg	<19.6	1410	1410	1440	1480	102	105	70-130	2	20	
o-Xylene	ug/kg	<21.1	1410	1410	1350	1380	96	98	70-130	2	20	
Styrene	ug/kg	<18.0	1410	1410	1370	1430	98	102	70-130	4	20	
Tetrachloroethene	ug/kg	<27.3	1410	1410	1340	1360	95	97	70-130	2	20	
Toluene	ug/kg	<17.7	1410	1410	1380	1360	98	97	76-120	1	20	
trans-1,2-Dichloroethene	ug/kg	<15.2	1410	1410	1350	1400	96	99	70-130	3	20	
trans-1,3-Dichloropropene	ug/kg	<201	1410	1410	1270	1260	90	90	70-130	0	20	
Trichloroethene	ug/kg	<26.3	1410	1410	1430	1480	102	105	70-130	4	20	
Trichlorofluoromethane	ug/kg	<20.4	1410	1410	1120	1240	80	89	42-159	10	21	
Vinyl chloride	ug/kg	<14.2	1410	1410	1270	1330	90	95	43-137	5	20	
1,2-Dichlorobenzene-d4 (S)	%						117	119	82-158			
4-Bromofluorobenzene (S)	%						130	134	66-153			
Toluene-d8 (S)	%						120	120	67-159			

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 398540
QC Batch Method: EPA 3541
Analysis Method: EPA 8082
Analysis Description: 8082 GCS PCB
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235057007, 40235057008, 40235057009

METHOD BLANK: 2300671 Matrix: Solid
Associated Lab Samples: 40235057007, 40235057008, 40235057009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1221 (Aroclor 1221)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1232 (Aroclor 1232)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1242 (Aroclor 1242)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1248 (Aroclor 1248)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1254 (Aroclor 1254)	ug/kg	<15.2	50.0	10/15/21 23:07	
PCB-1260 (Aroclor 1260)	ug/kg	<15.2	50.0	10/15/21 23:07	
Decachlorobiphenyl (S)	%	101	47-114	10/15/21 23:07	
Tetrachloro-m-xylene (S)	%	95	67-102	10/15/21 23:07	

LABORATORY CONTROL SAMPLE: 2300672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<15.2			
PCB-1221 (Aroclor 1221)	ug/kg		<15.2			
PCB-1232 (Aroclor 1232)	ug/kg		<15.2			
PCB-1242 (Aroclor 1242)	ug/kg		<15.2			
PCB-1248 (Aroclor 1248)	ug/kg		<15.2			
PCB-1254 (Aroclor 1254)	ug/kg		<15.2			
PCB-1260 (Aroclor 1260)	ug/kg	500	445	89	69-115	
Decachlorobiphenyl (S)	%			98	47-114	
Tetrachloro-m-xylene (S)	%			93	67-102	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300673 2300674

Parameter	Units	40234892004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20	
PCB-1221 (Aroclor 1221)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20	
PCB-1232 (Aroclor 1232)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20	
PCB-1242 (Aroclor 1242)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20	
PCB-1248 (Aroclor 1248)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20	
PCB-1254 (Aroclor 1254)	ug/kg	<0.018 mg/kg			<18.3	<18.4					20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300673 2300674

Parameter	Units	40234892004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1260 (Aroclor 1260)	ug/kg	<0.018 mg/kg	602	605	547	539	91	89	45-120	1	20	
Decachlorobiphenyl (S)	%						97	95	47-114			
Tetrachloro-m-xylene (S)	%						96	94	67-102			

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QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 399013
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: 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

METHOD BLANK: 2303909 Matrix: Solid
Associated Lab Samples: 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013, 40235057014, 40235057015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<2.4	16.7	10/20/21 09:27	
2-Methylnaphthalene	ug/kg	<2.4	16.7	10/20/21 09:27	
Acenaphthene	ug/kg	<2.2	16.7	10/20/21 09:27	
Acenaphthylene	ug/kg	<2.1	16.7	10/20/21 09:27	
Anthracene	ug/kg	<2.1	16.7	10/20/21 09:27	
Benzo(a)anthracene	ug/kg	<2.2	16.7	10/20/21 09:27	
Benzo(a)pyrene	ug/kg	<1.9	16.7	10/20/21 09:27	
Benzo(b)fluoranthene	ug/kg	<2.3	16.7	10/20/21 09:27	
Benzo(g,h,i)perylene	ug/kg	<2.9	16.7	10/20/21 09:27	
Benzo(k)fluoranthene	ug/kg	<2.1	16.7	10/20/21 09:27	
Chrysene	ug/kg	<3.2	16.7	10/20/21 09:27	
Dibenz(a,h)anthracene	ug/kg	<2.3	16.7	10/20/21 09:27	
Fluoranthene	ug/kg	<2.0	16.7	10/20/21 09:27	
Fluorene	ug/kg	<2.0	16.7	10/20/21 09:27	
Indeno(1,2,3-cd)pyrene	ug/kg	<3.5	16.7	10/20/21 09:27	
Naphthalene	ug/kg	<1.6	16.7	10/20/21 09:27	
Phenanthrene	ug/kg	<1.9	16.7	10/20/21 09:27	
Pyrene	ug/kg	<2.5	16.7	10/20/21 09:27	
2-Fluorobiphenyl (S)	%	82	36-86	10/20/21 09:27	
Terphenyl-d14 (S)	%	108	41-97	10/20/21 09:27	S3

LABORATORY CONTROL SAMPLE: 2303910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	333	264	79	53-100	
2-Methylnaphthalene	ug/kg	333	264	79	51-97	
Acenaphthene	ug/kg	333	290	87	62-120	
Acenaphthylene	ug/kg	333	266	80	61-120	
Anthracene	ug/kg	333	334	100	62-111	
Benzo(a)anthracene	ug/kg	333	323	97	61-120	
Benzo(a)pyrene	ug/kg	333	325	98	65-120	
Benzo(b)fluoranthene	ug/kg	333	302	91	64-108	
Benzo(g,h,i)perylene	ug/kg	333	304	91	71-120	
Benzo(k)fluoranthene	ug/kg	333	293	88	76-120	
Chrysene	ug/kg	333	333	100	74-120	
Dibenz(a,h)anthracene	ug/kg	333	304	91	71-120	
Fluoranthene	ug/kg	333	344	103	67-112	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

LABORATORY CONTROL SAMPLE: 2303910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluorene	ug/kg	333	278	83	65-120	
Indeno(1,2,3-cd)pyrene	ug/kg	333	314	94	74-120	
Naphthalene	ug/kg	333	261	78	53-120	
Phenanthrene	ug/kg	333	323	97	67-120	
Pyrene	ug/kg	333	305	92	60-103	
2-Fluorobiphenyl (S)	%			66	36-86	
Terphenyl-d14 (S)	%			85	41-97	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2303911 2303912

Parameter	Units	40235072004 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	22.7J	484	484	405	386	79	75	41-100	5	29	
2-Methylnaphthalene	ug/kg	27.6	484	484	427	400	83	77	42-97	7	21	
Acenaphthene	ug/kg	5.7J	484	484	364	376	74	77	43-120	3	27	
Acenaphthylene	ug/kg	6.7J	484	484	407	380	83	77	51-120	7	26	
Anthracene	ug/kg	23.5J	484	484	449	437	88	85	46-111	3	29	
Benzo(a)anthracene	ug/kg	83.2	484	484	492	446	84	75	48-120	10	23	
Benzo(a)pyrene	ug/kg	81.0	484	484	506	450	88	76	46-108	12	30	
Benzo(b)fluoranthene	ug/kg	117	484	484	582	455	96	70	45-108	24	30	
Benzo(g,h,i)perylene	ug/kg	57.2	484	484	475	431	86	77	39-120	10	37	
Benzo(k)fluoranthene	ug/kg	41.9	484	484	481	449	91	84	47-120	7	31	
Chrysene	ug/kg	95.6	484	484	517	450	87	73	54-120	14	21	
Dibenz(a,h)anthracene	ug/kg	17.0J	484	484	450	375	89	74	46-120	18	34	
Fluoranthene	ug/kg	195	484	484	631	552	90	74	53-112	13	27	
Fluorene	ug/kg	8.8J	484	484	434	443	88	90	48-120	2	29	
Indeno(1,2,3-cd)pyrene	ug/kg	49.2	484	484	488	403	91	73	40-120	19	34	
Naphthalene	ug/kg	33.9	484	484	382	413	72	78	47-120	8	25	
Phenanthrene	ug/kg	111	484	484	524	472	85	75	49-120	10	28	
Pyrene	ug/kg	145	484	484	535	546	81	83	43-103	2	31	
2-Fluorobiphenyl (S)	%						71	72	36-86			
Terphenyl-d14 (S)	%						74	82	41-97			

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
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(920)469-2436

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 399201
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: 40235057007

METHOD BLANK: 2304907 Matrix: Solid
Associated Lab Samples: 40235057007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<2.4	16.7	10/21/21 10:16	
2-Methylnaphthalene	ug/kg	<2.4	16.7	10/21/21 10:16	
Acenaphthene	ug/kg	<2.2	16.7	10/21/21 10:16	
Acenaphthylene	ug/kg	<2.1	16.7	10/21/21 10:16	
Anthracene	ug/kg	<2.1	16.7	10/21/21 10:16	
Benzo(a)anthracene	ug/kg	<2.2	16.7	10/21/21 10:16	
Benzo(a)pyrene	ug/kg	<1.9	16.7	10/21/21 10:16	
Benzo(b)fluoranthene	ug/kg	<2.3	16.7	10/21/21 10:16	
Benzo(g,h,i)perylene	ug/kg	<2.9	16.7	10/21/21 10:16	
Benzo(k)fluoranthene	ug/kg	<2.1	16.7	10/21/21 10:16	
Chrysene	ug/kg	<3.2	16.7	10/21/21 10:16	
Dibenz(a,h)anthracene	ug/kg	<2.3	16.7	10/21/21 10:16	
Fluoranthene	ug/kg	<2.0	16.7	10/21/21 10:16	
Fluorene	ug/kg	<2.0	16.7	10/21/21 10:16	
Indeno(1,2,3-cd)pyrene	ug/kg	<3.5	16.7	10/21/21 10:16	
Naphthalene	ug/kg	<1.6	16.7	10/21/21 10:16	
Phenanthrene	ug/kg	<1.9	16.7	10/21/21 10:16	
Pyrene	ug/kg	<2.5	16.7	10/21/21 10:16	
2-Fluorobiphenyl (S)	%	70	36-86	10/21/21 10:16	
Terphenyl-d14 (S)	%	80	41-97	10/21/21 10:16	

LABORATORY CONTROL SAMPLE: 2304908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	333	230	69	53-100	
2-Methylnaphthalene	ug/kg	333	233	70	51-97	
Acenaphthene	ug/kg	333	239	72	62-120	
Acenaphthylene	ug/kg	333	240	72	61-120	
Anthracene	ug/kg	333	272	82	62-111	
Benzo(a)anthracene	ug/kg	333	266	80	61-120	
Benzo(a)pyrene	ug/kg	333	274	82	65-120	
Benzo(b)fluoranthene	ug/kg	333	250	75	64-108	
Benzo(g,h,i)perylene	ug/kg	333	280	84	71-120	
Benzo(k)fluoranthene	ug/kg	333	274	82	76-120	
Chrysene	ug/kg	333	271	82	74-120	
Dibenz(a,h)anthracene	ug/kg	333	282	85	71-120	
Fluoranthene	ug/kg	333	239	72	67-112	
Fluorene	ug/kg	333	247	74	65-120	
Indeno(1,2,3-cd)pyrene	ug/kg	333	286	86	74-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

LABORATORY CONTROL SAMPLE: 2304908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	333	226	68	53-120	
Phenanthrene	ug/kg	333	264	79	67-120	
Pyrene	ug/kg	333	269	81	60-103	
2-Fluorobiphenyl (S)	%			68	36-86	
Terphenyl-d14 (S)	%			80	41-97	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304909 2304910

Parameter	Units	40235427005 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	<2.9	399	399	171	202	43	50	41-100	17	29	
2-Methylnaphthalene	ug/kg	<2.9	399	399	168	202	42	51	42-97	19	21	
Acenaphthene	ug/kg	<2.6	399	399	211	236	53	59	43-120	11	27	
Acenaphthylene	ug/kg	<2.5	399	399	211	241	53	60	51-120	14	26	
Anthracene	ug/kg	<2.5	399	399	229	242	57	60	46-111	5	29	
Benzo(a)anthracene	ug/kg	10.2J	399	399	236	266	57	64	48-120	12	23	
Benzo(a)pyrene	ug/kg	7.8J	399	399	239	283	58	69	46-108	17	30	
Benzo(b)fluoranthene	ug/kg	11.5J	399	399	255	270	61	65	45-108	6	30	
Benzo(g,h,i)perylene	ug/kg	7.7J	399	399	224	244	54	59	39-120	8	37	
Benzo(k)fluoranthene	ug/kg	5.7J	399	399	229	268	56	66	47-120	16	31	
Chrysene	ug/kg	12.9J	399	399	237	257	56	61	54-120	8	21	
Dibenz(a,h)anthracene	ug/kg	<2.8	399	399	219	259	54	64	46-120	17	34	
Fluoranthene	ug/kg	28.0	399	399	278	291	63	66	53-112	5	27	
Fluorene	ug/kg	<2.4	399	399	211	240	53	60	48-120	13	29	
Indeno(1,2,3-cd)pyrene	ug/kg	5.8J	399	399	228	266	56	65	40-120	16	34	
Naphthalene	ug/kg	2.0J	399	399	197	221	49	55	47-120	12	25	
Phenanthrene	ug/kg	13.8J	399	399	245	254	58	60	49-120	4	28	
Pyrene	ug/kg	23.6	399	399	241	286	55	66	43-103	17	31	
2-Fluorobiphenyl (S)	%						61	56	36-86			
Terphenyl-d14 (S)	%						52	56	41-97			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 398475
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: 40235057014, 40235057015, 40235057016, 40235057017

SAMPLE DUPLICATE: 2300226

Parameter	Units	40235057017 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	4.0	3.8	5	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 398541
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: 40235057001, 40235057002, 40235057003, 40235057004, 40235057005, 40235057006, 40235057007, 40235057008, 40235057009, 40235057010, 40235057011, 40235057012, 40235057013

SAMPLE DUPLICATE: 2300681

Parameter	Units	40235057001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.9	2.7	4	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40235057

QC Batch: 399216
QC Batch Method: EPA 9012B
Analysis Method: EPA 9012B
Analysis Description: 9012 Cyanide
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40235057007, 40235057008, 40235057009

METHOD BLANK: 2304950 Matrix: Solid
Associated Lab Samples: 40235057007, 40235057008, 40235057009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	<0.31	0.92	10/21/21 14:53	

LABORATORY CONTROL SAMPLE: 2304951

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304952 2304953

Parameter	Units	10583322002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	ND	4.9	4.9	2.7	3.2	53	64	80-120	18	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304954 2304955

Parameter	Units	40235236001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/kg	<0.35	3.5	3.7	3.6	3.5	99	94	80-120	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

QUALIFIERS

Project: LUDINGTON
Pace Project No.: 40235057

DEFINITIONS

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

ND - Not Detected at or above LOD.

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

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

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
S3	Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON
Pace Project No.: 40235057

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40235057007	GP-5 (1.5-2.5)	EPA 3541	398540	EPA 8082	398576
40235057008	GP-6 (2-4)	EPA 3541	398540	EPA 8082	398576
40235057009	GP-7 (2-4)	EPA 3541	398540	EPA 8082	398576
40235057001	GP-1 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057002	GP-1 (9-11)	EPA 3050B	398513	EPA 6010D	398994
40235057003	GP-2 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057004	GP-2 (9-11)	EPA 3050B	398513	EPA 6010D	398994
40235057005	GP-3 (1.5-2.5)	EPA 3050B	398513	EPA 6010D	398994
40235057006	GP-3 (8-10)	EPA 3050B	398513	EPA 6010D	398994
40235057007	GP-5 (1.5-2.5)	EPA 3050B	398513	EPA 6010D	398994
40235057008	GP-6 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057009	GP-7 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057010	GP-8 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057011	GP-8 (7-8)	EPA 3050B	398513	EPA 6010D	398994
40235057012	GP-9 (1.5-3.5)	EPA 3050B	398513	EPA 6010D	398994
40235057013	GP-9 (5.5-7.5)	EPA 3050B	398513	EPA 6010D	398994
40235057014	GP-10 (2-4)	EPA 3050B	398513	EPA 6010D	398994
40235057015	GP-10 (6.5-8)	EPA 3050B	398513	EPA 6010D	398994
40235057016	GP-4 (1.5-2.5)	EPA 3050B	398513	EPA 6010D	398994
40235057017	GP-4 (8-10)	EPA 3050B	398513	EPA 6010D	398994
40235057007	GP-5 (1.5-2.5)	EPA 3546	399201	EPA 8270E by SIM	399265
40235057008	GP-6 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057009	GP-7 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057010	GP-8 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057011	GP-8 (7-8)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057012	GP-9 (1.5-3.5)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057013	GP-9 (5.5-7.5)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057014	GP-10 (2-4)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057015	GP-10 (6.5-8)	EPA 3546	399013	EPA 8270E by SIM	399089
40235057001	GP-1 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057002	GP-1 (9-11)	EPA 5035/5030B	399239	EPA 8260	399243
40235057003	GP-2 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057004	GP-2 (9-11)	EPA 5035/5030B	399239	EPA 8260	399243
40235057007	GP-5 (1.5-2.5)	EPA 5035/5030B	399239	EPA 8260	399243
40235057008	GP-6 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057009	GP-7 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057010	GP-8 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057011	GP-8 (7-8)	EPA 5035/5030B	399239	EPA 8260	399243
40235057012	GP-9 (1.5-3.5)	EPA 5035/5030B	399239	EPA 8260	399243
40235057013	GP-9 (5.5-7.5)	EPA 5035/5030B	399239	EPA 8260	399243
40235057014	GP-10 (2-4)	EPA 5035/5030B	399239	EPA 8260	399243
40235057015	GP-10 (6.5-8)	EPA 5035/5030B	399239	EPA 8260	399243
40235057001	GP-1 (2-4)	ASTM D2974-87	398541		
40235057002	GP-1 (9-11)	ASTM D2974-87	398541		
40235057003	GP-2 (2-4)	ASTM D2974-87	398541		
40235057004	GP-2 (9-11)	ASTM D2974-87	398541		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LUDINGTON
Pace Project No.: 40235057

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40235057005	**GP-3 (1.5-2.5)**	ASTM D2974-87	398541		
40235057006	**GP-3 (8-10)**	ASTM D2974-87	398541		
40235057007	**GP-5 (1.5-2.5)**	ASTM D2974-87	398541		
40235057008	**GP-6 (2-4)**	ASTM D2974-87	398541		
40235057009	**GP-7 (2-4)**	ASTM D2974-87	398541		
40235057010	**GP-8 (2-4)**	ASTM D2974-87	398541		
40235057011	**GP-8 (7-8)**	ASTM D2974-87	398541		
40235057012	**GP-9 (1.5-3.5)**	ASTM D2974-87	398541		
40235057013	**GP-9 (5.5-7.5)**	ASTM D2974-87	398541		
40235057014	**GP-10 (2-4)**	ASTM D2974-87	398475		
40235057015	**GP-10 (6.5-8)**	ASTM D2974-87	398475		
40235057016	**GP-4 (1.5-2.5)**	ASTM D2974-87	398475		
40235057017	**GP-4 (8-10)**	ASTM D2974-87	398475		
40235057007	**GP-5 (1.5-2.5)**	EPA 9012B	399216	EPA 9012B	399286
40235057008	**GP-6 (2-4)**	EPA 9012B	399216	EPA 9012B	399286
40235057009	**GP-7 (2-4)**	EPA 9012B	399216	EPA 9012B	399286

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CHAIN OF CUSTODY

4023505 7

(Please Print Clearly)	
Company Name:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Ludington
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@ayresassociates.com
Invoice To Phone:	

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

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

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

***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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	As + Pb	PFAS	VOCs	PAHs	Asbestos	As, Pb, + Cyanide	PAHs + PCBs	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
	Analyses Requested				Y/N	Pick Letter			F						Profile #
001	GP-1 (2-4)	10-13-21	9:35	S			1		1						
002	GP-1 (9-11)	10-13-21	9:45	S			1		1						
003	GP-2 (2-4)	10-13-21	10:15	S			1		1						
004	GP-2 (9-11)	10-13-21	10:20	S			1		1						
005	GP-3 (1.5-2.5)	10-13-21	10:45	S			1								
006	GP-3 (8-10)	10-13-21	10:50	S			1								
007	GP-5 (1.5-2.5)	10-13-21	12:00	S					1			1	1		
008	GP-6 (2-4)	10-13-21	12:20	S					1			1	1		
009	GP-7 (2-4)	10-13-21	12:35	S					1			1	1		
010	GP-8 (2-4)	10-13-21	13:05	S			1	1	1	1	1				
011	GP-8 (7-8)	10-13-21	13:10	S			1	X	1	1	1			No PFAS sample	
012	GP-9 (1.5-3.5)	10-13-21	14:05	S			1	1	1	1	1				
013	GP-9 (5.5-7.5)	10-13-21	14:10	S			1	1	1	1	1				

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:
William Honea	10/13/21 1640		
		10/19/21 1640	

PACE Project No. 4023505 7

Receipt Temp = 3 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

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

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

4035057

(Please Print Clearly)	
Company Name:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Ludington
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

*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

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@ayresassociates.com
Invoice To Phone:	

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

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: As+Pb	PFAS	VOCs	PAHs	Asbestos	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	FILTERED? (YES/NO)	Y/N										
	PRESERVATION (CODE)*	Pick Letter					F					
04	GP-10 (2-4)	10-13-21	14:40	S	1	1	1	1	1			
05	GP-10 ~~(4-6)~~ (6.5-8)	10-13-21	14:45	S	1		1	1	1			
06	GP-4 (1.5-2.5)	10-~~13~~ 12-21	11:15	S	1							
07	GP-4 (8-10)	10-13-21	11:20	S	1							

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:
William Honea	10/13/21 16:40		
			10/13/21 1641

PACE Project No.

Receipt Temp = 3 °C

Sample Receipt pH OK / Adjusted

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

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

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

Sample Preservation Receipt Form

Client Name: Ayres Project # 40235057

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

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

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																		\					\										2.5 / 5 / 10
002																		\					\										2.5 / 5 / 10
003																		\					\										2.5 / 5 / 10
004																		\					\										2.5 / 5 / 10
005																		\					\										2.5 / 5 / 10
006																		\					\										2.5 / 5 / 10
007																		\	\	\			\										2.5 / 5 / 10
008																		\	\	\			\										2.5 / 5 / 10
009																		\	\	\			1										2.5 / 5 / 10
010										1								\	\	\			2										2.5 / 5 / 10
011																		\	\	\			2										2.5 / 5 / 10
012										1								\	\	\			2										2.5 / 5 / 10
013										1								\	\	\			2										2.5 / 5 / 10
014										1								\	\	\			2										2.5 / 5 / 10
015																		\	\	\			2										2.5 / 5 / 10
016																		10/13/21					1										2.5 / 5 / 10
017																			AN				1										2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																					10	13	21										2.5 / 5 / 10

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

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

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

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

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

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

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40235057

40235057

Client Name: Ayres

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 ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3

Person examining contents:

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

Date: 10/13/21 /Initials: CH

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

Labeled By Initials: AZJ

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. proj #, mail CH 10/13/21
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD:	☐Yes ☑No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
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™
www.pacelabs.com

Pace Analytical Services, LLC.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Client Services
PACE Wisconsin
1241 Bellevue Street
Green Bay WI 54302

REPORT OF LABORATORY ANALYSIS FOR PFAAs

Report Information:

Pace Project #: 10583480
Sample Receipt Date: 10/15/2021
Client Project #: 40235057 AYRES & ASSOCIA
Client Sub PO #: N/A
State Cert #: 999407970

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Ashley Williams, your Pace Project Manager.

This report has been reviewed by:

November 18, 2021

Kirsten Hogberg, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
kirsten.hogberg@pacelabs.com

Report Prepared Date:
November 11, 2021

Report of Laboratory Analysis

DISCUSSION

This report presents the results from the analyses performed on four samples, one matrix spike, and one matrix spike duplicate submitted by a representative of Pace Wisconsin. The samples were analyzed for thirty-three perfluorinated compounds using Wisconsin DNR Guidance for PFAS. Reporting limits were set to MDL.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. With the exception of 8:2 FTS in BLANK-94140, the results show the blanks were free of the target perfluorinated compounds at the reporting limits. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged B in the results tables and may be, at least partially, attributed to the background.

A laboratory spike sample and matrix spikes were also prepared with the sample batch using clean reference matrix and sample material in the project respectively that had been fortified with native standards. The recovery results were within the method limits. The RPDs (relative percent differences) between one designated matrix spike and its duplicate were within the method limits. These spikes indicate that extraction performed as expected. These spikes indicate that extraction performed as expected.

The four injection internal standards (13C4 PFOA, 13C4 PFOS, 13C2_PFDA, and 13C2_PFHxA) pass for each analysis in the batch verifying that the instrument detector is working as expected.

Values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

Internal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

[x] Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: [x] Yes [ ] No

Workorder: 40235057 **Workorder Name:** LUDINGTON **Owner Received xDate:** 10/13/2021 **Results Requested By:** 11/04/2021

Report To	Subcontract To
Dan Milewsky Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical Minnesota 1700 Elm Street SE Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	PFAS (WDNR 33 Targets)	LAB USE ONLY
1	GP-8 (2-4)	PS	10/13/2021 13:05	40235057010	Solid	1	X	0010
2	GP-9 (1.5-3.5)	PS	10/13/2021 14:05	40235057012	Solid	1	X	0012
3	GP-9 (5.5-7.5)	PS	10/13/2021 14:10	40235057013	Solid	1	X	RHL 10-13-21 0013
4	GP-10 (2-4)	PS	10/13/2021 14:40	40235057014	Solid	1	X	0014
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	10/14/21 07:00	[signature]	10/15/21 09:25
2				
3				

Comments:

Cooler Temperature on Receipt 1.9 °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.*

WO#: 10583480

10583480

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14Apr2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Pace Green Bay

Project #:

WO#: 10583480

PM: AW1 **Due Date: 11/03/21**

CLIENT: PASI-WI

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☑Commercial

Tracking Number: _____ See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☑Yes ☐No **Seals Intact?** ☑Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☑Bubble Wrap ☑Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☑Yes ☐No

Thermometer: ☑T1(0461) ☐T2(1336) ☐T3(0459) ☐OS418-LS ☐T4(0254) ☑T5(0489) ☐160285052 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Did Samples Originate in West Virginia? ☐Yes ☑No **Were All Container Temps Taken?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 1.4 °C

Correction Factor: TNTC **Cooler Temp Corrected w/temp blank:** 1.9 °C

Average Corrected Temp (no temp blank only): _____ °C ☐See Exceptions ENV-FRM-MIN4-0142 ☐1 Container

USDA Regulated Soil: (☑N/A, water sample/Other: _____)

Date/Initials of Person Examining Contents: CJS1 10/19/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☐No	☑N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☐No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☑Yes ☑Yes	☐No ☐No		8.
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐Water ☐Soil ☐Oil ☑Other_____	☑Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐Yes	☐No	☑N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐ ENV-FRM-MIN4-0142
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐Yes	☐No	☑N/A	13. **See Exception** ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	
Trip Blank Present?	☐Yes	☐No	☑N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Ashley Williams **Date:** 10/18/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: CJS1 (1)

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

4023505 7

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www.pacelabs.com

CHAIN OF CUSTODY

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

(Please Print Clearly)	
Company Name:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Ludington
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@ayresassociates.com
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	As + Pb	PFAS	VOCs	PAHs	Asbestos	As, Pb, + Cyanide	PAHs + PCBs	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	GP-1 (2-4)	10-13-21	9:35	S		F	1		1							
002	GP-1 (9-11)	10-13-21	9:45	S			1		1							
003	GP-2 (2-4)	10-13-21	10:15	S			1		1							
004	GP-2 (9-11)	10-13-21	10:20	S			1		1							
005	GP-3 (1.5-2.5)	10-13-21	10:45	S			1									
006	GP-3 (8-10)	10-13-21	10:50	S			1									
007	GP-5 (1.5-2.5)	10-13-21	12:00	S					1			1	1			
008	GP-6 (2-4)	10-13-21	12:20	S					1			1	1			
009	GP-7 (2-4)	10-13-21	12:35	S					1			1	1			
010	GP-8 (2-4)	10-13-21	13:05	S			1	1	1	1	1			A'		
011	GP-8 (7-8)	10-13-21	13:10	S			1	X	1	1	1			No PFAS simple		
012	GP-9 (1.5-3.5)	10-13-21	14:05	S			1	1	1	1	1					
013	GP-9 (5.5-7.5)	10-13-21	14:10	S			1	1	1	1	1					

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:
William Honea	10/13/21 1640		
		Allen	10/10/21 1640

PACE Project No. 4023505 7
Receipt Temp = 3 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06
ORIGINAL

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

4035057

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

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

(Please Print Clearly)	
Company Name:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Ludington
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@ayresassociates.com
Invoice To Phone:	

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

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: As+Pb	PFAS	VOCs	PAHs	Asbestos	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	FILTERED? (YES/NO)				Y/N							
	PRESERVATION (CODE)*				Pick Letter		F					
04	GP-10 (2-4)	10-13-21	14:40	S	1	1	1	1	1			
05	GP-10 ~~(4-6)~~ (6.5-8)	10-13-21	14:45	S	1		1	1	1			
06	GP-4 (1.5-2.5)	10-~~13~~ 13-21	11:15	S	1							
07	GP-4 (8-10)	10-13-21	11:20	S	1							

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:
William Honea	10/13/21 16:40		

Received By:	Date/Time:
	10/13/21 1640

PACE Project No.

Receipt Temp = 3 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / ~~Not Present~~
Intact / Not Intact

Version 6.0 06/14/06

ORIGINAL

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

Sample Preservation Receipt Form

Client Name: Ayres Project # 40235057

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

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

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

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

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

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

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

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40235057

40235057

Client Name: Ayres

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 ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3

Person examining contents:

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

Date: 10/13/21 /Initials: CW

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

Labeled By Initials: AZL

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. proj #, mail CW 10/13/21
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
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
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interferencepresent

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDEInterference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = SeeDiscussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	30 J	99	23	23	1	375-22-4	N2
PFPeA	70 J	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	88	22	22	1	375-73-5	N2
PFHxA	ND	99	30	30	1	307-24-4	N2
4:2 FTS	ND	93	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	ND	99	22	22	1	375-85-9	N2
DONA	ND	94	38	38	1	919005-14-4	N2
PFHxS	51 IJ	90	22	22	1	355-46-4	N2
PFOA	30 J	99	22	22	1	335-67-1	N2
6:2 FTS	68 J	94	32	32	1	27619-97-2	N2
PFHpS	ND	94	25	25	1	375-92-8	N2
PFNA	ND	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	330	92	28	28	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-Cl-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	77 J	99	24	24	1	2991-50-6	N2
PFDS	ND	96	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-Cl-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTrDA	ND	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
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Fax: 612.607.6444
www.pacelabs.com

Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	1000	103	50-150	
13C4_PFOA	990	1100	116	50-150	
13C2_PFDA	990	1100	112	50-150	
13C4_PFOS	950	990	105	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	760	76	25-150	
13C5_PFPeA	990	780	79	25-150	
13C3_PFBS	920	760	83	25-150	
13C2_4:2FTS	930	740	80	25-150	
13C5_PFHxA	990	810	82	25-150	
13C4_PFHpA	990	800	81	25-150	
13C3_PFHxS	940	810	86	25-150	
13C2_6:2FTS	940	810	86	25-150	
13C8_PFOA	990	810	82	25-150	
13C9_PFNA	990	870	88	25-150	
13C8_PFOS	950	810	85	25-150	
13C2_8:2FTS	950	1100	114	25-150	
13C6_PFDA	990	870	88	25-150	
d3-MeFOSAA	990	950	96	25-150	
13C8_PFOSA	990	620	62	25-150	
d5-EtFOSAA	990	1000	102	25-150	
13C7_PFUdA	990	950	96	25-150	
13C2_PFDoA	990	980	99	25-150	
13C2_PFTeDA	990	940	95	25-150	
13C3_HFPO-DA	990	770	78	25-150	
d7-N-MeFOSE	990	550	55	10-150	
d9-N-EtFOSE	990	520	52	10-150	
d3-N-MeFOSA	990	420	43	10-150	
d5-N-EtFOSA	990	430	43	10-150	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.91	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

REPORT OF LABORATORY ANALYSIS

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.60	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

REPORT OF LABORATORY ANALYSIS

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Phone: 612.607.1700
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www.pacelabs.com

Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-8 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057010-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_031	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 13:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	J
PFPeA	N/A	N/A	4.54	4.54	J
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.190	0.310	5.62	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.000	0.240	6.30	6.32	IJ
PFOA	0.400	0.390	6.06	6.06	J
6:2 FTS	0.540	0.480	5.83	5.83	J
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.130	0.200	6.48	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.150	0.210	7.21	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	0.00	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	7.69	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.510	0.570	7.05	7.10	J
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	8.82	8.87	
PFTDA	0.000	0.140	0.00	8.61	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	30 J	99	23	23	1	375-22-4	N2
PFPeA	54 J	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	88	22	22	1	375-73-5	N2
PFHxA	ND	99	30	30	1	307-24-4	N2
4:2 FTS	ND	93	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	ND	99	22	22	1	375-85-9	N2
DONA	ND	94	38	38	1	919005-14-4	N2
PFHxS	67 IJ	90	22	22	1	355-46-4	N2
PFOA	34 J	99	22	22	1	335-67-1	N2
6:2 FTS	44 J	94	32	32	1	27619-97-2	N2
PFHpS	ND	94	25	25	1	375-92-8	N2
PFNA	ND	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	310	92	28	28	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-Cl-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	ND	99	24	24	1	2991-50-6	N2
PFDS	ND	96	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-Cl-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTrDA	ND	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

REPORT OF LABORATORY ANALYSIS

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	990	100	50-150	
13C4_PFOA	990	1000	104	50-150	
13C2_PFDA	990	1100	110	50-150	
13C4_PFOS	950	990	105	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	780	79	25-150	
13C5_PFPeA	990	830	83	25-150	
13C3_PFBS	920	800	87	25-150	
13C2_4:2FTS	930	750	81	25-150	
13C5_PFHxA	990	840	85	25-150	
13C4_PFHpA	990	870	88	25-150	
13C3_PFHxS	940	870	93	25-150	
13C2_6:2FTS	940	830	88	25-150	
13C8_PFOA	990	880	89	25-150	
13C9_PFNA	990	910	92	25-150	
13C8_PFOS	950	830	87	25-150	
13C2_8:2FTS	950	1100	112	25-150	
13C6_PFDA	990	920	93	25-150	
d3-MeFOSAA	990	1000	104	25-150	
13C8_PFOSA	990	700	70	25-150	
d5-EtFOSAA	990	990	100	25-150	
13C7_PFUdA	990	1100	110	25-150	
13C2_PFDoA	990	1100	112	25-150	
13C2_PFTeDA	990	980	99	25-150	
13C3_HFPO-DA	990	840	85	25-150	
d7-N-MeFOSE	990	620	62	10-150	
d9-N-EtFOSE	990	620	63	10-150	
d3-N-MeFOSA	990	500	51	10-150	
d5-N-EtFOSA	990	510	52	10-150	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.19	7.21	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.28	5.29	
13C2_4:2FTS	N/A	N/A	4.90	4.90	
13C5_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.82	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.47	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.65	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.75	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.69	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	10.99	11.01	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (1.5-3.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057012-R2	Total Amount Extracted	5.05g
Lab File ID	A211102A_033	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:05	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	J
PFPeA	N/A	N/A	4.54	4.54	J
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.160	0.310	5.61	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.000	0.240	6.34	6.32	IJ
PFOA	0.340	0.390	6.05	6.06	J
6:2 FTS	0.700	0.480	5.83	5.83	J
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.180	0.200	6.49	6.49	
PFOSAm	N/A	N/A	8.65	8.66	
PFOS	0.210	0.210	7.20	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	0.00	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.000	0.570	7.08	7.10	
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	68 J	99	23	23	1	375-22-4	N2
PFPeA	100	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	87	22	22	1	375-73-5	N2
PFHxA	42 IJ	99	30	30	1	307-24-4	N2
4:2 FTS	ND	92	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	44 J	99	22	22	1	375-85-9	N2
DONA	ND	93	38	38	1	919005-14-4	N2
PFHxS	290 I	90	22	22	1	355-46-4	N2
PFOA	57 J	99	22	22	1	335-67-1	N2
6:2 FTS	38 J	94	32	32	1	27619-97-2	N2
PFHpS	ND	94	25	25	1	375-92-8	N2
PFNA	ND	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	380	91	27	27	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-Cl-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	ND	99	24	24	1	2991-50-6	N2
PFDS	ND	95	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-Cl-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTrDA	ND	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	960	97	50-150	
13C4_PFOA	990	1100	107	50-150	
13C2_PFDA	990	1100	115	50-150	
13C4_PFOS	950	930	98	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	680	68	25-150	
13C5_PFPeA	990	720	73	25-150	
13C3_PFBS	920	690	75	25-150	
13C2_4:2FTS	920	710	77	25-150	
13C5_PFHxA	990	710	71	25-150	
13C4_PFHpA	990	730	74	25-150	
13C3_PFHxS	940	800	86	25-150	
13C2_6:2FTS	940	880	94	25-150	
13C8_PFOA	990	760	77	25-150	
13C9_PFNA	990	820	83	25-150	
13C8_PFOS	950	760	80	25-150	
13C2_8:2FTS	950	1000	106	25-150	
13C6_PFDA	990	870	88	25-150	
d3-MeFOSAA	990	910	92	25-150	
13C8_PFOSA	990	600	61	25-150	
d5-EtFOSAA	990	1100	108	25-150	
13C7_PFUdA	990	990	101	25-150	
13C2_PFDoA	990	1000	103	25-150	
13C2_PFTeDA	990	910	92	25-150	
13C3_HFPO-DA	990	690	70	25-150	
d7-N-MeFOSE	990	490	50	10-150	
d9-N-EtFOSE	990	480	48	10-150	
d3-N-MeFOSA	990	340	34	10-150	
d5-N-EtFOSA	990	350	35	10-150	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.82	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-9 (5.5-7.5)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057013-R2	Total Amount Extracted	5.06g
Lab File ID	A211102A_034	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/13/2021 14:10	Ending CCal File	A211102A_041
Received	10/15/2021 09:25	Blank File	A211102A_027

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.70	3.70	J
PFPeA	N/A	N/A	4.54	4.54	
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	IJ
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.220	0.310	5.61	5.61	J
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.007	0.240	6.33	6.32	I
PFOA	0.400	0.390	6.05	6.06	J
6:2 FTS	0.440	0.480	5.83	5.83	J
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.340	0.200	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.170	0.210	7.21	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	0.00	6.68	
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	7.65	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.000	0.570	0.00	7.10	
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	10.14	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	51 J	99	23	23	1	375-22-4	N2
PFPeA	160	99	26	26	1	2706-90-3	N2
HFPO-DA	ND	99	29	29	1	13252-13-6	N2
PFBS	ND	87	22	22	1	375-73-5	N2
PFHxA	98 IJ	99	30	30	1	307-24-4	N2
4:2 FTS	ND	92	31	31	1	757124-72-4	N2
PFPeS	ND	93	18	18	1	2706-91-4	N2
PFHpA	70 J	99	22	22	1	375-85-9	N2
DONA	ND	93	38	38	1	919005-14-4	N2
PFHxS	27 IJ	90	22	22	1	355-46-4	N2
PFOA	220	99	22	22	1	335-67-1	N2
6:2 FTS	ND	94	32	32	1	27619-97-2	N2
PFHpS	63 IJ	94	25	25	1	375-92-8	N2
PFNA	170	99	28	28	1	375-95-1	N2
PFOSAm	ND	99	23	23	1	754-91-6	N2
PFOS	3200	91	27	27	1	1763-23-1	N2
MeFOSA	ND	99	25	25	1	31506-32-8	N2
PFDA	ND	99	21	21	1	335-76-2	N2
EtFOSAm	ND	99	23	23	1	4151-50-2	N2
8:2 FTS	ND	95	26	26	1	39108-34-4	N2
9-Cl-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	95	18	18	1	68259-12-1	N2
PFUnDA	ND	99	28	28	1	2058-94-8	N2
NMeFOSAA	ND	99	23	23	1	2355-31-9	N2
NEtFOSAA	170	99	24	24	1	2991-50-6	N2
PFDS	ND	95	25	25	1	335-77-3	N2
PFDOA	ND	99	26	26	1	307-55-1	N2
MeFOSE	ND	99	23	23	1	24448-09-7	N2
EtFOSE	ND	99	25	25	1	1691-99-2	N2
11-Cl-PF3OUdS	ND	93	16	16	1	763051-92-9	N2
PFTrDA	68 IJ	99	21	21	1	72629-94-8	N2
PFDoS	ND	96	30	30	1	79780-39-5	N2
PFTDA	ND	99	32	32	1	376-06-7	N2

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	770	78	50-150	
13C4_PFOA	990	820	84	50-150	
13C2_PFDA	990	890	90	50-150	
13C4_PFOS	940	810	86	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	570	58	50-150	
13C5_PFPeA	990	610	62	50-150	
13C3_PFBS	920	600	65	50-150	
13C2_4:2FTS	920	640	70	50-150	
13C5_PFHxA	990	640	65	50-150	
13C4_PFHpA	990	620	63	50-150	
13C3_PFHxS	930	620	67	50-150	
13C2_6:2FTS	940	680	72	50-150	
13C8_PFOA	990	620	63	50-150	
13C9_PFNA	990	660	67	50-150	
13C8_PFOS	940	610	64	50-150	
13C2_8:2FTS	950	750	80	50-150	
13C6_PFDA	990	690	70	50-150	
d3-MeFOSAA	990	770	78	50-150	
13C8_PFOSA	990	560	57	50-150	
d5-EtFOSAA	990	800	81	50-150	
13C7_PFUdA	990	780	79	50-150	
13C2_PFDoA	990	700	71	50-150	
13C2_PFTeDA	990	740	74	50-150	
13C3_HFPO-DA	990	580	58	50-150	
d7-N-MeFOSE	990	390	39	10-150	
d9-N-EtFOSE	990	420	42	10-150	
d3-N-MeFOSA	990	140	15	10-150	
d5-N-EtFOSA	990	170	17	10-150	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.04	6.05	
13C2_PFDA	N/A	N/A	6.89	6.91	
13C4_PFOS	N/A	N/A	7.19	7.21	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.82	5.83	
13C8_PFOA	N/A	N/A	6.04	6.05	
13C9_PFNA	N/A	N/A	6.47	6.48	
13C8_PFOS	N/A	N/A	7.19	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	
13C6_PFDA	N/A	N/A	6.89	6.91	
d3-MeFOSAA	N/A	N/A	6.84	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.32	7.34	
13C2_PFDoA	N/A	N/A	7.74	7.77	
13C2_PFTeDA	N/A	N/A	8.58	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.09	
d9-N-EtFOSE	N/A	N/A	10.71	10.71	
d3-N-MeFOSA	N/A	N/A	10.33	10.33	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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Sample Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	GP-10 (2-4)	Extraction Date	10/28/2021 09:09
Lab Sample ID	40235057014-R2	Total Amount Extracted	5.07g
Lab File ID	A211109C_011	Ical ID	211103A03
Matrix	Soil	CCal File	A211109C_003
Collected	10/13/2021 14:40	Ending CCal File	A211109C_014
Received	10/15/2021 09:25	Blank File	A211102A_027

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	J
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.000	0.440	0.00	5.33	
PFBS	1.40	0.390	5.29	5.29	
PFHxA	0.110	0.0620	5.12	5.12	IJ
4:2 FTS	0.000	0.560	4.84	4.90	
PFPeS	0.000	0.260	5.83	5.84	
PFHpA	0.350	0.280	5.60	5.61	J
DONA	0.000	0.500	0.00	5.78	
PFHxS	0.360	0.230	6.31	6.32	IJ
PFOA	0.390	0.400	6.05	6.06	
6:2 FTS	0.000	0.570	0.00	5.83	
PFHpS	0.091	0.270	6.77	6.78	IJ
PFNA	0.200	0.190	6.47	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.220	0.260	7.20	7.17	
MeFOSA	0.000	0.840	0.00	10.34	
PFDA	0.000	0.0760	0.00	6.92	
EtFOSAm	0.000	0.710	0.00	11.03	
8:2 FTS	0.000	0.530	0.00	6.68	
9-Cl-PF3ON	0.000	0.0190	0.00	7.53	
PFNS	0.000	0.270	0.00	7.65	
PFUnDA	0.000	0.0830	0.00	7.35	
NMeFOSAA	0.000	0.540	0.00	6.86	
NEtFOSAA	0.760	0.750	7.04	7.10	
PFDS	0.000	0.270	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0200	0.00	8.37	
PFTrDA	0.000	0.140	8.07	8.20	IJ
PFDoS	0.000	0.240	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

Compound	Concentration (ng/Kg)	QL (ng/Kg)	RL (ng/Kg)	DL (ng/Kg)	Dil.	CAS No.	Qual.
PFBA	ND	98	23	23	1	375-22-4	N2
PFPeA	ND	98	26	26	1	2706-90-3	N2
HFPO-DA	ND	98	29	29	1	13252-13-6	N2
PFBS	ND	87	22	22	1	375-73-5	N2
PFHxA	ND	98	29	29	1	307-24-4	N2
4:2 FTS	ND	92	31	31	1	757124-72-4	N2
PFPeS	ND	92	18	18	1	2706-91-4	N2
PFHpA	ND	98	22	22	1	375-85-9	N2
DONA	ND	93	38	38	1	919005-14-4	N2
PFHxS	ND	89	22	22	1	355-46-4	N2
PFOA	ND	98	22	22	1	335-67-1	N2
6:2 FTS	ND	93	31	31	1	27619-97-2	N2
PFHpS	ND	93	25	25	1	375-92-8	N2
PFNA	ND	98	28	28	1	375-95-1	N2
PFOSAm	ND	98	23	23	1	754-91-6	N2
PFOS	ND	91	27	27	1	1763-23-1	N2
MeFOSA	ND	98	24	24	1	31506-32-8	N2
PFDA	ND	98	21	21	1	335-76-2	N2
EtFOSAm	ND	98	23	23	1	4151-50-2	N2
8:2 FTS	26 IJ	94	25	25	1	39108-34-4	N2
9-Cl-PF3ON	ND	92	14	14	1	756426-58-1	N2
PFNS	ND	94	18	18	1	68259-12-1	N2
PFUnDA	ND	98	28	28	1	2058-94-8	N2
NMeFOSAA	ND	98	23	23	1	2355-31-9	N2
NEtFOSAA	ND	98	24	24	1	2991-50-6	N2
PFDS	ND	95	25	25	1	335-77-3	N2
PFDOA	ND	98	26	26	1	307-55-1	N2
MeFOSE	ND	98	23	23	1	24448-09-7	N2
EtFOSE	ND	98	24	24	1	1691-99-2	N2
11-Cl-PF3OUdS	ND	92	16	16	1	763051-92-9	N2
PFTrDA	ND	98	21	21	1	72629-94-8	N2
PFDoS	ND	95	29	29	1	79780-39-5	N2
PFTDA	ND	98	32	32	1	376-06-7	N2

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	980	1000	103	50-150	
13C4_PFOA	980	1000	105	50-150	
13C2_PFDA	980	980	100	50-150	
13C4_PFOS	940	950	101	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	980	830	85	50-150	
13C5_PFPeA	980	880	89	50-150	
13C3_PFBS	910	740	82	50-150	
13C2_4:2FTS	920	800	87	50-150	
13C5_PFHxA	980	840	86	50-150	
13C4_PFHpA	980	910	93	50-150	
13C3_PFHxS	930	830	89	50-150	
13C2_6:2FTS	930	860	93	50-150	
13C8_PFOA	980	820	83	50-150	
13C9_PFNA	980	880	90	50-150	
13C8_PFOS	940	790	84	50-150	
13C2_8:2FTS	940	920	97	50-150	
13C6_PFDA	980	850	87	50-150	
d3-MeFOSAA	980	880	89	50-150	
13C8_PFOSA	980	820	83	50-150	
d5-EtFOSAA	980	840	85	50-150	
13C7_PFUdA	980	840	86	50-150	
13C2_PFDoA	980	850	87	50-150	
13C2_PFTeDA	980	870	89	50-150	
13C3_HFPO-DA	980	830	85	50-150	
d7-N-MeFOSE	980	650	67	20-150	
d9-N-EtFOSE	980	620	63	20-150	
d3-N-MeFOSA	980	610	62	20-150	
d5-N-EtFOSA	980	590	60	20-150	

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.28	5.29	
13C2_4:2FTS	N/A	N/A	4.90	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.65	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.60	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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Method Blank Analysis Summary

PFAS by Isotope Dilution

Client Sample ID	BLKKC	Extraction Date	10/28/2021 09:09
Lab Sample ID	BLANK-94140	Total Amount Extracted	5.09g
Lab File ID	A211102A_027	Ical ID	211026A03
Matrix	Soil	CCal File	A211102A_026
Collected	10/27/2021 12:43	Ending CCal File	A211102A_041
Received	10/27/2021 12:43	Blank File	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.68	3.70	
PFPeA	N/A	N/A	0.00	4.54	
HFPO-DA	0.000	0.470	0.00	5.33	
PFBS	0.000	0.340	0.00	5.29	
PFHxA	0.000	0.0560	5.12	5.12	
4:2 FTS	0.000	0.540	0.00	4.90	
PFPeS	0.000	0.350	0.00	5.84	
PFHpA	0.000	0.310	0.00	5.61	
DONA	0.000	0.520	0.00	5.78	
PFHxS	0.000	0.240	0.00	6.32	
PFOA	0.000	0.390	0.00	6.06	
6:2 FTS	0.000	0.480	0.00	5.83	
PFHpS	0.000	0.260	0.00	6.78	
PFNA	0.000	0.200	0.00	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.000	0.210	0.00	7.17	
MeFOSA	0.000	0.920	0.00	10.34	
PFDA	0.000	0.0950	0.00	6.92	
EtFOSAm	0.000	0.720	0.00	11.03	
8:2 FTS	0.000	0.680	6.44	6.68	IJ
9-Cl-PF3ON	0.000	0.0210	0.00	7.53	
PFNS	0.000	0.230	0.00	7.65	
PFUnDA	0.000	0.100	0.00	7.35	
NMeFOSAA	0.000	0.500	0.00	6.86	
NEtFOSAA	0.000	0.570	0.00	7.10	
PFDS	0.000	0.240	0.00	8.07	
PFDOA	0.000	0.130	0.00	7.77	
MeFOSE	N/A	N/A	0.00	10.12	
EtFOSE	0.000	0.000	0.00	10.76	
11-Cl-PF3OUdS	0.000	0.0160	0.00	8.37	
PFTrDA	0.000	0.160	0.00	8.20	
PFDoS	0.000	0.230	0.00	8.87	
PFTDA	0.000	0.140	0.00	8.61	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94141	Instrument ID	10LCMS03
Run File Name	A211104A_007	Column ID	118AB10133
Analyzed	11/04/2021 10:52	Ical ID	211103A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	960	97	50-150	
13C4_PFOA	990	960	97	50-150	
13C2_PFDA	990	1000	103	50-150	
13C4_PFOS	950	880	92	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	830	84	50-150	
13C5_PFPeA	990	830	84	50-150	
13C3_PFBS	920	880	95	50-150	
13C2_4:2FTS	930	820	88	50-150	
13C5_PFHxA	990	850	86	50-150	
13C4_PFHpA	990	850	86	50-150	
13C3_PFHxS	940	800	85	50-150	
13C2_6:2FTS	940	790	84	50-150	
13C8_PFOA	990	890	89	50-150	
13C9_PFNA	990	870	88	50-150	
13C8_PFOS	950	800	84	50-150	
13C2_8:2FTS	950	1000	106	50-150	
13C6_PFDA	990	900	91	50-150	
d3-MeFOSAA	990	880	89	50-150	
13C8_PFOSA	990	830	83	50-150	
d5-EtFOSAA	990	900	91	50-150	
13C7_PFUdA	990	850	86	50-150	
13C2_PFDoA	990	880	89	50-150	
13C2_PFTeDA	990	840	85	50-150	
13C3_HFPO-DA	990	850	86	50-150	
d7-N-MeFOSE	990	640	64	20-150	
d9-N-EtFOSE	990	650	66	20-150	
d3-N-MeFOSA	990	680	68	20-150	
d5-N-EtFOSA	990	670	68	20-150	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94141	Instrument ID	10LCMS03
Run File Name	A211104A_007	Column ID	118AB10133
Analyzed	11/04/2021 10:52	Ical ID	211103A03
Injected By	NH	Level	L

Native Analytes

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	200	210	107	50-150		375-22-4
PFPeA	200	210	105	50-150		2706-90-3
HFPO-DA	200	200	103	50-150		13252-13-6
PFBS	180	180	104	50-150		375-73-5
PFHxA	200	210	107	50-150		307-24-4
4:2 FTS	190	220	117	50-150		757124-72-4
PFPeS	190	210	111	50-150		2706-91-4
PFHpA	200	220	110	50-150		375-85-9
DONA	190	210	114	50-150		919005-14-4
PFHxS	180	180	100	50-150		355-46-4
PFOA	200	210	106	50-150		335-67-1
6:2 FTS	190	210	112	50-150		27619-97-2
PFHpS	190	200	106	50-150		375-92-8
PFNA	200	210	105	50-150		375-95-1
PFOSAm	200	200	103	50-150		754-91-6
PFOS	180	200	109	50-150		1763-23-1
MeFOSA	200	210	108	50-150		31506-32-8
PFDA	200	210	103	50-150		335-76-2
EtFOSAm	200	220	109	50-150		4151-50-2
8:2 FTS	190	240	124	50-150	B	39108-34-4
9-Cl-PF3ON	180	200	108	50-150		756426-58-1
PFNS	190	200	105	50-150		68259-12-1
PFUnDA	200	220	109	50-150		2058-94-8
NMeFOSAA	200	220	111	50-150		2355-31-9
NEtFOSAA	200	220	113	50-150		2991-50-6
PFDS	190	200	104	50-150		335-77-3
PFDOA	200	220	111	50-150		307-55-1
MeFOSE	200	210	105	50-150		24448-09-7
EtFOSE	200	210	108	50-150		1691-99-2
11-Cl-PF3OUdS	190	210	112	50-150		763051-92-9
PFTrDA	200	220	110	50-150		72629-94-8
PFDoS	190	220	115	50-150		79780-39-5
PFTDA	200	200	102	50-150		376-06-7

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94141	Instrument ID	10LCMS03
Run File Name	A211104A_007	Column ID	118AB10133
Analyzed	11/04/2021 10:52	Ical ID	211103A03
Injected By	NH	Level	L

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.69	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.61	5.61	
13C3_PFHxS	N/A	N/A	6.32	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.60	8.61	
13C3_HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.09	10.14	
d9-N-EtFOSE	N/A	N/A	10.71	10.70	
d3-N-MeFOSA	N/A	N/A	10.33	10.32	
d5-N-EtFOSA	N/A	N/A	11.01	11.01	

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LCS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	LCS-94141	Instrument ID	10LCMS03
Run File Name	A211104A_007	Column ID	118AB10133
Analyzed	11/04/2021 10:52	Ical ID	211103A03
Injected By	NH	Level	L

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.48	0.47	5.33	5.33	
PFBS	0.34	0.34	5.30	5.29	
PFHxA	0.07	0.07	5.13	5.12	
4:2 FTS	0.52	0.56	4.91	4.90	
PFPeS	0.31	0.35	5.84	5.84	
PFHpA	0.29	0.28	5.61	5.61	
DONA	0.49	0.48	5.78	5.78	
PFHxS	0.29	0.28	6.32	6.32	
PFOA	0.36	0.32	6.06	6.06	
6:2 FTS	0.64	0.54	5.83	5.83	
PFHpS	0.26	0.24	6.77	6.78	
PFNA	0.20	0.20	6.49	6.49	
PFOSAm	N/A	N/A	8.67	8.66	
PFOS	0.22	0.23	7.21	7.17	
MeFOSA	0.84	0.90	10.35	10.34	
PFDA	0.10	0.09	6.91	6.92	
EtFOSAm	0.68	0.74	11.04	11.03	
8:2 FTS	0.52	0.64	6.67	6.68	B
9-Cl-PF3ON	0.02	0.01	7.52	7.53	
PFNS	0.23	0.22	7.64	7.65	
PFUnDA	0.09	0.08	7.34	7.35	
NMeFOSAA	0.48	0.57	6.86	6.86	
NEtFOSAA	0.71	0.57	7.06	7.10	
PFDS	0.24	0.23	8.06	8.07	
PFDOA	0.13	0.14	7.76	7.77	
MeFOSE	N/A	N/A	10.13	10.12	
EtFOSE	0.00	0.00	10.77	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.36	8.37	
PFTrDA	0.15	0.16	8.18	8.20	
PFDoS	0.20	0.26	8.85	8.87	
PFTDA	0.15	0.17	8.60	8.61	

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MS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MS-R	Instrument ID	10LCMS03
Run File Name	A211102A_029	Column ID	118AB10133
Analyzed	11/02/2021 15:59	Ical ID	211026A03
Injected By	NH	Level	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C2_PFHxA	990	1000	104	50-150	
13C4_PFOA	990	1100	109	50-150	
13C2_PFDA	990	1200	126	50-150	
13C4_PFOS	950	1000	106	50-150	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers
13C4_PFBA	990	710	72	50-150	
13C5_PFPeA	990	740	75	50-150	
13C3_PFBS	920	760	83	50-150	
13C2_4:2FTS	920	720	78	50-150	
13C5_PFHxA	990	740	75	50-150	
13C4_PFHpA	990	820	83	50-150	
13C3_PFHxS	930	810	87	50-150	
13C2_6:2FTS	940	910	97	50-150	
13C8_PFOA	990	750	76	50-150	
13C9_PFNA	990	820	83	50-150	
13C8_PFOS	950	730	77	50-150	
13C2_8:2FTS	950	1100	115	50-150	
13C6_PFDA	990	890	90	50-150	
d3-MeFOSAA	990	1300	132	50-150	
13C8_PFOSA	990	690	70	50-150	
d5-EtFOSAA	990	1000	102	50-150	
13C7_PFUdA	990	1200	124	50-150	
13C2_PFDoA	990	1200	120	50-150	
13C2_PFTeDA	990	920	93	50-150	
13C3_HFPO-DA	990	720	73	50-150	
d7-N-MeFOSE	990	580	59	10-150	
d9-N-EtFOSE	990	550	55	10-150	
d3-N-MeFOSA	990	550	56	10-150	
d5-N-EtFOSA	990	520	53	10-150	

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MS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MS-R	Instrument ID	10LCMS03
Run File Name	A211102A_029	Column ID	118AB10133
Analyzed	11/02/2021 15:59	Ical ID	211026A03
Injected By	NH	Level	

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	Qualifiers	CAS No.
PFBA	30	200	240	105	50-150		375-22-4
PFPeA	54	200	270	109	50-150		2706-90-3
HFPO-DA	0.00	200	200	101	50-150		13252-13-6
PFBS	0.00	170	190	109	50-150		375-73-5
PFHxA	0.00	200	230	115	50-150		307-24-4
4:2 FTS	0.00	180	180	100	50-150		757124-72-4
PFPeS	0.00	190	210	111	50-150		2706-91-4
PFHpA	0.00	200	210	107	50-150		375-85-9
DONA	0.00	190	200	105	50-150		919005-14-4
PFHxS	67	180	250	100	50-150		355-46-4
PFOA	34	200	270	118	50-150		335-67-1
6:2 FTS	44	190	210	87	50-150		27619-97-2
PFHpS	0.00	190	190	101	50-150		375-92-8
PFNA	0.00	200	200	104	50-150		375-95-1
PFOSAm	0.00	200	210	104	50-150		754-91-6
PFOS	310	180	430	69	50-150		1763-23-1
MeFOSA	0.00	200	210	104	50-150		31506-32-8
PFDA	0.00	200	190	97	50-150		335-76-2
EtFOSAm	0.00	200	190	94	50-150		4151-50-2
8:2 FTS	0.00	190	220	117	50-150	B	39108-34-4
9-Cl-PF3ON	0.00	180	180	96	50-150		756426-58-1
PFNS	0.00	180	200	107	50-150		68259-12-1
PFUnDA	0.00	200	210	108	50-150		2058-94-8
NMeFOSAA	0.00	200	180	92	50-150		2355-31-9
NEtFOSAA	0.00	200	210	108	50-150		2991-50-6
PFDS	0.00	190	190	99	50-150		335-77-3
PFDOA	0.00	200	210	106	50-150		307-55-1
MeFOSE	0.00	200	200	104	50-150		24448-09-7
EtFOSE	0.00	200	210	108	50-150		1691-99-2
11-Cl-PF3OUdS	0.00	190	170	92	50-150		763051-92-9
PFTrDA	0.00	200	200	103	50-150		72629-94-8
PFDoS	0.00	190	170	88	50-150		79780-39-5
PFTDA	0.00	200	200	101	50-150		376-06-7

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MS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MS-R	Instrument ID	10LCMS03
Run File Name	A211102A_029	Column ID	118AB10133
Analyzed	11/02/2021 15:59	Ical ID	211026A03
Injected By	NH	Level	

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFOA	N/A	N/A	6.04	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.19	7.21	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.28	5.29	
13C2_4:2FTS	N/A	N/A	4.90	4.90	
13C5_PFHxA	N/A	N/A	5.11	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.82	5.83	
13C8_PFOA	N/A	N/A	6.04	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.66	6.67	
13C6_PFDA	N/A	N/A	6.90	6.91	
d3-MeFOSAA	N/A	N/A	6.84	6.86	
13C8_PFOSA	N/A	N/A	8.65	8.66	
d5-EtFOSAA	N/A	N/A	7.04	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.75	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.31	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.69	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	10.99	11.01	

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MS Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MS-R	Instrument ID	10LCMS03
Run File Name	A211102A_029	Column ID	118AB10133
Analyzed	11/02/2021 15:59	Ical ID	211026A03
Injected By	NH	Level	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.68	3.70	
PFPeA	N/A	N/A	4.54	4.54	
HFPO-DA	0.47	0.47	5.32	5.33	
PFBS	0.29	0.34	5.29	5.29	
PFHxA	0.06	0.05	5.12	5.12	
4:2 FTS	0.59	0.54	4.91	4.90	
PFPeS	0.27	0.35	5.83	5.84	
PFHpA	0.29	0.31	5.61	5.61	
DONA	0.50	0.52	5.77	5.78	
PFHxS	0.19	0.24	6.32	6.32	
PFOA	0.35	0.39	6.05	6.06	
6:2 FTS	0.50	0.48	5.83	5.83	
PFHpS	0.24	0.26	6.77	6.78	
PFNA	0.22	0.20	6.48	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.23	0.21	7.20	7.17	
MeFOSA	0.89	0.92	10.33	10.34	
PFDA	0.10	0.09	6.91	6.92	
EtFOSAm	0.73	0.72	11.02	11.03	
8:2 FTS	0.49	0.68	6.67	6.68	B
9-Cl-PF3ON	0.02	0.02	7.51	7.53	
PFNS	0.23	0.23	7.63	7.65	
PFUnDA	0.10	0.10	7.34	7.35	
NMeFOSAA	0.52	0.50	6.85	6.86	
NEtFOSAA	0.62	0.57	7.05	7.10	
PFDS	0.23	0.24	8.05	8.07	
PFDOA	0.16	0.13	7.76	7.77	
MeFOSE	N/A	N/A	10.12	10.12	
EtFOSE	0.00	0.00	10.76	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.35	8.37	
PFTrDA	0.15	0.16	8.18	8.20	
PFDoS	0.25	0.23	8.85	8.87	
PFTDA	0.14	0.14	8.59	8.61	

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MSD Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MSD-R	Instrument ID	10LCMS03
Run File Name	A211102A_030	Column ID	118AB10133
Analyzed	11/02/2021 16:14	Ical ID	211026A03
Injected By	NH	Level	

Injection Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C2_PFHxA	980	1000	106	50-150	2.0	
13C4_PFOA	980	1100	110	50-150	0.3	
13C2_PFDA	980	1200	123	50-150	2.2	
13C4_PFOS	940	1000	109	50-150	2.8	

Extracted Internal Standards

Compound	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers
13C4_PFBA	980	750	76	50-150	5.9	
13C5_PFPeA	980	800	82	50-150	9.0	
13C3_PFBS	910	790	87	50-150	4.3	
13C2_4:2FTS	920	780	85	50-150	8.1	
13C5_PFHxA	980	770	78	50-150	4.5	
13C4_PFHpA	980	820	83	50-150	0.6	
13C3_PFHxS	930	820	88	50-150	1.6	
13C2_6:2FTS	930	840	90	50-150	8.0	
13C8_PFOA	980	810	83	50-150	7.9	
13C9_PFNA	980	900	91	50-150	8.7	
13C8_PFOS	940	850	90	50-150	15.4	
13C2_8:2FTS	940	1000	109	50-150	5.4	
13C6_PFDA	980	920	94	50-150	4.2	
d3-MeFOSAA	980	1100	109	50-150	19.2	
13C8_PFOSA	980	660	67	50-150	4.0	
d5-EtFOSAA	980	1000	103	50-150	1.4	
13C7_PFUdA	980	1100	107	50-150	14.4	
13C2_PFDoA	980	1100	113	50-150	6.1	
13C2_PFTeDA	980	860	87	50-150	6.1	
13C3_HFPO-DA	980	770	79	50-150	7.8	
d7-N-MeFOSE	980	610	62	10-150	4.6	
d9-N-EtFOSE	980	580	59	10-150	5.5	
d3-N-MeFOSA	980	480	49	10-150	13.6	
d5-N-EtFOSA	980	510	52	10-150	1.2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

MSD Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MSD-R	Instrument ID	10LCMS03
Run File Name	A211102A_030	Column ID	118AB10133
Analyzed	11/02/2021 16:14	Ical ID	211026A03
Injected By	NH	Level	

Native Analytes

Compound	Sample Conc.	Known Conc.	Conc. Found	%Recovery	Recovery Limits	RPD	Qualifiers	CAS No.
PFBA	30	200	220	99	50-150	5.0		375-22-4
PFPeA	54	200	250	99	50-150	7.2		2706-90-3
HFPO-DA	0.00	200	190	98	50-150	3.7		13252-13-6
PFBS	0.00	170	190	109	50-150	0.4		375-73-5
PFHxA	0.00	200	210	109	50-150	5.6		307-24-4
4:2 FTS	0.00	180	180	96	50-150	3.7		757124-72-4
PFPeS	0.00	190	210	111	50-150	0.3		2706-91-4
PFHpA	0.00	200	210	109	50-150	1.9		375-85-9
DONA	0.00	190	200	108	50-150	2.6		919005-14-4
PFHxS	67	180	280	121	50-150	14.3		355-46-4
PFOA	34	200	270	122	50-150	2.7		335-67-1
6:2 FTS	44	190	230	102	50-150	12.2		27619-97-2
PFHpS	0.00	190	170	90	50-150	11.3		375-92-8
PFNA	0.00	200	210	109	50-150	5.0		375-95-1
PFOSAm	0.00	200	200	101	50-150	3.4		754-91-6
PFOS	310	180	520	118	50-150	18.9		1763-23-1
MeFOSA	0.00	200	200	103	50-150	0.8		31506-32-8
PFDA	0.00	200	220	113	50-150	15.1		335-76-2
EtFOSAm	0.00	200	200	99	50-150	5.4		4151-50-2
8:2 FTS	0.00	190	190	98	50-150	17.3	B	39108-34-4
9-Cl-PF3ON	0.00	180	180	96	50-150	0.4		756426-58-1
PFNS	0.00	180	190	102	50-150	5.5		68259-12-1
PFUnDA	0.00	200	220	110	50-150	2.3		2058-94-8
NMeFOSAA	0.00	200	180	89	50-150	3.0		2355-31-9
NEtFOSAA	0.00	200	230	119	50-150	9.5		2991-50-6
PFDS	0.00	190	180	96	50-150	3.4		335-77-3
PFDOA	0.00	200	210	104	50-150	1.7		307-55-1
MeFOSE	0.00	200	200	102	50-150	1.8		24448-09-7
EtFOSE	0.00	200	190	96	50-150	11.3		1691-99-2
11-Cl-PF3OUdS	0.00	190	160	86	50-150	7.6		763051-92-9
PFTrDA	0.00	200	190	97	50-150	5.1		72629-94-8
PFDoS	0.00	190	160	84	50-150	5.0		79780-39-5
PFTDA	0.00	200	200	104	50-150	2.7		376-06-7

REPORT OF LABORATORY ANALYSIS

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MSD Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MSD-R	Instrument ID	10LCMS03
Run File Name	A211102A_030	Column ID	118AB10133
Analyzed	11/02/2021 16:14	Ical ID	211026A03
Injected By	NH	Level	

Injection Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C2_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFOA	N/A	N/A	6.05	6.05	
13C2_PFDA	N/A	N/A	6.90	6.91	
13C4_PFOS	N/A	N/A	7.20	7.21	

Extracted Internal Standards

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
13C4_PFBA	N/A	N/A	3.68	3.69	
13C5_PFPeA	N/A	N/A	4.54	4.53	
13C3_PFBS	N/A	N/A	5.29	5.29	
13C2_4:2FTS	N/A	N/A	4.91	4.90	
13C5_PFHxA	N/A	N/A	5.12	5.11	
13C4_PFHpA	N/A	N/A	5.60	5.61	
13C3_PFHxS	N/A	N/A	6.31	6.32	
13C2_6:2FTS	N/A	N/A	5.83	5.83	
13C8_PFOA	N/A	N/A	6.05	6.05	
13C9_PFNA	N/A	N/A	6.48	6.48	
13C8_PFOS	N/A	N/A	7.20	7.21	
13C2_8:2FTS	N/A	N/A	6.67	6.67	
13C6_PFDA	N/A	N/A	6.91	6.91	
d3-MeFOSAA	N/A	N/A	6.85	6.86	
13C8_PFOSA	N/A	N/A	8.66	8.66	
d5-EtFOSAA	N/A	N/A	7.05	7.05	
13C7_PFUdA	N/A	N/A	7.33	7.34	
13C2_PFDoA	N/A	N/A	7.76	7.77	
13C2_PFTeDA	N/A	N/A	8.59	8.61	
13C3_HFPO-DA	N/A	N/A	5.32	5.31	
d7-N-MeFOSE	N/A	N/A	10.08	10.14	
d9-N-EtFOSE	N/A	N/A	10.70	10.70	
d3-N-MeFOSA	N/A	N/A	10.32	10.32	
d5-N-EtFOSA	N/A	N/A	11.00	11.01	

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MSD Analysis Summary

PFAS by Isotope Dilution

Lab Sample ID	40235057012-MSD-R	Instrument ID	10LCMS03
Run File Name	A211102A_030	Column ID	118AB10133
Analyzed	11/02/2021 16:14	Ical ID	211026A03
Injected By	NH	Level	

Native Analytes

Compound	Ion Abund. Ratio	Reference Ratio	Retention Time	Reference Time	Qualifiers
PFBA	N/A	N/A	3.69	3.70	
PFPeA	N/A	N/A	4.55	4.54	
HFPO-DA	0.49	0.47	5.33	5.33	
PFBS	0.32	0.34	5.29	5.29	
PFHxA	0.06	0.05	5.12	5.12	
4:2 FTS	0.57	0.54	4.91	4.90	
PFPeS	0.29	0.35	5.84	5.84	
PFHpA	0.30	0.31	5.61	5.61	
DONA	0.45	0.52	5.78	5.78	
PFHxS	0.16	0.24	6.32	6.32	
PFOA	0.29	0.39	6.05	6.06	
6:2 FTS	0.55	0.48	5.83	5.83	
PFHpS	0.27	0.26	6.77	6.78	
PFNA	0.18	0.20	6.49	6.49	
PFOSAm	N/A	N/A	8.66	8.66	
PFOS	0.18	0.21	7.21	7.17	
MeFOSA	0.87	0.92	10.34	10.34	
PFDA	0.09	0.09	6.91	6.92	
EtFOSAm	0.67	0.72	11.03	11.03	
8:2 FTS	0.80	0.68	6.67	6.68	B
9-Cl-PF3ON	0.02	0.02	7.52	7.53	
PFNS	0.25	0.23	7.64	7.65	
PFUnDA	0.11	0.10	7.34	7.35	
NMeFOSAA	0.66	0.50	6.86	6.86	
NEtFOSAA	0.58	0.57	7.06	7.10	
PFDS	0.24	0.24	8.06	8.07	
PFDOA	0.14	0.13	7.76	7.77	
MeFOSE	N/A	N/A	10.12	10.12	
EtFOSE	0.00	0.00	10.76	10.76	
11-Cl-PF3OUdS	0.01	0.01	8.36	8.37	
PFTrDA	0.15	0.16	8.19	8.20	
PFDoS	0.25	0.23	8.85	8.87	
PFTDA	0.13	0.14	8.60	8.61	

REPORT OF LABORATORY ANALYSIS

Aerobiology Laboratory Associates, Incorporated
Expertise Since 1997

780 Simms Street
Suite 104
Golden, CO, 80401
303.232.3746
www.aerobiology.net

Certificate of Analysis

Client Name	Pace Analytical Green Bay
Street Address	1241 Bellevue Street, Suite 9
City, State ZIP	Green Bay, WI 54302
Attn:	Dan Milewsky
Client Project Name:	40235057 / Ludington

NVLAP® TESTING
NVLAP Lab Code 200860-0

Date Collected:	10/13/2021
Date Received:	10/15/2021
Date Analyzed:	10/27/2021
Date Reported:	10/27/2021
Project ID:	21047603

Test Requested: 3002, Asbestos in Bulk Samples
Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

Sample Identification		Physical Description of Sample/Layer	Homo-geneous (Y/N)	Layer Percentage	Asbestos Detected	Asbestos Percentage	Non-Asbestos Fiber Percentage	Non-Fibrous Material Percentage	Matrix Material Composition
Client	Lab Sample Number								
GP-8 (2-4)	21047603-1	Brown Soil	N	100	ND		2 CELL	98	
GP-8 (7-8)	21047603-2	Brown Soil with Brown Fibrous Debris	N	100	ND		30 CELL	70	
GP-9 (1.5-3.5)	21047603-3	Gray Soil	N	100	ND		2 CELL	98	
GP-9 (5.5-7.5)	21047603-4	Brown Soil	N	100	ND		2 CELL	98	
GP-10 (2-4)	21047603-5	Brown Soil with Brown Fibrous Debris	N	100	ND		15 CELL	85	
GP-10 (6.5-8)	21047603-6	Brown Soil	N	100	ND		2 CELL	98	

Piper-Lenore Murphy
Laboratory Analyst

Shannon Whitmore
Asbestos Lab Supervisor

AC = Actinolite	AH = Animal Hair	B = Binder	Q = Quartz
AM = Amosite	CELL = Cellulose	C = Calcite	T = Tar
AN = Anthophyllite	FG = Fibrous Glass	D = Diatoms	V = Vermiculite
CHRY = Chrysotile	MW = Mineral Wool	G = Gypsum	
CR = Crocidolite	OT = Other	M = Mica	
TRM = Tremolite	SYN = Synthetic	OR = Organic	
Tr = Trace	TL = Talc	OP = Opaques	
ND = None Detected	W = Wollastonite	P = Perlite	

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Certificate of Analysis

Client Name	Pace Analytical Green Bay		Date Collected: 10/13/2021
Street Address	1241 Bellevue Street, Suite 9	NVLAP® TESTING	Date Received: 10/15/2021
City, State ZIP	Green Bay, WI 54302	NVLAP Lab Code 200860-0	Date Analyzed: 10/27/2021
Attn:	Dan Milewsky		Date Reported: 10/27/2021
Client Project Name:	40235057 / Ludington		Project ID: 21047603

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

General Notes

- **ND** indicates no asbestos was detected; the method detection limit is 1 %.
- **Trace** or "< 1" indicates asbestos was identified in the sample, but the concentration is less than 1% and cannot be quantified without point counting.
- Samples identified as inhomogeneous (more than one layer) are separated into individual layers, and each layer is analyzed and reported separately.
- All regulated asbestos minerals (i.e. chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite) were sought in every layer of each sample, but only those asbestos minerals detected are listed. Amosite is the common name for the asbestiform variety of the minerals grunerite. Crocidolite is the common name used for the asbestiform variety of the mineral riebeckite.
- Tile, vinyl, foam, plastic, and fine powder samples may contain asbestos fibers of such small diameter (< 0.25 microns in diameter) that these fibers cannot be detected by PLM. For such samples, more sensitive analytical methods (e.g. TEM, SEM, and XRD) are recommended if greater certainty about asbestos content is required. Semi-quantitative bulk TEM floor tile analysis is accepted under NESHAP regulations.
- These results are submitted pursuant to Aerobiology Laboratory Associates, Inc.'s current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted.
- Unless notified in writing to return the samples covered by this report, Aerobiology Laboratory Associates, Inc. will store the samples for a minimum period of thirty (30) days before discarding. A shipping and handling charge will be assessed for the return of any samples.
- Aerobiology does not guarantee the results of tape lifts, microvacs, wipe, and/or debris samples. Accurate analysis cannot be performed due to particle size, media used, and/or amount of material given. Analysis of these materials should be preformed by a TEM. ***A result of ND does not indicate that the sample area does not contain asbestos. It means the analyst could not identify asbestos in the specific sample for the reasons listed above.***

Notes Required by NVLAP

- This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
- This test report relates only to the items tested or calibrated.
- This report is not valid unless it bears the name of a NVLAP-approved signatory.
- Any reproduction of this document must include the entire document in order for the report to be valid.

Internal Transfer Chain of Custody

210471603

Pace Analytical
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: WI
Cert. Needed: ☐ Yes ☒ No
Owner Received Date: 10/13/2021 Results Requested By: 10/27/2021

Workorder: 40235057 Workorder Name: LUDINGTON

Report To	Subcontract To
Dan Milewsky Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436 dan.milewsky@pace	Pace Analytical Golden 780 Simms St, Suite 104 Golden, CO 80401 Phone (866) 620-9348

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Asbestos-PLM	LAB USE ONLY
1	GP-8 (2-4)	PS	10/13/2021 13:05	40235057010	Solid	1	X	
2	GP-8 (7-8)	PS	10/13/2021 13:10	40235057011	Solid	1	X	
3	GP-9 (1.5-3.5)	PS	10/13/2021 14:05	40235057012	Solid	1	X	
4	GP-9 (5.5-7.5)	PS	10/13/2021 14:10	40235057013	Solid	1	X	
5	GP-10 (2-4)	PS	10/13/2021 14:40	40235057014	Solid	1	X	
6	GP-10 (6.5-8)	PS	10/13/2021 14:45	40235057015	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	10/14/21 1600	ERT 10/15/21	
2				
3				

Comments

Cooler Temperature on Receipt _____ °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 signatu
This chain of custody is considered complete as is since this information is available in the owner laborat

LAB USE ONLY

A: pam 10/27/21

V: _____

Q: AG 10/27/21

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

December 07, 2021

Bill Honea
AYRES & ASSOCIATES, INC.
3376 Packerland Avenue
De Pere, WI 54115

RE: Project: LUDINGTON
Pace Project No.: 40237395

Dear Bill Honea:

Enclosed are the analytical results for sample(s) received by the laboratory on November 22, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Green Bay

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

Sincerely,

Dan Milewsky
dan.milewsky@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: LUDINGTON
Pace Project No.: 40237395

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: LUDINGTON
Pace Project No.: 40237395

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40237395001	**GP-8 (7-8)**	Solid	10/13/21 13:10	11/22/21 16:40

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

SAMPLE ANALYTE COUNT

Project: LUDINGTON
Pace Project No.: 40237395

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40237395001	**GP-8 (7-8)**	EPA 6010D	TXW	2	PASI-G

PASI-G = Pace Analytical Services - Green Bay

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

ANALYTICAL RESULTS

Project: LUDINGTON
Pace Project No.: 40237395

Sample: GP-8 (7-8) **Lab ID: 40237395001** Collected: 10/13/21 13:10 Received: 11/22/21 16:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, TCLP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Leachate Method/Date: EPA 1311; 11/30/21 13:32 Pace Analytical Services - Green Bay								
Arsenic	**0.12**	mg/L	0.050	0.017	2	12/02/21 10:05	12/06/21 13:37	7440-38-2	
Lead	**3.3**	mg/L	0.040	0.012	2	12/02/21 10:05	12/06/21 13:37	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40237395

QC Batch: 403230
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET TCLP
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40237395001

METHOD BLANK: 2327836 Matrix: Water
Associated Lab Samples: 40237395001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0084	0.025	12/02/21 22:58	
Lead	mg/L	<0.0059	0.020	12/02/21 22:58	

METHOD BLANK: 2327020 Matrix: Solid
Associated Lab Samples: 40237395001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0084	0.025	12/02/21 23:49	
Lead	mg/L	<0.0059	0.020	12/02/21 23:49	

METHOD BLANK: 2327255 Matrix: Solid
Associated Lab Samples: 40237395001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0084	0.025	12/02/21 23:31	
Lead	mg/L	<0.0059	0.020	12/02/21 23:31	

LABORATORY CONTROL SAMPLE: 2327837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.25	0.23	90	80-120	
Lead	mg/L	0.25	0.24	95	80-120	

MATRIX SPIKE SAMPLE: 2327838

Parameter	Units	40237541001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.017	0.25	0.25	99	75-125	
Lead	mg/L	<0.012	0.25	0.27	105	75-125	

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

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QUALITY CONTROL DATA

Project: LUDINGTON
Pace Project No.: 40237395

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2327839 2327840

Parameter	Units	40237575045 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	<0.0084	0.25	0.25	0.25	0.25	97	97	75-125	0	20	
Lead	mg/L	<0.0059	0.25	0.25	0.25	0.24	99	97	75-125	2	20	

MATRIX SPIKE SAMPLE: 2327841

Parameter	Units	40237577001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.011J	0.25	0.26	98	75-125	
Lead	mg/L	<0.0059	0.25	0.25	102	75-125	

MATRIX SPIKE SAMPLE: 2327842

Parameter	Units	50303942001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.012J	0.25	0.26	99	75-125	
Lead	mg/L	<0.0059	0.25	0.25	99	75-125	

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: LUDINGTON
Pace Project No.: 40237395

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: LUDINGTON
Pace Project No.: 40237395

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40237395001	**GP-8 (7-8)**	EPA 3010A	403230	EPA 6010D	403280

REPORT OF LABORATORY ANALYSIS

40237395

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

Page 1 of 2

40235057

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

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

(Please Print Clearly)	
Company Name:	Ayres
Branch/Location:	Green Bay
Project Contact:	Bill Honea
Phone:	(920) 327-7815
Project Number:	
Project Name:	Lidington
Project State:	WI
Sampled By (Print):	William Honea
Sampled By (Sign):	William Honea
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	subs@ayresassociates.com
Invoice To Phone:	

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

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

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: As + Pb	PFAS	VOCs	PAHs	Asbestos	As, Pb, + Cyanide	PAHs + PCBs	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	GP-1 (2-4)	10-13-21	9:35	S		F	1		1							
002	GP-1 (9-11)	10-13-21	9:45	S			1		1							
003	GP-2 (2-4)	10-13-21	10:15	S			1		1							
004	GP-2 (9-11)	10-13-21	10:20	S			1		1							
005	GP-3 (1.5-2.5)	10-13-21	10:45	S			1									
006	GP-3 (8-10)	10-13-21	10:50	S			1									
007	GP-5 (1.5-2.5)	10-13-21	12:00	S					1			1	1			
008	GP-6 (2-4)	10-13-21	12:28	S					1			1	1			
009	GP-7 (2-4)	10-13-21	12:35	S					1			1	1			
010	GP-8 (2-4)	10-13-21	13:05	S			1	1	1	1	1					
011	GP-8 (7-8)	10-13-21	13:10	S			1	X	1	1	1			No PFAS sample	RELOG TCLP As/Pb	
012	GP-9 (1.5-3.5)	10-13-21	14:05	S			1	1	1	1	1					
013	GP-9 (5.5-7.5)	10-13-21	14:10	S			1	1	1	1	1				40237395	

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:
William Honea	10/13/21 1640		

PACE Project No.: 40235057

Receipt Temp = 3 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal: Present / Not Present; Intact / Not Intact

Version 6.0 06/14/06

ORIGINAL

40237395

From: Susan Wylie
Sent: Tuesday, November 23, 2021 9:10 AM
To: Dan Milewsky; WI Sample Receiving
Cc: Vyvyan Cole; McKenna Arnoldi; Kylee Richards
Subject: RE: # 40235057011

JGFU approx.. 200g; WPFU approx.. 217g

Sent from Mail for Windows

From: Dan Milewsky
Sent: Monday, November 22, 2021 1:06 PM
To: WI Sample Receiving
Cc: Vyvyan Cole; McKenna Arnoldi; Kylee Richards
Subject: RE: # 40235057011

If enough sample is left for TCLP, use this COC for the relog.

From: Dan Milewsky
Sent: Monday, November 22, 2021 1:01 PM
To: WI Sample Receiving <WISampleReceiving@pacelabs.com>
Subject: # 40235057011

Good afternoon receiving,

Can you pull this sample and tell me if there is enough left for TCLP Metals?
If so it will get logged with a new work order number.

Ayres
40235057011

Dan Milewsky
Project Manager | Pace Environmental Sciences
1241 Bellevue St, STE 9
Green Bay, WI 54302
Direct/Cell-920-412-8566 | Lab-920.469.2436 |
pacelabs.com

Pace Analytical will be **closed** for Thanksgiving on November 25th, 26th, & 27th Please make the necessary changes to your sampling schedule, especially if you have short hold or rush items. During the week of Thanksgiving, the lab will **only** set BOD or cBOD samples on Wednesday, November 24th

Client Name: Ayres

Sample Preservation Receipt Form

Project # 40237375

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

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

Lab Lot# of pH paper:

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

Initial when completed:

Date/ Time:

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN							
001																				/			/										2.5 / 5 / 10
002																																	2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
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014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																												11/23/24					2.5 / 5 / 10
020																																	2.5 / 5 / 10

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

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

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

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

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

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

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Ayres

WO#: 40237395

40237395

Courier: ☐ CS Logistics ☐ FedEx ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other:

Tracking #: N/A 11/23/21 SW

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 - **Type of Ice:** Wet Blue Dry None ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: /Corr:

Person examining contents: Date: 11/23/21 /Initials: SCW

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

Labeled By Initials:

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

Chain of Custody Present:	☑Yes ☐No ☐N/A	1. Sample from 40235057 getting relogged per PM 11/23/21 SW
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: S		
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

From: Honea, William <HoneaW@AyresAssociates.com>
Sent: Friday, January 14, 2022 1:01 PM
To: Sellwood, Alyssa A - DNR; Krueger, Sarah E - DNR; angela.carey@wisconisn.gov
Cc: Hubbard, Trace
Subject: Marinette Ludington Street Reconstruction Project
Attachments: Ludington Street Tables and Figures.pdf

Good afternoon,

The City of Marinette retained Ayres to complete soil and groundwater testing for the Ludington Street reconstruction project. We encountered fill mixed with general refuse during testing beneath the east end of the project site. This fill contained benzene, PAHs, arsenic, and lead above RCLs. Additionally, it contained low levels of PFOS and PFOA. Concentrations ranged from 30 to 380 ng/Kg. Currently, we don't think this fill material can be reused at the site because it's unsuitable for use as structural backfill. That leaves the City weighing disposal options, and unfortunately, landfills in the surrounding area haven't been receptive to accepting waste containing PFAS regardless of the levels. The City has asked me to evaluate the potential for managing this waste at another City-owned site, where dredge materials were previously placed under a low-hazard waste exemption. Preliminary estimates from the engineering design team indicate grading and storm sewer excavations could generate 2,700 cubic yards of spoils. Any thoughts regarding using a low-haz exemption to the manage this waste at another site would be greatly appreciated.

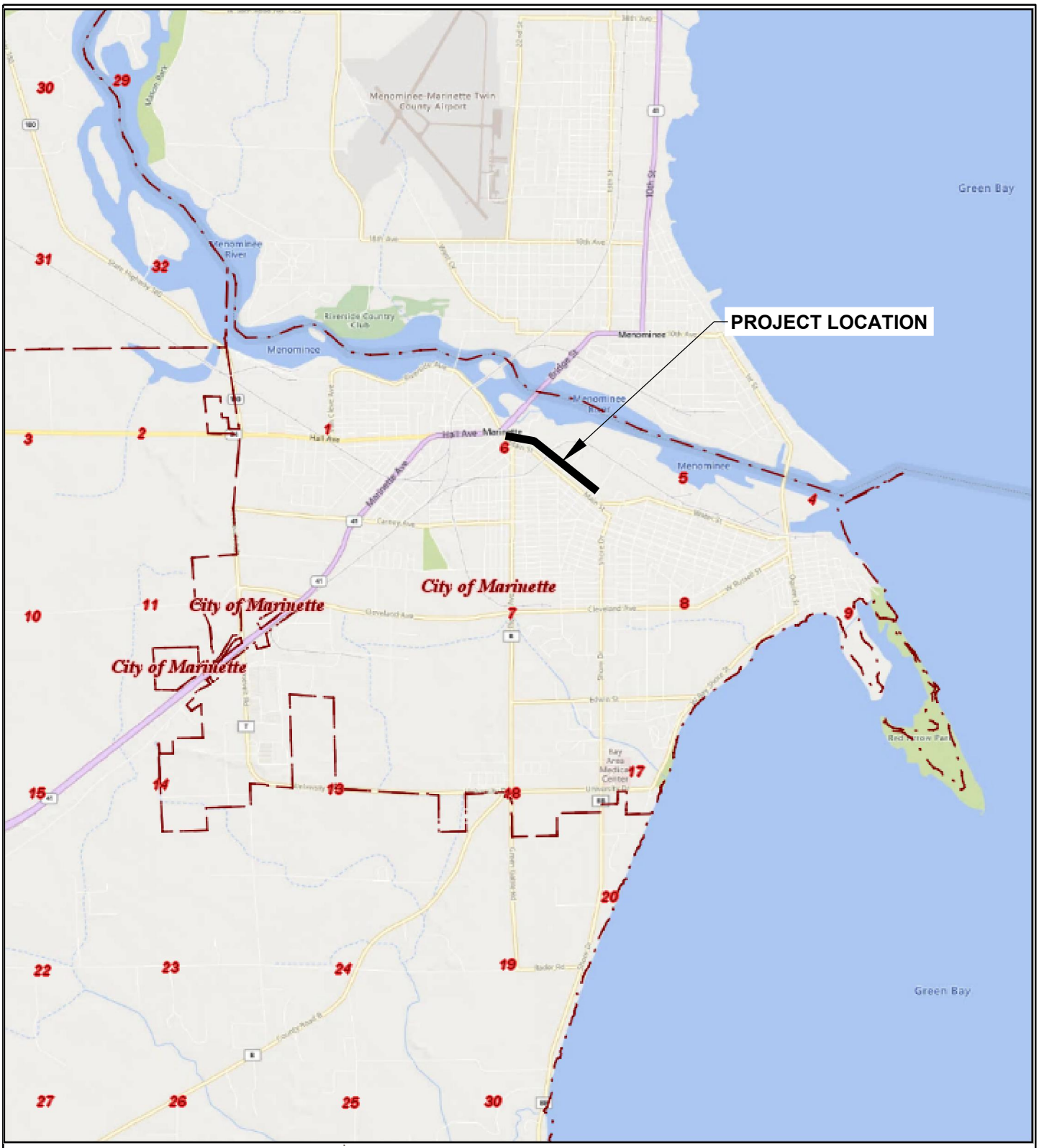
I've attached the analytical summary tables and figures for reference.

Thanks,
Bill

AYRES ENVIRONMENTAL

Bill Honea, PG | Geologist
Office: 920.498.1200 | Direct: 920.327.7815
3376 Packerland Drive | Ashwaubenon, WI 54115
Ayres Associates Inc | www.AyresAssociates.com
Ingenuity, Integrity, and Intelligence.

Figure 1: Location Map



https://mcgis.marinettecounty.com

N

Feet

0 4071.176613 8142.3532

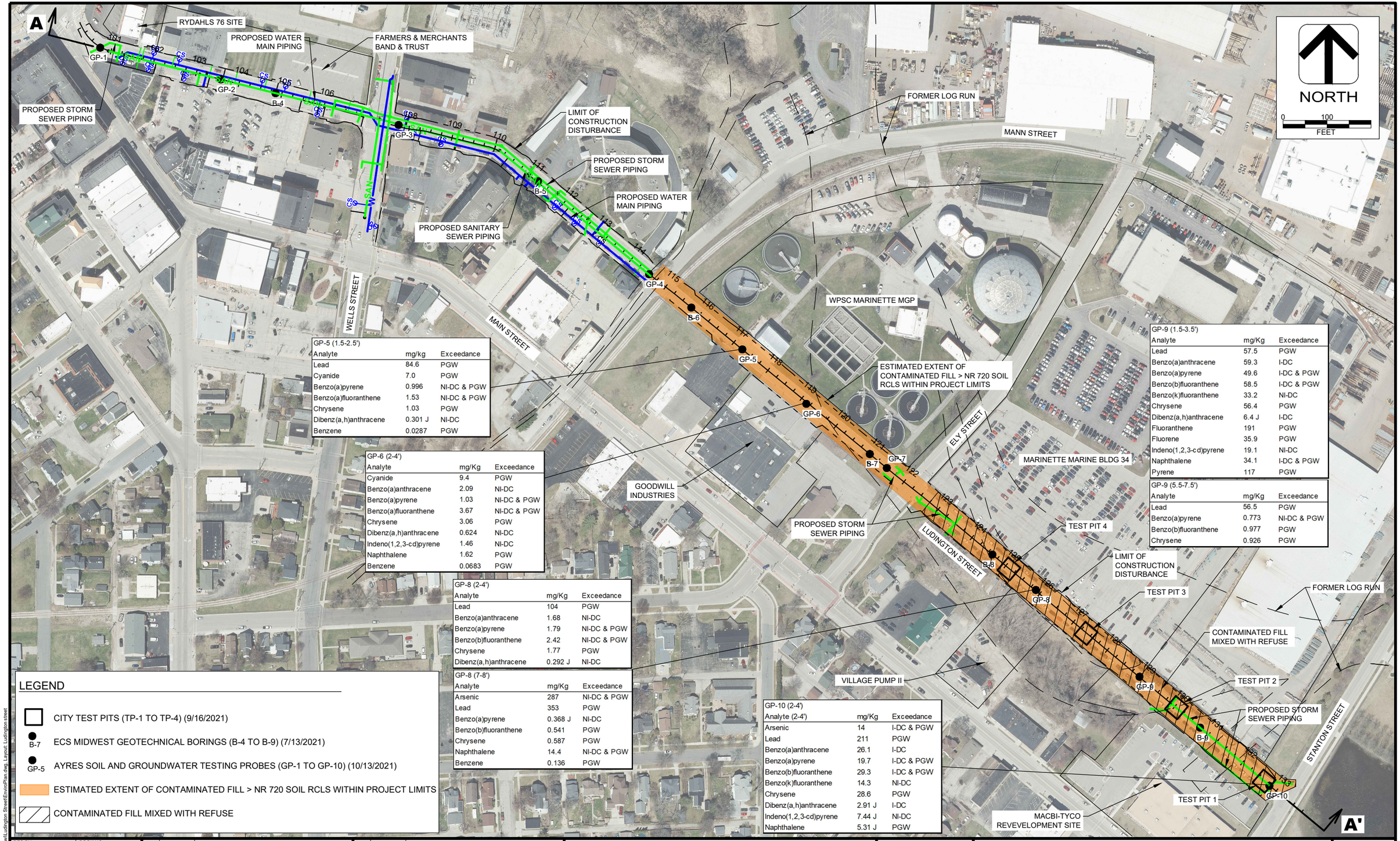
12/20/2021 1:44:52 PM

Notice/Disclaimer: The land records site is intended to be a general guide to property and land information, and does not represent a survey of real property nor should it be used or referenced to for conveyance of real property, guaranteeing title thereto or making official determinations of building development, permitting or other activity. Contact the appropriate County Department to obtain original source documents or for official determinations. This information has been developed from various sources and although efforts have been made to ensure accuracy and reliability; errors, omissions and variable conditions originating from compilation and sources used to develop the information may be reflected herein. In addition, land information is constantly changing and the most current or accurate data might not be represented. The information accessible through this site is represented "as is" without warranty of any kind, either expressed or implied, or statutory, including, but not limited to, the implied warranties or merchantability and fitness for a particular purpose. No guarantee of accuracy, completeness or currentness is granted nor is any responsibility for reliance thereon assumed. The user assumes the entire risk as to the quality, use and reliability of the entire information. Marinette County does not accept any liability for damages or misrepresentation of any kind caused by inaccuracies in the information and in no event shall Marinette County, its elected or appointed officials or employees be liable for direct, indirect, incidental, consequential or special damages of any kind.

DR.BY T. Shupert CHK.BY B. Honea DATE DEC. 2021	SOIL AND GROUNDWATER TESTING LUDINGTON ROAD MARINETTE, WISCONSIN	AYRES Eau Claire, Wisconsin	LOCATION MAP	FIGURE NO. 1

AA-Standard.stb
12/20/2021
I:\51\CAD\Marinett w\Ludington Street\EnvirPlan.dwg, Layout: Layout1

Figure 2: Site Plan with Sample Locations



GP-5 (1.5-2.5')

Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW

GP-6 (2-4')

Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (2-4')

Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-8 (7-8')

Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-10 (2-4')

Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-9 (1.5-3.5')

Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')

Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

LEGEND

- CITY TEST PITS (TP-1 TO TP-4) (9/16/2021)
- B-7 ECS MIDWEST GEOTECHNICAL BORINGS (B-4 TO B-9) (7/13/2021)
- GP-5 AYRES SOIL AND GROUNDWATER TESTING PROBES (GP-1 TO GP-10) (10/13/2021)
- ESTIMATED EXTENT OF CONTAMINATED FILL > NR 720 SOIL RCLS WITHIN PROJECT LIMITS
- CONTAMINATED FILL MIXED WITH REFUSE

DES BY	BOOK NO
B. HONEA	
DR BY	PROJ NO
T. SHUPERT	52-0712.00
CHK BY	DATE
B. HONEA	DEC. 2021

NO	DATE	REVISION

NO	DATE	REVISION

SOIL AND GROUNDWATER TESTING
LUDINGTON ROAD
MARINETTE, WISCONSIN

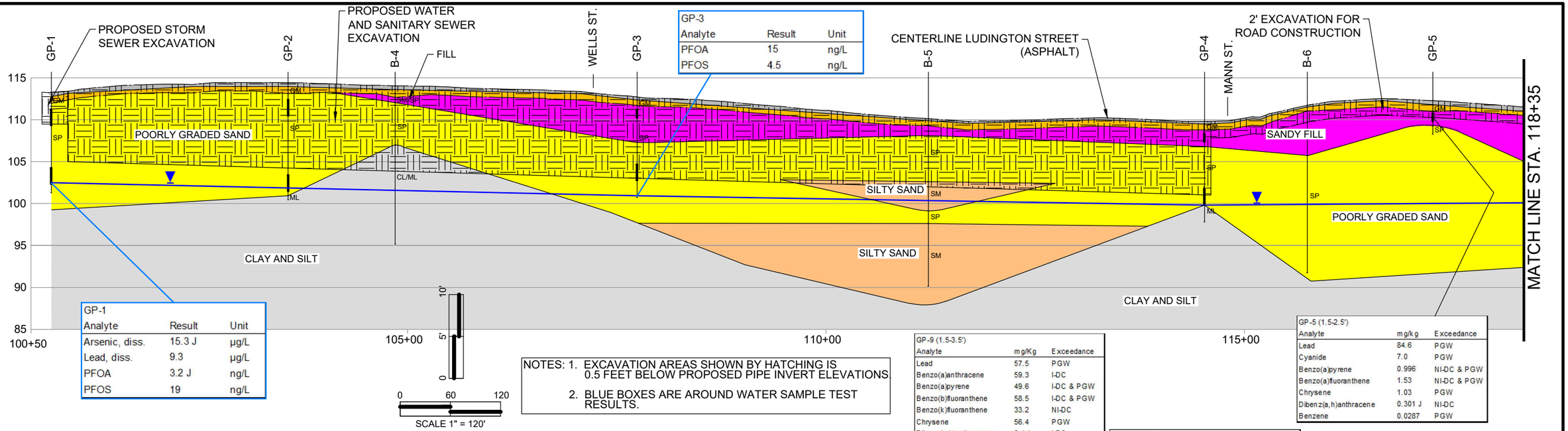
AYRES
Eau Claire, WI 54701

SITE PLAN

SHEET NO
2

AA-Standard.stb
12/23/2021
I:\51\CAD\Marinett w\Ludington Street\Environ\Plan.dwg, Layout: Ludington street

Figure 3: Geologic Section A – A’ (Centerline of Roadway)



GP-3		
Analyte	Result	Unit
PFOA	15	ng/L
PFOS	4.5	ng/L

GP-1		
Analyte	Result	Unit
Arsenic, diss.	15.3 J	µg/L
Lead, diss.	9.3	µg/L
PFOA	3.2 J	ng/L
PFOS	19	ng/L

NOTES: 1. EXCAVATION AREAS SHOWN BY HATCHING IS 0.5 FEET BELOW PROPOSED PIPE INVERT ELEVATIONS.

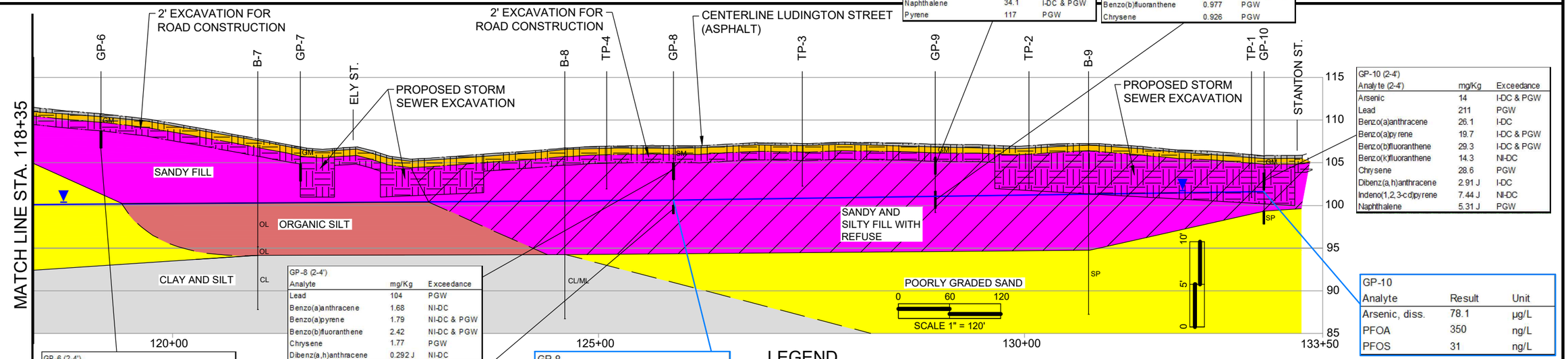
2. BLUE BOXES ARE AROUND WATER SAMPLE TEST RESULTS.

GEOLOGIC CROSS-SECTION A-A'

GP-9 (1.5-3.5')		
Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')		
Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

GP-5 (1.5-2.5')		
Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW



GP-10 (2-4')		
Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-10		
Analyte	Result	Unit
Arsenic, diss.	78.1	µg/L
PFOA	350	ng/L
PFOS	31	ng/L

GP-8 (2-4')		
Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-6 (2-4')		
Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (7-8')		
Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-8		
Analyte	Result	Unit
Lead, diss.	50	µg/L
PFOA	28	ng/L
PFOS	16	ng/L
Chrysene	0.029 J	µg/L

GEOLOGIC CROSS-SECTION A-A'

LEGEND

CL	INORGANIC CLAYS OF LOW PLASTICITY
ML	INORGANIC SILTS AND VERY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SM	SILTY SANDS, SAND-SILT MIXTURES
SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
PGW	PROTECTION OF GROUNDWATER
NI-DC	NON-INDUSTRIAL DIRECT-CONTACT RCL
I-DC	INDUSTRIAL DIRECT-CONTACT RCL

EXCAVATION AREAS

WATER LEVEL

DES BY	B. HONEA	BOOK NO					
DR BY	T. SHUPERT	PROJ NO	52-0712.00				
CHK BY	B. HONEA	DATE	DEC. 2021	NO	DATE	REVISION	

SOIL AND GROUNDWATER TESTING
LUDINGTON ROAD
MARINETTE, WISCONSIN

AYRES
Eau Claire, WI 54701

GEOLOGIC SECTION A - A' (CENTERLINE OF ROADWAY)

SHEET NO 3

AA-Standard.stb
12/20/2021
I:\01\CAD\Marinett wi\Ludington Street\Geo Sections CL Ludington street.dwg, Layout: base drawing

Table 1: List of Soil Explorations, Samples Collected, and Analytes Sought

Table 1
Soil Explorations, Samples Collected, and Analytes Sought

Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

Boring	Boring Depth (ft bgs)	Sample Depth (ft bgs)	Soil Type	As and Pb (EPA 6010)	Cyanide (EPA 9012)	PFAS (Isotope)	VOCs (EPA 8260)	PAHs (SIM 8270)	PCBs (EPA 8081)	Asbestos (PLM)
GP-1	12	2 - 4	Sand	✓			✓			
GP-1	12	9 - 11	Sand	✓			✓			
GP-2	12	2 - 4	Sand	✓			✓			
GP-2	12	9 - 11	Sand	✓			✓			
GP-3	12	1.5 - 2.5	Sand	✓						
GP-3	12	8 - 10	Sand	✓						
GP-4	12	1.5 - 2.5	Sand	✓						
GP-4	12	8 - 10	Sand	✓						
GP-5	4	1.5 - 2.5	Sand	✓	✓		✓	✓	✓	
GP-6	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-7	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-8	8	2 - 4	Sand	✓		✓	✓	✓		✓
GP-8	8	7 - 8	Refuse	✓			✓	✓		✓
GP-9	8	1.5 - 3.5	Sand	✓		✓	✓	✓		✓
GP-9	8	5.5 - 7.5	Sand	✓		✓	✓	✓		✓
GP-10	8	2 - 4	Refuse	✓		✓	✓	✓		✓
GP-10	8	6.5 - 8	Sand	✓			✓	✓		✓

Notes: bgs - below ground surface. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds. PCB - Polychlorinated biphenyls. PFAS - Per- and Polyfluoroalkyl substances.

Table 2: List of Groundwater Sample Locations, Water Level Measurements, and Analytes Sought

Table 2

Groundwater Sample Locations, Water Level Measurements, and Analytes Sought

Ludingtion Street

Hall Avenue to Stanton Street, Marinette, WI

Boring	Total Depth (ft bgs)	Screened Interval (ft bgs)	Depth to Water (ft bgs)	Dissolved As and Pb (EPA 6010)	PFAS	VOCs (EPA 8260)	PAHs (SIM 8270)
GP-1	12	7 - 12	10.8	✓	✓	✓	
GP-3	12	7 - 12	11.8		✓		
GP-4	12	7 - 12	Dry				
GP-8	8	3 - 8	6.4	✓	✓	✓	✓
GP-10	8	3 - 8	4.2	✓	✓	✓	✓

Notes: bgs - below ground surface. PFAS - Per- and polyfluoroalkyl substances. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds.

Table 3: Soil Analyte Detection Summary

Table 5
Previous Soil Analyte Detection Summary
Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

						Hall Avenue to Wells Street				*Wells Street to Mann Street*				*Mann Street to Ely Street*			*Ely Street to Stanton Street*					
		NR 720 Soil Cleanup Standards				GP-1	GP-1	GP-2	GP-2	GP-3	GP-3	GP-4	GP-4	GP-5	GP-6	GP-7	GP-8	GP-8	GP-9	GP-9	GP-10	GP-10
						10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
		Industrial Direct Contact	Non-Industrial Direct Contact	Protection of Groundwater	Background Threshold Value	2 - 4	9 - 11	2 - 4	9 - 11	1.5 - 2.5	8 - 10	1.5 - 2.5	8 - 10	1.5 - 2.5	2 - 4	2 - 4	2 - 4	7 - 8	1.5 - 3.5	5.5 - 7.5	2 - 4	6.5 - 8
						Sand	Sand	Sand	Sand	Sand	Sand	Fill	Sand	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Sand
mg/Kg	Arsenic	3.0	0.677	0.584	8	2.4 J	1.9 J	<1.4	3.4	2.6	<1.5	3.5	1.8 J	2.3 J	2.8	2.7	6.3	**287**	3.6	3.4	**14.0**	1.7 J
	Lead	800	400	27	52	1.0 J	0.64 J	0.74 J	1.2 J	11.9	0.88 J	42.4	6.2	*84.6*	47.1	4.6	*104*	*353*	*57.5*	*56.5*	*211*	2.9
	Cyanide	195	27.1	4.04	NS	NA	NA	NA	NA	NA	NA	NA	NA	*7.0*	*9.4*	<0.18	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances PFAS (mg/Kg)	PFBA (Perfluorobutanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.00003 J	0.000068 J	0.000051 J	NA
	PFPeA (Perfluoropentanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00007 J	NA	0.000054 J	0.0001	0.00016	NA
	PFHxA (Perfluorohexanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00003	NA	<0.00003	0.000042 IJ	0.000098 IJ	NA
	PFHpA (Perfluoroheptanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000026	NA	<0.000022	0.000044 J	0.00007 J	NA
	PFXxS (Perfluorohexanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000051 IJ	NA	0.000067 IJ	0.000290 I	0.000027 IJ	NA
	PFOA (Perfluorooctanoic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.000034 J	0.000057 J	0.00022	NA
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000068 J	NA	0.000044 J	0.000038 J	<0.000022	NA
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000025	NA	<0.000025	<0.000025	0.000063 IJ	NA
	PFNA (Perfluorononanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000028	NA	<0.000028	<0.000028	0.00017	NA
	PFOS (Perfluorooctanesulfonic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00033	NA	0.00031	0.00038	0.0032	NA
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000077 J	NA	<0.000024	<0.000024	0.00017	NA
	PFTrDA (Perfluorotridecanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000021	NA	<0.000021	<0.000021	0.000068 IJ	NA
Polycyclic Aromatic Hydrocarbons (mg/kg)	1-Methylnaphthalene	72.7	17.6	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0718 J	0.282 J	<0.0026	0.0543 J	8.58	8.52 J	0.124 J	2.36 J	<0.0029
	2-Methylnaphthalene	3,010	239	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.109 J	0.665	<0.0026	0.0752 J	13.0	12.3	0.150 J	3.09 J	<0.0029
	Acenaphthene	45,200	3,590	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	<0.0452	<0.0472	<0.0023	0.0585 J	0.555	17.0	0.154 J	2.93 J	<0.0026
	Acenaphthylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.78	2.0	0.003 J	0.0339 J	0.748	1.61	0.122 J	3.57 J	<0.0025
	Anthracene	100,000	17,900	197	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.317 J	0.456	0.0032 J	0.0352 J	0.458 J	63.6	0.301 J	14.3	<0.0025
	Benzo(a)anthracene	20.8	1.14	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.867	**2.09**	0.0185	**1.68**	0.655	**59.3**	0.861	**26.1**	0.0045 J
	Benzo(a)pyrene	2.11	0.115	0.47	NS	NA	NA	NA	NA	NA	NA	NA	NA	**0.996**	**1.03**	0.0251	**1.79**	**0.368 J**	**49.6**	**0.773**	**19.7**	0.0026 J
	Benzo(b)fluoranthene	21.1	1.15	0.4781	NS	NA	NA	NA	NA	NA	NA	NA	NA	**1.53**	**3.67**	0.0375	**2.42**	*0.541*	**58.5**	*0.977*	**29.3**	0.0036 J
	Benzo(g,h,i)perylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.09	1.6	0.0157 J	0.949	0.146 J	20.9	0.469	7.53 J	<0.0035
	Benzo(k)fluoranthene	211	11.5	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.597	1.74	0.0144 J	1.21	0.183 J	**33.2**	0.324 J	**14.3**	<0.0026
	Chrysene	2,110	115	0.1442	NS	NA	NA	NA	NA	NA	NA	NA	NA	*1.03*	*3.06*	0.0307	*1.77*	*0.587*	*56.4*	*0.926*	*28.6*	<0.0038
	Dibenz(a,h)anthracene	2.11	0.115	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	**0.301 J**	**0.624**	0.0046 J	**0.292 J**	<0.0659	**6.4 J**	0.100 J	**2.91 J**	<0.0028
	Fluoranthene	30,100	2,390	88.9	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.16	1.01	0.0431	3.35	1.25	*191*	1.39	65.4	0.0072 J
	Fluorene	30,100	2,390	14.8	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0667 J	0.1 J	<0.0021	0.117 J	0.937	*35.9*	0.236 J	13.2	<0.0024
	Indeno(1,2,3-cd)pyrene	21.1	1.15	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.893	**1.46**	0.0104 J	0.858	0.123 J	**19.1**	0.345 J	**7.44 J**	<0.0042
	Naphthalene	24.1	5.52	0.6582	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.388	*1.62*	0.0019 J	0.111 J	**14.4**	**34.1**	0.118 J	*5.31 J*	<0.0020
	Phenanthrene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.519	0.372	0.013 J	1.04	2.14	184	1.8	71.6	0.0061 J
	Pyrene	22,600	1,790	55	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.31	1.09	0.0351	2.76	1.47	*117*	3.89	41.5	0.0045 J
Volatile Organic Compounds (mg/Kg)	1,2,4-Trimethylbenzene	219	219	NS	NS	<0.0158	<0.0168	<0.0155	<0.0163	NA	NA	NA	NA	<0.0162	<0.0175	<0.0170	<0.0169	0.306	<0.0164	0.0210 J	<0.0286	<0.0210
	1,3,5-Trimethylbenzene	182	182	NS	NS	<0.0170	<0.0182	<0.0168	<0.0176	NA	NA	NA	NA	<0.0175	<0.0190	<0.0184	<0.0182	0.18	<0.0177	<0.0187	<0.0309	<0.0226
	Benzene	7.07	1.6	0.0051	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	*0.0287*	*0.0683*	<0.0136	<0.0135	*0.0458*	<0.0131	0.0149 J	<0.0228	<0.0167
	Chlorobenzene	761	370	0.1358	NS	<0.0063	<0.0068	<0.0062	<0.0065	NA	NA	NA	NA	<0.0065	<0.0071	<0.0068	<0.0068	0.0230 J	<0.0066	<0.0070	<0.0115	<0.0084
	Ethylbenzene	35.4	8.02	1.57	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	<0.0130	<0.0140	<0.0136	<0.0135	0.11	<0.0131	<0.0138	0.0288 J	<0.0167
	Isopropylbenzene (Cumene)	268	268	NS	NS	<0.0143	<0.0152	<0.0141	<0.0148	NA	NA	NA	NA	<0.0147	<0.0159	<0.0154	<0.0153	0.379	<0.0148	<0.0157	<0.0259	<0.0190
	m&p-Xylene	388	388	NS	NS	<0.0223	<0.0238	<0.0220	<0.0231	NA	NA	NA	NA	0.0243 J	0.0467 J	<0.0241	<0.0239	0.0716 J	<0.0232	0.0277 J	0.239	<0.0297
	Naphthalene	24.1	5.52	0.6582	NS	<0.0165	<0.0176	<0.0163	<0.0171	NA	NA	NA	NA	0.240 J	*0.819*	<0.0178	<0.0177	*4.84*	0.611	0.136 J	0.0666 J	<0.0219
	n-Butylbenzene	108	108	NS	NS	<0.0242	<0.0258	<0.0239	<0.0250	NA	NA	NA	NA	<0.0249	<0.0270	<0.0261	<0.0260	1.01	<0.0251	<0.0267	<0.0439	<0.0322
	n-Propylbenzene	264	264	NS	NS	<0.0127	<0.0135	<0.0125	<0.0131	NA	NA	NA	NA	<0.0131	<0.0141	<0.0137	<0.0136	0.137	<0.0132	<0.0140	<0.0230	<0.0169
	o-Xylene	434	434	NS	NS	<0.0159	<0.0169	<0.0156	<0.0164	NA	NA	NA	NA	<0.0163	0.0194 J	<0.0171	<0.0170	0.0682 J	<0.0165	<0.0175	0.0487 J	<0.0211
	p-Isopropyltoluene	162	162	NS	NS	<0.0161	<0.0172	<0.0159	<0.0166	NA	NA	NA	NA	<0.0165	<0.0179	<0.0173	<0.0172	0.164	<0.0167	<0.0177	<0.0291	<0.0214
	sec-Butylbenzene	145	145	NS	NS	<0.0129	<0.0138	<0.0127	<0.0133	NA	NA	NA	NA	<0.0133	<0.0144	<0.0139	<0.0138	0.198	<0.0134	<0.0142	<0.0234	<0.0172
	Styrene	867	867	0.22	NS	<0.0136	<0.0144	<0.0134	<0.0140	NA	NA	NA	NA	0.0143 J	0.0328 J	<0.0146	<0.0145	<0.0237	<0.0141	<0.0149	<0.0245	<0.0180
	tert-Butylbenzene	183	183	NS	NS	<0.0166	<0.0177	<0.0164	<0.0172	NA	NA	NA	NA	<0.0171	<0.0185	<0.0179	<0.0178	0.0348 J	<0.0172	<0.0183	<0.0301	<0.0221
	Toluene	818	818	1.1072	NS	<0.0133	<0.0142	<0.0131	<0.0138	NA	NA	NA	NA	0.0458 J	0.0959	<0.0144	<0.0143	0.146	<0.0138	0.0348 J	0.0366 J	<0.0177
	Trimethylbenzene (total)	NS	NS	1.3787	NS	<0.0328	<0.035	<0.0323	<0.0339	NA	NA	NA	NA	<0.0337	<0.0365	<0.0354	<0.0351	0.486	<0.0341	0.0397	<0.0595	<0.0436
	Xylene (total)	NS	NS	3.96	NS	<0.0382	<0.0407	<0.0376	<0.0395	NA	NA	NA	NA	<0.0406	<0.0661	<0.0412	<0.0409	0.1398	<0.0397	0.0452	<0.2877	<0.0508
Number of Protection of Groundwater Exceedances		NA	0	NA	NA	0	0	0	0	0	0	0	0	**6**	**6**	0	**4**	**6**	**8**	**4**	**6**	0
Number of Non-Industrial Direct Contact Exceedances		NA	0	NA	NA	0	0	0	0	0	0	0	0	**3**	**5**	0	**4**	**3**	**7**	**1**	**7**	0
Non-Industrial Cumulative Hazard Index		NA	1.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.1	0.4	**9.3**	**3.4**	0.2	**2.2**	0.0
Non-Industrial Cumulative Cancer Risk		NA	1.0E-05	NA	NA	7.7E-07	8.2E-07	7.6E-07	8.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**1.6E-05**	**2.2E-05**	1.7E-06	**2.3E-05**	**4.3E-04**	**6.2E-04**	**1.0E-05**	**2.8E-04**	1.2E-06

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NR 720 Soil Standards updated December 2018. NA - not analyzed. NS - no standard. ND - none detected. *Underlined italic* values are greater than protection of groundwater standards. **Bold** values are greater than non-industrial direct contact standards. **Bold underlined** values are greater than industrial direct contact standards. Background threshold values from USGS Report at http://pubs.usgs.gov/sir/2011/5202. 1,2-dibromo-3-chloropropane was not detected at the site but the laboratory limit of detection are greater than cleanup standards, as a result these compounds were excluded from cumulative exceedance calculations.

Table 4: Groundwater Analyte Detection Summary

Table 4
Groundwater
Analyte Detection Summary
Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

		NR 140 Groundwater Quality Standards		*Hall Avenue to Mann Street*			*Ely Street to Stanton Street*	
		Preventive Action Limit	**Enforcement Standard**	**GP-1** 10/13/2021	**GP-3** 10/13/2021	**GP-4** 10/13/2021	**GP-8** 10/13/2021	**GP-10** 10/13/2021
µg/L	Arsenic, Dissolved	1	10	**15.3 J**	NA	NA	<8.3	**78.1**
	Lead, Dissolved	1.5	15	*9.3*	NA	NA	**50**	<6.4
PFAS ng/L	PFBA (Perfluorobutanoic acid)	NS	NS	2.2 J	21	NA	60	49
	PFPeA (Perfluoropentanoic acid)	NS	NS	3.5 J	30	NA	150	140
	PFBS (Perfluorobutanesulfonic acid)	NS	NS	4.8 J	8.3	NA	6	6.8
	PFHxA (Perfluorohexanoic acid)	NS	NS	<2.2	18	NA	120	120
	PFPeS (Perfluoropentanesulfonic acid)	NS	NS	<2.1	<1.1	NA	<1.2	6.0
	PFHpA (Perfluoroheptanoic acid)	NS	NS	4.0 J	12	NA	72	130
	PFHxS (Perfluorohexanesulfonic acid)	NS	NS	<2.3	2.5 J	NA	6.8	22
	PFOA (Perfluorooctanoic acid)	2	20	*3.2 IJ*	*15*	NA	**28**	**350**
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	4.4 J	11
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	<1.8	<0.99	NA	<1.0	1.6 J
	PFNA (Perfluorononanoic acid)	NS	NS	<3.3	3.9 J	NA	3.3 J	<1.9
	PFOS (Perfluorooctanesulfonic acid)	2	20	*19*	*4.5*	NA	*16*	**31**
	PFDA (Perfluorodecanoic acid)	NS	NS	3.8 J	<1.4	NA	1.7 J	<1.4
	8:2 FTS (8:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	<1.6	4.7 J
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	<2.5	<1.3	NA	7.5	<1.4
PAH (µg/L)	1-Methylnaphthalene	NS	NS	NA	NA	NA	0.78	<0.017
	2-Methylnaphthalene	NS	NS	NA	NA	NA	0.47	0.016 J
	Acenaphthene	NS	NS	NA	NA	NA	0.47	0.021 J
	Benzo(a)anthracene	NS	NS	NA	NA	NA	0.014 J	<0.013
	Chrysene	0.02	0.2	NA	NA	NA	0.029 J	<0.025
	Fluoranthene	80	400	NA	NA	NA	0.043 J	<0.025
	Fluorene	80	400	NA	NA	NA	0.024 J	<0.022
	Naphthalene	10	100	NA	NA	NA	0.37	0.046 J
	Phenanthrene	NS	NS	NA	NA	NA	0.093	0.044 J
	Pyrene	50	250	NA	NA	NA	0.035 J	<0.021
VOC (µg/L)	1,2,4-Trimethylbenzene	96	480	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	NS	NS	<0.86	NA	NA	2.8	<0.86

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NA - not analyzed. ND - none detected. NS - no standard. *Underlined italic* values are greater than preventive action limits. **Bold** values are greater than enforcement standards.

Table 5: Groundwater Vapor Risk Screening Level Summary

Table 5 - Groundwater Vapor Risk Screening Level Summary

Ludington Street

Hall Avenue to Stanton Street, Marinette, WI

			Groundwater VRSL		Groundwater Samples				
					GP-1	GP-3	GP-4	GP-8	GP-10
		U.S. EPA RSL Basis	Residental	Non-residental	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
VOCs (µg/L)	1,2,4-Trimethylbenzene	n	250	10,317	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	n	409	17,323	<0.86	NA	NA	2.8	<0.86
	Naphthalene	c	46	2,000	<1.1	NA	NA	0.37	0.046 J

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. Bold values are greater than or equal to residential VRSLs. Bold underlined values are greater than or equal to small commercial VRSLs. Bold Underlined Italic values are greater than or equal to large commerical/industrial VRSLs. c - carcinogenic based RSL. n - non-carcinogenic based RSL. VAL - Vapor action level. VRSL - Vapor risk screening level. RSL - Regional screening level.

From: Krueger, Sarah E - DNR
Sent: Monday, January 24, 2022 2:13 PM
To: Honea, William; Sellwood, Alyssa A - DNR; Carey, Angela J - DNR
Cc: Hubbard, Trace; Bartel,, Kevin J - DNR; Marciulionis, Jacqueline R - DNR
Subject: RE: Marinette Ludington Street Reconstruction Project

Good Afternoon Bill,

Thank you for your patience in waiting for a response to the request you submitted Friday January 14, 2022. Please be aware that the RR program is unable to approve or make a determination regarding a potential low-hazard waste grant of exemption and the request should be made through the Waste and Material's Management Program. I have copied Kevin Bartel who would work with you on the request.

An application may be submitted to the Waste and Materials Management Program for a low-hazard waste grant of exemption in accordance with s. NR 500.08(4), Wis. Adm. Code, and s. 289.43(8), Stats to request approval to dispose of the material in an upland area outside of an approved disposal facility. More information on the low-hazard waste grant of exemption application process is available in PUB-WA 1645: Exempting Low-Hazard Wastes from Solid Waste Regulations.

Please reach out to Kevin with any questions related to a low-hazard waste grant of exemption.

Thank you,
Sarah

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Sarah Krueger, P.G.
Phone: (920) 510-8277
Sarah.Krueger@wisconsin.gov

From: Krueger, Sarah E - DNR
Sent: Wednesday, January 19, 2022 2:39 PM
To: Honea, William <HoneaW@AyresAssociates.com>; Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>; angela.carey@wisconisn.gov
Cc: Hubbard, Trace <HubbardT@AyresAssociates.com>
Subject: RE: Marinette Ludington Street Reconstruction Project

Good Afternoon Bill,

Thank you for your message, we are currently reviewing the information you provided and will get back to you with a response as soon as we are able.

Sarah

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Sarah Krueger, P.G.
Phone: (920) 510-8277
Sarah.Krueger@wisconsin.gov

From: Honea, William <HoneaW@AyresAssociates.com>
Sent: Friday, January 14, 2022 1:01 PM
To: Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>; Krueger, Sarah E - DNR <sarah.krueger@wisconsin.gov>; angela.carey@wisconisn.gov
Cc: Hubbard, Trace <HubbardT@AyresAssociates.com>
Subject: Marinette Ludington Street Reconstruction Project

Good afternoon,

The City of Marinette retained Ayres to complete soil and groundwater testing for the Ludington Street reconstruction project. We encountered fill mixed with general refuse during testing beneath the east end of the project site. This fill contained benzene, PAHs, arsenic, and lead above RCLs. Additionally, it contained low levels of PFOS and PFOA. Concentrations ranged from 30 to 380 ng/Kg. Currently, we don't think this fill material can be reused at the site because it's unsuitable for use as structural backfill. That leaves the City weighing disposal options, and unfortunately, landfills in the surrounding area haven't been receptive to accepting waste containing PFAS regardless of the levels. The City has asked me to evaluate the potential for managing this waste at another City-owned site, where dredge materials were previously placed under a low-hazard waste exemption. Preliminary estimates from the engineering design team indicate grading and storm sewer excavations could generate 2,700 cubic yards of spoils. Any thoughts regarding using a low-haz exemption to the manage this waste at another site would be greatly appreciated.

I've attached the analytical summary tables and figures for reference.

Thanks,
Bill

AYRES ENVIRONMENTAL

Bill Honea, PG | Geologist
Office: 920.498.1200 | Direct: 920.327.7815
3376 Packerland Drive | Ashwaubenon, WI 54115
Ayres Associates Inc | www.AyresAssociates.com

Ingenuity, Integrity, and Intelligence.

From: Krueger, Sarah E - DNR
Sent: Monday, February 14, 2022 10:52 AM
To: Honea, William
Subject: Ludington Street Reconstruction Project - Management of Material within the ROW

Bill –

As a follow up to our call today. DNR will consider a plan that places excavated material from the utility trenches within the right-of-way, outside of the road, with a cap.

A formal request with the materials management plan is needed, include in the plan how material with NAPL and/or waste will be managed, the estimated volumes of material to be managed onsite, placement location, cap design, and potentially a Historic Fill Exemption request. Additional information can be found in the Management of Contaminated Soil and Other Solid Wastes Guidance RR-060.

Let me know if you have any questions.
Thank you,
Sarah

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Sarah Krueger, P.G.
Contaminated Sediment Specialist
Wisconsin Department of Natural Resources
2984 Shawano Avenue, Green Bay WI 54313-6727
Phone: (920) 510-8277
Sarah.Krueger@wisconsin.gov

dnr.wi.gov

From:	Gwidt, Natasha K - DNR
Sent:	Friday, June 3, 2022 11:41 AM
To:	Kent, P; Honea, William; HubbardT@AyresAssociates.com
Cc:	Krueger, Sarah E - DNR; Bartel,, Kevin J - DNR; Marciulionis, Jacqueline R - DNR; Brester, Tess M - DNR; DuFresne, Kristin I - DNR; Chronert, Roxanne N - DNR; Sellwood, Alyssa A - DNR
Subject:	RE: City of Marinette-Ludington Street Project
Attachments:	Ludington Street Tables and Figures.pdf

Paul/Ayres Associates-

Please see the following information that was discussed and inquired on May 27, 2022 regarding the City of Marinette, Ludington Street Project disposal options. These options were inquired about for disposal options for the roadway project and we have provided some feedback on each.

OPTIONS:

One-time Disposal:

Section NR 500.03(158), Wis. Adm. Code, defines a "One-time disposal" site as: "no more than 10,000 cubic yards of approved types of agricultural or demolition solid waste on a one–time basis over a project life of not more than 6 months. Examples are the disposal of concrete, brick, stone, asphalt, wood, trees, logs, brush and material from demolished buildings. Material from a road construction project does not appear to meet the definition of material that is allowed in a one-time disposal.

Reopening existing dredge material location for disposal (Low Hazard Exemption-LHE):

- LHE issued April 28, 2014, expired January 1, 2016
- Located on the West end of Murray Street in City of Marinette – Referred to as Lot 24
  - Open parcel in an area zoned as heavy manufacturing district (according to August 16, 2021 zoning map)
  - Owned by the City of Marinette
- Design capacity is ~54,500 cubic yard (cy)
- Exemption is limited to dredged material from the Menekaunee Harbor
  - Exemption includes a definition of 'dredged material' – any material that is excavated or dredged at or below the ordinary high-water mark of water basins, watercourses, or public waters
- Approximately 27, 670 cu yds of dredged material disposed at Lot 24. Dredged material placed at the site included:
  - Dredged material that did not exceed contaminant concentration limits
  - Dredged material with arsenic < 6.0 ppm (note background threshold value is 8 ppm)
  - Coarser-grained material
- Dredged material was placed on top of native material and covered with 6-inches of topsoil
  - Lot 24 does not contain an engineered liner, cover, and is not monitored
  - Perimeter drainage swale constructed around dredged material

This location would not be acceptable for this material as it does not fit the perimeters as stated above for acceptance related to the contaminant concentration and source.

Low Hazard Exemption:

Based on the department's limited and preliminary review of the data you provided for the site; the department has made note of a few areas of concern.

1) GP-9 and GP-10 have Industrial Direct Contact exceedances for multiple PAHs
2) GP-8 has an Industrial Direct Contact exceedance for Arsenic
3) Groundwater pathway exceedances for VOCs and PAHs are present throughout the soils

The department does not generally consider soils with Industrial Direct Contact standards or VOCs above any NR 720 standard to be low hazard. Therefore, the department does not generally issue LHE for soils with contaminant levels observed in the Ludington Street soils.

Landfill:

Landfills that are in the general area that may consider taking this material are Mar-Oco Landfill located in Marinette County, Waste Management-Ridgeview Landfill, or out of state landfills in the Upper Peninsula of Michigan. As discussed it is up to the landfill to determine if they want to accept this material and if it fits within their approved operational plan. If you need a full list of landfills within the state of Wisconsin and additional contact info we are able to provide.

Management of Material within the Project Area or Right-of-Way

- RR will consider a Materials Management Plan (MMP) that places excavated material from the utility trenches within the right-of-way, outside of the roadway. This option was communicated to Bill Honea with Ayers via email and phone on February 14, 2022.
- Material should be placed as close as possible to the area it is excavated from.
- An impervious cap over the material place in the right-of-way is required for protection of groundwater and for direct contact, because the material is currently capped and above the groundwater pathway residual contaminant level and/or a direct contact residual contaminant level. RR would not impose a continuing obligation (CO) for the cap; however, if/when additional work in the right-of-way occurs the material would need to be recharacterized and managed appropriately.

Management of Material at Another Site or Facility

- RR would also consider a NR 718 request to place material at one of the adjacent RR sites with similar constituents of concern. A MMP would be required as well as agreement from the adjacent RR site property owner and responsible party.
- An impervious cap and cap maintenance is required by the receiving property owner, for protection of groundwater and for direct contact, because the material is currently capped and above the groundwater pathway residual contaminant level and/or a direct contact residual contaminant level. A CO is required at the property that receives the material and written notification is required at least 30 days prior to submitting the soil management plan as outlined in § NR 725.07.

General Information Pertaining to Materials Management

- Any material impacted by non-aqueous petroleum liquid (NAPL) and/or waste would need to go to a licensed landfill and could not be placed within the project limits or at another site/facility.
- If the material is proposed to be managed within the project limits or at one of the adjacent RR sites, a formal request with fee is required. The MMP must include estimated volumes of material to be managed onsite, placement location, cap design, and meet the location standards outlined in § NR 718.12 (1)(c) or request an exemption from the locational standards § NR 718.12 (1)(d).

- A Historic Fill Exemption request may be needed due to the presence of waste in the right-of-way, additional information can be found in the Development at Historic Fill Sites and Licensed Landfills: What You Need to Know Guidance RR-683.
- Additional information can be found in the Management of Contaminated Soil and Other Solid Wastes Guidance RR-060.

Thank you for your inquiries. We look forward to working with you on this project and others in the area. Although it may not be the best news for disposal options, we do think there are still options to consider and work through. Please feel free following up with any additional feedback or inquiries to me or directly to the DNR team member you may have been working with (Sarah Krueger-RR or others).

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Natasha Gwidt, P.E.
Field Operations Director – Waste & Materials Management
Wisconsin Department of Natural Resources
Cell Phone: (920) 309-3187
natashak.gwidt@wisconsin.gov

dnr.wi.gov

From: Paul Kent <pkent@staffordlaw.com>
Sent: Friday, June 3, 2022 10:11 AM
To: Gwidt, Natasha K - DNR <NatashaK.Gwidt@wisconsin.gov>
Subject: RE: City of Marinette-Ludington Street Project

Natasha,

Any update on this?

Paul

STAFFORD ROSENBAUM LLP

Paul G. Kent
pkent@staffordlaw.com | 608.259.2665 | Fax. 608.259.2600 |
| 608.259.2637 Marjorie Irving – Legal Assistant |
222 West Washington Avenue, Suite 900
P.O. Box 1784 | Madison, Wisconsin 53701-1784
www.staffordlaw.com | profile | vCard | Stafford Blogs

From: Gwidt, Natasha K - DNR <NatashaK.Gwidt@wisconsin.gov>
Sent: Thursday, May 26, 2022 4:39 PM
To: Paul Kent <pkent@staffordlaw.com>
Subject: [External] - City of Marinette-Ludington Street Project

Paul-
I received your contact from Jim Zellmer and Bart Sponseller regarding soil disposal options for the City of Marinette Ludington Street project. I am the Field Operations Director for the Waste and Materials Management Program and I believe you or the city has been corresponding with members of the Waste program at DNR. I am in the process of collecting some more info on our end. Would you be available or interested in talking more with me about this tomorrow (5/27) before noon?

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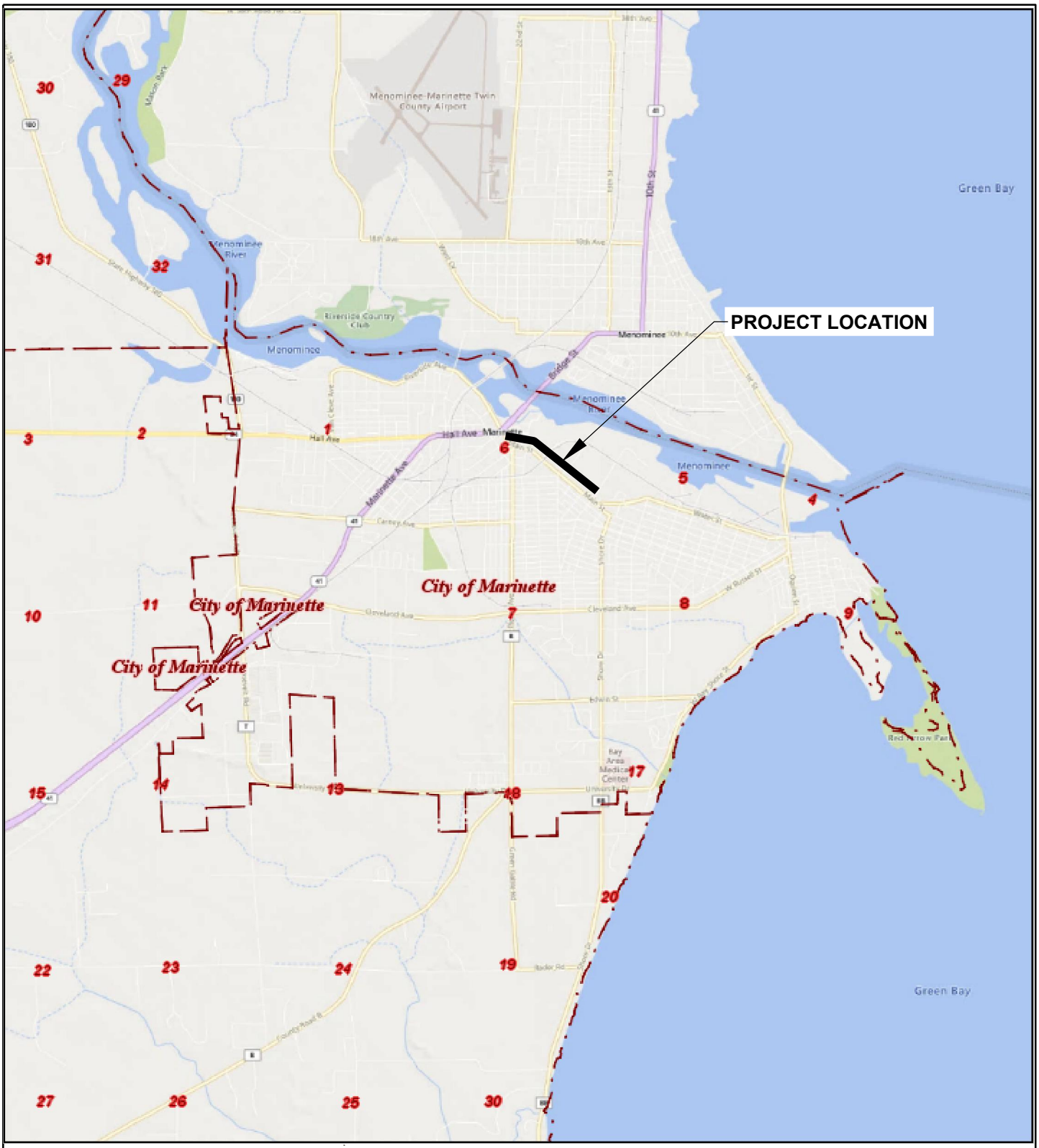
Natasha Gwidt, P.E.
Field Operations Director – Waste & Materials Management
Wisconsin Department of Natural Resources
Cell Phone: (920) 309-3187
natashak.gwidt@wisconsin.gov

dnr.wi.gov

Figure 1: Location Map



https://mcgis.marinettecounty.com

N

Feet

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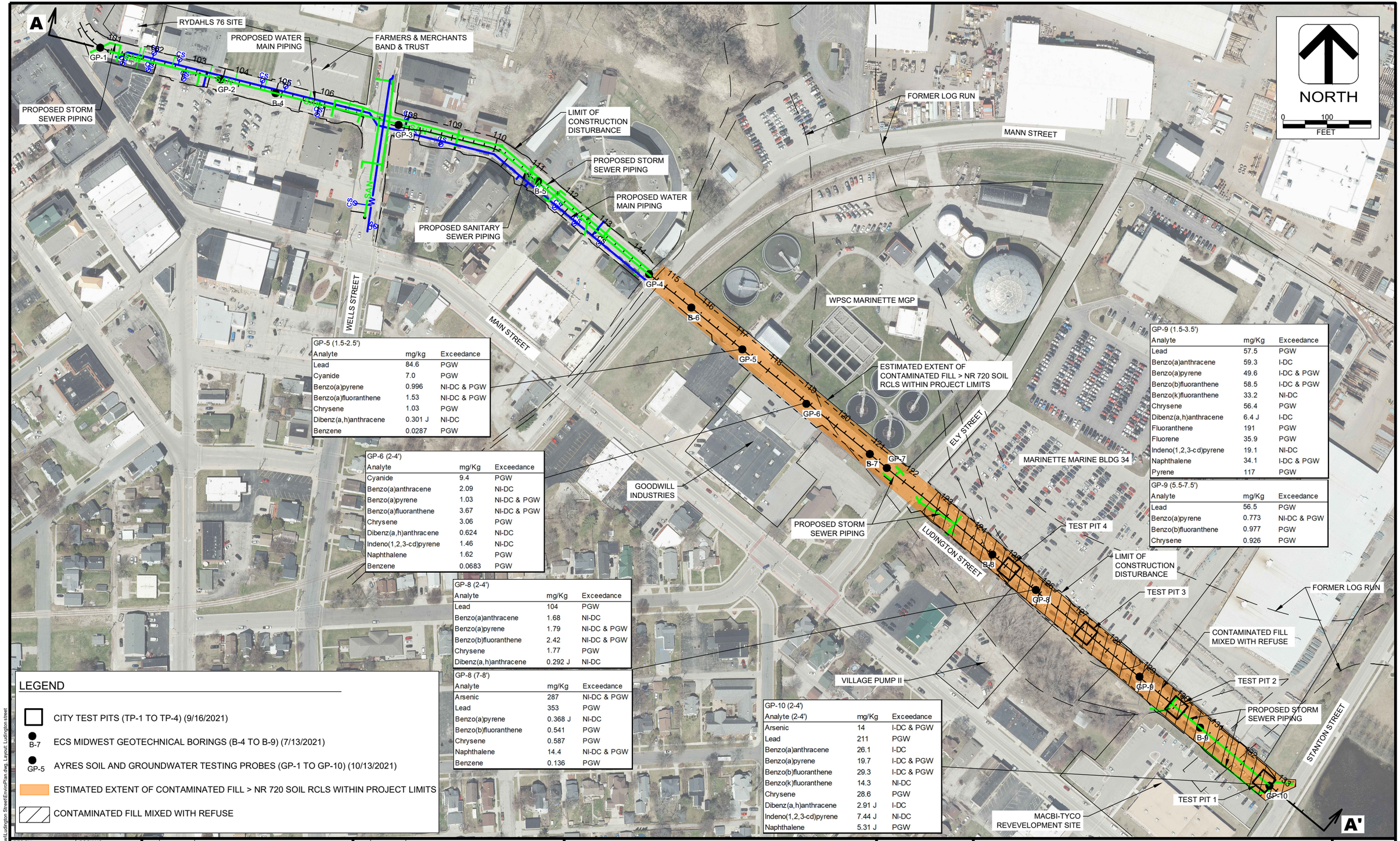
12/20/2021 1:44:52 PM

Notice/Disclaimer: The land records site is intended to be a general guide to property and land information, and does not represent a survey of real property nor should it be used or referenced to for conveyance of real property, guaranteeing title thereto or making official determinations of building development, permitting or other activity. Contact the appropriate County Department to obtain original source documents or for official determinations. This information has been developed from various sources and although efforts have been made to ensure accuracy and reliability; errors, omissions and variable conditions originating from compilation and sources used to develop the information may be reflected herein. In addition, land information is constantly changing and the most current or accurate data might not be represented. The information accessible through this site is represented "as is" without warranty of any kind, either expressed or implied, or statutory, including, but not limited to, the implied warranties or merchantability and fitness for a particular purpose. No guarantee of accuracy, completeness or currentness is granted nor is any responsibility for reliance thereon assumed. The user assumes the entire risk as to the quality, use and reliability of the entire information. Marinette County does not accept any liability for damages or misrepresentation of any kind caused by inaccuracies in the information and in no event shall Marinette County, its elected or appointed officials or employees be liable for direct, indirect, incidental, consequential or special damages of any kind.

DR.BY T. Shupert CHK.BY B. Honea DATE DEC. 2021	SOIL AND GROUNDWATER TESTING LUDINGTON ROAD MARINETTE, WISCONSIN	AYRES Eau Claire, Wisconsin	LOCATION MAP	FIGURE NO. 1

AA-Standard.stb
12/20/2021
I:\51\CAD\Marinett w\Ludington Street\EnvirPlan.dwg, Layout: Layout1

Figure 2: Site Plan with Sample Locations



GP-5 (1.5-2.5')

Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW

GP-6 (2-4')

Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (2-4')

Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-8 (7-8')

Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-10 (2-4')

Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-9 (1.5-3.5')

Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')

Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

LEGEND

- CITY TEST PITS (TP-1 TO TP-4) (9/16/2021)
- B-7 ECS MIDWEST GEOTECHNICAL BORINGS (B-4 TO B-9) (7/13/2021)
- GP-5 AYRES SOIL AND GROUNDWATER TESTING PROBES (GP-1 TO GP-10) (10/13/2021)
- ESTIMATED EXTENT OF CONTAMINATED FILL > NR 720 SOIL RCLS WITHIN PROJECT LIMITS
- CONTAMINATED FILL MIXED WITH REFUSE

DES BY	BOOK NO
B. HONEA	
DR BY	PROJ NO
T. SHUPERT	52-0712.00
CHK BY	DATE
B. HONEA	DEC. 2021

NO	DATE	REVISION

NO	DATE	REVISION

SOIL AND GROUNDWATER TESTING
LUDINGTON ROAD
MARINETTE, WISCONSIN

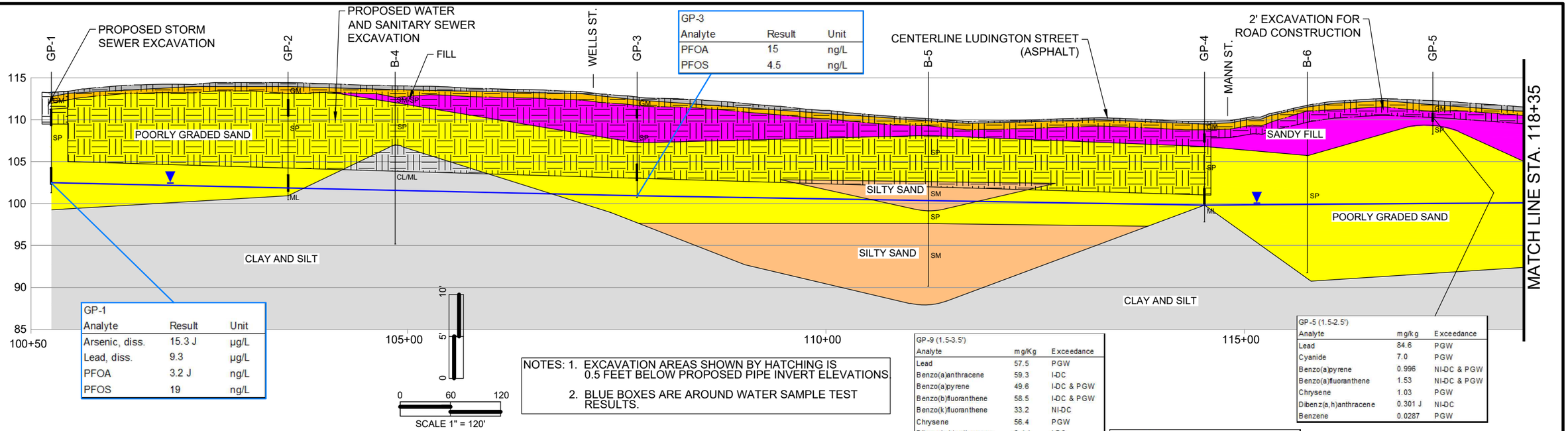
AYRES
Eau Claire, WI 54701

SITE PLAN

SHEET NO
2

AA-Standard.stb
12/23/2021
I:\51\CAD\Marinett w\Ludington Street\Environ\Plan.dwg, Layout: Ludington street

Figure 3: Geologic Section A – A’ (Centerline of Roadway)



GP-3		
Analyte	Result	Unit
PFOA	15	ng/L
PFOS	4.5	ng/L

GP-1		
Analyte	Result	Unit
Arsenic, diss.	15.3 J	µg/L
Lead, diss.	9.3	µg/L
PFOA	3.2 J	ng/L
PFOS	19	ng/L

NOTES: 1. EXCAVATION AREAS SHOWN BY HATCHING IS 0.5 FEET BELOW PROPOSED PIPE INVERT ELEVATIONS.

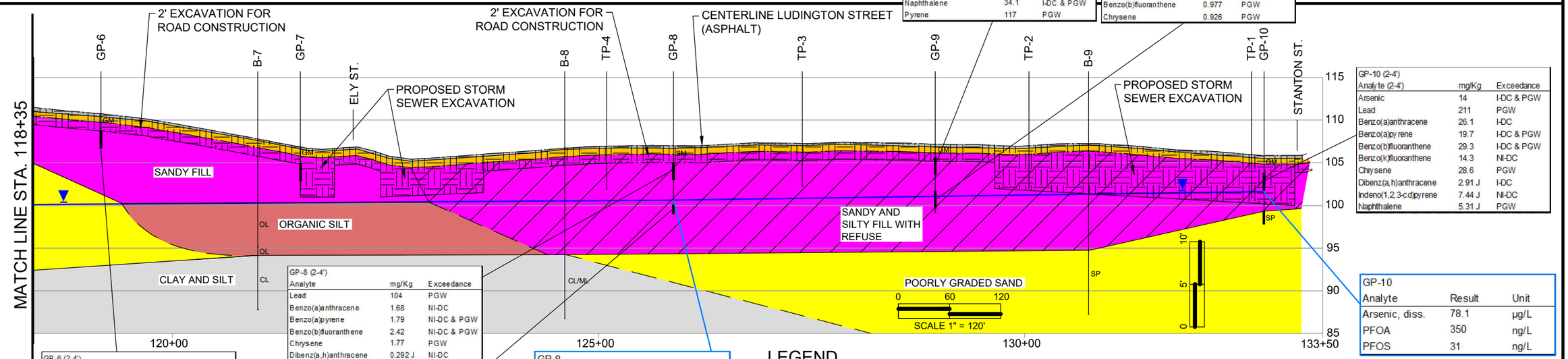
2. BLUE BOXES ARE AROUND WATER SAMPLE TEST RESULTS.

GEOLOGIC CROSS-SECTION A-A'

GP-9 (1.5-3.5')		
Analyte	mg/Kg	Exceedance
Lead	57.5	PGW
Benzo(a)anthracene	59.3	I-DC
Benzo(a)pyrene	49.6	I-DC & PGW
Benzo(b)fluoranthene	58.5	I-DC & PGW
Benzo(k)fluoranthene	33.2	NI-DC
Chrysene	56.4	PGW
Dibenz(a,h)anthracene	6.4 J	I-DC
Fluoranthene	191	PGW
Fluorene	35.9	PGW
Indeno(1,2,3-cd)pyrene	19.1	NI-DC
Naphthalene	34.1	I-DC & PGW
Pyrene	117	PGW

GP-9 (5.5-7.5')		
Analyte	mg/Kg	Exceedance
Lead	56.5	PGW
Benzo(a)pyrene	0.773	NI-DC & PGW
Benzo(b)fluoranthene	0.977	PGW
Chrysene	0.926	PGW

GP-5 (1.5-2.5')		
Analyte	mg/kg	Exceedance
Lead	84.6	PGW
Cyanide	7.0	PGW
Benzo(a)pyrene	0.996	NI-DC & PGW
Benzo(a)fluoranthene	1.53	NI-DC & PGW
Chrysene	1.03	PGW
Dibenz(a,h)anthracene	0.301 J	NI-DC
Benzene	0.0287	PGW



GP-10 (2-4')		
Analyte (2-4')	mg/Kg	Exceedance
Arsenic	14	I-DC & PGW
Lead	211	PGW
Benzo(a)anthracene	26.1	I-DC
Benzo(a)pyrene	19.7	I-DC & PGW
Benzo(b)fluoranthene	29.3	I-DC & PGW
Benzo(k)fluoranthene	14.3	NI-DC
Chrysene	28.6	PGW
Dibenz(a,h)anthracene	2.91 J	I-DC
Indeno(1,2,3-cd)pyrene	7.44 J	NI-DC
Naphthalene	5.31 J	PGW

GP-10		
Analyte	Result	Unit
Arsenic, diss.	78.1	µg/L
PFOA	350	ng/L
PFOS	31	ng/L

GP-8 (2-4')		
Analyte	mg/Kg	Exceedance
Lead	104	PGW
Benzo(a)anthracene	1.68	NI-DC
Benzo(a)pyrene	1.79	NI-DC & PGW
Benzo(b)fluoranthene	2.42	NI-DC & PGW
Chrysene	1.77	PGW
Dibenz(a,h)anthracene	0.292 J	NI-DC

GP-6 (2-4')		
Analyte	mg/Kg	Exceedance
Cyanide	9.4	PGW
Benzo(a)anthracene	2.09	NI-DC
Benzo(a)pyrene	1.03	NI-DC & PGW
Benzo(a)fluoranthene	3.67	NI-DC & PGW
Chrysene	3.06	PGW
Dibenz(a,h)anthracene	0.624	NI-DC
Indeno(1,2,3-cd)pyrene	1.46	NI-DC
Naphthalene	1.62	PGW
Benzene	0.0683	PGW

GP-8 (7-8')		
Analyte	mg/Kg	Exceedance
Arsenic	287	NI-DC & PGW
Lead	353	PGW
Benzo(a)pyrene	0.368 J	NI-DC
Benzo(b)fluoranthene	0.541	PGW
Chrysene	0.587	PGW
Naphthalene	14.4	NI-DC & PGW
Benzene	0.136	PGW

GP-8		
Analyte	Result	Unit
Lead, diss.	50	µg/L
PFOA	28	ng/L
PFOS	16	ng/L
Chrysene	0.029 J	µg/L

GEOLOGIC CROSS-SECTION A-A'

LEGEND

CL	INORGANIC CLAYS OF LOW PLASTICITY
ML	INORGANIC SILTS AND VERY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SM	SILTY SANDS, SAND-SILT MIXTURES
SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
PGW	PROTECTION OF GROUNDWATER
NI-DC	NON-INDUSTRIAL DIRECT-CONTACT RCL
I-DC	INDUSTRIAL DIRECT-CONTACT RCL

EXCAVATION AREAS

WATER LEVEL

DES BY	B. HONEA	BOOK NO					
DR BY	T. SHUPERT	PROJ NO	52-0712.00				
CHK BY	B. HONEA	DATE	DEC. 2021	NO	DATE	REVISION	

SOIL AND GROUNDWATER TESTING
LUDINGTON ROAD
MARINETTE, WISCONSIN

AYRES
Eau Claire, WI 54701

GEOLOGIC SECTION A - A' (CENTERLINE OF ROADWAY)

SHEET NO 3

AA-Standard.stb
12/20/2021
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Table 1: List of Soil Explorations, Samples Collected, and Analytes Sought

Table 1
Soil Explorations, Samples Collected, and Analytes Sought

Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

Boring	Boring Depth (ft bgs)	Sample Depth (ft bgs)	Soil Type	As and Pb (EPA 6010)	Cyanide (EPA 9012)	PFAS (Isotope)	VOCs (EPA 8260)	PAHs (SIM 8270)	PCBs (EPA 8081)	Asbestos (PLM)
GP-1	12	2 - 4	Sand	✓			✓			
GP-1	12	9 - 11	Sand	✓			✓			
GP-2	12	2 - 4	Sand	✓			✓			
GP-2	12	9 - 11	Sand	✓			✓			
GP-3	12	1.5 - 2.5	Sand	✓						
GP-3	12	8 - 10	Sand	✓						
GP-4	12	1.5 - 2.5	Sand	✓						
GP-4	12	8 - 10	Sand	✓						
GP-5	4	1.5 - 2.5	Sand	✓	✓		✓	✓	✓	
GP-6	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-7	4	2 - 4	Sand	✓	✓		✓	✓	✓	
GP-8	8	2 - 4	Sand	✓		✓	✓	✓		✓
GP-8	8	7 - 8	Refuse	✓			✓	✓		✓
GP-9	8	1.5 - 3.5	Sand	✓		✓	✓	✓		✓
GP-9	8	5.5 - 7.5	Sand	✓		✓	✓	✓		✓
GP-10	8	2 - 4	Refuse	✓		✓	✓	✓		✓
GP-10	8	6.5 - 8	Sand	✓			✓	✓		✓

Notes: bgs - below ground surface. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds. PCB - Polychlorinated biphenyls. PFAS - Per- and Polyfluoroalkyl substances.

Table 2: List of Groundwater Sample Locations, Water Level Measurements, and Analytes Sought

Table 2

Groundwater Sample Locations, Water Level Measurements, and Analytes Sought

Ludingtion Street

Hall Avenue to Stanton Street, Marinette, WI

Boring	Total Depth (ft bgs)	Screened Interval (ft bgs)	Depth to Water (ft bgs)	Dissolved As and Pb (EPA 6010)	PFAS	VOCs (EPA 8260)	PAHs (SIM 8270)
GP-1	12	7 - 12	10.8	✓	✓	✓	
GP-3	12	7 - 12	11.8		✓		
GP-4	12	7 - 12	Dry				
GP-8	8	3 - 8	6.4	✓	✓	✓	✓
GP-10	8	3 - 8	4.2	✓	✓	✓	✓

Notes: bgs - below ground surface. PFAS - Per- and polyfluoroalkyl substances. PAHs - Polycyclic aromatic hydrocarbons. VOCs - Volatile organic compounds.

Table 3: Soil Analyte Detection Summary

Table 5
Previous Soil Analyte Detection Summary
Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

						Hall Avenue to Wells Street				*Wells Street to Mann Street*				*Mann Street to Ely Street*			*Ely Street to Stanton Street*					
		NR 720 Soil Cleanup Standards				GP-1	GP-1	GP-2	GP-2	GP-3	GP-3	GP-4	GP-4	GP-5	GP-6	GP-7	GP-8	GP-8	GP-9	GP-9	GP-10	GP-10
						10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
		Industrial Direct Contact	Non-Industrial Direct Contact	Protection of Groundwater	Background Threshold Value	2 - 4	9 - 11	2 - 4	9 - 11	1.5 - 2.5	8 - 10	1.5 - 2.5	8 - 10	1.5 - 2.5	2 - 4	2 - 4	2 - 4	7 - 8	1.5 - 3.5	5.5 - 7.5	2 - 4	6.5 - 8
						Sand	Sand	Sand	Sand	Sand	Sand	Fill	Sand	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Sand
mg/Kg	Arsenic	3.0	0.677	0.584	8	2.4 J	1.9 J	<1.4	3.4	2.6	<1.5	3.5	1.8 J	2.3 J	2.8	2.7	6.3	**287**	3.6	3.4	**14.0**	1.7 J
	Lead	800	400	27	52	1.0 J	0.64 J	0.74 J	1.2 J	11.9	0.88 J	42.4	6.2	*84.6*	47.1	4.6	*104*	*353*	*57.5*	*56.5*	*211*	2.9
	Cyanide	195	27.1	4.04	NS	NA	NA	NA	NA	NA	NA	NA	NA	*7.0*	*9.4*	<0.18	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances PFAS (mg/Kg)	PFBA (Perfluorobutanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.00003 J	0.000068 J	0.000051 J	NA
	PFPeA (Perfluoropentanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00007 J	NA	0.000054 J	0.0001	0.00016	NA
	PFHxA (Perfluorohexanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00003	NA	<0.00003	0.000042 IJ	0.000098 IJ	NA
	PFHpA (Perfluoroheptanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000026	NA	<0.000022	0.000044 J	0.00007 J	NA
	PFXxS (Perfluorohexanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000051 IJ	NA	0.000067 IJ	0.000290 I	0.000027 IJ	NA
	PFOA (Perfluorooctanoic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 J	NA	0.000034 J	0.000057 J	0.00022	NA
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000068 J	NA	0.000044 J	0.000038 J	<0.000022	NA
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000025	NA	<0.000025	<0.000025	0.000063 IJ	NA
	PFNA (Perfluorononanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000028	NA	<0.000028	<0.000028	0.00017	NA
	PFOS (Perfluorooctanesulfonic acid)	16.4	1.26	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00033	NA	0.00031	0.00038	0.0032	NA
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000077 J	NA	<0.000024	<0.000024	0.00017	NA
	PFTrDA (Perfluorotridecanoic acid)	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.000021	NA	<0.000021	<0.000021	0.000068 IJ	NA
Polycyclic Aromatic Hydrocarbons (mg/kg)	1-Methylnaphthalene	72.7	17.6	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0718 J	0.282 J	<0.0026	0.0543 J	8.58	8.52 J	0.124 J	2.36 J	<0.0029
	2-Methylnaphthalene	3,010	239	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.109 J	0.665	<0.0026	0.0752 J	13.0	12.3	0.150 J	3.09 J	<0.0029
	Acenaphthene	45,200	3,590	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	<0.0452	<0.0472	<0.0023	0.0585 J	0.555	17.0	0.154 J	2.93 J	<0.0026
	Acenaphthylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.78	2.0	0.003 J	0.0339 J	0.748	1.61	0.122 J	3.57 J	<0.0025
	Anthracene	100,000	17,900	197	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.317 J	0.456	0.0032 J	0.0352 J	0.458 J	63.6	0.301 J	14.3	<0.0025
	Benzo(a)anthracene	20.8	1.14	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.867	**2.09**	0.0185	**1.68**	0.655	**59.3**	0.861	**26.1**	0.0045 J
	Benzo(a)pyrene	2.11	0.115	0.47	NS	NA	NA	NA	NA	NA	NA	NA	NA	**0.996**	**1.03**	0.0251	**1.79**	**0.368 J**	**49.6**	**0.773**	**19.7**	0.0026 J
	Benzo(b)fluoranthene	21.1	1.15	0.4781	NS	NA	NA	NA	NA	NA	NA	NA	NA	**1.53**	**3.67**	0.0375	**2.42**	*0.541*	**58.5**	*0.977*	**29.3**	0.0036 J
	Benzo(g,h,i)perylene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.09	1.6	0.0157 J	0.949	0.146 J	20.9	0.469	7.53 J	<0.0035
	Benzo(k)fluoranthene	211	11.5	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.597	1.74	0.0144 J	1.21	0.183 J	**33.2**	0.324 J	**14.3**	<0.0026
	Chrysene	2,110	115	0.1442	NS	NA	NA	NA	NA	NA	NA	NA	NA	*1.03*	*3.06*	0.0307	*1.77*	*0.587*	*56.4*	*0.926*	*28.6*	<0.0038
	Dibenz(a,h)anthracene	2.11	0.115	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	**0.301 J**	**0.624**	0.0046 J	**0.292 J**	<0.0659	**6.4 J**	0.100 J	**2.91 J**	<0.0028
	Fluoranthene	30,100	2,390	88.9	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.16	1.01	0.0431	3.35	1.25	*191*	1.39	65.4	0.0072 J
	Fluorene	30,100	2,390	14.8	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.0667 J	0.1 J	<0.0021	0.117 J	0.937	*35.9*	0.236 J	13.2	<0.0024
	Indeno(1,2,3-cd)pyrene	21.1	1.15	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.893	**1.46**	0.0104 J	0.858	0.123 J	**19.1**	0.345 J	**7.44 J**	<0.0042
	Naphthalene	24.1	5.52	0.6582	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.388	*1.62*	0.0019 J	0.111 J	**14.4**	**34.1**	0.118 J	*5.31 J*	<0.0020
	Phenanthrene	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	0.519	0.372	0.013 J	1.04	2.14	184	1.8	71.6	0.0061 J
	Pyrene	22,600	1,790	55	NS	NA	NA	NA	NA	NA	NA	NA	NA	1.31	1.09	0.0351	2.76	1.47	*117*	3.89	41.5	0.0045 J
Volatile Organic Compounds (mg/Kg)	1,2,4-Trimethylbenzene	219	219	NS	NS	<0.0158	<0.0168	<0.0155	<0.0163	NA	NA	NA	NA	<0.0162	<0.0175	<0.0170	<0.0169	0.306	<0.0164	0.0210 J	<0.0286	<0.0210
	1,3,5-Trimethylbenzene	182	182	NS	NS	<0.0170	<0.0182	<0.0168	<0.0176	NA	NA	NA	NA	<0.0175	<0.0190	<0.0184	<0.0182	0.18	<0.0177	<0.0187	<0.0309	<0.0226
	Benzene	7.07	1.6	0.0051	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	*0.0287*	*0.0683*	<0.0136	<0.0135	*0.0458*	<0.0131	0.0149 J	<0.0228	<0.0167
	Chlorobenzene	761	370	0.1358	NS	<0.0063	<0.0068	<0.0062	<0.0065	NA	NA	NA	NA	<0.0065	<0.0071	<0.0068	<0.0068	0.0230 J	<0.0066	<0.0070	<0.0115	<0.0084
	Ethylbenzene	35.4	8.02	1.57	NS	<0.0126	<0.0134	<0.0124	<0.0130	NA	NA	NA	NA	<0.0130	<0.0140	<0.0136	<0.0135	0.11	<0.0131	<0.0138	0.0288 J	<0.0167
	Isopropylbenzene (Cumene)	268	268	NS	NS	<0.0143	<0.0152	<0.0141	<0.0148	NA	NA	NA	NA	<0.0147	<0.0159	<0.0154	<0.0153	0.379	<0.0148	<0.0157	<0.0259	<0.0190
	m&p-Xylene	388	388	NS	NS	<0.0223	<0.0238	<0.0220	<0.0231	NA	NA	NA	NA	0.0243 J	0.0467 J	<0.0241	<0.0239	0.0716 J	<0.0232	0.0277 J	0.239	<0.0297
	Naphthalene	24.1	5.52	0.6582	NS	<0.0165	<0.0176	<0.0163	<0.0171	NA	NA	NA	NA	0.240 J	*0.819*	<0.0178	<0.0177	*4.84*	0.611	0.136 J	0.0666 J	<0.0219
	n-Butylbenzene	108	108	NS	NS	<0.0242	<0.0258	<0.0239	<0.0250	NA	NA	NA	NA	<0.0249	<0.0270	<0.0261	<0.0260	1.01	<0.0251	<0.0267	<0.0439	<0.0322
	n-Propylbenzene	264	264	NS	NS	<0.0127	<0.0135	<0.0125	<0.0131	NA	NA	NA	NA	<0.0131	<0.0141	<0.0137	<0.0136	0.137	<0.0132	<0.0140	<0.0230	<0.0169
	o-Xylene	434	434	NS	NS	<0.0159	<0.0169	<0.0156	<0.0164	NA	NA	NA	NA	<0.0163	0.0194 J	<0.0171	<0.0170	0.0682 J	<0.0165	<0.0175	0.0487 J	<0.0211
	p-Isopropyltoluene	162	162	NS	NS	<0.0161	<0.0172	<0.0159	<0.0166	NA	NA	NA	NA	<0.0165	<0.0179	<0.0173	<0.0172	0.164	<0.0167	<0.0177	<0.0291	<0.0214
	sec-Butylbenzene	145	145	NS	NS	<0.0129	<0.0138	<0.0127	<0.0133	NA	NA	NA	NA	<0.0133	<0.0144	<0.0139	<0.0138	0.198	<0.0134	<0.0142	<0.0234	<0.0172
	Styrene	867	867	0.22	NS	<0.0136	<0.0144	<0.0134	<0.0140	NA	NA	NA	NA	0.0143 J	0.0328 J	<0.0146	<0.0145	<0.0237	<0.0141	<0.0149	<0.0245	<0.0180
	tert-Butylbenzene	183	183	NS	NS	<0.0166	<0.0177	<0.0164	<0.0172	NA	NA	NA	NA	<0.0171	<0.0185	<0.0179	<0.0178	0.0348 J	<0.0172	<0.0183	<0.0301	<0.0221
	Toluene	818	818	1.1072	NS	<0.0133	<0.0142	<0.0131	<0.0138	NA	NA	NA	NA	0.0458 J	0.0959	<0.0144	<0.0143	0.146	<0.0138	0.0348 J	0.0366 J	<0.0177
	Trimethylbenzene (total)	NS	NS	1.3787	NS	<0.0328	<0.035	<0.0323	<0.0339	NA	NA	NA	NA	<0.0337	<0.0365	<0.0354	<0.0351	0.486	<0.0341	0.0397	<0.0595	<0.0436
	Xylene (total)	NS	NS	3.96	NS	<0.0382	<0.0407	<0.0376	<0.0395	NA	NA	NA	NA	<0.0406	<0.0661	<0.0412	<0.0409	0.1398	<0.0397	0.0452	<0.2877	<0.0508
Number of Protection of Groundwater Exceedances		NA	0	NA	NA	0	0	0	0	0	0	0	0	**6**	**6**	0	**4**	**6**	**8**	**4**	**6**	0
Number of Non-Industrial Direct Contact Exceedances		NA	0	NA	NA	0	0	0	0	0	0	0	0	**3**	**5**	0	**4**	**3**	**7**	**1**	**7**	0
Non-Industrial Cumulative Hazard Index		NA	1.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.1	0.4	**9.3**	**3.4**	0.2	**2.2**	0.0
Non-Industrial Cumulative Cancer Risk		NA	1.0E-05	NA	NA	7.7E-07	8.2E-07	7.6E-07	8.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	**1.6E-05**	**2.2E-05**	1.7E-06	**2.3E-05**	**4.3E-04**	**6.2E-04**	**1.0E-05**	**2.8E-04**	1.2E-06

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NR 720 Soil Standards updated December 2018. NA - not analyzed. NS - no standard. ND - none detected. *Underlined italic* values are greater than protection of groundwater standards. **Bold** values are greater than non-industrial direct contact standards. **Bold underlined** values are greater than industrial direct contact standards. Background threshold values from USGS Report at http://pubs.usgs.gov/sir/2011/5202. 1,2-dibromo-3-chloropropane was not detected at the site but the laboratory limit of detection are greater than cleanup standards, as a result these compounds were excluded from cumulative exceedance calculations.

Table 4: Groundwater Analyte Detection Summary

Table 4
Groundwater
Analyte Detection Summary
Ludington Street
Hall Avenue to Stanton Street, Marinette, WI

		NR 140 Groundwater Quality Standards		*Hall Avenue to Mann Street*			*Ely Street to Stanton Street*	
		Preventive Action Limit	**Enforcement Standard**	**GP-1** 10/13/2021	**GP-3** 10/13/2021	**GP-4** 10/13/2021	**GP-8** 10/13/2021	**GP-10** 10/13/2021
µg/L	Arsenic, Dissolved	1	10	**15.3 J**	NA	NA	<8.3	**78.1**
	Lead, Dissolved	1.5	15	*9.3*	NA	NA	**50**	<6.4
PFAS ng/L	PFBA (Perfluorobutanoic acid)	NS	NS	2.2 J	21	NA	60	49
	PFPeA (Perfluoropentanoic acid)	NS	NS	3.5 J	30	NA	150	140
	PFBS (Perfluorobutanesulfonic acid)	NS	NS	4.8 J	8.3	NA	6	6.8
	PFHxA (Perfluorohexanoic acid)	NS	NS	<2.2	18	NA	120	120
	PFPeS (Perfluoropentanesulfonic acid)	NS	NS	<2.1	<1.1	NA	<1.2	6.0
	PFHpA (Perfluoroheptanoic acid)	NS	NS	4.0 J	12	NA	72	130
	PFHxS (Perfluorohexanesulfonic acid)	NS	NS	<2.3	2.5 J	NA	6.8	22
	PFOA (Perfluorooctanoic acid)	2	20	*3.2 IJ*	*15*	NA	**28**	**350**
	6:2 FTS (6:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	4.4 J	11
	PFHpS (Perfluoroheptanesulfonic acid)	NS	NS	<1.8	<0.99	NA	<1.0	1.6 J
	PFNA (Perfluorononanoic acid)	NS	NS	<3.3	3.9 J	NA	3.3 J	<1.9
	PFOS (Perfluorooctanesulfonic acid)	2	20	*19*	*4.5*	NA	*16*	**31**
	PFDA (Perfluorodecanoic acid)	NS	NS	3.8 J	<1.4	NA	1.7 J	<1.4
	8:2 FTS (8:2 Fluorotelomer sulfonic acid)	NS	NS	<2.9	<1.6	NA	<1.6	4.7 J
	NEtFOSAA (N-Ethyl perfluorooctane sulfonamidoacetic acid)	NS	NS	<2.5	<1.3	NA	7.5	<1.4
PAH (µg/L)	1-Methylnaphthalene	NS	NS	NA	NA	NA	0.78	<0.017
	2-Methylnaphthalene	NS	NS	NA	NA	NA	0.47	0.016 J
	Acenaphthene	NS	NS	NA	NA	NA	0.47	0.021 J
	Benzo(a)anthracene	NS	NS	NA	NA	NA	0.014 J	<0.013
	Chrysene	0.02	0.2	NA	NA	NA	0.029 J	<0.025
	Fluoranthene	80	400	NA	NA	NA	0.043 J	<0.025
	Fluorene	80	400	NA	NA	NA	0.024 J	<0.022
	Naphthalene	10	100	NA	NA	NA	0.37	0.046 J
	Phenanthrene	NS	NS	NA	NA	NA	0.093	0.044 J
	Pyrene	50	250	NA	NA	NA	0.035 J	<0.021
VOC (µg/L)	1,2,4-Trimethylbenzene	96	480	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	NS	NS	<0.86	NA	NA	2.8	<0.86

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. NA - not analyzed. ND - none detected. NS - no standard. *Underlined italic* values are greater than preventive action limits. **Bold** values are greater than enforcement standards.

Table 5: Groundwater Vapor Risk Screening Level Summary

Table 5 - Groundwater Vapor Risk Screening Level Summary

Ludington Street

Hall Avenue to Stanton Street, Marinette, WI

			Groundwater VRSL		Groundwater Samples				
					GP-1	GP-3	GP-4	GP-8	GP-10
		U.S. EPA RSL Basis	Residental	Non-residental	10/13/2021	10/13/2021	10/13/2021	10/13/2021	10/13/2021
VOCs (µg/L)	1,2,4-Trimethylbenzene	n	250	10,317	<0.45	NA	NA	1.4	<0.45
	Chlorobenzene	n	409	17,323	<0.86	NA	NA	2.8	<0.86
	Naphthalene	c	46	2,000	<1.1	NA	NA	0.37	0.046 J

Notes: < Value less than laboratory limit of detection. J - Value between laboratory limit of detection and limit of quantitation. Bold values are greater than or equal to residential VRSLs. Bold underlined values are greater than or equal to small commercial VRSLs. Bold Underlined Italic values are greater than or equal to large commerical/industrial VRSLs. c - carcinogenic based RSL. n - non-carcinogenic based RSL. VAL - Vapor action level. VRSL - Vapor risk screening level. RSL - Regional screening level.