PFAS Investigation
Phase 2 Report
Pellston Regional Airport (PLN)

Final Report for MDOT/EGLE Grant-Funded Activity

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September 14, 2021

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1 Introduction

This report documents the second phase of subsurface investigation activities performed at the Pellston Regional Airport (identified by its airport code "PLN" or "Airport") in accordance with the work plan dated April 15, 2021. The investigation of PFAS in the subsurface at the Airport is being conducted by Emmet County in response to the letter dated March 4, 2020 from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) (*Compliance Communication Regarding the Potential Release of Per- and Poly-fluoroalkyl Substances (PFAS) through use of Firefighting Foam at Pellston regional Airport, 1351 Highway US-31, Pellston, Michigan*). The work described in this report and the preparation of this report were completed under a grant from the Michigan Department of Transportation, Office of Aeronautics (MDOT) dated September 1, 2020 (MDOT project number PL-PFAS 2020).

The Phase 1 Investigation was designed to identify the presence or absence of PFAS in soil and groundwater at the reported locations of past AFFF use. As described in the Phase 1 investigation report (LimnoTech, 2021), PFAS was detected in groundwater at each of the five past AFFF use areas and at least one PFAS compound was measured above Michigan Part 201 drinking water criteria at four of those locations. A summary of the Phase 1 investigation is provided in Section 2 of this report.

The objective of the Phase 2 investigation was to begin delineation of the horizontal and vertical extent of PFAS in groundwater at the Airport. Specifically:

- Investigate the vertical extent of PFAS in groundwater on the east side of the Airport, in the Hangar Fire Location and the South Test Area, and
- Investigate the potential presence and depth of PFAS in groundwater south of the Hangar Fire Location and the South Test Area, along the southern property line of the Airport.

This report is intended to serve as the final report to MDOT and EGLE under MDOT grant number PL-PFAS 2020.

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2 Summary of Phase 1 Investigation

2.1 Phase 1 Investigation Overview

As described in detail in the May 28, 2020 work plan, Airport personnel reported that AFFF was released at five (5) locations described in detail in the work plan. These locations are:

- 1979 Hangar Fire – An old aircraft hangar was reported to have caught fire as a result of an aircraft crash in 1979 and AFFF was reported to have been used. This location is labeled "Hangar Fire Location" on Figure 2-1.
- Equipment Testing Areas – Airport ARFF personnel reported that AFFF has been used as a part of required equipment testing at four locations on the Airport over the years. These are labeled as the "West Test Area", "Central Test Area", "East Test Area", and "South Test Area" on Figure 1-1.

In addition to these five past AFFF use areas, EGLE requested the collection of shallow groundwater samples along the West Branch of the Maple River as shown on Figure 2-1.

A total of ten (10) soil borings were completed during the Phase 1 investigation. In accordance with the approved Work Plan, two (2) soil borings were completed to investigate each of the five AFFF use areas. Additionally, ten (10) groundwater-surface water interface (GSI) samples were collected along the West Branch Maple River, which is located on the south-southwest portion of Airport property. One (1) permanent monitoring well was installed in each of the five AFFF use areas to allow measurement of groundwater levels, to allow estimation of groundwater flow direction.

2.2 Phase 1 Investigation Findings

PFOA was not detected in any soil sample collected during the Phase 1 investigation at the Airport. PFOS was measured in 15 of the 20 soil samples collected, at concentrations ranging from 0.33 µg/kg to 72.2 µg/kg. The Michigan Part 201 criterion for PFOS in soil is 0.24 µg/kg for the protection of the GSI pathway. Although the measured concentrations of PFOS in soil exceed the Part 201 GSI criterion, these soil samples were collected more than 2,000 feet from the nearest surface water body and therefore are not necessarily of immediate concern.

At least one PFAS compound was detected in each groundwater sample collected during the Phase 1 investigation, from the five AFFF use areas. Three PFAS compounds for which Michigan has promulgated Part 201 cleanup criteria were detected above their respective criteria in several groundwater samples as follows:

- PFHxS was detected in all ten groundwater samples from the AFFF use areas at concentrations ranging from 7.8 ng/l[1] to 1,880 ng/l. Six of the ten groundwater samples had concentrations above the Part 201 PFHxS cleanup criterion for drinking water of 51 ng/l.
- PFOS was detected in nine of the ten of the samples, at concentrations ranging from 1.1 ng/l to 931 ng/l, and six of the samples had PFOS concentrations above the Part 201 PFOS cleanup criterion for drinking water of 16 ng/l.

[1] ng/l = nanogram per liter, equivalent to parts per trillion (ppt)

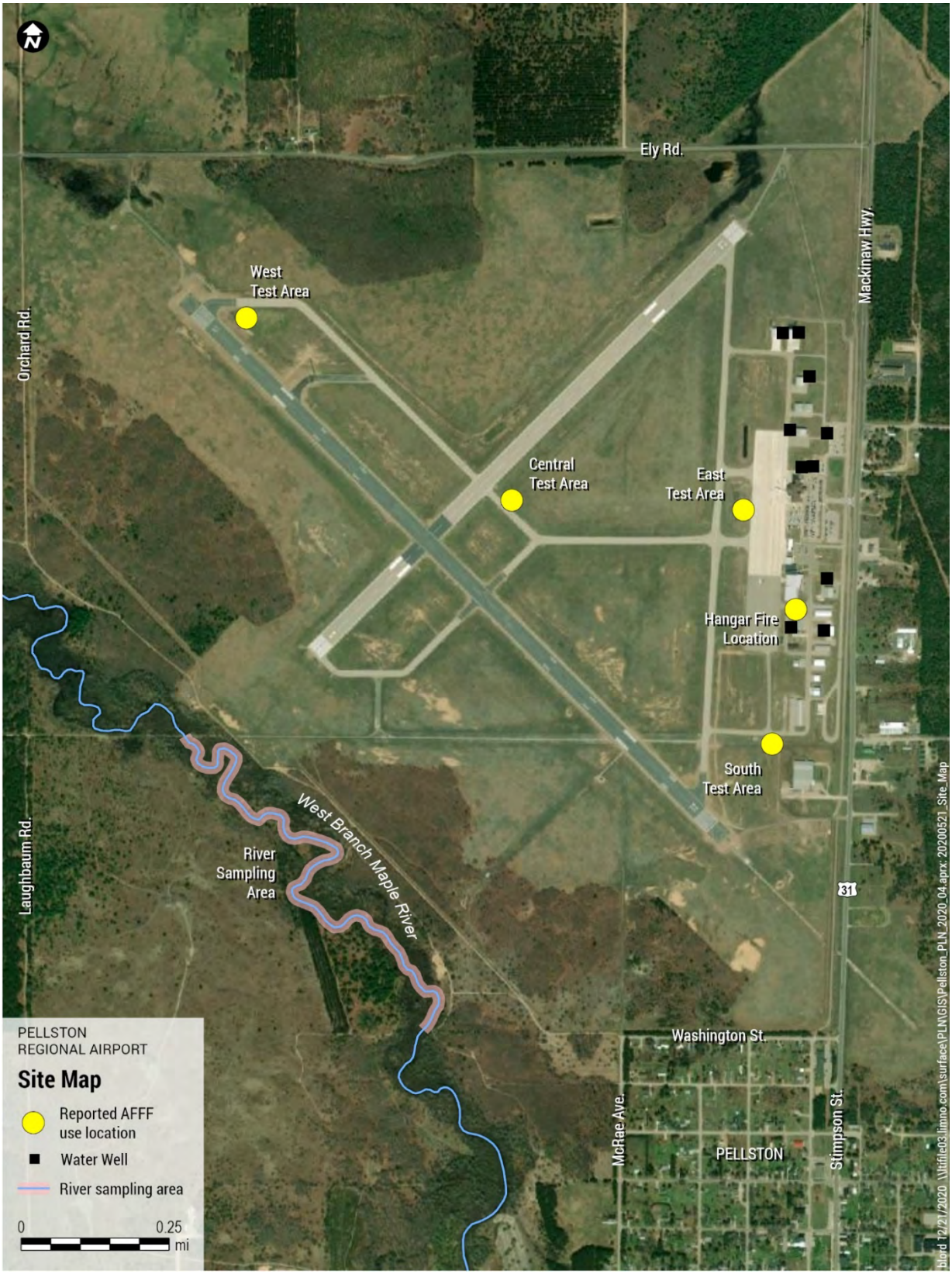

Figure 2-1. Site Map with Identified AFFF Use Location

- PFOA was detected in seven out of ten groundwater samples collected from the AFFF use areas, at concentrations ranging from 3.5 ng/l to 192 ng/l. The Part 201 PFOA cleanup criterion for drinking water (8 ng/l) was exceeded in five samples.

Three other compounds (PFHxA, PFNA, and PFBS) were detected but were not measured at concentrations above their respective Part 201 criteria in any samples collected in the Phase 1 investigation. HFPO-DA (GenX) was not detected in any groundwater sample collected during the Phase 1 investigation. Very low concentrations of PFHxS, PFOS, PFOA, and/or PFNA were measured in seven (7) of the ten (10) shallow groundwater samples collected near the West Branch Maple River during the Phase 1 investigation, but concentrations were well below Part 201 GSI criteria in all samples. The Phase 1 investigation groundwater sampling results are presented in Figure 2-2.

Groundwater elevation measurements taken from the five monitoring wells installed during the Phase 1 investigation were used to interpolate groundwater elevation contours, as shown in Figure 2-3. These contours indicate that groundwater flow is to the south and southwest from the Airport.

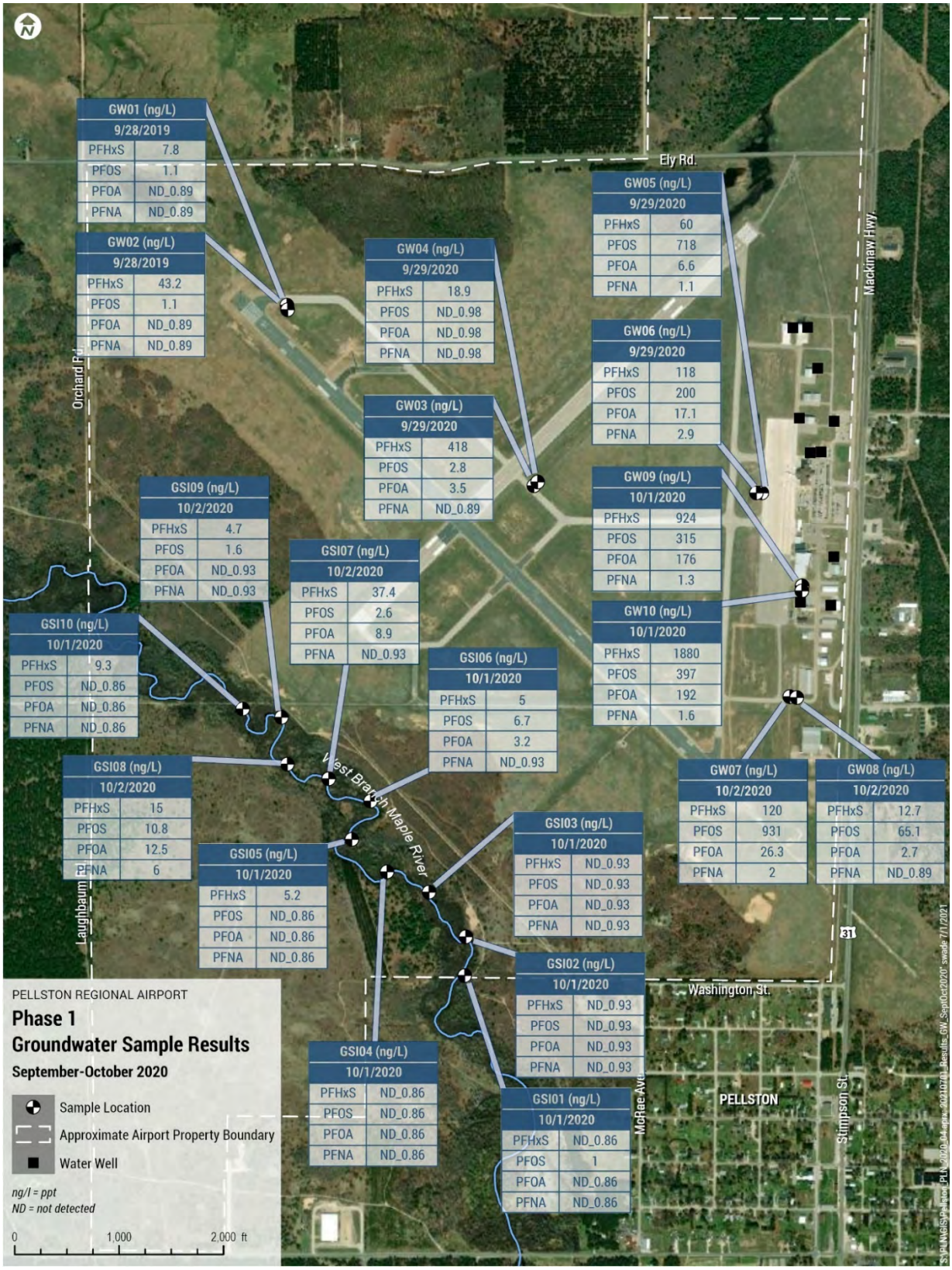

Figure 2-2. Phase 1 Groundwater Sampling Results for PFAS at Pellston Regional Airport

Figure 2-3. Phase 1 Investigation Groundwater Elevation (October 2020 Data)

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3 Phase 2 Investigation Description

LimnoTech conducted the Phase 2 investigation activities at the Airport between April 27 and May 12, 2021. The completed investigation tasks included advancement of soil borings and collection of vertically stratified groundwater samples (i.e., vertical aquifer sampling or VAS). In keeping with the approved work plan, no soil samples were collected during the Phase 2 investigation and no new monitoring wells were installed. Investigation details are described in this section.

3.1 Pre-Field Activities

Prior to field mobilization, a site-specific health and safety plan (HASP) was prepared to provide on-site investigation personnel with essential emergency service and contact information in the event of an accident. A copy of the HASP was maintained by the LimnoTech field leader and reviewed with the drilling personnel prior to beginning work. Soil boring locations were surveyed and marked by a licensed land surveyor and subsurface utility check was performed through Miss Dig. Additional buried utility clearance was performed through consultation with Airport personnel.

3.2 Investigation Overview

In accordance with the approved work plan, the Phase 2 investigation included the following elements:

- Four (4) soil borings were drilled, with vertical aquifer sampling to collect groundwater samples at discrete depth intervals at each boring location;
- Resampling of the five (5) monitoring wells installed during the Phase 1 investigation; and
- Measuring static groundwater elevations in the five (5) monitoring wells installed during the Phase 1 investigation.

The Phase 2 investigation did not include new monitoring wells or soil sampling. Soil boring and groundwater sampling locations are shown on Figure 3-1.

3.3 Soil Boring Method

All soil borings in this investigation were completed with a track-mounted sonic (Geoprobe® 8140DT) drill rig, operated by MATECO Drilling, using a continuous soil sampler. Each extracted soil core was roughly five (5) feet long. All soil borings were logged in the field by the geologist overseeing the field investigation and are included in Appendix A.

3.4 Groundwater Sampling Method

All vertical aquifer groundwater samples were collected using a stainless steel screen (four [4] feet long), which was installed on the end of the inner drill stem casing and was advanced through the outer casing rods to the desired sampling depth for the collection of representative groundwater samples. Then, the outer casing is retracted to expose the screen to the target interval to be sampled. The borings were subsequently purged using a decontaminated PFOA-free stainless steel (i.e., Stainless Steel Hurricane® XL pump) or plastic submersible pump and by installing fresh, clean high-density polyethylene (HDPE) or low-density polyethylene (LDPE) tubing into the drill stem to the screened interval depth. Purged water was monitored using an EXO multi-parameter sonde and flow-through cell. Once temperature,

conductivity, pH, dissolved oxygen, and turbidity stabilized (i.e., low-flow sampling methodology), a sample was collected directly from the tubing into the sampling containers provided by the laboratory.

Table 3-1. Phase 2 Groundwater Sampling Locations

In addition to vertical aquifer samples collected from the four new soil borings, each of the five monitoring wells installed in Phase 1 of the investigation were resampled. These groundwater samples were collected using a peristaltic pump, with new HDPE tubing used for each well, and by monitoring water quality parameters with an EXO multi-parameter sonde and flow-through cell until stabilization was achieved.

3.5 Sample Summary

A total of twenty-one (21) groundwater samples were collected during this phase of the investigation; sixteen (16) of those were collected from the four new soil borings and five (5) were collected from existing monitoring wells. Soil borings SB21-01 and SB21-02 were both advanced to fifty (50) feet below ground surface (bgs) and three (3) vertically stratified groundwater samples were collected from each boring. Soil borings SB21-03 and SB21-04 were both advanced to one hundred ten (110) feet bgs and five (5) vertically stratified groundwater samples were collected from each boring. Table 3-1 presents a summary of all groundwater samples collected in Phase 2 of the investigation.

Table 3-2. Phase 2 Groundwater Sample Summary

Boring or Monitoring Well ID	Groundwater Sample ID	Groundwater Sample Depth (ft bgs)
SB21-01	SB21-01(16-20)	16-20
	SB21-01(31-35)	31-35
	SB21-01(46-50)	46-50
SB21-02	SB21-02(16-20)	16-20
	SB21-02(31-35)	31-35
	SB21-02(46-50)	46-50
SB21-03	SB21-03(30-34)	31-34
	SB21-03(51-55)	51-55
	SB21-03(61-65)	61-65
	SB21-03(81-85)	81-85
	SB21-03(106-110)	106-110
SB21-04	SB21-04(31-34)	31-34
	SB21-04(51-55)	51-55
	SB21-04(61-65)	61-65
	SB21-04(81-85)	81-85
	SB21-04(106-110)	106-110
MW20-01	MW20-01	14-19
MW20-02	MW20-02	13-18
MW20-03	MW20-03	8-13
MW20-04	MW20-04	13-18
MW20-05	MW20-05	14-19

3.6 Sample Handling

Once each sample container was filled, it was capped and placed in a new zip-lock bag in a cooler with ice. Prior to shipment, sample containers were double-bagged using zip-locks, packed in bagged ice and

shipped under proper chain-of-custody procedures to the laboratory. Copies of the chain-of-custody forms are included in Appendix B.

3.7 Laboratory Analysis

All samples were sent via Federal Express overnight delivery to SGS North America (SGS) in Orlando, Florida. SGS analyzed the samples using a modified Method 537 isotope dilution method. SGS is accredited by the U.S. Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) for PFAS analysis in accordance with the program's Quality Systems Manual (QSM) and is also accredited by the State of California, therefore meeting the requirements of the Order. Laboratory reports are included in Appendix C.

3.8 Equipment Decontamination

Drilling equipment was decontaminated in between individual soil borings by power-washing the equipment. Decontamination water was collected and drummed for subsequent characterization and disposal. Manual sampling equipment (e.g., water level indicator) was decontaminated between borings using a Liquinox wash and PFAS-free water rinse. Water for decontamination was obtained from a well located near the north parking lot on Airport property. A water sample of this water (labeled "Source Water A") was collected and analyzed for quality assurance purposes, as discussed in Section 4.5.

3.9 Soil Boring Closure

Upon completion of sampling at each borehole location, the boring was abandoned by grouting the boring according to the following standard procedure. A tremie pipe was lowered to the bottom of the borehole and cement grout (i.e., PUREGOLD® GROUT by CETCO® Energy Services and QUIK-GROUT® Borehole Grouting and Plugging Material by Baroid Industrial Drilling Products) was mixed in batches and pumped into the borehole from the bottom up, therefore eliminating the chance for the formation of air pockets. Once the grout reached the surface, the outer drill casing was removed from the borehole and decontaminated. Typically, borings were topped off with additional grout and bentonite chips (i.e., HOLEPLUG® 3/8″ by Baroid Industrial Drilling Products consisting of Wyoming sodium bentonite and screened to 1/4″ to 3/8″ in size) to account for slight settling.

3.10 Investigation-Derived Waste

Investigation activities generated the following types of investigation-derived waste (IDW):

- Used expendable materials related to sampling (e.g., nitrile gloves)
- Used drilling and sampling equipment (e.g., plastic sampling sleeves and tubing)
- Excess groundwater pumped during groundwater sampling
- Equipment decontamination water (Airport supply well)
- Excess soil material generated during soil borings

Used expendable materials were placed in sealed trash bags for disposal at a licensed solid waste facility. Drilling and sampling equipment (tubing and sleeves), environmental media (groundwater and soil), and decontamination water was stored in 55-gallon drums on Airport property pending disposal based on laboratory results.

3.11 Deviations from Work Plan

The following deviations were noted from the approved work plan:

- Due to the presence of underground utilities, the location of soil boring SB20-01 was relocated approximately 185 feet west of the proposed location.
- In order to avoid the protection zone for Runway 14/32, the location of soil boring SB21-02 was relocated approximately 515 feet north/northeast of the proposed location.
- Due to the presence of mature trees and vegetation, the location of soil boring SB21-03 was relocated approximately 58 feet south of the proposed location.
- Due to issues with the stainless steel submersible pump, all groundwater samples collected from soil boring SB21-03, with the exception of groundwater sample SB21-03(106-110), were collected with a plastic submersible pump and LDPE tubing. Groundwater samples collected from the other three (3) soil borings (i.e., SB21-01, SB21-02, and SB21-04) were collected with a stainless steel submersible pump (i.e., Stainless Steel Hurricane® XL pump) and HDPE tubing.
- Due to loose soil sloughing into the borehole, the shallowest groundwater sample at soil boring SB21-03 was collected from 30-34 feet bgs instead of 31-35 feet bgs.

All of the above deviations are routine adjustments that are often necessary to adapt the written work plan to actual conditions in the field and do not affect the usability or reliability of the data.

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4 Phase 2 Investigation Results

The results of the investigation are presented in this section.

4.1 Subsurface Hydrogeological Conditions

The Phase 2 soil borings were drilled to much deeper depths (50 to 110 feet bgs) than the Phase 1 soil borings, which were all less than twenty (20) feet bgs. Soil in all borings consisted mainly of poorly graded (i.e., uniform) fine to medium sand. No significant layers of silt or clay were noted in any of the borings. Groundwater was encountered in the Phase 2 soil borings from 9 to 12 feet bgs, with saturated conditions to the bottom of each boring. Phase 2 soil boring logs are included as Appendix A.

Static water levels were measured in the five previously installed monitoring wells in May 2021 and again during a follow-up site visit in August 2021. Groundwater surface elevation contours were interpolated from these measurements to assess groundwater flow direction (Figures 4-1 and 4-2). These measurements and interpolations confirm the observations made during the Phase 1 investigation, that groundwater flow is primarily to the south, with a slight southwesterly component.

4.2 Groundwater Sampling Results

A total of twenty-one (21) groundwater samples were collected during this phase of the investigation; sixteen (16) were collected from new soil borings using vertical aquifer sampling methods and five (5) were collected from monitoring wells installed in the first phase of the investigation. As described in Section 3.7, all groundwater samples were analyzed using a modified Method 537 isotope dilution method, with quantification of twenty-eight (28) PFAS compounds. EGLE has promulgated Part 201 groundwater cleanup criteria for seven PFAS compounds: PFOA, PFOS, perfluorobutanesulfonic acid (PFBS), perfluorohexanesulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dymer acid (HFPO-DA or Gen-X). PFHxA, PFNA, and PFBS were detected in some groundwater samples collected during the Phase 2 investigation at the Airport, but they were not detected above their respective Part 201 cleanup criteria in any sample. HFPO-DA was not detected at all in any sample. Results for the other three compounds are summarized as follows:

- PFHxS was detected in nineteen (19) out of twenty-one (21) groundwater samples at concentrations ranging from 2 ng/l to 784 ng/l. Twelve (12) of the groundwater samples had concentrations above the Part 201 PFHxS cleanup criterion for drinking water of 51 ng/l.
- PFOS was detected in eighteen (18) groundwater samples, at concentrations ranging from 1.8 ng/l to 1,830 ng/l and twelve (12) of the samples had PFOS concentrations above the Part 201 PFOS cleanup criterion for drinking water of 16 ng/l.
- PFOA was detected in sixteen (16) groundwater samples, at concentrations ranging from 1.7 ng/l to 102 ng/l. The Part 201 PFOA cleanup criterion for drinking water (8 ng/l) was exceeded in eleven (11) samples.

The analytical results for PFHxS, PFOS, and PFOA in all groundwater samples from the Phase 2 investigation are shown on Figure 3-3, Figure 3-4, and Figure 3-5, respectively. The results for all compounds are reported in Table 3-1. Laboratory reports are presented in Appendix C.

Figure 4-1. Groundwater Surface Map – May 2021

Figure 4-2. Groundwater Surface Map – August 2021

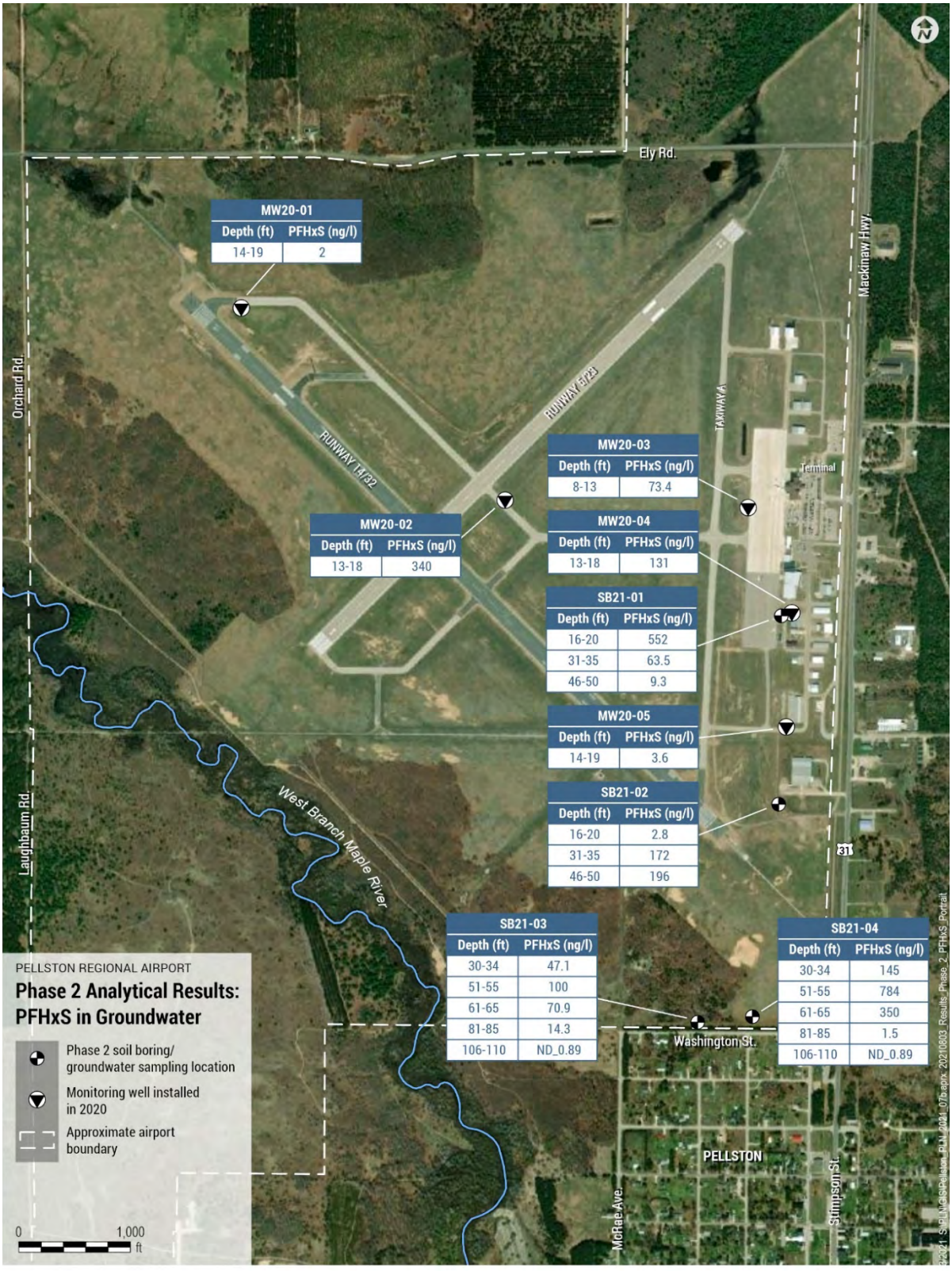

Figure 4-3. Phase 2 Investigation Results for PFHxS in Groundwater

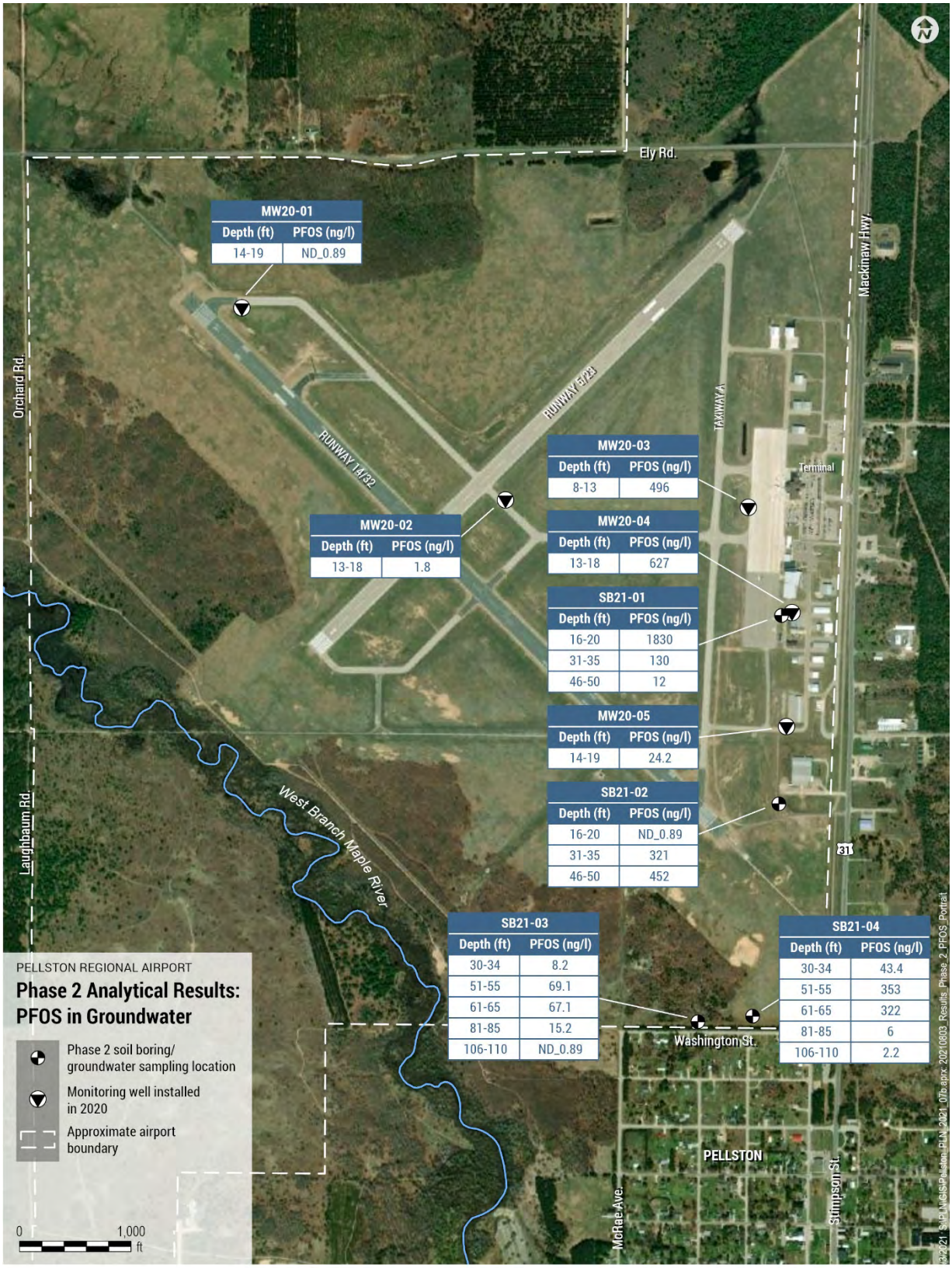

Figure 4-4. Phase 2 Investigation Results for PFOS in Groundwater

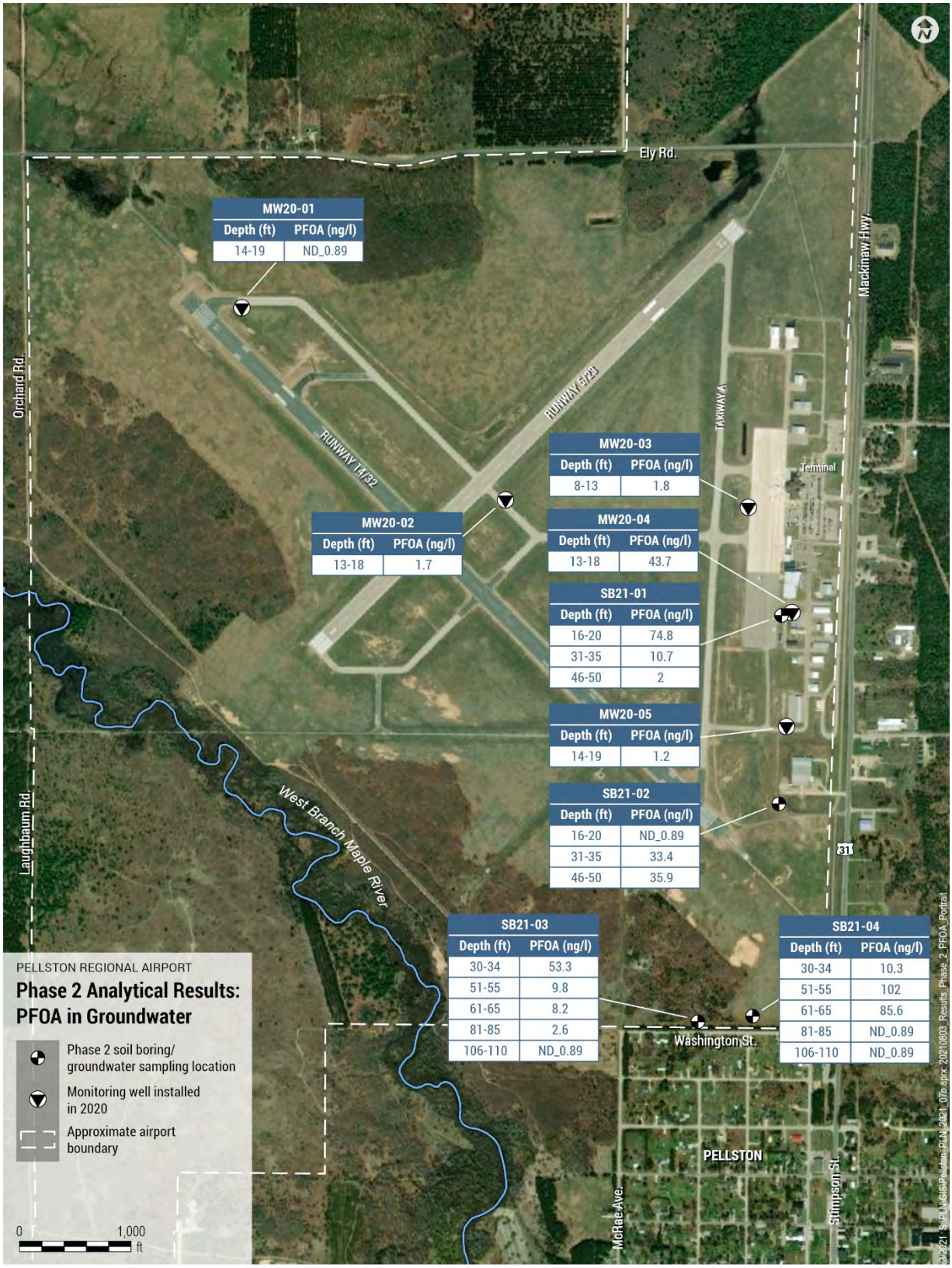

Figure 4-5. Phase 2 Investigation Results for PFOA in Groundwater

Table 4-1. Phase 2 Investigation Sampling Results for Monitoring Wells (all ng/l or ppt)

Compound	MW20-01 4/27/2021	MW20-02 4/27/2021	MW20-03 4/28/2021	MW20-04 4/28/2021	MW20-05 4/28/2021
PFBA	ND_1.8	ND_1.8	ND_1.8	38.8	2.1
PFPeA	ND_0.89	ND_0.89	ND_0.89	101	ND_0.89
PFHxA	ND_0.89	1.8	ND_0.89	84.7	1.3
PFHpA	ND_0.89	ND_0.89	ND_0.89	31.6	ND_0.89
PFOA	ND_0.89	1.7	1.8	43.7	1.2
PFNA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFUnA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDoA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTriA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTeA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFBS	1.3	60.8	2.6	11.9	ND_0.89
PFPeS	ND_0.89	83.5	4.9	10.2	ND_0.89
PFHxS	2	340	73.4	131	3.6
PFHpS	ND_0.89	1.3	9.8	16.1	ND_0.89
PFOS	ND_0.89	1.8	496	627	24.2
PFNS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFOSA	ND_1.8	ND_1.8	ND_1.8	3.2	ND_1.8
MeFOSAA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
EtFOSAA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
4:2FTS	ND_1.8	ND_1.8	ND_1.8	3.6	ND_1.8
6:2FTS	ND_1.8	ND_1.8	ND_1.8	346	ND_1.8
8:2FTS	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
HFPO-DA (GenX)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ADONA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
9C1-PF3ONS (F-53B Major	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
11C1-PF3OUdS (F-53B Minor)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ND = compound not detected at method detection limit shown					

Table 4-2. Phase 2 Investigation Vertical Aquifer Sampling Results for Borings SB21-01 and SB21-02

Compound	SB21-01 (16-20) 5/10/2021	SB21-01 (31-35) 5/11/2021	SB21-01 (46-50) 5/11/2021	SB21-02 (16-20) 5/6/2021	SB21-01 (31-35) 5/7/2021	SB21-01 (46-50) 5/7/2021
PFBA	35.4	5.2	2	3.4	3.5	5.1
PFPeA	162	8.4	2.3	0.9	3.8	2.3
PFHxA	103	12.1	2.9	ND_0.89	13.5	12.4
PFHpA	44.3	5.8	1.2	ND_0.89	5.6	4.1
PFOA	74.8	10.7	2	ND_0.89	33.4	35.9
PFNA	3.8	ND_0.89	ND_0.89	ND_0.89	0.97	0.97
PFDA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFUnA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDoA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTriA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTeA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFBS	16.6	26.6	6.3	1.2	3.2	4.6
PFPeS	24.3	15.4	3.9	ND_0.89	5	6.2
PFHxS	552	63.5	9.3	2.8	172	196
PFHpS	34.2	1.7	ND_0.89	ND_0.89	11.3	13.7
PFOS	1830	130	12	ND_0.89	321	452
PFNS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFOSA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	370
MeFOSAA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
EtFOSAA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
4:2FTS	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
6:2FTS	808	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
8:2FTS	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
HFPO-DA (GenX)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ADONA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
9C1-PF3ONS (F-53B Major	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
11C1-PF3OUdS (F-53B Minor)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ND = compound not detected at method detection limit shown						

Table 4-3. Phase 2 Investigation Vertical Aquifer Sampling Results for Boring SB21-03

Compound	SB21-03 (30-34) 4/29/2021	SB21-03 (51-55) 4/29/2021	SB21-03 (61-65) 4/30/2021	SB21-03 (81-85) 4/30/2021	SB21-03 (106-110) 5/3/2021
PFBA	16.7	7.6	6.2	2.4	1.8
PFPeA	55.4	10.9	10.4	2.6	ND_0.89
PFHxA	43.6	11.7	10.7	2.4	ND_0.89
PFHpA	46.6	6	5.3	1.5	ND_0.89
PFOA	53.3	9.8	8.2	2.6	ND_0.89
PFNA	3.3	0.95	ND_0.89	ND_0.89	ND_0.89
PFDA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFUnA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDoA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTriA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTeA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFBS	5.6	13.5	7.1	2.5	ND_0.89
PFPeS	6.7	17.7	11.7	3.1	ND_0.89
PFHxS	47.1	100	70.9	14.3	ND_0.89
PFHpS	1.3	3.9	4.1	ND_0.89	ND_0.89
PFOS	8.2	69.1	67.1	15.2	ND_0.89
PFNS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFOSA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
MeFOSAA	ND_8.9	ND_8.9	ND_8.9	ND_8.9	ND_8.9
EtFOSAA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
4:2FTS	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
6:2FTS	164	22.1	26.3	4.3	ND_1.8
8:2FTS	280	ND_1.8	ND_1.8	ND_1.8	ND_1.8
HFPO-DA (GenX)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ADONA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
9C1-PF3ONS (F-53B Major	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
11C1-PF3OUdS (F-53B Minor)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ND = compound not detected at method detection limit shown					

Table 4-4. Phase 2 Investigation Vertical Aquifer Sampling Results for Boring SB21-04

Compound	SB21-04 (31-35) 5/4/2021	SB21-04 (51-55) 5/4/2021	SB21-04 (61-65) 5/5/2021	SB21-04 (81-85) 5/5/2021	SB21-04 (106-110) 5/5/2021
PFBA	2.8	15.5	12	ND_0.89	1.9
PFPeA	2.4	27.1	20.2	ND_0.89	ND_0.89
PFHxA	5.2	38	28.8	ND_0.89	ND_0.89
PFHpA	2.9	40.1	30.2	ND_0.89	ND_0.89
PFOA	10.3	102	85.6	ND_0.89	ND_0.89
PFNA	ND_0.89	4.1	3.4	ND_0.89	ND_0.89
PFDA	ND_0.89	2.3	2.4	ND_0.89	ND_0.89
PFUnA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDoA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTriA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFTeA	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFBS	10.4	12.1	6.9	ND_0.89	ND_0.89
PFPeS	15.6	36	13.5	ND_0.89	ND_0.89
PFHxS	145	784	350	1.5	ND_0.89
PFHpS	9.3	8.3	8.6	ND_0.89	ND_0.89
PFOS	43.4	353	322	6	2.2
PFNS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFDS	ND_0.89	ND_0.89	ND_0.89	ND_0.89	ND_0.89
PFOSA	ND_1.8	7.6	6.6	ND_0.89	ND_0.89
MeFOSAA	ND_8.9	ND_8.9	ND_8.9	ND_0.89	ND_0.89
EtFOSAA	ND_1.8	ND_1.8	ND_1.8	ND_0.89	ND_0.89
4:2FTS	ND_1.8	ND_1.8	ND_1.8	ND_0.89	ND_0.89
6:2FTS	ND_1.8	4.3	4.2	ND_0.89	ND_0.89
8:2FTS	ND_1.8	4.6	6.6	ND_0.89	ND_0.89
HFPO-DA (GenX)	ND_1.8	ND_1.8	ND_1.8	ND_0.89	ND_0.89
ADONA	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
9C1-PF3ONS (F-53B Major	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
11C1-PF3OUdS (F-53B Minor)	ND_1.8	ND_1.8	ND_1.8	ND_1.8	ND_1.8
ND = compound not detected at method detection limit shown					

4.3 Data Quality Review

To assess sample collection, handling, and analytical procedures, quality assurance/quality control (QA/QC) samples were collected during the investigation. These samples are discussed below.

4.3.1 Field Blanks

A total of three (3) field blanks were collected and analyzed to check for sample or sample bottle contamination originating from ambient sources such as sampler attire, vapors or airborne dust. Field blanks were prepared by pouring laboratory-supplied PFAS-free water into a sample bottle at the sample site and preserved according to the parameters to be analyzed. No PFAS compounds were detected in any field blanks collected during this investigation.

4.3.2 Equipment and Source Water Blanks

Two (2) equipment blanks ("Equipment Blank A" and "Equipment Blank B") were collected and analyzed to check for cross-contamination from sampling equipment, either due to materials in the equipment or ineffective decontamination procedures. Equipment blank sampling procedures are described below:

- Equipment Blank A was collected by pouring laboratory-provided PFAS-free water through the stainless steel submersible pump (i.e., Stainless Steel Hurricane® XL pump) with HDPE tubing used for groundwater sampling.
- Equipment Blank B was collected by running laboratory-provided PFAS-free water through the drilling subcontractors plastic submersible pump with LDPE tubing used for groundwater sampling.

No PFAS compounds were detected in either equipment blank sample from this investigation. In addition to the two equipment blank samples, one (1) source water sample was collected from a well located at the Airport used to provide water for decontamination and drilling ("Source Water A"). One PFAS compound, PFPeA, was reported as an estimated concentration of 1 ng/l in this sample.

4.3.3 Field Duplicates

A total of three (3) field duplicates were collected and analyzed to check the precision or reproducibility of sampling and analytical procedures. The analytical results for all sample/duplicate pairs were compared by calculating the relative percent difference (RPD), in accordance with standard quality assurance methods:

$$RPD = 100 \times (X1 - X2)/[(X1 + X2)/2]$$

Where: X1 = original sample value

X2 = duplicate sample value

The target RPD limit was +/-40%, unless the concentration in either the sample or field duplicate is less than five (5) times the reporting limit, in which case the RPD was not calculated. None of the duplicates yielded a RPD value of greater than 40%.

4.3.4 Data Quality Conclusion

Based on quality assurance review of the data produced during this investigation, all data were determined to be valid and reliable.

Blank Page

APPENDIX A
Soil Boring Logs

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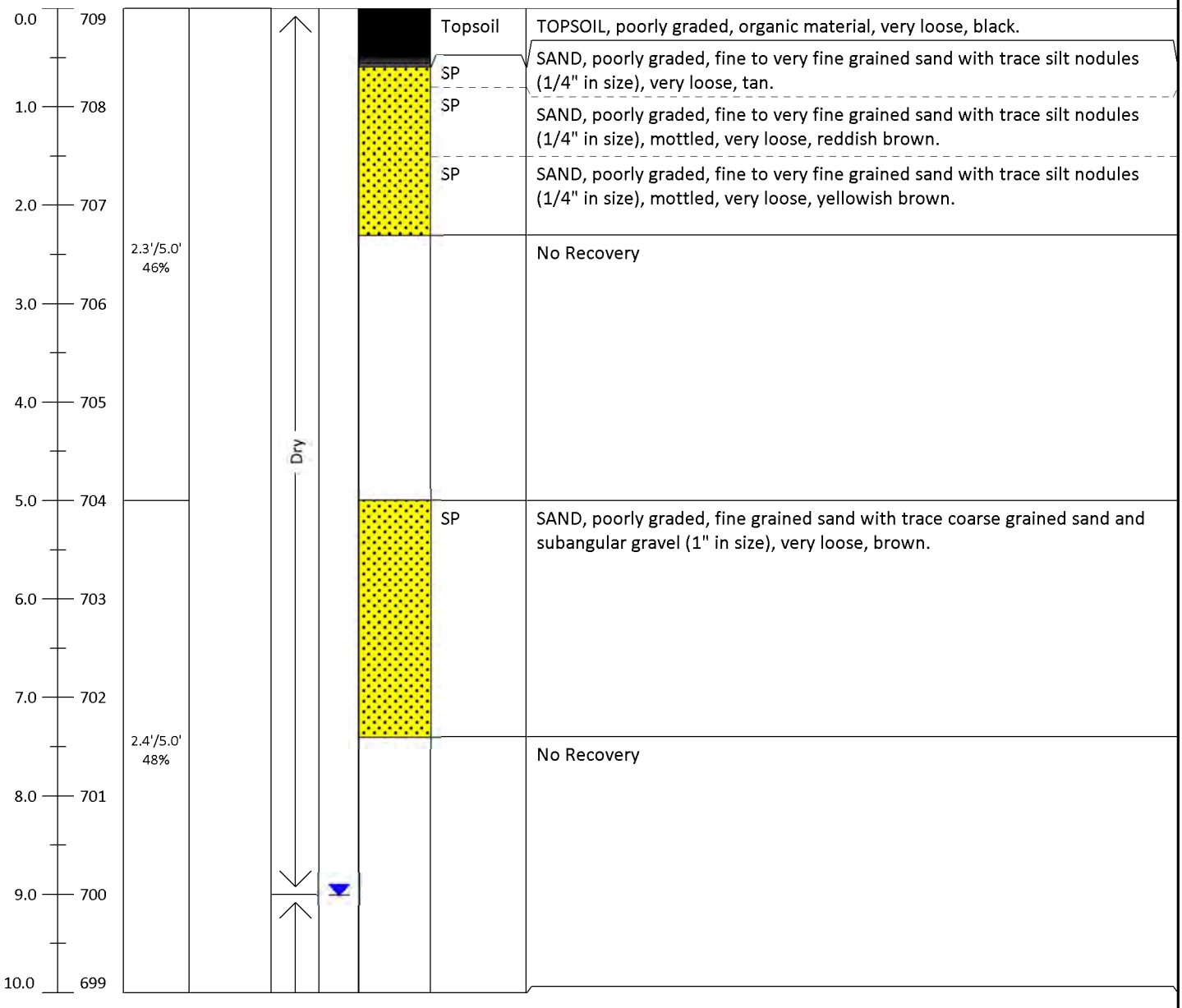
BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-01

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	709'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.568327°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786410°
DATE STARTED:	05/10/2021	**DATE COMPLETED:**	05/11/2021



Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-01

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	709'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.568327°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786410°
DATE STARTED:	05/10/2021	**DATE COMPLETED:**	05/11/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
11.0	698	4.0'/5.0' 80%				SP — SAND, poorly graded, fine grained sand with trace medium to coarse grained sand and subangular gravel (1/2" in size) and silt nodules (1/4" in size), mottled, loose to very loose, tan.
12.0	697					SP — SAND, poorly graded, fine grained sand with trace medium to coarse grained sand and silt nodules (1/4" in size), mottled, loose to very loose, tan.
13.0	696					
14.0	695					No Recovery
15.0	694	3.6'/5.0' 72%	GW Sample SB21-01 (16-20) GW			SP — SAND, poorly graded, fine to very fine grained sand with trace medium grained sand, very loose, tan.
16.0	693					SM — SILTY SAND, poorly graded, very fine grained sand and silt, loose, tan.
17.0	692					SM — SILTY SAND, poorly graded, fine to very fine grained sand with trace medium grained sand, very loose, tan.
18.0	691					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), very loose, tan.
19.0	690					No Recovery
20.0	689					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-01

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	709'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.568327°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786410°
DATE STARTED:	05/10/2021	**DATE COMPLETED:**	05/11/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
21.0	688	3.2'/5.0' 64%				SP — SAND, poorly graded, fine to very fine grained sand with trace medium to coarse grained sand, very loose, tan.
22.0	687					SP — SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and subrounded gravel (1/2" in size) with trace silt nodules (1/4" in size), very loose, tan.
23.0	686					No Recovery
24.0	685					
25.0	684	3.8'/5.0' 76%				SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size) and cobbles, very loose, tan.
26.0	683					
27.0	682					
28.0	681					
29.0	680			Wet		No Recovery
30.0	679					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME:	**PLN**
BOREHOLE ID:	**SB21-01**

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	709'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.568327°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786410°
DATE STARTED:	05/10/2021	**DATE COMPLETED:**	05/11/2021

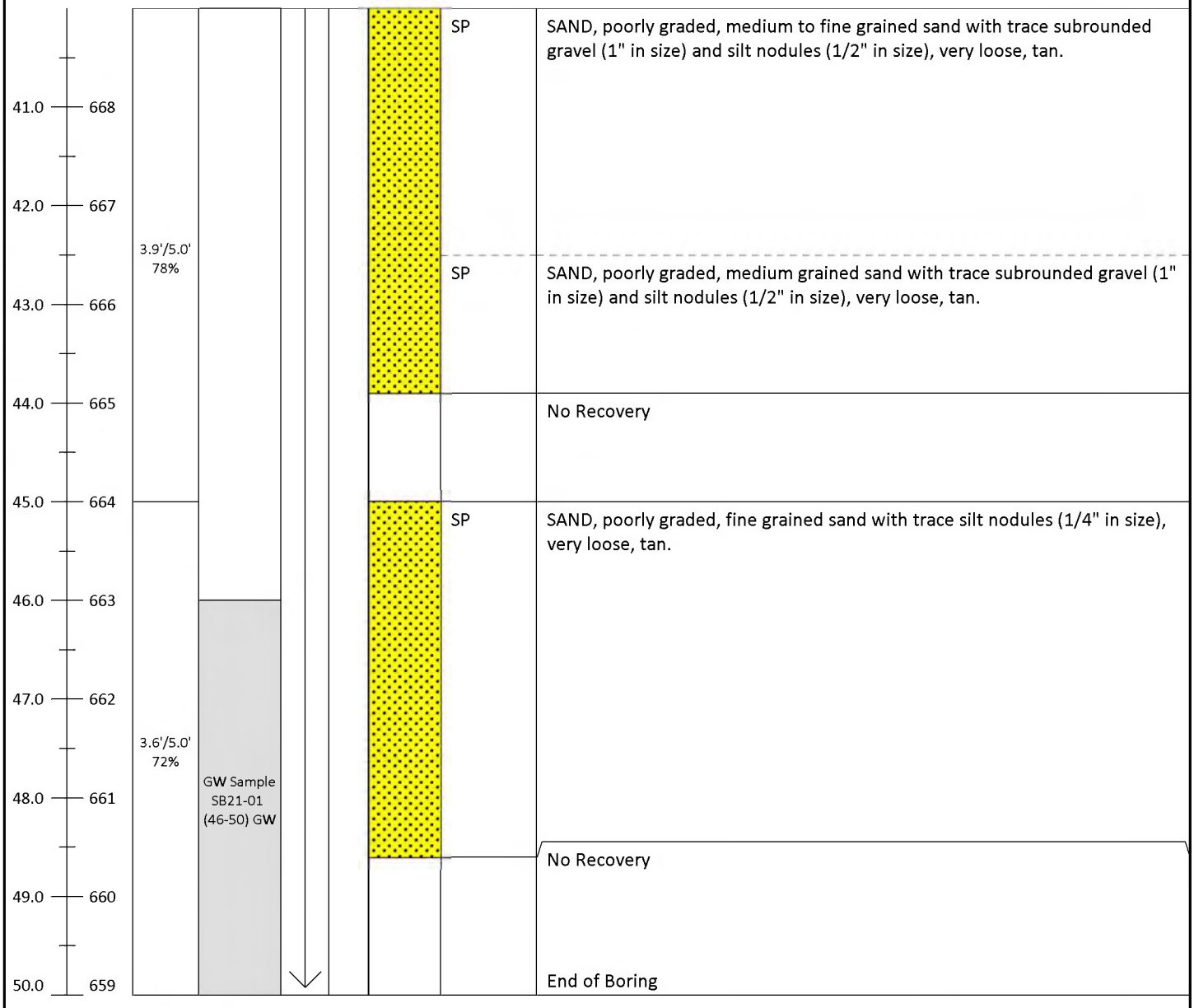
DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
31.0	678	3.0'/5.0' 60%	GW Sample SB21-01 (31-35) GW			SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand, coarsening downward, very loose, tan.
						SP	SAND, poorly graded, medium to coarse grained sand with trace subrounded gravel (1/2" in size), very loose, tan.
32.0	677					SP-GP	GRAVELLY SAND, poorly graded, coarse grained sand with subrounded gravel (1/2" in size) and cobbles, very loose, tan.
						SP	SAND, poorly graded, medium to fine grained sand with trace coarse grained sand, very loose, tan.
33.0	676						No Recovery
34.0	675						
35.0	674	3.7'/5.0' 74%				SP	SAND, poorly graded, medium to fine grained sand with trace coarse grained sand, coarsening, downward, very loose, tan.
36.0	673					SP	SAND, poorly graded, medium to coarse grained sand with trace subrounded gravel (1" in size) and cobbles, very loose, tan.
37.0	672						
38.0	671						
39.0	670						No Recovery
40.0	669						

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-01

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	709'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.568327°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786410°
DATE STARTED:	05/10/2021	**DATE COMPLETED:**	05/11/2021

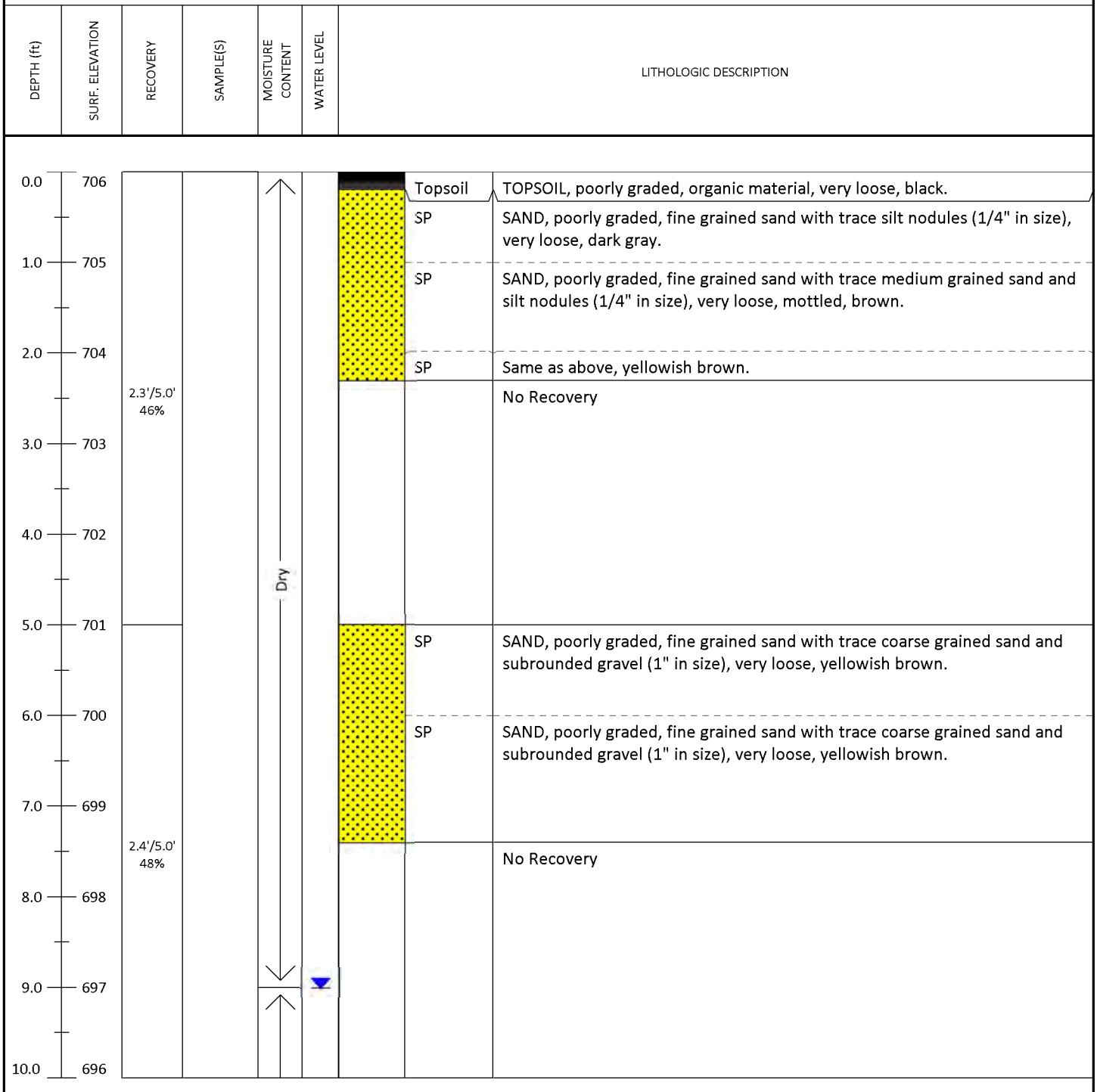


Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-02

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	706'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.563696°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786469°
DATE STARTED:	05/06/2021	**DATE COMPLETED:**	05/10/2021



Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-02

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	706'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.563696°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786469°
DATE STARTED:	05/06/2021	**DATE COMPLETED:**	05/10/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
11.0	695	4.0'/5.0' 80%				SP	SAND, poorly graded, fine grained sand with trace medium to coarse grained sand, very loose, tan.
						SP	SAND, poorly graded, medium to fine grained sand with trace subrounded gravel (1/4" in size), very loose, tan.
12.0	694						
						SP	SAND, poorly graded, fine grained sand with trace silt nodules (1/2" in size), very loose, tan.
13.0	693						
14.0	692						No Recovery
15.0	691	3.1'/5.0' 62%	GW Sample SB21-02 (16-20) GW			ML-SM	SANDY SILT, poorly graded, silt and very fine grained sand, loose, tan.
						SP	SAND, poorly graded, fine grained sand and some silt with trace medium grained sand and silt nodules (1" in size), very loose to loose, tan.
16.0	690						
17.0	689						
						SP	SAND, poorly graded, fine to medium grained sand and some silt with trace silt nodules (1/2" in size), very loose, tan.
18.0	688						No Recovery
19.0	687						
20.0	686						

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-02

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	706'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.563696°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786469°
DATE STARTED:	05/06/2021	**DATE COMPLETED:**	05/10/2021

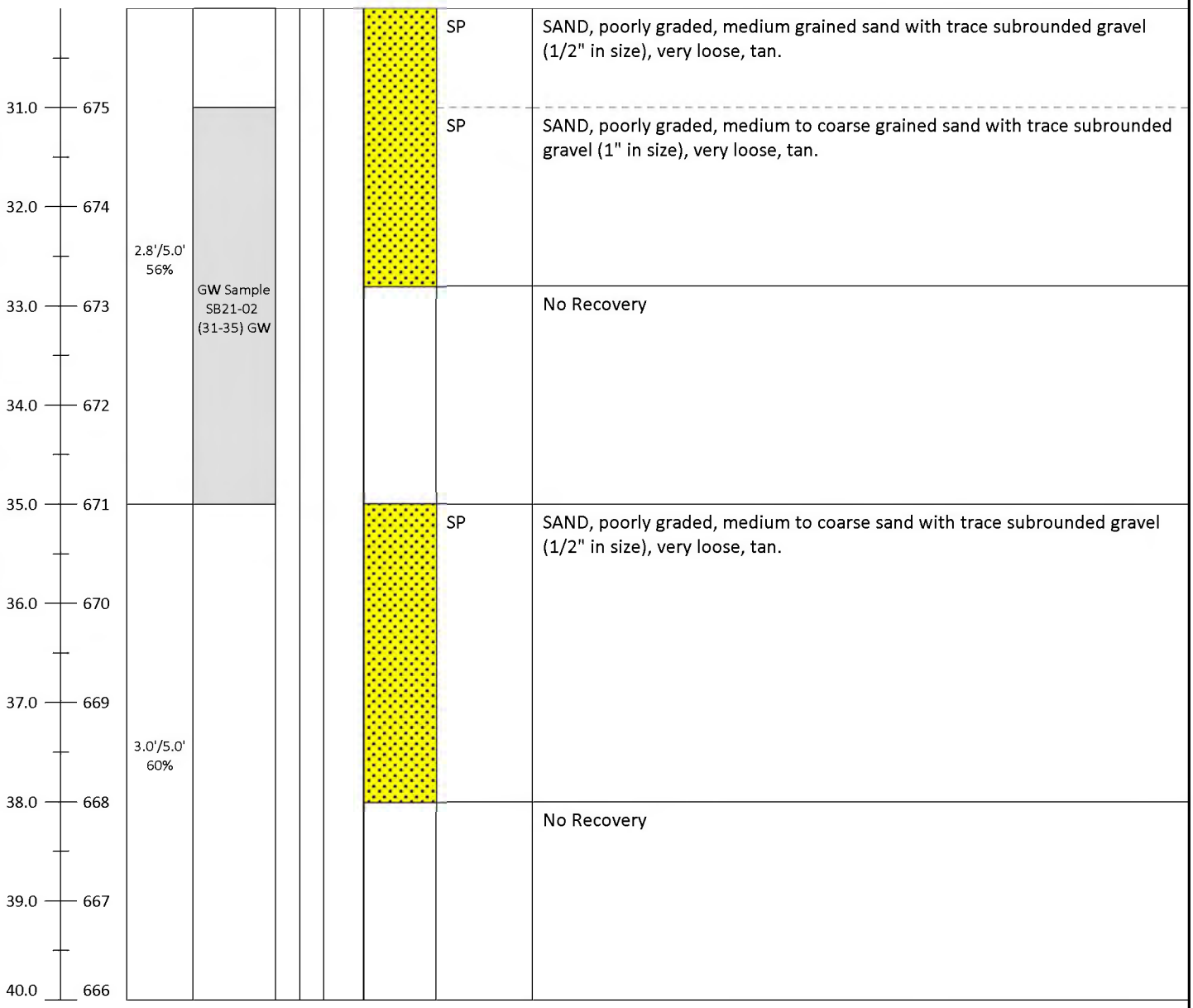
DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
21.0	685					SP — SAND, poorly graded, fine to medium grained sand with trace coarse grained sand, very loose, tan.
						SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand and subangular gravel (1/2" in size), coarsening downward, very loose, tan.
22.0	684					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1/2" in size), very loose, tan.
		2.3'/5.0' 46%				No Recovery
23.0	683					
24.0	682					
25.0	681					SP — SAND, poorly graded, medium to coarse grained sand with trace subrounded gravel (1" in size), very loose, tan.
26.0	680					
27.0	679					
		3.5'/5.0' 70%				
28.0	678					
						No Recovery
29.0	677			Wet		
30.0	676					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME:	**PLN**
BOREHOLE ID:	**SB21-02**

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	706'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.563696°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786469°
DATE STARTED:	05/06/2021	**DATE COMPLETED:**	05/10/2021

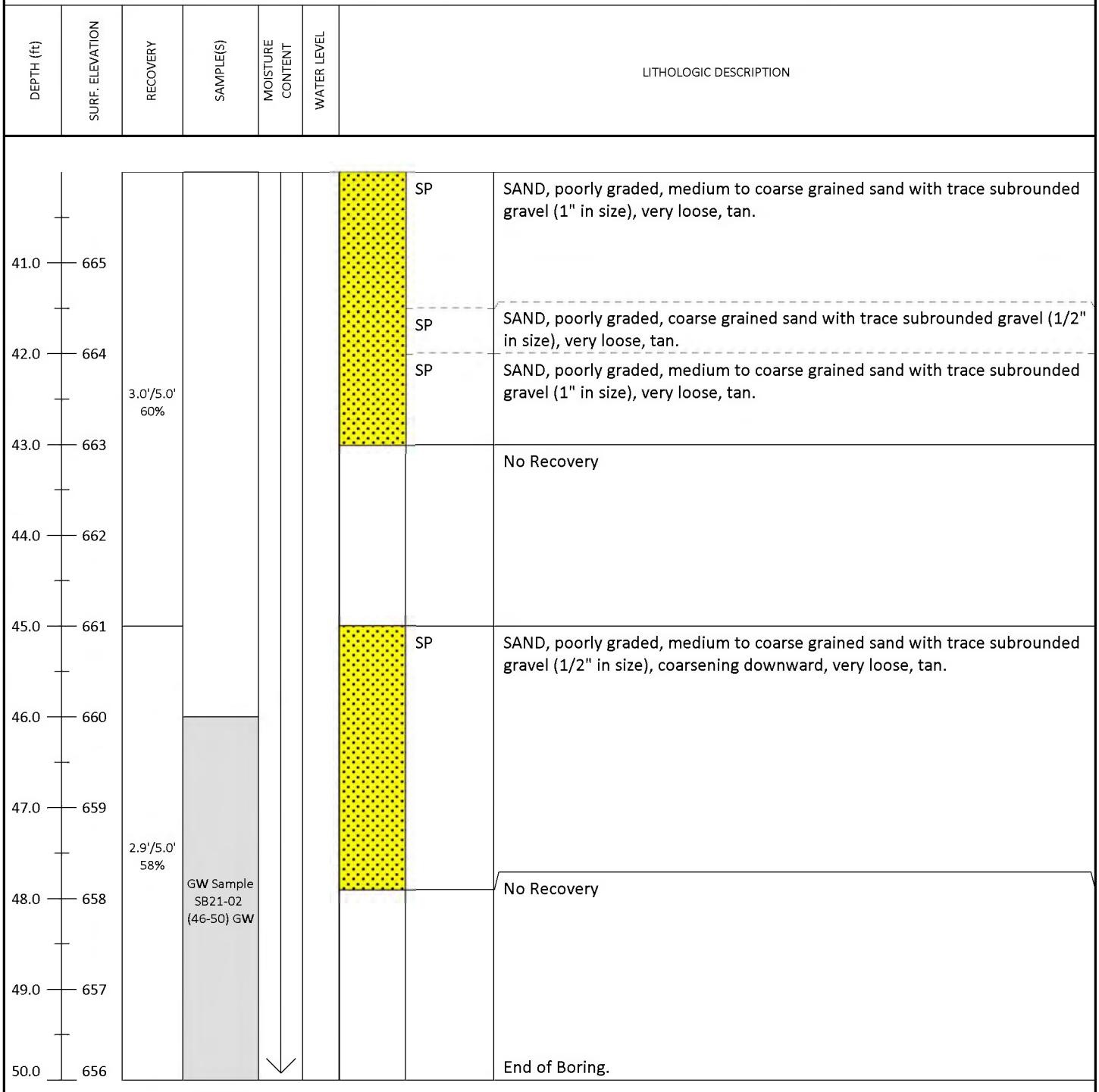


Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME:	**PLN**
BOREHOLE ID:	**SB21-02**

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	50' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	9' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	706'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.563696°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.786469°
DATE STARTED:	05/06/2021	**DATE COMPLETED:**	05/10/2021

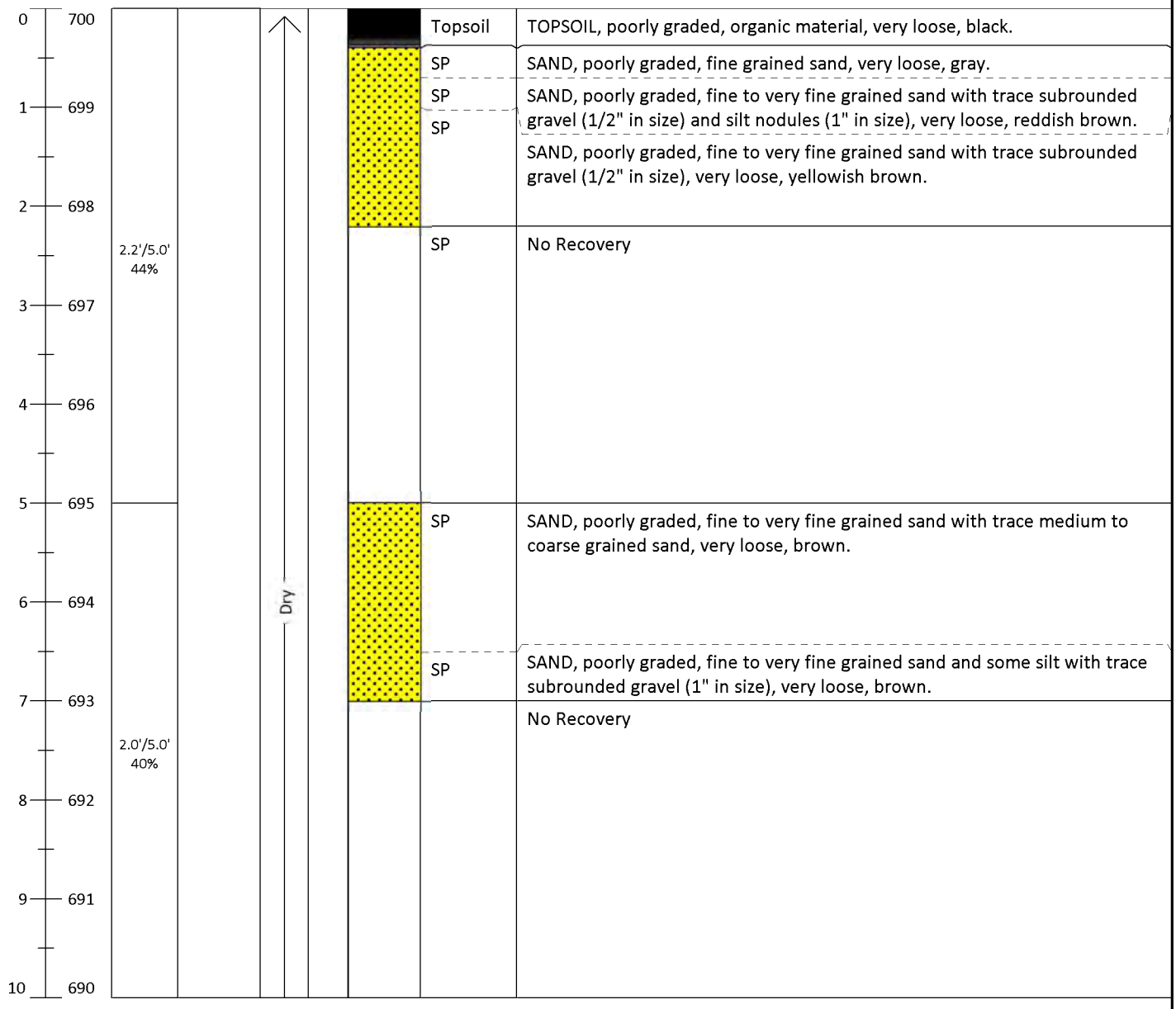


Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

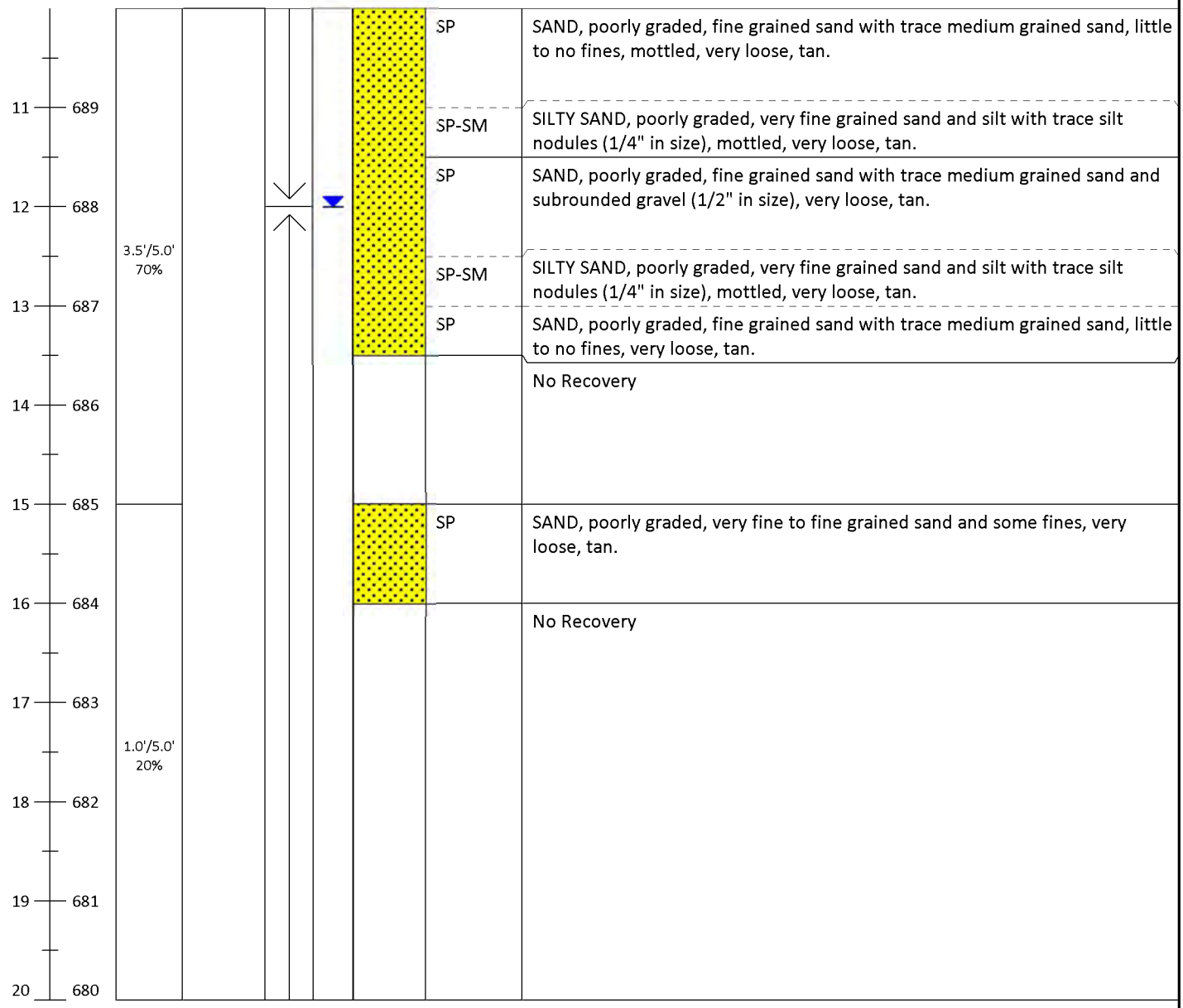


Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021



Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
21	679	3.6'/5.0' 72%				SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and subrounded gravel (1/4" in size) and cobbles, very loose, tan.
22	678						
23	677					SP	SAND, poorly graded, fine grained sand, very loose, tan.
24	676						No Recovery
25	675	3.6'/5.0' 72%				SP	SAND, poorly graded, very fine to fine grained sand and some silt, coarsening downward, very loose, tan.
26	674					SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and subrounded gravel (1" in size) and cobbles, very loose, tan.
27	673						
28	672						
29	671						No Recovery
30	670						

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

LimnoTech

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
31	669	3.3'/5.0' 66%	GW Sample SB21-03 (30-34) GW			SP — SAND, poorly graded, fine to medium grained sand with trace coarse grained sand, very loose, tan.
32	668					
33	667					GP — GRAVEL, poorly graded, subrounded gravel (1" in size) and cobbles, very loose, tan.
34	666					No Recovery
35	665	3.3'/5.0' 66%				SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1/2" in size), very loose, tan.
36	664					
37	663					SP — SAND, poorly graded, fine grained sand with trace medium to coarse grained sand, very loose, tan.
38	662					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (3/4" in size) and cobbles, very loose, tan.
39	661					No Recovery
40	660					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
41	659	3.7'/5.0' 74%				SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (3/4" in size), very loose, tan.
42	658					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), coarsening downward, very loose, tan.
43	657					
44	656					No Recovery
45	655	0.0'/5.0' 0%				No Recovery
46	654					
47	653					
48	652					
49	651					
50	650					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
51	649	3.1'/5.0' 62%	GW Sample SB21-03 (51-55) GW			SP — SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), very loose, tan.
52	648					SP — SAND, poorly graded, fine to very fine grained sand with trace medium to coarse grained sand and subrounded gravel (1" in size) and cobbles, very loose, tan.
53	647					No Recovery
54	646					
55	645	0.0'/5.0' 0%				No Recovery
56	644					
57	643					
58	642					
59	641					
60	640					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION		
61	639	3.2'/5.0' 64%	GW Sample SB21-03 (61-65) GW	Wet		SP	SAND, poorly graded, fine grained sand with trace coarse grained sand and subrounded gravel (1/4" in size), very loose, tan.	
62	638					SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand, very loose, tan.	
63	637					SP	SAND, poorly graded, very fine grained sand, little to no fines, very loose, tan.	
64	636						No Recovery	
65	635	2.0'/5.0' 40%				SP	SAND, poorly graded, fine to very fine grained sand and some fines with trace medium to coarse grained sand, very loose, tan.	
66	634							
67	633						No Recovery	
68	632							
69	631							
70	630							

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
71	629					SP — SAND, poorly graded, fine to very fine grained sand and some fines with trace medium to coarse grained sand, very loose, tan.
72	628					SP — SAND, poorly graded, very fine to fine grained sand with trace subrounded gravel (1" in size) and silt nodules (1/2" in size), very loose, tan.
73	627	2.3'/5.0' 46%				No Recovery
74	626					
75	625					No Recovery
76	624					
77	623					
78	622	0.0'/5.0' 0%				
79	621					
80	620					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
80	620	0.0'/5.0' 0%	GW Sample SB21-03 (81-85) GW			No Recovery
81	619					
82	618					
83	617					
84	616					
85	615	0.0'/5.0' 0%				No Recovery
86	614					
87	613					
88	612					
89	611					
90	610					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION		
91	609	0.0'/5.0' 0%						No Recovery
92	608							
93	607							
94	606							
95	605	3.3'/5.0' 66%					SP	SAND, poorly graded, very fine to fine grained sand with trace medium to coarse grained sand and subrounded gravel (1/4" in size), very loose, tan.
96	604							
97	603							
98	602						SP	SAND, poorly graded, fine to very fine grained sand with trace medium grained sand, very loose, tan.
99	601							No Recovery
100	600							

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-03

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	700'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558326°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.789263°
DATE STARTED:	04/29/2021	**DATE COMPLETED:**	05/03/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
101	599	3.5'/5.0' 70%				SP — SAND, poorly graded, fine to very fine grained sand, very loose, tan.
						SP-SM — SILTY SAND, poorly graded, very fine grained sand and silt, loose, tan.
						SP — SAND, poorly graded, fine grained sand, very loose, tan.
102	598					
103	597					SP — SAND, poorly graded, fine grained sand with trace subrounded gravel (1" in size), very loose, tan.
104	596					No Recovery
105	595	1.5'/5.0' 30%	GW Sample SB21-03 (106-110) GW			SP — SAND, poorly graded, fine to very fine grained sand and some silt with trace medium to coarse grained sand and subrounded gravel (1/2" in size), very loose, tan.
106	594					No Recovery
107	593					
108	592					
109	591					
110	590					End of Boring.

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling at SB21-04 as water was utilized during drilling starting at 5.0 feet below ground surface.

LimnoTech

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION		
0	701					Topsoil	TOPSOIL, poorly graded, organic material, very loose, black.	
1	700					SP	SAND, poorly graded, fine to very fine grained sand with trace medium grained sand and silt nodules (1/4" in size), very loose, reddish brown.	
2	699	1.8'/5.0' 36%				SP	SAND, poorly graded, fine to very fine grained sand with trace medium grained sand and subrounded gravel (1/2" in size) and silt nodules (1/4" in size), very loose, yellowish brown.	
3	698						No Recovery	
4	697							
5	696					SP	SAND, poorly graded, medium to fine grained sand with trace medium grained sand and subangular gravel (1/2" in size), very loose, brown.	
6	695			Dry			No Recovery	
7	694	1.0'/5.0' 20%						
8	693							
9	692							
10	691							

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
11	690	3.3'/5.0' 66%				SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand and subangular gravel (1" in size), very loose, brown.
						SP — SAND, poorly graded, fine to medium grained sand with trace coarse grained sand, very loose, tan.
12	689				▼	SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand and subrounded gravel (1/2" in size) and silt nodules (1/4" in size), mottled, very loose, tan.
						SP-SM — SILTY SAND, poorly graded, very fine grained sand and silt with trace silt nodules (1/4" in size), mottled, loose, tan.
13	688					SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand and subrounded gravel (1/2" in size) and silt nodules (1/4" in size), mottled, very loose, tan.
14	687					No Recovery
15	686	1.5'/5.0' 30%				SP — SAND, poorly graded, fine to medium grained sand and some silt with trace coarse grained sand and subangular gravel (1/4" in size) and silt nodules (1/4" in size), very loose, tan.
16	685					
17	684					No Recovery
18	683					
19	682					
20	681					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
21	680	3.3'/5.0' 66%				SP — SAND, poorly graded, medium to fine grained sand and some fines with trace coarse grained sand and subrounded gravel (1/4" in size), coarsening downward, very loose, tan.
22	679					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (3/4" in size), little to no fines, very loose, tan.
23	678					
24	677					No Recovery
25	676	3.8'/5.0' 76%				SP-GP — GRAVELLY SAND, poorly graded, medium to coarse grained sand with subrounded gravel (1" in size) and cobbles, very loose, fining downward, tan.
26	675					SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand and subrounded gravel (1" in size), very loose, tan.
27	674					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), very loose, tan.
28	673					
29	672					No Recovery
30	671					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
31	670	2.7'/5.0' 54%	GW Sample SB21-04 (31-35) GW			SP	SAND, poorly graded, fine grained sand with trace medium to coarse grained sand and silt nodules (1/4" in size), very loose, tan.
						SP	SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1/2" in size), very loose, tan.
32	669						
33	668						No Recovery
34	667						
35	666	2.1'/5.0' 42%				SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand, very loose, tan.
36	665						
37	664						
38	663					SP	SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), very loose, tan.
							No Recovery
39	662						
40	661						

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

LimnoTech

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
41	660	3.4'/5.0' 68%				SP	SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), very loose, tan.
42	659					SP	SAND, poorly graded, fine grained sand and some fines with trace medium to coarse grained sand, very loose, tan.
43	658					SP	SAND, poorly graded, medium grained sand with trace grained sand and subrounded gravel (1 ½" in size), very loose, tan.
44	657						No Recovery
45	656	3.4'/5.0' 68%				SP	SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1/4" in size), very loose, tan.
46	655						
47	654					SP	Same as above, mottled.
48	653						
49	652						No Recovery
50	651						

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
51	650	3.5'/5.0' 70%	GW Sample SB21-04 (51-55) GW			SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and subrounded gravel (1" in size), fining downward, very loose, tan.
52	649					SP — SAND, poorly graded, fine grained sand with trace medium to coarse grained sand and silt nodules (1" in size), mottled, very loose, tan.
53	648					
54	647					No Recovery
55	646	3.8'/5.0' 76%				SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand, very loose, tan.
56	645					
57	644					SP — SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and subrounded gravel (1" in size) and silt nodules (1/2" in size), mottled, loose to very loose, tan.
58	643					
59	642					No Recovery
60	641					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION		
61	640	3.4'/5.0' 68%	GW Sample SB21-04 (61-65) GW	Wet		SP	SAND, poorly graded, fine to medium grained sand with trace silt nodules (1/2" in size), mottled, very loose, tan.	
62	639						Cobble at 62 to 62.5 feet bgs.	
63	638					SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and silt nodules (1/2" in size), mottled, very loose, tan.	
64	637						No Recovery	
65	636	3.8'/5.0' 76%				SP	SAND, poorly graded, medium grained sand and some fines with trace silt nodules (3/4" in size), mottled, very loose, tan.	
66	635							
67	634							
68	633					SP	SAND, poorly graded, medium grained sand and some fines with trace subrounded gravel (1/4" in size) and silt nodules (3/4" in size), fining downward, mottled, very loose, tan.	
69	632						No Recovery	
70	631							

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
71	630					SP — SAND, poorly graded, medium grained sand with trace coarse grained sand and silt nodules (1/2" in size), very loose, tan.
						SM — SILTY SAND, poorly graded, very fine grained sand and silt, mottled, loose, tan.
72	629					SP — SAND, poorly graded, fine to medium grained sand and some silt with trace silt nodules (1" in size), very loose, tan.
		3.3'/5.0' 66%				
73	628					SM — SILTY SAND, poorly graded, very fine grained sand and silt, mottled, loose, tan.
						No Recovery
74	627					
75	626					SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand, very loose, tan.
76	625					
77	624					
		2.8'/5.0' 56%				
78	623					No Recovery
79	622					
80	621					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
81	620	2.8'/5.0' 56%	GW Sample SB21-04 (81-85) GW			SP	SAND, poorly graded, medium to fine grained sand, very loose, tan.
82	619					SP	SAND, poorly graded, fine to medium grained sand with trace silt nodules (1/2" in size), very loose, tan.
83	618						No Recovery
84	617						
85	616					SP	SAND, poorly graded, medium to fine grained sand with trace coarse grained sand, very loose, tan.
86	615						
87	614	1.8'/5.0' 36%					No Recovery
88	613						
89	612						
90	611						

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL	LITHOLOGIC DESCRIPTION
91	610	3.2'/5.0' 64%				SP — SAND, poorly graded, medium to fine grained sand with trace coarse grained sand, coarsening downward, very loose, tan.
92	609					SP — SAND, poorly graded, medium to coarse grained sand with trace subrounded gravel (1/4" in size), little to no fines, very loose, tan.
93	608					No Recovery
94	607					
95	606	2.7'/5.0' 54%				SP — SAND, poorly graded, medium to coarse grained sand with trace subrounded gravel (1/4" in size), little to no fines, very loose, tan.
96	605					
97	604					
98	603					No Recovery
99	602					
100	601					

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

BORING LOG

PROJECT NAME: PLN
BOREHOLE ID: SB21-04

SITE LOCATION:	Pellston Regional Airport	**TOTAL DEPTH:**	110' bgs
ADDRESS:	1395 US-31, Pellston, MI 49769	**DEPTH TO WATER:**	12' bgs
LOGGED BY:	J. Bleha, LimnoTech	**GROUND SURFACE ELEVATION:**	701'
DRILLING COMPANY:	MATECO Drilling Company	**LATITUDE:**	45.558480°
DRILLING METHOD:	Sonic (4" x 6") Drilling (Geoprobe 8140DT)	**LONGITUDE:**	-84.787356°
DATE STARTED:	05/03/2021	**DATE COMPLETED:**	05/06/2021

DEPTH (ft)	SURF. ELEVATION	RECOVERY	SAMPLE(S)	MOISTURE CONTENT	WATER LEVEL		LITHOLOGIC DESCRIPTION
101	600	3.3'/5.0' 66%				SP	SAND, poorly graded, medium grained sand with trace coarse grained sand, little to no fines, very loose, tan.
102	599					SP-GP	GRAVELLY SAND, poorly graded, medium to coarse grained sand and subrounded gravel (1" in size) and cobbles, little to no fines, very loose, tan.
103	598						No Recovery
104	597						
105	596	2.7'/5.0' 54%	GW Sample SB21-04 (106-110) GW			SP	SAND, poorly graded, fine to very fine grained sand with trace medium grained sand, coarsening downward, very loose, tan.
106	595					SP	SAND, poorly graded, fine to medium grained sand with trace coarse grained sand and subrounded gravel (1" in size) and cobbles, very loose, tan.
107	594					SP-GP	GRAVELLY SAND, poorly graded, medium to coarse grained sand and subrounded gravel (1" in size) and cobbles, little to no fines, very loose, tan.
108	593						No Recovery
109	592						
110	591						End of Boring.

Moisture content and depth to groundwater values were estimated from measurements recorded during low flow sampling as water was utilized during drilling starting at 5.0 feet below ground surface.

APPENDIX B
Chain-of-Custody Forms

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SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # :

PAGE 1 OF 2

SGS - ORLANDO Quote #

SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH
Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed)
Sampler 1: ISLEHA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN PFAS (PHASE 2 INVESTIGATION)
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Siudge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNA	DI WATER	MEOH	PFAS (LIST OF 38)	LAB USE ONLY
	DUP-GW-A	4/28/21	—	LTI	GW	2		X								X	
	DUP-GW-B	4/29/21	—	LTI	GW	2		X								X	
	MW20-01	4/27/21	1510	LTI	GW	2		X								X	
	MW20-02	4/27/21	1635	LTI	GW	2		X								X	
	MW20-03	4/28/21	0920	LTI	GW	2		X								X	
	MW20-04	4/28/21	1055	LTI	GW	2		X								X	
	MW20-05	4/28/21	1205	LTI	GW	2		X								X	
	SOURCE WATER A	4/28/21	1420	LTI	GW	2		X								X	
	SB21-03 (30-34) GW	4/29/21	1420	LTI	GW	2		X								X	
	SB21-03 (51-55) GW	4/29/21	1715	LTI	GW	2		X								X	
	SB21-03 (61-65) GW	4/30/21	1010	LTI	GW	2		X								X	
	SB21-03 (81-85) GW	4/30/21	1245	LTI	GW	2		X								X	

Turnaround Time (Business days)

(10 Day (Business)) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

☐ COMMERCIAL "A" (RESULTS ONLY)
☐ COMMERCIAL "B" (RESULTS PLUS QC)
☐ REDT1 (EPA LEVEL 3)
☐ FULLT1 (EPA LEVEL 4)
☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	[signature] / LIMNOTECH	4/30/21 1630	2	3		4
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS North America Inc - Orlando

Chain of Custody

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TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH
Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed)
Sampler 1: BLEMA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN PFAS (PHASE 2 INVESTIGATION)
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	PFAS (LIST OF 28)	LAB USE ONLY
	FIELD BLANK 01	4/30/21	1320	LTI	WW	2		X								X	

Turnaround Time (Business days)

10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Approved By: / Date:
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
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- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	[signature] / LIMNOTECH	4/30/21 1630	2	3		4
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

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SGS - ORLANDO JOB # :

PAGE 1 OF 1

SGS - ORLANDO Quote #

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Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed)
Sampler 1: BLEHA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN (PHASE 2 INVESTIGATION) PFAS
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	PFAS (LIST OF 28)	LAB USE ONLY
	FIELD BLANK 02	5/5/21	1115	LTI	WW	2		X								X	
	SB21-03 (106-110) GW	5/3/21	1320	LTI	GW	2		X								X	
	SB21-04 (31-35) GW	5/4/21	1125	LTI	GW	2		X								X	
	SB21-04 (51-55) GW	5/4/21	1730	LTI	GW	2		X								X	
	SB21-04 (61-65) GW	5/5/21	1040	LTI	GW	2		X								X	
	SB21-04 (81-85) GW	5/5/21	1425	LTI	GW	2		X								X	
	SB21-04 (106-110) GW	5/5/21	1820	LTI	GW	2		X								X	
	SB21-02 (16-20) GW	5/6/21	1725	LTI	GW	2		X								X	
	SB21-02 (31-35) GW	5/7/21	0955	LTI	GW	2		X								X	
	SB21-02 (46-50) GW	5/7/21	1228	LTI	GW	2		X								X	
	DUP-GW-C	5/7/21	—	LTI	GW	2		X								X	

Turnaround Time (Business days)

10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Approved By: / Date:
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 / LIMNOTECH	5/7/21 1330	2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

SGS North America Inc - Orlando

Chain of Custody

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SGS - ORLANDO JOB # :

PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH

Address: 501 AVIS DRIVE

City: ANN ARBOR State: MI Zip: 48108

Project Contact: SCOTT BELL Email: sbell@limno.com

Phone #: (734) 332-1200

Sampler(s) Name(s) (Printed)
Sampler 1: BLEHA Sampler 2:

Project Information

Project Name:

Street

City State

Project # PLN PFAS PHASE 2 INVESTIGATION

Fax #

Client Purchase Order #

Analytical Information

PFAS (LIST OF 28)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	PFAS (LIST OF 28)	LAB USE ONLY
	SB21-01 (16-20) GW	5/10/21	1530	LTI	GW	2		X								X	
	SB21-01 (31-35) GW	5/11/21	0850	LTI	GW	2		X								X	
	SB21-01 (46-50) GW	5/11/21	1105	LTI	GW	2		X								X	
	FIELD BLANK 03	5/10/21	1030	LTI	WW	2		X								X	
	EQUIPMENT BLANK A	5/11/21	1150	LTI	WW	2		X								X	
	EQUIPMENT BLANK B	5/12/21	0930	LTI	WW	2		X								X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other

Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	LIMNOTECH	5/12/21 1000	2	3		4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

APPENDIX C
Laboratory Reports

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The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

LimnoTech

Pellston Airport, MI

SGS Job Number: FA85196

Sampling Dates: 04/27/21 - 04/30/21

Report to:

LimnoTech
501 Avis Drive
Ann Arbor, MI 48108
sbell@limno.com

ATTN: Scott Bell

Total number of pages in report: 64

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, UT, VT, WA, WV

Sections: 1 2 3 4 5 6

Table of Contents

SGS North America Inc.

Sample Summary

LimnoTech

Pellston Airport, MI

Job No: FA85196

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
FA85196-1	04/28/21	00:00	OB	05/01/21	AQ	Ground Water	DUP-GW-A
FA85196-2	04/29/21	00:00	OB	05/01/21	AQ	Ground Water	DUP-GW-B
FA85196-3	04/27/21	15:10	OB	05/01/21	AQ	Ground Water	MW20-01
FA85196-4	04/27/21	16:35	OB	05/01/21	AQ	Ground Water	MW20-02
FA85196-5	04/28/21	09:20	OB	05/01/21	AQ	Ground Water	MW20-03
FA85196-6	04/28/21	10:55	OB	05/01/21	AQ	Ground Water	MW20-04
FA85196-7	04/28/21	12:05	OB	05/01/21	AQ	Ground Water	MW20-05
FA85196-8	04/28/21	14:20	OB	05/01/21	AQ	Water	SOURCE WATER A
FA85196-9	04/29/21	14:20	OB	05/01/21	AQ	Ground Water	SB21-03 (30-34)GW
FA85196-10	04/29/21	17:15	OB	05/01/21	AQ	Ground Water	SB21-03 (51-55)GW
FA85196-11	04/30/21	10:10	OB	05/01/21	AQ	Ground Water	SB21-03 (61-65)GW
FA85196-12	04/30/21	12:45	OB	05/01/21	AQ	Ground Water	SB21-03 (81-85)GW

SGS North America Inc.

Sample Summary
(continued)

LimnoTech

Pellston Airport, MI

Job No: FA85196

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA85196-13	04/30/21	13:20	OB	05/01/21	AQ	Field Blank Water	FIELD BLANK 01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: LimnoTech **Job No:** FA85196

Site: Pellston Airport, MI **Report Date** 5/25/2021 3:34:10 PM

12 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were collected on between 04/27/2021 and 04/30/2021 and were received at SGS North America Inc - Orlando on 05/01/2021 properly preserved, at 0.4 Deg. C and intact. These Samples received an SGS Orlando job number of FA85196. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537M BY ID

Matrix: AQ **Batch ID:** OP85344

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA85196-1MS, FA85196-2DUP, FA85196-1MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix Spike Recovery(s) for Perfluorooctanesulfonic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Sample(s) FA85196-8 have surrogates outside control limits.

FA85196-2: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA85196-8: Confirmation run.

Matrix: AQ **Batch ID:** OP85474

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA85474-1MS, FA85499-1DUP, FA85474-1MS were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluorobutanesulfonic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

RPD(s) for Duplicate for Perfluorotetradecanoic acid are outside control limits for sample OP85474-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FA85196-8 have surrogates outside control limits.

FA85196-8: Associated BS ID recovery standard outside control limits. Insufficient sample to re-extract.

FA85196-8 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA85196
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 04/27/21 thru 04/30/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA85196-1	**DUP-GW-A**					
Perfluorooctanoic acid		1.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		2.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		6.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		84.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		10.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		402	8.9	4.5	ng/l	EPA 537M BY ID
FA85196-2	**DUP-GW-B**					
Perfluorobutanoic acid [a]		6.8	4.0	2.0	ng/l	EPA 537M BY ID
Perfluoropentanoic acid [a]		10.4	2.0	1.0	ng/l	EPA 537M BY ID
Perfluorohexanoic acid [a]		11.2	2.0	1.0	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid [a]		5.7	2.0	1.0	ng/l	EPA 537M BY ID
Perfluorooctanoic acid [a]		8.8	2.0	1.0	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid [a]		12.6	2.0	1.0	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid [a]		17.0	2.0	1.0	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid [a]		90.4	2.0	1.0	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid [a]		3.5	2.0	1.0	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid [a]		63.6	2.0	1.0	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate [a]		22.3	8.0	2.0	ng/l	EPA 537M BY ID
FA85196-3	**MW20-01**					
Perfluorobutanesulfonic acid		1.3 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		2.0	1.8	0.89	ng/l	EPA 537M BY ID
FA85196-4	**MW20-02**					
Perfluorohexanoic acid		1.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		1.7 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		60.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		83.5	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		340	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		1.3 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		1.8	1.8	0.89	ng/l	EPA 537M BY ID
FA85196-5	**MW20-03**					
Perfluorooctanoic acid		1.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		2.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		4.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		73.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		9.8	1.8	0.89	ng/l	EPA 537M BY ID

Summary of Hits

Job Number: FA85196
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 04/27/21 thru 04/30/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluorooctanesulfonic acid		496	8.9	4.5	ng/l	EPA 537M BY ID
FA85196-6	**MW20-04**					
Perfluorobutanoic acid		38.8	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		101	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		84.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		31.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		43.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		11.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		10.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		131	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		16.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		627	8.9	4.5	ng/l	EPA 537M BY ID
PFOSA		3.2 J	3.6	1.8	ng/l	EPA 537M BY ID
4:2 Fluorotelomer sulfonate		3.6 J	7.1	1.8	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		346	7.1	1.8	ng/l	EPA 537M BY ID
FA85196-7	**MW20-05**					
Perfluorobutanoic acid		2.1 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		1.3 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		1.2 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		3.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		24.2	1.8	0.89	ng/l	EPA 537M BY ID
FA85196-8	**SOURCE WATER A**					
Perfluoropentanoic acid [b]		1.0 J	1.8	0.89	ng/l	EPA 537M BY ID
FA85196-9	**SB21-03 (30-34)GW**					
Perfluorobutanoic acid		16.7	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		55.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		43.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		46.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		53.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		3.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		5.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		6.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		47.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		1.3 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		8.2	1.8	0.89	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		164	7.1	1.8	ng/l	EPA 537M BY ID
8:2 Fluorotelomer sulfonate		280	7.1	1.8	ng/l	EPA 537M BY ID

Summary of Hits

Job Number: FA85196
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 04/27/21 thru 04/30/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA85196-10	**SB21-03 (51-55)GW**					
Perfluorobutanoic acid		7.6	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		10.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		11.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		6.0	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		9.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		0.95 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		13.5	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		17.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		100	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		3.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		69.1	1.8	0.89	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		22.1	7.1	1.8	ng/l	EPA 537M BY ID
FA85196-11	**SB21-03 (61-65)GW**					
Perfluorobutanoic acid		6.2	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		10.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		10.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		5.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		8.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		7.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		11.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		70.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		4.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		67.1	1.8	0.89	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		26.3	7.1	1.8	ng/l	EPA 537M BY ID
FA85196-12	**SB21-03 (81-85)GW**					
Perfluorobutanoic acid		2.4 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		2.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		2.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		1.5 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		2.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		2.5	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		3.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		14.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		15.2	1.8	0.89	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		4.3 J	7.1	1.8	ng/l	EPA 537M BY ID

Summary of Hits

Job Number: FA85196
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 04/27/21 thru 04/30/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FA85196-13 FIELD BLANK 01

No hits reported in this sample.

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Associated BS ID recovery standard outside control limits. Insufficient sample to re-extract.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: DUP-GW-A
Lab Sample ID: FA85196-1
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38020.D	1	05/17/21 19:12	NG	05/11/21 11:00	OP85344	S3Q560
Run #2	3Q37975.D	5	05/15/21 04:56	NG	05/11/21 11:00	OP85344	S3Q559

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	1.8	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	2.9	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	6.3	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	84.4	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	10.9	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	402 [a]	8.9	4.5	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-GW-A
Lab Sample ID: FA85196-1
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%	84%	35-135%
	13C5-PFPeA	74%	84%	50-150%
	13C5-PFHxA	75%	83%	50-150%
	13C4-PFHpA	77%	87%	50-150%
	13C8-PFOA	77%	87%	50-150%
	13C9-PFNA	73%	84%	50-150%
	13C6-PFDA	73%	83%	50-150%
	13C7-PFUnDA	70%	77%	40-140%
	13C2-PFDoDA	64%	71%	40-140%
	13C2-PFTeDA	62%	70%	30-130%
	13C3-PFBS	75%	86%	50-150%
	13C3-PFHxS	71%	83%	50-150%
	13C8-PFOS	64%	77%	50-150%
	13C8-FOSA	64%	75%	30-130%
	d3-MeFOSAA	72%	88%	40-140%
	d5-EtFOSAA	75%	87%	40-140%
	13C2-4:2FTS	72%	83%	50-150%
	13C2-6:2FTS	73%	85%	50-150%
	13C2-8:2FTS	71%	77%	50-150%
	13C3-HFPO-DA	69%	77%	50-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-GW-B
Lab Sample ID: FA85196-2
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/29/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q38009.D	1.12	05/17/21 16:10	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	6.8	4.0	2.0	ng/l	
2706-90-3	Perfluoropentanoic acid	10.4	2.0	1.0	ng/l	
307-24-4	Perfluorohexanoic acid	11.2	2.0	1.0	ng/l	
375-85-9	Perfluoroheptanoic acid	5.7	2.0	1.0	ng/l	
335-67-1	Perfluorooctanoic acid	8.8	2.0	1.0	ng/l	
375-95-1	Perfluorononanoic acid	ND	2.0	1.0	ng/l	
335-76-2	Perfluorodecanoic acid	ND	2.0	1.0	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	2.0	1.0	ng/l	
307-55-1	Perfluorododecanoic acid	ND	2.0	1.0	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	2.0	1.0	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	2.0	1.0	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	12.6	2.0	1.0	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	17.0	2.0	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	90.4	2.0	1.0	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	3.5	2.0	1.0	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	63.6	2.0	1.0	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	2.0	1.0	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	2.0	1.0	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	4.0	2.0	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	4.0	2.0	ng/l	
2991-50-6	EtFOSAA	ND	4.0	2.0	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	8.0	2.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	22.3	8.0	2.0	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-GW-B
Lab Sample ID: FA85196-2
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/29/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	8.0	2.0	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	4.0	2.0	ng/l	
919005-14-4	ADONA	ND	8.0	2.0	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	8.0	2.0	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	8.0	2.0	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		35-135%
	13C5-PFPeA	81%		50-150%
	13C5-PFHxA	81%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	90%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	89%		40-140%
	13C2-PFDoDA	79%		40-140%
	13C2-PFTeDA	74%		30-130%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	82%		30-130%
	d3-MeFOSAA	92%		40-140%
	d5-EtFOSAA	93%		40-140%
	13C2-4:2FTS	79%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	75%		50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-01
Lab Sample ID: FA85196-3
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/27/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38011.D	1	05/17/21 16:43	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	1.3	1.8	0.89	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	2.0	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-01
Lab Sample ID: FA85196-3
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/27/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		35-135%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	81%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	81%		50-150%
	13C7-PFUnDA	76%		40-140%
	13C2-PFDoDA	69%		40-140%
	13C2-PFTeDA	67%		30-130%
	13C3-PFBS	70%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	72%		50-150%
	13C8-FOSA	75%		30-130%
	d3-MeFOSAA	79%		40-140%
	d5-EtFOSAA	79%		40-140%
	13C2-4:2FTS	70%		50-150%
	13C2-6:2FTS	77%		50-150%
	13C2-8:2FTS	73%		50-150%
	13C3-HFPO-DA	65%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-02
Lab Sample ID: FA85196-4
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/27/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38012.D	1	05/17/21 17:00	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	1.8	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	1.7	1.8	0.89	ng/l	J
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	60.8	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	83.5	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	340	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.3	1.8	0.89	ng/l	J
1763-23-1	Perfluorooctanesulfonic acid	1.8	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-02
Lab Sample ID: FA85196-4
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/27/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		35-135%
	13C5-PFPeA	77%		50-150%
	13C5-PFHxA	78%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	86%		50-150%
	13C7-PFUnDA	80%		40-140%
	13C2-PFDoDA	68%		40-140%
	13C2-PFTeDA	65%		30-130%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	90%		30-130%
	d3-MeFOSAA	86%		40-140%
	d5-EtFOSAA	81%		40-140%
	13C2-4:2FTS	75%		50-150%
	13C2-6:2FTS	80%		50-150%
	13C2-8:2FTS	78%		50-150%
	13C3-HFPO-DA	74%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-03
Lab Sample ID: FA85196-5
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38022.D	1	05/17/21 19:46	NG	05/11/21 11:00	OP85344	S3Q560
Run #2	3Q37983.D	5	05/15/21 07:09	NG	05/11/21 11:00	OP85344	S3Q559

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	1.8	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	2.6	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	4.9	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	73.4	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	9.8	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	496 [a]	8.9	4.5	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-03
Lab Sample ID: FA85196-5
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%	100%	35-135%
	13C5-PFPeA	83%	100%	50-150%
	13C5-PFHxA	83%	101%	50-150%
	13C4-PFHpA	87%	103%	50-150%
	13C8-PFOA	87%	105%	50-150%
	13C9-PFNA	82%	102%	50-150%
	13C6-PFDA	85%	103%	50-150%
	13C7-PFUnDA	81%	95%	40-140%
	13C2-PFDoDA	70%	86%	40-140%
	13C2-PFTeDA	37%	70%	30-130%
	13C3-PFBS	83%	101%	50-150%
	13C3-PFHxS	81%	97%	50-150%
	13C8-PFOS	75%	95%	50-150%
	13C8-FOSA	68%	86%	30-130%
	d3-MeFOSAA	85%	108%	40-140%
	d5-EtFOSAA	86%	111%	40-140%
	13C2-4:2FTS	81%	99%	50-150%
	13C2-6:2FTS	83%	102%	50-150%
	13C2-8:2FTS	80%	96%	50-150%
	13C3-HFPO-DA	75%	90%	50-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-04
Lab Sample ID: FA85196-6
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38023.D	1	05/17/21 20:02	NG	05/11/21 11:00	OP85344	S3Q560
Run #2	3Q37984.D	5	05/15/21 07:25	NG	05/11/21 11:00	OP85344	S3Q559

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	38.8	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	101	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	84.7	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	31.6	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	43.7	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	11.9	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	10.2	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	131	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	16.1	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	627 [a]	8.9	4.5	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	3.2	3.6	1.8	ng/l	J
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	3.6	7.1	1.8	ng/l	J
27619-97-2	6:2 Fluorotelomer sulfonate	346	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-04
Lab Sample ID: FA85196-6
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%	105%	35-135%
	13C5-PFPeA	83%	104%	50-150%
	13C5-PFHxA	80%	105%	50-150%
	13C4-PFHpA	84%	110%	50-150%
	13C8-PFOA	84%	111%	50-150%
	13C9-PFNA	85%	110%	50-150%
	13C6-PFDA	92%	115%	50-150%
	13C7-PFUnDA	88%	107%	40-140%
	13C2-PFDoDA	77%	97%	40-140%
	13C2-PFTeDA	75%	94%	30-130%
	13C3-PFBS	83%	102%	50-150%
	13C3-PFHxS	82%	103%	50-150%
	13C8-PFOS	77%	102%	50-150%
	13C8-FOSA	94%	124%	30-130%
	d3-MeFOSAA	94%	119%	40-140%
	d5-EtFOSAA	91%	118%	40-140%
	13C2-4:2FTS	78%	98%	50-150%
	13C2-6:2FTS	110%	148%	50-150%
	13C2-8:2FTS	86%	107%	50-150%
	13C3-HFPO-DA	74%	99%	50-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-05
Lab Sample ID: FA85196-7
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38013.D	1	05/17/21 17:16	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	2.1	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	1.3	1.8	0.89	ng/l	J
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	1.2	1.8	0.89	ng/l	J
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	3.6	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	24.2	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW20-05
Lab Sample ID: FA85196-7
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		35-135%
	13C5-PFPeA	83%		50-150%
	13C5-PFHxA	84%		50-150%
	13C4-PFHpA	87%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	85%		50-150%
	13C6-PFDA	83%		50-150%
	13C7-PFUnDA	79%		40-140%
	13C2-PFDoDA	73%		40-140%
	13C2-PFTeDA	75%		30-130%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	78%		50-150%
	13C8-FOSA	94%		30-130%
	d3-MeFOSAA	83%		40-140%
	d5-EtFOSAA	82%		40-140%
	13C2-4:2FTS	79%		50-150%
	13C2-6:2FTS	79%		50-150%
	13C2-8:2FTS	75%		50-150%
	13C3-HFPO-DA	80%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SOURCE WATER A		
Lab Sample ID:	FA85196-8	**Date Sampled:**	04/28/21
Matrix:	AQ - Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q38333.D	1	05/22/21 11:52	NG	05/19/21 08:45	OP85474	S3Q563
Run #2 [b]	3Q37973.D	1	05/15/21 04:23	NG	05/11/21 11:00	OP85344	S3Q559

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.0	1.8	0.89	ng/l	J
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid [c]	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SOURCE WATER A
Lab Sample ID: FA85196-8
Matrix: AQ - Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/28/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	73%	80%	35-135%
	13C5-PFPeA	76%	82%	50-150%
	13C5-PFHxA	76%	82%	50-150%
	13C4-PFHpA	80%	88%	50-150%
	13C8-PFOA	85%	95%	50-150%
	13C9-PFNA	89%	89%	50-150%
	13C6-PFDA	89%	69%	50-150%
	13C7-PFUnDA	78%	32% [d]	40-140%
	13C2-PFDoDA	60%	13% [d]	40-140%
	13C2-PFTeDA	17% [d]	3% [d]	30-130%
	13C3-PFBS	70%	80%	50-150%
	13C3-PFHxS	78%	83%	50-150%
	13C8-PFOS	80%	60%	50-150%
	13C8-FOSA	69%	15% [d]	30-130%
	d3-MeFOSAA	95%	51%	40-140%
	d5-EtFOSAA	96%	40%	40-140%
	13C2-4:2FTS	77%	81%	50-150%
	13C2-6:2FTS	90%	95%	50-150%
	13C2-8:2FTS	86%	70%	50-150%
	13C3-HFPO-DA	72%	70%	50-150%

(a) Associated BS ID recovery standard outside control limits. Insufficient sample to re-extract.
(b) Confirmation run.
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-03 (30-34)GW
Lab Sample ID: FA85196-9
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/29/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38014.D	1	05/17/21 17:33	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	16.7	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	55.4	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	43.6	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	46.6	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	53.3	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	3.3	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	5.6	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	6.7	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	47.1	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.3	1.8	0.89	ng/l	J
1763-23-1	Perfluorooctanesulfonic acid	8.2	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	164	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-03 (30-34)GW		
Lab Sample ID:	FA85196-9	**Date Sampled:**	04/29/21
Matrix:	AQ - Ground Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	280	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		35-135%
	13C5-PFPeA	81%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	87%		40-140%
	13C2-PFDoDA	76%		40-140%
	13C2-PFTeDA	69%		30-130%
	13C3-PFBS	81%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	93%		30-130%
	d3-MeFOSAA	92%		40-140%
	d5-EtFOSAA	99%		40-140%
	13C2-4:2FTS	78%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	78%		50-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-03 (51-55)GW		
Lab Sample ID:	FA85196-10	**Date Sampled:**	04/29/21
Matrix:	AQ - Ground Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38015.D	1	05/17/21 17:50	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	7.6	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	10.9	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	11.7	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	6.0	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	9.8	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	0.95	1.8	0.89	ng/l	J
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	13.5	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	17.7	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	100	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	3.9	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	69.1	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	22.1	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-03 (51-55)GW		
Lab Sample ID:	FA85196-10	**Date Sampled:**	04/29/21
Matrix:	AQ - Ground Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		35-135%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	66%		50-150%
	13C4-PFHpA	70%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	72%		50-150%
	13C6-PFDA	75%		50-150%
	13C7-PFUnDA	71%		40-140%
	13C2-PFDoDA	66%		40-140%
	13C2-PFTeDA	62%		30-130%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	65%		50-150%
	13C8-PFOS	67%		50-150%
	13C8-FOSA	78%		30-130%
	d3-MeFOSAA	77%		40-140%
	d5-EtFOSAA	80%		40-140%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	70%		50-150%
	13C2-8:2FTS	70%		50-150%
	13C3-HFPO-DA	61%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-03 (61-65)GW
Lab Sample ID: FA85196-11
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/30/21
Date Received: 05/01/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38016.D	1	05/17/21 18:06	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	6.2	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	10.4	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	10.7	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	5.3	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	8.2	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	7.1	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	11.7	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	70.9	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	4.1	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	67.1	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	26.3	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-03 (61-65)GW		
Lab Sample ID:	FA85196-11	**Date Sampled:**	04/30/21
Matrix:	AQ - Ground Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		35-135%
	13C5-PFPeA	77%		50-150%
	13C5-PFHxA	77%		50-150%
	13C4-PFHpA	81%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	85%		50-150%
	13C7-PFUnDA	80%		40-140%
	13C2-PFDoDA	72%		40-140%
	13C2-PFTeDA	69%		30-130%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	76%		50-150%
	13C8-FOSA	88%		30-130%
	d3-MeFOSAA	88%		40-140%
	d5-EtFOSAA	88%		40-140%
	13C2-4:2FTS	75%		50-150%
	13C2-6:2FTS	81%		50-150%
	13C2-8:2FTS	81%		50-150%
	13C3-HFPO-DA	71%		50-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-03 (81-85)GW		
Lab Sample ID:	FA85196-12	**Date Sampled:**	04/30/21
Matrix:	AQ - Ground Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38017.D	1	05/17/21 18:23	NG	05/11/21 11:00	OP85344	S3Q560
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	2.4	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	2.6	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	2.4	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	1.5	1.8	0.89	ng/l	J
335-67-1	Perfluorooctanoic acid	2.6	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	2.5	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.1	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	14.3	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	15.2	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	4.3	7.1	1.8	ng/l	J

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-03 (81-85)GW		
Lab Sample ID:	FA85196-12	**Date Sampled:**	04/30/21
Matrix:	AQ - Ground Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		35-135%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	83%		50-150%
	13C4-PFHpA	87%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	88%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	83%		40-140%
	13C2-PFDoDA	75%		40-140%
	13C2-PFTeDA	70%		30-130%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	91%		30-130%
	d3-MeFOSAA	89%		40-140%
	d5-EtFOSAA	88%		40-140%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	82%		50-150%
	13C3-HFPO-DA	76%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FIELD BLANK 01		
Lab Sample ID:	FA85196-13	**Date Sampled:**	04/30/21
Matrix:	AQ - Field Blank Water	**Date Received:**	05/01/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q37974.D	1	05/15/21 04:39	NG	05/11/21 11:00	OP85344	S3Q559
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FIELD BLANK 01
Lab Sample ID: FA85196-13
Matrix: AQ - Field Blank Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 04/30/21
Date Received: 05/01/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	102%		35-135%
	13C5-PFPeA	101%		50-150%
	13C5-PFHxA	102%		50-150%
	13C4-PFHpA	104%		50-150%
	13C8-PFOA	103%		50-150%
	13C9-PFNA	99%		50-150%
	13C6-PFDA	98%		50-150%
	13C7-PFUnDA	97%		40-140%
	13C2-PFDoDA	98%		40-140%
	13C2-PFTeDA	104%		30-130%
	13C3-PFBS	100%		50-150%
	13C3-PFHxS	97%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	104%		30-130%
	d3-MeFOSAA	101%		40-140%
	d5-EtFOSAA	111%		40-140%
	13C2-4:2FTS	98%		50-150%
	13C2-6:2FTS	86%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	94%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

Parameter Certification Exceptions

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
4:2 Fluorotelomer sulfonate	757124-72-4	EPA 537M BY ID	AQ	Certified by SOP MS014
6:2 Fluorotelomer sulfonate	27619-97-2	EPA 537M BY ID	AQ	Certified by SOP MS014
8:2 Fluorotelomer sulfonate	39108-34-4	EPA 537M BY ID	AQ	Certified by SOP MS014
ADONA	919005-14-4	EPA 537M BY ID	AQ	Certified by SOP MS014
11Cl-PF3OUdS (F-53B Minor)	763051-92-9	EPA 537M BY ID	AQ	Certified by SOP MS014
9Cl-PF3ONS (F-53B Major)	756426-58-1	EPA 537M BY ID	AQ	Certified by SOP MS014
EtFOSAA	2991-50-6	EPA 537M BY ID	AQ	Certified by SOP MS014
HFPO-DA (GenX)	13252-13-6	EPA 537M BY ID	AQ	Certified by SOP MS014
MeFOSAA	2355-31-9	EPA 537M BY ID	AQ	Certified by SOP MS014
PFOSA	754-91-6	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorobutanesulfonic acid	375-73-5	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorobutanoic acid	375-22-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorodecanesulfonic acid	335-77-3	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorodecanoic acid	335-76-2	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorododecanoic acid	307-55-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroheptanesulfonic acid	375-92-8	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroheptanoic acid	375-85-9	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorohexanesulfonic acid	355-46-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorohexanoic acid	307-24-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorononanesulfonic acid	68259-12-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorononanoic acid	375-95-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorooctanesulfonic acid	1763-23-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorooctanoic acid	335-67-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoropentanesulfonic acid	2706-91-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoropentanoic acid	2706-90-3	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorotetradecanoic acid	376-06-7	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorotridecanoic acid	72629-94-8	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroundecanoic acid	2058-94-8	EPA 537M BY ID	AQ	Certified by SOP MS014

FA85196

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH
Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed)
Sampler 1: BLEHA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN PFAS (PHASE 2 INVESTIGATION)
Fax #
Client Purchase Order #

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	MeOH+ZnAc	DI WATER	MEOH	PFAS (LIST OF 38)	LAB USE ONLY
1	DUP-GW-A	4/28/21	—	LTI	GW	2		X								X	
2	DUP-GW-B	4/29/21	—	LTI	GW	2		X								X	
3	MW20-01	4/27/21	1510	LTI	GW	2		X								X	
4	MW20-02	4/27/21	1635	LTI	GW	2		X								X	
5	MW20-03	4/28/21	0920	LTI	GW	2		X								X	
6	MW20-04	4/28/21	1055	LTI	GW	2		X								X	
7	MW20-05	4/28/21	1205	LTI	GW	2		X								X	
8	SOURCE WATER A	4/28/21	1420	LTI	GW	2		X								X	
9	SB21-03 (30-34) GW	4/29/21	1420	LTI	GW	2		X								X	
10	SB21-03 (51-55) GW	4/29/21	1715	LTI	GW	2		X								X	
11	SB21-03 (61-65) GW	4/30/21	1010	LTI	GW	2		X								X	
12	SB21-03 (81-85) GW	4/30/21	1245	LTI	GW	2		X								X	

INITIAL ASSESSMENT
LABEL VERIFICATION

Turnaround Time (Business days)

- 10 Day (Business) — Approved By: / Date:
- 7 Day
- 5 Day
- 3 Day *RUSH*
- 2 Day *RUSH*
- 1 Day *RUSH*
- Other

Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	LIMNOTECH	4/30/21 1630	2 FX	3 FX	5/1/21 940	4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 0.4 IR#6

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA85196: Chain of Custody
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FA85196

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 2 OF 2

SGS - ORLANDO Quote #	SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH
Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed) Sampler 1: BLEHA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN PFAS (PHASE 2 INVESTIGATION)
Fax #
Client Purchase Order #

Analytical Information

PFAS (LIST OF 28)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	CONTAINER INFORMATION TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	PFAS (LIST OF 28)	LAB USE ONLY
13	FIELD BLANK 02	4/30/21	1320	LT	WW	2		X								X	

Turnaround Time (Business days)

10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Approved By: / Date:
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	LIMNOTECH	4/30/21 1630	2	3	5/1/21	4
	Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

5.2 5

FA85196: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FA85196 **Client:** LIMNOTECH **Project:** PLN PFAS

Date / Time Received: 5/1/2021 9:40:00 AM **Delivery Method:** FX **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -1.8; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2);

Cooler Temps (Corrected) °C: Cooler 1: (0.4);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 5/1/2021 9:40:00 AM Reviewer: _____ Date: _____

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-MB	3Q37972.D	1	05/15/21	NG	05/11/21	OP85344	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0040	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	35-135%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	101%	50-150%

Method Blank Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-MB	3Q37972.D	1	05/15/21	NG	05/11/21	OP85344	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	99%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	89%	40-140%
	13C2-PFDoDA	87%	40-140%
	13C2-PFTeDA	85%	30-130%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	96%	30-130%
	d3-MeFOSAA	93%	40-140%
	d5-EtFOSAA	97%	40-140%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	84%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	90%	50-150%

Method Blank Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-MB	3Q38325.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0040	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	35-135%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	101%	50-150%

Method Blank Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-MB	3Q38325.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	105%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	98%	40-140%
	13C2-PFDoDA	93%	40-140%
	13C2-PFTeDA	91%	30-130%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	110%	30-130%
	d3-MeFOSAA	110%	40-140%
	d5-EtFOSAA	110%	40-140%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	101%	50-150%

Instrument Blank

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q559-IBLK	3Q37920.D	1	05/14/21	NG	n/a	n/a	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85196-1, FA85196-5, FA85196-6, FA85196-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	92%	50-150%

Instrument Blank

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q559-IBLK	3Q37920.D	1	05/14/21	NG	n/a	n/a	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85196-1, FA85196-5, FA85196-6, FA85196-13

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	93%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	106%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	108%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	88%	50-150%

Instrument Blank

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q560-IBLK	3Q37996.D	1	05/17/21	NG	n/a	n/a	S3Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	77%	50-150%
	13C5-PFPeA	77%	50-150%
	13C5-PFHxA	78%	50-150%
	13C4-PFHpA	79%	50-150%

Instrument Blank

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q560-IBLK	3Q37996.D	1	05/17/21	NG	n/a	n/a	S3Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	78%	50-150%
	13C9-PFNA	78%	50-150%
	13C6-PFDA	81%	50-150%
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	80%	50-150%
	13C3-PFBS	77%	50-150%
	13C3-PFHxS	79%	50-150%
	13C8-PFOS	77%	50-150%
	13C8-FOSA	86%	50-150%
	d3-MeFOSA	75%	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	84%	50-150%
	13C2-4:2FTS	72%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	70%	50-150%
	13C3-HFPO-DA	75%	50-150%

Instrument Blank

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q563-IBLK	3Q38243.D	1	05/21/21	NG	n/a	n/a	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85196-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	86%	50-150%

Instrument Blank

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q563-IBLK	3Q38243.D	1	05/21/21	NG	n/a	n/a	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85196-8

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	89%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	89%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	89%	50-150%

Blank Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-BS	3Q37971.D	1	05/15/21	NG	05/11/21	OP85344	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0765	96	70-130
2706-90-3	Perfluoropentanoic acid	0.08	0.0794	99	70-130
307-24-4	Perfluorohexanoic acid	0.08	0.0774	97	70-130
375-85-9	Perfluoroheptanoic acid	0.08	0.0783	98	70-130
335-67-1	Perfluorooctanoic acid	0.08	0.0776	97	70-130
375-95-1	Perfluorononanoic acid	0.08	0.0791	99	70-130
335-76-2	Perfluorodecanoic acid	0.08	0.0769	96	70-130
2058-94-8	Perfluoroundecanoic acid	0.08	0.0767	96	70-130
307-55-1	Perfluorododecanoic acid	0.08	0.0783	98	70-130
72629-94-8	Perfluorotridecanoic acid	0.08	0.0763	95	60-140
376-06-7	Perfluorotetradecanoic acid	0.08	0.0778	97	70-130
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0796	100	70-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0821	103	70-130
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0788	99	70-130
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0865	108	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0801	100	70-130
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0827	103	65-130
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0770	96	60-130
754-91-6	PFOSA	0.08	0.0804	101	70-130
2355-31-9	MeFOSAA	0.08	0.0792	99	70-130
2991-50-6	EtFOSAA	0.08	0.0781	98	70-130
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0827	103	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0824	103	70-130
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0820	103	70-130
13252-13-6	HFPO-DA (GenX)	0.08	0.0797	100	70-130
919005-14-4	ADONA	0.08	0.0803	100	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0683	85	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0743	93	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	99%	35-135%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	99%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-BS	3Q37971.D	1	05/15/21	NG	05/11/21	OP85344	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	98%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	87%	40-140%
	13C2-PFDoDA	88%	40-140%
	13C2-PFTeDA	91%	30-130%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	80%	50-150%
	13C8-FOSA	92%	30-130%
	d3-MeFOSAA	92%	40-140%
	d5-EtFOSAA	96%	40-140%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	90%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-BS	3Q38324.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0719	90	70-130
2706-90-3	Perfluoropentanoic acid	0.08	0.0703	88	70-130
307-24-4	Perfluorohexanoic acid	0.08	0.0718	90	70-130
375-85-9	Perfluoroheptanoic acid	0.08	0.0691	86	70-130
335-67-1	Perfluorooctanoic acid	0.08	0.0692	87	70-130
375-95-1	Perfluorononanoic acid	0.08	0.0695	87	70-130
335-76-2	Perfluorodecanoic acid	0.08	0.0697	87	70-130
2058-94-8	Perfluoroundecanoic acid	0.08	0.0712	89	70-130
307-55-1	Perfluorododecanoic acid	0.08	0.0705	88	70-130
72629-94-8	Perfluorotridecanoic acid	0.08	0.0491	61	60-140
376-06-7	Perfluorotetradecanoic acid	0.08	0.0701	88	70-130
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0700	88	70-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0711	89	70-130
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0713	89	70-130
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0737	92	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0690	86	70-130
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0734	92	65-130
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0709	89	60-130
754-91-6	PFOSA	0.08	0.0694	87	70-130
2355-31-9	MeFOSAA	0.08	0.0743	93	70-130
2991-50-6	EtFOSAA	0.08	0.0696	87	70-130
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0728	91	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0747	93	70-130
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0738	92	70-130
13252-13-6	HFPO-DA (GenX)	0.08	0.0710	89	70-130
919005-14-4	ADONA	0.08	0.0711	89	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0627	78	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0644	81	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	36%	35-135%
	13C5-PFPeA	36%*	50-150%
	13C5-PFHxA	36%*	50-150%
	13C4-PFHpA	37%*	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-BS	3Q38324.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	38%*	50-150%
	13C9-PFNA	39%*	50-150%
	13C6-PFDA	38%*	50-150%
	13C7-PFUnDA	37%*	40-140%
	13C2-PFDoDA	38%*	40-140%
	13C2-PFTeDA	62%	30-130%
	13C3-PFBS	36%*	50-150%
	13C3-PFHxS	36%*	50-150%
	13C8-PFOS	37%*	50-150%
	13C8-FOSA	39%	30-130%
	d3-MeFOSAA	40%	40-140%
	d5-EtFOSAA	40%	40-140%
	13C2-4:2FTS	36%*	50-150%
	13C2-6:2FTS	38%*	50-150%
	13C2-8:2FTS	39%*	50-150%
	13C3-HFPO-DA	37%*	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-MS	3Q37976.D	5	05/15/21	NG	05/11/21	OP85344	S3Q559
FA85196-1	3Q38020.D	1	05/17/21	NG	05/11/21	OP85344	S3Q560
FA85196-1	3Q37975.D	5	05/15/21	NG	05/11/21	OP85344	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	Compound	FA85196-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	ND		0.0714	0.0684	96	70-130
2706-90-3	Perfluoropentanoic acid	ND		0.0714	0.0696	97	70-130
307-24-4	Perfluorohexanoic acid	ND		0.0714	0.0692	97	70-130
375-85-9	Perfluoroheptanoic acid	ND		0.0714	0.0680	95	70-130
335-67-1	Perfluorooctanoic acid	0.0018		0.0714	0.0726	99	70-130
375-95-1	Perfluorononanoic acid	ND		0.0714	0.0677	95	70-130
335-76-2	Perfluorodecanoic acid	ND		0.0714	0.0664	93	70-130
2058-94-8	Perfluoroundecanoic acid	ND		0.0714	0.0699	98	70-130
307-55-1	Perfluorododecanoic acid	ND		0.0714	0.0709	99	70-130
72629-94-8	Perfluorotridecanoic acid	ND		0.0714	0.0703	98	60-140
376-06-7	Perfluorotetradecanoic acid	ND		0.0714	0.0703	98	70-130
375-73-5	Perfluorobutanesulfonic acid	0.0029		0.0714	0.0708	95	70-130
2706-91-4	Perfluoropentanesulfonic acid	0.0063		0.0714	0.0760	98	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0844		0.0714	0.138	75	70-130
375-92-8	Perfluoroheptanesulfonic acid	0.0109		0.0714	0.0890	109	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.402	b	0.0714	0.594	269*	a 70-130
68259-12-1	Perfluorononanesulfonic acid	ND		0.0714	0.0707	99	65-130
335-77-3	Perfluorodecanesulfonic acid	ND		0.0714	0.0650	91	60-130
754-91-6	PFOSA	ND		0.0714	0.0686	96	70-130
2355-31-9	MeFOSAA	ND		0.0714	0.0687	96	70-130
2991-50-6	EtFOSAA	ND		0.0714	0.0711	100	70-130
757124-72-4	4:2 Fluorotelomer sulfonate	ND		0.0714	0.0728	102	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.0714	0.0715	100	70-130
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.0714	0.0732	102	70-130
13252-13-6	HFPO-DA (GenX)	ND		0.0714	0.0711	100	70-130
919005-14-4	ADONA	ND		0.0714	0.0671	94	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND		0.0714	0.0580	81	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND		0.0714	0.0636	89	60-140

CAS No.	ID Standard Recoveries	MS	FA85196-1	FA85196-1	Limits
	13C4-PFBA	87%	75%	84%	35-135%
	13C5-PFPeA	87%	74%	84%	50-150%
	13C5-PFHxA	87%	75%	83%	50-150%
	13C4-PFHpA	91%	77%	87%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-MS	3Q37976.D	5	05/15/21	NG	05/11/21	OP85344	S3Q559
FA85196-1	3Q38020.D	1	05/17/21	NG	05/11/21	OP85344	S3Q560
FA85196-1	3Q37975.D	5	05/15/21	NG	05/11/21	OP85344	S3Q559

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	ID Standard Recoveries	MS	FA85196-1	FA85196-1	Limits
	13C8-PFOA	91%	77%	87%	50-150%
	13C9-PFNA	92%	73%	84%	50-150%
	13C6-PFDA	89%	73%	83%	50-150%
	13C7-PFUnDA	81%	70%	77%	40-140%
	13C2-PFDoDA	76%	64%	71%	40-140%
	13C2-PFTeDA	73%	62%	70%	30-130%
	13C3-PFBS	91%	75%	86%	50-150%
	13C3-PFHxS	89%	71%	83%	50-150%
	13C8-PFOS	80%	64%	77%	50-150%
	13C8-FOSA	90%	64%	75%	30-130%
	d3-MeFOSAA	91%	72%	88%	40-140%
	d5-EtFOSAA	89%	75%	87%	40-140%
	13C2-4:2FTS	92%	72%	83%	50-150%
	13C2-6:2FTS	98%	73%	85%	50-150%
	13C2-8:2FTS	89%	71%	77%	50-150%
	13C3-HFPO-DA	81%	69%	77%	50-150%

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-MS	3Q38332.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563
FA85474-1 [a]	3Q38331.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	Compound	FA85474-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0075		0.0714	0.0704	88	70-130
2706-90-3	Perfluoropentanoic acid	0.0067		0.0714	0.0693	88	70-130
307-24-4	Perfluorohexanoic acid	0.0143		0.0714	0.0764	87	70-130
375-85-9	Perfluoroheptanoic acid	0.0023		0.0714	0.0660	89	70-130
335-67-1	Perfluorooctanoic acid	0.0070		0.0714	0.0675	85	70-130
375-95-1	Perfluorononanoic acid	0.0012		0.0714	0.0641	88	70-130
335-76-2	Perfluorodecanoic acid	0.0012		0.0714	0.0655	90	70-130
2058-94-8	Perfluoroundecanoic acid	ND		0.0714	0.0647	91	70-130
307-55-1	Perfluorododecanoic acid	ND		0.0714	0.0637	89	70-130
72629-94-8	Perfluorotridecanoic acid	ND		0.0714	0.0758	106	60-140
376-06-7	Perfluorotetradecanoic acid	ND		0.0714	0.0629	88	70-130
375-73-5	Perfluorobutanesulfonic acid	0.347		0.0714	0.347	0* [b]	70-130
2706-91-4	Perfluoropentanesulfonic acid	ND		0.0714	0.0682	95	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0171		0.0714	0.0802	88	70-130
375-92-8	Perfluoroheptanesulfonic acid	0.0016		0.0714	0.0697	95	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.0645		0.0714	0.123	82	70-130
68259-12-1	Perfluorononanesulfonic acid	ND		0.0714	0.0650	91	65-130
335-77-3	Perfluorodecanesulfonic acid	ND		0.0714	0.0611	86	60-130
754-91-6	PFOSA	ND		0.0714	0.0652	91	70-130
2355-31-9	MeFOSAA	0.0026		0.0714	0.0695	94	70-130
2991-50-6	EtFOSAA	ND		0.0714	0.0653	91	70-130
757124-72-4	4:2 Fluorotelomer sulfonate	ND		0.0714	0.0662	93	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.0021		0.0714	0.0687	93	70-130
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.0714	0.0691	97	70-130
13252-13-6	HFPO-DA (GenX)	ND		0.0714	0.0673	94	70-130
919005-14-4	ADONA	ND		0.0714	0.0616	86	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND		0.0714	0.0600	84	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND		0.0714	0.0569	80	60-140

CAS No.	ID Standard Recoveries	MS	FA85474-1	Limits
	13C4-PFBA	75%	68%	35-135%
	13C5-PFPeA	78%	71%	50-150%
	13C5-PFHxA	82%	74%	50-150%
	13C4-PFHpA	86%	79%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-MS	3Q38332.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563
FA85474-1 [a]	3Q38331.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	ID Standard Recoveries	MS	FA85474-1	Limits
	13C8-PFOA	93%	84%	50-150%
	13C9-PFNA	97%	88%	50-150%
	13C6-PFDA	94%	85%	50-150%
	13C7-PFUnDA	83%	89%	40-140%
	13C2-PFDoDA	86%	90%	40-140%
	13C2-PFTeDA	69%	60%	30-130%
	13C3-PFBS	81%	67%	50-150%
	13C3-PFHxS	88%	80%	50-150%
	13C8-PFOS	90%	80%	50-150%
	13C8-FOSA	86%	83%	30-130%
	d3-MeFOSAA	110%	103%	40-140%
	d5-EtFOSAA	138%	137%	40-140%
	13C2-4:2FTS	94%	81%	50-150%
	13C2-6:2FTS	107%	95%	50-150%
	13C2-8:2FTS	110%	96%	50-150%
	13C3-HFPO-DA	80%	74%	50-150%

(a) Associated BS ID recovery standard outside control limits. Insufficient sample to re-extract.
(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-DUP	3Q38010.D	1.12	05/17/21	NG	05/11/21	OP85344	S3Q560
FA85196-2 [a]	3Q38009.D	1.12	05/17/21	NG	05/11/21	OP85344	S3Q560

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	Compound	FA85196-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0068		0.0070		3	30
2706-90-3	Perfluoropentanoic acid	0.0104		0.0104		0	30
307-24-4	Perfluorohexanoic acid	0.0112		0.0113		1	30
375-85-9	Perfluoroheptanoic acid	0.0057		0.0058		2	30
335-67-1	Perfluorooctanoic acid	0.0088		0.0089		1	30
375-95-1	Perfluorononanoic acid	ND		ND		nc	30
335-76-2	Perfluorodecanoic acid	ND		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	ND		ND		nc	30
307-55-1	Perfluorododecanoic acid	ND		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	ND		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	ND		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0126		0.0138		9	30
2706-91-4	Perfluoropentanesulfonic acid	0.0170		0.0175		3	30
355-46-4	Perfluorohexanesulfonic acid	0.0904		0.0958		6	30
375-92-8	Perfluoroheptanesulfonic acid	0.0035		0.0036		3	30
1763-23-1	Perfluorooctanesulfonic acid	0.0636		0.0653		3	30
68259-12-1	Perfluorononanesulfonic acid	ND		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	ND		ND		nc	30
754-91-6	PFOSA	ND		ND		nc	30
2355-31-9	MeFOSAA	ND		ND		nc	30
2991-50-6	EtFOSAA	ND		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	ND		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0223		0.0224		0	30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		ND		nc	30
13252-13-6	HFPO-DA (GenX)	ND		ND		nc	30
919005-14-4	ADONA	ND		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA85196-2	Limits
	13C4-PFBA	77%	81%	35-135%
	13C5-PFPeA	78%	81%	50-150%
	13C5-PFHxA	78%	81%	50-150%
	13C4-PFHpA	83%	85%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85344-DUP	3Q38010.D	1.12	05/17/21	NG	05/11/21	OP85344	S3Q560
FA85196-2 [a]	3Q38009.D	1.12	05/17/21	NG	05/11/21	OP85344	S3Q560

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-1, FA85196-2, FA85196-3, FA85196-4, FA85196-5, FA85196-6, FA85196-7, FA85196-9, FA85196-10, FA85196-11, FA85196-12, FA85196-13

CAS No.	ID Standard Recoveries	DUP	FA85196-2	Limits
	13C8-PFOA	87%	89%	50-150%
	13C9-PFNA	88%	90%	50-150%
	13C6-PFDA	88%	92%	50-150%
	13C7-PFUnDA	83%	89%	40-140%
	13C2-PFDoDA	72%	79%	40-140%
	13C2-PFTeDA	67%	74%	30-130%
	13C3-PFBS	77%	80%	50-150%
	13C3-PFHxS	79%	83%	50-150%
	13C8-PFOS	82%	85%	50-150%
	13C8-FOSA	82%	82%	30-130%
	d3-MeFOSAA	93%	92%	40-140%
	d5-EtFOSAA	90%	93%	40-140%
	13C2-4:2FTS	75%	79%	50-150%
	13C2-6:2FTS	84%	87%	50-150%
	13C2-8:2FTS	83%	86%	50-150%
	13C3-HFPO-DA	73%	75%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-DUP	3Q38339.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563
FA85499-1 [a]	3Q38338.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	Compound	FA85499-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0396		0.0387		2	30
2706-90-3	Perfluoropentanoic acid	0.0570		0.0545		4	30
307-24-4	Perfluorohexanoic acid	0.0703		0.0673		4	30
375-85-9	Perfluoroheptanoic acid	0.0456		0.0449		2	30
335-67-1	Perfluorooctanoic acid	0.134		0.127		5	30
375-95-1	Perfluorononanoic acid	0.0311		0.0302		3	30
335-76-2	Perfluorodecanoic acid	0.0560		0.0526		6	30
2058-94-8	Perfluoroundecanoic acid	0.0038		0.0034		11	30
307-55-1	Perfluorododecanoic acid	0.0122		0.0091		29	30
72629-94-8	Perfluorotridecanoic acid	ND		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0018		0.0011	J	48*	30
375-73-5	Perfluorobutanesulfonic acid	0.0071		0.0061		15	30
2706-91-4	Perfluoropentanesulfonic acid	0.0036		0.0031		15	30
355-46-4	Perfluorohexanesulfonic acid	0.0193		0.0179		8	30
375-92-8	Perfluoroheptanesulfonic acid	ND		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0091		0.0085		7	30
68259-12-1	Perfluorononanesulfonic acid	ND		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	ND		ND		nc	30
754-91-6	PFOSA	ND		ND		nc	30
2355-31-9	MeFOSAA	ND		ND		nc	30
2991-50-6	EtFOSAA	ND		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	ND		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		ND		nc	30
13252-13-6	HFPO-DA (GenX)	ND		ND		nc	30
919005-14-4	ADONA	ND		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA85499-1	Limits
	13C4-PFBA	69%	69%	35-135%
	13C5-PFPeA	65%	66%	50-150%
	13C5-PFHxA	69%	69%	50-150%
	13C4-PFHpA	69%	69%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA85196
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85474-DUP	3Q38339.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563
FA85499-1 [a]	3Q38338.D	1	05/22/21	NG	05/19/21	OP85474	S3Q563

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85196-8

CAS No.	ID Standard Recoveries	DUP	FA85499-1	Limits
	13C8-PFOA	78%	78%	50-150%
	13C9-PFNA	81%	83%	50-150%
	13C6-PFDA	73%	71%	50-150%
	13C7-PFUnDA	77%	62%	40-140%
	13C2-PFDoDA	80%	49%	40-140%
	13C2-PFTeDA	66%	30%	30-130%
	13C3-PFBS	70%	68%	50-150%
	13C3-PFHxS	71%	71%	50-150%
	13C8-PFOS	72%	71%	50-150%
	13C8-FOSA	63%	47%	30-130%
	d3-MeFOSAA	86%	78%	40-140%
	d5-EtFOSAA	102%	91%	40-140%
	13C2-4:2FTS	72%	75%	50-150%
	13C2-6:2FTS	81%	86%	50-150%
	13C2-8:2FTS	78%	81%	50-150%
	13C3-HFPO-DA	66%	65%	50-150%

(a) Associated BS ID recovery standard outside control limits. Insufficient sample to re-extract.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

LimnoTech

Pellston Airport, MI

SGS Job Number: FA85396

Sampling Dates: 05/03/21 - 05/07/21

Report to:

LimnoTech
501 Avis Drive
Ann Arbor, MI 48108
sbell@limno.com

ATTN: Scott Bell

Total number of pages in report: 45

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, UT, VT, WA, WV

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SGS North America Inc.

Sample Summary

LimnoTech

Pellston Airport, MI

Job No: FA85396

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
FA85396-1	05/05/21	11:15	OB	05/08/21	AQ	Field Blank Water	FIELD BLANK 02
FA85396-2	05/03/21	13:20	OB	05/08/21	AQ	Ground Water	SB21-03 (106-110)GW
FA85396-3	05/04/21	11:25	OB	05/08/21	AQ	Ground Water	SB21-04 (31-35)GW
FA85396-4	05/04/21	17:30	OB	05/08/21	AQ	Ground Water	SB21-04 (51-55)GW
FA85396-5	05/05/21	10:40	OB	05/08/21	AQ	Ground Water	SB21-04 (61-65)GW
FA85396-6	05/05/21	14:25	OB	05/08/21	AQ	Ground Water	SB21-04 (81-85)GW
FA85396-7	05/05/21	08:20	OB	05/08/21	AQ	Ground Water	SB21-04 (106-110)GW
FA85396-8	05/06/21	17:25	OB	05/08/21	AQ	Ground Water	SB21-02 (16-20)GW
FA85396-9	05/07/21	09:55	OB	05/08/21	AQ	Ground Water	SB21-02 (31-35)GW
FA85396-10	05/07/21	12:28	OB	05/08/21	AQ	Ground Water	SB21-02 (46-50)GW
FA85396-11	05/07/21	00:00	OB	05/08/21	AQ	Ground Water	DUP-GW-C

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: LimnoTech **Job No:** FA85396

Site: Pellston Airport, MI **Report Date** 5/28/2021 12:37:01

10 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were collected on between 05/03/2021 and 05/07/2021 and were received at SGS North America Inc - Orlando on 05/08/2021 properly preserved, at 0.2 Deg. C and intact. These Samples received an SGS Orlando job number of FA85396. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537M BY ID

Matrix: AQ **Batch ID:** OP85440

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA85389-2MS, FA85389-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Sample(s) FA85396-2 have surrogates outside control limits.

FA85396-2 for d3-MeFOSAA: Outside control limits.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA85396
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 05/03/21 thru 05/07/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA85396-1	**FIELD BLANK 02**					
No hits reported in this sample.						
FA85396-2	**SB21-03 (106-110)GW**					
Perfluorobutanoic acid		1.8 J	3.6	1.8	ng/l	EPA 537M BY ID
FA85396-3	**SB21-04 (31-35)GW**					
Perfluorobutanoic acid		2.8 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		2.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		5.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		2.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		10.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		10.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		15.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		145	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		9.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		43.4	1.8	0.89	ng/l	EPA 537M BY ID
FA85396-4	**SB21-04 (51-55)GW**					
Perfluorobutanoic acid		15.5	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		27.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		38.0	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		40.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		102	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		4.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorodecanoic acid		2.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		12.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		36.0	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		784	8.9	4.5	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		8.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		353	1.8	0.89	ng/l	EPA 537M BY ID
PFOSA		7.6	3.6	1.8	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		4.3 J	7.1	1.8	ng/l	EPA 537M BY ID
8:2 Fluorotelomer sulfonate		4.6 J	7.1	1.8	ng/l	EPA 537M BY ID
FA85396-5	**SB21-04 (61-65)GW**					
Perfluorobutanoic acid		12.0	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		20.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		28.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		30.2	1.8	0.89	ng/l	EPA 537M BY ID

Summary of Hits

Job Number: FA85396
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 05/03/21 thru 05/07/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Perfluorooctanoic acid		85.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		3.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorodecanoic acid		2.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		6.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		13.5	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		350	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		8.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		322	1.8	0.89	ng/l	EPA 537M BY ID
PFOSA		6.6	3.6	1.8	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		4.2 J	7.1	1.8	ng/l	EPA 537M BY ID
8:2 Fluorotelomer sulfonate		6.6 J	7.1	1.8	ng/l	EPA 537M BY ID
FA85396-6	**SB21-04 (81-85)GW**					
Perfluorohexanesulfonic acid		1.5 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		6.0	1.8	0.89	ng/l	EPA 537M BY ID
FA85396-7	**SB21-04 (106-110)GW**					
Perfluorobutanoic acid		1.9 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		2.2	1.8	0.89	ng/l	EPA 537M BY ID
FA85396-8	**SB21-02 (16-20)GW**					
Perfluorobutanoic acid		3.4 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		0.90 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		1.2 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		2.8	1.8	0.89	ng/l	EPA 537M BY ID
FA85396-9	**SB21-02 (31-35)GW**					
Perfluorobutanoic acid		3.5 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		3.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		13.5	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		5.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		33.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		0.97 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		3.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		5.0	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		172	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		11.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		321	1.8	0.89	ng/l	EPA 537M BY ID
PFOSA		170	3.6	1.8	ng/l	EPA 537M BY ID

Summary of Hits

Job Number: FA85396
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 05/03/21 thru 05/07/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA85396-10	**SB21-02 (46-50)GW**					
Perfluorobutanoic acid		5.1	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		2.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		12.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		4.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		35.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		0.97 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		4.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		6.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		196	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		13.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		452	3.6	1.8	ng/l	EPA 537M BY ID
PFOSA		370	7.1	3.6	ng/l	EPA 537M BY ID
FA85396-11	**DUP-GW-C**					
Perfluorobutanoic acid		5.1	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		2.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		13.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		4.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		36.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		1.1 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		4.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		6.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		205	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		14.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		472	3.6	1.8	ng/l	EPA 537M BY ID
PFOSA		379	7.1	3.6	ng/l	EPA 537M BY ID

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	FIELD BLANK 02		
Lab Sample ID:	FA85396-1	**Date Sampled:**	05/05/21
Matrix:	AQ - Field Blank Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38480.D	1	05/24/21 14:49	MV	05/17/21 08:30	OP85440	S3Q565
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FIELD BLANK 02
Lab Sample ID: FA85396-1
Matrix: AQ - Field Blank Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/05/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	96%		35-135%
	13C5-PFPeA	97%		50-150%
	13C5-PFHxA	98%		50-150%
	13C4-PFHpA	99%		50-150%
	13C8-PFOA	103%		50-150%
	13C9-PFNA	101%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	92%		40-140%
	13C2-PFDoDA	88%		40-140%
	13C2-PFTeDA	94%		30-130%
	13C3-PFBS	93%		50-150%
	13C3-PFHxS	92%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	104%		30-130%
	d3-MeFOSAA	107%		40-140%
	d5-EtFOSAA	109%		40-140%
	13C2-4:2FTS	95%		50-150%
	13C2-6:2FTS	97%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	96%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-03 (106-110)GW
Lab Sample ID: FA85396-2
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/03/21
Date Received: 05/08/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38481.D	1	05/24/21 15:06	MV	05/17/21 08:30	OP85440	S3Q565
Run #2	3Q38566.D	5	05/25/21 17:22	MV	05/17/21 08:30	OP85440	S3Q566

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.8	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND [a]	18	8.9	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-03 (106-110)GW
Lab Sample ID: FA85396-2
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/03/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	100%	103%	35-135%
	13C5-PFPeA	104%	107%	50-150%
	13C5-PFHxA	104%	107%	50-150%
	13C4-PFHpA	106%	108%	50-150%
	13C8-PFOA	118%	114%	50-150%
	13C9-PFNA	117%	116%	50-150%
	13C6-PFDA	117%	108%	50-150%
	13C7-PFUnDA	110%	104%	40-140%
	13C2-PFDoDA	104%	98%	40-140%
	13C2-PFTeDA	95%	93%	30-130%
	13C3-PFBS	99%	101%	50-150%
	13C3-PFHxS	102%	103%	50-150%
	13C8-PFOS	104%	102%	50-150%
	13C8-FOSA	127%	129%	30-130%
	d3-MeFOSAA	147% [b]	126%	40-140%
	d5-EtFOSAA	137%	129%	40-140%
	13C2-4:2FTS	105%	101%	50-150%
	13C2-6:2FTS	115%	110%	50-150%
	13C2-8:2FTS	111%	103%	50-150%
	13C3-HFPO-DA	97%	99%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-04 (31-35)GW
Lab Sample ID: FA85396-3
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/04/21
Date Received: 05/08/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38482.D	1	05/24/21 15:22	MV	05/17/21 08:30	OP85440	S3Q565
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	2.8	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	2.4	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	5.2	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	2.9	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	10.3	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	10.4	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	15.6	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	145	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	9.3	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	43.4	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-04 (31-35)GW		
Lab Sample ID:	FA85396-3	**Date Sampled:**	05/04/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%		35-135%
	13C5-PFPeA	88%		50-150%
	13C5-PFHxA	88%		50-150%
	13C4-PFHpA	89%		50-150%
	13C8-PFOA	95%		50-150%
	13C9-PFNA	95%		50-150%
	13C6-PFDA	90%		50-150%
	13C7-PFUnDA	86%		40-140%
	13C2-PFDoDA	80%		40-140%
	13C2-PFTeDA	77%		30-130%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	100%		30-130%
	d3-MeFOSAA	105%		40-140%
	d5-EtFOSAA	103%		40-140%
	13C2-4:2FTS	87%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	84%		50-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-04 (51-55)GW
Lab Sample ID: FA85396-4
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/04/21
Date Received: 05/08/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38483.D	1	05/24/21 15:39	MV	05/17/21 08:30	OP85440	S3Q565
Run #2	3Q38567.D	5	05/25/21 17:38	MV	05/17/21 08:30	OP85440	S3Q566

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	15.5	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	27.1	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	38.0	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	40.1	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	102	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	4.1	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	2.3	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	12.1	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	36.0	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	784 [a]	8.9	4.5	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	8.3	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	353	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	7.6	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	4.3	7.1	1.8	ng/l	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-04 (51-55)GW
Lab Sample ID: FA85396-4
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/04/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	4.6	7.1	1.8	ng/l	J
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%	81%	35-135%
	13C5-PFPeA	74%	84%	50-150%
	13C5-PFHxA	73%	83%	50-150%
	13C4-PFHpA	72%	84%	50-150%
	13C8-PFOA	76%	88%	50-150%
	13C9-PFNA	77%	84%	50-150%
	13C6-PFDA	76%	82%	50-150%
	13C7-PFUnDA	74%	77%	40-140%
	13C2-PFDoDA	70%	74%	40-140%
	13C2-PFTeDA	67%	71%	30-130%
	13C3-PFBS	71%	82%	50-150%
	13C3-PFHxS	66%	81%	50-150%
	13C8-PFOS	68%	78%	50-150%
	13C8-FOSA	84%	95%	30-130%
	d3-MeFOSAA	95%	96%	40-140%
	d5-EtFOSAA	94%	98%	40-140%
	13C2-4:2FTS	73%	79%	50-150%
	13C2-6:2FTS	76%	85%	50-150%
	13C2-8:2FTS	76%	78%	50-150%
	13C3-HFPO-DA	67%	80%	50-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-04 (61-65)GW		
Lab Sample ID:	FA85396-5	**Date Sampled:**	05/05/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38568.D	1	05/25/21 17:55	MV	05/17/21 08:30	OP85440	S3Q566
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	12.0	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	20.2	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	28.8	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	30.2	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	85.6	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	3.4	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	2.4	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	6.9	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	13.5	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	350	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	8.6	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	322	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	6.6	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	4.2	7.1	1.8	ng/l	J

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-04 (61-65)GW
Lab Sample ID: FA85396-5
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/05/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	6.6	7.1	1.8	ng/l	J
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		35-135%
	13C5-PFPeA	65%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	63%		50-150%
	13C8-PFOA	68%		50-150%
	13C9-PFNA	66%		50-150%
	13C6-PFDA	62%		50-150%
	13C7-PFUnDA	51%		40-140%
	13C2-PFDoDA	44%		40-140%
	13C2-PFTeDA	37%		30-130%
	13C3-PFBS	61%		50-150%
	13C3-PFHxS	59%		50-150%
	13C8-PFOS	55%		50-150%
	13C8-FOSA	69%		30-130%
	d3-MeFOSAA	69%		40-140%
	d5-EtFOSAA	68%		40-140%
	13C2-4:2FTS	65%		50-150%
	13C2-6:2FTS	67%		50-150%
	13C2-8:2FTS	60%		50-150%
	13C3-HFPO-DA	58%		50-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-04 (81-85)GW		
Lab Sample ID:	FA85396-6	**Date Sampled:**	05/05/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38487.D	1	05/24/21 16:45	MV	05/17/21 08:30	OP85440	S3Q565
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.5	1.8	0.89	ng/l	J
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	6.0	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-04 (81-85)GW		
Lab Sample ID:	FA85396-6	**Date Sampled:**	05/05/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%		35-135%
	13C5-PFPeA	86%		50-150%
	13C5-PFHxA	86%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	96%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	85%		50-150%
	13C7-PFUnDA	70%		40-140%
	13C2-PFDoDA	60%		40-140%
	13C2-PFTeDA	51%		30-130%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	100%		30-130%
	d3-MeFOSAA	93%		40-140%
	d5-EtFOSAA	80%		40-140%
	13C2-4:2FTS	88%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	80%		50-150%
	13C3-HFPO-DA	79%		50-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-04 (106-110)GW
Lab Sample ID: FA85396-7
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/05/21
Date Received: 05/08/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38488.D	1	05/24/21 17:02	MV	05/17/21 08:30	OP85440	S3Q565
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	1.9	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	2.2	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-04 (106-110)GW
Lab Sample ID: FA85396-7
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/05/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		35-135%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	91%		50-150%
	13C9-PFNA	93%		50-150%
	13C6-PFDA	88%		50-150%
	13C7-PFUnDA	79%		40-140%
	13C2-PFDoDA	73%		40-140%
	13C2-PFTeDA	60%		30-130%
	13C3-PFBS	78%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	84%		50-150%
	13C8-FOSA	97%		30-130%
	d3-MeFOSAA	115%		40-140%
	d5-EtFOSAA	100%		40-140%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	85%		50-150%
	13C3-HFPO-DA	77%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-02 (16-20)GW
Lab Sample ID: FA85396-8
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/06/21
Date Received: 05/08/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38489.D	1	05/24/21 17:19	MV	05/17/21 08:30	OP85440	S3Q565
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	3.4	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	0.90	1.8	0.89	ng/l	J
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	1.2	1.8	0.89	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	2.8	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-02 (16-20)GW		
Lab Sample ID:	FA85396-8	**Date Sampled:**	05/06/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		35-135%
	13C5-PFPeA	90%		50-150%
	13C5-PFHxA	91%		50-150%
	13C4-PFHpA	92%		50-150%
	13C8-PFOA	102%		50-150%
	13C9-PFNA	102%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	88%		40-140%
	13C2-PFDoDA	84%		40-140%
	13C2-PFTeDA	81%		30-130%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	104%		30-130%
	d3-MeFOSAA	135%		40-140%
	d5-EtFOSAA	92%		40-140%
	13C2-4:2FTS	90%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	92%		50-150%
	13C3-HFPO-DA	87%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-02 (31-35)GW
Lab Sample ID: FA85396-9
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/07/21
Date Received: 05/08/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38490.D	1	05/24/21 17:35	MV	05/17/21 08:30	OP85440	S3Q565
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	3.5	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	3.8	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	13.5	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	5.6	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	33.4	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	0.97	1.8	0.89	ng/l	J
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	3.2	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	5.0	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	172	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	11.3	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	321	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	170	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-02 (31-35)GW
Lab Sample ID: FA85396-9
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/07/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		35-135%
	13C5-PFPeA	90%		50-150%
	13C5-PFHxA	91%		50-150%
	13C4-PFHpA	91%		50-150%
	13C8-PFOA	99%		50-150%
	13C9-PFNA	99%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	88%		40-140%
	13C2-PFDoDA	84%		40-140%
	13C2-PFTeDA	88%		30-130%
	13C3-PFBS	88%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	95%		30-130%
	d3-MeFOSAA	114%		40-140%
	d5-EtFOSAA	95%		40-140%
	13C2-4:2FTS	90%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	88%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-02 (46-50)GW		
Lab Sample ID:	FA85396-10	**Date Sampled:**	05/07/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38491.D	1	05/24/21 17:52	MV	05/17/21 08:30	OP85440	S3Q565
Run #2	3Q38569.D	2	05/25/21 18:12	MV	05/17/21 08:30	OP85440	S3Q566

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	5.1	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	2.3	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	12.4	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	4.1	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	35.9	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	0.97	1.8	0.89	ng/l	J
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	4.6	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	6.2	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	196	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	13.7	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	452 [a]	3.6	1.8	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	370 [a]	7.1	3.6	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-02 (46-50)GW
Lab Sample ID: FA85396-10
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/07/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%	81%	35-135%
	13C5-PFPeA	82%	82%	50-150%
	13C5-PFHxA	82%	83%	50-150%
	13C4-PFHpA	82%	84%	50-150%
	13C8-PFOA	91%	91%	50-150%
	13C9-PFNA	92%	91%	50-150%
	13C6-PFDA	89%	88%	50-150%
	13C7-PFUnDA	83%	82%	40-140%
	13C2-PFDoDA	79%	80%	40-140%
	13C2-PFTeDA	78%	89%	30-130%
	13C3-PFBS	77%	81%	50-150%
	13C3-PFHxS	79%	79%	50-150%
	13C8-PFOS	81%	82%	50-150%
	13C8-FOSA	84%	92%	30-130%
	d3-MeFOSAA	111%	105%	40-140%
	d5-EtFOSAA	94%	93%	40-140%
	13C2-4:2FTS	80%	79%	50-150%
	13C2-6:2FTS	87%	86%	50-150%
	13C2-8:2FTS	85%	83%	50-150%
	13C3-HFPO-DA	76%	75%	50-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-GW-C		
Lab Sample ID:	FA85396-11	**Date Sampled:**	05/07/21
Matrix:	AQ - Ground Water	**Date Received:**	05/08/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q38492.D	1	05/24/21 18:08	MV	05/17/21 08:30	OP85440	S3Q565
Run #2	3Q38572.D	2	05/25/21 19:01	MV	05/17/21 08:30	OP85440	S3Q566

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	5.1	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	2.3	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	13.1	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	4.2	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	36.2	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	1.1	1.8	0.89	ng/l	J
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	4.9	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	6.6	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	205	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	14.9	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	472 [a]	3.6	1.8	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	379 [a]	7.1	3.6	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-GW-C
Lab Sample ID: FA85396-11
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/07/21
Date Received: 05/08/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%	93%	35-135%
	13C5-PFPeA	86%	94%	50-150%
	13C5-PFHxA	86%	94%	50-150%
	13C4-PFHpA	86%	94%	50-150%
	13C8-PFOA	94%	102%	50-150%
	13C9-PFNA	93%	101%	50-150%
	13C6-PFDA	90%	98%	50-150%
	13C7-PFUnDA	84%	90%	40-140%
	13C2-PFDoDA	79%	85%	40-140%
	13C2-PFTeDA	84%	91%	30-130%
	13C3-PFBS	82%	91%	50-150%
	13C3-PFHxS	82%	89%	50-150%
	13C8-PFOS	80%	89%	50-150%
	13C8-FOSA	79%	95%	30-130%
	d3-MeFOSAA	113%	117%	40-140%
	d5-EtFOSAA	95%	106%	40-140%
	13C2-4:2FTS	84%	91%	50-150%
	13C2-6:2FTS	89%	98%	50-150%
	13C2-8:2FTS	85%	92%	50-150%
	13C3-HFPO-DA	78%	87%	50-150%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

Parameter Certification Exceptions

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
4:2 Fluorotelomer sulfonate	757124-72-4	EPA 537M BY ID	AQ	Certified by SOP MS014
6:2 Fluorotelomer sulfonate	27619-97-2	EPA 537M BY ID	AQ	Certified by SOP MS014
8:2 Fluorotelomer sulfonate	39108-34-4	EPA 537M BY ID	AQ	Certified by SOP MS014
ADONA	919005-14-4	EPA 537M BY ID	AQ	Certified by SOP MS014
11Cl-PF3OUdS (F-53B Minor)	763051-92-9	EPA 537M BY ID	AQ	Certified by SOP MS014
9Cl-PF3ONS (F-53B Major)	756426-58-1	EPA 537M BY ID	AQ	Certified by SOP MS014
EtFOSAA	2991-50-6	EPA 537M BY ID	AQ	Certified by SOP MS014
HFPO-DA (GenX)	13252-13-6	EPA 537M BY ID	AQ	Certified by SOP MS014
MeFOSAA	2355-31-9	EPA 537M BY ID	AQ	Certified by SOP MS014
PFOSA	754-91-6	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorobutanesulfonic acid	375-73-5	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorobutanoic acid	375-22-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorodecanesulfonic acid	335-77-3	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorodecanoic acid	335-76-2	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorododecanoic acid	307-55-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroheptanesulfonic acid	375-92-8	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroheptanoic acid	375-85-9	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorohexanesulfonic acid	355-46-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorohexanoic acid	307-24-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorononanesulfonic acid	68259-12-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorononanoic acid	375-95-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorooctanesulfonic acid	1763-23-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorooctanoic acid	335-67-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoropentanesulfonic acid	2706-91-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoropentanoic acid	2706-90-3	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorotetradecanoic acid	376-06-7	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorotridecanoic acid	72629-94-8	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroundecanoic acid	2058-94-8	EPA 537M BY ID	AQ	Certified by SOP MS014

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

FA85396
SGS - ORLANDO JOB # :

PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH
Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed) Sampler 1: BLEHA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN (PHASE 2 INVESTIGATION) PFAS
Fax #
Client Purchase Order #

Analytical Information

PFAS (LIST OF 28)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	CONTAINER INFORMATION MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	PFAS (LIST OF 28)	LAB USE ONLY
1	FIELD BLANK 02	5/5/21	1115	LTI	WW	2		X								X	
2	SB21-03 (106-110) GW	5/3/21	1320	LTI	GW	2		X								X	
3	SB21-04 (31-35) GW	5/4/21	1125	LTI	GW	2		X								X	
4	SB21-04 (51-55) GW	5/4/21	1730	LTI	GW	2		X								X	
5	SB21-04 (61-65) GW	5/5/21	1040	LTI	GW	2		X								X	
6	SB21-04 (81-85) GW	5/5/21	1425	LTI	GW	2		X								X	
7	SB21-04 (106-110) GW	5/5/21	1820	LTI	GW	2		X								X	
8	SB21-02 (16-20) GW	5/6/21	1725	LTI	GW	2		X								X	
9	SB21-02 (31-35) GW	5/7/21	0955	LTI	GW	2		X								X	
10	SB21-02 (46-50) GW	5/7/21	1228	LTI	GW	2		X								X	
11	DUP-GW-C	5/7/21	—	LTI	GW	2		X								X	

INITIAL ASSESSMENT GAM
LABEL VERIFICATION CM

Turnaround Time (Business days)

10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Approved By: / Date:
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	LIMNOTECH	5/7/21 1330	2 FX	3 FX	9/8/21	4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time: 10/0	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 0.2 IR#4

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

SGS Sample Receipt Summary

Job Number: FA85396 **Client:** LIMNOTECH **Project:** PLN

Date / Time Received: 5/8/2021 10:10:00 AM **Delivery Method:** FX **Airbill #'s:** 5061 4506 4490

Therm ID: IR 1; **Therm CF:** -1.8; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (0.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 5/8/2021 10:10:00 AM Reviewer: _____ Date: _____

FA85396: Chain of Custody
Page 2 of 2

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85440-MB	3Q38478.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-5, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0040	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	35-135%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	91%	50-150%

Method Blank Summary

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85440-MB	3Q38478.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-5, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	95%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	91%	40-140%
	13C2-PFDoDA	88%	40-140%
	13C2-PFTeDA	87%	30-130%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	100%	30-130%
	d3-MeFOSAA	109%	40-140%
	d5-EtFOSAA	112%	40-140%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	90%	50-150%

Instrument Blank

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q565-IBLK	3Q38472.D	1	05/24/21	MV	n/a	n/a	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	88%	50-150%
	13C4-PFHpA	89%	50-150%

Instrument Blank

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q565-IBLK	3Q38472.D	1	05/24/21	MV	n/a	n/a	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	93%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	104%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	88%	50-150%

Instrument Blank

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q566-IBLK	3Q38545.D	1	05/25/21	MV	n/a	n/a	S3Q566

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85396-2, FA85396-4, FA85396-5, FA85396-10, FA85396-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	91%	50-150%

Instrument Blank

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q566-IBLK	3Q38545.D	1	05/25/21	MV	n/a	n/a	S3Q566

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85396-2, FA85396-4, FA85396-5, FA85396-10, FA85396-11

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	94%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	117%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	88%	50-150%

Blank Spike Summary

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85440-BS	3Q38477.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-5, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0816	102	70-130
2706-90-3	Perfluoropentanoic acid	0.08	0.0786	98	70-130
307-24-4	Perfluorohexanoic acid	0.08	0.0808	101	70-130
375-85-9	Perfluoroheptanoic acid	0.08	0.0787	98	70-130
335-67-1	Perfluorooctanoic acid	0.08	0.0766	96	70-130
375-95-1	Perfluorononanoic acid	0.08	0.0774	97	70-130
335-76-2	Perfluorodecanoic acid	0.08	0.0804	101	70-130
2058-94-8	Perfluoroundecanoic acid	0.08	0.0803	100	70-130
307-55-1	Perfluorododecanoic acid	0.08	0.0792	99	70-130
72629-94-8	Perfluorotridecanoic acid	0.08	0.0793	99	60-140
376-06-7	Perfluorotetradecanoic acid	0.08	0.0778	97	70-130
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0786	98	70-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0801	100	70-130
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0819	102	70-130
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0839	105	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0794	99	70-130
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0827	103	65-130
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0736	92	60-130
754-91-6	PFOSA	0.08	0.0791	99	70-130
2355-31-9	MeFOSAA	0.08	0.0793	99	70-130
2991-50-6	EtFOSAA	0.08	0.0801	100	70-130
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0810	101	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0812	102	70-130
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0825	103	70-130
13252-13-6	HFPO-DA (GenX)	0.08	0.0816	102	70-130
919005-14-4	ADONA	0.08	0.0834	104	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0750	94	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0767	96	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	87%	35-135%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	87%	50-150%
	13C4-PFHpA	87%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85440-BS	3Q38477.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-5, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	91%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	90%	40-140%
	13C2-PFDoDA	87%	40-140%
	13C2-PFTeDA	83%	30-130%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	92%	30-130%
	d3-MeFOSAA	108%	40-140%
	d5-EtFOSAA	107%	40-140%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	87%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85440-MS	3Q38500.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565
OP85440-MSD	3Q38501.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565
FA85389-2	3Q38499.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-5, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	Compound	FA85389-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0080	U	0.08	0.0826	103	0.08	0.0835	104	1	70-130/30
2706-90-3	Perfluoropentanoic acid	0.0040	U	0.08	0.0799	100	0.08	0.0806	101	1	70-130/30
307-24-4	Perfluorohexanoic acid	0.0040	U	0.08	0.0818	102	0.08	0.0824	103	1	70-130/30
375-85-9	Perfluoroheptanoic acid	0.0040	U	0.08	0.0814	102	0.08	0.0812	102	0	70-130/30
335-67-1	Perfluorooctanoic acid	0.0040	U	0.08	0.0788	99	0.08	0.0785	98	0	70-130/30
375-95-1	Perfluorononanoic acid	0.0040	U	0.08	0.0782	98	0.08	0.0795	99	2	70-130/30
335-76-2	Perfluorodecanoic acid	0.0040	U	0.08	0.0816	102	0.08	0.0822	103	1	70-130/30
2058-94-8	Perfluoroundecanoic acid	0.0040	U	0.08	0.0816	102	0.08	0.0837	105	3	70-130/30
307-55-1	Perfluorododecanoic acid	0.0040	U	0.08	0.0815	102	0.08	0.0826	103	1	70-130/30
72629-94-8	Perfluorotridecanoic acid	0.0040	U	0.08	0.0771	96	0.08	0.0785	98	2	60-140/30
376-06-7	Perfluorotetradecanoic acid	0.0040	U	0.08	0.0800	100	0.08	0.0804	101	0	70-130/30
375-73-5	Perfluorobutanesulfonic acid	0.0040	U	0.08	0.0809	101	0.08	0.0823	103	2	70-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0040	U	0.08	0.0807	101	0.08	0.0833	104	3	70-130/30
355-46-4	Perfluorohexanesulfonic acid	0.0040	U	0.08	0.0797	100	0.08	0.0829	104	4	70-130/30
375-92-8	Perfluoroheptanesulfonic acid	0.0040	U	0.08	0.0881	110	0.08	0.0864	108	2	70-130/30
1763-23-1	Perfluorooctanesulfonic acid	0.0040	U	0.08	0.0794	99	0.08	0.0799	100	1	70-130/30
68259-12-1	Perfluorononanesulfonic acid	0.0040	U	0.08	0.0833	104	0.08	0.0828	104	1	65-130/30
335-77-3	Perfluorodecanesulfonic acid	0.0040	U	0.08	0.0775	97	0.08	0.0759	95	2	60-130/30
754-91-6	PFOSA	0.0080	U	0.08	0.0830	104	0.08	0.0824	103	1	70-130/30
2355-31-9	MeFOSAA	0.0080	U	0.08	0.0827	103	0.08	0.0847	106	2	70-130/30
2991-50-6	EtFOSAA	0.0080	U	0.08	0.0811	101	0.08	0.0809	101	0	70-130/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.08	0.0832	104	0.08	0.0844	106	1	70-130/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.08	0.0845	106	0.08	0.0861	108	2	70-130/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.08	0.0827	103	0.08	0.0832	104	1	70-130/30
13252-13-6	HFPO-DA (GenX)	0.0080	U	0.08	0.0826	103	0.08	0.0838	105	1	70-130/30
919005-14-4	ADONA	0.016	U	0.08	0.0829	104	0.08	0.0841	105	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.08	0.0720	90	0.08	0.0735	92	2	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.08	0.0792	99	0.08	0.0807	101	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA85389-2	Limits
	13C4-PFBA	101%	99%		35-135%
	13C5-PFPeA	100%	99%		50-150%
	13C5-PFHxA	101%	99%	97%	50-150%
	13C4-PFHpA	100%	98%	98%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA85396
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85440-MS	3Q38500.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565
OP85440-MSD	3Q38501.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565
FA85389-2	3Q38499.D	1	05/24/21	MV	05/17/21	OP85440	S3Q565

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85396-1, FA85396-2, FA85396-3, FA85396-4, FA85396-5, FA85396-6, FA85396-7, FA85396-8, FA85396-9, FA85396-10, FA85396-11

CAS No.	ID Standard Recoveries	MS	MSD	FA85389-2	Limits
	13C8-PFOA	104%	104%	102%	50-150%
	13C9-PFNA	104%	102%	102%	50-150%
	13C6-PFDA	98%	98%	99%	50-150%
	13C7-PFUnDA	97%	95%	96%	40-140%
	13C2-PFDoDA	94%	91%	91%	40-140%
	13C2-PFTeDA	102%	98%	98%	30-130%
	13C3-PFBS	97%	95%	94%	50-150%
	13C3-PFHxS	99%	96%	93%	50-150%
	13C8-PFOS	94%	94%	92%	50-150%
	13C8-FOSA	103%	100%		30-130%
	d3-MeFOSAA	115%	109%	110%	40-140%
	d5-EtFOSAA	120%	112%	113%	40-140%
	13C2-4:2FTS	104%	102%		50-150%
	13C2-6:2FTS	102%	99%		50-150%
	13C2-8:2FTS	98%	99%		50-150%
	13C3-HFPO-DA	95%	93%	92%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

LimnoTech

Pellston Airport, MI

SGS Job Number: FA85506

Sampling Dates: 05/10/21 - 05/12/21

Report to:

LimnoTech
501 Avis Drive
Ann Arbor, MI 48108
sbell@limno.com

ATTN: Scott Bell

Total number of pages in report: 33

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, UT, VT, WA, WV

Test results relate only to samples analyzed.

Sections:

1 2 3 4 5 6

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SGS North America Inc.

Sample Summary

LimnoTech

Pellston Airport, MI

Job No: FA85506

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
FA85506-1	05/10/21	15:30	OB	05/13/21	AQ	Ground Water	SB21-01 (16-20)GW
FA85506-2	05/11/21	08:50	OB	05/13/21	AQ	Ground Water	SB21-01 (31-35)GW
FA85506-3	05/11/21	11:05	OB	05/13/21	AQ	Ground Water	SB21-01 (46-50)GW
FA85506-4	05/10/21	10:30	OB	05/13/21	AQ	Field Blank Water	FIELD BLANK 03
FA85506-5	05/11/21	11:50	OB	05/13/21	AQ	Equipment Blank	EQUIPMENT BLANK A
FA85506-6	05/12/21	09:30	OB	05/13/21	AQ	Equipment Blank	EQUIPMENT BLANK B

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: LimnoTech **Job No:** FA85506

Site: Pellston Airport, MI **Report Date** 5/28/2021 4:10:56 PM

5 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were collected on between 05/10/2021 and 05/12/2021 and were received at SGS North America Inc - Orlando on 05/13/2021 properly preserved, at 1.2 Deg. C and intact. These Samples received an SGS Orlando job number of FA85506. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537M BY ID

Matrix: AQ **Batch ID:** OP85473

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA85503-2MS, FA85503-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Sample(s) FA85506-1, FA85506-2, FA85506-5 have surrogates outside control limits.

FA85506-1 for 13C2-6:2FTS: Outside control limits.

FA85506-1 for d5-EtFOSAA: Outside control limits.

FA85506-2 for 13C2-PFTeDA: Outside control limits.

FA85506-2: Dilution required due to matrix interference (ID recovery standard failure).

FA85506-5 for 13C2-PFDoDA: Outside control limits.

FA85506-5 for 13C7-PFUnDA: Outside control limits.

FA85506-5: Dilution required due to matrix interference (ID recovery standard failure).

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA85506
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 05/10/21 thru 05/12/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA85506-1	**SB21-01 (16-20)GW**					
Perfluorobutanoic acid		35.4	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		162	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		103	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		44.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		74.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorononanoic acid		3.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		16.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		24.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		552	18	8.9	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		34.2	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		1830	18	8.9	ng/l	EPA 537M BY ID
PFOSA		34.6	3.6	1.8	ng/l	EPA 537M BY ID
6:2 Fluorotelomer sulfonate		808	710	180	ng/l	EPA 537M BY ID
FA85506-2	**SB21-01 (31-35)GW**					
Perfluorobutanoic acid		5.2	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		8.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		12.1	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		5.8	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		10.7	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		26.6	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		15.4	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		63.5	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanesulfonic acid		1.7 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		130	1.8	0.89	ng/l	EPA 537M BY ID
FA85506-3	**SB21-01 (46-50)GW**					
Perfluorobutanoic acid		2.0 J	3.6	1.8	ng/l	EPA 537M BY ID
Perfluoropentanoic acid		2.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanoic acid		2.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoroheptanoic acid		1.2 J	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanoic acid		2.0	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorobutanesulfonic acid		6.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluoropentanesulfonic acid		3.9	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		9.3	1.8	0.89	ng/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		12.0	1.8	0.89	ng/l	EPA 537M BY ID
FA85506-4	**FIELD BLANK 03**					

No hits reported in this sample.

Summary of Hits

Job Number: FA85506
Account: LimnoTech
Project: Pellston Airport, MI
Collected: 05/10/21 thru 05/12/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

FA85506-5 **EQUIPMENT BLANK A**

No hits reported in this sample.

FA85506-6 **EQUIPMENT BLANK B**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB21-01 (16-20)GW		
Lab Sample ID:	FA85506-1	**Date Sampled:**	05/10/21
Matrix:	AQ - Ground Water	**Date Received:**	05/13/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q81805.D	1	05/25/21 07:59	NG	05/19/21 08:30	OP85473	SQ1782
Run #2	Q81820.D	10	05/25/21 12:09	NG	05/19/21 08:30	OP85473	SQ1782
Run #3	Q81890.D	100	05/26/21 06:50	NG	05/19/21 08:30	OP85473	SQ1783

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml
Run #3	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	35.4	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	162	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	103	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	44.3	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	74.8	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	3.8	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	16.6	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	24.3	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	552 [a]	18	8.9	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	34.2	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1830 [a]	18	8.9	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	34.6	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-01 (16-20)GW		
Lab Sample ID:	FA85506-1	**Date Sampled:**	05/10/21
Matrix:	AQ - Ground Water	**Date Received:**	05/13/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	808 [b]	710	180	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	87%	93%	93%	35-135%
	13C5-PFPeA	87%	95%	92%	50-150%
	13C5-PFHxA	84%	92%	92%	50-150%
	13C4-PFHpA	83%	92%	92%	50-150%
	13C8-PFOA	81%	90%	95%	50-150%
	13C9-PFNA	78%	93%	96%	50-150%
	13C6-PFDA	94%	95%	99%	50-150%
	13C7-PFUnDA	80%	89%	95%	40-140%
	13C2-PFDoDA	75%	80%	96%	40-140%
	13C2-PFTeDA	42%	61%	96%	30-130%
	13C3-PFBS	82%	85%	92%	50-150%
	13C3-PFHxS	81%	92%	95%	50-150%
	13C8-PFOS	79%	104%	98%	50-150%
	13C8-FOSA	77%	91%	119%	30-130%
	d3-MeFOSAA	122%	128%	139%	40-140%
	d5-EtFOSAA	113%	86%	142% [c]	40-140%
	13C2-4:2FTS	83%	92%	87%	50-150%
	13C2-6:2FTS	144%	155% [c]	92%	50-150%
	13C2-8:2FTS	95%	87%	93%	50-150%
	13C3-HFPO-DA	84%	115%	93%	50-150%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-01 (31-35)GW		
Lab Sample ID:	FA85506-2	**Date Sampled:**	05/11/21
Matrix:	AQ - Ground Water	**Date Received:**	05/13/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q81821.D	1	05/25/21 12:25	NG	05/19/21 08:30	OP85473	SQ1782
Run #2 [a]	Q81822.D	10	05/25/21 12:41	NG	05/19/21 08:30	OP85473	SQ1782

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	5.2	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	8.4	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	12.1	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	5.8	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	10.7	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND [b]	18	8.9	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	26.6	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	15.4	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	63.5	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.7	1.8	0.89	ng/l	J
1763-23-1	Perfluorooctanesulfonic acid	130	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-01 (31-35)GW
Lab Sample ID: FA85506-2
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/11/21
Date Received: 05/13/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%	94%	35-135%
	13C5-PFPeA	85%	92%	50-150%
	13C5-PFHxA	87%	91%	50-150%
	13C4-PFHpA	89%	95%	50-150%
	13C8-PFOA	90%	88%	50-150%
	13C9-PFNA	96%	100%	50-150%
	13C6-PFDA	95%	91%	50-150%
	13C7-PFUnDA	77%	79%	40-140%
	13C2-PFDoDA	65%	73%	40-140%
	13C2-PFTeDA	24% [c]	43%	30-130%
	13C3-PFBS	80%	88%	50-150%
	13C3-PFHxS	90%	85%	50-150%
	13C8-PFOS	89%	91%	50-150%
	13C8-FOSA	88%	95%	30-130%
	d3-MeFOSAA	105%	127%	40-140%
	d5-EtFOSAA	104%	113%	40-140%
	13C2-4:2FTS	86%	89%	50-150%
	13C2-6:2FTS	91%	92%	50-150%
	13C2-8:2FTS	91%	94%	50-150%
	13C3-HFPO-DA	88%	112%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SB21-01 (46-50)GW
Lab Sample ID: FA85506-3
Matrix: AQ - Ground Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/11/21
Date Received: 05/13/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q81807.D	1	05/25/21 08:31	NG	05/19/21 08:30	OP85473	SQ1782
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	2.0	3.6	1.8	ng/l	J
2706-90-3	Perfluoropentanoic acid	2.3	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	2.9	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	1.2	1.8	0.89	ng/l	J
335-67-1	Perfluorooctanoic acid	2.0	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	6.3	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.9	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	9.3	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	12.0	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB21-01 (46-50)GW		
Lab Sample ID:	FA85506-3	**Date Sampled:**	05/11/21
Matrix:	AQ - Ground Water	**Date Received:**	05/13/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		35-135%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	86%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	88%		50-150%
	13C9-PFNA	92%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	77%		40-140%
	13C2-PFDoDA	69%		40-140%
	13C2-PFTeDA	43%		30-130%
	13C3-PFBS	81%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	87%		30-130%
	d3-MeFOSAA	100%		40-140%
	d5-EtFOSAA	94%		40-140%
	13C2-4:2FTS	84%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	84%		50-150%
	13C3-HFPO-DA	86%		50-150%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FIELD BLANK 03
Lab Sample ID: FA85506-4
Matrix: AQ - Field Blank Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/10/21
Date Received: 05/13/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q81808.D	1	05/25/21 08:47	NG	05/19/21 08:30	OP85473	SQ1782
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FIELD BLANK 03
Lab Sample ID: FA85506-4
Matrix: AQ - Field Blank Water
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/10/21
Date Received: 05/13/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	88%		35-135%
	13C5-PFPeA	89%		50-150%
	13C5-PFHxA	90%		50-150%
	13C4-PFHpA	89%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	79%		50-150%
	13C7-PFUnDA	75%		40-140%
	13C2-PFDoDA	75%		40-140%
	13C2-PFTeDA	78%		30-130%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	74%		50-150%
	13C8-FOSA	88%		30-130%
	d3-MeFOSAA	94%		40-140%
	d5-EtFOSAA	93%		40-140%
	13C2-4:2FTS	86%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	72%		50-150%
	13C3-HFPO-DA	93%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EQUIPMENT BLANK A		
Lab Sample ID:	FA85506-5	**Date Sampled:**	05/11/21
Matrix:	AQ - Equipment Blank	**Date Received:**	05/13/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q81809.D	1	05/25/21 09:02	NG	05/19/21 08:30	OP85473	SQ1782
Run #2 [a]	Q81823.D	10	05/25/21 12:57	NG	05/19/21 08:30	OP85473	SQ1782

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND [b]	18	8.9	ng/l	
307-55-1	Perfluorododecanoic acid	ND [b]	18	8.9	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND [b]	18	8.9	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND [b]	18	8.9	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EQUIPMENT BLANK A		
Lab Sample ID:	FA85506-5	**Date Sampled:**	05/11/21
Matrix:	AQ - Equipment Blank	**Date Received:**	05/13/21
Method:	EPA 537M BY ID EPA 537 MOD	**Percent Solids:**	n/a
Project:	Pellston Airport, MI		

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND [b]	71	18	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%	92%	35-135%
	13C5-PFPeA	96%	89%	50-150%
	13C5-PFHxA	97%	91%	50-150%
	13C4-PFHpA	97%	91%	50-150%
	13C8-PFOA	95%	93%	50-150%
	13C9-PFNA	93%	98%	50-150%
	13C6-PFDA	100%	96%	50-150%
	13C7-PFUnDA	8% [c]	84%	40-140%
	13C2-PFDoDA	1% [c]	73%	40-140%
	13C2-PFTeDA	70%	78%	30-130%
	13C3-PFBS	90%	86%	50-150%
	13C3-PFHxS	94%	91%	50-150%
	13C8-PFOS	84%	99%	50-150%
	13C8-FOSA	124%	115%	30-130%
	d3-MeFOSAA	116%	119%	40-140%
	d5-EtFOSAA	96%	112%	40-140%
	13C2-4:2FTS	91%	88%	50-150%
	13C2-6:2FTS	93%	93%	50-150%
	13C2-8:2FTS	92%	90%	50-150%
	13C3-HFPO-DA	96%	109%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: EQUIPMENT BLANK B
Lab Sample ID: FA85506-6
Matrix: AQ - Equipment Blank
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/12/21
Date Received: 05/13/21
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q81810.D	1	05/25/21 09:18	NG	05/19/21 08:30	OP85473	SQ1782
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	ND	3.6	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	ND	1.8	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	ND	1.8	0.89	ng/l	
375-85-9	Perfluoroheptanoic acid	ND	1.8	0.89	ng/l	
335-67-1	Perfluorooctanoic acid	ND	1.8	0.89	ng/l	
375-95-1	Perfluorononanoic acid	ND	1.8	0.89	ng/l	
335-76-2	Perfluorodecanoic acid	ND	1.8	0.89	ng/l	
2058-94-8	Perfluoroundecanoic acid	ND	1.8	0.89	ng/l	
307-55-1	Perfluorododecanoic acid	ND	1.8	0.89	ng/l	
72629-94-8	Perfluorotridecanoic acid	ND	1.8	0.89	ng/l	
376-06-7	Perfluorotetradecanoic acid	ND	1.8	0.89	ng/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	ND	1.8	0.89	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.8	0.89	ng/l	
355-46-4	Perfluorohexanesulfonic acid	ND	1.8	0.89	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.8	0.89	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.8	0.89	ng/l	
68259-12-1	Perfluorononanesulfonic acid	ND	1.8	0.89	ng/l	
335-77-3	Perfluorodecanesulfonic acid	ND	1.8	0.89	ng/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	ND	3.6	1.8	ng/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	ND	3.6	1.8	ng/l	
2991-50-6	EtFOSAA	ND	3.6	1.8	ng/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: EQUIPMENT BLANK B
Lab Sample ID: FA85506-6
Matrix: AQ - Equipment Blank
Method: EPA 537M BY ID EPA 537 MOD
Project: Pellston Airport, MI

Date Sampled: 05/12/21
Date Received: 05/13/21
Percent Solids: n/a

CAS No.	Compound	Result	RL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	7.1	1.8	ng/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	ND	3.6	1.8	ng/l	
919005-14-4	ADONA	ND	7.1	1.8	ng/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	7.1	1.8	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	7.1	1.8	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		35-135%
	13C5-PFPeA	92%		50-150%
	13C5-PFHxA	93%		50-150%
	13C4-PFHpA	92%		50-150%
	13C8-PFOA	86%		50-150%
	13C9-PFNA	93%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	81%		40-140%
	13C2-PFDoDA	79%		40-140%
	13C2-PFTeDA	55%		30-130%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	89%		50-150%
	13C8-PFOS	79%		50-150%
	13C8-FOSA	114%		30-130%
	d3-MeFOSAA	109%		40-140%
	d5-EtFOSAA	100%		40-140%
	13C2-4:2FTS	86%		50-150%
	13C2-6:2FTS	74%		50-150%
	13C2-8:2FTS	81%		50-150%
	13C3-HFPO-DA	93%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

Parameter Certification Exceptions

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
4:2 Fluorotelomer sulfonate	757124-72-4	EPA 537M BY ID	AQ	Certified by SOP MS014
6:2 Fluorotelomer sulfonate	27619-97-2	EPA 537M BY ID	AQ	Certified by SOP MS014
8:2 Fluorotelomer sulfonate	39108-34-4	EPA 537M BY ID	AQ	Certified by SOP MS014
ADONA	919005-14-4	EPA 537M BY ID	AQ	Certified by SOP MS014
11Cl-PF3OUdS (F-53B Minor)	763051-92-9	EPA 537M BY ID	AQ	Certified by SOP MS014
9Cl-PF3ONS (F-53B Major)	756426-58-1	EPA 537M BY ID	AQ	Certified by SOP MS014
EtFOSAA	2991-50-6	EPA 537M BY ID	AQ	Certified by SOP MS014
HFPO-DA (GenX)	13252-13-6	EPA 537M BY ID	AQ	Certified by SOP MS014
MeFOSAA	2355-31-9	EPA 537M BY ID	AQ	Certified by SOP MS014
PFOSA	754-91-6	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorobutanesulfonic acid	375-73-5	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorobutanoic acid	375-22-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorodecanesulfonic acid	335-77-3	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorodecanoic acid	335-76-2	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorododecanoic acid	307-55-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroheptanesulfonic acid	375-92-8	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroheptanoic acid	375-85-9	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorohexanesulfonic acid	355-46-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorohexanoic acid	307-24-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorononanesulfonic acid	68259-12-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorononanoic acid	375-95-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorooctanesulfonic acid	1763-23-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorooctanoic acid	335-67-1	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoropentanesulfonic acid	2706-91-4	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoropentanoic acid	2706-90-3	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorotetradecanoic acid	376-06-7	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluorotridecanoic acid	72629-94-8	EPA 537M BY ID	AQ	Certified by SOP MS014
Perfluoroundecanoic acid	2058-94-8	EPA 537M BY ID	AQ	Certified by SOP MS014

SGS North America Inc - Orlando

Chain of Custody

FA85506

SGS - ORLANDO JOB # : PAGE 1 OF 1

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: LIMNOTECH
Address: 501 AVIS DRIVE
City: ANN ARBOR State: MI Zip: 48108
Project Contact: SCOTT BELL Email: sbell@limno.com
Phone #: (734) 332-1200
Sampler(s) Name(s) (Printed)
Sampler 1: BLEHA Sampler 2:

Project Information

Project Name:
Street
City State
Project # PLN PFAS PHASE 2 INVESTIGATION
Fax #
Client Purchase Order #

Analytical Information

PFAS (LIST OF 28)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNA	DI WATER	MEOH	PFAS (LIST OF 28)
1	SB21-01 (16-20) GW	5/10/21	1530	LT	GW	2		X								X
2	SB21-01 (31-35) GW	5/11/21	0850	LT	GW	2		X								X
3	SB21-01 (46-50) GW	5/11/21	1105	LT	GW	2		X								X
4	FIELD BLANK 03	5/10/21	1030	LT	WW	2		X								X
5	EQUIPMENT BLANK A	5/11/21	1150	LT	WW	2		X								X
6	EQUIPMENT BLANK B	5/12/21	0930	LT	WW	2		X								X

INITIAL ASSESSMENT
LABEL VERIFICATION

LAB USE ONLY

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	LIMNOTECH	5/12/21 1000	2	3	5/13/21	4
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time: 940	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 1.2 IR#4

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA85506: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA85506 **Client:** LIMNOTECH **Project:** PLN PFAS PHASE 2

Date / Time Received: 5/13/2021 9:40:00 AM **Delivery Method:** FX **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -1.8; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (1.2);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 5/13/2021 9:40:00 AM Reviewer: _____ Date: _____

FA85506: Chain of Custody
Page 2 of 2

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85473-MB	Q81795.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0020	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0020	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0040	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	35-135%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	95%	50-150%

Method Blank Summary

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85473-MB	Q81795.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	91%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	92%	40-140%
	13C2-PFDoDA	86%	40-140%
	13C2-PFTeDA	81%	30-130%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	95%	30-130%
	d3-MeFOSAA	102%	40-140%
	d5-EtFOSAA	98%	40-140%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	96%	50-150%

Instrument Blank

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1782-IBLK	Q81745.D	1	05/24/21	NG	n/a	n/a	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	94%	50-150%

Instrument Blank

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1782-IBLK	Q81745.D	1	05/24/21	NG	n/a	n/a	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	ID Standard Recoveries		Limits
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	95%	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	87%	50-150%

Instrument Blank

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1783-IBLK	Q81829.D	1	05/25/21	NG	n/a	n/a	SQ1783

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA85506-1

CAS No.	Compound	Result	RL	MDL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	103%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	122%	50-150%

Blank Spike Summary

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85473-BS	Q81794.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0772	97	70-130
2706-90-3	Perfluoropentanoic acid	0.08	0.0759	95	70-130
307-24-4	Perfluorohexanoic acid	0.08	0.0780	98	70-130
375-85-9	Perfluoroheptanoic acid	0.08	0.0761	95	70-130
335-67-1	Perfluorooctanoic acid	0.08	0.0834	104	70-130
375-95-1	Perfluorononanoic acid	0.08	0.0787	98	70-130
335-76-2	Perfluorodecanoic acid	0.08	0.0785	98	70-130
2058-94-8	Perfluoroundecanoic acid	0.08	0.0770	96	70-130
307-55-1	Perfluorododecanoic acid	0.08	0.0753	94	70-130
72629-94-8	Perfluorotridecanoic acid	0.08	0.0742	93	60-140
376-06-7	Perfluorotetradecanoic acid	0.08	0.0730	91	70-130
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0834	104	70-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0764	96	70-130
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0748	94	70-130
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0645	81	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0760	95	70-130
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0754	94	65-130
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0802	100	60-130
754-91-6	PFOSA	0.08	0.0765	96	70-130
2355-31-9	MeFOSAA	0.08	0.0701	88	70-130
2991-50-6	EtFOSAA	0.08	0.0827	103	70-130
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0732	92	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0753	94	70-130
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0781	98	70-130
13252-13-6	HFPO-DA (GenX)	0.08	0.0731	91	70-130
919005-14-4	ADONA	0.08	0.0745	93	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0722	90	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0761	95	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	35-135%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	91%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85473-BS	Q81794.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	73%	50-150%
	13C9-PFNA	81%	50-150%
	13C6-PFDA	83%	50-150%
	13C7-PFUnDA	83%	40-140%
	13C2-PFDoDA	87%	40-140%
	13C2-PFTeDA	88%	30-130%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	77%	30-130%
	d3-MeFOSAA	90%	40-140%
	d5-EtFOSAA	83%	40-140%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	67%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	94%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85473-MS	Q81798.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782
OP85473-MSD	Q81799.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782
FA85503-2	Q81797.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	Compound	FA85503-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0083	U	0.167	0.167	100	0.167	0.166	100	1	70-130/30
2706-90-3	Perfluoropentanoic acid	0.0042	U	0.167	0.167	100	0.167	0.165	99	1	70-130/30
307-24-4	Perfluorohexanoic acid	0.0042	U	0.167	0.169	101	0.167	0.166	100	2	70-130/30
375-85-9	Perfluoroheptanoic acid	0.0042	U	0.167	0.167	100	0.167	0.167	100	0	70-130/30
335-67-1	Perfluorooctanoic acid	0.0042	U	0.167	0.178	107	0.167	0.175	105	2	70-130/30
375-95-1	Perfluorononanoic acid	0.0042	U	0.167	0.168	101	0.167	0.170	102	1	70-130/30
335-76-2	Perfluorodecanoic acid	0.0042	U	0.167	0.167	100	0.167	0.172	103	3	70-130/30
2058-94-8	Perfluoroundecanoic acid	0.0042	U	0.167	0.163	98	0.167	0.170	102	4	70-130/30
307-55-1	Perfluorododecanoic acid	0.0042	U	0.167	0.165	99	0.167	0.165	99	0	70-130/30
72629-94-8	Perfluorotridecanoic acid	0.0042	U	0.167	0.164	98	0.167	0.162	97	1	60-140/30
376-06-7	Perfluorotetradecanoic acid	0.0042	U	0.167	0.166	100	0.167	0.164	98	1	70-130/30
375-73-5	Perfluorobutanesulfonic acid	0.0042	U	0.167	0.179	107	0.167	0.175	105	2	70-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0042	U	0.167	0.177	106	0.167	0.171	103	3	70-130/30
355-46-4	Perfluorohexanesulfonic acid	0.0042	U	0.167	0.164	98	0.167	0.163	98	1	70-130/30
375-92-8	Perfluoroheptanesulfonic acid	0.0042	U	0.167	0.161	97	0.167	0.156	94	3	70-130/30
1763-23-1	Perfluorooctanesulfonic acid	0.0042	U	0.167	0.174	104	0.167	0.169	101	3	70-130/30
68259-12-1	Perfluorononanesulfonic acid	0.0042	U	0.167	0.181	109	0.167	0.174	104	4	65-130/30
335-77-3	Perfluorodecanesulfonic acid	0.0042	U	0.167	0.185	111	0.167	0.177	106	4	60-130/30
754-91-6	PFOSA	0.0083	U	0.167	0.175	105	0.167	0.172	103	2	70-130/30
2355-31-9	MeFOSAA	0.0083	U	0.167	0.154	92	0.167	0.164	98	6	70-130/30
2991-50-6	EtFOSAA	0.0083	U	0.167	0.163	98	0.167	0.173	104	6	70-130/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.159	95	0.167	0.157	94	1	70-130/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.161	97	0.167	0.162	97	1	70-130/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.166	100	0.167	0.166	100	0	70-130/30
13252-13-6	HFPO-DA (GenX)	0.0083	U	0.167	0.155	93	0.167	0.157	94	1	70-130/30
919005-14-4	ADONA	0.017	U	0.167	0.162	97	0.167	0.164	98	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.167	0.151	91	0.167	0.155	93	3	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.167	0.160	96	0.167	0.163	98	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA85503-2	Limits
	13C4-PFBA	85%	84%		35-135%
	13C5-PFPeA	93%	93%		50-150%
	13C5-PFHxA	93%	94%	95%	50-150%
	13C4-PFHpA	94%	93%	93%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA85506
Account: LIMNMIAA LimnoTech
Project: Pellston Airport, MI

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP85473-MS	Q81798.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782
OP85473-MSD	Q81799.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782
FA85503-2	Q81797.D	1	05/25/21	NG	05/19/21	OP85473	SQ1782

The QC reported here applies to the following samples: **Method:** EPA 537M BY ID

FA85506-1, FA85506-2, FA85506-3, FA85506-4, FA85506-5, FA85506-6

CAS No.	ID Standard Recoveries	MS	MSD	FA85503-2	Limits
	13C8-PFOA	88%	89%	88%	50-150%
	13C9-PFNA	90%	88%	89%	50-150%
	13C6-PFDA	86%	85%	87%	50-150%
	13C7-PFUnDA	83%	83%	85%	40-140%
	13C2-PFDoDA	83%	86%	86%	40-140%
	13C2-PFTeDA	86%	86%	85%	30-130%
	13C3-PFBS	88%	90%	89%	50-150%
	13C3-PFHxS	94%	93%	90%	50-150%
	13C8-PFOS	83%	86%	87%	50-150%
	13C8-FOSA	81%	86%		30-130%
	d3-MeFOSAA	91%	91%	95%	40-140%
	d5-EtFOSAA	89%	92%	95%	40-140%
	13C2-4:2FTS	95%	95%		50-150%
	13C2-6:2FTS	91%	91%		50-150%
	13C2-8:2FTS	84%	85%		50-150%
	13C3-HFPO-DA	95%	93%	94%	50-150%

* = Outside of Control Limits.

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