

**Mr. Paul Bucholtz**

Michigan Department of Environment, Great Lakes, and Energy  
Remediation and Redevelopment Division  
Constitution Hall  
525 West Allegan Street  
Lansing, MI 48909

**RE: *PFAS Screening Results – October 2020 Event  
RACER Trust – Hemphill Road Industrial Land, Burton, Michigan***

**FILE: 15388/75237/Docs**

Dear **Mr. Bucholtz**:

This technical memorandum (memo) has been prepared by Ramboll Americas Engineering Solutions, Inc. (Ramboll), on behalf of the Revitalizing Auto Communities Environmental Response Trust (RACER Trust) to provide the results of the recently completed sampling and analysis for per- and polyfluoroalkyl substances (PFAS) at the Hemphill Road Industrial Land (HRIL) facility located in Burton, Michigan (Site) ([Figure 1](#)).

Date February 10, 2021

The work summarized in this letter was completed in response to EGLE’s approval of activities proposed in the Ramboll August 14, 2020 technical memorandum as amended based on comments from EGLE.

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USA

**Sample Collection**

**Groundwater Sample Collection**

Groundwater samples for PFAS analysis were collected from the following onsite monitoring wells. See [Figure 2](#) for sample locations.

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- Ten shallow onsite monitoring wells
  - OBG MW-1S, OBG MW-2S, OBG MW-3, OBG MW-5S, OBG MW-6S, OBG MW-7S, OBG MW-8, OBG MW-9, OBG MW-11, and MW-403
- Three deep onsite monitoring wells
  - OBG MW-2D, OBG MW-6D, and OBG MW-7D
- Three onsite monitoring well with light non-aqueous phase liquid (LNAPL) impacts (water samples were collected from beneath LNAPL)
  - OBG MW-4S, OBG MW-10, and MW-401

Special care was taken during sampling and transport of the samples to avoid cross-contamination from clothing, sampling materials, and storage containers due to the extremely low detection limits for PFAS (<1 ng/L). New high-density polyethylene tubing (HDPE) and silicon tubing were utilized for sample collection

at each well location. Samples were collected in accordance with the EGLE Groundwater PFAS Sampling Guidance (EGLE, 2018).

Low flow groundwater sampling was performed in accordance with USEPA, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (EPA/540/S-95/504) and the USEPA Region 1 (July 30, 1996, Revision 4) *Low Stress (Low-Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells*.

Low-flow groundwater sampling was performed using HDPE sample tubing lowered approximately to the midpoint of the well screen and connected to a peristaltic pump utilizing silicon tubing. The tubing was then attached to a flow-through cell connected to a physical parameter measurement instrument capable of measuring temperature, conductivity, pH, dissolved oxygen (DO), and oxidation-reduction potential (ORP). Turbidity was measured with a separate turbidity meter.

In order to purge the monitoring wells below the LNAPL in monitoring wells MW-4S and MW-401, larger 3/8 outside diameter (OD) tubing was used with a paper towel stuffed into the bottom of the tubing. Once the tubing was lowered to the bottom of the well and through the LNAPL, the paper towel was pulled through the tubing with the peristaltic pump and removed.

The well was purged at a rate that produced less than 0.3 ft of drawdown in the well, except for wells OBG MW-1S, OBG MW-2S/D, OBG MW-5S, OBG MW-6S/D, OBG MW-7S, OBG MW-8, OBG MW-9, OBG WM-11. For these wells, the purge rate was maintained at a maximum of 100 milliliters per minute [ml/min]; however, a drawdown of more than 0.3 ft was observed. Due to the viscous LNAPL coating the interface probe of the measuring instrument, it was difficult to acquire an accurate measurement in monitoring wells MW-401, OBG MW-4S, and OBG MW-10.

Purging continued until the water quality parameters stabilized over three consecutive 5-minute periods pursuant to USEPA's Low Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells. Purge water was discharged to the ground surface onsite, except for wells MW-401, OBG MW-4S, and OBG MW-10 where the purged groundwater was poured back down the well after sample collection.

Once stabilized, the flow-through cell was disconnected, and samples were collected directly into laboratory supplied containers. The sample container selection and preservation techniques followed EGLE Remediation and Redevelopment Division (RRD) Standard Operating Procedure for Sample Preservation, Sample Handling, and Holding Time (RRD-34).

The samples were labeled, packed on ice, and shipped via courier under routine chain-of-custody protocols to Merit Laboratories, Inc. (Merit) of East Lansing, Michigan. The groundwater samples were analyzed for PFAS by method ASTM D7979-19 (no preservative).

Quality Assurance/Quality Control (QA/QC) samples consisted of a field duplicate and a field (ambient) blank to check for cross contamination. An equipment blank was not collected.

### **LNAPL Sample Collection**

To evaluate the concentrations of PFAS in LNAPL, samples were collected from monitoring wells MW-401 and OBG MW-4S. LNAPL was also observed in monitoring wells OBG MW-5S and OBG MW-10, but not at a volume where a sample could be collected. LNAPL at each well was collected by scraping it off the

outside of the HDPE sample tubing with a stainless-steel putty knife. The appearance of LNAPL varied between the two monitoring wells. At monitoring well OBG MW-4S the LNAPL appeared brown, bubbly, and very viscous. At monitoring well MW-401 the LNAPL appeared dark brownish black and less viscous than at OBG MW-4S. The LNAPL samples were analyzed for PFAS by method ASTM D7968-17M (no preservative).

### Sanitary Sewer Sample Collection

To evaluate the potential for PFAS in the sanitary sewer, one sample (SAN-1) was collected from a manhole just west of the Site, which at the time of sampling had a moderate flow. Two samples were proposed to be collected from the manhole located just southeast of the Site from both the north and south sewer lines entering the manhole. During the sampling event there was no flow from the sewer lines southwest of the Site and the manhole was dry. See [Figure 5](#) for sample locations.

The sanitary sewer sampling was performed in accordance with the methods specified in EGLE’s Wastewater PFAS Sampling Guidance. Personnel did not enter confined space areas (manholes) and samples were collected remotely. The samples were collected with a peristaltic pump and HDPE tubing that was weighted down with a stainless-steel weight and lowered into the manhole. The sanitary sewer sample were analyzed for PFAS by method ASTM D7979-19 (no preservative).

### PFAS Analytical Results

A review of the analytical data presented in the attached tables indicates for those wells sampled previously, analytical results are similar to the previous sampling event, a summary of the data is provided below. For further detail please refer to [Table 1](#) for groundwater, [Table 2](#) for LNAPL results, and [Table 3](#) for the sanitary sewer result. The laboratory analytical reports are provided in [Attachment A](#).

#### Groundwater PFAS Sample Results

PFAS were not detected or had estimated detections below the reporting limit in the following monitoring wells:

- Two shallow onsite monitoring wells
  - MW-401 (water from beneath LNAPL) and OBG MW-8
- Three deep onsite monitoring wells
  - OBG MW-2D, OBG MW-6D, and OBG MW-7D

The following monitoring wells contained low level (<8 nanograms per liter [ng/l]) detections of PFAS below their respective cleanup criteria, if established:

- Seven shallow onsite monitoring wells
  - OBG MW-1S, OBG MW-2S, OBG MW-3, OBG MW-4S (water from beneath LNAPL), OBG MW-6S, OBG MW-9, and OBG MW-11

The following monitoring wells contained either perfluorooctanoic acid (PFOA) and/or perfluorooctane sulfonic acid (PFOS) above EGLE drinking water cleanup criteria (8 ng/l and 16 ng/l, respectively).

- Four onsite monitoring wells
  - MW-403 (25 ng/L PFOA / 960 ng/L PFOS), OBG MW-5S (11 ng/L PFOA), OBG MW-5S duplicate (11 ng/L PFOA), OBG MW-7S (25 ng/L PFOA / 60 ng/L PFOS), and OBG MW-10 (9.6 ng/L PFOA / 17 ng/L PFOS – water from beneath LNAPL)

The non-detect results at monitoring wells OBG MW-2D, OBG MW-6D, and OBG MW-7D indicates that the deeper groundwater zone is not impacted.

The analytical results continue to indicate low level detections of PFAS on the western side of the Site and slightly higher results on the east side of the Site. There is no apparent source of PFAS detected on the western side of the Site and the higher results appear to be present on the east side of the Site in two areas. The PFAS impacted areas appear to be an area within waste fill around monitoring well OBG MW-7S on the northeast side of the Site and an area within waste fill between monitoring wells OBG MW-10 and OBG MW-5S on the southeast side of the Site, with the source area or most impacted monitoring well being MW-403.

Higher detections on the east side of the Site are apparently related to certain locations within the waste fill along the east side of the Site. However, not all of the waste fill appears to be PFAS impacted as monitoring wells MW-401, OBG MW-4S, OBG MW-8, OBG MW-9, and OBG MW-11 which are screened in fill material were non-detect or had detections below the drinking water criteria.

**Figure 3** provides a summary of the sample results on the base map, and **Figure 4** provides a groundwater contour map for the recent sampling event. Shallow groundwater flow is toward the east near OBG MW-7S and is more southeast in the southern portion of the Site.

The results from the LNAPL samples appear to indicate that LNAPL is not the source of PFAS groundwater impacts at the Site (further discussion below).

### **LNAPL PFAS Sample Results**

PFAS was not detected above the reporting limit in the LNAPL sample collected from monitoring well OBG MW-4S. In monitoring well MW-401 there was a detection of 320 ng/kg for PFOS and a detection of 530 ng/kg for N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA).

The groundwater samples collected beneath the LNAPL in monitoring well MW-401 was non-detect for PFAS and in monitoring well OBG MW-4S the detections of PFOA (4.5 ng/l) and PFOS (3.9 ng/l) were both below the EGLE drinking water cleanup criteria of 8 ng/l for PFOA and 16 ng/l for PFOS. OBG MW-10, which contains LNAPL (but not at a volume that allows it to be sampled) had groundwater results that were just above the criteria for PFOA (9.6 ng/l) and PFOS (17 ng/l).

In addition, monitoring wells OBG MW-8 and OBG MW-9, which are located approximately 38 feet southwest and 46 feet northwest of OBG MW-4S were non-detect for PFAS. These results appear to indicate that the LNAPL is not a significant source of PFAS impacts in groundwater at the Site (i.e., the PFAS in the LNAPL does not appear to be leaching or migrating appreciably).

### **Sanitary Sewer PFAS Sample Results**

PFAS was not detected above the EGLE Rule 57 Surface Water Quality Values for non-drinking water in sample SAN-01. Given the difference in specific PFAS detected in this sample and the specific PFAS

detected in Site wells, it is not clear that PFAS-impacted groundwater from the Site is infiltrating into this sewer line and is the source of detections. This result appears to indicate that if PFAS impacted groundwater is mobilizing/entering the sanitary sewer where the waste fill and groundwater table are above the sewer (i.e., the sewer is below the water table) in the southern portion of the Site, it is not significantly impacting the sewer water quality.

### Exposure Pathway Evaluation

The likely source of the Site-related PFAS impacts to groundwater is certain fill materials placed on the eastern portion of the Site, not all of the waste fill appears to be PFAS impacted. The completed interim remedial action (IRA) along with the existing and amended declaration of restrictive covenant (DRC) presented in the November 2019 draft No Further Action (NFA) report is intended to restrict groundwater use at the Site, and to allow proper due care to be taken at the Site.

An evaluation of potentially complete and applicable transport and exposure pathways for PFAS in groundwater is presented herein to address those transport and exposure pathways. Currently, the Site is zoned for general business (C-2) purposes and is vacant. In addition, RACER Trust has placed a deed restriction that limits future use to nonresidential. Therefore, the nonresidential scenario was used for evaluation purposes (i.e., Generic Nonresidential Cleanup Criteria); however, for PFAS impacts, the nonresidential drinking water criteria are the same as the residential criteria.

PFOA and PFOS were the only PFAS detected above the drinking water criteria; therefore, PFOA and PFOS are considered the only constituents of concern (COCs) from a PFAS standpoint for the Site.

A site-specific comparison of relevant and applicable nonresidential criteria for groundwater is summarized on [Table 1](#). Review of the analytical data indicates the highest concentrations of PFAS COCs detected in groundwater onsite are as follows:

**Table 4 - Highest Detections of PFOA and PFOS in Groundwater**

COC	Highest Concentration Detected	Location
<b>PFOA</b>	25 ng/L	OBG MW-7S (10/27/2020) & MW-403 (11/2/2020)
<b>PFOS</b>	960 ng/L	MW-403 (11/2/2020)

Source: Ramboll

### Groundwater Risk Evaluation

This subsection provides an evaluation of the PFAS impacted groundwater exposure pathway.

#### Risks Due to PFAS-Impacted Groundwater to Drinking Water Uses

The groundwater pathway is a relevant pathway for the Site. However, groundwater at the Site is not used for drinking water and the shallow unit (waste fill) containing PFOA and PFOS above drinking water criteria is not likely connected to the lower usable aquifer in this area and it is not likely that shallow groundwater would migrate horizontally through the waste fill on the adjacent property to private wells located east of Schram Drain, which likely acts as a receptor for shallow groundwater.

The usage or exposure to the detected exceedances in groundwater in an aquifer can be addressed through recording a resource use restriction in a DRC preventing groundwater extraction or use at the Site; furthermore, it is reasonable to assume given the time period (landfilling occurred from sometime after 1941 to approximately 1958. Filling activities continued east of the Site until 1978) of the landfilling activities at the Site that the PFAS concentrations are stable or decreasing at this time. Nearby well records indicate a thick clay unit, ranging in from 57 to 102 ft thick underlying the Site (this clay was observed onsite to a depth of 50 fbg in southeastern portion of the Site); therefore, it is unlikely the exceedances onsite in shallow groundwater would migrate to the useable aquifer, which is confirmed by the non-detect results in OBG MW-2D, OBG MW-6D, and OBG MW-7D. In addition, the City of Burton Ordinance §51.080 prohibits the installation of water wells and use of groundwater for human consumption in the Site area.

The Site is not located in a wellhead protection area and there are no wellhead protection areas within approximately 3,000 feet of the Site. The nearest private wells to the Site are located approximately 815 to 1,250 ft east of the Site, which is east of Schram Drain, and then additional wells approximately 2,300 ft east of the Site ([Figure 6](#)).

The next closest well is approximately 2,500 feet southwest of the Site. Furthermore, all but two of these wells are screened in bedrock at depths greater than 150 feet below grade (fbg). The shallowest well is located approximately 1,000 feet east of the Site and is screened from 80 to 90 fbg in a gravel aquifer and the other is screened from 140 to 150 fbg, which would be even deeper than the sandy unit that the deep wells on site are screened in. [Attachment B](#) provides the well logs for the private wells within 2,500 feet of the Site.

Therefore, the prohibition of installation of wells to extract groundwater at the Site via the current and planned amended DRC combined with the Site not being located in a wellhead protection area or the lack of nearby shallow private wells makes risks due to PFOS and PFOA highly unlikely from the drinking water pathway.

### **Risks Due to PFAS-Impacted Groundwater for Indoor Air**

Groundwater impacts causing indoor air risks is not a current complete exposure pathway for the Site. The detected concentrations of PFAS in groundwater are low and the detected PFAS are not considered to volatilize appreciably at the detected concentrations to cause an indoor air issue. Potential future risks via this exposure pathway are addressed through the existing DRC and planned amended DRC, which both require assessment and/or mitigation of the vapor intrusion to indoor air pathway.

### **Risks Due to PFAS-Impacted Groundwater to Surface Water Resources**

The groundwater impact to surface water resources exposure pathway has been evaluated for the Site. The highest detection of PFOA was at 25 ng/L at MW-403 and OBG MW-7S, which is below both the drinking water (420 ng/L) and non-drinking water (12,000 ng/L) EGLE Rule 57 Surface Water Quality Values. The highest detection of PFOS was at 960 ng/L at MW-403, which is above the drinking water (11 ng/L) and non-drinking water (12 ng/L) surface water quality values. However, at these concentrations it is not likely that PFOS would migrate with groundwater to surface water above the surface water values because surface water does not exist on or immediately adjacent to the Site.

The nearest surface water body is the Schram Drain, which is approximately 500 feet east of OBG MW-7S and 400 feet to the east of OBG MW-10 (**Figure 1**). Shallow groundwater would need to migrate from the Site through waste fill in the adjacent former Hemphill Landfill to reach the drain. Furthermore, the storm sewers that traverse the Site (**Figure 5**) are installed at depths above the groundwater level based on Site information.

However, portions of the sanitary sewers that parallel and/or traverse the Site appear to be below the groundwater level (**Figure 5**); therefore, there is a potential for groundwater migration from the Site to surface water through the currently existing sanitary sewer lines and ultimately the public treatment works.

It is not clear if Site-related PFAS-impacted groundwater is seeping into the sanitary sewer lines as the specific detected PFAS in the sewer sample were different than the specific PFAS detected in Site groundwater. Further, PFAS were not detected above the EGLE Rule 57 Surface Water Quality Values of non-drinking water in sample SAN-01 west of the Site and there was no flow from the sewer lines southwest of the Site.

The planned Amended DRC will prevent any future infiltration of PFAS-impacted groundwater from migrating into any new utility by prohibiting construction, installation, or maintenance of subsurface utilities, structures or other features (collectively Subsurface Features), unless such activity is approved in writing in advance by EGLE and RACER Trust, and such activity incorporates engineering controls designed to eliminate the potential for the subsurface feature and/or the subsurface feature corridor to be a preferential contaminant migration pathway for impacted subsurface water or vapor, or for the subsurface feature to release fluids that could infiltrate through the subsurface and exacerbate existing environmental conditions including impacts to groundwater.

### **Exposure Pathway Evaluation Summary**

As PFAS may remain in subsurface material at the Site, the potential for exposure to these COCs has been evaluated in the above subsections. The presence of COCs above EGLE criteria is not, in itself, indicative of a threat to human health or the environment.

Based on the above evaluation of the potential exposure pathways, implementation of the proposed land and resource use restrictions presented in the draft NFA report will address all relevant exposure pathways, with the possible exception of the potential exposure pathway associated with the currently existing sanitary sewers. The planned Amended DRC will prevent potential future Subsurface Features creating complete exposure pathways.

### **Path Forward**

Based on the results of the sampling and Exposure Pathway evaluation and to verify detected concentrations, a third round of groundwater sampling is recommended and can be completed during our next semiannual sampling event in April 2021. For the third round of groundwater sampling we suggest collecting samples from the deep monitoring wells OBG MW-2D, OBG MW-6D, and OBG MW-7D, and the monitoring wells with PFAS impacts or surrounding the PFAS impacts. This would include onsite shallow monitoring wells MW-401, MW-403, OBG MW-4S, OBG MW-5S, OBG MW-7S, OBG MW-8, OBG MW-9, OBG MW-10, OBG MW-11 and off-site monitoring wells OBG OS MW-3, OBG OS MW-4, and OBG OS MW-

5. An attempt will also be made to collect another round of LNAPL samples from MW-401 and OBG MW-4S.

In addition, we propose collecting sanitary sewer samples for analysis of PFAS from the manhole located just southeast of the Site from both the north and south sewer lines entering that manhole if flowing water is observed and from both manholes downstream from this manhole that are located west of the Site (**Figure 5**).

Following completion of the third round of PFAS groundwater and sewer sampling this technical memorandum will be updated to provide the results of both the groundwater sampling and the sanitary sewer sampling events and present any recommendations for further activity.

If you have any questions or comments concerning this tech memo, please feel free to contact me at 313.333.0211 or Dave Favero at 217.741.6235.

Yours sincerely

**O'BRIEN & GERE ENGINEERS, INC.**



**Clifford S. Yantz**

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### **Enclosures**

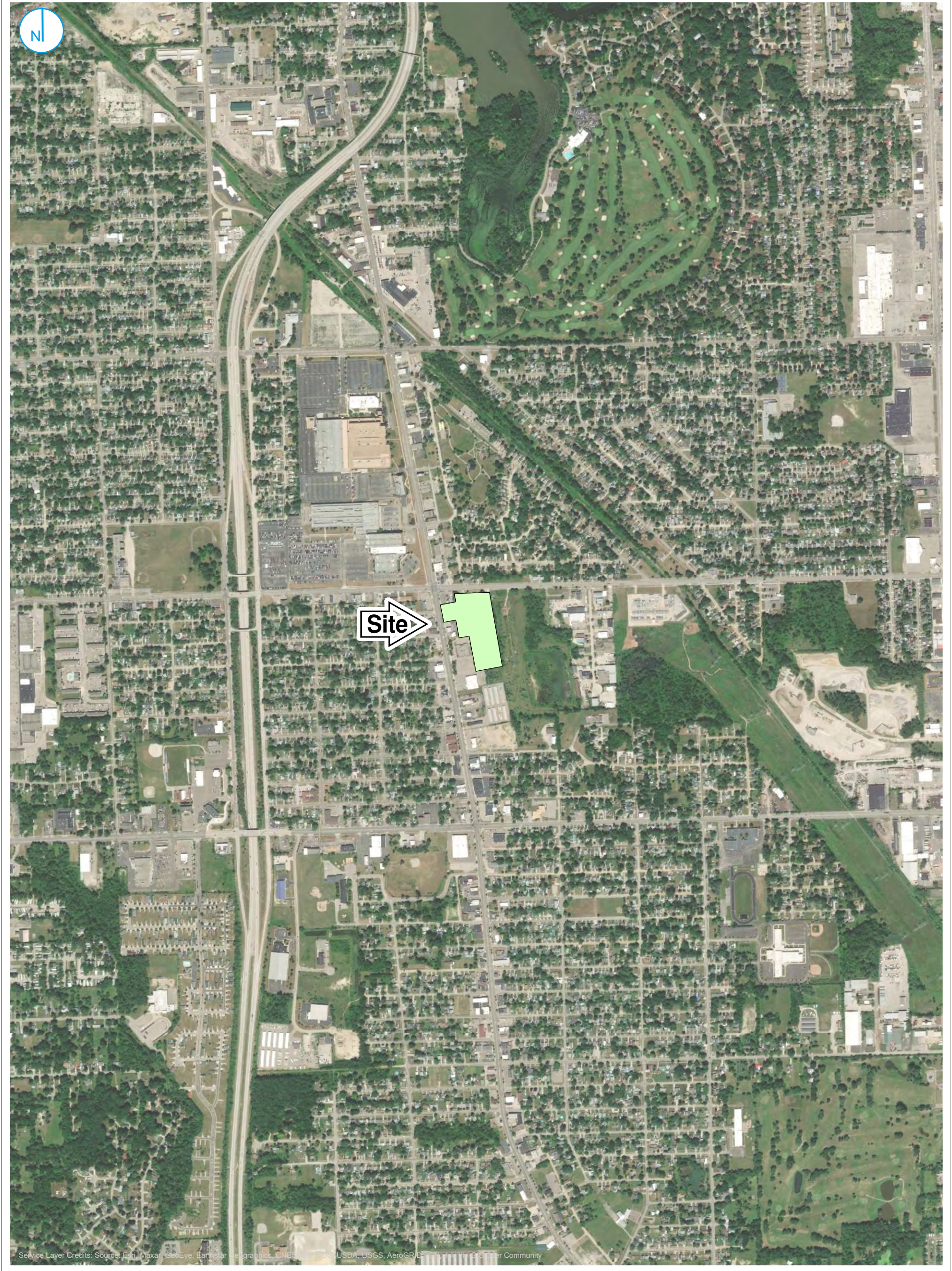
Figure 1 – Site Location Map  
Figure 2 – PFAS Sample Locations  
Figure 3 – PFAS Sample Results  
Figure 4 – Interpreted Shallow Groundwater Elevation Contours – October 27, 2020  
Figure 5 – Site Utility Layout  
Figure 6 – PFAS Sample Locations and Private Wells

Table 1 – Groundwater PFAS Sampling Results – October/November 2020  
Table 2 – LNAPL PFAS Sampling Results – October/November 2020  
Table 3 – Sanitary Sewer PFAS Sampling Results – October/November 2020

Attachment A – Analytical Reports  
Attachment B – Private Well Logs

cc: David Favero – RACER Trust  
Kevin Schneider – Ramboll

**FIGURES**



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar, DigitalGlobe, CNES, Airbus, USDA, USGS, AeroGRID, IGN, SITA, and the Open Street Community

SITE LOCATION MAP

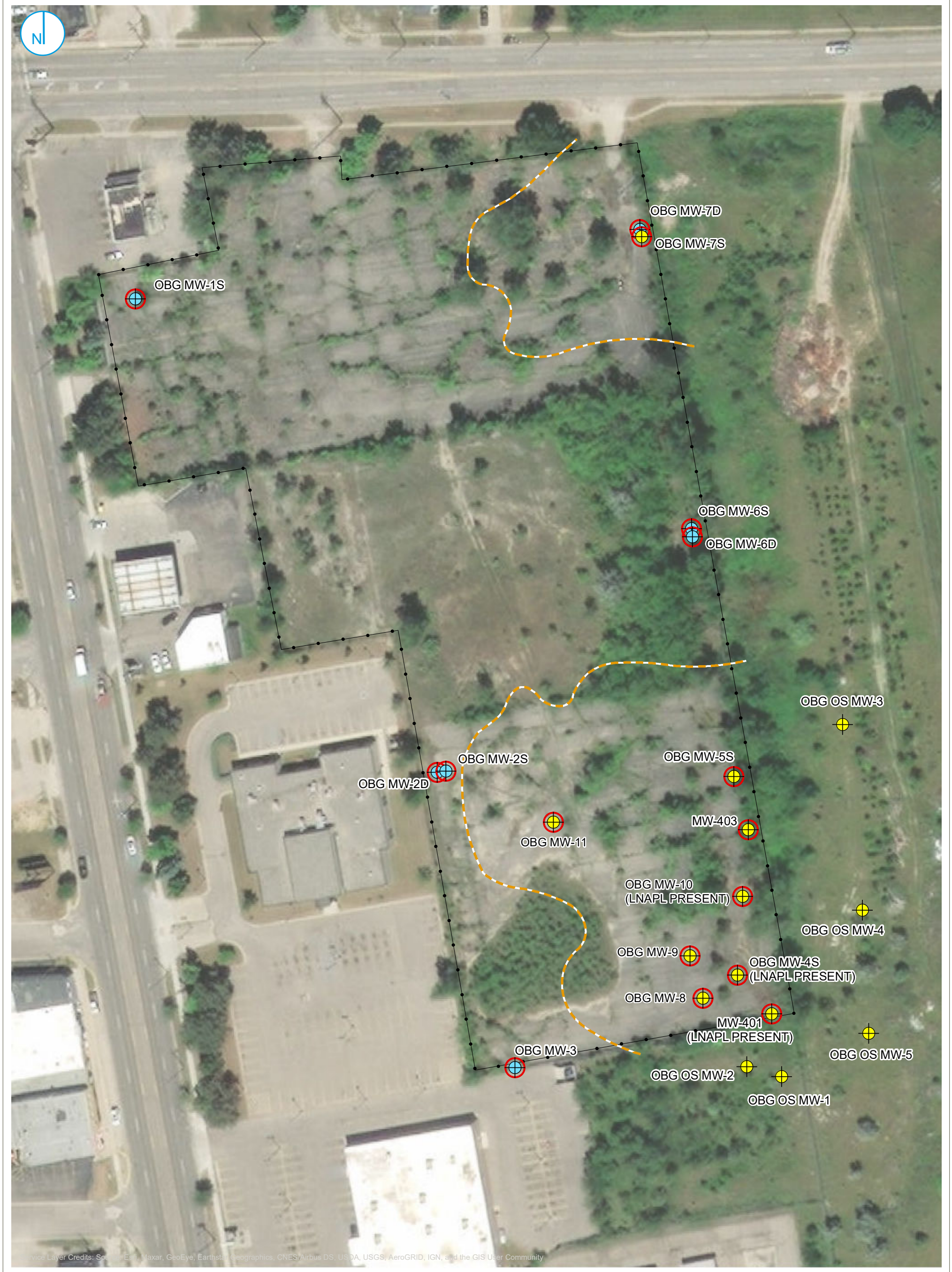
FIGURE 01

0 500 1,000 2,000  
Feet

**RACER TRUST**  
HEMPHILL ROAD INDUSTRIAL LAND  
BURTON, MICHIGAN






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**LEGEND**

-  MONITORING WELL LOCATION (SCREENED IN NATIVE SOIL)
-  MONITORING WELL LOCATION (SCREENED IN FILL)
-  PFAS SAMPLE LOCATION
-  FENCE LINE
-  APPROXIMATE EXTENT OF WASTE FILL ONSITE

**PFAS SAMPLE LOCATIONS**

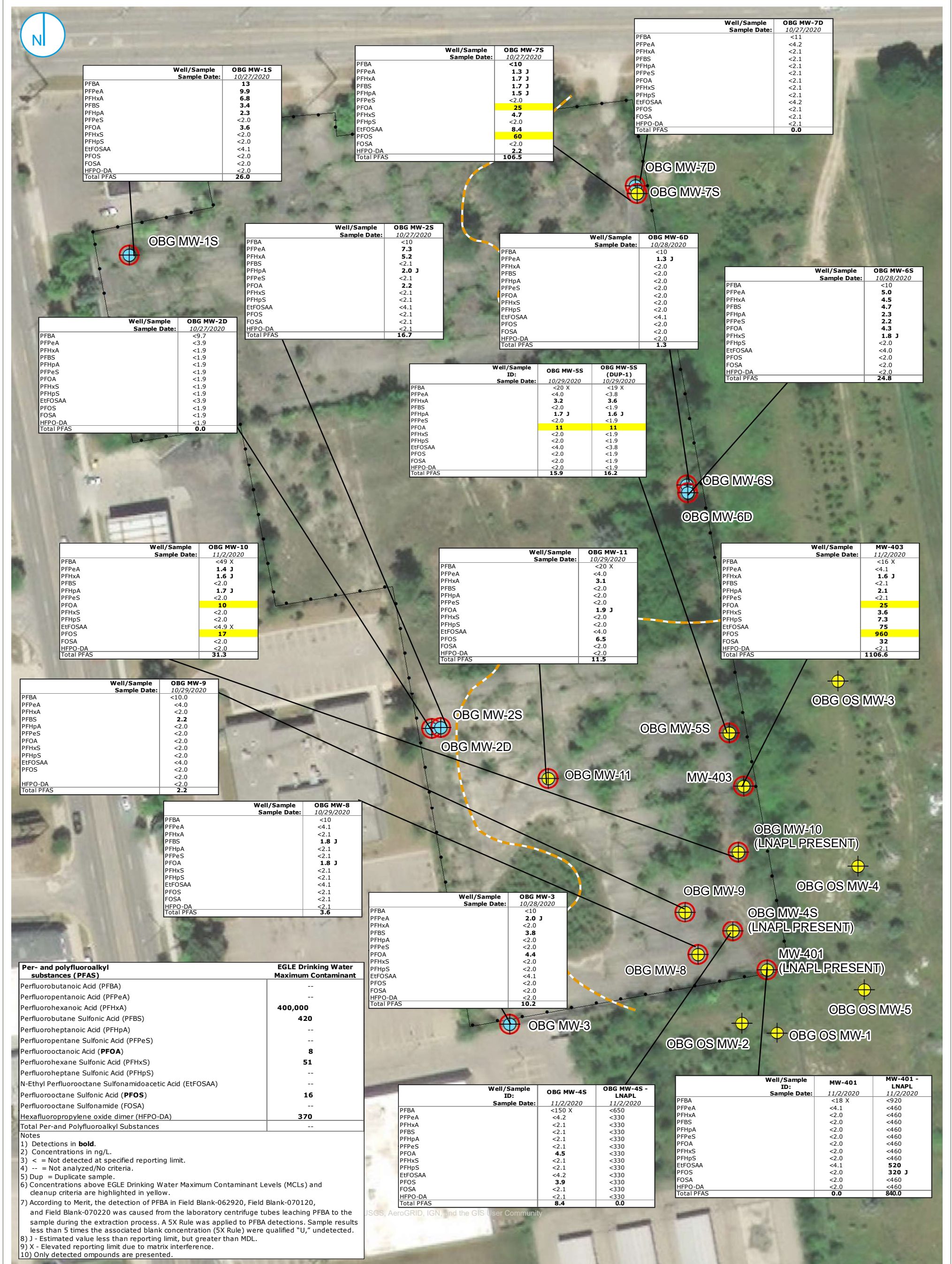
**FIGURE 02**

0 50 100 Feet

**RACER TRUST**  
HEMPHILL ROAD INDUSTRIAL LAND  
BURTON, MICHIGAN

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Per- and polyfluoroalkyl substances (PFAS)	EGLE Drinking Water Maximum Contaminant
Perfluorobutanoic Acid (PFBA)	--
Perfluoropentanoic Acid (PFPeA)	--
Perfluorohexanoic Acid (PFHxA)	400,000
Perfluorobutane Sulfonic Acid (PFBS)	420
Perfluoroheptanoic Acid (PFHpA)	--
Perfluoropentane Sulfonic Acid (PFPeS)	--
Perfluorooctanoic Acid (PFOA)	8
Perfluorohexane Sulfonic Acid (PFHxS)	51
Perfluoroheptane Sulfonic Acid (PFHpS)	--
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--
Perfluorooctane Sulfonic Acid (PFOS)	16
Perfluorooctane Sulfonamide (FOSA)	--
Hexafluoropropylene oxide dimer (HFPO-DA)	370
Total Per- and Polyfluoroalkyl Substances	--

- Notes**
- 1) Detections in **bold**.
  - 2) Concentrations in ng/L.
  - 3) < = Not detected at specified reporting limit.
  - 4) -- = Not analyzed/No criteria.
  - 5) Dup = Duplicate sample.
  - 6) Concentrations above EGLE Drinking Water Maximum Contaminant Levels (MCLs) and cleanup criteria are highlighted in yellow.
  - 7) According to Merit, the detection of PFBA in Field Blank-062920, Field Blank-070120, and Field Blank-070220 was caused from the laboratory centrifuge tubes leaching PFBA to the sample during the extraction process. A 5X Rule was applied to PFBA detections. Sample results less than 5 times the associated blank concentration (5X Rule) were qualified "U," undetected.
  - 8) J - Estimated value less than reporting limit, but greater than MDL.
  - 9) X - Elevated reporting limit due to matrix interference.
  - 10) Only detected compounds are presented.

**LEGEND**

- MONITORING WELL LOCATION (SCREENED IN NATIVE SOIL)
- MONITORING WELL LOCATION (SCREENED IN FILL)
- PFAS SAMPLE LOCATION
- FENCE LINE
- APPROXIMATE EXTENT OF WASTE FILL ONSITE

**PFAS SAMPLE RESULTS**

**FIGURE 03**



RACER TRUST  
HEMPHILL ROAD INDUSTRIAL LAND  
BURTON, MICHIGAN

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Notes:  
 1) Groundwater elevations for onsite wells OBG MW-4S, MW-401 and MW-403 were not recorded for this event.  
 2) OBG MW-1S, OBG MW-2S, OBG MW-3, and OBG MW-6S are screened in native soils.  
 The remaining wells are screened in waste material, which may constitute a different flow regime.  
 3) \* Monitoring well screened in waste material.  
 4) This document was developed in color. Reproduction in B/W may not represent the data as intended.  
 5) Aerial photo provided by ESRI.

- MONITORING WELL LOCATION (SCREENED IN FILL)
- MONITORING WELL LOCATION (SCREENED IN NATIVE SOIL)
- SHALLOW GROUNDWATER ELEVATION CONTOUR
- FENCE LINE
- APPROXIMATE EXTENT OF WASTE FILL ONSITE

0 50 100 Feet

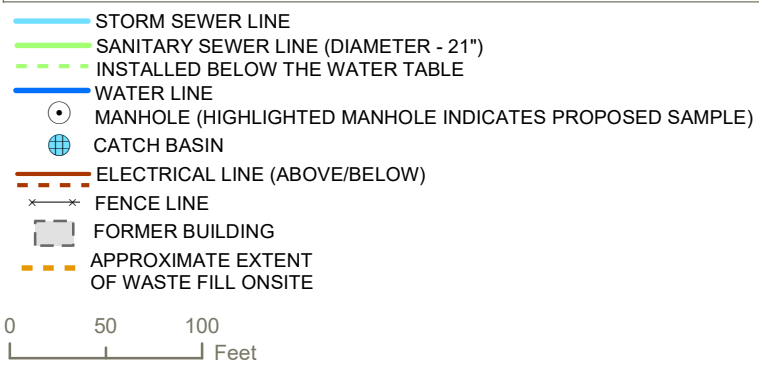
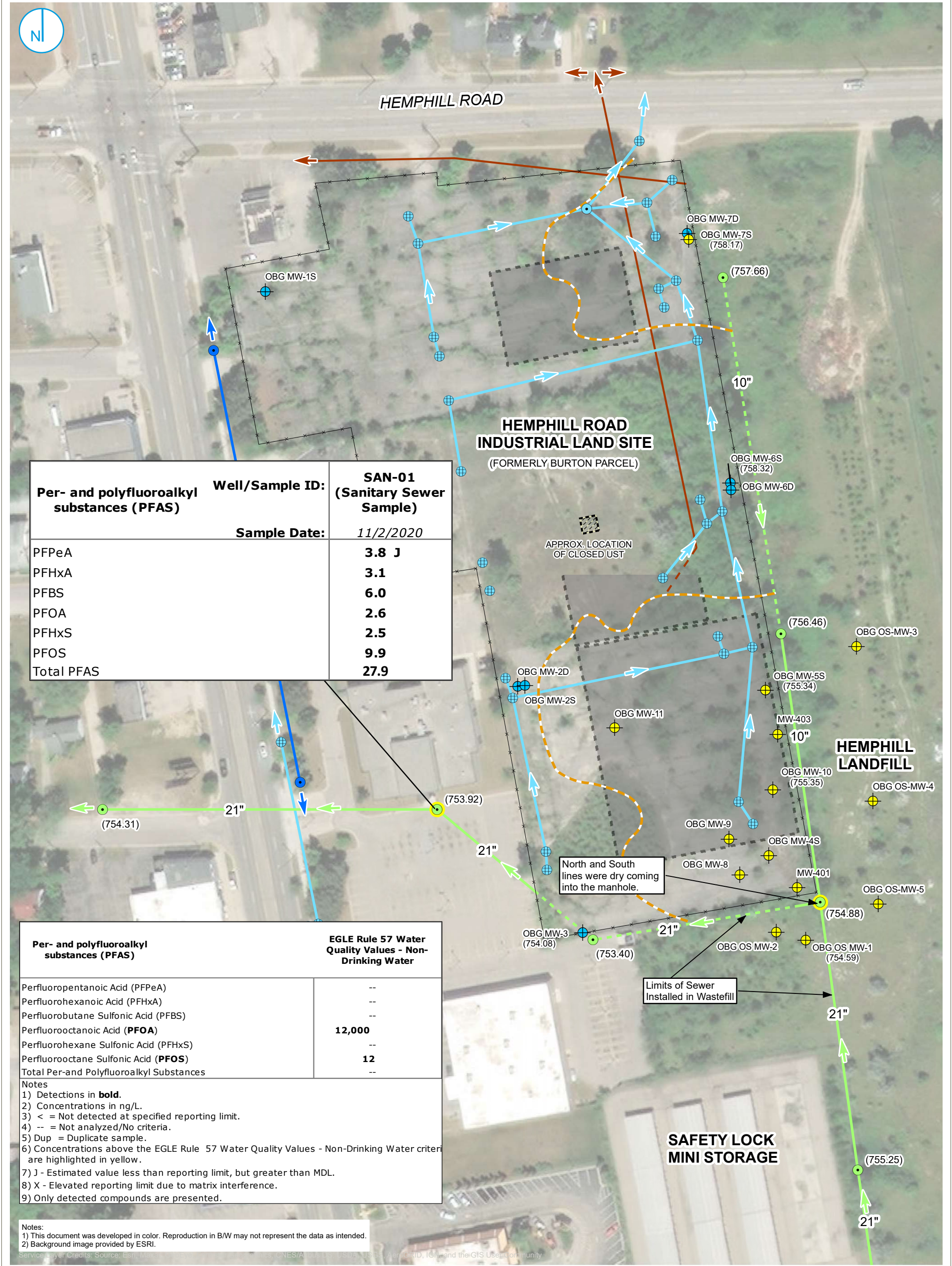
**INTERPRETED SHALLOW GROUNDWATER ELEVATION CONTOURS**  
**OCTOBER 27, 2020**

**FIGURE 04**

**RACER TRUST**  
 HEMPHILL ROAD INDUSTRIAL LAND  
 BURTON, MICHIGAN

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**SITE UTILITY LAYOUT**

**FIGURE 05**



**LEGEND**

-  MONITORING WELL LOCATION (SCREENED IN NATIVE SOIL)
-  MONITORING WELL LOCATION (SCREENED IN FILL)
-  DRIFT AQUIFER WELL LOCATION
-  BEDROCK AQUIFER WELL LOCATION
-  PFAS SAMPLE LOCATION
-  FENCE LINE

BEDROCK AQUIFER WATER WELL DEPTH RANGE:  
180 feet below grade (fbg) to 240 fbg

DRIFT AQUIFER WATER WELL SCREEN INTERVAL:  
80-90 fbg (25000021167) & 140-150 fbg (25000019460)

0 225 450  
Feet

**PFAS SAMPLE LOCATIONS AND PRIVATE WELLS**

**RACER TRUST**  
HEMPHILL ROAD INDUSTRIAL LAND  
BURTON, MICHIGAN

**FIGURE 06**

TABLES



**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results -June - November 2020**

**Hemphill Road Industrial Land - PFAS Groundwater Sample Results**

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-1S	OBG MW-1S	OBG MW-2S	OBG MW-2S	OBG MW-2D	OBG MW-3	OBG MW-3
	Sample Date:		6/29/2020	10/27/2020	6/30/2020	10/27/2020	10/27/2020	6/30/2020	10/28/2020
Perfluorobutanoic Acid (PFBA)	--	--	<b>32 U</b>	<b>13</b>	<b>31 U</b>	<10	<9.7	<b>33 U</b>	<10
Perfluoropentanoic Acid (PFPeA)	--	--	<b>7.7</b>	<b>9.9</b>	<b>7.6</b>	<b>7.3</b>	<3.9	<b>4.1</b>	<b>2.0 J</b>
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<2.0
Perfluorohexanoic Acid (PFHxA)	<b>400,000</b>	<b>5.8</b>	<b>6.8</b>	<b>4.9</b>	<b>5.2</b>	<1.9	<b>2.7</b>	<2.0	<b>3.8</b>
Perfluorobutane Sulfonic Acid (PFBS)	<b>420</b>	<b>2.4</b>	<b>3.4</b>	<2.0	<2.1	<1.9	<b>3.8</b>	<b>3.8</b>	<b>3.8</b>
Perfluoroheptanoic Acid (PFHpA)	--	--	<2.1	<b>2.3</b>	<b>1.8 J</b>	<b>2.0 J</b>	<1.9	<b>2.2</b>	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<2.0
Perfluorooctanoic Acid (PFOA)	<b>8</b>	<b>3.9</b>	<b>3.6</b>	<b>2.3</b>	<b>2.2</b>	<1.9	<b>4.2</b>	<b>4.4</b>	<b>4.4</b>
Perfluorohexane Sulfonic Acid (PFHxS)	<b>51</b>	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorononanoic Acid (PFNA)	<b>6</b>	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorodecanoic Acid (PFDA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<4.2	<4.1	<3.9	<4.1	<3.9	<3.9	<3.9	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	<b>16</b>	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorotridecanoic Acid (PFTrDA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Perfluorotetradecanoic Acid (PFTEDA)	--	<4.2	<4.1	<3.9	<4.1	<3.9	<3.9	<3.9	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	<b>370</b>	<2.1	<2.0	<2.0	<2.1	<1.9	<1.9	<1.9	<2.0
Total Per-and Polyfluoroalkyl Substances	--	<b>19.8</b>	<b>26.0</b>	<b>16.6</b>	<b>16.7</b>	<b>0.0</b>	<b>17.0</b>	<b>10.2</b>	

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) Concentrations above EGLE Drinking Water Maximum Contaminant Levels (MCLs) and cleanup criteria are highlighted in yellow.
- 7) According to Merit, the detection of PFBA in Field Blank-062920, Field Blank-070120, and Field Blank-070220 was caused from the laboratory centrifuge tubes leaching PFBA to the sample during the extraction process. A 5X Rule was applied to PFBA detections. Sample results less than 5 times the associated blank concentration (5X Rule) were qualified "U," undetected.
- 8) J - Estimated value less than reporting limit, but greater than MDL.
- 9) X - Elevated reporting limit due to matrix interference.



**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results -June - November 2020**

**Hemphill Road Industrial Land - PFAS Groundwater Sample Results**

Perfluorinated Compound	Well/Sample ID: EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-4S	OBG MW-5S	OBG MW-5S (DUP-1)	OBG MW-5S	OBG MW-5S (DUP-1)	OBG MW-6S	OBG MW-6S	OBG MW-6D
		Sample Date: 11/2/2020	7/1/2020	7/1/2020	10/29/2020	10/29/2020	6/30/2020	10/28/2020	10/28/2020
Perfluorobutanoic Acid (PFBA)	--	<150 X	<48 X	<38 X	<20 X	<19 X	<b>30 U</b>	<10	<10
Perfluoropentanoic Acid (PFPeA)	--	<4.2	<3.8	<3.8	<4.0	<3.8	<b>4.9</b>	<b>5.0</b>	<b>1.3 J</b>
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorohexanoic Acid (PFHxA)	<b>400,000</b>	<2.1	<3.8 X	<3.8 X	<b>3.2</b>	<b>3.6</b>	<b>5.6</b>	<b>4.5</b>	<2.0
Perfluorobutane Sulfonic Acid (PFBS)	<b>420</b>	<2.1	<3.8 X	<3.8 X	<2.0	<1.9	<b>4.4</b>	<b>4.7</b>	<2.0
Perfluoroheptanoic Acid (PFHpA)	--	<2.1	<1.9	<b>1.8 J</b>	<b>1.7 J</b>	<b>1.6 J</b>	<b>2.2</b>	<b>2.3</b>	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<b>2.2</b>	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorooctanoic Acid (PFOA)	<b>8</b>	<b>4.5</b>	<b>8.7</b>	<b>9.8</b>	<b>11</b>	<b>11</b>	<b>8.8</b>	<b>4.3</b>	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)	<b>51</b>	<2.1	<b>3.2</b>	<b>3.0</b>	<2.0	<1.9	<2.0	<b>1.8 J</b>	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<2.1	<b>2.0</b>	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorononanoic Acid (PFNA)	<b>6</b>	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorodecanoic Acid (PFDA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<4.2	<3.8	<3.8	<4.0	<3.8	<4.0	<4.0	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	<b>16</b>	<b>3.9</b>	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluoroundecanoic Acid (PFUnDA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorododecanoic Acid (PFDoDA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorodecane Sulfonic Acid (PFDS)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorotridecanoic Acid (PFTeDA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorooctane Sulfonamide (FOSA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Perfluorotetradecanoic Acid (PFTeDA)	--	<4.2	<3.8	<3.8	<4.0	<3.8	<4.0	<4.0	<4.1
11-chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	<b>370</b>	<2.1	<1.9	<1.9	<2.0	<1.9	<2.0	<2.0	<2.0
Total Per-and Polyfluoroalkyl Substances	--	<b>8.4</b>	<b>11.9</b>	<b>14.6</b>	<b>15.9</b>	<b>16.2</b>	<b>25.9</b>	<b>24.8</b>	<b>1.3</b>

- Notes
- 1) Detections in **bold**.
  - 2) Concentrations in ng/L.
  - 3) < = Not detected at specified reporting limit.
  - 4) -- = Not analyzed/No criteria.
  - 5) Dup = Duplicate sample.
  - 6) Concentrations above EGLE Drinking Water Maximum Contaminant Levels (MCLs) and cleanup criteria are highlighted in yellow.
  - 7) According to Merit, the detection of PFBA in Field Blank-062920, Field Blank-070120, and Field Blank-070220 was caused from the laboratory centrifuge tubes leaching PFBA to the sample during the extraction process. A 5X Rule was applied to PFBA detections. Sample results less than 5 times the associated blank concentration (5X Rule) were qualified "U," undetected.
  - 8) J - Estimated value less than reporting limit, but greater than MDL.
  - 9) X - Elevated reporting limit due to matrix interference.



**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results -June - November 2020**

**Hemphill Road Industrial Land - PFAS Groundwater Sample Results**

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-7S	OBG MW-7S	OBG MW-7D	OBG MW-7D	OBG MW-8	OBG MW-8
	Sample Date:		6/29/2020	10/27/2020	6/29/2020	10/27/2020	6/30/2020	10/29/2020
Perfluorobutanoic Acid (PFBA)	--	--	<b>33 U</b>	< <b>10</b>	<b>28 U</b>	<11	<b>25 U</b>	<10
Perfluoropentanoic Acid (PFPeA)	--	--	<3.8	<b>1.3 J</b>	<3.9	<4.2	<4.1	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1
Perfluorohexanoic Acid (PFHxA)	<b>400,000</b>	<b>1.4 J</b>	<b>1.7 J</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorobutane Sulfonic Acid (PFBS)	<b>420</b>	<b>1.5 J</b>	<b>1.7 J</b>	<1.9	<2.1	<2.1	<2.1	<b>1.8 J</b>
Perfluoroheptanoic Acid (PFHpA)	--	--	<1.9	<b>1.5 J</b>	<1.9	<2.1	<2.1	<2.1
Perfluoropentane Sulfonic Acid (PFPeS)	--	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1
Perfluorooctanoic Acid (PFOA)	<b>8</b>	<b>19</b>	<b>25</b>	<1.9	<2.1	<2.1	<2.1	<b>1.8 J</b>
Perfluorohexane Sulfonic Acid (PFHxS)	<b>51</b>	<b>3.7</b>	<b>4.7</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<b>2.8</b>	<b>3.1</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorononanoic Acid (PFNA)	<b>6</b>	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorodecanoic Acid (PFDA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<b>6.6</b>	<b>8.4</b>	<3.9	<4.2	<4.1	<4.1	<4.1
Perfluorooctane Sulfonic Acid (PFOS)	<b>16</b>	<b>54</b>	<b>60</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<b>26</b>	<b>29</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<b>27</b>	<b>29</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluoroundecanoic Acid (PFUnDA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorotridecanoic Acid (PFTeDA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Perfluorotetradecanoic Acid (PFTeDA)	--	<3.8	<4.1	<3.9	<4.2	<4.1	<4.1	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UdS)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<1.9	<2.0	<1.9	<2.1	<2.1	<2.1	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	<b>370</b>	<1.9	<b>2.2</b>	<1.9	<2.1	<2.1	<2.1	<2.1
Total Per-and Polyfluoroalkyl Substances	--	<b>86.2</b>	<b>106.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>3.6</b>

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) Concentrations above EGLE Drinking Water Maximum Contaminant Levels (MCLs) and cleanup criteria are highlighted in yellow.
- 7) According to Merit, the detection of PFBA in Field Blank-062920, Field Blank-070120, and Field Blank-070220 was caused from the laboratory centrifuge tubes leaching PFBA to the sample during the extraction process. A 5X Rule was applied to PFBA detections. Sample results less than 5 times the associated blank concentration (5X Rule) were qualified "U," undetected.
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- 9) X - Elevated reporting limit due to matrix interference.



**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results -June - November 2020**

**Hemphill Road Industrial Land - PFAS Groundwater Sample Results**

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	OBG MW-9	OBG MW-10	OBG MW-10	OBG MW-11	MW-401	MW-403
	Sample Date:		10/29/2020	7/2/2020	11/2/2020	10/29/2020	11/2/2020	11/2/2020
Perfluorobutanoic Acid (PFBA)	--	<10.0	<10.0	<b>26 U</b>	<49 X	<20 X	<18 X	<16 X
Perfluoropentanoic Acid (PFPeA)	--	<4.0	<4.0	<3.9	<b>1.4 J</b>	<4.0	<4.1	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorohexanoic Acid (PFHxA)	<b>400,000</b>	<2.0	<2.0	<2.0	<b>1.6 J</b>	<b>3.1</b>	<2.0	<b>1.6 J</b>
Perfluorobutane Sulfonic Acid (PFBS)	<b>420</b>	<b>2.2</b>	<b>1.4</b>	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluoroheptanoic Acid (PFHpA)	--	<2.0	<2.0	<2.0	<b>1.7 J</b>	<2.0	<2.0	<b>2.1</b>
Perfluoropentane Sulfonic Acid (PFPeS)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorooctanoic Acid (PFOA)	<b>8</b>	<2.0	<2.0	<b>9.6</b>	<b>9.6</b>	<b>1.9 J</b>	<2.0	<b>25</b>
Perfluorohexane Sulfonic Acid (PFHxS)	<b>51</b>	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<b>3.6</b>
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<b>3.5</b>
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorononanoic Acid (PFNA)	<b>6</b>	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluoroheptane Sulfonic Acid (PFHpS)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<b>7.3</b>
Perfluorodecanoic Acid (PFDA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	--	<4.0	<4.0	<b>5.6</b>	<4.9 X	<4.0	<4.1	<b>75</b>
Perfluorooctane Sulfonic Acid (PFOS)	<b>16</b>	<2.0	<2.0	<b>16</b>	<b>17</b>	<b>6.5</b>	<2.0	<b>960</b>
Perfluorooctane Sulfonic Acid (PFOS-LN)	--	<2.0	<2.0	<b>7.2</b>	<b>7.0</b>	<2.0	<2.0	<b>710</b>
Perfluorooctane Sulfonic Acid (PFOS-BR)	--	<2.0	<2.0	<b>8.5</b>	<b>8.8</b>	<b>4.8</b>	<2.0	<b>250</b>
Perfluoroundecanoic Acid (PFUnDA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorononane Sulfonic Acid (PFNS)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorododecanoic Acid (PFDoDA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorodecane Sulfonic Acid (PFDS)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorotridecanoic Acid (PFTeDA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Perfluorooctane Sulfonamide (FOSA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<b>32</b>
Perfluorotetradecanoic Acid (PFTeDA)	--	<4.0	<3.9	<3.9	<3.9	<4.0	<4.1	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CI-PF30UdS)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9CI-PF3ONS)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Hexafluoropropylene oxide dimer (HFPO-DA)	<b>370</b>	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1
Total Per-and Polyfluoroalkyl Substances	--	<b>2.2</b>	<b>32.6</b>	<b>31.3</b>	<b>11.5</b>	<b>0.0</b>	<b>1106.6</b>	

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) Concentrations above EGLE Drinking Water Maximum Contaminant Levels (MCLs) and cleanup criteria are highlighted in yellow.
- 7) According to Merit, the detection of PFBA in Field Blank-062920, Field Blank-070120, and Field Blank-070220 was caused from the laboratory centrifuge tubes leaching PFBA to the sample during the extraction process. A 5X Rule was applied to PFBA detections. Sample results less than 5 times the associated blank concentration (5X Rule) were qualified "U," undetected.
- 8) J - Estimated value less than reporting limit, but greater than MDL.
- 9) X - Elevated reporting limit due to matrix interference.



**TABLE 1**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results -June - November 2020**

**Hemphill Road Industrial Land - PFAS Groundwater Sample Results**

Perfluorinated Compound	Well/Sample ID:	EGLE Drinking Water Maximum Contaminant Levels (MCLs)	Field Blank-062920 (Field Blank)	Field Blank-070120 (Field Blank)	Field Blank-070220 (Field Blank)	Field Blank-102720	Field Blank-102920	Field Blank-110220
	Sample Date:		6/29/2020	7/1/2020	7/2/2020	10/27/2020	10/29/2020	11/2/2020
Perfluorobutanoic Acid (PFBA)		--	<b>21</b>	<b>35</b>	<b>16</b>	<10.0	<9.7	<10
Perfluoropentanoic Acid (PFPeA)		--	<4.0	<3.9	<4.0	<4.0	<3.9	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorohexanoic Acid (PFHxA)		<b>400,000</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorobutane Sulfonic Acid (PFBS)		<b>420</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluoroheptanoic Acid (PFHpA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		--	<2.0	<1.9	<2.0	<2.0	<b>2.8</b>	<2.0
Perfluorooctanoic Acid ( <b>PFOA</b> )		<b>8</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)		<b>51</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorononanoic Acid (PFNA)		<b>6</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorodecanoic Acid (PFDA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		--	<4.0	<3.9	<4.0	<4.0	<3.9	<4.1
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> )		<b>16</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> -LN)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> -BR)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluoroundecanoic Acid (PFUnDA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorononane Sulfonic Acid (PFNS)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorododecanoic Acid (PFDoDA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorodecane Sulfonic Acid (PFDS)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorotridecanoic Acid (PFTTrDA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorooctane Sulfonamide (FOSA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Perfluorotetradecanoic Acid (PFTeDA)		--	<4.0	<3.9	<4.0	<4.0	<3.9	<4.1
11-chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)		--	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)		<b>370</b>	<2.0	<1.9	<2.0	<2.0	<1.9	<2.0
Total Per-and Polyfluoroalkyl Substances		--	<b>21.0</b>	<b>35.0</b>	<b>16.0</b>	<b>0.0</b>	<b>2.8</b>	<b>0.0</b>

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) Concentrations above EGLE Drinking Water Maximum Contaminant Levels (MCLs) and cleanup criteria are highlighted in yellow.
- 7) According to Merit, the detection of PFBA in Field Blank-062920, Field Blank-070120, and Field Blank-070220 was caused from the laboratory centrifuge tubes leaching PFBA to the sample during the extraction process. A 5X Rule was applied to PFBA detections. Sample results less than 5 times the associated blank concentration (5X Rule) were qualified "U," undetected.
- 8) J - Estimated value less than reporting limit, but greater than MDL.
- 9) X - Elevated reporting limit due to matrix interference.



**TABLE 2**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results - November 2020**

**Hemphill Road Industrial Land - PFAS LNAPL Sample Results**

Perfluorinated Compound	Well/Sample ID:	OBG MW-4S	MW-401	Field Blank-110220
	Sample Date:	11/2/2020	11/2/2020	11/2/2020
Perfluorobutanoic Acid (PFBA)		<650	<920	<10
Perfluoropentanoic Acid (PFPeA)		<330	<460	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		<330	<460	<2.0
Perfluorohexanoic Acid (PFHxA)		<330	<460	<2.0
Perfluorobutane Sulfonic Acid (PFBS)		<330	<460	<2.0
Perfluoroheptanoic Acid (PFHpA)		<330	<460	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)		<330	<460	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		<330	<460	<2.0
Perfluorooctanoic Acid ( <b>PFOA</b> )		<330	<460	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)		<330	<460	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		<330	<460	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		<330	<460	<2.0
Perfluorononanoic Acid (PFNA)		<330	<460	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		<330	<460	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)		<330	<460	<2.0
Perfluorodecanoic Acid (PFDA)		<330	<460	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)		<330	<460	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		<330	<b>520</b>	<4.1
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> )		<330	<b>320 J</b>	<2.0
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> -LN)		<330	<b>150 J</b>	<2.0
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> -BR)		<330	<b>130 J</b>	<2.0
Perfluoroundecanoic Acid (PFUnDA)		<330	<460	<2.0
Perfluorononane Sulfonic Acid (PFNS)		<330	<460	<2.0
Perfluorododecanoic Acid (PFDoDA)		<330	<460 I	<2.0
Perfluorodecane Sulfonic Acid (PFDS)		<330	<460	<2.0
Perfluorotridecanoic Acid (PFTrDA)		<330	<460 I	<2.0
Perfluorooctane Sulfonamide (FOSA)		<330	<460	<2.0
Perfluorotetradecanoic Acid (PFTeDA)		<330	<460	<4.1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		<330	<460	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)		<330	<460	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)		<330	<460	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)		<330	<460	<2.0
<b>Total Per-and Polyfluoroalkyl Substances</b>		<b>0.0</b>	<b>840.0</b>	<b>0.0</b>

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/kg. Field blank concentration in ng/L
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) J - Estimated value less than reporting limit, but greater than MDL.
- 7) I - Matrix interference with internal standard.



**TABLE 3**  
**RACER Trust - Hemphill Road Industrial Land**  
**Pre-and Polyfluoroalkyl Substances (PFAS) Sampling Results -November 2020**

**Hemphill Road Industrial Land - PFAS Sanitary Sewer Sample Results**

Perfluorinated Compound	Well/Sample ID:	EGLE Rule 57 Water Quality Values - Non-Drinking Water	Sanitary Sewer Southwest of Site	SAN-01 (Sanitary Sewer Sample)	Field Blank-110220
	Sample Date:		11/2/2020	11/2/2020	11/2/2020
Perfluorobutanoic Acid (PFBA)		--	DRY	<10	<10
Perfluoropentanoic Acid (PFPeA)		--	DRY	<b>3.8 J</b>	<4.1
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)		--	DRY	<2.0	<2.0
Perfluorohexanoic Acid (PFHxA)		--	DRY	<b>3.1</b>	<2.0
Perfluorobutane Sulfonic Acid (PFBS)		--	DRY	<b>6.0</b>	<2.0
Perfluoroheptanoic Acid (PFHpA)		--	DRY	<2.0	<2.0
Perfluoropentane Sulfonic Acid (PFPeS)		--	DRY	<2.0	<2.0
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)		--	DRY	<2.0	<2.0
Perfluorooctanoic Acid ( <b>PFOA</b> )		<b>12,000</b>	DRY	<b>2.6</b>	<2.0
Perfluorohexane Sulfonic Acid (PFHxS)		--	DRY	<b>2.5</b>	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)		--	DRY	<b>1.7 J</b>	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)		--	DRY	<2.0	<2.0
Perfluorononanoic Acid (PFNA)		--	DRY	<2.0	<2.0
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)		--	DRY	<2.0	<2.0
Perfluoroheptane Sulfonic Acid (PFHpS)		--	DRY	<2.0	<2.0
Perfluorodecanoic Acid (PFDA)		--	DRY	<2.0	<2.0
N-methyl Perfluorooctanesulfonamidoacetic Acid (N-MeFOSAA)		--	DRY	<2.0	<2.0
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)		--	DRY	<4.0	<4.1
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> )		<b>12</b>	DRY	<b>9.9</b>	<2.0
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> -LN)		--	DRY	<2.0	<2.0
Perfluorooctane Sulfonic Acid ( <b>PFOS</b> -BR)		--	DRY	<b>7.0</b>	<2.0
Perfluoroundecanoic Acid (PFUnDA)		--	DRY	<2.0	<2.0
Perfluorononane Sulfonic Acid (PFNS)		--	DRY	<2.0	<2.0
Perfluorododecanoic Acid (PFDoDA)		--	DRY	<2.0	<2.0
Perfluorodecane Sulfonic Acid (PFDS)		--	DRY	<2.0	<2.0
Perfluorotridecanoic Acid (PFTrDA)		--	DRY	<2.0	<2.0
Perfluorooctane Sulfonamide (FOSA)		--	DRY	<2.0	<2.0
Perfluorotetradecanoic Acid (PFTeDA)		--	DRY	<4.0	<4.1
11-chloroicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		--	DRY	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)		--	DRY	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)		--	DRY	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)		--	DRY	<2.0	<2.0
Total Per-and Polyfluoroalkyl Substances		--		<b>27.9</b>	<b>0.0</b>

Notes

- 1) Detections in **bold**.
- 2) Concentrations in ng/L.
- 3) < = Not detected at specified reporting limit.
- 4) -- = Not analyzed/No criteria.
- 5) Dup = Duplicate sample.
- 6) Concentrations above the EGLE Rule 57 Water Quality Values - Non-Drinking Water criteria are highlighted in yellow.
- 7) J - Estimated value less than reporting limit, but greater than MDL.
- 8) X - Elevated reporting limit due to matrix interference.

**ATTACHMENTS**



ENVIRONMENT  
& HEALTH

ATTACHMENT A  
ANALYTICAL REPORTS



# Analytical Laboratory Report

Report ID: S18760.01(01)  
Generated on 11/18/2020

## Report to

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Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:  
Email: Clifford.Yantz@obg.com

## Report produced by

---

Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

## Contacts for report questions:

John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

## Report Summary

---

Lab Sample ID(s): S18760.01-S18760.12  
Project: RACER Hemphill Rd Industrial Land  
Collected Date(s): 10/27/2020 - 10/29/2020  
Submitted Date/Time: 10/29/2020 13:15  
Sampled by: Kevin Schneider  
P.O. #: 12000648

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

## Report Narrative

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

## Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



# Analytical Laboratory Report

## Sample Summary (12 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S18760.01	OBG MW-1S	Groundwater	10/27/20 10:35
S18760.02	Field Blank-102720	Water	10/27/20 10:32
S18760.03	OBG MW-7S	Groundwater	10/27/20 11:53
S18760.04	OBG MW-7D	Groundwater	10/27/20 13:03
S18760.05	OBG MW-2S	Groundwater	10/27/20 14:18
S18760.06	OBG MW-2D	Groundwater	10/27/20 15:55
S18760.07	OBG MW-3	Groundwater	10/28/20 10:35
S18760.08	OBG MW-6S	Groundwater	10/28/20 14:58
S18760.09	OBG MW-6D	Groundwater	10/28/20 16:42
S18760.10	OBG MW-8	Groundwater	10/29/20 09:42
S18760.11	OBG MW-9	Groundwater	10/29/20 10:53
S18760.12	OBG MW-11	Groundwater	10/29/20 11:48



# Analytical Laboratory Report

Lab Sample ID: S18760.01

Sample Tag: OBG MW-1S

Collected Date/Time: 10/27/2020 10:35

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.88/6.96/12	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/29/20 23:25, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	13	10	10	ng/L	2.03	375-22-4	
PFPeA*	9.9	4.1	1.0	ng/L	2.03	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.03	757124-72-4	
PFHxA*	6.8	2.0	1.4	ng/L	2.03	307-24-4	
PFBS*	3.4	2.0	1.4	ng/L	2.03	375-73-5	
PFHpA*	2.3	2.0	1.4	ng/L	2.03	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.03	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.03	27619-97-2	
PFOA*	3.6	2.0	1.6	ng/L	2.03	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.03	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.03	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.03	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.03	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.03	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.03	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18760.02

Sample Tag: Field Blank-102720

Collected Date/Time: 10/27/2020 10:32

Matrix: Water

COC Reference: 126035

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.35/6.82/11	ASTMD7979-19M	10/29/20 11:15	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 18:30, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10.0	10.0	ng/L	1.99	375-22-4	
PFPeA*	Not detected	4.0	1.00	ng/L	1.99	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.99	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.99	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.99	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.99	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.99	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.99	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.99	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.99	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.99	375-95-1	
8:2 FTSA*	Not detected	2.0	1.00	ng/L	1.99	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.99	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.99	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.99	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.99	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.99	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.99	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.99	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.99	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.99	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.99	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.99	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.99	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.99	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.99	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.99	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18760.03

Sample Tag: OBG MW-7S

Collected Date/Time: 10/27/2020 11:53

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.76/6.88/12	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 00:04, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	1.3	4.1	1.0	ng/L	2.04	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	1.7	2.0	1.4	ng/L	2.04	307-24-4	J
PFBS*	1.7	2.0	1.4	ng/L	2.04	375-73-5	J
PFHpA*	1.5	2.0	1.4	ng/L	2.04	375-85-9	J
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	25	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	4.7	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	3.1	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	8.4	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	60	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	29	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	29	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	2.2	2.0	2.0	ng/L	2.04	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18760.04

Sample Tag: OBG MW-7D

Collected Date/Time: 10/27/2020 13:03

Matrix: Groundwater

COC Reference: 126035

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.11/6.86/11	ASTMD7979-19M	10/29/20 11:15	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 12:27, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	11	11	ng/L	2.1	375-22-4	
PFPeA*	Not detected	4.2	1.1	ng/L	2.1	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.7	ng/L	2.1	757124-72-4	
PFHxA*	Not detected	2.1	1.5	ng/L	2.1	307-24-4	
PFBS*	Not detected	2.1	1.5	ng/L	2.1	375-73-5	
PFHpA*	Not detected	2.1	1.5	ng/L	2.1	375-85-9	
PFPeS*	Not detected	2.1	1.9	ng/L	2.1	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.1	27619-97-2	
PFOA*	Not detected	2.1	1.7	ng/L	2.1	335-67-1	
PFHxS*	Not detected	2.1	1.7	ng/L	2.1	355-46-4	
PFHxS-LN*	Not detected	2.1	1.7	ng/L	2.1	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.7	ng/L	2.1	355-46-4-BR	
PFNA*	Not detected	2.1	1.9	ng/L	2.1	375-95-1	
8:2 FTSA*	Not detected	2.1	1.1	ng/L	2.1	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.1	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.1	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.1	2355-31-9	
EtFOSAA*	Not detected	4.2	2.1	ng/L	2.1	2991-50-6	
PFOS*	Not detected	2.1	2.1	ng/L	2.1	1763-23-1	
PFOS-LN*	Not detected	2.1	2.1	ng/L	2.1	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.1	ng/L	2.1	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.5	ng/L	2.1	2058-94-8	
PFNS*	Not detected	2.1	1.5	ng/L	2.1	68259-12-1	
PFDoDA*	Not detected	2.1	1.7	ng/L	2.1	307-55-1	
PFDS*	Not detected	2.1	1.5	ng/L	2.1	335-77-3	
PFTTrDA*	Not detected	2.1	1.3	ng/L	2.1	72629-94-8	
FOSA*	Not detected	2.1	1.9	ng/L	2.1	754-91-6	
PFTeDA*	Not detected	4.2	1.9	ng/L	2.1	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.9	ng/L	2.1	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.5	ng/L	2.1	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.1	919005-14-4	
HFPO-DA*	Not detected	2.1	2.1	ng/L	2.1	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18760.05

Sample Tag: OBG MW-2S

Collected Date/Time: 10/27/2020 14:18

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.26/6.89/11	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 13:06, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.05	375-22-4	
PFPeA*	7.3	4.1	1.0	ng/L	2.05	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.6	ng/L	2.05	757124-72-4	
PFHxA*	5.2	2.1	1.4	ng/L	2.05	307-24-4	
PFBS*	Not detected	2.1	1.4	ng/L	2.05	375-73-5	
PFHpA*	2.0	2.1	1.4	ng/L	2.05	375-85-9	J
PFPeS*	Not detected	2.1	1.8	ng/L	2.05	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.05	27619-97-2	
PFOA*	2.2	2.1	1.6	ng/L	2.05	335-67-1	
PFHxS*	Not detected	2.1	1.6	ng/L	2.05	355-46-4	
PFHxS-LN*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-BR	
PFNA*	Not detected	2.1	1.8	ng/L	2.05	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.05	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.05	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.05	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.05	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.05	2991-50-6	
PFOS*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1	
PFOS-LN*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.05	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.05	68259-12-1	
PFDODA*	Not detected	2.1	1.6	ng/L	2.05	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.05	335-77-3	
PFTTrDA*	Not detected	2.1	1.2	ng/L	2.05	72629-94-8	
FOSA*	Not detected	2.1	1.8	ng/L	2.05	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.05	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.8	ng/L	2.05	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.05	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.05	919005-14-4	
HFPO-DA*	Not detected	2.1	2.1	ng/L	2.05	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18760.06

Sample Tag: OBG MW-2D

Collected Date/Time: 10/27/2020 15:55

Matrix: Groundwater

COC Reference: 126035

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	13.12/6.90/12	ASTMD7979-19M	10/29/20 11:15	KCV	

### Organics

**28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 01:41, Analyst: KCV**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	9.7	ng/L	1.93	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.93	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.93	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.93	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.93	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.93	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.93	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.93	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.93	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.93	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.93	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.93	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.93	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.93	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.93	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.93	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.93	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.93	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.93	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.93	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.93	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.93	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.93	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.93	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.93	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.93	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.93	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.93	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.93	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18760.07

Sample Tag: OBG MW-3

Collected Date/Time: 10/28/2020 10:35

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.76/6.89/12	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 02:01, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	2.0	4.1	1.0	ng/L	2.04	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	3.8	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	4.4	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.04	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18760.08

Sample Tag: OBG MW-6S

Collected Date/Time: 10/28/2020 14:58

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.89/6.90/12	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 18:50, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2	375-22-4	
PFPeA*	5.0	4.0	1.0	ng/L	2	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2	757124-72-4	
PFHxA*	4.5	2.0	1.4	ng/L	2	307-24-4	
PFBS*	4.7	2.0	1.4	ng/L	2	375-73-5	
PFHpA*	2.3	2.0	1.4	ng/L	2	375-85-9	
PFPeS*	2.2	2.0	1.8	ng/L	2	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2	27619-97-2	
PFOA*	4.3	2.0	1.6	ng/L	2	335-67-1	
PFHxS*	1.8	2.0	1.6	ng/L	2	355-46-4	J
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18760.09

Sample Tag: OBG MW-6D

Collected Date/Time: 10/28/2020 16:42

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.41/6.99/11	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 19:09, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.03	375-22-4	
PFPeA*	1.3	4.1	1.0	ng/L	2.03	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.03	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.03	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.03	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.03	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.03	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.03	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.03	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.03	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.03	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.03	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.03	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.03	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.03	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.03	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.03	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.03	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.03	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.03	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.03	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.03	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.03	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.03	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.03	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.03	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.03	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.03	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.03	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18760.10

Sample Tag: OBG MW-8

Collected Date/Time: 10/29/2020 09:42

Matrix: Groundwater

COC Reference: 126035

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.72/6.86/12	ASTMD7979-19M	10/29/20 11:15	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 19:29, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.05	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.05	2706-90-3	
4:2 FTSA*	Not detected	2.1	1.6	ng/L	2.05	757124-72-4	
PFHxA*	Not detected	2.1	1.4	ng/L	2.05	307-24-4	
PFBS*	1.8	2.1	1.4	ng/L	2.05	375-73-5	J
PFHpA*	Not detected	2.1	1.4	ng/L	2.05	375-85-9	
PFPeS*	Not detected	2.1	1.8	ng/L	2.05	2706-91-4	
6:2 FTSA*	Not detected	2.1	2.1	ng/L	2.05	27619-97-2	
PFOA*	1.8	2.1	1.6	ng/L	2.05	335-67-1	J
PFHxS*	Not detected	2.1	1.6	ng/L	2.05	355-46-4	
PFHxS-LN*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-LN	
PFHxS-BR*	Not detected	2.1	1.6	ng/L	2.05	355-46-4-BR	
PFNA*	Not detected	2.1	1.8	ng/L	2.05	375-95-1	
8:2 FTSA*	Not detected	2.1	1.0	ng/L	2.05	39108-34-4	
PFHpS*	Not detected	2.1	2.1	ng/L	2.05	375-92-8	
PFDA*	Not detected	2.1	2.1	ng/L	2.05	335-76-2	
N-MeFOSAA*	Not detected	2.1	2.1	ng/L	2.05	2355-31-9	
EtFOSAA*	Not detected	4.1	2.1	ng/L	2.05	2991-50-6	
PFOS*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1	
PFOS-LN*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-LN	
PFOS-BR*	Not detected	2.1	2.0	ng/L	2.05	1763-23-1-BR	
PFUnDA*	Not detected	2.1	1.4	ng/L	2.05	2058-94-8	
PFNS*	Not detected	2.1	1.4	ng/L	2.05	68259-12-1	
PFDODA*	Not detected	2.1	1.6	ng/L	2.05	307-55-1	
PFDS*	Not detected	2.1	1.4	ng/L	2.05	335-77-3	
PFTTrDA*	Not detected	2.1	1.2	ng/L	2.05	72629-94-8	
FOSA*	Not detected	2.1	1.8	ng/L	2.05	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.05	376-06-7	
11Cl-PF3OUdS*	Not detected	2.1	1.8	ng/L	2.05	763051-92-9	
9Cl-PF3ONS*	Not detected	2.1	1.4	ng/L	2.05	756426-58-1	
ADONA*	Not detected	2.1	2.1	ng/L	2.05	919005-14-4	
HFPO-DA*	Not detected	2.1	2.1	ng/L	2.05	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18760.11

Sample Tag: OBG MW-9

Collected Date/Time: 10/29/2020 10:53

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.42/6.88/11	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/30/20 19:48, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10.0	10.0	ng/L	1.99	375-22-4	
PFPeA*	Not detected	4.0	1.00	ng/L	1.99	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.99	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.99	307-24-4	
PFBS*	2.2	2.0	1.4	ng/L	1.99	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.99	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.99	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.99	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.99	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.99	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.99	375-95-1	
8:2 FTSA*	Not detected	2.0	1.00	ng/L	1.99	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.99	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.99	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.99	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.99	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.99	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.99	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.99	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.99	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.99	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.99	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.99	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.99	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.99	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.99	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.99	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18760.12

Sample Tag: OBG MW-11

Collected Date/Time: 10/29/2020 11:48

Matrix: Groundwater

COC Reference: 126035

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.91/6.84/12	ASTMD7979-19M	10/29/20 11:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 11/02/20 14:38, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20	9.9	ng/L	1.98	375-22-4	X
PFPeA*	Not detected	4.0	0.99	ng/L	1.98	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.98	757124-72-4	
PFHxA*	3.1	2.0	1.4	ng/L	1.98	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.98	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.98	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.98	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.98	27619-97-2	
PFOA*	1.9	2.0	1.6	ng/L	1.98	335-67-1	J
PFHxS*	Not detected	2.0	1.6	ng/L	1.98	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.98	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.98	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.98	375-95-1	
8:2 FTSA*	Not detected	2.0	0.99	ng/L	1.98	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.98	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.98	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.98	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.98	2991-50-6	
PFOS*	6.5	2.0	1.9	ng/L	1.98	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.98	1763-23-1-LN	
PFOS-BR*	4.8	2.0	1.9	ng/L	1.98	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.98	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.98	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.98	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.98	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.98	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.98	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.98	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.98	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.98	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.98	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.98	13252-13-6	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL

# Merit Laboratories Login Checklist

Lab Set ID:S18760

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Hemphill Rd Industrial Land

Submitted: 10/29/2020 13:15 Login User: MMC

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

## Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 3.4 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

## Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

## Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

## Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_





# Quality Control Report

Report ID: QC-S18760-01  
Generated on 11/18/2020

Report to

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Report Produced by

Merit Laboratories  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S18760.01-S18760.12  
Project: RACER Hemphill Rd Industrial Land  
Submitted Date/Time: 10/29/2020 13:15  
Sampled by: Kevin Schneider  
P.O. #: 12000648

QC Report Sections

Cover Page (Page 1)  
Analysis Summary (Pages 2-13)  
Prep Batch Summary (Page 14)  
Internal Standards per Lab Sample (Pages 15-26)  
Internal Standards per QC Sample (Pages 27-29)  
Batch QC Results (Pages 30-33)

Report Flag Descriptions

\*: QC result is outside of indicated control limits  
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball  
Quality Assurance Manager

# QC Report - Analysis Summary

Lab Sample ID: S18760.01

Sample Tag: OBG MW-1S

Collected Date/Time: 10/27/2020 10:35

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/29/20 23:25	AK201029A	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.02

Sample Tag: Field Blank-102720

Collected Date/Time: 10/27/2020 10:32

Matrix: Water

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 18:30	AK201030R	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.03

Sample Tag: OBG MW-7S

Collected Date/Time: 10/27/2020 11:53

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 00:04	AK201029A	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.04

Sample Tag: OBG MW-7D

Collected Date/Time: 10/27/2020 13:03

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 12:27	AK201029A	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.05

Sample Tag: OBG MW-2S

Collected Date/Time: 10/27/2020 14:18

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 13:06	AK201029A	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.06

Sample Tag: OBG MW-2D

Collected Date/Time: 10/27/2020 15:55

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 01:41	AK201029A	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

**Lab Sample ID: S18760.07**

Sample Tag: OBG MW-3

Collected Date/Time: 10/28/2020 10:35

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 02:01	AK201029A	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

**Lab Sample ID: S18760.08**

Sample Tag: OBG MW-6S

Collected Date/Time: 10/28/2020 14:58

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 18:50	AK201030R	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.09

Sample Tag: OBG MW-6D

Collected Date/Time: 10/28/2020 16:42

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 19:09	AK201030R	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.10

Sample Tag: OBG MW-8

Collected Date/Time: 10/29/2020 09:42

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 19:29	AK201030R	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.11

Sample Tag: OBG MW-9

Collected Date/Time: 10/29/2020 10:53

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/30/20 19:48	AK201030R	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18760.12

Sample Tag: OBG MW-11

Collected Date/Time: 10/29/2020 11:48

Matrix: Groundwater

COC Reference: 126035

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/02/20 14:38	AK201102	PF201029W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF201029W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18760.01	28 PFAs	ASTMD7979-19M	10/29/20 23:25	AK201029A
S18760.02	28 PFAs	ASTMD7979-19M	10/30/20 18:30	AK201030R
S18760.03	28 PFAs	ASTMD7979-19M	10/30/20 00:04	AK201029A
S18760.04	28 PFAs	ASTMD7979-19M	10/30/20 12:27	AK201029A
S18760.05	28 PFAs	ASTMD7979-19M	10/30/20 13:06	AK201029A
S18760.06	28 PFAs	ASTMD7979-19M	10/30/20 01:41	AK201029A
S18760.07	28 PFAs	ASTMD7979-19M	10/30/20 02:01	AK201029A
S18760.08	28 PFAs	ASTMD7979-19M	10/30/20 18:50	AK201030R
S18760.09	28 PFAs	ASTMD7979-19M	10/30/20 19:09	AK201030R
S18760.10	28 PFAs	ASTMD7979-19M	10/30/20 19:29	AK201030R
S18760.11	28 PFAs	ASTMD7979-19M	10/30/20 19:48	AK201030R
S18760.12	28 PFAs	ASTMD7979-19M	11/02/20 14:38	AK201102

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.01

Sample Tag: OBG MW-1S

Collected Date/Time: 10/27/2020 10:35

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201029A, Run Date: 10/29/2020 23:25, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.4	50.0	150.0
M2-6:2FTSA		131.5	50.0	150.0
M2-8:2FTSA		140.9	50.0	150.0
M2PFTeDA		146.5	12.0	218.0
M3PFBS		104.5	50.0	150.0
M3PFHxS		106.4	50.0	150.0
M4PFHpA		115.2	50.0	150.0
M5PFHxA		108.5	50.0	150.0
M5PFPeA		110.3	50.0	150.0
M6PFDA		111.9	50.0	150.0
M7PFUnDA		114.7	50.0	150.0
M8FOSA		106.8	50.0	150.0
M8PFOA		111.5	50.0	150.0
M8PFOS		106.0	50.0	150.0
M9-PFNA		126.7	50.0	150.0
MPFBA		108.0	50.0	150.0
MPFDoDA		118.5	50.0	150.0
d3N-MeFOSAA		133.4	50.0	150.0
d5EtFOSAA		105.1	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.02

Sample Tag: Field Blank-102720

Collected Date/Time: 10/27/2020 10:32

Matrix: Water

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030R, Run Date: 10/30/2020 18:30, Matrix: WW, Dilution: 1.99

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		90.2	50.0	150.0
M2-6:2FTSA		97.5	50.0	150.0
M2-8:2FTSA		89.8	50.0	150.0
M2PFTeDA		121.0	12.0	218.0
M3PFBS		100.1	50.0	150.0
M3PFHxS		91.7	50.0	150.0
M4PFHpA		97.2	50.0	150.0
M5PFHxA		94.2	50.0	150.0
M5PFPeA		94.0	50.0	150.0
M6PFDA		93.4	50.0	150.0
M7PFUnDA		95.9	50.0	150.0
M8FOSA		102.1	50.0	150.0
M8PFOA		95.7	50.0	150.0
M8PFOS		98.2	50.0	150.0
M9-PFNA		86.4	50.0	150.0
MPFBA		63.9	50.0	150.0
MPFDoDA		84.7	50.0	150.0
d3N-MeFOSAA		92.2	50.0	150.0
d5EtFOSAA		83.0	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.03

Sample Tag: OBG MW-7S

Collected Date/Time: 10/27/2020 11:53

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201029A, Run Date: 10/30/2020 00:04, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		121.8	50.0	150.0
M2-6:2FTSA		137.2	50.0	150.0
M2-8:2FTSA		128.0	50.0	150.0
M2PFTeDA		147.6	12.0	218.0
M3PFBS		105.6	50.0	150.0
M3PFHxS		104.7	50.0	150.0
M4PFHpA		111.1	50.0	150.0
M5PFHxA		117.2	50.0	150.0
M5PFPeA		106.9	50.0	150.0
M6PFDA		108.3	50.0	150.0
M7PFUnDA		113.8	50.0	150.0
M8FOSA		108.3	50.0	150.0
M8PFOA		105.5	50.0	150.0
M8PFOS		104.4	50.0	150.0
M9-PFNA		119.6	50.0	150.0
MPFBA		107.7	50.0	150.0
MPFDoDA		125.8	50.0	150.0
d3N-MeFOSAA		137.4	50.0	150.0
d5EtFOSAA		107.8	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.04

Sample Tag: OBG MW-7D

Collected Date/Time: 10/27/2020 13:03

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201029A, Run Date: 10/30/2020 12:27, Matrix: WW, Dilution: 2.1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		92.8	50.0	150.0
M2-6:2FTSA		99.7	50.0	150.0
M2-8:2FTSA		93.2	50.0	150.0
M2PFTeDA		119.7	12.0	218.0
M3PFBS		90.2	50.0	150.0
M3PFHxS		98.4	50.0	150.0
M4PFHpA		96.6	50.0	150.0
M5PFHxA		95.7	50.0	150.0
M5PFPeA		94.8	50.0	150.0
M6PFDA		93.3	50.0	150.0
M7PFUnDA		88.1	50.0	150.0
M8FOSA		95.2	50.0	150.0
M8PFOA		96.7	50.0	150.0
M8PFOS		106.7	50.0	150.0
M9-PFNA		100.4	50.0	150.0
MPFBA		92.1	50.0	150.0
MPFDoDA		102.4	50.0	150.0
d3N-MeFOSAA		110.3	50.0	150.0
d5EtFOSAA		88.2	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.05

Sample Tag: OBG MW-2S

Collected Date/Time: 10/27/2020 14:18

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201029A, Run Date: 10/30/2020 13:06, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.1	50.0	150.0
M2-6:2FTSA		127.9	50.0	150.0
M2-8:2FTSA		113.4	50.0	150.0
M2PFTeDA		101.7	12.0	218.0
M3PFBS		101.4	50.0	150.0
M3PFHxS		96.6	50.0	150.0
M4PFHpA		103.0	50.0	150.0
M5PFHxA		98.2	50.0	150.0
M5PFPeA		94.9	50.0	150.0
M6PFDA		96.1	50.0	150.0
M7PFUnDA		98.1	50.0	150.0
M8FOSA		97.7	50.0	150.0
M8PFOA		98.7	50.0	150.0
M8PFOS		97.4	50.0	150.0
M9-PFNA		102.7	50.0	150.0
MPFBA		95.7	50.0	150.0
MPFDoDA		101.5	50.0	150.0
d3N-MeFOSAA		115.0	50.0	150.0
d5EtFOSAA		100.5	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.06

Sample Tag: OBG MW-2D

Collected Date/Time: 10/27/2020 15:55

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201029A, Run Date: 10/30/2020 01:41, Matrix: WW, Dilution: 1.93

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		114.7	50.0	150.0
M2-6:2FTSA		142.8	50.0	150.0
M2-8:2FTSA		143.9	50.0	150.0
M2PFTeDA		119.8	12.0	218.0
M3PFBS		105.6	50.0	150.0
M3PFHxS		108.0	50.0	150.0
M4PFHpA		103.9	50.0	150.0
M5PFHxA		103.9	50.0	150.0
M5PFPeA		102.5	50.0	150.0
M6PFDA		102.0	50.0	150.0
M7PFUnDA		111.9	50.0	150.0
M8FOSA		103.9	50.0	150.0
M8PFOA		111.1	50.0	150.0
M8PFOS		106.3	50.0	150.0
M9-PFNA		115.3	50.0	150.0
MPFBA		101.6	50.0	150.0
MPFDoDA		110.7	50.0	150.0
d3N-MeFOSAA		117.8	50.0	150.0
d5EtFOSAA		111.2	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.07

Sample Tag: OBG MW-3

Collected Date/Time: 10/28/2020 10:35

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201029A, Run Date: 10/30/2020 02:01, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		109.3	50.0	150.0
M2-6:2FTSA		140.1	50.0	150.0
M2-8:2FTSA		139.9	50.0	150.0
M2PFTeDA		111.2	12.0	218.0
M3PFBS		113.8	50.0	150.0
M3PFHxS		99.8	50.0	150.0
M4PFHpA		111.0	50.0	150.0
M5PFHxA		104.3	50.0	150.0
M5PFPeA		102.3	50.0	150.0
M6PFDA		108.0	50.0	150.0
M7PFUnDA		112.1	50.0	150.0
M8FOSA		109.8	50.0	150.0
M8PFOA		108.3	50.0	150.0
M8PFOS		111.0	50.0	150.0
M9-PFNA		109.4	50.0	150.0
MPFBA		103.1	50.0	150.0
MPFDoDA		110.2	50.0	150.0
d3N-MeFOSAA		134.2	50.0	150.0
d5EtFOSAA		114.0	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.08

Sample Tag: OBG MW-6S

Collected Date/Time: 10/28/2020 14:58

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030R, Run Date: 10/30/2020 18:50, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		80.6	50.0	150.0
M2-6:2FTSA		99.8	50.0	150.0
M2-8:2FTSA		89.0	50.0	150.0
M2PFTeDA		123.4	12.0	218.0
M3PFBS		92.0	50.0	150.0
M3PFHxS		87.2	50.0	150.0
M4PFHpA		93.3	50.0	150.0
M5PFHxA		89.0	50.0	150.0
M5PFPeA		87.9	50.0	150.0
M6PFDA		84.9	50.0	150.0
M7PFUnDA		98.0	50.0	150.0
M8FOSA		105.2	50.0	150.0
M8PFOA		96.1	50.0	150.0
M8PFOS		101.1	50.0	150.0
M9-PFNA		83.7	50.0	150.0
MPFBA		89.1	50.0	150.0
MPFDoDA		86.2	50.0	150.0
d3N-MeFOSAA		95.4	50.0	150.0
d5EtFOSAA		85.1	50.0	150.0

## QC Report - Internal Standards per Lab Sample

**Lab Sample ID: S18760.09**

Sample Tag: OBG MW-6D

Collected Date/Time: 10/28/2020 16:42

Matrix: Groundwater

COC Reference: 126035

**Organics - Volatiles, Analysis: 28 PFAs**

Run in Batch: AK201030R, Run Date: 10/30/2020 19:09, Matrix: WW, Dilution: 2.03

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>91.0</b>	50.0	150.0
M2-6:2FTSA		<b>117.8</b>	50.0	150.0
M2-8:2FTSA		<b>106.4</b>	50.0	150.0
M2PFTeDA		<b>145.1</b>	12.0	218.0
M3PFBS		<b>99.3</b>	50.0	150.0
M3PFHxS		<b>97.3</b>	50.0	150.0
M4PFHpA		<b>98.5</b>	50.0	150.0
M5PFHxA		<b>97.8</b>	50.0	150.0
M5PFPeA		<b>94.7</b>	50.0	150.0
M6PFDA		<b>97.5</b>	50.0	150.0
M7PFUnDA		<b>103.4</b>	50.0	150.0
M8FOSA		<b>114.6</b>	50.0	150.0
M8PFOA		<b>107.2</b>	50.0	150.0
M8PFOS		<b>109.5</b>	50.0	150.0
M9-PFNA		<b>96.3</b>	50.0	150.0
MPFBA		<b>96.1</b>	50.0	150.0
MPFDoDA		<b>94.1</b>	50.0	150.0
d3N-MeFOSAA		<b>103.4</b>	50.0	150.0
d5EtFOSAA		<b>103.4</b>	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.10

Sample Tag: OBG MW-8

Collected Date/Time: 10/29/2020 09:42

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030R, Run Date: 10/30/2020 19:29, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		120.6	50.0	150.0
M2-6:2FTSA		120.9	50.0	150.0
M2-8:2FTSA		108.7	50.0	150.0
M2PFTeDA		140.4	12.0	218.0
M3PFBS		99.0	50.0	150.0
M3PFHxS		94.2	50.0	150.0
M4PFHpA		102.8	50.0	150.0
M5PFHxA		101.0	50.0	150.0
M5PFPeA		96.7	50.0	150.0
M6PFDA		91.4	50.0	150.0
M7PFUnDA		102.2	50.0	150.0
M8FOSA		104.9	50.0	150.0
M8PFOA		101.7	50.0	150.0
M8PFOS		91.7	50.0	150.0
M9-PFNA		95.7	50.0	150.0
MPFBA		95.9	50.0	150.0
MPFDoDA		96.4	50.0	150.0
d3N-MeFOSAA		116.4	50.0	150.0
d5EtFOSAA		101.3	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.11

Sample Tag: OBG MW-9

Collected Date/Time: 10/29/2020 10:53

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030R, Run Date: 10/30/2020 19:48, Matrix: WW, Dilution: 1.99

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		107.7	50.0	150.0
M2-6:2FTSA		114.4	50.0	150.0
M2-8:2FTSA		102.3	50.0	150.0
M2PFTeDA		122.3	12.0	218.0
M3PFBS		99.6	50.0	150.0
M3PFHxS		94.4	50.0	150.0
M4PFHpA		101.0	50.0	150.0
M5PFHxA		90.9	50.0	150.0
M5PFPeA		96.2	50.0	150.0
M6PFDA		97.1	50.0	150.0
M7PFUnDA		107.3	50.0	150.0
M8FOSA		108.8	50.0	150.0
M8PFOA		105.0	50.0	150.0
M8PFOS		91.9	50.0	150.0
M9-PFNA		89.8	50.0	150.0
MPFBA		98.0	50.0	150.0
MPFDoDA		89.6	50.0	150.0
d3N-MeFOSAA		97.5	50.0	150.0
d5EtFOSAA		93.9	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18760.12

Sample Tag: OBG MW-11

Collected Date/Time: 10/29/2020 11:48

Matrix: Groundwater

COC Reference: 126035

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201102, Run Date: 11/02/2020 14:38, Matrix: WW, Dilution: 1.98

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		95.1	50.0	150.0
M2-6:2FTSA		83.9	50.0	150.0
M2-8:2FTSA		85.3	50.0	150.0
M2PFTeDA		81.2	12.0	218.0
M3PFBS		104.3	50.0	150.0
M3PFHxS		101.8	50.0	150.0
M4PFHpA		98.3	50.0	150.0
M5PFHxA		102.9	50.0	150.0
M5PFPeA		102.6	50.0	150.0
M6PFDA		102.9	50.0	150.0
M7PFUnDA		108.7	50.0	150.0
M8FOSA		105.1	50.0	150.0
M8PFOA		97.9	50.0	150.0
M8PFOS		94.3	50.0	150.0
M9-PFNA		99.8	50.0	150.0
MPFBA		109.1	50.0	150.0
MPFDoDA		101.8	50.0	150.0
d3N-MeFOSAA		87.8	50.0	150.0
d5EtFOSAA		93.1	50.0	150.0

**QC Report - Internal Standards per QC Sample**

**Organics - Volatiles, Prep Batch ID: PF201029W1**

QC Types: BLK/LCS/LCSD/MS/DUP

**Blank (BLK)**

Lab Sample ID: AK201029A.BLK201029

Run in Batch: AK201029A, Run Date: 10/29/2020 19:31, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>130.8</b>	50.0	150.0
M2-6:2FTSA		<b>132.7</b>	50.0	150.0
M2-8:2FTSA		<b>126.2</b>	50.0	150.0
M2PFTeDA		<b>94.0</b>	12.0	218.0
M3PFBS		<b>106.3</b>	50.0	150.0
M3PFHxS		<b>103.4</b>	50.0	150.0
M4PFHpA		<b>105.3</b>	50.0	150.0
M5PFHxA		<b>100.0</b>	50.0	150.0
M5PFPeA		<b>99.9</b>	50.0	150.0
M6PFDA		<b>105.5</b>	50.0	150.0
M7PFUnDA		<b>103.5</b>	50.0	150.0
M8FOSA		<b>99.9</b>	50.0	150.0
M8PFOA		<b>101.9</b>	50.0	150.0
M8PFOS		<b>109.2</b>	50.0	150.0
M9-PFNA		<b>110.8</b>	50.0	150.0
MPFBA		<b>66.9</b>	50.0	150.0
MPFDoDA		<b>95.6</b>	50.0	150.0
d3N-MeFOSAA		<b>137.0</b>	50.0	150.0
d5EtFOSAA		<b>119.1</b>	50.0	150.0

**Laboratory Control Sample (LCS)**

Lab Sample ID: AK201029A.LCS201029

Run in Batch: AK201029A, Run Date: 10/29/2020 18:52, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>106.8</b>	50.0	150.0
M2-6:2FTSA		<b>119.4</b>	50.0	150.0
M2-8:2FTSA		<b>101.2</b>	50.0	150.0
M2PFTeDA		<b>122.2</b>	12.0	218.0
M3PFBS		<b>101.4</b>	50.0	150.0
M3PFHxS		<b>100.4</b>	50.0	150.0
M4PFHpA		<b>106.9</b>	50.0	150.0
M5PFHxA		<b>105.7</b>	50.0	150.0
M5PFPeA		<b>103.1</b>	50.0	150.0
M6PFDA		<b>104.9</b>	50.0	150.0
M7PFUnDA		<b>104.5</b>	50.0	150.0
M8FOSA		<b>104.8</b>	50.0	150.0
M8PFOA		<b>102.8</b>	50.0	150.0
M8PFOS		<b>96.1</b>	50.0	150.0
M9-PFNA		<b>109.7</b>	50.0	150.0
MPFBA		<b>102.3</b>	50.0	150.0
MPFDoDA		<b>111.8</b>	50.0	150.0
d3N-MeFOSAA		<b>124.5</b>	50.0	150.0
d5EtFOSAA		<b>102.2</b>	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201029A.LCSD201029R, Parent Sample ID: AK201029A.LCS201029

Run in Batch: AK201029A, Run Date: 10/30/2020 12:08, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		95.1	50.0	150.0
M2-6:2FTSA		100.7	50.0	150.0
M2-8:2FTSA		98.2	50.0	150.0
M2PFTeDA		116.6	12.0	218.0
M3PFBS		93.9	50.0	150.0
M3PFHxS		88.9	50.0	150.0
M4PFHpA		91.4	50.0	150.0
M5PFHxA		98.3	50.0	150.0
M5PFPeA		93.6	50.0	150.0
M6PFDA		100.4	50.0	150.0
M7PFUnDA		89.5	50.0	150.0
M8FOSA		98.4	50.0	150.0
M8PFOA		98.6	50.0	150.0
M8PFOS		97.6	50.0	150.0
M9-PFNA		103.5	50.0	150.0
MPFBA		92.5	50.0	150.0
MPFDoDA		98.1	50.0	150.0
d3N-MeFOSAA		115.8	50.0	150.0
d5EtFOSAA		88.8	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201029A.1876004RM, Parent Sample ID: S18760.04

Run in Batch: AK201029A, Run Date: 10/30/2020 12:47, Prep Date: 10/29/2020, Matrix: WW, Dilution: 2.1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		94.1	50.0	150.0
M2-6:2FTSA		113.6	50.0	150.0
M2-8:2FTSA		96.9	50.0	150.0
M2PFTeDA		111.6	12.0	218.0
M3PFBS		95.7	50.0	150.0
M3PFHxS		92.7	50.0	150.0
M4PFHpA		98.6	50.0	150.0
M5PFHxA		95.3	50.0	150.0
M5PFPeA		94.7	50.0	150.0
M6PFDA		99.8	50.0	150.0
M7PFUnDA		94.1	50.0	150.0
M8FOSA		94.9	50.0	150.0
M8PFOA		98.8	50.0	150.0
M8PFOS		97.7	50.0	150.0
M9-PFNA		100.1	50.0	150.0
MPFBA		93.9	50.0	150.0
MPFDoDA		104.6	50.0	150.0
d3N-MeFOSAA		108.5	50.0	150.0
d5EtFOSAA		83.1	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK201029A.1876005RD, Parent Sample ID: S18760.05

Run in Batch: AK201029A, Run Date: 10/30/2020 13:26, Prep Date: 10/29/2020, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>98.8</b>	50.0	150.0
M2-6:2FTSA		<b>123.7</b>	50.0	150.0
M2-8:2FTSA		<b>101.2</b>	50.0	150.0
M2PFTeDA		<b>107.5</b>	12.0	218.0
M3PFBS		<b>93.5</b>	50.0	150.0
M3PFHxS		<b>93.0</b>	50.0	150.0
M4PFHpA		<b>92.5</b>	50.0	150.0
M5PFHxA		<b>97.5</b>	50.0	150.0
M5PFPeA		<b>93.5</b>	50.0	150.0
M6PFDA		<b>92.0</b>	50.0	150.0
M7PFUnDA		<b>96.9</b>	50.0	150.0
M8FOSA		<b>96.6</b>	50.0	150.0
M8PFOA		<b>93.4</b>	50.0	150.0
M8PFOS		<b>105.6</b>	50.0	150.0
M9-PFNA		<b>103.8</b>	50.0	150.0
MPFBA		<b>93.8</b>	50.0	150.0
MPFDoDA		<b>98.8</b>	50.0	150.0
d3N-MeFOSAA		<b>103.3</b>	50.0	150.0
d5EtFOSAA		<b>91.3</b>	50.0	150.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201029W1**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Blank (BLK)**

Lab Sample ID: AK201029A.BLK201029

Run in Batch: AK201029A, Run Date: 10/29/2020 19:31, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	2	ng/l

**Laboratory Control Sample (LCS)**

Lab Sample ID: AK201029A.LCS201029

Run in Batch: AK201029A, Run Date: 10/29/2020 18:52, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		114.0	70.0	130.0
PFPeA		115.0	70.0	130.0
4:2 FTSA		97.7	70.0	130.0
PFHxA		108.0	70.0	130.0
PFBS		116.0	70.0	130.0
HFPO-DA		98.7	70.0	130.0
PFHpA		109.0	70.0	130.0
PFPeS		122.0	70.0	130.0
ADONA		105.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201029W1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201029A.LCS201029

Run in Batch: AK201029A, Run Date: 10/29/2020 18:52, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		106.0	70.0	130.0
PFOA		113.0	70.0	130.0
PFHxS		120.0	70.0	130.0
PFNA		111.0	70.0	130.0
8:2 FTSA		96.5	70.0	130.0
PFHpS		105.0	70.0	130.0
PFDA		113.0	70.0	130.0
N-MeFOSAA		114.0	70.0	130.0
PFOS		123.0	70.0	130.0
EtFOSAA		104.0	70.0	130.0
PFUnDA		110.0	70.0	130.0
9CL-PF3ONS		121.0	70.0	130.0
PFNS		114.0	70.0	130.0
PFDoDA		105.0	70.0	130.0
PFDS		111.0	70.0	130.0
PFTrDA		107.0	70.0	130.0
11CL-PF3OUdS		113.0	70.0	130.0
PFTeDA		105.0	70.0	130.0
FOSA		115.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201029A.LCSD201029R, Parent Sample ID: AK201029A.LCS201029

Run in Batch: AK201029A, Run Date: 10/30/2020 12:08, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		113.0	70.0	130.0	0.9	30.0
PFPeA		113.0	70.0	130.0	1.8	30.0
4:2 FTSA		100.0	70.0	130.0	2.3	30.0
PFHxA		99.5	70.0	130.0	8.2	30.0
PFBS		112.0	70.0	130.0	3.5	30.0
HFPO-DA		93.2	70.0	130.0	5.7	30.0
PFHpA		112.0	70.0	130.0	2.7	30.0
PFPeS		118.0	70.0	130.0	3.3	30.0
ADONA		93.9	70.0	130.0	11.2	30.0
6:2 FTSA		109.0	70.0	130.0	2.8	30.0
PFOA		100.0	70.0	130.0	12.2	30.0
PFHxS		123.0	70.0	130.0	2.5	30.0
PFNA		104.0	70.0	130.0	6.5	30.0
8:2 FTSA		94.6	70.0	130.0	2.0	30.0
PFHpS		116.0	70.0	130.0	10.0	30.0
PFDA		105.0	70.0	130.0	7.3	30.0
N-MeFOSAA		107.0	70.0	130.0	6.3	30.0
PFOS		108.0	70.0	130.0	13.0	30.0
EtFOSAA		104.0	70.0	130.0	0.0	30.0
PFUnDA		108.0	70.0	130.0	1.8	30.0
9CL-PF3ONS		100.0	70.0	130.0	19.0	30.0
PFNS		104.0	70.0	130.0	9.2	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201029W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201029A.LCSD201029R, Parent Sample ID: AK201029A.LCS201029

Run in Batch: AK201029A, Run Date: 10/30/2020 12:08, Prep Date: 10/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		111.0	70.0	130.0	5.6	30.0
PFDS		105.0	70.0	130.0	5.6	30.0
PFTTrDA		110.0	70.0	130.0	2.8	30.0
11CL-PF3OUdS		100.0	70.0	130.0	12.2	30.0
PFTeDA		114.0	70.0	130.0	8.2	30.0
FOSA		115.0	70.0	130.0	0.0	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201029A.1876004RM, Parent Sample ID: S18760.04

Run in Batch: AK201029A, Run Date: 10/30/2020 12:47, Prep Date: 10/29/2020, Matrix: WW, Dilution: 2.1

Analyte	Flags	% Rec	LCL	UCL
PFBA		114.3	70.0	130.0
PFPeA		114.3	70.0	130.0
4:2 FTSA		104.8	70.0	130.0
PFHxA		114.3	70.0	130.0
PFBS		114.3	70.0	130.0
PFHpA		95.2	70.0	130.0
PFPeS		123.8	70.0	130.0
6:2 FTSA		104.8	70.0	130.0
PFOA		104.8	70.0	130.0
PFHxS		123.8	70.0	130.0
PFNA		114.3	70.0	130.0
8:2 FTSA		95.2	70.0	130.0
PFHpS		123.8	70.0	130.0
PFDA		104.8	70.0	130.0
N-MeFOSAA		104.8	70.0	130.0
EtFOSAA		114.3	70.0	130.0
PFOS		114.3	70.0	130.0
PFUnDA		114.3	70.0	130.0
PFNS		114.3	70.0	130.0
PFDoDA		95.2	70.0	130.0
PFDS		104.8	70.0	130.0
PFTTrDA		104.8	70.0	130.0
FOSA		123.8	70.0	130.0
PFTeDA		114.3	70.0	130.0
11CL-PF3OUdS		104.8	70.0	130.0
9CL-PF3ONS		104.8	70.0	130.0
ADONA		95.2	70.0	130.0
HFPO-DA		93.3	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK201029A.1876005RD, Parent Sample ID: S18760.05

Run in Batch: AK201029A, Run Date: 10/30/2020 13:26, Prep Date: 10/29/2020, Matrix: WW, Dilution: 2.05

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		11.6	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF201029W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Duplicate (DUP) (continued)

Lab Sample ID: AK201029A.1876005RD, Parent Sample ID: S18760.05

Run in Batch: AK201029A, Run Date: 10/30/2020 13:26, Prep Date: 10/29/2020, Matrix: WW, Dilution: 2.05

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		7.4	30.0
PFBS		NC	30.0
PFHpA		14.0	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		12.8	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0





# Analytical Laboratory Report

Report ID: S18812.01(01)  
Generated on 11/18/2020

## Report to

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Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:  
Email: Clifford.Yantz@obg.com

## Report produced by

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Merit Laboratories, Inc.  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

## Contacts for report questions:

John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

## Report Summary

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Lab Sample ID(s): S18812.01-S18812.03  
Project: RACER Hemphill Rd Industrial Land  
Collected Date(s): 10/29/2020  
Submitted Date/Time: 10/30/2020 14:30  
Sampled by: Kevin Schneider  
P.O. #: 12000648

## Table of Contents

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

## Report Narrative

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

## Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



# Analytical Laboratory Report

## Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S18812.01	DUP-1	Groundwater	10/29/20 00:01
S18812.02	OBG MW-5S	Groundwater	10/29/20 17:12
S18812.03	Field Blank-102920	Water	10/29/20 17:25



# Analytical Laboratory Report

Lab Sample ID: S18812.01

Sample Tag: DUP-1

Collected Date/Time: 10/29/2020 00:01

Matrix: Groundwater

COC Reference: 126043

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.61/6.86/11	ASTMD7979-19M	10/30/20 15:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/31/20 14:00, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	19	9.6	ng/L	1.91	375-22-4	X
PFPeA*	Not detected	3.8	0.96	ng/L	1.91	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.91	757124-72-4	
PFHxA*	3.6	1.9	1.3	ng/L	1.91	307-24-4	
PFBS*	Not detected	1.9	1.3	ng/L	1.91	375-73-5	
PFHpA*	1.6	1.9	1.3	ng/L	1.91	375-85-9	J
PFPeS*	Not detected	1.9	1.7	ng/L	1.91	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.91	27619-97-2	
PFOA*	11	1.9	1.5	ng/L	1.91	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.91	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.91	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.91	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.91	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.91	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.91	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.91	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.91	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.91	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.91	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.91	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.91	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.91	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.91	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.91	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.91	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.91	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.91	13252-13-6	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18812.02

Sample Tag: OBG MW-5S

Collected Date/Time: 10/29/2020 17:12

Matrix: Groundwater

COC Reference: 126043

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.42/6.89/11	ASTMD7979-19M	10/30/20 15:15	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/31/20 14:19, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	20	10.0	ng/L	1.99	375-22-4	X
PFPeA*	Not detected	4.0	1.00	ng/L	1.99	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.99	757124-72-4	
PFHxA*	3.2	2.0	1.4	ng/L	1.99	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.99	375-73-5	
PFHpA*	1.7	2.0	1.4	ng/L	1.99	375-85-9	J
PFPeS*	Not detected	2.0	1.8	ng/L	1.99	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.99	27619-97-2	
PFOA*	11	2.0	1.6	ng/L	1.99	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.99	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.99	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.99	375-95-1	
8:2 FTSA*	Not detected	2.0	1.00	ng/L	1.99	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.99	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.99	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.99	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	1.99	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	1.99	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.99	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.99	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.99	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.99	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.99	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.99	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	1.99	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.99	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.99	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.99	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	1.99	13252-13-6	

X-Elevated reporting limit due to matrix interference

J-Estimated value less than reporting limit, but greater than MDL



# Analytical Laboratory Report

Lab Sample ID: S18812.03

Sample Tag: Field Blank-102920

Collected Date/Time: 10/29/2020 17:25

Matrix: Water

COC Reference: 126043

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	2.6	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.16/7.00/10	ASTMD7979-19M	10/30/20 15:15	KCV	

### Organics

**28 PFAs, Method: ASTMD7979-19M, Run Date: 10/31/20 14:39, Analyst: KCV**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	9.7	ng/L	1.94	375-22-4	
PFPeA*	Not detected	3.9	0.97	ng/L	1.94	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.6	ng/L	1.94	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.94	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.94	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.94	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.94	2706-91-4	
6:2 FTSA*	2.8	1.9	1.9	ng/L	1.94	27619-97-2	
PFOA*	Not detected	1.9	1.6	ng/L	1.94	335-67-1	
PFHxS*	Not detected	1.9	1.6	ng/L	1.94	355-46-4	
PFHxS-LN*	Not detected	1.9	1.6	ng/L	1.94	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.6	ng/L	1.94	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.94	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.94	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.94	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.94	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.94	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.94	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.94	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.94	68259-12-1	
PFDODA*	Not detected	1.9	1.6	ng/L	1.94	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.94	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.94	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.94	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.94	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.94	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.94	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.94	919005-14-4	
HFPO-DA*	Not detected	1.9	1.9	ng/L	1.94	13252-13-6	

# Merit Laboratories Login Checklist

Lab Set ID:S18812

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Hemphill Rd Industrial Land

Submitted: 10/30/2020 14:30 Login User: MMC

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

## Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 2.6 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

## Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

## Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

## Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



2680 East Lansing Dr., East Lansing, MI 48823  
 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

126043

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Clifford Yartz  
 COMPANY Ramboll  
 ADDRESS 2260 East Lansing  
 CITY East Lansing STATE MI ZIP CODE 48823  
 PHONE NO. 313-333-0211 FAX NO. \_\_\_\_\_ P.O. NO. \_\_\_\_\_  
 E-MAIL ADDRESS clifford.yartz@ramboll.com QUOTE NO. \_\_\_\_\_

CONTACT NAME  SAME  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_  
 PHONE NO. \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

PROJECT NO./NAME RACER Hemphill Rd Industrial Land SAMPLER(S) - PLEASE PRINT/SIGN NAME Karin Schneider  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

PFAS (ASTM D7761)

Certifications  
 OHIO VAP  Drinking Water  
 DoD  NPDES  
 Project Locations  
 Detroit  New York  
 Other \_\_\_\_\_  
 Special Instructions

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	PFAS (ASTM D7761)							
	DATE	TIME																		
1881201	10/29/20	—	DUP-1	GW	3	3							X							
.02	↓	1712	086 MW-SS	GW	3	3							X							
.03	↓	1725	Field Blank - 102920	QL	3	3							X							

Low level Reporting limit with estimated values

RELINQUISHED BY: [Signature]  Sampler DATE 10/30/20 TIME 12:30  
 RECEIVED BY: [Signature] DATE 10/30/20 TIME 12:30  
 RELINQUISHED BY: [Signature] DATE 10/30/20 TIME 14:30  
 RECEIVED BY: [Signature] DATE 10/30/20 TIME 14:30

RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 SEAL NO. SEAL INTACT YES  NO  INITIALS \_\_\_\_\_ NOTES: TEMP. ON ARRIVAL 2.6  
 SEAL NO. SEAL INTACT YES  NO  INITIALS \_\_\_\_\_

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



# Quality Control Report

Report ID: QC-S18812-01  
Generated on 11/19/2020

Report to

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Report Produced by

Merit Laboratories  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S18812.01-S18812.03  
Project: RACER Hemphill Rd Industrial Land  
Submitted Date/Time: 10/30/2020 14:30  
Sampled by: Kevin Schneider  
P.O. #: 12000648

QC Report Sections

Cover Page (Page 1)  
Analysis Summary (Pages 2-4)  
Prep Batch Summary (Page 5)  
Internal Standards per Lab Sample (Pages 6-8)  
Internal Standards per QC Sample (Pages 9-11)  
Batch QC Results (Pages 12-15)

Report Flag Descriptions

\*: QC result is outside of indicated control limits  
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball  
Quality Assurance Manager

# QC Report - Analysis Summary

Lab Sample ID: S18812.01

Sample Tag: DUP-1

Collected Date/Time: 10/29/2020 00:01

Matrix: Groundwater

COC Reference: 126043

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/31/20 14:00	AK201030W	PF201030W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18812.02

Sample Tag: OBG MW-5S

Collected Date/Time: 10/29/2020 17:12

Matrix: Groundwater

COC Reference: 126043

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/31/20 14:19	AK201030W	PF201030W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18812.03

Sample Tag: Field Blank-102920

Collected Date/Time: 10/29/2020 17:25

Matrix: Water

COC Reference: 126043

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	10/31/20 14:39	AK201030W	PF201030W1	Yes	BLK/LCS/LCSD/MS/DU

## QC Report - Prep Batch Summary

### Organics - Volatiles, Prep Batch ID: PF201030W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18812.01	28 PFAs	ASTMD7979-19M	10/31/20 14:00	AK201030W
S18812.02	28 PFAs	ASTMD7979-19M	10/31/20 14:19	AK201030W
S18812.03	28 PFAs	ASTMD7979-19M	10/31/20 14:39	AK201030W

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18812.01

Sample Tag: DUP-1

Collected Date/Time: 10/29/2020 00:01

Matrix: Groundwater

COC Reference: 126043

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030W, Run Date: 10/31/2020 14:00, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		92.5	50.0	150.0
M2-6:2FTSA		92.1	50.0	150.0
M2-8:2FTSA		92.8	50.0	150.0
M2PFTeDA		124.9	12.0	218.0
M3PFBS		104.6	50.0	150.0
M3PFHxS		110.2	50.0	150.0
M4PFHpA		105.5	50.0	150.0
M5PFHxA		105.9	50.0	150.0
M5PFPeA		105.7	50.0	150.0
M6PFDA		97.7	50.0	150.0
M7PFUnDA		111.6	50.0	150.0
M8FOSA		104.6	50.0	150.0
M8PFOA		104.9	50.0	150.0
M8PFOS		112.8	50.0	150.0
M9-PFNA		103.0	50.0	150.0
MPFBA		105.5	50.0	150.0
MPFDoDA		94.4	50.0	150.0
d3N-MeFOSAA		94.3	50.0	150.0
d5EtFOSAA		97.6	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18812.02

Sample Tag: OBG MW-5S

Collected Date/Time: 10/29/2020 17:12

Matrix: Groundwater

COC Reference: 126043

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030W, Run Date: 10/31/2020 14:19, Matrix: WW, Dilution: 1.99

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		80.8	50.0	150.0
M2-6:2FTSA		87.0	50.0	150.0
M2-8:2FTSA		77.6	50.0	150.0
M2PFTeDA		152.0	12.0	218.0
M3PFBS		98.9	50.0	150.0
M3PFHxS		98.1	50.0	150.0
M4PFHpA		104.6	50.0	150.0
M5PFHxA		102.4	50.0	150.0
M5PFPeA		102.7	50.0	150.0
M6PFDA		99.4	50.0	150.0
M7PFUnDA		109.6	50.0	150.0
M8FOSA		101.4	50.0	150.0
M8PFOA		99.7	50.0	150.0
M8PFOS		111.1	50.0	150.0
M9-PFNA		98.3	50.0	150.0
MPFBA		102.0	50.0	150.0
MPFDoDA		105.3	50.0	150.0
d3N-MeFOSAA		91.2	50.0	150.0
d5EtFOSAA		91.0	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18812.03

Sample Tag: Field Blank-102920

Collected Date/Time: 10/29/2020 17:25

Matrix: Water

COC Reference: 126043

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201030W, Run Date: 10/31/2020 14:39, Matrix: WW, Dilution: 1.94

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		88.0	50.0	150.0
M2-6:2FTSA		87.5	50.0	150.0
M2-8:2FTSA		87.9	50.0	150.0
M2PFTeDA		157.2	12.0	218.0
M3PFBS		104.8	50.0	150.0
M3PFHxS		115.3	50.0	150.0
M4PFHpA		104.7	50.0	150.0
M5PFHxA		103.5	50.0	150.0
M5PFPeA		105.8	50.0	150.0
M6PFDA		106.7	50.0	150.0
M7PFUnDA		113.6	50.0	150.0
M8FOSA		102.9	50.0	150.0
M8PFOA		114.2	50.0	150.0
M8PFOS		118.3	50.0	150.0
M9-PFNA		102.8	50.0	150.0
MPFBA		105.0	50.0	150.0
MPFDoDA		111.8	50.0	150.0
d3N-MeFOSAA		98.2	50.0	150.0
d5EtFOSAA		100.2	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Organics - Volatiles, Prep Batch ID: PF201030W1

QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201102.BLK201030

Run in Batch: AK201102, Run Date: 11/02/2020 15:37, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		84.0	50.0	150.0
M2-6:2FTSA		74.1	50.0	150.0
M2-8:2FTSA		83.8	50.0	150.0
M2PFTeDA		135.0	12.0	218.0
M3PFBS		110.6	50.0	150.0
M3PFHxS		102.2	50.0	150.0
M4PFHpA		104.3	50.0	150.0
M5PFHxA		102.8	50.0	150.0
M5PFPeA		109.7	50.0	150.0
M6PFDA		111.2	50.0	150.0
M7PFUnDA		126.0	50.0	150.0
M8FOSA		112.0	50.0	150.0
M8PFOA		106.9	50.0	150.0
M8PFOS		103.6	50.0	150.0
M9-PFNA		102.9	50.0	150.0
MPFBA		110.0	50.0	150.0
MPFDoDA		120.8	50.0	150.0
d3N-MeFOSAA		109.9	50.0	150.0
d5EtFOSAA		98.3	50.0	150.0

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201102.LCS201030

Run in Batch: AK201102, Run Date: 11/02/2020 14:58, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		86.2	50.0	150.0
M2-6:2FTSA		103.2	50.0	150.0
M2-8:2FTSA		89.2	50.0	150.0
M2PFTeDA		128.9	12.0	218.0
M3PFBS		100.0	50.0	150.0
M3PFHxS		105.8	50.0	150.0
M4PFHpA		96.9	50.0	150.0
M5PFHxA		97.4	50.0	150.0
M5PFPeA		99.9	50.0	150.0
M6PFDA		106.9	50.0	150.0
M7PFUnDA		103.9	50.0	150.0
M8FOSA		113.5	50.0	150.0
M8PFOA		109.0	50.0	150.0
M8PFOS		91.8	50.0	150.0
M9-PFNA		101.7	50.0	150.0
MPFBA		101.1	50.0	150.0
MPFDoDA		114.2	50.0	150.0
d3N-MeFOSAA		97.9	50.0	150.0
d5EtFOSAA		95.2	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201102.LCSD201030, Parent Sample ID: AK201102.LCS201030

Run in Batch: AK201102, Run Date: 11/02/2020 15:17, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>77.1</b>	50.0	150.0
M2-6:2FTSA		<b>79.4</b>	50.0	150.0
M2-8:2FTSA		<b>89.9</b>	50.0	150.0
M2PFTeDA		<b>127.8</b>	12.0	218.0
M3PFBS		<b>102.0</b>	50.0	150.0
M3PFHxS		<b>95.1</b>	50.0	150.0
M4PFHpA		<b>98.1</b>	50.0	150.0
M5PFHxA		<b>96.6</b>	50.0	150.0
M5PFPeA		<b>97.8</b>	50.0	150.0
M6PFDA		<b>103.6</b>	50.0	150.0
M7PFUnDA		<b>112.9</b>	50.0	150.0
M8FOSA		<b>103.3</b>	50.0	150.0
M8PFOA		<b>101.3</b>	50.0	150.0
M8PFOS		<b>97.0</b>	50.0	150.0
M9-PFNA		<b>100.8</b>	50.0	150.0
MPFBA		<b>99.1</b>	50.0	150.0
MPFDoDA		<b>109.4</b>	50.0	150.0
d3N-MeFOSAA		<b>92.3</b>	50.0	150.0
d5EtFOSAA		<b>88.3</b>	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201030W.1875101M, Parent Sample ID: S18751.01

Run in Batch: AK201030W, Run Date: 10/31/2020 09:27, Prep Date: 10/30/2020, Matrix: WW, Dilution: 2.07

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>73.1</b>	50.0	150.0
M2-6:2FTSA		<b>95.8</b>	50.0	150.0
M2-8:2FTSA		<b>105.8</b>	50.0	150.0
M2PFTeDA		<b>146.5</b>	12.0	218.0
M3PFBS		<b>98.3</b>	50.0	150.0
M3PFHxS		<b>99.9</b>	50.0	150.0
M4PFHpA		<b>105.0</b>	50.0	150.0
M5PFHxA		<b>96.8</b>	50.0	150.0
M5PFPeA		<b>99.0</b>	50.0	150.0
M6PFDA		<b>90.8</b>	50.0	150.0
M7PFUnDA		<b>106.9</b>	50.0	150.0
M8FOSA		<b>99.0</b>	50.0	150.0
M8PFOA		<b>97.7</b>	50.0	150.0
M8PFOS		<b>104.0</b>	50.0	150.0
M9-PFNA		<b>95.2</b>	50.0	150.0
MPFBA		<b>97.0</b>	50.0	150.0
MPFDoDA		<b>92.7</b>	50.0	150.0
d3N-MeFOSAA		<b>92.4</b>	50.0	150.0
d5EtFOSAA		<b>100.3</b>	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK201030W.1875102D, Parent Sample ID: S18751.02

Run in Batch: AK201030W, Run Date: 10/31/2020 10:06, Prep Date: 10/30/2020, Matrix: WW, Dilution: 2.08

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>65.2</b>	50.0	150.0
M2-6:2FTSA		<b>73.0</b>	50.0	150.0
M2-8:2FTSA		<b>74.3</b>	50.0	150.0
M2PFTeDA		<b>190.2</b>	12.0	218.0
M3PFBS		<b>99.8</b>	50.0	150.0
M3PFHxS		<b>105.4</b>	50.0	150.0
M4PFHpA		<b>102.8</b>	50.0	150.0
M5PFHxA		<b>99.8</b>	50.0	150.0
M5PFPeA		<b>97.4</b>	50.0	150.0
M6PFDA		<b>97.6</b>	50.0	150.0
M7PFUnDA		<b>107.7</b>	50.0	150.0
M8FOSA		<b>98.6</b>	50.0	150.0
M8PFOA		<b>103.6</b>	50.0	150.0
M8PFOS		<b>117.2</b>	50.0	150.0
M9-PFNA		<b>94.2</b>	50.0	150.0
MPFBA		<b>97.1</b>	50.0	150.0
MPFDoDA		<b>105.5</b>	50.0	150.0
d3N-MeFOSAA		<b>99.4</b>	50.0	150.0
d5EtFOSAA		<b>92.8</b>	50.0	150.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201030W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201102.BLK201030

Run in Batch: AK201102, Run Date: 11/02/2020 15:37, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFNA		ND	2	ng/l
PFHpS		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDODA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
PFTeDA		ND	4	ng/l
FOSA		ND	2	ng/l

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201102.LCS201030

Run in Batch: AK201102, Run Date: 11/02/2020 14:58, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		117.0	70.0	130.0
PFPeA		120.0	70.0	130.0
4:2 FTSA		108.0	70.0	130.0
PFHxA		111.0	70.0	130.0
PFBS		117.0	70.0	130.0
HFPO-DA		83.6	70.0	130.0
PFHpA		110.0	70.0	130.0
PFPeS		126.0	70.0	130.0
ADONA		94.3	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201030W1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201102.LCS201030

Run in Batch: AK201102, Run Date: 11/02/2020 14:58, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		105.0	70.0	130.0
PFOA		102.0	70.0	130.0
PFHxS		103.0	70.0	130.0
PFNA		110.0	70.0	130.0
PFHpS		106.0	70.0	130.0
8:2 FTSA		88.8	70.0	130.0
PFDA		107.0	70.0	130.0
N-MeFOSAA		114.0	70.0	130.0
PFOS		113.0	70.0	130.0
EtFOSAA		108.0	70.0	130.0
PFUnDA		124.0	70.0	130.0
9CL-PF3ONS		113.0	70.0	130.0
PFNS		113.0	70.0	130.0
PFDODA		103.0	70.0	130.0
PFDS		113.0	70.0	130.0
PFTTrDA		114.0	70.0	130.0
11CL-PF3OUdS		109.0	70.0	130.0
PFTeDA		113.0	70.0	130.0
FOSA		111.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201102.LCSD201030, Parent Sample ID: AK201102.LCS201030

Run in Batch: AK201102, Run Date: 11/02/2020 15:17, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		119.0	70.0	130.0	1.7	30.0
PFPeA		118.0	70.0	130.0	1.7	30.0
4:2 FTSA		104.0	70.0	130.0	3.8	30.0
PFHxA		109.0	70.0	130.0	1.8	30.0
PFBS		110.0	70.0	130.0	6.2	30.0
HFPO-DA		91.6	70.0	130.0	9.1	30.0
PFHpA		101.0	70.0	130.0	8.5	30.0
PFPeS		127.0	70.0	130.0	0.8	30.0
ADONA		104.0	70.0	130.0	9.8	30.0
6:2 FTSA		101.0	70.0	130.0	3.9	30.0
PFOA		115.0	70.0	130.0	12.0	30.0
PFHxS		115.0	70.0	130.0	11.0	30.0
PFNA		115.0	70.0	130.0	4.4	30.0
PFHpS		120.0	70.0	130.0	12.4	30.0
8:2 FTSA		74.4	70.0	130.0	17.6	30.0
PFDA		103.0	70.0	130.0	3.8	30.0
N-MeFOSAA		124.0	70.0	130.0	8.4	30.0
PFOS		104.0	70.0	130.0	8.3	30.0
EtFOSAA		103.0	70.0	130.0	4.7	30.0
PFUnDA		104.0	70.0	130.0	17.5	30.0
9CL-PF3ONS		94.6	70.0	130.0	17.7	30.0
PFNS		112.0	70.0	130.0	0.9	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201030W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201102.LCSD201030, Parent Sample ID: AK201102.LCS201030

Run in Batch: AK201102, Run Date: 11/02/2020 15:17, Prep Date: 10/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		118.0	70.0	130.0	13.6	30.0
PFDS		110.0	70.0	130.0	2.7	30.0
PFTTrDA		121.0	70.0	130.0	6.0	30.0
11CL-PF3OUdS		105.0	70.0	130.0	3.7	30.0
PFTeDA		116.0	70.0	130.0	2.6	30.0
FOSA		122.0	70.0	130.0	9.4	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201030W.1875101M, Parent Sample ID: S18751.01

Run in Batch: AK201030W, Run Date: 10/31/2020 09:27, Prep Date: 10/30/2020, Matrix: WW, Dilution: 2.07

Analyte	Flags	% Rec	LCL	UCL
PFBA		115.4	70.0	130.0
PFPeA		115.4	70.0	130.0
4:2 FTSA		105.8	70.0	130.0
PFHxA		115.4	70.0	130.0
PFBS		125.0	70.0	130.0
PFHpA		105.8	70.0	130.0
PFPeS	*	134.6	70.0	130.0
6:2 FTSA		115.4	70.0	130.0
PFOA		125.0	70.0	130.0
PFHxS		125.0	70.0	130.0
PFNA		115.4	70.0	130.0
8:2 FTSA		90.4	70.0	130.0
PFHpS		115.4	70.0	130.0
PFDA		115.4	70.0	130.0
N-MeFOSAA		115.4	70.0	130.0
EtFOSAA		93.3	70.0	130.0
PFOS		125.0	70.0	130.0
PFUnDA		105.8	70.0	130.0
PFNS		115.4	70.0	130.0
PFDoDA		125.0	70.0	130.0
PFDS		125.0	70.0	130.0
PFTTrDA		125.0	70.0	130.0
FOSA		125.0	70.0	130.0
PFTeDA		115.4	70.0	130.0
11CL-PF3OUdS		115.4	70.0	130.0
9CL-PF3ONS		115.4	70.0	130.0
ADONA		115.4	70.0	130.0
HFPO-DA		95.2	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK201030W.1875102D, Parent Sample ID: S18751.02

Run in Batch: AK201030W, Run Date: 10/31/2020 10:06, Prep Date: 10/30/2020, Matrix: WW, Dilution: 2.08

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF201030W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

## Duplicate (DUP) (continued)

Lab Sample ID: AK201030W.1875102D, Parent Sample ID: S18751.02

Run in Batch: AK201030W, Run Date: 10/31/2020 10:06, Prep Date: 10/30/2020, Matrix: WW, Dilution: 2.08

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDODA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0



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 Phone (517) 332-0167 Fax (517) 332-4034  
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C.O.C. PAGE # 1 OF 1

126043

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME: Clifford Yartz  
 COMPANY: Ramboll  
 ADDRESS: 2260 East Lansing  
 CITY: East Lansing STATE: MI ZIP CODE: 48823  
 PHONE NO.: 313-333-0211 P.O. NO.:  
 E-MAIL ADDRESS: clifford.yartz@ramboll.com QUOTE NO.:

CONTACT NAME:  SAME  
 COMPANY:  
 ADDRESS:  
 CITY: STATE: ZIP CODE:  
 PHONE NO.: E-MAIL ADDRESS:

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

PROJECT NO./NAME: RACER Hemphill Rd Industrial Land SAMPLER(S) - PLEASE PRINT/SIGN NAME: Karin Schneider  
 TURNAROUND TIME REQUIRED:  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED:  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	PFAS (ASTM D7761)	Certifications	Project Locations	Special Instructions
	DATE	TIME														
1881201	10/29/20	—	DUP-1	GW	3	3							X			Low level Reporting limit with estimated values
.02	↓	1712	086 MW-SS	GW	3	3							X			
.03	↓	1725	Field Blank - 102920	QL	3	3							X			

RELINQUISHED BY: [Signature]  Sampler DATE: 10/30/20 TIME: 12:30  
 RECEIVED BY: [Signature] DATE: 10/30/20 TIME: 12:30  
 RELINQUISHED BY: [Signature] DATE: 10/30/20 TIME: 14:30  
 RECEIVED BY: [Signature] DATE: 10/30/20 TIME: 14:30

RELINQUISHED BY: DATE: TIME:  
 RECEIVED BY: DATE: TIME:  
 SEAL NO. SEAL INTACT YES  NO  INITIALS: NOTES: TEMP. ON ARRIVAL: 2.6  
 SEAL NO. SEAL INTACT YES  NO  INITIALS:

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



# Quality Control Report

Report ID: QC-S18863-01  
Generated on 11/23/2020

Report to

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Report Produced by

Merit Laboratories  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S18863.01-S18863.05  
Project: RACER Hemphill Rd Industrial Land  
Submitted Date/Time: 11/03/2020 13:40  
Sampled by: Kevin Schneider  
P.O. #: 12000648

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-6)
- Prep Batch Summary (Page 7)
- Internal Standards per Lab Sample (Pages 8-12)
- Internal Standards per QC Sample (Pages 13-15)
- Batch QC Results (Pages 16-19)

Report Flag Descriptions

- \*: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball  
Quality Assurance Manager

# QC Report - Analysis Summary

**Lab Sample ID: S18863.01**

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 16:35	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.02

Sample Tag: MW-403

Collected Date/Time: 11/02/2020 11:17

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 16:55	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.03

Sample Tag: OBG MW-10

Collected Date/Time: 11/02/2020 12:38

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 17:14	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.04

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 14:02

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 17:34	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.05

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 15:44

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 17:53	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18863.01	28 PFAs	ASTMD7979-19M	11/05/20 16:35	AK201105
S18863.02	28 PFAs	ASTMD7979-19M	11/05/20 16:55	AK201105
S18863.03	28 PFAs	ASTMD7979-19M	11/05/20 17:14	AK201105
S18863.04	28 PFAs	ASTMD7979-19M	11/05/20 17:34	AK201105
S18863.05	28 PFAs	ASTMD7979-19M	11/05/20 17:53	AK201105

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.01

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 16:35, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		70.2	50.0	150.0
M2-6:2FTSA		67.7	50.0	150.0
M2-8:2FTSA		84.0	50.0	150.0
M2PFTeDA		124.7	12.0	218.0
M3PFBS		96.0	50.0	150.0
M3PFHxS		91.1	50.0	150.0
M4PFHpA		79.5	50.0	150.0
M5PFHxA		93.3	50.0	150.0
M5PFPeA		90.1	50.0	150.0
M6PFDA		87.9	50.0	150.0
M7PFUnDA		89.7	50.0	150.0
M8FOSA		89.2	50.0	150.0
M8PFOA		88.5	50.0	150.0
M8PFOS		93.6	50.0	150.0
M9-PFNA		85.9	50.0	150.0
MPFBA		88.9	50.0	150.0
MPFDoDA		90.5	50.0	150.0
d3N-MeFOSAA		95.8	50.0	150.0
d5EtFOSAA		82.0	50.0	150.0

## QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.02

Sample Tag: MW-403

Collected Date/Time: 11/02/2020 11:17

Matrix: Groundwater

COC Reference: 126036

### Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 16:55, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		71.3	50.0	150.0
M2-6:2FTSA		69.0	50.0	150.0
M2-8:2FTSA		70.2	50.0	150.0
M2PFTeDA		116.6	12.0	218.0
M3PFBS		93.1	50.0	150.0
M3PFHxS		91.9	50.0	150.0
M4PFHpA		84.8	50.0	150.0
M5PFHxA		90.5	50.0	150.0
M5PFPeA		89.1	50.0	150.0
M6PFDA		82.6	50.0	150.0
M7PFUnDA		87.9	50.0	150.0
M8FOSA		88.1	50.0	150.0
M8PFOA		87.7	50.0	150.0
M8PFOS		83.7	50.0	150.0
M9-PFNA		91.5	50.0	150.0
MPFBA		89.8	50.0	150.0
MPFDoDA		84.2	50.0	150.0
d3N-MeFOSAA		85.9	50.0	150.0
d5EtFOSAA		83.1	50.0	150.0

## QC Report - Internal Standards per Lab Sample

**Lab Sample ID: S18863.03**

Sample Tag: OBG MW-10

Collected Date/Time: 11/02/2020 12:38

Matrix: Groundwater

COC Reference: 126036

**Organics - Volatiles, Analysis: 28 PFAs**

Run in Batch: AK201105, Run Date: 11/05/2020 17:14, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>76.1</b>	50.0	150.0
M2-6:2FTSA		<b>66.7</b>	50.0	150.0
M2-8:2FTSA		<b>69.4</b>	50.0	150.0
M2PFTeDA		<b>98.8</b>	12.0	218.0
M3PFBS		<b>91.6</b>	50.0	150.0
M3PFHxS		<b>93.6</b>	50.0	150.0
M4PFHpA		<b>83.8</b>	50.0	150.0
M5PFHxA		<b>94.3</b>	50.0	150.0
M5PFPeA		<b>88.9</b>	50.0	150.0
M6PFDA		<b>92.1</b>	50.0	150.0
M7PFUnDA		<b>77.8</b>	50.0	150.0
M8FOSA		<b>87.3</b>	50.0	150.0
M8PFOA		<b>83.1</b>	50.0	150.0
M8PFOS		<b>93.3</b>	50.0	150.0
M9-PFNA		<b>89.1</b>	50.0	150.0
MPFBA		<b>90.9</b>	50.0	150.0
MPFDoDA		<b>82.7</b>	50.0	150.0
d3N-MeFOSAA		<b>82.0</b>	50.0	150.0
d5EtFOSAA		<b>78.6</b>	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.04

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 14:02

Matrix: Groundwater

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 17:34, Matrix: WW, Dilution: 2.08

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		69.5	50.0	150.0
M2-6:2FTSA		63.7	50.0	150.0
M2-8:2FTSA		76.3	50.0	150.0
M2PFTeDA		126.1	12.0	218.0
M3PFBS		97.5	50.0	150.0
M3PFHxS		91.7	50.0	150.0
M4PFHpA		87.8	50.0	150.0
M5PFHxA		87.7	50.0	150.0
M5PFPeA		90.7	50.0	150.0
M6PFDA		93.5	50.0	150.0
M7PFUnDA		93.0	50.0	150.0
M8FOSA		89.3	50.0	150.0
M8PFOA		82.2	50.0	150.0
M8PFOS		96.7	50.0	150.0
M9-PFNA		87.9	50.0	150.0
MPFBA		93.0	50.0	150.0
MPFDoDA		87.5	50.0	150.0
d3N-MeFOSAA		89.7	50.0	150.0
d5EtFOSAA		92.9	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.05

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 15:44

Matrix: Groundwater

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 17:53, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		71.2	50.0	150.0
M2-6:2FTSA		70.3	50.0	150.0
M2-8:2FTSA		71.2	50.0	150.0
M2PFTeDA		101.7	12.0	218.0
M3PFBS		94.2	50.0	150.0
M3PFHxS		93.8	50.0	150.0
M4PFHpA		86.9	50.0	150.0
M5PFHxA		91.2	50.0	150.0
M5PFPeA		88.5	50.0	150.0
M6PFDA		81.0	50.0	150.0
M7PFUnDA		79.3	50.0	150.0
M8FOSA		83.9	50.0	150.0
M8PFOA		81.9	50.0	150.0
M8PFOS		92.8	50.0	150.0
M9-PFNA		87.6	50.0	150.0
MPFBA		89.5	50.0	150.0
MPFDoDA		79.9	50.0	150.0
d3N-MeFOSAA		79.7	50.0	150.0
d5EtFOSAA		84.6	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Organics - Volatiles, Prep Batch ID: PF201104W1

QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		67.0	50.0	150.0
M2-6:2FTSA		61.1	50.0	150.0
M2-8:2FTSA		66.3	50.0	150.0
M2PFTeDA		127.7	12.0	218.0
M3PFBS		92.9	50.0	150.0
M3PFHxS		96.5	50.0	150.0
M4PFHpA		83.4	50.0	150.0
M5PFHxA		96.4	50.0	150.0
M5PFPeA		90.5	50.0	150.0
M6PFDA		90.7	50.0	150.0
M7PFUnDA		93.2	50.0	150.0
M8FOSA		87.8	50.0	150.0
M8PFOA		93.7	50.0	150.0
M8PFOS		95.4	50.0	150.0
M9-PFNA		91.5	50.0	150.0
MPFBA		89.8	50.0	150.0
MPFDoDA		89.0	50.0	150.0
d3N-MeFOSAA		87.0	50.0	150.0
d5EtFOSAA		80.6	50.0	150.0

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		60.1	50.0	150.0
M2-6:2FTSA		65.7	50.0	150.0
M2-8:2FTSA		61.9	50.0	150.0
M2PFTeDA		113.3	12.0	218.0
M3PFBS		87.6	50.0	150.0
M3PFHxS		84.8	50.0	150.0
M4PFHpA		88.0	50.0	150.0
M5PFHxA		85.5	50.0	150.0
M5PFPeA		84.0	50.0	150.0
M6PFDA		82.0	50.0	150.0
M7PFUnDA		79.9	50.0	150.0
M8FOSA		86.9	50.0	150.0
M8PFOA		77.9	50.0	150.0
M8PFOS		80.5	50.0	150.0
M9-PFNA		85.2	50.0	150.0
MPFBA		82.0	50.0	150.0
MPFDoDA		83.7	50.0	150.0
d3N-MeFOSAA		78.4	50.0	150.0
d5EtFOSAA		80.1	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		61.1	50.0	150.0
M2-6:2FTSA		61.3	50.0	150.0
M2-8:2FTSA		59.8	50.0	150.0
M2PFTeDA		98.3	12.0	218.0
M3PFBS		91.5	50.0	150.0
M3PFHxS		87.3	50.0	150.0
M4PFHpA		74.5	50.0	150.0
M5PFHxA		84.4	50.0	150.0
M5PFPeA		84.7	50.0	150.0
M6PFDA		79.9	50.0	150.0
M7PFUnDA		83.8	50.0	150.0
M8FOSA		85.5	50.0	150.0
M8PFOA		83.4	50.0	150.0
M8PFOS		90.9	50.0	150.0
M9-PFNA		82.6	50.0	150.0
MPFBA		84.7	50.0	150.0
MPFDoDA		81.9	50.0	150.0
d3N-MeFOSAA		82.3	50.0	150.0
d5EtFOSAA		75.4	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		66.7	50.0	150.0
M2-6:2FTSA		73.8	50.0	150.0
M2-8:2FTSA		66.7	50.0	150.0
M2PFTeDA		116.4	12.0	218.0
M3PFBS		101.4	50.0	150.0
M3PFHxS		94.9	50.0	150.0
M4PFHpA		84.0	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		92.8	50.0	150.0
M6PFDA		88.3	50.0	150.0
M7PFUnDA		93.5	50.0	150.0
M8FOSA		91.9	50.0	150.0
M8PFOA		87.4	50.0	150.0
M8PFOS		102.0	50.0	150.0
M9-PFNA		89.2	50.0	150.0
MPFBA		91.9	50.0	150.0
MPFDoDA		93.4	50.0	150.0
d3N-MeFOSAA		88.9	50.0	150.0
d5EtFOSAA		86.0	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>66.7</b>	50.0	150.0
M2-6:2FTSA		<b>68.2</b>	50.0	150.0
M2-8:2FTSA		<b>73.2</b>	50.0	150.0
M2PFTeDA		<b>110.4</b>	12.0	218.0
M3PFBS		<b>94.1</b>	50.0	150.0
M3PFHxS		<b>93.8</b>	50.0	150.0
M4PFHpA		<b>87.4</b>	50.0	150.0
M5PFHxA		<b>91.6</b>	50.0	150.0
M5PFPeA		<b>90.4</b>	50.0	150.0
M6PFDA		<b>94.8</b>	50.0	150.0
M7PFUnDA		<b>84.9</b>	50.0	150.0
M8FOSA		<b>87.6</b>	50.0	150.0
M8PFOA		<b>87.0</b>	50.0	150.0
M8PFOS		<b>96.2</b>	50.0	150.0
M9-PFNA		<b>89.6</b>	50.0	150.0
MPFBA		<b>88.0</b>	50.0	150.0
MPFDoDA		<b>91.2</b>	50.0	150.0
d3N-MeFOSAA		<b>87.6</b>	50.0	150.0
d5EtFOSAA		<b>86.0</b>	50.0	150.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	2	ng/l

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		120.0	70.0	130.0
PFPeA		120.0	70.0	130.0
4:2 FTSA		116.0	70.0	130.0
PFHxA		115.0	70.0	130.0
PFBS		121.0	70.0	130.0
HFPO-DA		102.0	70.0	130.0
PFHpA		96.3	70.0	130.0
PFPeS		124.0	70.0	130.0
ADONA		108.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		113.0	70.0	130.0
PFOA		124.0	70.0	130.0
PFHxS		104.0	70.0	130.0
PFNA		116.0	70.0	130.0
8:2 FTSA		103.0	70.0	130.0
PFHpS		107.0	70.0	130.0
N-MeFOSAA		121.0	70.0	130.0
PFDA		111.0	70.0	130.0
EtFOSAA		99.2	70.0	130.0
PFOS		125.0	70.0	130.0
PFUnDA		118.0	70.0	130.0
9CL-PF3ONS		117.0	70.0	130.0
PFNS		124.0	70.0	130.0
PFDoDA		109.0	70.0	130.0
PFDS		114.0	70.0	130.0
PFTTrDA		117.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		118.0	70.0	130.0
PFTeDA		116.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		112.0	70.0	130.0	6.9	30.0
PFPeA		114.0	70.0	130.0	5.1	30.0
4:2 FTSA		115.0	70.0	130.0	0.9	30.0
PFHxA		109.0	70.0	130.0	5.4	30.0
PFBS		103.0	70.0	130.0	16.1	30.0
HFPO-DA		104.0	70.0	130.0	1.9	30.0
PFHpA		116.0	70.0	130.0	18.6	30.0
PFPeS		119.0	70.0	130.0	4.1	30.0
ADONA		94.6	70.0	130.0	13.2	30.0
6:2 FTSA		111.0	70.0	130.0	1.8	30.0
PFOA		108.0	70.0	130.0	13.8	30.0
PFHxS		101.0	70.0	130.0	2.9	30.0
PFNA		113.0	70.0	130.0	2.6	30.0
8:2 FTSA		94.5	70.0	130.0	8.6	30.0
PFHpS		107.0	70.0	130.0	0.0	30.0
N-MeFOSAA		106.0	70.0	130.0	13.2	30.0
PFDA		115.0	70.0	130.0	3.5	30.0
EtFOSAA		100.0	70.0	130.0	0.8	30.0
PFOS		120.0	70.0	130.0	4.1	30.0
PFUnDA		105.0	70.0	130.0	11.7	30.0
9CL-PF3ONS		105.0	70.0	130.0	10.8	30.0
PFNS		102.0	70.0	130.0	19.5	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		103.0	70.0	130.0	5.7	30.0
PFDS		104.0	70.0	130.0	9.2	30.0
PFTTrDA		101.0	70.0	130.0	14.7	30.0
FOSA		111.0	70.0	130.0	1.8	30.0
11CL-PF3OUdS		95.8	70.0	130.0	20.8	30.0
PFTeDA		106.0	70.0	130.0	9.0	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Analyte	Flags	% Rec	LCL	UCL
PFBA		121.8	70.0	130.0
PFPeA		121.8	70.0	130.0
4:2 FTSA		101.5	70.0	130.0
PFHxA		101.5	70.0	130.0
PFBS		111.7	70.0	130.0
PFHpA		111.7	70.0	130.0
PFPeS		121.8	70.0	130.0
6:2 FTSA		111.7	70.0	130.0
PFOA		121.8	70.0	130.0
PFHxS		101.5	70.0	130.0
PFNA		121.8	70.0	130.0
8:2 FTSA		111.7	70.0	130.0
PFHpS		101.5	70.0	130.0
PFDA		121.8	70.0	130.0
N-MeFOSAA		121.8	70.0	130.0
EtFOSAA		111.7	70.0	130.0
PFOS		101.5	70.0	130.0
PFUnDA		101.5	70.0	130.0
PFNS		97.5	70.0	130.0
PFDoDA		101.5	70.0	130.0
PFDS		100.5	70.0	130.0
PFTTrDA		101.5	70.0	130.0
FOSA		121.8	70.0	130.0
PFTeDA		121.8	70.0	130.0
11CL-PF3OUdS		98.5	70.0	130.0
9CL-PF3ONS		97.5	70.0	130.0
ADONA		101.5	70.0	130.0
HFPO-DA		101.5	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

## Duplicate (DUP) (continued)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0





# Quality Control Report

Report ID: QC-S18863-01  
Generated on 11/23/2020

Report to

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Report Produced by

Merit Laboratories  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S18863.01-S18863.05  
Project: RACER Hemphill Rd Industrial Land  
Submitted Date/Time: 11/03/2020 13:40  
Sampled by: Kevin Schneider  
P.O. #: 12000648

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-6)
- Prep Batch Summary (Page 7)
- Internal Standards per Lab Sample (Pages 8-12)
- Internal Standards per QC Sample (Pages 13-15)
- Batch QC Results (Pages 16-19)

Report Flag Descriptions

- \*: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball  
Quality Assurance Manager

# QC Report - Analysis Summary

**Lab Sample ID: S18863.01**

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 16:35	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.02

Sample Tag: MW-403

Collected Date/Time: 11/02/2020 11:17

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 16:55	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.03

Sample Tag: OBG MW-10

Collected Date/Time: 11/02/2020 12:38

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 17:14	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18863.04

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 14:02

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 17:34	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

**Lab Sample ID: S18863.05**

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 15:44

Matrix: Groundwater

COC Reference: 126036

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 17:53	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18863.01	28 PFAs	ASTMD7979-19M	11/05/20 16:35	AK201105
S18863.02	28 PFAs	ASTMD7979-19M	11/05/20 16:55	AK201105
S18863.03	28 PFAs	ASTMD7979-19M	11/05/20 17:14	AK201105
S18863.04	28 PFAs	ASTMD7979-19M	11/05/20 17:34	AK201105
S18863.05	28 PFAs	ASTMD7979-19M	11/05/20 17:53	AK201105

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.01

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 16:35, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		70.2	50.0	150.0
M2-6:2FTSA		67.7	50.0	150.0
M2-8:2FTSA		84.0	50.0	150.0
M2PFTeDA		124.7	12.0	218.0
M3PFBS		96.0	50.0	150.0
M3PFHxS		91.1	50.0	150.0
M4PFHpA		79.5	50.0	150.0
M5PFHxA		93.3	50.0	150.0
M5PFPeA		90.1	50.0	150.0
M6PFDA		87.9	50.0	150.0
M7PFUnDA		89.7	50.0	150.0
M8FOSA		89.2	50.0	150.0
M8PFOA		88.5	50.0	150.0
M8PFOS		93.6	50.0	150.0
M9-PFNA		85.9	50.0	150.0
MPFBA		88.9	50.0	150.0
MPFDoDA		90.5	50.0	150.0
d3N-MeFOSAA		95.8	50.0	150.0
d5EtFOSAA		82.0	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.02

Sample Tag: MW-403

Collected Date/Time: 11/02/2020 11:17

Matrix: Groundwater

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 16:55, Matrix: WW, Dilution: 2.05

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		71.3	50.0	150.0
M2-6:2FTSA		69.0	50.0	150.0
M2-8:2FTSA		70.2	50.0	150.0
M2PFTeDA		116.6	12.0	218.0
M3PFBS		93.1	50.0	150.0
M3PFHxS		91.9	50.0	150.0
M4PFHpA		84.8	50.0	150.0
M5PFHxA		90.5	50.0	150.0
M5PFPeA		89.1	50.0	150.0
M6PFDA		82.6	50.0	150.0
M7PFUnDA		87.9	50.0	150.0
M8FOSA		88.1	50.0	150.0
M8PFOA		87.7	50.0	150.0
M8PFOS		83.7	50.0	150.0
M9-PFNA		91.5	50.0	150.0
MPFBA		89.8	50.0	150.0
MPFDoDA		84.2	50.0	150.0
d3N-MeFOSAA		85.9	50.0	150.0
d5EtFOSAA		83.1	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.03

Sample Tag: OBG MW-10

Collected Date/Time: 11/02/2020 12:38

Matrix: Groundwater

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 17:14, Matrix: WW, Dilution: 1.96

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		76.1	50.0	150.0
M2-6:2FTSA		66.7	50.0	150.0
M2-8:2FTSA		69.4	50.0	150.0
M2PFTeDA		98.8	12.0	218.0
M3PFBS		91.6	50.0	150.0
M3PFHxS		93.6	50.0	150.0
M4PFHpA		83.8	50.0	150.0
M5PFHxA		94.3	50.0	150.0
M5PFPeA		88.9	50.0	150.0
M6PFDA		92.1	50.0	150.0
M7PFUnDA		77.8	50.0	150.0
M8FOSA		87.3	50.0	150.0
M8PFOA		83.1	50.0	150.0
M8PFOS		93.3	50.0	150.0
M9-PFNA		89.1	50.0	150.0
MPFBA		90.9	50.0	150.0
MPFDoDA		82.7	50.0	150.0
d3N-MeFOSAA		82.0	50.0	150.0
d5EtFOSAA		78.6	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.04

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 14:02

Matrix: Groundwater

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 17:34, Matrix: WW, Dilution: 2.08

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		69.5	50.0	150.0
M2-6:2FTSA		63.7	50.0	150.0
M2-8:2FTSA		76.3	50.0	150.0
M2PFTeDA		126.1	12.0	218.0
M3PFBS		97.5	50.0	150.0
M3PFHxS		91.7	50.0	150.0
M4PFHpA		87.8	50.0	150.0
M5PFHxA		87.7	50.0	150.0
M5PFPeA		90.7	50.0	150.0
M6PFDA		93.5	50.0	150.0
M7PFUnDA		93.0	50.0	150.0
M8FOSA		89.3	50.0	150.0
M8PFOA		82.2	50.0	150.0
M8PFOS		96.7	50.0	150.0
M9-PFNA		87.9	50.0	150.0
MPFBA		93.0	50.0	150.0
MPFDoDA		87.5	50.0	150.0
d3N-MeFOSAA		89.7	50.0	150.0
d5EtFOSAA		92.9	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18863.05

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 15:44

Matrix: Groundwater

COC Reference: 126036

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 17:53, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		71.2	50.0	150.0
M2-6:2FTSA		70.3	50.0	150.0
M2-8:2FTSA		71.2	50.0	150.0
M2PFTeDA		101.7	12.0	218.0
M3PFBS		94.2	50.0	150.0
M3PFHxS		93.8	50.0	150.0
M4PFHpA		86.9	50.0	150.0
M5PFHxA		91.2	50.0	150.0
M5PFPeA		88.5	50.0	150.0
M6PFDA		81.0	50.0	150.0
M7PFUnDA		79.3	50.0	150.0
M8FOSA		83.9	50.0	150.0
M8PFOA		81.9	50.0	150.0
M8PFOS		92.8	50.0	150.0
M9-PFNA		87.6	50.0	150.0
MPFBA		89.5	50.0	150.0
MPFDoDA		79.9	50.0	150.0
d3N-MeFOSAA		79.7	50.0	150.0
d5EtFOSAA		84.6	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Organics - Volatiles, Prep Batch ID: PF201104W1

QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		67.0	50.0	150.0
M2-6:2FTSA		61.1	50.0	150.0
M2-8:2FTSA		66.3	50.0	150.0
M2PFTeDA		127.7	12.0	218.0
M3PFBS		92.9	50.0	150.0
M3PFHxS		96.5	50.0	150.0
M4PFHpA		83.4	50.0	150.0
M5PFHxA		96.4	50.0	150.0
M5PFPeA		90.5	50.0	150.0
M6PFDA		90.7	50.0	150.0
M7PFUnDA		93.2	50.0	150.0
M8FOSA		87.8	50.0	150.0
M8PFOA		93.7	50.0	150.0
M8PFOS		95.4	50.0	150.0
M9-PFNA		91.5	50.0	150.0
MPFBA		89.8	50.0	150.0
MPFDoDA		89.0	50.0	150.0
d3N-MeFOSAA		87.0	50.0	150.0
d5EtFOSAA		80.6	50.0	150.0

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		60.1	50.0	150.0
M2-6:2FTSA		65.7	50.0	150.0
M2-8:2FTSA		61.9	50.0	150.0
M2PFTeDA		113.3	12.0	218.0
M3PFBS		87.6	50.0	150.0
M3PFHxS		84.8	50.0	150.0
M4PFHpA		88.0	50.0	150.0
M5PFHxA		85.5	50.0	150.0
M5PFPeA		84.0	50.0	150.0
M6PFDA		82.0	50.0	150.0
M7PFUnDA		79.9	50.0	150.0
M8FOSA		86.9	50.0	150.0
M8PFOA		77.9	50.0	150.0
M8PFOS		80.5	50.0	150.0
M9-PFNA		85.2	50.0	150.0
MPFBA		82.0	50.0	150.0
MPFDoDA		83.7	50.0	150.0
d3N-MeFOSAA		78.4	50.0	150.0
d5EtFOSAA		80.1	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		61.1	50.0	150.0
M2-6:2FTSA		61.3	50.0	150.0
M2-8:2FTSA		59.8	50.0	150.0
M2PFTeDA		98.3	12.0	218.0
M3PFBS		91.5	50.0	150.0
M3PFHxS		87.3	50.0	150.0
M4PFHpA		74.5	50.0	150.0
M5PFHxA		84.4	50.0	150.0
M5PFPeA		84.7	50.0	150.0
M6PFDA		79.9	50.0	150.0
M7PFUnDA		83.8	50.0	150.0
M8FOSA		85.5	50.0	150.0
M8PFOA		83.4	50.0	150.0
M8PFOS		90.9	50.0	150.0
M9-PFNA		82.6	50.0	150.0
MPFBA		84.7	50.0	150.0
MPFDoDA		81.9	50.0	150.0
d3N-MeFOSAA		82.3	50.0	150.0
d5EtFOSAA		75.4	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		66.7	50.0	150.0
M2-6:2FTSA		73.8	50.0	150.0
M2-8:2FTSA		66.7	50.0	150.0
M2PFTeDA		116.4	12.0	218.0
M3PFBS		101.4	50.0	150.0
M3PFHxS		94.9	50.0	150.0
M4PFHpA		84.0	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		92.8	50.0	150.0
M6PFDA		88.3	50.0	150.0
M7PFUnDA		93.5	50.0	150.0
M8FOSA		91.9	50.0	150.0
M8PFOA		87.4	50.0	150.0
M8PFOS		102.0	50.0	150.0
M9-PFNA		89.2	50.0	150.0
MPFBA		91.9	50.0	150.0
MPFDoDA		93.4	50.0	150.0
d3N-MeFOSAA		88.9	50.0	150.0
d5EtFOSAA		86.0	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>66.7</b>	50.0	150.0
M2-6:2FTSA		<b>68.2</b>	50.0	150.0
M2-8:2FTSA		<b>73.2</b>	50.0	150.0
M2PFTeDA		<b>110.4</b>	12.0	218.0
M3PFBS		<b>94.1</b>	50.0	150.0
M3PFHxS		<b>93.8</b>	50.0	150.0
M4PFHpA		<b>87.4</b>	50.0	150.0
M5PFHxA		<b>91.6</b>	50.0	150.0
M5PFPeA		<b>90.4</b>	50.0	150.0
M6PFDA		<b>94.8</b>	50.0	150.0
M7PFUnDA		<b>84.9</b>	50.0	150.0
M8FOSA		<b>87.6</b>	50.0	150.0
M8PFOA		<b>87.0</b>	50.0	150.0
M8PFOS		<b>96.2</b>	50.0	150.0
M9-PFNA		<b>89.6</b>	50.0	150.0
MPFBA		<b>88.0</b>	50.0	150.0
MPFDoDA		<b>91.2</b>	50.0	150.0
d3N-MeFOSAA		<b>87.6</b>	50.0	150.0
d5EtFOSAA		<b>86.0</b>	50.0	150.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	2	ng/l

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		120.0	70.0	130.0
PFPeA		120.0	70.0	130.0
4:2 FTSA		116.0	70.0	130.0
PFHxA		115.0	70.0	130.0
PFBS		121.0	70.0	130.0
HFPO-DA		102.0	70.0	130.0
PFHpA		96.3	70.0	130.0
PFPeS		124.0	70.0	130.0
ADONA		108.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		113.0	70.0	130.0
PFOA		124.0	70.0	130.0
PFHxS		104.0	70.0	130.0
PFNA		116.0	70.0	130.0
8:2 FTSA		103.0	70.0	130.0
PFHpS		107.0	70.0	130.0
N-MeFOSAA		121.0	70.0	130.0
PFDA		111.0	70.0	130.0
EtFOSAA		99.2	70.0	130.0
PFOS		125.0	70.0	130.0
PFUnDA		118.0	70.0	130.0
9CL-PF3ONS		117.0	70.0	130.0
PFNS		124.0	70.0	130.0
PFDoDA		109.0	70.0	130.0
PFDS		114.0	70.0	130.0
PFTTrDA		117.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		118.0	70.0	130.0
PFTeDA		116.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		112.0	70.0	130.0	6.9	30.0
PFPeA		114.0	70.0	130.0	5.1	30.0
4:2 FTSA		115.0	70.0	130.0	0.9	30.0
PFHxA		109.0	70.0	130.0	5.4	30.0
PFBS		103.0	70.0	130.0	16.1	30.0
HFPO-DA		104.0	70.0	130.0	1.9	30.0
PFHpA		116.0	70.0	130.0	18.6	30.0
PFPeS		119.0	70.0	130.0	4.1	30.0
ADONA		94.6	70.0	130.0	13.2	30.0
6:2 FTSA		111.0	70.0	130.0	1.8	30.0
PFOA		108.0	70.0	130.0	13.8	30.0
PFHxS		101.0	70.0	130.0	2.9	30.0
PFNA		113.0	70.0	130.0	2.6	30.0
8:2 FTSA		94.5	70.0	130.0	8.6	30.0
PFHpS		107.0	70.0	130.0	0.0	30.0
N-MeFOSAA		106.0	70.0	130.0	13.2	30.0
PFDA		115.0	70.0	130.0	3.5	30.0
EtFOSAA		100.0	70.0	130.0	0.8	30.0
PFOS		120.0	70.0	130.0	4.1	30.0
PFUnDA		105.0	70.0	130.0	11.7	30.0
9CL-PF3ONS		105.0	70.0	130.0	10.8	30.0
PFNS		102.0	70.0	130.0	19.5	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		103.0	70.0	130.0	5.7	30.0
PFDS		104.0	70.0	130.0	9.2	30.0
PFTTrDA		101.0	70.0	130.0	14.7	30.0
FOSA		111.0	70.0	130.0	1.8	30.0
11CL-PF3OUdS		95.8	70.0	130.0	20.8	30.0
PFTeDA		106.0	70.0	130.0	9.0	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Analyte	Flags	% Rec	LCL	UCL
PFBA		121.8	70.0	130.0
PFPeA		121.8	70.0	130.0
4:2 FTSA		101.5	70.0	130.0
PFHxA		101.5	70.0	130.0
PFBS		111.7	70.0	130.0
PFHpA		111.7	70.0	130.0
PFPeS		121.8	70.0	130.0
6:2 FTSA		111.7	70.0	130.0
PFOA		121.8	70.0	130.0
PFHxS		101.5	70.0	130.0
PFNA		121.8	70.0	130.0
8:2 FTSA		111.7	70.0	130.0
PFHpS		101.5	70.0	130.0
PFDA		121.8	70.0	130.0
N-MeFOSAA		121.8	70.0	130.0
EtFOSAA		111.7	70.0	130.0
PFOS		101.5	70.0	130.0
PFUnDA		101.5	70.0	130.0
PFNS		97.5	70.0	130.0
PFDoDA		101.5	70.0	130.0
PFDS		100.5	70.0	130.0
PFTTrDA		101.5	70.0	130.0
FOSA		121.8	70.0	130.0
PFTeDA		121.8	70.0	130.0
11CL-PF3OUdS		98.5	70.0	130.0
9CL-PF3ONS		97.5	70.0	130.0
ADONA		101.5	70.0	130.0
HFPO-DA		101.5	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

## Duplicate (DUP) (continued)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0



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 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

126036

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Clifford Yantz  
 COMPANY Ramboll  
 ADDRESS East Saginaw  
 CITY East Lansing STATE MI ZIP CODE 48823  
 PHONE NO. 313-333-0211 FAX NO. \_\_\_\_\_ P.O. NO. \_\_\_\_\_  
 E-MAIL ADDRESS clifford.yantz@ramboll.com QUOTE NO. \_\_\_\_\_

CONTACT NAME \_\_\_\_\_  SAME  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_  
 PHONE NO. \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Hemphill Rd Industrial Land SAMPLER(S) - PLEASE PRINT/SIGN NAME Kevin Schneider  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	PFA's (ASTMD 774)	Certifications	Project Locations	Special Instructions
	DATE	TIME														
<u>1886301</u>	<u>11/2/20</u>	<u>916</u>	<u>Field Blank-110220</u>	<u>al</u>	<u>1</u>	<u>1</u>								<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water	<input type="checkbox"/> Detroit <input type="checkbox"/> New York	<u>Low level Reporting</u>
<u>.02</u>		<u>1117</u>	<u>MW-403</u>	<u>GW</u>	<u>3</u>	<u>3</u>								<input type="checkbox"/> DoD <input type="checkbox"/> NPDES		<u>(omit with estimated)</u>
<u>.03</u>		<u>1238</u>	<u>OBG MW-10</u>													<u>Valves</u>
<u>.04</u>		<u>1402</u>	<u>OBG MW-45</u>													
<u>.05</u>		<u>1544</u>	<u>MW-401</u>													
<u>WSS</u>																

RELINQUISHED BY: Kevin Schneider  Sampler DATE 11/3/20 TIME 10:15  
 SIGNATURE/ORGANIZATION \_\_\_\_\_  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 10:15  
 SIGNATURE/ORGANIZATION \_\_\_\_\_  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 13:40  
 SIGNATURE/ORGANIZATION \_\_\_\_\_  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 15:40  
 SIGNATURE/ORGANIZATION \_\_\_\_\_

RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 SIGNATURE/ORGANIZATION \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 SIGNATURE/ORGANIZATION \_\_\_\_\_  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_ NOTES: TEMP. ON ARRIVAL \_\_\_\_\_  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_ 54

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



# Analytical Laboratory Report

Report ID: S18861.01(01)  
Generated on 11/18/2020

## Report to

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Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:  
Email: Clifford.Yantz@obg.com

## Report produced by

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Merit Laboratories, Inc.  
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East Lansing, MI 48823

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John Lavery (johnlavery@meritlabs.com)  
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## Report Summary

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Lab Sample ID(s): S18861.01-S18861.02  
Project: RACER Hemphill Rd Industrial Land  
Collected Date(s): 11/02/2020  
Submitted Date/Time: 11/03/2020 13:40  
Sampled by: Kevin Schneider  
P.O. #: 12000648

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

## Report Narrative

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

## Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

## Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



# Analytical Laboratory Report

## Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

## Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



# Analytical Laboratory Report

## Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S18861.01	Field Blank-110220	Water	11/02/20 09:16
S18861.02	SAN-01	Liquid	11/02/20 09:20



# Analytical Laboratory Report

Lab Sample ID: S18861.01

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126037

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.1	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.74/6.83/10	ASTMD7979-19M	11/04/20 11:15	KCV	

### Organics

**28 PFAs, Method: ASTMD7979-19M, Run Date: 11/05/20 15:37, Analyst: KCV**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.04	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18861.02

Sample Tag: SAN-01

Collected Date/Time: 11/02/2020 09:20

Matrix: Liquid

COC Reference: 126037

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.1	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.88/6.94/12	ASTMD7979-19M	11/04/20 11:15	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 11/05/20 15:56, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.02	375-22-4	
PFPeA*	3.8	4.0	1.0	ng/L	2.02	2706-90-3	J
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.02	757124-72-4	
PFHxA*	3.1	2.0	1.4	ng/L	2.02	307-24-4	
PFBS*	6.0	2.0	1.4	ng/L	2.02	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.02	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.02	27619-97-2	
PFOA*	2.6	2.0	1.6	ng/L	2.02	335-67-1	
PFHxS*	2.5	2.0	1.6	ng/L	2.02	355-46-4	
PFHxS-LN*	1.7	2.0	1.6	ng/L	2.02	355-46-4-LN	J
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.02	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.02	2991-50-6	
PFOS*	9.9	2.0	2.0	ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	7.0	2.0	2.0	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.02	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.02	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.02	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.02	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.02	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL

# Merit Laboratories Login Checklist

Lab Set ID:S18861

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Hemphill Rd Industrial Land

Submitted: 11/03/2020 13:40 Login User: REJ

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

## Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.1 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

## Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

## Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

## Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_





# Quality Control Report

Report ID: QC-S18861-01  
Generated on 11/19/2020

Report to

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Report Produced by

Merit Laboratories  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S18861.01-S18861.02  
Project: RACER Hemphill Rd Industrial Land  
Submitted Date/Time: 11/03/2020 13:40  
Sampled by: Kevin Schneider  
P.O. #: 12000648

QC Report Sections

Cover Page (Page 1)  
Analysis Summary (Pages 2-3)  
Prep Batch Summary (Page 4)  
Internal Standards per Lab Sample (Pages 5-6)  
Internal Standards per QC Sample (Pages 7-9)  
Batch QC Results (Pages 10-13)

Report Flag Descriptions

\*: QC result is outside of indicated control limits  
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball  
Quality Assurance Manager

# QC Report - Analysis Summary

**Lab Sample ID: S18861.01**

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126037

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 15:37	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18861.02

Sample Tag: SAN-01

Collected Date/Time: 11/02/2020 09:20

Matrix: Liquid

COC Reference: 126037

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 15:56	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18861.01	28 PFAs	ASTMD7979-19M	11/05/20 15:37	AK201105
S18861.02	28 PFAs	ASTMD7979-19M	11/05/20 15:56	AK201105

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18861.01

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 126037

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 15:37, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		65.8	50.0	150.0
M2-6:2FTSA		65.1	50.0	150.0
M2-8:2FTSA		77.4	50.0	150.0
M2PFTeDA		124.4	12.0	218.0
M3PFBS		96.1	50.0	150.0
M3PFHxS		95.7	50.0	150.0
M4PFHpA		83.5	50.0	150.0
M5PFHxA		91.4	50.0	150.0
M5PFPeA		89.5	50.0	150.0
M6PFDA		84.5	50.0	150.0
M7PFUnDA		85.0	50.0	150.0
M8FOSA		88.3	50.0	150.0
M8PFOA		83.6	50.0	150.0
M8PFOS		88.5	50.0	150.0
M9-PFNA		92.4	50.0	150.0
MPFBA		88.0	50.0	150.0
MPFDoDA		91.2	50.0	150.0
d3N-MeFOSAA		84.5	50.0	150.0
d5EtFOSAA		82.0	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18861.02

Sample Tag: SAN-01

Collected Date/Time: 11/02/2020 09:20

Matrix: Liquid

COC Reference: 126037

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 15:56, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		85.4	50.0	150.0
M2-6:2FTSA		74.1	50.0	150.0
M2-8:2FTSA		86.6	50.0	150.0
M2PFTeDA		141.2	12.0	218.0
M3PFBS		94.2	50.0	150.0
M3PFHxS		96.8	50.0	150.0
M4PFHpA		86.5	50.0	150.0
M5PFHxA		95.0	50.0	150.0
M5PFPeA		95.6	50.0	150.0
M6PFDA		100.6	50.0	150.0
M7PFUnDA		93.9	50.0	150.0
M8FOSA		93.7	50.0	150.0
M8PFOA		95.8	50.0	150.0
M8PFOS		91.5	50.0	150.0
M9-PFNA		91.3	50.0	150.0
MPFBA		96.4	50.0	150.0
MPFDoDA		105.5	50.0	150.0
d3N-MeFOSAA		98.7	50.0	150.0
d5EtFOSAA		97.2	50.0	150.0

**QC Report - Internal Standards per QC Sample**

**Organics - Volatiles, Prep Batch ID: PF201104W1**

QC Types: BLK/LCS/LCSD/MS/DUP

**Blank (BLK)**

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		67.0	50.0	150.0
M2-6:2FTSA		61.1	50.0	150.0
M2-8:2FTSA		66.3	50.0	150.0
M2PFTeDA		127.7	12.0	218.0
M3PFBS		92.9	50.0	150.0
M3PFHxS		96.5	50.0	150.0
M4PFHpA		83.4	50.0	150.0
M5PFHxA		96.4	50.0	150.0
M5PFPeA		90.5	50.0	150.0
M6PFDA		90.7	50.0	150.0
M7PFUnDA		93.2	50.0	150.0
M8FOSA		87.8	50.0	150.0
M8PFOA		93.7	50.0	150.0
M8PFOS		95.4	50.0	150.0
M9-PFNA		91.5	50.0	150.0
MPFBA		89.8	50.0	150.0
MPFDoDA		89.0	50.0	150.0
d3N-MeFOSAA		87.0	50.0	150.0
d5EtFOSAA		80.6	50.0	150.0

**Laboratory Control Sample (LCS)**

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		60.1	50.0	150.0
M2-6:2FTSA		65.7	50.0	150.0
M2-8:2FTSA		61.9	50.0	150.0
M2PFTeDA		113.3	12.0	218.0
M3PFBS		87.6	50.0	150.0
M3PFHxS		84.8	50.0	150.0
M4PFHpA		88.0	50.0	150.0
M5PFHxA		85.5	50.0	150.0
M5PFPeA		84.0	50.0	150.0
M6PFDA		82.0	50.0	150.0
M7PFUnDA		79.9	50.0	150.0
M8FOSA		86.9	50.0	150.0
M8PFOA		77.9	50.0	150.0
M8PFOS		80.5	50.0	150.0
M9-PFNA		85.2	50.0	150.0
MPFBA		82.0	50.0	150.0
MPFDoDA		83.7	50.0	150.0
d3N-MeFOSAA		78.4	50.0	150.0
d5EtFOSAA		80.1	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		61.1	50.0	150.0
M2-6:2FTSA		61.3	50.0	150.0
M2-8:2FTSA		59.8	50.0	150.0
M2PFTeDA		98.3	12.0	218.0
M3PFBS		91.5	50.0	150.0
M3PFHxS		87.3	50.0	150.0
M4PFHpA		74.5	50.0	150.0
M5PFHxA		84.4	50.0	150.0
M5PFPeA		84.7	50.0	150.0
M6PFDA		79.9	50.0	150.0
M7PFUnDA		83.8	50.0	150.0
M8FOSA		85.5	50.0	150.0
M8PFOA		83.4	50.0	150.0
M8PFOS		90.9	50.0	150.0
M9-PFNA		82.6	50.0	150.0
MPFBA		84.7	50.0	150.0
MPFDoDA		81.9	50.0	150.0
d3N-MeFOSAA		82.3	50.0	150.0
d5EtFOSAA		75.4	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		66.7	50.0	150.0
M2-6:2FTSA		73.8	50.0	150.0
M2-8:2FTSA		66.7	50.0	150.0
M2PFTeDA		116.4	12.0	218.0
M3PFBS		101.4	50.0	150.0
M3PFHxS		94.9	50.0	150.0
M4PFHpA		84.0	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		92.8	50.0	150.0
M6PFDA		88.3	50.0	150.0
M7PFUnDA		93.5	50.0	150.0
M8FOSA		91.9	50.0	150.0
M8PFOA		87.4	50.0	150.0
M8PFOS		102.0	50.0	150.0
M9-PFNA		89.2	50.0	150.0
MPFBA		91.9	50.0	150.0
MPFDoDA		93.4	50.0	150.0
d3N-MeFOSAA		88.9	50.0	150.0
d5EtFOSAA		86.0	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>66.7</b>	50.0	150.0
M2-6:2FTSA		<b>68.2</b>	50.0	150.0
M2-8:2FTSA		<b>73.2</b>	50.0	150.0
M2PFTeDA		<b>110.4</b>	12.0	218.0
M3PFBS		<b>94.1</b>	50.0	150.0
M3PFHxS		<b>93.8</b>	50.0	150.0
M4PFHpA		<b>87.4</b>	50.0	150.0
M5PFHxA		<b>91.6</b>	50.0	150.0
M5PFPeA		<b>90.4</b>	50.0	150.0
M6PFDA		<b>94.8</b>	50.0	150.0
M7PFUnDA		<b>84.9</b>	50.0	150.0
M8FOSA		<b>87.6</b>	50.0	150.0
M8PFOA		<b>87.0</b>	50.0	150.0
M8PFOS		<b>96.2</b>	50.0	150.0
M9-PFNA		<b>89.6</b>	50.0	150.0
MPFBA		<b>88.0</b>	50.0	150.0
MPFDoDA		<b>91.2</b>	50.0	150.0
d3N-MeFOSAA		<b>87.6</b>	50.0	150.0
d5EtFOSAA		<b>86.0</b>	50.0	150.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDODA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	2	ng/l

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		120.0	70.0	130.0
PFPeA		120.0	70.0	130.0
4:2 FTSA		116.0	70.0	130.0
PFHxA		115.0	70.0	130.0
PFBS		121.0	70.0	130.0
HFPO-DA		102.0	70.0	130.0
PFHpA		96.3	70.0	130.0
PFPeS		124.0	70.0	130.0
ADONA		108.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		113.0	70.0	130.0
PFOA		124.0	70.0	130.0
PFHxS		104.0	70.0	130.0
PFNA		116.0	70.0	130.0
8:2 FTSA		103.0	70.0	130.0
PFHpS		107.0	70.0	130.0
N-MeFOSAA		121.0	70.0	130.0
PFDA		111.0	70.0	130.0
EtFOSAA		99.2	70.0	130.0
PFOS		125.0	70.0	130.0
PFUnDA		118.0	70.0	130.0
9CL-PF3ONS		117.0	70.0	130.0
PFNS		124.0	70.0	130.0
PFDoDA		109.0	70.0	130.0
PFDS		114.0	70.0	130.0
PFTTrDA		117.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		118.0	70.0	130.0
PFTeDA		116.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		112.0	70.0	130.0	6.9	30.0
PFPeA		114.0	70.0	130.0	5.1	30.0
4:2 FTSA		115.0	70.0	130.0	0.9	30.0
PFHxA		109.0	70.0	130.0	5.4	30.0
PFBS		103.0	70.0	130.0	16.1	30.0
HFPO-DA		104.0	70.0	130.0	1.9	30.0
PFHpA		116.0	70.0	130.0	18.6	30.0
PFPeS		119.0	70.0	130.0	4.1	30.0
ADONA		94.6	70.0	130.0	13.2	30.0
6:2 FTSA		111.0	70.0	130.0	1.8	30.0
PFOA		108.0	70.0	130.0	13.8	30.0
PFHxS		101.0	70.0	130.0	2.9	30.0
PFNA		113.0	70.0	130.0	2.6	30.0
8:2 FTSA		94.5	70.0	130.0	8.6	30.0
PFHpS		107.0	70.0	130.0	0.0	30.0
N-MeFOSAA		106.0	70.0	130.0	13.2	30.0
PFDA		115.0	70.0	130.0	3.5	30.0
EtFOSAA		100.0	70.0	130.0	0.8	30.0
PFOS		120.0	70.0	130.0	4.1	30.0
PFUnDA		105.0	70.0	130.0	11.7	30.0
9CL-PF3ONS		105.0	70.0	130.0	10.8	30.0
PFNS		102.0	70.0	130.0	19.5	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		103.0	70.0	130.0	5.7	30.0
PFDS		104.0	70.0	130.0	9.2	30.0
PFTTrDA		101.0	70.0	130.0	14.7	30.0
FOSA		111.0	70.0	130.0	1.8	30.0
11CL-PF3OUdS		95.8	70.0	130.0	20.8	30.0
PFTeDA		106.0	70.0	130.0	9.0	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Analyte	Flags	% Rec	LCL	UCL
PFBA		121.8	70.0	130.0
PFPeA		121.8	70.0	130.0
4:2 FTSA		101.5	70.0	130.0
PFHxA		101.5	70.0	130.0
PFBS		111.7	70.0	130.0
PFHpA		111.7	70.0	130.0
PFPeS		121.8	70.0	130.0
6:2 FTSA		111.7	70.0	130.0
PFOA		121.8	70.0	130.0
PFHxS		101.5	70.0	130.0
PFNA		121.8	70.0	130.0
8:2 FTSA		111.7	70.0	130.0
PFHpS		101.5	70.0	130.0
PFDA		121.8	70.0	130.0
N-MeFOSAA		121.8	70.0	130.0
EtFOSAA		111.7	70.0	130.0
PFOS		101.5	70.0	130.0
PFUnDA		101.5	70.0	130.0
PFNS		97.5	70.0	130.0
PFDoDA		101.5	70.0	130.0
PFDS		100.5	70.0	130.0
PFTTrDA		101.5	70.0	130.0
FOSA		121.8	70.0	130.0
PFTeDA		121.8	70.0	130.0
11CL-PF3OUdS		98.5	70.0	130.0
9CL-PF3ONS		97.5	70.0	130.0
ADONA		101.5	70.0	130.0
HFPO-DA		101.5	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

## Duplicate (DUP) (continued)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0





Report ID: S18862.01(02)  
Generated on 12/07/2020  
Replaces report S18862.01(01) generated on 12/07/2020

Report to

Attention: Clifford Yantz  
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Report Summary

Lab Sample ID(s): S18862.01-S18862.03  
Project: RACER Hemphill Rd Industrial Land  
Collected Date(s): 11/02/2020  
Submitted Date/Time: 11/03/2020 13:40  
Sampled by: Kevin Schneider  
P.O. #: 12000648

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Maya Murshak  
Technical Director



## General Report Notes

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Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (\*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

## Report Narrative

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.02 sample tag changed per client request.



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

## Method Summary

Method	Version
ASTM D7968-17M	ASTM Method D7968 - 17 Modified (Isotopic Dilution)
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

## Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



## Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S18862.01	Field Blank-110220	Water	11/02/20 09:16
S18862.02	OBG MW-4S	Oil	11/02/20 15:30
S18862.03	MW-401	Oil	11/02/20 16:30



# Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S18862.01

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 128650

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.1	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.74/6.83/10	ASTMD7979-19M	11/04/20 11:15	KCV	

### Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 11/05/20 16:16, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	2.0	2.0	ng/L	2.04	13252-13-6	



# Analytical Laboratory Report

Lab Sample ID: S18862.02

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 15:30

Matrix: Oil

COC Reference: 128650

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.1	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	7.098/6.791/10	ASTM D7968-17M	11/24/20 11:00	KCV	

### Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 11/30/20 01:54, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	650	180	ng/kg	32.6	375-22-4	
PFPeA*	Not detected	330	100	ng/kg	32.6	2706-90-3	
4:2 FTSA*	Not detected	330	72	ng/kg	32.6	757124-72-4	
PFHxA*	Not detected	330	65	ng/kg	32.6	307-24-4	
PFBS*	Not detected	330	75	ng/kg	32.6	375-73-5	
PFHpA*	Not detected	330	91	ng/kg	32.6	375-85-9	
PFPeS*	Not detected	330	91	ng/kg	32.6	2706-91-4	
6:2 FTSA*	Not detected	330	110	ng/kg	32.6	27619-97-2	
PFOA*	Not detected	330	55	ng/kg	32.6	335-67-1	
PFHxS*	Not detected	330	46	ng/kg	32.6	355-46-4	
PFHxS-LN*	Not detected	330	46	ng/kg	32.6	355-46-4-LN	
PFHxS-BR*	Not detected	330	46	ng/kg	32.6	355-46-4-BR	
PFNA*	Not detected	330	85	ng/kg	32.6	375-95-1	
8:2 FTSA*	Not detected	330	130	ng/kg	32.6	39108-34-4	
PFHpS*	Not detected	330	98	ng/kg	32.6	375-92-8	
PFDA*	Not detected	330	160	ng/kg	32.6	335-76-2	
N-MeFOSAA*	Not detected	330	72	ng/kg	32.6	2355-31-9	
EtFOSAA*	Not detected	330	130	ng/kg	32.6	2991-50-6	
PFOS*	Not detected	330	55	ng/kg	32.6	1763-23-1	
PFOS-LN*	Not detected	330	55	ng/kg	32.6	1763-23-1-LN	
PFOS-BR*	Not detected	330	55	ng/kg	32.6	1763-23-1-BR	
PFUnDA*	Not detected	330	78	ng/kg	32.6	2058-94-8	
PFNS*	Not detected	330	68	ng/kg	32.6	68259-12-1	
PFDODA*	Not detected	330	85	ng/kg	32.6	307-55-1	
PFDS*	Not detected	330	91	ng/kg	32.6	335-77-3	
PFTTrDA*	Not detected	330	75	ng/kg	32.6	72629-94-8	
FOSA*	Not detected	330	65	ng/kg	32.6	754-91-6	
PFTeDA*	Not detected	330	62	ng/kg	32.6	376-06-7	
11Cl-PF3OUdS*	Not detected	330	78	ng/kg	32.6	763051-92-9	
9Cl-PF3ONS*	Not detected	330	72	ng/kg	32.6	756426-58-1	
ADONA*	Not detected	330	91	ng/kg	32.6	919005-14-4	
HFPO-DA*	Not detected	330	82	ng/kg	32.6	13252-13-6	



# Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S18862.03

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 16:30

Matrix: Oil

COC Reference: 128650

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	5.1	IR

### Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	7.019/6.801/10	ASTM D7968-17M	11/24/20 11:00	KCV	

### Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 11/30/20 02:14, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	920	250	ng/kg	45.9	375-22-4	
PFPeA*	Not detected	460	150	ng/kg	45.9	2706-90-3	
4:2 FTSA*	Not detected	460	100	ng/kg	45.9	757124-72-4	
PFHxA*	Not detected	460	92	ng/kg	45.9	307-24-4	
PFBS*	Not detected	460	110	ng/kg	45.9	375-73-5	
PFHpA*	Not detected	460	130	ng/kg	45.9	375-85-9	
PFPeS*	Not detected	460	130	ng/kg	45.9	2706-91-4	
6:2 FTSA*	Not detected	460	150	ng/kg	45.9	27619-97-2	
PFOA*	Not detected	460	78	ng/kg	45.9	335-67-1	
PFHxS*	Not detected	460	64	ng/kg	45.9	355-46-4	
PFHxS-LN*	Not detected	460	64	ng/kg	45.9	355-46-4-LN	
PFHxS-BR*	Not detected	460	64	ng/kg	45.9	355-46-4-BR	
PFNA*	Not detected	460	120	ng/kg	45.9	375-95-1	
8:2 FTSA*	Not detected	460	180	ng/kg	45.9	39108-34-4	
PFHpS*	Not detected	460	140	ng/kg	45.9	375-92-8	
PFDA*	Not detected	460	220	ng/kg	45.9	335-76-2	
N-MeFOSAA*	Not detected	460	100	ng/kg	45.9	2355-31-9	
EtFOSAA*	520	460	180	ng/kg	45.9	2991-50-6	
PFOS*	320	460	78	ng/kg	45.9	1763-23-1	J
PFOS-LN*	150	460	78	ng/kg	45.9	1763-23-1-LN	J
PFOS-BR*	130	460	78	ng/kg	45.9	1763-23-1-BR	J
PFUnDA*	Not detected	460	110	ng/kg	45.9	2058-94-8	
PFNS*	Not detected	460	96	ng/kg	45.9	68259-12-1	
PFDODA*	Not detected	460	120	ng/kg	45.9	307-55-1	I
PFDS*	Not detected	460	130	ng/kg	45.9	335-77-3	
PFTTrDA*	Not detected	460	110	ng/kg	45.9	72629-94-8	I
FOSA*	Not detected	460	92	ng/kg	45.9	754-91-6	
PFTeDA*	Not detected	460	87	ng/kg	45.9	376-06-7	
11Cl-PF3OUdS*	Not detected	460	110	ng/kg	45.9	763051-92-9	
9Cl-PF3ONS*	Not detected	460	100	ng/kg	45.9	756426-58-1	
ADONA*	Not detected	460	130	ng/kg	45.9	919005-14-4	
HFPO-DA*	Not detected	460	110	ng/kg	45.9	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL

I-Matrix interference with internal standard

# Merit Laboratories Login Checklist

Lab Set ID:S18862

Attention: Clifford Yantz

Address: O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Client:OBG02 (O'Brien & Gere Engineers, Inc. - East Lansing, MI)

Project: RACER Hemphill Rd Industrial Land

Submitted: 11/03/2020 13:40 Login User: REJ

Phone: 313-333-0211 FAX:

Email: Clifford.Yantz@obg.com

Selection	Description	Note
-----------	-------------	------

## Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.1 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

## Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

## Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

## Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



2680 East Lansing Dr., East Lansing, MI 48823  
 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

128650

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Clifford Vantz  
 COMPANY Ramboll  
 ADDRESS East Saginaw  
 CITY East Lansing STATE MI ZIP CODE 48823  
 PHONE NO. 313-337-0211 FAX NO. \_\_\_\_\_ P.O. NO. \_\_\_\_\_  
 E-MAIL ADDRESS clifford.vantz@ramboll.com QUOTE NO. \_\_\_\_\_

CONTACT NAME \_\_\_\_\_  SAME  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_  
 PHONE NO. \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

PROJECT NO./NAME RACER Hemphill Rd Industrial Land SAMPLER(S) - PLEASE PRINT/SIGN NAME Kevin Schneider  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	PFAS (ASTM D 79168)	Certifications		Project Locations		Special Instructions
	DATE	TIME												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Detroit	<input type="checkbox"/> New York	
<u>1880201</u>	<u>11/2/20</u>	<u>916</u>	<u>Field Blank - 110220</u>	<u>QC</u>	<u>1</u>	<u>1</u>							<u>X</u>					<u>Low level reporting</u>
<u>.02</u>	<u>↓</u>	<u>1530</u>	<u>066 Mw-45</u>	<u>LWAP</u>	<u>3</u>	<u>3</u>							<u>X</u>					<u>limit with estimated</u>
<u>.03</u>	<u>↓</u>	<u>1630</u>	<u>MW-401</u>	<u>LWAP</u>	<u>3</u>	<u>3</u>							<u>X</u>					<u>values</u>
<u>/</u>			<u>/</u>			<u>/</u>			<u>/</u>			<u>/</u>			<u>/</u>			

RELINQUISHED BY: [Signature]  Sampler DATE 11/3/20 TIME 16:15  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 10:15  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 13:40  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 13:40

RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_  
 NOTES: S1 TEMP. ON ARRIVAL \_\_\_\_\_

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



# Quality Control Report

Report ID: QC-S18862-01  
Generated on 12/07/2020

Report to

Attention: Clifford Yantz  
O'Brien & Gere Engineers, Inc.  
2260 East Saginaw Street  
East Lansing, MI 48823

Phone: 313-333-0211 FAX:

Report Produced by

Merit Laboratories  
2680 East Lansing Drive  
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S18862.01-S18862.03  
Project: RACER Hemphill Rd Industrial Land  
Submitted Date/Time: 11/03/2020 13:40  
Sampled by: Kevin Schneider  
P.O. #: 12000648

QC Report Sections

- Cover Page (Page 1)
- Analysis Summary (Pages 2-4)
- Prep Batch Summary (Page 5)
- Internal Standards per Lab Sample (Pages 6-8)
- Internal Standards per QC Sample (Pages 9-14)
- Batch QC Results (Pages 15-22)

Report Flag Descriptions

- \*: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball  
Quality Assurance Manager

# QC Report - Analysis Summary

**Lab Sample ID: S18862.01**

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 128650

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTMD7979-19M	11/05/20 16:16	AK201105	PF201104W1	Yes	BLK/LCS/LCSD/MS/DU

# QC Report - Analysis Summary

Lab Sample ID: S18862.02

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 15:30

Matrix: Oil

COC Reference: 128650

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTM D7968-17M	11/30/20 01:54	AK201129S	PF201124S1	Yes	BLK/LCS/LCSD/MS/MS

# QC Report - Analysis Summary

**Lab Sample ID: S18862.03**

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 16:30

Matrix: Oil

COC Reference: 128650

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<b>Organics - Volatiles</b>						
28 PFAs	ASTM D7968-17M	11/30/20 02:14	AK201129S	PF201124S1	Yes	BLK/LCS/LCSD/MS/MS

# QC Report - Prep Batch Summary

## Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18862.01	28 PFAs	ASTMD7979-19M	11/05/20 16:16	AK201105

## Organics - Volatiles, Prep Batch ID: PF201124S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S18862.02	28 PFAs	ASTM D7968-17M	11/30/20 01:54	AK201129S
S18862.03	28 PFAs	ASTM D7968-17M	11/30/20 02:14	AK201129S

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18862.01

Sample Tag: Field Blank-110220

Collected Date/Time: 11/02/2020 09:16

Matrix: Water

COC Reference: 128650

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201105, Run Date: 11/05/2020 16:16, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		70.0	50.0	150.0
M2-6:2FTSA		64.7	50.0	150.0
M2-8:2FTSA		82.3	50.0	150.0
M2PFTeDA		125.5	12.0	218.0
M3PFBS		93.5	50.0	150.0
M3PFHxS		95.4	50.0	150.0
M4PFHpA		90.3	50.0	150.0
M5PFHxA		93.1	50.0	150.0
M5PFPeA		90.0	50.0	150.0
M6PFDA		86.1	50.0	150.0
M7PFUnDA		92.3	50.0	150.0
M8FOSA		87.9	50.0	150.0
M8PFOA		90.8	50.0	150.0
M8PFOS		90.1	50.0	150.0
M9-PFNA		90.1	50.0	150.0
MPFBA		87.8	50.0	150.0
MPFDoDA		88.5	50.0	150.0
d3N-MeFOSAA		85.3	50.0	150.0
d5EtFOSAA		80.9	50.0	150.0

# QC Report - Internal Standards per Lab Sample

Lab Sample ID: S18862.02

Sample Tag: OBG MW-4S

Collected Date/Time: 11/02/2020 15:30

Matrix: Oil

COC Reference: 128650

## Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201129S, Run Date: 11/30/2020 01:54, Matrix: SO, Dilution: 32.6

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		96.1	50.0	150.0
M2-6:2FTSA		96.8	50.0	150.0
M2-8:2FTSA		88.5	50.0	150.0
M2PFTeDA		110.9	12.0	218.0
M3PFBS		105.2	50.0	150.0
M3PFHxS		102.7	50.0	150.0
M4PFHpA		97.7	50.0	150.0
M5PFHxA		102.0	50.0	150.0
M5PFPeA		101.6	50.0	150.0
M6PFDA		104.5	50.0	150.0
M7PFUnDA		109.0	50.0	150.0
M8FOSA		118.9	50.0	150.0
M8PFOA		97.9	50.0	150.0
M8PFOS		96.9	50.0	150.0
M9-PFNA		99.1	50.0	150.0
MPFBA		105.2	50.0	150.0
MPFDoDA		102.3	50.0	150.0
d3N-MeFOSAA		95.8	50.0	150.0
d5EtFOSAA		76.5	50.0	150.0

## QC Report - Internal Standards per Lab Sample

**Lab Sample ID: S18862.03**

Sample Tag: MW-401

Collected Date/Time: 11/02/2020 16:30

Matrix: Oil

COC Reference: 128650

**Organics - Volatiles, Analysis: 28 PFAs**

Run in Batch: AK201129S, Run Date: 11/30/2020 02:14, Matrix: SO, Dilution: 45.9

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>100.8</b>	50.0	150.0
M2-6:2FTSA		<b>104.7</b>	50.0	150.0
M2-8:2FTSA		<b>93.8</b>	50.0	150.0
M2PFTeDA		<b>18.7</b>	12.0	218.0
M3PFBS		<b>95.6</b>	50.0	150.0
M3PFHxS		<b>91.5</b>	50.0	150.0
M4PFHpA		<b>103.7</b>	50.0	150.0
M5PFHxA		<b>101.0</b>	50.0	150.0
M5PFPeA		<b>96.7</b>	50.0	150.0
M6PFDA		<b>83.8</b>	50.0	150.0
M7PFUnDA		<b>68.8</b>	50.0	150.0
M8FOSA		<b>119.6</b>	50.0	150.0
M8PFOA		<b>96.9</b>	50.0	150.0
M8PFOS		<b>70.5</b>	50.0	150.0
M9-PFNA		<b>92.8</b>	50.0	150.0
MPFBA		<b>97.5</b>	50.0	150.0
MPFDoDA	*	<b>44.4</b>	50.0	150.0
d3N-MeFOSAA		<b>84.2</b>	50.0	150.0
d5EtFOSAA		<b>76.1</b>	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Organics - Volatiles, Prep Batch ID: PF201104W1

QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		67.0	50.0	150.0
M2-6:2FTSA		61.1	50.0	150.0
M2-8:2FTSA		66.3	50.0	150.0
M2PFTeDA		127.7	12.0	218.0
M3PFBS		92.9	50.0	150.0
M3PFHxS		96.5	50.0	150.0
M4PFHpA		83.4	50.0	150.0
M5PFHxA		96.4	50.0	150.0
M5PFPeA		90.5	50.0	150.0
M6PFDA		90.7	50.0	150.0
M7PFUnDA		93.2	50.0	150.0
M8FOSA		87.8	50.0	150.0
M8PFOA		93.7	50.0	150.0
M8PFOS		95.4	50.0	150.0
M9-PFNA		91.5	50.0	150.0
MPFBA		89.8	50.0	150.0
MPFDoDA		89.0	50.0	150.0
d3N-MeFOSAA		87.0	50.0	150.0
d5EtFOSAA		80.6	50.0	150.0

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		60.1	50.0	150.0
M2-6:2FTSA		65.7	50.0	150.0
M2-8:2FTSA		61.9	50.0	150.0
M2PFTeDA		113.3	12.0	218.0
M3PFBS		87.6	50.0	150.0
M3PFHxS		84.8	50.0	150.0
M4PFHpA		88.0	50.0	150.0
M5PFHxA		85.5	50.0	150.0
M5PFPeA		84.0	50.0	150.0
M6PFDA		82.0	50.0	150.0
M7PFUnDA		79.9	50.0	150.0
M8FOSA		86.9	50.0	150.0
M8PFOA		77.9	50.0	150.0
M8PFOS		80.5	50.0	150.0
M9-PFNA		85.2	50.0	150.0
MPFBA		82.0	50.0	150.0
MPFDoDA		83.7	50.0	150.0
d3N-MeFOSAA		78.4	50.0	150.0
d5EtFOSAA		80.1	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		61.1	50.0	150.0
M2-6:2FTSA		61.3	50.0	150.0
M2-8:2FTSA		59.8	50.0	150.0
M2PFTeDA		98.3	12.0	218.0
M3PFBS		91.5	50.0	150.0
M3PFHxS		87.3	50.0	150.0
M4PFHpA		74.5	50.0	150.0
M5PFHxA		84.4	50.0	150.0
M5PFPeA		84.7	50.0	150.0
M6PFDA		79.9	50.0	150.0
M7PFUnDA		83.8	50.0	150.0
M8FOSA		85.5	50.0	150.0
M8PFOA		83.4	50.0	150.0
M8PFOS		90.9	50.0	150.0
M9-PFNA		82.6	50.0	150.0
MPFBA		84.7	50.0	150.0
MPFDoDA		81.9	50.0	150.0
d3N-MeFOSAA		82.3	50.0	150.0
d5EtFOSAA		75.4	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		66.7	50.0	150.0
M2-6:2FTSA		73.8	50.0	150.0
M2-8:2FTSA		66.7	50.0	150.0
M2PFTeDA		116.4	12.0	218.0
M3PFBS		101.4	50.0	150.0
M3PFHxS		94.9	50.0	150.0
M4PFHpA		84.0	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		92.8	50.0	150.0
M6PFDA		88.3	50.0	150.0
M7PFUnDA		93.5	50.0	150.0
M8FOSA		91.9	50.0	150.0
M8PFOA		87.4	50.0	150.0
M8PFOS		102.0	50.0	150.0
M9-PFNA		89.2	50.0	150.0
MPFBA		91.9	50.0	150.0
MPFDoDA		93.4	50.0	150.0
d3N-MeFOSAA		88.9	50.0	150.0
d5EtFOSAA		86.0	50.0	150.0

# QC Report - Internal Standards per QC Sample

## Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>66.7</b>	50.0	150.0
M2-6:2FTSA		<b>68.2</b>	50.0	150.0
M2-8:2FTSA		<b>73.2</b>	50.0	150.0
M2PFTeDA		<b>110.4</b>	12.0	218.0
M3PFBS		<b>94.1</b>	50.0	150.0
M3PFHxS		<b>93.8</b>	50.0	150.0
M4PFHpA		<b>87.4</b>	50.0	150.0
M5PFHxA		<b>91.6</b>	50.0	150.0
M5PFPeA		<b>90.4</b>	50.0	150.0
M6PFDA		<b>94.8</b>	50.0	150.0
M7PFUnDA		<b>84.9</b>	50.0	150.0
M8FOSA		<b>87.6</b>	50.0	150.0
M8PFOA		<b>87.0</b>	50.0	150.0
M8PFOS		<b>96.2</b>	50.0	150.0
M9-PFNA		<b>89.6</b>	50.0	150.0
MPFBA		<b>88.0</b>	50.0	150.0
MPFDoDA		<b>91.2</b>	50.0	150.0
d3N-MeFOSAA		<b>87.6</b>	50.0	150.0
d5EtFOSAA		<b>86.0</b>	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Organics - Volatiles, Prep Batch ID: PF201124S1

QC Types: BLK/LCS/LCSD/MS/MSD

#### Blank (BLK)

Lab Sample ID: AK201129S.BLK201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:57, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		107.4	50.0	150.0
M2-6:2FTSA		105.6	50.0	150.0
M2-8:2FTSA		86.3	50.0	150.0
M2PFTeDA		123.2	12.0	218.0
M3PFBS		100.9	50.0	150.0
M3PFHxS		109.7	50.0	150.0
M4PFHpA		108.9	50.0	150.0
M5PFHxA		106.4	50.0	150.0
M5PFPeA		102.6	50.0	150.0
M6PFDA		101.7	50.0	150.0
M7PFUnDA		96.9	50.0	150.0
M8FOSA		108.4	50.0	150.0
M8PFOA		101.7	50.0	150.0
M8PFOS		103.9	50.0	150.0
M9-PFNA		101.7	50.0	150.0
MPFBA		103.0	50.0	150.0
MPFDoDA		101.5	50.0	150.0
d3N-MeFOSAA		110.2	50.0	150.0
d5EtFOSAA		103.9	50.0	150.0

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201129S.LCS201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:18, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		102.5	50.0	150.0
M2-6:2FTSA		103.2	50.0	150.0
M2-8:2FTSA		114.6	50.0	150.0
M2PFTeDA		133.4	12.0	218.0
M3PFBS		96.3	50.0	150.0
M3PFHxS		108.3	50.0	150.0
M4PFHpA		97.3	50.0	150.0
M5PFHxA		97.8	50.0	150.0
M5PFPeA		101.5	50.0	150.0
M6PFDA		95.0	50.0	150.0
M7PFUnDA		102.4	50.0	150.0
M8FOSA		104.1	50.0	150.0
M8PFOA		89.2	50.0	150.0
M8PFOS		93.1	50.0	150.0
M9-PFNA		103.0	50.0	150.0
MPFBA		99.5	50.0	150.0
MPFDoDA		95.4	50.0	150.0
d3N-MeFOSAA		101.2	50.0	150.0
d5EtFOSAA		98.8	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201129S.LCSD201124S, Parent Sample ID: AK201129S.LCS201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:38, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>104.6</b>	50.0	150.0
M2-6:2FTSA		<b>102.3</b>	50.0	150.0
M2-8:2FTSA		<b>116.0</b>	50.0	150.0
M2PFTeDA		<b>147.6</b>	12.0	218.0
M3PFBS		<b>99.2</b>	50.0	150.0
M3PFHxS		<b>104.2</b>	50.0	150.0
M4PFHpA		<b>95.2</b>	50.0	150.0
M5PFHxA		<b>103.5</b>	50.0	150.0
M5PFPeA		<b>100.4</b>	50.0	150.0
M6PFDA		<b>95.8</b>	50.0	150.0
M7PFUnDA		<b>104.9</b>	50.0	150.0
M8FOSA		<b>98.8</b>	50.0	150.0
M8PFOA		<b>101.4</b>	50.0	150.0
M8PFOS		<b>84.3</b>	50.0	150.0
M9-PFNA		<b>98.2</b>	50.0	150.0
MPFBA		<b>99.6</b>	50.0	150.0
MPFDoDA		<b>102.6</b>	50.0	150.0
d3N-MeFOSAA		<b>108.4</b>	50.0	150.0
d5EtFOSAA		<b>106.3</b>	50.0	150.0

### Matrix Spike (MS)

Lab Sample ID: AK201129S.MSAND201124M, Parent Sample ID: AK201129S.MSAND201124

Run in Batch: AK201129S, Run Date: 11/30/2020 00:36, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>100.8</b>	50.0	150.0
M2-6:2FTSA		<b>96.5</b>	50.0	150.0
M2-8:2FTSA		<b>131.9</b>	50.0	150.0
M2PFTeDA		<b>149.5</b>	12.0	218.0
M3PFBS		<b>98.8</b>	50.0	150.0
M3PFHxS		<b>98.9</b>	50.0	150.0
M4PFHpA		<b>99.4</b>	50.0	150.0
M5PFHxA		<b>99.2</b>	50.0	150.0
M5PFPeA		<b>97.6</b>	50.0	150.0
M6PFDA		<b>102.4</b>	50.0	150.0
M7PFUnDA		<b>99.8</b>	50.0	150.0
M8FOSA		<b>101.2</b>	50.0	150.0
M8PFOA		<b>95.5</b>	50.0	150.0
M8PFOS		<b>90.0</b>	50.0	150.0
M9-PFNA		<b>96.6</b>	50.0	150.0
MPFBA		<b>97.6</b>	50.0	150.0
MPFDoDA		<b>104.7</b>	50.0	150.0
d3N-MeFOSAA		<b>110.2</b>	50.0	150.0
d5EtFOSAA		<b>103.4</b>	50.0	150.0

## QC Report - Internal Standards per QC Sample

### Matrix Spike Duplicate (MSD)

Lab Sample ID: AK201129S.MSAND201124N, Parent Sample ID: AK201129S.MSAND201124M

Run in Batch: AK201129S, Run Date: 11/30/2020 00:56, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		<b>102.5</b>	50.0	150.0
M2-6:2FTSA		<b>104.6</b>	50.0	150.0
M2-8:2FTSA		<b>125.6</b>	50.0	150.0
M2PFTeDA		<b>124.0</b>	12.0	218.0
M3PFBS		<b>100.6</b>	50.0	150.0
M3PFHxS		<b>97.9</b>	50.0	150.0
M4PFHpA		<b>91.0</b>	50.0	150.0
M5PFHxA		<b>103.5</b>	50.0	150.0
M5PFPeA		<b>98.7</b>	50.0	150.0
M6PFDA		<b>97.9</b>	50.0	150.0
M7PFUnDA		<b>107.1</b>	50.0	150.0
M8FOSA		<b>97.8</b>	50.0	150.0
M8PFOA		<b>102.8</b>	50.0	150.0
M8PFOS		<b>91.5</b>	50.0	150.0
M9-PFNA		<b>99.9</b>	50.0	150.0
MPFBA		<b>99.7</b>	50.0	150.0
MPFDoDA		<b>100.0</b>	50.0	150.0
d3N-MeFOSAA		<b>108.5</b>	50.0	150.0
d5EtFOSAA		<b>101.9</b>	50.0	150.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

#### Blank (BLK)

Lab Sample ID: AK201105.BLK201104

Run in Batch: AK201105, Run Date: 11/05/2020 14:19, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
PFDA		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFOS-BR		ND	2	ng/l
PFUnDA		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTTrDA		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l
11CL-PF3OUdS		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
ADONA		ND	2	ng/l
HFPO-DA		ND	2	ng/l

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		120.0	70.0	130.0
PFPeA		120.0	70.0	130.0
4:2 FTSA		116.0	70.0	130.0
PFHxA		115.0	70.0	130.0
PFBS		121.0	70.0	130.0
HFPO-DA		102.0	70.0	130.0
PFHpA		96.3	70.0	130.0
PFPeS		124.0	70.0	130.0
ADONA		108.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:40, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		113.0	70.0	130.0
PFOA		124.0	70.0	130.0
PFHxS		104.0	70.0	130.0
PFNA		116.0	70.0	130.0
8:2 FTSA		103.0	70.0	130.0
PFHpS		107.0	70.0	130.0
N-MeFOSAA		121.0	70.0	130.0
PFDA		111.0	70.0	130.0
EtFOSAA		99.2	70.0	130.0
PFOS		125.0	70.0	130.0
PFUnDA		118.0	70.0	130.0
9CL-PF3ONS		117.0	70.0	130.0
PFNS		124.0	70.0	130.0
PFDoDA		109.0	70.0	130.0
PFDS		114.0	70.0	130.0
PFTTrDA		117.0	70.0	130.0
FOSA		113.0	70.0	130.0
11CL-PF3OUdS		118.0	70.0	130.0
PFTeDA		116.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		112.0	70.0	130.0	6.9	30.0
PFPeA		114.0	70.0	130.0	5.1	30.0
4:2 FTSA		115.0	70.0	130.0	0.9	30.0
PFHxA		109.0	70.0	130.0	5.4	30.0
PFBS		103.0	70.0	130.0	16.1	30.0
HFPO-DA		104.0	70.0	130.0	1.9	30.0
PFHpA		116.0	70.0	130.0	18.6	30.0
PFPeS		119.0	70.0	130.0	4.1	30.0
ADONA		94.6	70.0	130.0	13.2	30.0
6:2 FTSA		111.0	70.0	130.0	1.8	30.0
PFOA		108.0	70.0	130.0	13.8	30.0
PFHxS		101.0	70.0	130.0	2.9	30.0
PFNA		113.0	70.0	130.0	2.6	30.0
8:2 FTSA		94.5	70.0	130.0	8.6	30.0
PFHpS		107.0	70.0	130.0	0.0	30.0
N-MeFOSAA		106.0	70.0	130.0	13.2	30.0
PFDA		115.0	70.0	130.0	3.5	30.0
EtFOSAA		100.0	70.0	130.0	0.8	30.0
PFOS		120.0	70.0	130.0	4.1	30.0
PFUnDA		105.0	70.0	130.0	11.7	30.0
9CL-PF3ONS		105.0	70.0	130.0	10.8	30.0
PFNS		102.0	70.0	130.0	19.5	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201105.LCSD201104, Parent Sample ID: AK201105.LCS201104

Run in Batch: AK201105, Run Date: 11/05/2020 13:59, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		103.0	70.0	130.0	5.7	30.0
PFDS		104.0	70.0	130.0	9.2	30.0
PFTTrDA		101.0	70.0	130.0	14.7	30.0
FOSA		111.0	70.0	130.0	1.8	30.0
11CL-PF3OUdS		95.8	70.0	130.0	20.8	30.0
PFTeDA		106.0	70.0	130.0	9.0	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201105.1888101M, Parent Sample ID: S18881.01

Run in Batch: AK201105, Run Date: 11/05/2020 18:32, Prep Date: 11/04/2020, Matrix: WW, Dilution: 1.97

Analyte	Flags	% Rec	LCL	UCL
PFBA		121.8	70.0	130.0
PFPeA		121.8	70.0	130.0
4:2 FTSA		101.5	70.0	130.0
PFHxA		101.5	70.0	130.0
PFBS		111.7	70.0	130.0
PFHpA		111.7	70.0	130.0
PFPeS		121.8	70.0	130.0
6:2 FTSA		111.7	70.0	130.0
PFOA		121.8	70.0	130.0
PFHxS		101.5	70.0	130.0
PFNA		121.8	70.0	130.0
8:2 FTSA		111.7	70.0	130.0
PFHpS		101.5	70.0	130.0
PFDA		121.8	70.0	130.0
N-MeFOSAA		121.8	70.0	130.0
EtFOSAA		111.7	70.0	130.0
PFOS		101.5	70.0	130.0
PFUnDA		101.5	70.0	130.0
PFNS		97.5	70.0	130.0
PFDoDA		101.5	70.0	130.0
PFDS		100.5	70.0	130.0
PFTTrDA		101.5	70.0	130.0
FOSA		121.8	70.0	130.0
PFTeDA		121.8	70.0	130.0
11CL-PF3OUdS		98.5	70.0	130.0
9CL-PF3ONS		97.5	70.0	130.0
ADONA		101.5	70.0	130.0
HFPO-DA		101.5	70.0	130.0

### Duplicate (DUP)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

# QC Report - Batch QC Results

## Organics - Volatiles, Prep Batch ID: PF201104W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

## Duplicate (DUP) (continued)

Lab Sample ID: AK201105.1888102D, Parent Sample ID: S18881.02

Run in Batch: AK201105, Run Date: 11/05/2020 19:11, Prep Date: 11/04/2020, Matrix: WW, Dilution: 2.01

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201124S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

#### Blank (BLK)

Lab Sample ID: AK201129S.BLK201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:57, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/kg
PFPeA		ND	4	ng/kg
4:2 FTSA		ND	2	ng/kg
PFHxA		ND	2	ng/kg
PFBS		ND	2	ng/kg
PFHpA		ND	2	ng/kg
PFPeS		ND	2	ng/kg
6:2 FTSA		ND	2	ng/kg
PFOA		ND	2	ng/kg
PFHxS		ND	2	ng/kg
PFHxS-LN		ND	2	ng/kg
PFHxS-BR		ND	2	ng/kg
PFNA		ND	2	ng/kg
8:2 FTSA		ND	2	ng/kg
PFHpS		ND	2	ng/kg
PFDA		ND	2	ng/kg
N-MeFOSAA		ND	2	ng/kg
EtFOSAA		ND	4	ng/kg
PFOS		ND	2	ng/kg
PFOS-LN		ND	2	ng/kg
PFOS-BR		ND	2	ng/kg
PFUnDA		ND	2	ng/kg
PFNS		ND	2	ng/kg
PFDoDA		ND	2	ng/kg
PFDS		ND	2	ng/kg
PFTTrDA		ND	2	ng/kg
FOSA		ND	2	ng/kg
PFTeDA		ND	4	ng/kg
11CL-PF3OUdS		ND	2	ng/kg
9CL-PF3ONS		ND	2	ng/kg
ADONA		ND	2	ng/kg
HFPO-DA		ND	2	ng/kg

#### Laboratory Control Sample (LCS)

Lab Sample ID: AK201129S.LCS201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:18, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		113.0	70.0	130.0
PFPeA		108.0	70.0	130.0
4:2 FTSA		96.5	70.0	130.0
PFHxA		104.0	70.0	130.0
PFBS		113.0	70.0	130.0
HFPO-DA		98.5	70.0	130.0
PFHpA		107.0	70.0	130.0
ADONA		106.0	70.0	130.0
PFPeS		115.0	70.0	130.0

**QC Report - Batch QC Results**

**Organics - Volatiles, Prep Batch ID: PF201124S1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

**Laboratory Control Sample (LCS) (continued)**

Lab Sample ID: AK201129S.LCS201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:18, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		102.0	70.0	130.0
PFOA		115.0	70.0	130.0
PFHxS		104.0	70.0	130.0
PFNA		99.0	70.0	130.0
8:2 FTSA		79.1	70.0	130.0
PFHpS		95.2	70.0	130.0
N-MeFOSAA		109.0	70.0	130.0
PFDA		110.0	70.0	130.0
EtFOSAA		99.2	70.0	130.0
PFOS		109.0	70.0	130.0
PFUnDA		104.0	70.0	130.0
9CL-PF3ONS		103.0	70.0	130.0
PFNS		98.4	70.0	130.0
PFDoDA		109.0	70.0	130.0
PFDS		102.0	70.0	130.0
FOSA		108.0	70.0	130.0
PFTTrDA		102.0	70.0	130.0
11CL-PF3OUdS		96.4	70.0	130.0
PFTeDA		105.0	70.0	130.0

**Laboratory Control Sample Duplicate (LCSD)**

Lab Sample ID: AK201129S.LCSD201124S, Parent Sample ID: AK201129S.LCS201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:38, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		113.0	70.0	130.0	0.0	30.0
PFPeA		108.0	70.0	130.0	0.0	30.0
4:2 FTSA		96.3	70.0	130.0	0.2	30.0
PFHxA		97.5	70.0	130.0	6.5	30.0
PFBS		108.0	70.0	130.0	4.5	30.0
HFPO-DA		98.6	70.0	130.0	0.1	30.0
PFHpA		103.0	70.0	130.0	3.8	30.0
ADONA		89.9	70.0	130.0	16.4	30.0
PFPeS		114.0	70.0	130.0	0.9	30.0
6:2 FTSA		110.0	70.0	130.0	7.5	30.0
PFOA		105.0	70.0	130.0	9.1	30.0
PFHxS		109.0	70.0	130.0	4.7	30.0
PFNA		113.0	70.0	130.0	13.2	30.0
8:2 FTSA		83.6	70.0	130.0	5.5	30.0
PFHpS		101.0	70.0	130.0	5.9	30.0
N-MeFOSAA		99.3	70.0	130.0	9.3	30.0
PFDA		107.0	70.0	130.0	2.8	30.0
EtFOSAA		88.9	70.0	130.0	11.0	30.0
PFOS		126.0	70.0	130.0	14.5	30.0
PFUnDA		109.0	70.0	130.0	4.7	30.0
9CL-PF3ONS		119.0	70.0	130.0	14.4	30.0
PFNS		112.0	70.0	130.0	12.9	30.0

## QC Report - Batch QC Results

### Organics - Volatiles, Prep Batch ID: PF201124S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

### Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201129S.LCSD201124S, Parent Sample ID: AK201129S.LCS201124S

Run in Batch: AK201129S, Run Date: 11/29/2020 23:38, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		105.0	70.0	130.0	3.7	30.0
PFDS		116.0	70.0	130.0	12.8	30.0
FOSA		121.0	70.0	130.0	11.4	30.0
PFTTrDA		107.0	70.0	130.0	4.8	30.0
11CL-PF3OUdS		103.0	70.0	130.0	6.6	30.0
PFTeDA		107.0	70.0	130.0	1.9	30.0

### Matrix Spike (MS)

Lab Sample ID: AK201129S.MSAND201124M, Parent Sample ID: AK201129S.MSAND201124

Run in Batch: AK201129S, Run Date: 11/30/2020 00:36, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		116.0	70.0	130.0
PFPeA		110.0	70.0	130.0
4:2 FTSA		104.0	70.0	130.0
PFHxA		102.0	70.0	130.0
PFBS		108.0	70.0	130.0
PFHpA		102.0	70.0	130.0
PFPeS		114.0	70.0	130.0
6:2 FTSA		108.0	70.0	130.0
PFOA		118.0	70.0	130.0
PFHxS		108.0	70.0	130.0
PFNA		122.0	70.0	130.0
8:2 FTSA		80.0	70.0	130.0
PFHpS		106.0	70.0	130.0
N-MeFOSAA		104.0	70.0	130.0
PFDA		94.0	70.0	130.0
EtFOSAA		96.0	70.0	130.0
PFOS		108.0	70.0	130.0
PFUnDA		116.0	70.0	130.0
PFNS		96.0	70.0	130.0
PFDoDA		106.0	70.0	130.0
PFDS		106.0	70.0	130.0
FOSA		118.0	70.0	130.0
PFTTrDA		104.0	70.0	130.0
PFTeDA		110.0	70.0	130.0

### Matrix Spike Duplicate (MSD)

Lab Sample ID: AK201129S.MSAND201124N, Parent Sample ID: AK201129S.MSAND201124M

Run in Batch: AK201129S, Run Date: 11/30/2020 00:56, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		118.0	70.0	130.0	1.7	30.0
PFPeA		112.0	70.0	130.0	1.8	30.0
4:2 FTSA		108.0	70.0	130.0	3.8	30.0
PFHxA		98.0	70.0	130.0	4.0	30.0
PFBS		112.0	70.0	130.0	3.6	30.0
PFHpA		126.0	70.0	130.0	21.1	30.0

## QC Report - Batch QC Results

**Organics - Volatiles, Prep Batch ID: PF201124S1 (continued)**

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

**Matrix Spike Duplicate (MSD) (continued)**

Lab Sample ID: AK201129S.MSAND201124N, Parent Sample ID: AK201129S.MSAND201124M

Run in Batch: AK201129S, Run Date: 11/30/2020 00:56, Prep Date: 11/24/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFPeS		122.0	70.0	130.0	6.8	30.0
6:2 FTSA		104.0	70.0	130.0	3.8	30.0
PFOA		108.0	70.0	130.0	8.8	30.0
PFHxS		110.0	70.0	130.0	1.8	30.0
PFNA		108.0	70.0	130.0	12.2	30.0
8:2 FTSA		86.0	70.0	130.0	7.2	30.0
PFHpS		122.0	70.0	130.0	14.0	30.0
PFDA		108.0	70.0	130.0	13.9	30.0
N-MeFOSAA		110.0	70.0	130.0	5.6	30.0
EtFOSAA		94.0	70.0	130.0	2.1	30.0
PFOS		118.0	70.0	130.0	8.8	30.0
PFUnDA		108.0	70.0	130.0	7.1	30.0
PFNS		110.0	70.0	130.0	13.6	30.0
PFDoDA		100.0	70.0	130.0	5.8	30.0
PFDS		100.0	70.0	130.0	5.8	30.0
PFTTrDA		104.0	70.0	130.0	0.0	30.0
FOSA		124.0	70.0	130.0	5.0	30.0
PFTeDA		114.0	70.0	130.0	3.6	30.0



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 Phone (517) 332-0167 Fax (517) 332-4034  
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

128650

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Clifford Vantz  
 COMPANY Ramboll  
 ADDRESS East Saginaw  
 CITY East Lansing STATE MI ZIP CODE 48823  
 PHONE NO. 313-337-0211 FAX NO. \_\_\_\_\_ P.O. NO. \_\_\_\_\_  
 E-MAIL ADDRESS clifford.vantz@ramboll.com QUOTE NO. \_\_\_\_\_

CONTACT NAME \_\_\_\_\_  SAME  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_  
 PHONE NO. \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

PROJECT NO./NAME RACER Hemphill Rd Industrial Land SAMPLER(S) - PLEASE PRINT/SIGN NAME Kevin Schneider  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	PFAS (ASTM D 7768)	Certifications		Project Locations		Special Instructions
	DATE	TIME												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Detroit	<input type="checkbox"/> New York	
<u>1880201</u>	<u>11/2/20</u>	<u>916</u>	<u>Field Blank-110220</u>	<u>QC</u>	<u>1</u>	<u>1</u>							<u>X</u>		<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES		<u>low level reporting</u>
<u>.02</u>	<u>↓</u>	<u>1530</u>	<u>066 Mw-45</u>	<u>LWAP</u>	<u>3</u>	<u>3</u>							<u>X</u>					<u>limit with estimated</u>
<u>.03</u>	<u>↓</u>	<u>1630</u>	<u>MW-401</u>	<u>LWAP</u>	<u>3</u>	<u>3</u>							<u>X</u>					<u>values</u>
/			/			/			/			/			/			

RELINQUISHED BY: [Signature]  Sampler DATE 11/3/20 TIME 16:15  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 10:15  
 RELINQUISHED BY: [Signature] DATE 11/3/20 TIME 13:40  
 RECEIVED BY: [Signature] DATE 11/3/20 TIME 13:40

RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_  
 SEAL NO. \_\_\_\_\_ SEAL INTACT YES  NO  INITIALS \_\_\_\_\_  
 NOTES: S1 TEMP. ON ARRIVAL \_\_\_\_\_

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



ENVIRONMENT  
& HEALTH

ATTACHMENT B  
PRIVATE WELL LOGS



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID: 25077729002

<b>Tax No:</b>	<b>Permit No:</b>	<b>County:</b> Genesee			<b>Township:</b> Burton		
<b>Well ID: 25000002286</b>  Elevation: 787 ft. Latitude: 42.9808883757 Longitude: -83.6613828348 Method of Collection: Interpolation-Map		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b>	<b>WSSN:</b>	<b>Source ID/Well No:</b>	
		<b>Distance and Direction from Road Intersection:</b> Aquifer: SAGINAW      Well #: 250032902					
		<b>Well Owner:</b>				<b>Owner Address:</b>	
<b>Well Address:</b> 3307 GLENGARRY MI							

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 5/29/1985	<b>Pump Installation Date:</b>	<b>HP:</b>
<b>Well Type:</b> Replacement	<b>Height:</b>	<b>Manufacturer:</b> Other	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> Unknown		<b>Model Number:</b>	<b>Pump Capacity:</b> 0 GPM
<b>Casing Joint:</b> Unknown		<b>Drop Pipe Length:</b> 0.00 ft.	<b>Pump Voltage:</b>
<b>Casing Fitting:</b> None		<b>Drop Pipe Diameter:</b>	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 160.00 ft. depth		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b>		<b>Pressure Tank Installed:</b> No	
		<b>Pressure Relief Valve Installed:</b> No	

<b>Static Water Level:</b> 45.00 ft. Below Grade <b>Well Yield Test:</b> Pumping level 220.00 ft. after 1.00 hrs. at 30 GPM <b>Yield Test Method:</b> Unknown	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
	Sand	14.00	14.00
<b>Screen Installed:</b> No <b>Intake:</b> Unknown	Clay	44.00	58.00
	Gravel & Clay	23.00	81.00
	Clay	75.00	156.00
	Sandstone	64.00	220.00

<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Unknown	<b>Geology Remarks:</b>
<b>Grouting Material:</b> Other	<b>Bags:</b> 0.00 <b>Additives:</b> None <b>Depth:</b> 0.00 ft. to 0.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter	<b>Drilling Machine Operator Name:</b>
---	--

<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Unknown
<b>Type:</b> None	
<b>Distance:</b>	
<b>Direction:</b>	

<b>Abandoned Well Plugged:</b> No	<b>Contractor Type:</b> Unknown	<b>Reg No:</b>
<b>Reason Not Plugged:</b>	<b>Business Name:</b>	
	<b>Business Address:</b>	

<b>Water Well Contractor's Certification</b>	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b>
<b>Other Remarks:</b> Grouting Material 1: Listed as other in Wellkey, Pump Manufacturer: Pump Manufacturer unknown



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 6663	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000007447</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Distance and Direction from Road Intersection:</b> 1/10th mile south of hemphill on the west side of redarrow			
		<b>Well Owner:</b> Scott Richardson			
<b>Elevation:</b> 787 ft.		<b>Well Address:</b> 2216 Redarrow Burton, MI 48529		<b>Owner Address:</b> 2216 Redarrow Burton, MI 48529	
<b>Latitude:</b> 42.98032793					
<b>Longitude:</b> -83.66184115					
<b>Method of Collection:</b> Address Matching-House Number					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Well Type:</b> Replacement	<b>Pump Installation Date:</b> 5/8/2002	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Date Completed:</b> 5/8/2002	<b>Manufacturer:</b> Goulds	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic	<b>Height:</b> 1.00 ft. above grade	<b>Model Number:</b> 10SB05421	<b>Pump Capacity:</b> 10 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b>
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 180.00 ft. depth		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b> 8.00 in. to 180.00 ft. depth 4.50 in. to 220.00 ft. depth		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
		<b>Manufacturer:</b> Goulds	
		<b>Model Number:</b> V-100	<b>Tank Capacity:</b> 32.0 Gallons
		<b>Pressure Relief Valve Installed:</b> No	

<b>Static Water Level:</b> 35.00 ft. Below Grade	<b>Well Yield Test:</b> Pumping level 55.00 ft. after 0.50 hrs. at 30 GPM	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
			Brown Sand Sandy Brown	15.00	15.00
			Gray Clay Clayey Gray	15.00	30.00
			Brown Sand Sandy Brown	5.00	35.00
			Gray Clay Clayey Gray	65.00	100.00
			Brown Sand & Gravel Fine To Coarse Brown	10.00	110.00
			Gray Clay Sticky Gray	30.00	140.00
			Black Shale Firm Black	35.00	175.00
			Gray Limestone Broken Gray	5.00	180.00
			Gray Sandstone Firm Water Bearing	40.00	220.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 8.00	<b>Additives:</b> None
	<b>Depth:</b> 0.00 ft. to 200.00 ft.	

<b>Wellhead Completion:</b> 12 inches above grade	<b>Drilling Machine Operator Name:</b> Matt Sckelsky
	<b>Employment:</b> Subcontractor

<b>Nearest Source of Possible Contamination:</b>		
<b>Type</b>	<b>Distance</b>	<b>Direction</b>
Sewer line	15 ft.	North-Northeast
Sewer line	18 ft.	South

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-2203
	<b>Business Name:</b> Snider Well Drilling, Inc.	
	<b>Business Address:</b> 3274 Alpena St	

<b>Casing Removed:</b>	<b>Water Well Contractor's Certification</b>
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	<b>Signature of Registered Contractor</b>
	<b>Date</b>

<b>General Remarks:</b> The pressure tank was 1 year old installed previously
<b>Other Remarks:</b>



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 25077724003	<b>County:</b> Genesee	<b>Township:</b> Burton
<b>Well ID: 25000008395</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29
<b>Elevation:</b> 784 ft.		<b>Well Status:</b> Inactive	<b>WSSN:</b> 2047925
<b>Latitude:</b> 42.97995		<b>Source ID/Well No:</b> 001	
<b>Longitude:</b> -83.66713		<b>Distance and Direction from Road Intersection:</b> 2/10 mi E of Saginaw St, one block S of Hemphill Rd	
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off		<b>Well Owner:</b> Ed Kropiewnicki	
		<b>Well Address:</b> 3333 Associates Flint, MI 48529	<b>Owner Address:</b> 3333 Associates Flint, MI 48529

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Type II public	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 3/8/1994	<b>Pump Installation Date:</b>	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b>	<b>Manufacturer:</b> Aermotor	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic		<b>Model Number:</b>	<b>Pump Capacity:</b> 12 GPM
<b>Casing Joint:</b> Unknown		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b>
<b>Casing Fitting:</b> Unknown		<b>Drop Pipe Diameter:</b>	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 170.00 ft. depth		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b> 7.88 in. to 170.00 ft. depth		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Unknown	
		<b>Manufacturer:</b> Well-X-Trol	
		<b>Model Number:</b> 203	<b>Tank Capacity:</b> 12.0 Gallons
		<b>Pressure Relief Valve Installed:</b> No	

<b>Static Water Level:</b> 40.00 ft. Below Grade	<b>Yield Test Method:</b> Unknown	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 50.00 ft. after 0.50 hrs. at 30 GPM		Brown Clay	12.00	12.00
		Gray Clay	20.00	32.00
		Clay & Sand	40.00	72.00
<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	Gravel Fine	7.00	79.00
		Gray Clay Sticky	63.00	142.00
		Gray Shale	10.00	152.00
		Stones	12.00	164.00
		White Sandstone	40.00	204.00
		Gray Shale	5.00	209.00
		White Sandstone	11.00	220.00

<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Unknown	<b>Geology Remarks:</b>
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 0.00	
<b>Additives:</b> None	<b>Depth:</b> 0.00 ft. to 140.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter, 12 inches above grade	<b>Drilling Machine Operator Name:</b> David D Coon
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	
<b>Distance:</b> 100 ft.	
<b>Direction:</b> West	

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-2152
	<b>Business Name:</b> Coon Well Drilling	
	<b>Business Address:</b> 2265 Rollins St Grand, Blanc, MI	

<b>Casing Removed:</b>	<b>Water Well Contractor's Certification</b>
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	<b>Signature of Registered Contractor</b> _____
	<b>Date</b> _____

<b>General Remarks:</b>
<b>Other Remarks:</b>





# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b>	<b>County:</b> Genesee			<b>Township:</b> Burton	
<b>Well ID: 25000012776</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>	<b>Source ID/Well No:</b>
		<b>Distance and Direction from Road Intersection:</b>				
<b>Elevation:</b>		<b>Well Owner:</b>				
<b>Latitude:</b> 42.97991531		<b>Well Address:</b> 2242 ARROW BURTON, MI 48529			<b>Owner Address:</b> 2242 ARROW BURTON, MI 48529	
<b>Longitude:</b> -83.661472						
<b>Method of Collection:</b> Address Matching-House Number						

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> No
<b>Well Depth:</b> 200.00 ft.	<b>Date Completed:</b> 6/20/1990	<b>Pressure Tank Installed:</b> No
<b>Well Type:</b> Replacement	<b>Height:</b>	<b>Pressure Relief Valve Installed:</b> No
<b>Casing Type:</b> PVC plastic		
<b>Casing Joint:</b> Unknown		
<b>Casing Fitting:</b> Drive shoe		
<b>Diameter:</b> 5.00 in. to 163.00 ft. depth		
<b>Borehole:</b> 7.88 in. to 163.00 ft. depth		

<b>Static Water Level:</b> 40.00 ft. Below Grade	<b>Well Yield Test:</b> Pumping level 100.00 ft. after 2.00 hrs. at 20 GPM	<b>Yield Test Method:</b> Unknown	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
			Sand	10.00	10.00
			Yellow Clay	5.00	15.00
			Blue Clay	110.00	125.00
			Clay Sandy	15.00	140.00
			Gravel	12.00	152.00
			Shale	8.00	160.00
			Sandstone	40.00	200.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Unknown	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 0.00	
<b>Additives:</b> None	<b>Depth:</b> 0.00 ft. to 163.00 ft.	

<b>Wellhead Completion:</b> 12 inches above grade	<b>Drilling Machine Operator Name:</b> BRIAN SUNDE
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	
<b>Distance:</b>	
<b>Direction:</b>	

<b>Abandoned Well Plugged:</b> No	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-1710
<b>Reason Not Plugged:</b> Unknown	<b>Business Name:</b> GIL SUNDE WELL DRLG	
	<b>Business Address:</b>	

<b>Water Well Contractor's Certification</b>	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b>
<b>Other Remarks:</b>



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> W11985	<b>County:</b> Genesee	<b>Township:</b> Burton
<b>Well ID: 25000015887</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 30
		<b>Well Status:</b> Active	<b>WSSN:</b>
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> North of Bristol, West of Greenley St.	
<b>Latitude:</b> 42.974842		<b>Well Owner:</b> Davvid Carrill	
<b>Longitude:</b> -83.679872		<b>Well Address:</b> 1346 Connell St Burton, MI 48529	<b>Owner Address:</b> 1346 Connell St Burton, MI 48529-2216
<b>Method of Collection:</b> Address Matching-House Number			

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 180.00 ft.	<b>Date Completed:</b> 6/16/2006	<b>Pump Installation Date:</b> 6/16/2006	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b> 1.00 ft. above grade	<b>Manufacturer:</b> Other	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic		<b>Model Number:</b> T5L4Y12P7	<b>Pump Capacity:</b> 10 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 60.00 ft.	<b>Pump Voltage:</b>
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 159.00 ft. depth		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b> 8.50 in. to 159.00 ft. depth 4.50 in. to 195.00 ft. depth		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
		<b>Manufacturer:</b> Perma-Air	
		<b>Model Number:</b> pad20	<b>Tank Capacity:</b> 20.0 Gallons
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 25.00 ft. Below Grade	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 20.00 ft. after 2.00 hrs. at 30 GPM			
	Sand	10.00	10.00
	Clay	30.00	40.00
	Clay Gravelly	40.00	80.00
	Clay W/Shale Hard	60.00	140.00
	Sandstone	40.00	180.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite dry granular	<b>Bags:</b> 10.00	
<b>Additives:</b> None	<b>Depth:</b> 0.00 ft. to 140.00 ft.	

<b>Wellhead Completion:</b> 12 inches above grade	<b>Drilling Machine Operator Name:</b> Carl Kirklin
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	<b>Pump Installer:</b> Derrec Coulter
<b>Distance:</b> 20 ft.	
<b>Direction:</b> East	

<b>Abandoned Well Plugged:</b> No	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 44-2047
<b>Reason Not Plugged:</b> Other	<b>Business Name:</b> Tim Kirklin Well Drilling	
	<b>Business Address:</b> 4718 Davison Rd, Lapeer, MI, 48446	

<b>Water Well Contractor's Certification</b>	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b>
<b>Other Remarks:</b> Pump Manufacturer: Schaefer Pump installed, Not Plugged Reason: Dug up old well, already abandoned. , Coordinate Source: Google well address geocoding



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 10801	<b>County:</b> Genesee	<b>Township:</b> Burton		
<b>Well ID:</b> 25000017428	<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>	<b>Source ID/Well No:</b>
	<b>Distance and Direction from Road Intersection:</b> Between Saginaw and Dort Hwy. South off Hemphill Rd.				
	<b>Well Owner:</b> Recovery Services				
<b>Elevation:</b>	<b>Well Address:</b>		<b>Owner Address:</b>		
<b>Latitude:</b> 42.98014	3323 Associates Dr.		3323 Associates Dr.		
<b>Longitude:</b> -83.66761	Burton, MI 48529		Burton, MI 48529		
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Type III public	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 6/6/2008	<b>Pump Installation Date:</b> 6/10/2008	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b> 1.00 ft. above grade	<b>Manufacturer:</b> AquaDuty	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic	<b>Casing Joint:</b> Solvent welded/glued	<b>Model Number:</b> T5M4C12P71	<b>Pump Capacity:</b> 12 GPM
<b>Casing Fitting:</b> Shale packer/trap	<b>Diameter:</b> 5.00 in. to 175.00 ft. depth	<b>Drop Pipe Length:</b> 60.00 ft.	<b>Pump Voltage:</b>
	<b>Borehole:</b> 8.00 in. to 175.00 ft. depth 4.50 in. to 220.00 ft. depth	<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
		<b>Draw Down Seal Used:</b> No	
		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
		<b>Manufacturer:</b> Challenger	
		<b>Model Number:</b> 122	<b>Tank Capacity:</b> 32.0 Gallons
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 25.00 ft. Below Grade	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 200.00 ft. after 2.00 hrs. at 45 GPM			
	Clay	50.00	50.00
	Gravel	38.00	88.00
	Clay	57.00	145.00
	Gravel	15.00	160.00
	Clay & Gravel	11.00	171.00
	Sandstone	49.00	220.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 8.00	
	<b>Additives:</b> None	
	<b>Depth:</b> 0.00 ft. to 175.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter	<b>Drilling Machine Operator Name:</b> Mike Munsell
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	<b>Pump Installer:</b> Percy Buck
<b>Distance:</b> 12 ft.	
<b>Direction:</b> South	
<b>None</b>	

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-1886
	<b>Business Name:</b> Lyons Well Drilling	
	<b>Business Address:</b> 8107 N Dort Hwy, Mt Morris, MI, 48458	

**Water Well Contractor's Certification**

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

<b>Casing Diameter:</b> 2 in.	<b>Casing Removed:</b> No	<b>Signature of Registered Contractor</b>	<b>Date</b>
<b>Plugging Material:</b> Bentonite chips/pellets			
<b>No. of Bags:</b> 4.00	<b>Well Depth:</b> 93 ft.		

**General Remarks:** Old well coordinates N42.98013 W083.66774

**Other Remarks:**





# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 17776	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000019460</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> South of Hemphill, on the east side of Associates Drive			
<b>Latitude:</b> 42.97935		<b>Well Owner:</b> Emerald Landscaping			
<b>Longitude:</b> -83.668543		<b>Well Address:</b> 3364 Associates Drive Burton, MI 48529		<b>Owner Address:</b> 3364 Associates Drive Burton, MI 48529	
<b>Method of Collection:</b> Interpolation-Map					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Irrigation	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 150.00 ft.	<b>Date Completed:</b> 1/5/2012	<b>Pump Installation Date:</b> 1/10/2012	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b> 1.00 ft. above grade	<b>Manufacturer:</b> Franklin Electric	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic	<b>Casing Joint:</b> Solvent welded/glued	<b>Model Number:</b> T5L4Y10P9	<b>Pump Capacity:</b> 10 GPM
<b>Casing Fitting:</b> None		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b> 220
		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 140.00 ft. depth SDR: 21.00		<b>Draw Down Seal Used:</b> No	
		<b>Pressure Tank Installed:</b> No	
<b>Borehole:</b> 8.75 in. to 150.00 ft. depth		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 40.00 ft. Below Grade	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 150.00 ft. after 1.00 hrs. at 75 GPM		Clay	102.00	102.00
		Gravel	48.00	150.00

<b>Screen Installed:</b> Yes	<b>Filter Packed:</b> Yes		
<b>Screen Diameter:</b> 5.00 in.	<b>Blank:</b>		
<b>Screen Material Type:</b> PVC-slotted			
<b>Screen Installation Type:</b> Attached			
<b>Slot Length Set Between</b>			
15.00 10.00 ft. 140.00 ft. and 150.00 ft.			
<b>Fittings:</b> None			

<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	<b>Geology Remarks:</b>
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 10.00	
<b>Additives:</b> None	<b>Depth:</b> 0.00 ft. to 135.00 ft.	

**Wellhead Completion:** Pitless adapter, 12 inches above grade

<b>Nearest Source of Possible Contamination:</b>	<b>Drilling Machine Operator Name:</b> Paul Wenlding
<b>Type:</b> Storm sewer	<b>Employment:</b> Employee
<b>Distance:</b> 70 ft.	<b>Pump Installer:</b> Andy Birchmeier
<b>Direction:</b> East-Northeast	

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 78-1607
	<b>Business Name:</b> Ed Birkmeier Well Drilling	
	<b>Business Address:</b> 9471 Genesee Street, New Lothrop, MI, 48460	

<b>Water Well Contractor's Certification</b>	
This well/pump was constructed under my supervision and I hereby certify that the work complies with Part 127 Act 368 PA 1978 and the well code.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

**General Remarks:** USED OWNERS EXISTING BLADDER TANK

**Other Remarks:**



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID: WM6242

<b>Tax No:</b>	<b>Permit No:</b> w-17935	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000019736</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> E. OF SAGINAW RD; S. OFF HAMPHILL RD.			
<b>Latitude:</b> 42.98118		<b>Well Owner:</b> Judith Belote			
<b>Longitude:</b> -83.66328		<b>Well Address:</b> 2192 Red Arrow Dr. Burton, MI 48529		<b>Owner Address:</b> 2192 Red Arrow Dr. Burton, MI 48529	
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Well Type:</b> Replacement	<b>Pump Installation Date:</b> 7/16/2012	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Date Completed:</b> 7/15/2012	<b>Manufacturer:</b> Franklin Electric	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic	<b>Height:</b> 1.00 ft. above grade	<b>Model Number:</b> 12FV05-2W1	<b>Pump Capacity:</b> 12 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b> 115
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
		<b>Draw Down Seal Used:</b> No	
<b>Diameter:</b> 5.00 in. to 172.00 ft. depth SDR: 21.00		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
<b>Borehole:</b> 8.50 in. to 172.00 ft. depth 4.50 in. to 220.00 ft. depth		<b>Manufacturer:</b> Goulds	<b>Tank Capacity:</b> 10.0 Gallons
		<b>Model Number:</b> V100	
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 30.00 ft. Below Grade	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 70.00 ft. after 0.50 hrs. at 15 GPM			
	Sand	15.00	15.00
	Gray Clay	70.00	85.00
	Clay & Gravel	60.00	145.00
	Gray Clay	20.00	165.00
	Sandstone	55.00	220.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 9.00	
	<b>Additives:</b> None	
	<b>Depth:</b> 0.00 ft. to 170.00 ft.	

<b>Wellhead Completion:</b> 12 inches above grade	<b>Drilling Machine Operator Name:</b> Matt Sekelsky
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	<b>Pump Installer:</b> Perry Jones
<b>Distance:</b> 14 ft.	
<b>Direction:</b> South	

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-2152
	<b>Business Name:</b> COON WELL DRILLING, INC.	
	<b>Business Address:</b> 2265 Rollins St., Grand Blanc, MI, 48439	

<b>Latitude:</b> 42.98118	<b>Longitude:</b> -83.66328	<b>Water Well Contractor's Certification</b>	
<b>Casing Diameter:</b> 2 in.	<b>Casing Removed:</b> No	This well/pump was constructed under my supervision and I hereby certify that the work complies with Part 127 Act 368 PA 1978 and the well code.	
<b>Plugging Material:</b> Neat cement		<b>Signature of Registered Contractor</b>	<b>Date</b>
<b>No. of Bags:</b> 12.00	<b>Well Depth:</b> 215 ft.		

<b>General Remarks:</b>
<b>Other Remarks:</b>





# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 19896	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000021329</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> SOUTH OF HEMPHILL ROAD, BETWEEN SAGINAW ROAD AND DORT HIGHWAY			
<b>Latitude:</b> 42.981018		<b>Well Owner:</b> ANTHONY & VALERIE TALHELM			
<b>Longitude:</b> -83.661001		<b>Well Address:</b> 3318 OGEMA AVENUE BURTON, MI 48529		<b>Owner Address:</b> 1054 N. MORRISH ROAD FLINT, MI 48532	
<b>Method of Collection:</b> Interpolation-Map					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 8/26/2015	<b>Pump Installation Date:</b> 8/26/2015	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b> 1.00 ft. above grade	<b>Manufacturer:</b> AquaDuty	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic		<b>Model Number:</b> T5M4C12P7-S	<b>Pump Capacity:</b> 12 GPM
<b>Casing Joint:</b> Spline joint/CertaLok		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b> 115
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
		<b>Draw Down Seal Used:</b> No	
<b>Diameter:</b> 5.00 in. to 130.00 ft. depth SDR: 21.00		<b>Pressure Tank Installed:</b> Yes	
5.00 in. to 40.00 ft. depth SDR: 17.00		<b>Pressure Tank Type:</b> Diaphragm/bladder	
<b>Borehole:</b> 7.87 in. to 170.00 ft. depth		<b>Manufacturer:</b> Goulds	
4.50 in. to 220.00 ft. depth		<b>Model Number:</b> V-100	<b>Tank Capacity:</b> 32.0 Gallons
		<b>Pressure Relief Valve Installed:</b> No	

<b>Static Water Level:</b> 50.00 ft. Below Grade	<b>Well Yield Test:</b> Pumping level 220.00 ft. after 1.00 hrs. at 33 GPM	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
			Sand	23.00	23.00
			Clay	27.00	50.00
			Gravel	3.00	53.00
			Clay	73.00	126.00
			Gravel	9.00	135.00
			Clay	8.00	143.00
			Shale W/Sandstone	23.00	166.00
			Sandstone	54.00	220.00

<b>Screen Installed:</b> No	<b>Intake:</b> Unknown	<b>Geology Remarks:</b> EZ-MUD
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 6.00	<b>Additives:</b> None
	<b>Depth:</b> 0.00 ft. to 170.00 ft.	

**Wellhead Completion:** Pitless adapter, 12 inches above grade

<b>Nearest Source of Possible Contamination:</b>			<b>Drilling Machine Operator Name:</b> CLINTON BURNS
<b>Type:</b> Sewer line	<b>Distance:</b> 20 ft.	<b>Direction:</b> North	<b>Employment:</b> Employee
<b>Abandoned Well Plugged:</b> Yes			<b>Contractor Type:</b> Water Well Drilling Contractor <b>Reg No:</b> 25-1947
			<b>Business Name:</b> BURNS WELL DRILLING
			<b>Business Address:</b> 5370 CORUNNA ROAD, FLINT, MI, 48532

<b>Latitude:</b> 42.58799		<b>Longitude:</b> -83.39663	
<b>Casing Diameter:</b> 2 in.		<b>Casing Removed:</b> No	
<b>Plugging Material:</b> Neat cement			
<b>No. of Bags:</b> 5.00		<b>Well Depth:</b> 220 ft.	
<b>Water Well Contractor's Certification</b>			
This well/pump was constructed under my supervision and I hereby certify that the work complies with Part 127 Act 368 PA 1978 and the well code.			
<b>Signature of Registered Contractor</b>		<b>Date</b>	

**General Remarks:**

**Other Remarks:**



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> w-21304	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000022511</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> 1/2 mile east of saginaw rd, south west side of red arrow			
<b>Latitude:</b> 42.98122		<b>Well Owner:</b> Wray Properties llc			
<b>Longitude:</b> -83.66348		<b>Well Address:</b> 2188 Red Arrow Burton, MI 48429		<b>Owner Address:</b> 3136 Redbarn rd Flint, MI 48460	
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 8/28/2017	<b>Pressure Tank Installed:</b> No
<b>Well Type:</b> Replacement	<b>Height:</b>	<b>Pressure Relief Valve Installed:</b> No
<b>Casing Type:</b> PVC plastic		
<b>Casing Joint:</b>		
<b>Casing Fitting:</b>		
<b>Diameter:</b> 5.00 in. to 182.00 ft. depth SDR: 21.00		
<b>Borehole:</b> 8.75 in. to 180.00 ft. depth 6.88 in. to 188.00 ft. depth 4.75 in. to 220.00 ft. depth		

<b>Static Water Level:</b> 50.00 ft. Below Grade	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 220.00 ft. after 1.00 hrs. at 40 GPM		Sand	10.00	10.00
		Clay	113.00	123.00
		Sand	4.00	127.00
		Sand & Clay	9.00	136.00
		Sand & Clay Fine	35.00	171.00
		Sandstone	49.00	220.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 16.00	
	<b>Additives:</b> None	
	<b>Depth:</b> 0.00 ft. to 180.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter, 12 inches above grade	<b>Drilling Machine Operator Name:</b> Matt Trnka
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sanitary sewer	<b>Pump Installer:</b> Jeff Babinger
<b>Distance:</b> 40 ft.	
<b>Direction:</b> East	

<b>Abandoned Well Plugged:</b> No	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 78-1607
<b>Reason Not Plugged:</b> Well being plugged by another driller	<b>Business Name:</b> Ed Birkmeier Well Drilling	
	<b>Business Address:</b> PO Box 324, New Lothrop, MI, 48460	

<b>Water Well Contractor's Certification</b>	
This well and/or pump installation was performed under my registration.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b>
<b>Other Remarks:</b>



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 22247	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000022969</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> Between E Hemphill Rd and S Dort Hwy on the west side of Red Arrow Rd			
<b>Latitude:</b> 42.98085		<b>Well Owner:</b> James Miller			
<b>Longitude:</b> -83.6627		<b>Well Address:</b> 2212 Red Arrow Rd Burton, MI 48529		<b>Owner Address:</b> 2212 Red Arrow Rd Burton, MI 48529	
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 7/31/2018	<b>Pump Installation Date:</b> 8/1/2018	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b> 1.00 ft. above grade	<b>Manufacturer:</b> Franklin Electric	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic		<b>Model Number:</b> 10FA05P4-2W115	<b>Pump Capacity:</b> 10 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b> 115
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 178.00 ft. depth		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b> 8.00 in. to 178.00 ft. depth 4.50 in. to 220.00 ft. depth		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
		<b>Manufacturer:</b> Flex-Lite-Flexcon	
		<b>Model Number:</b> FL7	<b>Tank Capacity:</b> 22.0 Gallons
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 37.00 ft. Below Grade	<b>Well Yield Test:</b> Pumping level 200.00 ft. after 2.00 hrs. at 40 GPM	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
			Sand	12.00	12.00
			Clay	83.00	95.00
			Clay & Gravel	20.00	115.00
<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well		Clay	25.00	140.00
			Clay & Gravel Sandy	20.00	160.00
			Clay	8.00	168.00
			Sandstone	3.00	171.00
			Shale	4.00	175.00
			Sandstone	12.00	187.00
			Slate W/Sandstone Strips	8.00	195.00
			Sandstone	25.00	220.00

<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	<b>Geology Remarks:</b>
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 9.00	
	<b>Additives:</b> None	
	<b>Depth:</b> 0.00 ft. to 178.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter	<b>Drilling Machine Operator Name:</b> Mike Munsell
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	<b>Pump Installer:</b> Coleman Brock
<b>Distance:</b> 12 ft.	
<b>Direction:</b> North	

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-2380
	<b>Business Name:</b> Lyons Well Drilling	
	<b>Business Address:</b> 3159 E. Bristol Rd., Burton, MI, 48529	

<b>Water Well Contractor's Certification</b>	
This well and/or pump installation was performed under my registration.	
<b>Latitude:</b> 42.98079	<b>Longitude:</b> -83.66285
<b>Casing Diameter:</b> 2 in.	<b>Casing Removed:</b> Yes
<b>Plugging Material:</b> Bentonite chips/pellets	
<b>No. of Bags:</b> 2.00	<b>Well Depth:</b> 60 ft.
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b>
<b>Other Remarks:</b>



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 21890	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000023548</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b>			
<b>Latitude:</b> 42.9797186		Between S Saginaw St and S Dort Hwy off E Hemphill Rd on the west side of the road			
<b>Longitude:</b> -83.668233		<b>Well Owner:</b> JP Machining			
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off		<b>Well Address:</b>		<b>Owner Address:</b>	
		3336 Associates Dr Burton, MI 48529		3336 Associates Dr Burton, MI 48529	

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Type III public	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 240.00 ft.	<b>Date Completed:</b> 7/22/2019	<b>Pump Installation Date:</b> 7/24/2019	<b>HP:</b> 0.75
<b>Well Type:</b> New	<b>Height:</b> 1.00 ft. above grade	<b>Manufacturer:</b> Franklin Electric	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic		<b>Model Number:</b> 10FB07P4-2W230	<b>Pump Capacity:</b> 10 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b> 230
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
		<b>Draw Down Seal Used:</b> No	
<b>Diameter:</b> 5.00 in. to 160.00 ft. depth SDR: 21.00		<b>Pressure Tank Installed:</b> Yes	
5.00 in. to 199.00 ft. depth SDR: 17.00		<b>Pressure Tank Type:</b> Diaphragm/bladder	
<b>Borehole:</b> 8.50 in. to 199.00 ft. depth		<b>Manufacturer:</b> Flex-Lite-Flexcon	
4.50 in. to 240.00 ft. depth		<b>Model Number:</b> FL12	<b>Tank Capacity:</b> 35.0 Gallons
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 26.00 ft. Below Grade	<b>Well Yield Test:</b> Pumping level 220.00 ft. after 2.00 hrs. at 50 GPM	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
			Clay	72.00	72.00
			Clay & Gravel	13.00	85.00
			Gravel	11.00	96.00
			Clay & Gravel	12.00	108.00
			Clay	12.00	120.00
			Sand & Gravel	75.00	195.00
			Sandstone	10.00	205.00
			Slate	7.00	212.00
			Sandstone	28.00	240.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Neat cement	<b>Bags:</b> 17.00	
	<b>Additives:</b> None	
	<b>Depth:</b> 0.00 ft. to 199.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter	<b>Drilling Machine Operator Name:</b> Percy Buck
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	<b>Pump Installer:</b> Coleman Brock
<b>Distance:</b> 13 ft.	
<b>Direction:</b> South	

<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-2380
<b>Business Name:</b> Lyons Well Drilling	
<b>Business Address:</b> 3159 E. Bristol Rd., Burton, MI, 48529	

<b>Water Well Contractor's Certification</b>	
This well and/or pump installation was performed under my registration.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b>
<b>Other Remarks:</b>



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 22790	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000023573</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> 800' S OF E HEMPHILL RD 30' W OF RED ARROW			
<b>Latitude:</b> 42.979914		<b>Well Owner:</b> BRIAN HOLT			
<b>Longitude:</b> -83.66172		<b>Well Address:</b> 2250 RED ARROW BURTON, MI 48529		<b>Owner Address:</b> 2250 RED ARROW BURTON, MI 48529	
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Date Completed:</b> 8/7/2019	<b>Pump Installation Date:</b> 8/8/2019	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Height:</b> 1.50 ft. above grade	<b>Manufacturer:</b> Franklin Electric	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic		<b>Model Number:</b> 10FA05P4	<b>Pump Capacity:</b> 10 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 80.00 ft.	<b>Pump Voltage:</b> 115
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 168.00 ft. depth SDR: 21.00		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b> 8.00 in. to 168.00 ft. depth 4.75 in. to 220.00 ft. depth		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
		<b>Manufacturer:</b> Challenger	
		<b>Model Number:</b> PC122	<b>Tank Capacity:</b> 33.0 Gallons
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 25.00 ft. Below Grade	<b>Well Yield Test:</b> Pumping level 120.00 ft. after 3.00 hrs. at 30 GPM	<b>Yield Test Method:</b> Air	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
			Sand & Clay	30.00	30.00
<b>Screen Installed:</b> No <b>Intake:</b> Bedrock Well			Clay	50.00	80.00
			Gravel	10.00	90.00
			Clay	60.00	150.00
			Shale	15.00	165.00
			Sandstone	55.00	220.00

<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	<b>Geology Remarks:</b>
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 10.00 <b>Additives:</b> None <b>Depth:</b> 0.00 ft. to 168.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter	<b>Drilling Machine Operator Name:</b> MIKE KUREK
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sanitary sewer	<b>Pump Installer:</b> AL WHITNEY
<b>Distance:</b> 18 ft.	
<b>Direction:</b> East	

<b>Abandoned Well Plugged:</b> No	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 44-2007
<b>Reason Not Plugged:</b> Well inaccessible for plugging	<b>Business Name:</b> Metamora Water Services, Inc	
	<b>Business Address:</b> 3601 W Genesee, Lapeer, MI, 48446	

<b>Water Well Contractor's Certification</b>	
This well and/or pump installation was performed under my registration.	
<b>Signature of Registered Contractor</b>	<b>Date</b>

<b>General Remarks:</b> CEMENTED LINES IN BASEMENT OLD WELL IS UNDER ASPHALT DRIVEWAY
<b>Other Remarks:</b>



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:

<b>Tax No:</b>	<b>Permit No:</b> 21036	<b>County:</b> Genesee		<b>Township:</b> Burton	
<b>Well ID: 25000023790</b>		<b>Town/Range:</b> 07N 07E	<b>Section:</b> 29	<b>Well Status:</b> Active	<b>WSSN:</b>
		<b>Source ID/Well No:</b>			
<b>Elevation:</b>		<b>Distance and Direction from Road Intersection:</b> //2 mile of O, 1/3 mile of Dopt HW			
<b>Latitude:</b> 42.97962		<b>Well Owner:</b>			
<b>Longitude:</b> -83.66177		<b>Well Address:</b> 2254 Red Arrow Rd. Burton, MI 48529		<b>Owner Address:</b> 2254 Red Arrow Rd. Burton, MI 48529	
<b>Method of Collection:</b> GPS Std Positioning Svc SA Off					

<b>Drilling Method:</b> Rotary	<b>Well Use:</b> Household	<b>Pump Installed:</b> Yes	<b>Pump Installation Only:</b> No
<b>Well Depth:</b> 220.00 ft.	<b>Well Type:</b> Replacement	<b>Pump Installation Date:</b>	<b>HP:</b> 0.50
<b>Well Type:</b> Replacement	<b>Date Completed:</b> 9/21/2017	<b>Manufacturer:</b> Berkeley	<b>Pump Type:</b> Submersible
<b>Casing Type:</b> PVC plastic	<b>Height:</b> 1.00 ft. above grade	<b>Model Number:</b> B10K05121-02	<b>Pump Capacity:</b> 10 GPM
<b>Casing Joint:</b> Solvent welded/glued		<b>Drop Pipe Length:</b> 100.00 ft.	<b>Pump Voltage:</b> 115
<b>Casing Fitting:</b> Shale packer/trap		<b>Drop Pipe Diameter:</b> 1.00 in.	<b>Drilling Record ID:</b>
<b>Diameter:</b> 5.00 in. to 170.00 ft. depth SDR: 21.00		<b>Draw Down Seal Used:</b> No	
<b>Borehole:</b> 8.50 in. to 170.00 ft. depth 4.50 in. to 220.00 ft. depth		<b>Pressure Tank Installed:</b> Yes	
		<b>Pressure Tank Type:</b> Diaphragm/bladder	
		<b>Manufacturer:</b> Flex-Lite-Flexcon	
		<b>Model Number:</b> FL12	<b>Tank Capacity:</b> 35.0 Gallons
		<b>Pressure Relief Valve Installed:</b> Yes	

<b>Static Water Level:</b> 50.00 ft. Below Grade	<b>Formation Description</b>	<b>Thickness</b>	<b>Depth to Bottom</b>
<b>Well Yield Test:</b> Pumping level 100.00 ft. after 2.00 hrs. at 20 GPM			
<b>Yield Test Method:</b> Air	Clay	160.00	160.00
	Sandstone	10.00	170.00
	Black Shale	10.00	180.00
	Sandstone	40.00	220.00

<b>Screen Installed:</b> No	<b>Intake:</b> Bedrock Well	<b>Geology Remarks:</b>
<b>Well Grouted:</b> Yes	<b>Grouting Method:</b> Grout pipe outside casing	
<b>Grouting Material:</b> Bentonite slurry	<b>Bags:</b> 8.00	
	<b>Additives:</b> Retarder	
	<b>Depth:</b> 0.00 ft. to 170.00 ft.	

<b>Wellhead Completion:</b> Pitless adapter, 12 inches above grade	<b>Drilling Machine Operator Name:</b> George Dugdale Jr.
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<b>Nearest Source of Possible Contamination:</b>	<b>Employment:</b> Employee
<b>Type:</b> Sewer line	<b>Pump Installer:</b> Wesley C Snider II
<b>Distance:</b> 40 ft.	
<b>Direction:</b> North	

<b>Abandoned Well Plugged:</b> Yes	<b>Contractor Type:</b> Water Well Drilling Contractor	<b>Reg No:</b> 25-2203
	<b>Business Name:</b> Wes Snider Pump & Well LLC	
	<b>Business Address:</b> 3459 E Atherton Road, Burton, MI, 48529	

<b>Latitude:</b> 42.97969	<b>Longitude:</b> -83.66171	<b>Water Well Contractor's Certification</b> This well and/or pump installation was performed under my registration.
<b>Casing Diameter:</b> 2 in.	<b>Casing Removed:</b> No	
<b>Plugging Material:</b> Bentonite chips/pellets		
<b>No. of Bags:</b> 1.00	<b>Well Depth:</b> 168 ft.	
<b>Signature of Registered Contractor</b>		<b>Date</b>

<b>General Remarks:</b> oct remained stuck in the well
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<b>Other Remarks:</b>
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