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AREAS 11 and 12
RESPONSE ACTIVITY PLAN
North Kent Study Area

DRAFT

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June 18, 2020
File No. 16.0062961.40

PREPARED FOR:
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TABLE OF CONTENTS

TABLES

APPENDED FIGURES

APPENDICES

ACRONYMS

CD	Consent Decree
CFS	Cubic Feet per Second
COVID-19	Coronavirus Disease 2019
CSM	Conceptual Site Model
DoD	United States Department of Defense
DWC	Part 201 Generic Groundwater Cleanup Criteria Protective of Drinking Water for Residential Land Uses
EGLE	Michigan Department of Environmental, Great Lakes and Energy
EPA	United States Environmental Protection Agency
GIS	Geographic Information Systems
GSI	Groundwater-Surface Water Interface
HSDS	House Street Disposal Site
HUC	Hydrologic Unit Code
ID	Identification
MDEQ	Michigan Department of Environmental Quality
MDOT	Michigan Department of Transportation
MGDL	Michigan GIS Data Library
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NE	Northeast
ng/L	Nanogram per Liter
NKLF	North Kent County Landfill
NKSA	North Kent Study Area
PDF	Portable Document Format
PFAS	Per- and Polyfluoroalkyl Substances
PFBS	Perfluorobutane Sulfonic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexane Sulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
QAPP	Quality Assurance Project Plan [*Former Wolverine Tannery, House Street Disposal Area, and Wolven/Jewell Area, Per- and Polyfluoroalkyl Substances Investigation Program]*
QA/QC	Quality Assurance/Quality Control
QSM	Quality Systems Manual
R&W/GZA	Rose & Westra, a Division of GZA GeoEnvironmental, Inc.
RAP	Response Activity Plan
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedures
SOW	Schedule of Work
µg/L	Micrograms per Liter
USGS	United States Geological Survey
VAP	Vertical Aquifer Profiling
Wolverine	Wolverine World Wide, Inc.

1.0 INTRODUCTION

On behalf of Wolverine, R&W/GZA prepared this RAP for the Areas 11 and 12 investigation in the NKSA. The objective of this RAP is to comply with the CD by refining the current understanding of the conceptual site model and better defining the vertical and horizontal extent of PFAS at Areas 11 and 12.

Areas 11 and 12 are located southeast of the HSDS. They are south and southeast of the primary PFAS plume, north of the Grand River, and east of the Rogue River (**Figure 1**). Most of the residential water wells in Area 11 had PFOA + PFOS concentrations greater than 10 ng/L but less than 70 ng/L. In Area 12 most residential water wells did not have detectable PFOA + PFOS. Those with detected PFOA + PFOS were all less than 70 ng/L, with only one exceeding 10 ng/L.

This RAP is prepared pursuant to CD No. 1:18-cv-00039-JTN-SJB, effective February 19, 2020. Specifically, this scope of work is established in Sections 7.4, 7.9(b), and Appendix P of the CD. This RAP is organized into the following sections:

- Introduction
- CSM
- Proposed Statement of Work
- Investigation Methodologies
- Sampling and Analysis Methods and Procedures
- Data Quality Objectives
- Data Quality Control and Assurance
- Project Schedule for Field Sampling and Analysis
- Project Schedule for Data Evaluation and Report Submittals

2.0 CONCEPTUAL SITE MODEL

The CSM (as defined in Section 4.4 of the CD) was based on interpretation of the HSDS on-site investigation data, regional geology and hydrogeology, residential water well sampling data in the NKSA, and groundwater investigations performed associated with the former HSDS (i.e., within the House Street Study Area; i.e., portion of NKSA investigated as it pertains to the HSDS). The CSM is focused on the groundwater flow from the source area to Areas 11 and 12, PFAS distribution in groundwater, and the fate and transport of PFAS in groundwater. For the purpose of this RAP, the current understanding of the CSM as related to the human receptors in Areas 11 and 12 was discussed and potential data gaps identified. See **Figure 1** for a layout of the NKSA and the PFAS Investigation Areas. No permanent groundwater monitoring wells have yet been installed in Areas 11 and 12. See **Table 1** for a list of residential water wells and addresses in Areas 11 and 12 and their associated PFAS analytical results. The following sections provide discussions of source areas, hydrology, geology, hydrogeology, PFAS distribution in groundwater, groundwater flow, and PFAS transport.

2.01 HOUSE STREET DISPOSAL SITE AND OTHER POTENTIAL SOURCE AREAS

The HSDS, located at 1855 House Street NE, Plainfield Township, Kent County, Michigan encompasses approximately 76 acres (**Figure 1**). The HSDS is currently undeveloped and according to available information, no

buildings were previously present. An electric utility right-of-way and associated high-voltage transmission lines cross the northern portion of the HSDS, and an access road from House Street runs south to north across the HSDS.

The properties surrounding the HSDS are primarily undeveloped or residential. Properties to the northwest are undeveloped extending to Clear Bottom Lake and Freska Lake. Properties to the west, southwest, and northeast are primarily residential. House Street NE abuts the HSDS to the south and southeast. Portions of the eastern HSDS boundary are formed by Herrington Avenue NE. Land owned by MDOT is present south and southeast of the HSDS (US-131 right-of-way), and additional residential properties are located westward along House Street.

PFAS were in Scotchgard™, a waterproofing material manufactured by 3M Company, that was applied to some leather goods manufactured at the former Wolverine tannery site in Rockford, Michigan, over a period of time. It has been determined that the tanning byproducts in which Scotchgard™ was used contained PFOS and PFOA and their precursors, which are part of a larger group of PFAS.

The HSDS was a State of Michigan licensed and regulated disposal facility from the mid-1960s through 1978. Until 1970, the HSDS received leather tanning byproducts over a period of time. EGLE Remediation and Redevelopment Division files indicated that HSDS's waste disposal license expired in 1978, but it appears no waste was disposed by Wolverine at HSDS after 1970. Based on past investigation data at Wolverine's tannery Site (R&W/GZA, 2019), the byproducts also contained other substances which were addressed in the USEPA TCRA removal action. However, the data indicates that only PFOS and PFOA appear to be materially migrating from the HSDS.

Lastly, while not specifically investigated, there are other possible sources of PFAS at residential properties such as those in Area 6, including septic systems, rain deposition, and the use of domestic products that contain PFAS (Schaider et al, 2016; EGLE, 2019a; ITRC, 2020).

2.02 TOPOGRAPHY

As shown in **Figure 1**, the terrain is generally hilly in the region. The ground surface elevation at HSDS ranges from 740 feet to 800 feet. The HSDS is flanked by higher ground to the northeast and southwest, but ground surface generally dips to the northwest toward Clear Bottom Lake and Freska Lake, and to the southeast toward the Rogue River. Ground surface elevations for the area east of the HSDS range from 800 to more than 900 feet; ground surface elevations for the west to southwest of the HSDS range from 800 to 820 feet, with lower terrains to the northwest and southeast. Ground surface elevations in Areas 11 and 12 range from approximately 620 feet near the Grand River to more than 710 feet on the grounds of the Blythefield Country Club. Ground surface generally dips south and southeast toward the Rogue and Grand Rivers.

2.03 HYDROLOGY

The NKSA is situated within the Rogue River Basin (Basin No. 14F), which is part of the Lower Grand River watershed (HUC 04050006). Based on the Michigan's Major Watersheds – Sub-basins GIS data (EGLE, 2019b) downloaded from MGDL, the HSDS and Areas 11 and 12 study areas are situated within the Rogue River Basin (Basin No. 14F), which is part of the Lower Grand River watershed (HUC 04050006). The Rogue River Basin consists of 12 sub-basins Area 11 is in Rogue River sub-basin HUC 04050006040120 and Grand River sub-basin HUC 04050006050030. Area 12 Rogue River sub-basin HUC 04050006040120. The HSDS is situated on the water divide of two sub-basins: HUC 04050006040080 and HUC 04050006040120. These three sub-basins drain to the Rogue River, which discharges to the Grand River. The HSDS is also near sub-basin HUC 04050006050050, which is part of the Grand River basin.

The 2016 National Oceanic and Atmospheric Administration climate data report[1] for Grand Rapids, Michigan, indicates that the mean annual precipitation for the 80-year record period is approximately 36 inches. Based on the state-wide GIS data for the estimated annual groundwater recharge (Michigan State University, 2005), the estimated precipitation at the NKSA ranged from 9 to 15 inches.

From 1989 to 2016, the average annual streamflow rate at USGS Gaging Station No. 04118500 in Rockford, Michigan, is approximately 260 cfs, and the average baseflow rate approximately 210 cfs. The gaging station measures the flow for the sub-basin, HUC 04050006040110, and all the upstream sub-basins, representing a drainage area of approximately 234 square miles, according to the USGS record.

2.04 GEOLOGY

Overburden in Kent County is a thick sequence of Pleistocene glacial deposits. The thickness of glacial deposits ranges from 11 to 800 feet in Kent County; however, the majority of glacial deposits range from 200 to 400 feet in thickness (Western Michigan University, 1981; Farrand, 1982). The glacial deposits in the County include till, outwash and lacustrine deposits. Till occurs in end moraines and ground moraines (till plains), interspersed on the surface throughout the County (Stramel, Wisler, & Laird, 1954). For the area near the City of Rockford and Plainfield Township, the Michigan Glacial Land systems (Michigan State University, 2015) indicates that proglacial outwash plain is present along the Rogue River, and end moraines are present either side of the Rogue River extending to the "wide" near the Grand River. End moraines of medium-textured till are present at the NKSA and its vicinity. The ground moraine (till plain) and end moraine belong to the unstratified group of deposits, composed of fine- to coarse-grained material, including silt, sand, gravel, and boulders.

Based upon bedrock maps for the area (MDEQ, 1987), the bedrock beneath the NKSA includes the Michigan basin series. Based on GIS data from EGLE (MDEQ, 1987), Jurassic "red beds" are present in most of the site area and its vicinity, with small areas of Saginaw formation outcrops. The Jurassic "red beds" are often poorly consolidated or unconsolidated and consist primarily of clay, mudstone, siltstone, sandstone, shale, and gypsum. The "red beds" are of low permeability and are considered a confining unit. However, locally in the county, the "red beds" have been documented to supply small quantities of water (Apple & Reeves, 2007). Beneath the "red beds," bedrock in the region consists of the Mississippian-aged sandstone (Marshall formation), shale (Michigan formation), and the Bayport limestone as well as the Pennsylvanian-aged Saginaw formation. The regional dip is northeasterly toward the center of the Michigan basin.

Based on the Hydrogeologic Atlas of Michigan (Western Michigan University, 1981), the top of bedrock elevation ranges from 500 to 550 feet near the City of Rockford. The top of bedrock elevations at the HSDS area were estimated to range from 540 to 580 feet (R&W/GZA, 2018).

NKSA Geology

This summary of the geology in the NKSA is based on borehole data collected during the subsurface exploration and groundwater monitoring well installation described in **Appendix A** and the residential water well construction information and lithology data downloaded from the online Wellogic System.[2] The Wellogic System made available individual well logs in PDF, GIS shapefiles of county-wide well locations and construction information, and database files of lithology data for some of the wells. R&W/GZA has attempted to verify the well locations by comparing the well addresses to the Kent County Parcel GIS shapefiles and found that some of the well locations in the Wellogic GIS shapefiles are incorrect. To rectify, the Kent County parcel center coordinates are used for the

[1] https://www.ncdc.noaa.gov/cdo-web/search
[2] https://secure1.state.mi.us/wellogic/Login.aspx?ReturnUrl=%2fwellogic%2fdefault.aspx

residential well locations if the well addresses are verified with the Kent County Parcel GIS shapefiles. The majority of the well addresses in the Wellogic System GIS shapefiles were verified, and the parcel center locations were used as their coordinates. For some well locations, the addresses of which were not verifiable, the locations in the Wellogic System GIS files were kept and qualified with a note. In addition, lithology data for some of the wells in the Wellogic System GIS shapefiles were not available; therefore, R&W/GZA downloaded the PDF well logs and compiled the available lithology data into the well lithology database.

Monitoring wells near Areas 11 and 12 and the residential water wells with lithology data within these Areas are shown in **Figure 4.** Geologic cross-sections, A-A', B-B', and C-C' show the lithology in Areas 11 and 12. See **Figures 5** through **8** for the geological cross-sections and their locations within Areas 11 and 12.

Areas 11 and 12

Cross-section A-A' (**Figure 6**) begins east of the Rogue River along the western portion of Area 11 and is approximately parallel to the Rogue River channel. The lithology of A-A' is predominantly coarse-grained soil, with the fine-grained soil below the water table in layers ranging from 5 to 10 feet thick alternating with coarse-grained soil.

Cross-section B-B' (**Figure 7**) is perpendicular to A-A' and is approximately perpendicular to the Rogue River channel west of Area 11. The lithology of B-B' is generally coarse-grained soil with layers of finer-grained soils in the central portion of the alignment. Coarse grained soils dominate the lithology near the Rogue River and in the uplands near Keswick Drive. The maximum thickness of fine-grained soils was approximately 15 feet.

Cross-section C-C' (**Figure 8**) is constructed northeasterly to southwesterly bisecting Area 12 and continuing southwest toward the Rogue River. The lithology in cross-section C-C' is similar to B-B' except for the southwest portion where fine-grained materials are prevalent at and near the water table. Fine-grained soil was encountered in approximately half of the boreholes in this section to a maximum thickness of approximately 25 feet.

In general, coarse-grained soil is predominant in most of the soil borings and water well logs in Areas 11 and 12 and the HSDS Study Area. The presence and thickness of clay and silt deposits varies horizontally and vertically without stratified correlation between borings. The lithologies shown on the cross-sections are characteristics of glacial outwash, and end moraines, to a lesser extent, as documented in regional geology. Based on our review of well log lithologies, the overburden thickness in Areas 11 and 12 ranges from approximately 30 to 140 feet, and the top of bedrock elevations ranged from approximately 530 to 590 feet.

2.05 HYDROGEOLOGY

NKSA House Street Study Area Groundwater Flow

Static water levels were collected from the monitoring wells and the staff gauges throughout the HSDS Study Area (i.e., portion of NKSA investigated as it pertains to the HSDS). Groundwater and surface water elevations were calculated from the surveyed elevations of the top of casing for the monitoring wells or reference points for the staff gauges. In addition, surface water elevations recorded at USGS Gaging Station No. 04118500 were also downloaded and converted to the same datum as the monitoring well survey. See **Table 3** for the well installation information in the NKSA and **Table 4** for a summary of the static groundwater water level measurements. Note these tables include information for NKSA as a whole, while only a portion of the data is relevant to Areas 11 and 12.

In addition to the R&W/GZA-installed groundwater monitoring wells, EGLE also collected static water level data from the monitoring wells installed by EGLE during the November 2019 monitoring event and requested NKLF collect and provide static water level data in November 2019. In combination, the November 2019 static water level data provided the most complete set of static water levels and elevations for the NKSA even though no monitoring wells are within Areas 11 and 12 themselves.

For the locations where multiple wells were installed at different intervals, R&W/GZA grouped the wells into the shallow zone and deep zone by borehole lithologies, screen intervals, and static water elevations. See **Table 3** for the well grouping designations.

Based on the November 2019 data set, groundwater elevation contours were interpolated from the static water level data. See **Figure 2** for the groundwater elevation contours in the shallow zone and **Figure 3** for the deep zone.

As shown on **Figures 2** and **3**, groundwater in both the deep and shallow zones of the NKSA flows to the Rogue River. The HSDS is situated at or near a groundwater divide. Groundwater predominantly flows from the HSDS to the southeast to the Rogue River, but a portion of the flow is to the northwest. Because of groundwater discharge to Freska Lake and Clear Bottom Lake, the hydraulic gradient to the southwest appears to be flat as compared to the southeast. For the areas east of the Rogue River, groundwater flows to the west or southwest to the Rogue River. Near the Rogue River mouth to the Grand River, or the "wide" area where proglacial outwash is present, the hydraulic gradient is generally flat as compared to the other areas within NKLF.

Areas 11 and 12 Groundwater Flow

As shown in **Figures 2** and **3**, groundwater in Area 11 flows to the southwest toward the Rogue River in the western portion of the area and to the south toward the Grand River in the eastern portion of the area. Groundwater in Area 12 flows to the west and southwest toward the Rogue River. The deeper groundwater contours show an overall, similar flow pattern, except for the part of Area 11 located immediately north of the Rogue River mouth to the Grand River, where the Rogue River elevation is likely higher than the groundwater elevation, and surface water "short-cuts" the meander. The groundwater contours and flow evaluation indicate that groundwater from the HSDS area primarily flows to the southeast and discharges to the Rogue River, and groundwater east of the Rogue River flows to the west or southwest and discharges to the Rogue River. As discussed in **Section 2.03**, the Rogue River is a gaining stream. The groundwater contours and flow evaluation indicate it receives groundwater from either side of the river. With the Rogue River, it is unlikely that groundwater from the HSDS area under-flows past the Rogue River and migrates to Areas 11 and 12. Based on the groundwater flow direction evaluation, the PFAS detection in Areas 11 and 12 is believed to originate from areas northeast of Areas 11 and 12. However, the current groundwater contours were based on the surface water elevations in the Rogue River and groundwater elevations from a limited number of the monitoring wells east of the Rogue River. Additional monitoring wells in Areas 11 and 12 can provide data to refine or confirm this evaluation. Site-specific hydraulic conductivity values are not available, as such Areas 11 and 12 specific groundwater seepage velocity is not estimated.

2.06 PFAS DISTRIBUTION IN GROUNDWATER

Distribution of PFAS in the House Street Study Area

Groundwater and residential well sampling completed since 2017 has identified one primary PFAS plume within the HSDS Study Area ("House Street Primary Plume"). Groundwater samples collected from the monitoring wells across the House Street Study Area in 2019 identified PFOA and PFOS as the primary PFAS compounds

(approximately 11 percent and 60 percent of the total PFAS in monitoring well samples respectively). Note total PFAS analyte lists have varied between 14 and 23 (i.e., the EPA Method 537.1 14-analyte list and the 23 analytes included in the isotope dilution methodology under the most recent DoD QSM revision in effect at the time of sampling). However, given that the percent of the total PFAS mass that is comprised of PFOA + PFOS is relatively high, the slight variations in the total PFAS due to the varied number of analytes is negligible. Specifically, the analytes included on the 23 list that are not on the 14 list (i.e., nine different compounds) comprise approximately 8 percent of the total PFAS in the monitoring well samples. For consistency in the mapping, the total PFAS presented on **Figure 9** are calculated from the sum of the 12 PFAS compounds that are common between EPA Method 537.1 and the isotope dilution, DoD QSM methodology. However, the total PFAS values used throughout the remainder of this RAP and associated documents are reported as full totals of either the 14 or 23 analytes.

Table 5, below, summarizes the detections, maximum concentration, and frequency of detection in groundwater samples collected in the House Street Study Area for PFOA and PFOS analytes. Analytical data for the residential wells in Areas 11 and 12 are provided on **Table 2**, and PFAS analytical results for the samples collected from the House Street Study Area in 2019 are provided in **Table 6. Figures 9** and **10** depict total PFAS (12 compounds as previously discussed) and PFOA + PFOS in the House Street Study Area near Areas 11 and 12, respectively.

Table 5: Summary of Combined PFOA + PFOS Data in Groundwater, 2019 HSDS Quarterly Monitoring Well Sampling

Compound	Total Samples	Number of Detections	Number of Exceedances	Maximum Conc. (µg/L)	Threshold Value (µg/L)	Basis for Value[1]
Combined PFOA + PFOS	256	129	35	111	0.070	DWC
Combined PFOA + PFOS	256	129	91	111	0.010	CD Value[2]

1. Discussion of criterion applicability is included in Section 2.08.
2. CD value is not a state-wide criterion, but a performance objective from the CD.

PFAS analytical data from the groundwater monitoring wells and residential water well samples collected until December 2019 were combined and used for the interpolation of isoconcentration maps for total PFAS (**Figure 9**), and PFOA + PFOS **(Figure 10**). Where data from multiple sampling depths or sampling events are available at one location, the maximum concentrations were used during interpolation. It is important to note that the isoconcentration maps were geostatistically interpolated from spatially distributed point data, therefore they may overestimate the concentrations or extents in areas where data points were relatively sparse. As implied by the method, the isoconcentration maps are estimations only and are not intended to represent measured or true conditions.

The total PFAS isoconcentration map (**Figure 9**) suggests the primary PFAS plume migrated from the HSDS toward the Rogue River, primarily in the southeast direction, along the plume centerline. The PFOA + PFOS isoconcentration map (**Figure 10**) indicates a similar distribution to the total PFAS isoconcentration map, but their extents and the concentration ranges are less than that of total PFAS because the total PFAS isoconcentration map included other compounds, such as PFBS, PFHxA, PFHxS, and PFNA. As shown in **Figures 9** and **10**, the HSDS primary PFAS plume (consisting of primarily PFOA and PFOS) is located west of the Rogue River. As discussed in **Section 2.05**, the Rogue River acts as the discharge point for both sides of the river, and it is unlikely groundwater from the HSDS area under-flows past the Rogue River and migrates to Areas 11 and 12.

Distribution of PFAS in Areas 11 and 12

Within Area 11 and 12, most of the Area 11 residential water wells had PFOA + PFOS concentrations greater than 10 ng/L but less than 70 ng/L. Area 12 residential water wells generally did not have detectable PFOA + PFOS, with only one exceeding 10 ng/L. No residential well samples collected in Areas 11 and 12 have exceeded 70 ng/L. The groundwater data delineating the extent of the PFOS + PFOA within Areas 11 and 12 is limited to residential wells with generalized lithology. As discussed above, the Rogue River acts as a discharge point for either side of the river, and under-flow from the HSDS plume to the east of the Rogue River is unlikely. Therefore, the detected PFOA + PFOS concentrations in Areas 11 and 12 were attributed to potential sources northeast or east of Areas 11 and 12, not from the primary HSDS plume. Considering the limited number of groundwater monitoring wells in Areas 11 and 12, additional monitoring wells can provide data to refine this evaluation. See **Section 2.08** and **Section 3.0** for proposed monitoring wells in Areas 11 and 12.

3-Dimensional Representation of PFAS in Areas 11 and 12

Due to the lack of monitoring well clusters screened at multiple depths in Areas 11 and 12, a 3-dimensional representation of PFAS is not practicable at this time. The possibility of 3-dimensional representation will be evaluated once the data proposed in **Section 3.0** are collected.

2.07 EXPOSURE PATHWAYS – APPLICABLE PART 201 CLEANUP CRITERIA AND CD ACTION LEVELS

The residents in Areas 11 and 12 who use groundwater for drinking water are potential receptors of PFOA + PFOS exposure via groundwater ingestion. Therefore, based on EGLE's Part 201 administrative rules, the applicable Part 201 groundwater cleanup criterion for Areas 11 and 12 is the Part 201 Generic Groundwater Cleanup Criteria Protective of Drinking Water for Residential Land Uses (DWC), which is protective of human health from being exposed to groundwater via ingestion.

For PFAS compounds, Michigan only has Part 201 cleanup criteria for PFOS and PFOA. Section 7.1 of the CD requires preventing exposure to PFOA + PFOS concentration in excess of 10 ng/L as one of the performance objectives.

Compound	Threshold Value (µg/L)	Basis for Value
PFOA	12	GSI
PFOS	0.012	GSI
Combined PFOA + PFOS	0.070	DWC
Combined PFOA + PFOS	0.010	CD Value

The GSI pathway for PFAS and PFOA + PFOS is addressed in a separate RAP submitted to EGLE in April 2020 (R&W/GZA, 2020).

Based on the Part 201 cleanup criteria and the CD requirement, the project action levels for PFOA + PFOS concentrations are set to be 10 ng/L and 70 ng/L. The project objectives are to monitor possible migration of PFAS/PFOA + PFOS to Areas 11 and 12 and evaluate if Areas 11 and 12 receptors are potentially exposed to PFOA + PFOS above 10 ng/L via groundwater ingestion.

2.08 DATA GAPS

Based on the current understanding of the CSM and the above discussions, the following data gaps are identified:

- Groundwater elevation and groundwater flow directions within Areas 11 and 12; and,
- Potential for PFAS-impacted groundwater in the shallow and deep zones migrating to Areas 11 and 12.

R&W/GZA has identified the following areas within Areas 11 and 12 where additional data is needed to further characterize the plume and meet the project objectives and address the data gaps:

- Southeast of the HSDS primary plume, east side of the Rogue River;
- East of Area 12;
- Northeast of Area 11; and,
- Immediately north of Area 11.

3.0 PROPOSED STATEMENT OF WORK

The following provides a summary of the proposed investigation, based on the identified data gaps. The proposed sampling locations are shown on **Figure 11**. Actual monitoring well locations may vary slightly from the proposed locations of **Figure 11** during installation. While the target locations are shown, limitations for access on private properties, site conditions, and utilities may require moving monitoring well locations.

- One VAP/monitoring well location (AREA11-RI-1) is proposed hydraulically upgradient of the area where PFOA + PFOS were detected at a concentration greater 70 ng/L east of the Rogue River, to evaluate potential upgradient source of PFOA + PFOS.
- One VAP/monitoring well location (HS-PMW-RI-110) is proposed to evaluate and monitor potential migration of PFAS from the hydraulically upgradient area to the filter area between HS-PMW-RI-110 and the Rogue River, where the parcels are not planned to receive municipal water.
- Two VAP/monitoring well locations (HS-PMW-RI-111 and HS-PMW-RI-112) are proposed near the area east of the river where PFOA + PFOS were detected at a concentration greater 70 ng/L, to evaluate potential migration of PFAS from this area to the filter area south and southwest, where the parcels are not planned to receive municipal water.
- Three VAP/monitoring well locations (AREA12-RI-1, AREA12-RI-2, and AREA12-RI-3) are proposed to evaluate groundwater flow in this area and monitor potential PFAS migration to the filter area south of these proposed locations.

The combination of groundwater monitoring, institutional controls (groundwater use ordinance), and filters (as required) are designed to protect Areas 11 and 12 residents from unacceptable exposure to PFOA + PFOS in drinking water. In addition to groundwater monitoring proposed in this RAP, additional residential well resampling is proposed (see separate residential well sampling RAP submitted May 2020). If a residential well exceeds 10 ng/L PFOA + PFOS, the CD mandates Wolverine provide a drinking water filter and requires the Plainfield and Algoma Townships groundwater use ordinance to require use and maintenance of these filters.

4.0 INVESTIGATION METHODOLOGY

Relevant tasks completed under this RAP will be completed in accordance with the most recent revision of the QAPP prepared for Wolverine by R&W/GZA.

The proposed well cluster locations will be drilled using either hollow-stem auger or rotosonic methods in accordance with SOPs A03 through A06 of the QAPP. When possible, the initial boring at each location will be drilled to the top of bedrock or upon refusal. The borehole terminal depth will also be evaluated based on the depths of adjacent water wells and the presence of confining strata.

As the original borings are drilled at each location, VAP samples will be collected for PFAS analysis from water-bearing and permeable formation(s) at an interval of 10 feet. VAP will be completed in accordance with *SOP A25, Vertical Aquifer Profiling* included in the QAPP. The turn-around time for laboratory samples will be approximately three weeks.

Based on the profiling data, encountered geology, and nearby drinking water well elevations, R&W/GZA will determine the depth(s) of wells installed at each nest location. The monitoring wells will be developed in accordance with *SOP A13, Well Development* in the QAPP. Upon completion, the wells will also be surveyed by a licensed surveyor.

5.0 SAMPLING AND ANALYTICAL PROCEDURES

This section provides a generalized SAP for the Areas 11 and 12 monitoring well sampling. Specific information regarding sampling procedures and analytical methods is provided in the site-specific QAPP.

Wells will be sampled as follows:

- Initial sampling post installation/development;
- Annual sampling until substantial completion of the Areas 11 and 12 well network; and
- Once the Areas 11 and 12 well network is substantially complete, all newly installed wells will be sampled quarterly for one year. (Substantial Completion will be agreed upon by R&W/GZA and EGLE.)

5.01 SAMPLING LOCATIONS

As discussed in **Section 3.0**, the following monitoring wells will be sampled:

Grouping/Area	**Well Nomenclature**
Hydraulically upgradient of the area where PFOA + PFOS were detected at a concentration greater 70 ng/L east of the Rogue River, to evaluate potential upgradient source of PFOA + PFOS	AREA11-RI-1
Evaluate and monitor potential migration of PFAS from the hydraulically upgradient area to the filter area between HS PMW-RI-110 and the Rogue River	HS-PMW-RI-110
Near the area east of the river where PFOA + PFOS were detected at a concentration greater 70 ng/L, to evaluate potential migration of PFAS from this area to the filter area south and southwest	HS-PMW-RI-111 and HS-PMW-RI-112
Evaluate groundwater flow in Area 12 and monitor potential PFAS migration to the filter area south of these proposed locations	AREA12-RI-1, AREA12-RI-2, and AREA12-RI-3

5.02 SAMPLE COLLECTION AND LABELING

Samples will be collected for PFAS analysis following the methods summarized in **Section 4.0** and detailed in the sampling SOPs for Groundwater Monitoring Wells (SOP A16; Low Flow Sampling). Detailed field and laboratory requirements are provided in the site-specific QAPP.

Sample identification will consist of nomenclatures that include the unique location identification (see reference table above). If applicable, sample identification for each sample will be repeated for each sampling event with consistent spelling.

To prevent misidentification of samples, legible labels will be affixed to each sample container. The labels will be sufficiently durable to remain legible even when wet. At a minimum, the labels will contain the following information:

- Location ID;
- Name or initials of collector; and
- Date and time of collection.

5.03 SAMPLE SHIPPING

Sample bottles will be placed into the cooler and packed with double-bagged wet ice immediately following collection. Packing material will be used as necessary. A temperature blank will be placed in the cooler prior to shipment. The cooler shall be addressed to the appropriate laboratory and dispatched as soon as practical to ensure timely arrival.

5.04 ANALYTICAL METHOD AND PARAMETERS

PFAS will be analyzed using DoD QSM 5.3 guidelines for PFAS by isotope dilution methodology. The analyte list will include the 28 PFAS compounds specified by EGLE, and reporting limits are provided in Table A.7.7 of the project-specific QAPP.

6.0 DATA QUALITY ASSURANCE AND CONTROL

The following field quality control samples will be collected at a rate of one per 20 samples in accordance with the project-specific QAPP: Field blanks, field duplicates, and MS/MSDs.

- Field blanks will be collected by pouring laboratory-supplied, certified PFAS-free water into a sample container at the point of sample collection. The purpose of field blanks is to assess potential contamination at the sample point.
- Field duplicates will be collected by filling one additional sample container with water from the sample point. The purpose of field duplicates is to assess variability in sample composition. Field duplicates are not intended to be blind duplicates.
- MS/MSD will be collected by filling two additional sets of sample bottles with water from the sample point. MS/MSD analyses are conducted by the analytical laboratory after samples have been collected and submitted. Analysis of known concentrations of analytes spiked in the MS/MSD samples indicate if matrix interference effects are occurring.

- QA/QC samples will be collected using the methods described in **Section 5.0** and the SOPs in the site-specific QAPP. Samples will be labeled described in **Section 5.0.** The location of QA/QC samples will be entered into the Monitoring Checklist. QA/QC samples will be analyzed using the same analytical methods used for the primary sample.

7.0 INVESTIGATION DERIVED WASTE

Soil cuttings from beneath the water table and development/purge water from the well installations and sampling will be containerized and transported to the HSDS property for staging/storage until off-site treatment/disposal or other approved handling can be arranged. Soil cuttings from above the water table will be spread near the wellhead and/or transported to another location to be used as clean fill.

8.0 ANTICIPATED SCHEDULE

The schedule for monitoring well installation will depend greatly on R&W/GZA's ability to procure access to the desired or proximate alternate locations and the potential impact of COVID-19. The following table outlines R&W/GZA's current estimates of the steps and approximate timeframes for the tasks in this RAP (upon EGLE approval).

Task	Estimated Timeframe per Location
Access	1 to 3 months
Initial Drilling	2 to 3 weeks
VAP analysis	3 weeks
Monitoring Wells Installation	1 to 2 weeks
Development Wait Time	2 weeks
First Groundwater Sampling	1 week
First Laboratory Analysis	3 weeks

Assuming one month per location, R&W/GZA estimates this SOW will require seven months to complete drilling, VAP, and monitoring well installation. This will be completed in conjunction with the other RAPs submitted under the CD. R&W/GZA will coordinate with EGLE to prioritize drilling locations if access is obtained for multiple locations throughout the RAPs simultaneously. Because access will likely be obtained piecemeal, the actual well installation schedule will likely exceed six months.

Following the full year of quarterly sampling of the well network, R&W/GZA will evaluate the data in consultation with EGLE and determine appropriate next steps.

9.0 REFERENCES

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TABLES

TABLE 1
PARCEL LIST AND WELL INFORMATION
Areas 11 and 12
Plainfield Township, Kent County, MI

Area	PPN	Address	Note	Well Screen Elevation (feet)
Area 11	411022279006	5754 AUSTERLITZ AVE NE	VACANT	NA
Area 11	411022280015	5764 AUSTERLITZ AVE NE	VACANT	NA
Area 11	411022426002	3104 INDIAN DR NE	SAMPLED BY R&W/GZA	577-564
Area 11	411022426019	3112 INDIAN DR NE	TOWNSHIP PROPERTY - NO WELLS	NA
Area 11	411022426017	3128 INDIAN DR NE	VACANT	NA
Area 11	411022426018	3132 INDIAN DR NE	VACANT	NA
Area 11	411022426006	3136 INDIAN DR NE	VACANT	NA
Area 11	411022426020	3140 INDIAN DR NE	VACANT	NA
Area 11	411022426009	3150 INDIAN DR NE	VACANT	NA
Area 11	411023302001	3240 INDIAN DR NE	VACANT	NA
Area 11	411023303013	3246 INDIAN DR NE	SAMPLED BY R&W/GZA	NA
Area 11	411023303009	3252 INDIAN DR NE	SAMPLED BY R&W/GZA	NA
Area 11	411023301001	3277 INDIAN DR NE	SAMPLED BY OTHERS	570-560
Area 11	411022277004	5653 MALL AVE NE	SAMPLED BY R&W/GZA	NA
Area 11	411022277003	5659 MALL AVE NE	VACANT	NA
Area 11	411022277002	5663 MALL AVE NE	SAMPLED BY R&W/GZA	577-567
Area 11	411022279005	5748 MALL AVE NE	SAMPLED BY R&W/GZA	NA
Area 11	411022278007	5750 MALL AVE NE	SAMPLED BY R&W/GZA	580-570
Area 11	411022280014	5762 MALL AVE NE	VACANT	NA
Area 11	411022278003	3190 RAND ST NE	VACANT	NA
Area 11	411022278008	3149 RIPLEY ST NE	VACANT	NA
Area 11	411022279001	3150 RIPLEY ST NE	SAMPLED BY R&W/GZA	594-584
Area 11	411022279003	3160 RIPLEY ST NE	SAMPLED BY R&W/GZA	589-581
Area 11	411022278006	3179 RIPLEY ST NE	SAMPLED BY R&W/GZA	576-571
Area 11	411022279004	3180 RIPLEY ST NE	SAMPLED BY R&W/GZA	586-578
Area 11	411022278005	3189 RIPLEY ST NE	VACANT	NA
Area 11	411022426010	3158 RIVER POINT DR NE	VACANT	NA
Area 11	411022426011	3162 RIVER POINT DR NE	VACANT	NA
Area 11	411022426012	3168 RIVER POINT DR NE	VACANT	NA
Area 11	411022426013	3172 RIVER POINT DR NE	VACANT	NA
Area 11	411022426014	3180 RIVER POINT DR NE	VACANT	NA
Area 11	411022426015	3184 RIVER POINT DR NE	VACANT	NA
Area 11	411022426016	3192 RIVER POINT DR NE	VACANT	NA
Area 11	411023303001	3198 RIVER POINT DR NE	VACANT	NA
Area 11	411023303015	3204 RIVER POINT DR NE	VACANT	NA
Area 11	411023303014	3208 RIVER POINT DR NE	VACANT	NA
Area 11	411023303010	3212 RIVER POINT DR NE	VACANT	NA
Area 11	411023303011	3216 RIVER POINT DR NE	VACANT	NA
Area 11	411023303005	3222 RIVER POINT DR NE	VACANT	NA
Area 11	411023303006	3228 RIVER POINT DR NE	VACANT	NA
Area 11	411022280006	6443 WEST RIVER DR NE	VACANT	NA
Area 11	411022426001	6450 WEST RIVER DR NE	VACANT	NA

TABLE 1
PARCEL LIST AND WELL INFORMATION
Areas 11 and 12
Plainfield Township, Kent County, MI

Area	PPN	Address	Note	Well Screen Elevation (feet)
Area 11	411022280016	6461 WEST RIVER DR NE	VACANT	NA
Area 11	411022280008	6479 WEST RIVER DR NE	VACANT	NA
Area 11	411022280013	6485 WEST RIVER DR NE	SAMPLED BY R&W/GZA	586-581
Area 11	411023326006	6618 WEST RIVER DR NE	VACANT	NA
Area 11	411023326001	6622 WEST RIVER DR NE	SAMPLED BY R&W/GZA MUNICIPAL WATER	NA
Area 11	411023326005	6644 WEST RIVER DR NE	VACANT	NA
Area 11	411023326002	6656 WEST RIVER DR NE	VACANT	NA
Area 11	411023326003	6668 WEST RIVER DR NE	VACANT	NA
Area 11	411023326004	6680 WEST RIVER DR NE	VACANT	NA
Area 12	411015230004	2950 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015230005	2952 GOLD DUST ST NE	VACANT	NA
Area 12	411015230003	2956 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015230002	2966 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015230001	2986 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285001	3006 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285002	3022 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285003	3036 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285004	3050 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285005	3066 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285006	3074 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285007	3096 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285008	3104 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285009	3118 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285010	3130 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285011	3144 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015285012	3160 GOLD DUST ST NE	MUNICIPAL WATER	NA
Area 12	411015176002	6290 PACKER DR NE	VACANT	NA
Area 12	411015290001	6420 PACKER DR NE	VACANT	NA
Area 12	411015427002	3031 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427011	3036 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	609-604
Area 12	411015427003	3041 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427010	3050 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427004	3055 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	588-583
Area 12	411015427005	3065 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	605-600
Area 12	411015427009	3066 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427008	3080 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427006	3083 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427007	3086 RAPIDFALL CT NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427018	6250 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427017	6254 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428009	6259 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	617-612

TABLE 1
PARCEL LIST AND WELL INFORMATION
Areas 11 and 12
Plainfield Township, Kent County, MI

Area	PPN	Address	Note	Well Screen Elevation (feet)
Area 12	411015427016	6262 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	584-580
Area 12	411015428008	6267 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427015	6270 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428007	6275 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	615-611
Area 12	411015427014	6280 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428006	6283 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428001	6287 RAPIDFALL DR NE	VACANT	NA
Area 12	411015428026	6289 RAPIDFALL DR NE	VACANT	NA
Area 12	411015428005	6291 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	585-580
Area 12	411015427013	6298 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428004	6299 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427012	6312 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428003	6315 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	581-576
Area 12	411015428002	6327 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	566-561
Area 12	411015427001	6332 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	617-612
Area 12	411015428025	6335 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	598-593
Area 12	411015427021	6350 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428024	6351 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428023	6363 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427020	6368 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	600-595
Area 12	411015428022	6375 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	600-595
Area 12	411015428021	6391 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428020	6405 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428019	6415 RAPIDFALL DR NE	SAMPLED BY R&W/GZA	598-592
Area 12	411015428032	3075 ROGUE RIVER RD NE	MUNICIPAL WATER	NA
Area 12	411015429009	3191 ROGUE RIVER RD NE	SAMPLED BY R&W/GZA FUTURE MUNICIPAL WATER (AREA 16)	613-609
Area 12	411015428016	6145 WOODWATER DR NE	MUNICIPAL WATER	NA
Area 12	411015429008	6146 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015429007	6160 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428015	6163 WOODWATER DR NE	SAMPLED BY R&W/GZA	585-581
Area 12	411015429006	6176 WOODWATER DR NE	SAMPLED BY R&W/GZA	596-590
Area 12	411015428014	6177 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015429005	6192 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428013	6195 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015429004	6208 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428012	6211 WOODWATER DR NE	SAMPLED BY R&W/GZA	590-587
Area 12	411015429003	6226 WOODWATER DR NE	SAMPLED BY R&W/GZA	590-586
Area 12	411015428011	6229 WOODWATER DR NE	SAMPLED BY R&W/GZA	603-599
Area 12	411015429002	6240 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015428010	6241 WOODWATER DR NE	SAMPLED BY R&W/GZA	590-585
Area 12	411015429001	6258 WOODWATER DR NE	SAMPLED BY R&W/GZA	590-586

TABLE 1
PARCEL LIST AND WELL INFORMATION
Areas 11 and 12
Plainfield Township, Kent County, MI

Area	PPN	Address	Note	Well Screen Elevation (feet)
Area 12	411015426030	6266 WOODWATER DR NE	SAMPLED BY R&W/GZA	591-581
Area 12	411015427034	6273 WOODWATER DR NE	SAMPLED BY R&W/GZA	594-589
Area 12	411015426029	6274 WOODWATER DR NE	SAMPLED BY R&W/GZA	593-587
Area 12	411015426028	6282 WOODWATER DR NE	SAMPLED BY R&W/GZA	628-618
Area 12	411015427033	6285 WOODWATER DR NE	SAMPLED BY R&W/GZA	606-600
Area 12	411015426027	6290 WOODWATER DR NE	SAMPLED BY R&W/GZA	598-593
Area 12	411015427032	6293 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426026	6298 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427031	6301 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426025	6306 WOODWATER DR NE	SAMPLED BY R&W/GZA	607-602
Area 12	411015427030	6311 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426024	6314 WOODWATER DR NE	SAMPLED BY R&W/GZA	617-612
Area 12	411015426023	6322 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427029	6325 WOODWATER DR NE	SAMPLED BY R&W/GZA	610-605
Area 12	411015426022	6330 WOODWATER DR NE	SAMPLED BY R&W/GZA	613-608
Area 12	411015426021	6338 WOODWATER DR NE	SAMPLED BY R&W/GZA	609-603
Area 12	411015427028	6341 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426020	6346 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427027	6351 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426019	6354 WOODWATER DR NE	SAMPLED BY R&W/GZA	613-607
Area 12	411015427026	6359 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426018	6362 WOODWATER DR NE	SAMPLED BY R&W/GZA	616-611
Area 12	411015427025	6367 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426017	6370 WOODWATER DR NE	SAMPLED BY R&W/GZA	617-611
Area 12	411015427024	6375 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426016	6378 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015427023	6383 WOODWATER DR NE	SAMPLED BY R&W/GZA	615-610
Area 12	411015426015	6386 WOODWATER DR NE	SAMPLED BY R&W/GZA	620-614
Area 12	411015427022	6391 WOODWATER DR NE	SAMPLED BY R&W/GZA	605-600
Area 12	411015426014	6394 WOODWATER DR NE	SAMPLED BY R&W/GZA	610-604
Area 12	411015427019	6399 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA
Area 12	411015426013	6402 WOODWATER DR NE	SAMPLED BY R&W/GZA	NA

Notes:

1. Well screen elevations provided in feet above mean sea level, North American Vertical Datum of 1988 (NAVD 88). Well screen elevations were calculated using well information provided by the State of Michigan's Wellogic database and ground surface elevations of the center of the PPN generated from LiDAR data provided by Kent County. Elevations are rounded to the nearest foot.
2. "NA" indicates not available.

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Proposed MCL[3]	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 11	Area 12	Area 12
PPN			411023301001	411022426002	411023303013	411023303009	411022277004	411022277002	411022279005	411022279001	411022279003	411022278006	411022279004	411022280013	411022278007	411023326001	411015428011	411015426026
Address			3277 INDIAN DR NE	3104 INDIAN DR NE	3246 INDIAN DR NE	3252 INDIAN DR NE	5653 MALL AVE NE	5663 MALL AVE NE	5748 MALL AVE NE	3150 RIPLEY ST NE	3160 RIPLEY ST NE	3179 RIPLEY ST NE	3180 RIPLEY ST NE	6485 WEST RIVER DR NE	5750 MALL AVE NE	6622 WEST RIVER DR NE	6229 WOODWATER DR NE	6298 WOODWATER DR NE
Sample Name			WIRR1712111230 JLB	3104 Indian Dr NE	3246 Indian Dr NE	3252 Indian Dr NE	5653 Mall AveNE	5663 Mall Ave NE	5748 Mall Ave NE	3150 Ripley NE	3160 Ripley NE	3179 Ripley NE	3180 Ripley NE	6485 West River Dr NE	5750 Mall Ave NE	6622 West River DrNE	6229 Woodwater Dr NE - S	6298 Woodwater Dr NE - S
Matrix			Ground Water (Irrigation Well)	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water
Laboratory ID			1701971-07	K1800298-012	K1800298-002	K1800298-001	K1800298-013	K1800298-014	K1800298-015	K1800298-016	K1800298-017	K1800298-019	K1800298-018	K1800298-005	K1800341-010	TE12015-001	K1713822-004	K1713822-002
Sample Date			12/11/2017	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/10/2018	05/11/2018	12/21/2017	12/21/2017
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	-	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0035	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	-	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	-	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0035	-	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	-	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	0.00392	0.0072	0.0051	<0.0043	0.017	0.016	0.023	0.012	0.0092	0.0097	0.01	0.0046	0.013	0.0075	<0.0041	0.012
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
Perfluorooctadecanoic acid (PFODA)	NCL	NA	<0.00718	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	0.00147 J	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
Perfluorooctane sulfonamide (FOSA)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	<0.0043
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	0.0041	0.0092	0.0068	0.011	0.0073	0.0086	0.0074	0.0079	0.0089	0.0044	0.01	<0.0043	0.0054	0.0039	<0.0041	<0.0043
Perfluorobutanoic acid (PFBA)	NCL	NA	0.00188 J	<0.0082	<0.0083	<0.0086	<0.0085	<0.0085	<0.0086	<0.0085	<0.0085	<0.0085	<0.0085	<0.0087	<0.0088	-	<0.0082	<0.0087
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluoroheptanoic acid (PFHpA)	NCL	NA	0.00087 J	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluorohexanoic acid (PFHxA)	NCL	400	0.00389	<0.0041	0.0046	<0.0043	0.0058	0.0054	0.0047	0.0045	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	0.0084
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	0.00141 J	0.0057	0.0079	0.007	0.0088	0.0095	0.0096	0.011	0.0079	0.0019	0.0085	<0.0017	0.006	0.0042	<0.0016	0.0064
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	0.00355 J	0.0097	0.011	0.0092	0.022	0.016	0.015	0.024	0.022	<0.0042	0.02	<0.0043	0.016	0.0055	<0.0041	0.0052
PFOA + PFOS (Calculated)	0.07	NA	0.005	0.015	0.019	0.016	0.031	0.026	0.025	0.035	0.03	0.0019	0.029	ND	0.022	0.0097	ND	0.012
Perfluoropentanoic acid (PFPeA)	NCL	NA	0.00173 J	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	-	<0.0041	0.0081
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.00239	<0.0041	<0.0042	<0.0043	<0.0042	<0.0042	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0044	<0.0035	<0.0041	<0.0043
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	<0.00239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFAS (Calculated)	NCL	NA	0.023	0.032	0.035	0.027	0.061	0.056	0.06	0.059	0.048	0.016	0.049	0.0046	0.04	0.021	ND	0.04

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Proposed MCL[3]	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12
PPN			411015426020	411015429008	411015429007	411015429004	411015429003	411015426030	411015426029	411015426027	411015426025	411015428015	411015428013	411015428012	411015428010	411015426022	411015426020	411015426019
Address			6346 WOODWATER DR NE	6146 WOODWATER DR NE	6160 WOODWATER DR NE	6208 WOODWATER DR NE	6226 WOODWATER DR NE	6266 WOODWATER DR NE	6274 WOODWATER DR NE	6290 WOODWATER DR NE	6306 WOODWATER DR NE	6163 WOODWATER DR NE	6195 WOODWATER DR NE	6211 WOODWATER DR NE	6241 WOODWATER DR NE	6330 WOODWATER DR NE	6346 WOODWATER DR NE	6354 WOODWATER DR NE
Sample Name			6346 Woodwater Dr NE - S	6146 Woodwater S	6160 Woodwater S	6208 Woodwater S	6226 Woodwater S	6266 Woodwater S	6274 Woodwater S	6290 Woodwater S	6306 Woodwater S	6163 Woodwater Dr NE - S	6195 Woodwater Dr NE - S	6211 Woodwater Dr NE - S	6241 Woodwater Dr NE - S	6330 Woodwater Dr NE - S	6346 Woodwater Dr NE - S	6354 Woodwater Dr NE - S
Matrix			Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water
Laboratory ID			K1713822-003	K1800112-002	K1800112-003	K1800112-004	K1800112-005	K1800112-007	K1800112-008	K1800112-009	K1800112-010	K1800111-002	K1800111-003	K1800111-004	K1800111-006	K1800111-007	K1800111-008	K1800111-010
Sample Date			12/21/2017	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/02/2018	01/03/2018	01/03/2018	01/03/2018	01/03/2018	01/03/2018	01/03/2018	01/03/2018
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	0.065	0.0049	<0.0042
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	0.012	0.0075	0.015	0.013	0.006	<0.0043	<0.0042	0.0043	0.0046	0.0067	0.0058	<0.0043	<0.0041	0.006	<0.0042	0.0084
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorooctadecanoic acid (PFODA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorooctane sulfonamide (FOSA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	<0.0043	0.0062	0.0046	0.0048	0.0048	0.006	0.0044	<0.0042	<0.0042	<0.0042	<0.0042	0.0083	0.0052	<0.0042	<0.0042	0.0043
Perfluorobutanoic acid (PFBA)	NCL	NA	<0.0086	<0.0083	<0.0083	<0.0085	<0.0082	<0.0086	<0.0083	<0.0083	<0.0085	<0.0083	<0.0085	<0.0086	<0.0082	<0.0085	<0.0083	<0.0083
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluoroheptanoic acid (PFHpA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorohexanoic acid (PFHxA)	NCL	400	<0.0043	<0.0042	0.0054	0.0048	0.0051	0.0052	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	0.0043	<0.0042	<0.0042
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	0.0023	0.0031	0.0034	0.0022	<0.0016	<0.0017	<0.0017	0.003	<0.0017	<0.0017	<0.0017	<0.0017	<0.0016	0.005	<0.0017	0.0029
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
PFOA + PFOS (Calculated)	0.07	NA	0.0023	0.0031	0.0034	0.0022	ND	ND	ND	0.003	ND	ND	ND	ND	ND	0.005	ND	0.0029
Perfluoropentanoic acid (PFPeA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0041	<0.0043	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0041	<0.0042	<0.0042	<0.0042
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFAS (Calculated)	NCL	NA	0.014	0.017	0.028	0.025	0.016	0.011	0.0044	0.0073	0.0046	0.0067	0.0058	0.0083	0.0052	0.08	0.0049	0.016

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Proposed MCL[3]	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12
PPN			411015426018	411015426017	411015427010	411015427018	411015427017	411015427016	411015427014	411015427013	411015427012	411015428002	411015427001	411015428025	411015428024	411015428023	411015427020	411015428022
Address			6362 WOODWATER DR NE	6370 WOODWATER DR NE	3050 RAPIDFALL CT NE	6250 RAPIDFALL DR NE	6254 RAPIDFALL DR NE	6262 RAPIDFALL DR NE	6280 RAPIDFALL DR NE	6298 RAPIDFALL DR NE	6312 RAPIDFALL DR NE	6327 RAPIDFALL DR NE	6332 RAPIDFALL DR NE	6335 RAPIDFALL DR NE	6351 RAPIDFALL DR NE	6363 RAPIDFALL DR NE	6368 RAPIDFALL DR NE	6375 RAPIDFALL DR NE
Sample Name			6362 Woodwater Dr NE - S	6370 Woodwater Dr NE - S	3050 Rapidfall Ct - S	6250 Rapidfall - S	6254 Rapidfall - S	6262 Rapidfall - S	6280 Rapidfall - S	6298 Rapidfall - S	6312 Rapidfall - S	6327 Rapidfall - S	6332 Rapidfall - S	6335 Rapidfall - S	6351 Rapidfall - S	6363 Rapidfall - S	6368 Rapidfall - S	6375 Rapidfall - S
Matrix			Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water
Laboratory ID			K1800111-009	K1800111-011	K1800185-026	K1800185-011	K1800185-012	K1800185-013	K1800185-014	K1800185-018	K1800185-016	K1800185-015	K1800185-020	K1800185-021	K1800185-022	K1800185-023	K1800185-024	K1800185-025
Sample Date			01/03/2018	01/03/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018	01/04/2018
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	0.0096	0.008	0.008	<0.0041	0.0069	<0.0042	<0.0042	0.0075	0.0079	<0.0043	<0.0041	<0.0041	0.0062	0.0083	0.0097	0.0067
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorooctadecanoic acid (PFODA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorooctane sulfonamide (FOSA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	0.0063	0.0041	0.011	<0.0041	<0.0041	<0.0042	<0.0042	0.012	0.0053	<0.0043	0.0056	<0.0041	<0.0041	0.0045	0.0054	0.0081
Perfluorobutanoic acid (PFBA)	NCL	NA	<0.0085	<0.0082	<0.0083	<0.0081	<0.0081	<0.0085	<0.0083	<0.0082	<0.0081	<0.0086	<0.0081	<0.0082	<0.0082	<0.0083	<0.0085	<0.0082
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluoroheptanoic acid (PFHpA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorohexanoic acid (PFHxA)	NCL	400	<0.0042	<0.0041	<0.0042	0.0097	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	0.0052	0.0047
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	0.0028	0.0035	0.0023	0.0051	0.0017	<0.0017	<0.0017	<0.0016	0.0053	<0.0017	0.0017	<0.0016	0.0042	0.003	0.0031	0.0034
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
PFOA + PFOS (Calculated)	0.07	NA	0.0028	0.0035	0.0023	0.0051	0.0017	ND	ND	ND	0.0053	ND	0.0017	ND	0.0042	0.003	0.0031	0.0034
Perfluoropentanoic acid (PFPeA)	NCL	NA	<0.0042	<0.0041	<0.0042	0.0052	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.0042	<0.0041	<0.0042	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041	<0.0041	<0.0043	<0.0041	<0.0041	<0.0041	<0.0042	<0.0042	<0.0041
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFAS (Calculated)	NCL	NA	0.019	0.016	0.021	0.02	0.0086	ND	ND	0.02	0.019	ND	0.0073	ND	0.01	0.016	0.023	0.023

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Proposed MCL[3]	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12
PPN			411015429006	411015426013	411015427011	411015427004	411015427007	411015428021	411015428020	411015428019	411015427034	411015427032	411015427031	411015426014	411015427005	411015427021	411015427023	411015427022
Address			6176 WOODWATER DR NE	6402 WOODWATER DR NE	3036 RAPIDFALL CT NE	3055 RAPIDFALL CT NE	3086 RAPIDFALL CT NE	6391 RAPIDFALL DR NE	6405 RAPIDFALL DR NE	6415 RAPIDFALL DR NE	6273 WOODWATER DR NE	6293 WOODWATER DR NE	6301 WOODWATER DR NE	6394 WOODWATER DR NE	3065 RAPIDFALL CT NE	6350 RAPIDFALL DR NE	6383 WOODWATER DR NE	6391 WOODWATER DR NE
Sample Name			6176 Woodwater S	6402 Woodwater Dr	3036 Rapidfall Ct - S	3055 Rapidfall Ct - S	3086 Rapidfall Ct - S	6391 Rapidfall - S	6405 Rapidfall - S	6415 Rapidfall - S	6273 Woodwater Dr NE	6293 Woodwater Dr NE	6301 Woodwater Dr NE	6394 Wood Water Sue	3065 Rapidfall Ct NE	6350 Rapidfall Dr NE	6383 Woodwater Dr NE	6391 Woodwater Dr NE
Matrix			Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water
Laboratory ID			K1800185-019	K1800187-002	K1800185-002	K1800185-001	K1800185-008	K1800185-010	K1800185-007	K1800185-006	K1800183-001	K1800183-003	K1800183-002	K1800183-009	K1800242-002	K1800242-001	K1800242-003	K1800242-005
Sample Date			01/04/2018	01/04/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/05/2018	01/06/2018	01/06/2018	01/06/2018	01/06/2018
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	0.0051	0.0073	<0.0041	<0.0041	<0.0041	0.0093	0.01	0.0043	0.0045	0.0063	<0.0042	<0.0043	0.0059	0.0062	0.0067	0.0071
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorooctadecanoic acid (PFODA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorooctane sulfonamide (FOSA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	<0.0041	0.0064	<0.0041	<0.0041	<0.0041	0.0046	0.0076	0.0048	<0.0042	0.0057	<0.0042	<0.0043	0.014	<0.0042	<0.0042	<0.0044
Perfluorobutanoic acid (PFBA)	NCL	NA	<0.0081	<0.0085	<0.0082	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0083	<0.0086	<0.0083	<0.0086	<0.0095	<0.0083	<0.0083	<0.0088
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluoroheptanoic acid (PFHpA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorohexanoic acid (PFHxA)	NCL	400	<0.0041	<0.0071	<0.0041	<0.0041	<0.0041	<0.0041	0.0059	0.0053	0.0088	0.0053	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0055
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	<0.0016	0.0037	<0.0016	<0.0016	<0.0016	0.0039	0.0044	0.0022	0.0033	0.0033	<0.0017	<0.0017	<0.0019	0.0021	0.0019	0.003
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
PFOA + PFOS (Calculated)	0.07	NA	ND	0.0037	ND	ND	ND	0.0039	0.0044	0.0022	0.0033	0.0033	ND	ND	ND	0.0021	0.0019	0.003
Perfluoropentanoic acid (PFPeA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	0.0049	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.0041	<0.0042	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0042	<0.0043	<0.0042	<0.0043	<0.0048	<0.0042	<0.0042	<0.0044
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFAS (Calculated)	NCL	NA	0.0051	0.017	ND	ND	ND	0.018	0.028	0.017	0.022	0.021	ND	ND	0.02	0.0083	0.0086	0.01

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Proposed MCL[3]	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12
PPN			411015427006	411015428009	411015428008	411015428014	411015426024	411015426021	411015427024	411015426016	411015426015	411015428005	411015428004	411015428004	411015428003	411015427030	411015427028	411015427026
Address			3083 RAPIDFALL CT NE	6259 RAPIDFALL DR NE	6267 RAPIDFALL DR NE	6177 WOODWATER DR NE	6314 WOODWATER DR NE	6338 WOODWATER DR NE	6375 WOODWATER DR NE	6378 WOODWATER DR NE	6386 WOODWATER DR NE	6291 RAPIDFALL DR NE	6299 RAPIDFALL DR NE	6299 RAPIDFALL DR NE	6315 RAPIDFALL DR NE	6311 WOODWATER DR NE	6341 WOODWATER DR NE	6359 WOODWATER DR NE
Sample Name			3083 Rapidfall Ct	6259 Rapidfall Dr	6267 Rapidfall Dr	6177 Woodwater Dr	6314 Woodwater Dr	6338 Woodwater Dr	6375 Woodwater Dr	6378 Woodwater Dr NE	6386 Woodwater Dr NE	6291 Rapidfall Dr	6297 Rapidfall Dr	6299 Rapidfall Dr	6315 Rapidfall Dr	6311 Woodwater	6341 Woodwater	6359 Woodwater
Matrix			Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water
Laboratory ID			K1800236-004	K1800241-005	K1800236-006	K1800236-002	K1800236-003	K1800236-005	K1800241-001	K1800238-002	K1800238-007	K1800296-014	K1800296-017	K1800296-016	K1800296-015	K1800296-010	K1800296-012	K1800296-011
Sample Date			01/08/2018	01/08/2018	01/08/2018	01/08/2018	01/08/2018	01/08/2018	01/08/2018	01/08/2018	01/08/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018	01/09/2018
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	0.005	<0.0042	0.0052	0.012	0.0044	<0.0043	<0.0043	0.0082	0.008	<0.0041	0.0058	0.0058	<0.0043	0.0089	0.005	<0.0042
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorooctadecanoic acid (PFODA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorooctane sulfonamide (FOSA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	0.0051	0.0054	0.0084	0.008	<0.0043	<0.0043	<0.0043	0.0062	0.0047	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	0.01	0.0045
Perfluorobutanoic acid (PFBA)	NCL	NA	<0.0086	<0.0083	<0.0083	<0.0083	<0.0086	<0.0087	<0.0087	<0.0086	<0.0083	<0.0082	<0.0086	<0.009	<0.0086	<0.0086	<0.0086	<0.0083
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluoroheptanoic acid (PFHpA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorohexanoic acid (PFHxA)	NCL	400	<0.0043	<0.0042	0.011	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	0.0098	0.0052	0.0048	<0.0017	<0.0017	<0.0017	<0.0017	0.0037	0.0028	<0.0016	<0.0017	<0.0018	<0.0017	0.0036	<0.0017	<0.0017
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
PFOA + PFOS (Calculated)	0.07	NA	0.0098	0.0052	0.0048	ND	ND	ND	ND	0.0037	0.0028	ND	ND	ND	ND	0.0036	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NA	<0.0043	<0.0042	0.0062	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.0043	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0043	<0.0043	<0.0042	<0.0041	<0.0043	<0.0045	<0.0043	<0.0043	<0.0043	<0.0042
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFAS (Calculated)	NCL	NA	0.02	0.011	0.036	0.02	0.0044	ND	ND	0.018	0.016	ND	0.0058	0.0058	ND	0.013	0.015	0.0045

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Proposed MCL[3]	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12	Area 12
PPN			411015427025	411015427008	411015427015	411015429005	411015429002	411015427033	411015428007	411015429001	411015427029	411015427019	411015427003	411015428006	411015426023	411015427027	411015427002	411015427009
Address			6367 WOODWATER DR NE	3080 RAPIDFALL CT NE	6270 RAPIDFALL DR NE	6192 WOODWATER DR NE	6240 WOODWATER DR NE	6285 WOODWATER DR NE	6275 RAPIDFALL DR NE	6258 WOODWATER DR NE	6325 WOODWATER DR NE	6399 WOODWATER DR NE	3041 RAPIDFALL CT NE	6283 RAPIDFALL DR NE	6322 WOODWATER DR NE	6351 WOODWATER DR NE	3031 RAPIDFALL CT NE	3066 RAPIDFALL CT NE
Sample Name			6367 Woodwater Dr NE	3080 Rapidfall Ct	6270 Rapidfall Dr	6192 Woodwater	6240 Woodwater	6285 Woodwater	6275 Rapidsfall Dr	6258 Woodwater	6325 Woodwater	6399 Woodwater	3041 Rapidfall Ct	6283 Rapidfall Ct NE	6322 Woodwater Dr NE	6351 Woodwater	3031 Rapidfall	3066 Rapidfall Ct-3/5
Matrix			Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water
Laboratory ID			K1800298-004	K1800339-002	K1800339-001	K1800339-017	K1800339-003	K1800339-004	K1800406-006	K1800406-007	K1800406-003	K1800406-004	K1800432-008	K1800433-006	K1800619-001	K1800622-002	K1800622-012	K1802091-001
Sample Date			01/09/2018	01/10/2018	01/10/2018	01/10/2018	01/10/2018	01/10/2018	01/11/2018	01/11/2018	01/11/2018	01/11/2018	01/12/2018	01/12/2018	01/13/2018	01/15/2018	01/18/2018	03/05/2018
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	0.0054	0.0045	<0.0042	0.0073	0.0052	0.0084	0.019	<0.0042	0.011	0.0095	0.0077	<0.0044	0.0057	0.0043	0.0062	<0.0048
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorooctadecanoic acid (PFODA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorooctane sulfonamide (FOSA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	<0.0042	0.0047	<0.0042	<0.0042	0.0052	0.005	0.0075	0.0054	0.014	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	0.0084
Perfluorobutanoic acid (PFBA)	NCL	NA	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0086	0.0089	<0.0083	<0.0086	<0.0083	<0.0088	<0.0088	<0.0083	<0.0086	<0.0083	<0.0096
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluoroheptanoic acid (PFHpA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorohexanoic acid (PFHxA)	NCL	400	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	0.0057	0.026	<0.0042	0.0056	0.007	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	0.003	0.0044	<0.0017	0.0051	0.0041	<0.0018	<0.0018	<0.0017	<0.0017	<0.0017	<0.0019
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
PFOA + PFOS (Calculated)	0.07	NA	ND	ND	ND	ND	ND	0.003	0.0044	ND	0.0051	0.0041	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	0.016	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0043	<0.0043	<0.0042	<0.0043	<0.0042	<0.0044	<0.0044	<0.0042	<0.0043	<0.0042	<0.0048
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PFAS (Calculated)	NCL	NA	0.0054	0.0092	ND	0.0073	0.01	0.022	0.082	0.0054	0.036	0.021	0.0077	ND	0.0057	0.0043	0.0062	0.0084

TABLE 2
SUMMARY OF DRINKING WATER ANALYTICAL DATA - PFAS
Areas 11/12
Plainfield Township, Kent County, MI

Area	**Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]**	**Proposed MCL[3]**	**Area 12**	**Area 12 (Future Muni Water Area**
PPN			**411015426028**	**411015429009**
Address			**6282 WOODWATER DR NE**	**3191 ROGUE RIVER RD NE**
Sample Name			**6282 Woodwater**	**3191 Rogue River Dr - S**
Matrix			**Drinking Water**	**Drinking Water**
Laboratory ID			**TE10011-003**	**K1800112-001**
Sample Date			**05/09/2018**	**01/02/2018**
Parameter (µg/L)				
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NA	-	<0.0041
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NA	-	<0.0041
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NA	-	<0.0041
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	NCL	NA	<0.0039	-
N-Ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE)	NCL	NA	-	<0.0041
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NA	-	<0.0041
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	NCL	NA	<0.0039	-
N-Methyl perfluorooctane sulfonamidoethanol (N-MeFOSE)	NCL	NA	-	<0.0041
Perfluorobutane sulfonic acid (PFBS)	NCL	0.42	<0.0039	0.0061
Perfluorodecane sulfonic acid (PFDS)	NCL	NA	-	<0.0041
Perfluorooctadecanoic acid (PFODA)	NCL	NA	-	-
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NA	-	<0.0041
Perfluorooctane sulfonamide (FOSA)	NCL	NA	-	<0.0041
Perfluorohexane sulfonic acid (PFHxS)	NCL	0.051	<0.0039	0.0095
Perfluorobutanoic acid (PFBA)	NCL	NA	-	<0.0081
Perfluorodecanoic acid (PFDA)	NCL	NA	<0.0039	<0.0041
Perfluorododecanoic acid (PFDoDA)	NCL	NA	<0.0039	<0.0041
Perfluoroheptanoic acid (PFHpA)	NCL	NA	<0.0039	<0.0041
Perfluorohexanoic acid (PFHxA)	NCL	400	<0.0039	0.0054
Perfluorononanoic acid (PFNA)	NCL	0.006	<0.0039	<0.0041
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	0.008	<0.0039	0.0047
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.016	<0.0039	<0.0041
PFOA + PFOS (Calculated)	0.07	NA	ND	0.0047
Perfluoropentanoic acid (PFPeA)	NCL	NA	-	<0.0041
Perfluorotetradecanoic acid (PFTeDA)	NCL	NA	<0.0039	<0.0041
Perfluorotridecanoic acid (PFTrDA)	NCL	NA	<0.0039	<0.0041
Perfluoroundecanoic acid (PFUnDA)	NCL	NA	<0.0039	<0.0041
Perfluorohexadecanoic acid (PFHxDA)	NCL	NA	-	-
Total PFAS (Calculated)	NCL	NA	ND	0.026

TABLE 2 NOTES

Areas 11/12

Plainfield Township, Kent County, MI

NOTES:

1. Concentration and criteria units are micrograms per Liter (µg/L) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits. "ND" indicates the parameters used in the calculation were not detected.
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated June 25, 2018.
   Abbreviations Include:
   "NCL" indicates no criterion listed in EGLE Table 1.
   Footnotes Include:
   (JJ) - Compliance with the drinking water criteria shall require comparing the sum of the PFOA and PFOS groundwater concentrations to the drinking water criterion of 0.07 µg/L.
3. Proposed Maxium Contaminant Levels (MCLs) were published by EGLE on October 11, 2019. These are included for reference.
   Abbreviations Include:
   "NA" indicates no Proposed MCL listed.
4. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria listed. Proposed MCLs are provided for reference only and results detected above the Proposed MCLs are not bolded or italicized.
5. Abbreviations include:
   "< RL" indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.
   "DUP" indicates a duplicate sample.
   "-" indicates the paramater was not analyzed.
   "J" indicates the parameter was detected at a concentration greater than the limit of quantitation (LOQ) but less than the detection limit (DL) and the result is estimated.

TABLE 3
MONITORING WELL INSTALLATION INFORMATION
Areas 11/12
Algoma and Plainfield Townships, Kent County, MI

Site Location	Well Ownership/ Data Provider	Well Field ID	Top of Casing Elevation (ft)	Ground Surface Elevation (ft)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Casing Diameter (in)	Casing Type	Aquifer Zone	Protective Casing Type
House Street	EGLE	HS-DEQ-MW1D	799.43	799.7	*ND*	123.82	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW1I	799.83	800.2	*ND*	77.58	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW1S	799.42	799.7	*ND*	56.56	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW3D	857.29	857.9	*ND*	177.41	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW3S	857.40	857.9	*ND*	106.45	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW4-102	733.80	734.4	*ND*	102.8	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW4-16	734.23	734.7	*ND*	16.04	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW4-53	734.33	734.7	*ND*	53.85	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW4-80	734.33	734.7	*ND*	80.09	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW4-85	733.61	734.4	*ND*	85.79	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW4-90	733.99	734.4	*ND*	89.68	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW4-97	733.71	734.4	*ND*	98.81	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW5D	812.95	813.5	*ND*	130.16	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW5S	813.12	813.5	*ND*	47.28	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW6D	795.59	796.4	*ND*	176.36	*ND*	*ND*	*D*	*ND*
House Street	EGLE	HS-DEQ-MW6S	796.09	796.4	*ND*	45.71	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW7-102	775.04	775.4	*ND*	102.11	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW7-33	775.15	775.4	*ND*	33.33	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW7-87	775.02	775.4	*ND*	87.71	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW7-94	775.16	775.4	*ND*	94.32	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW8D	677.86	678.2	*ND*	33.37	*ND*	*ND*	*S*	*ND*
House Street	EGLE	HS-DEQ-MW8S	677.87	678.2	*ND*	28.28	*ND*	*ND*	*S*	*ND*
House Street	R&W/GZA	HS-MW-10D	780.94	778.1	188.2	193.2	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-10M	780.64	777.7	126.4	131.4	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-10S	780.06	777.2	48.3	58.3	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-11D	744.75	742.1	153.6	158.6	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-11M	744.96	742.3	96.4	101.4	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-11S	744.78	742.1	21.2	31.2	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-12A	716.50	716.8	15.4	20.4	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-12B	716.36	716.8	51.5	56.5	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-12C	716.17	716.9	127.7	132.7	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-12D	716.48	717.0	158.7	163.7	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-12E	716.29	716.8	187.5	192.5	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-13A	*ND*	*ND*	79.0	84.0	2	PVC	ND	*ND*
House Street	R&W/GZA	HS-MW-13B	*ND*	*ND*	149.0	154.0	2	PVC	ND	*ND*
House Street	R&W/GZA	HS-MW-13C	*ND*	*ND*	199.5	114.5	2	PVC	ND	*ND*
House Street	R&W/GZA	HS-MW-14D	673.20	670.7	109.0	114.0	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-14M	673.53	671.0	68.1	73.1	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-14S	673.64	671.2	13.0	23.0	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-15D	642.86	639.7	108.6	118.6	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-15M	640.98	638.0	44.8	49.8	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-15S	640.71	637.5	6.9	16.9	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-17D	784.64	782.3	222.1	227.1	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-17M	784.17	781.9	167.3	172.3	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-17S	784.77	782.0	105.8	110.8	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-18D	684.73	682.0	140.6	145.6	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-18S	683.93	682.0	12.8	22.8	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-19D	680.79	677.7	85.9	95.9	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-19S	680.83	677.8	58.4	61.4	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-1D	790.73	788.7	172.3	176.9	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-1S	791.01	788.8	67.4	72.1	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-20D	706.64	703.9	126.1	131.1	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-20M	706.90	704.2	101.5	106.5	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-20S	706.72	703.9	61.1	66.1	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-21D	648.38	645.7	76.2	86.2	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-21M	648.85	645.9	59.0	64.0	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-21S	648.67	645.8	9.8	19.8	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-23A	791.23	791.7	72.1	77.1	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-23B	791.21	791.5	137.9	142.8	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-23C	791.09	791.4	210.2	215.0	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-23D	791.47	792.0	238.9	243.9	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-24A	776.01	776.3	55.6	60.4	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-24B	775.72	776.2	225.2	230.0	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-25D	650.61	651.1	65.7	70.7	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-25S	650.83	651.2	51.1	56.1	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-26D	651.75	652.1	79.6	84.6	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-26M	651.31	651.7	61.7	66.7	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-26S	651.88	652.0	25.8	30.8	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-27A	668.44	668.7	21.6	26.2	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-27B	668.49	668.9	35.4	38.0	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-27C	668.64	669.0	41.3	45.9	2	PVC	S	Flush

TABLE 3
MONITORING WELL INSTALLATION INFORMATION
Areas 11/12
Algoma and Plainfield Townships, Kent County, MI

Site Location	Well Ownership/ Data Provider	Well Field ID	Top of Casing Elevation (ft)	Ground Surface Elevation (ft)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Casing Diameter (in)	Casing Type	Aquifer Zone	Protective Casing Type
House Street	R&W/GZA	HS-MW-27D	668.54	668.9	52.4	56.4	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-27E	668.56	668.9	58.5	62.5	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-28A	665.88	666.2	39.1	43.7	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-28B	666.14	666.4	43.3	47.9	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-28C	666.16	666.5	49.2	53.8	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-28D	665.89	666.3	62.2	66.8	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-28E	665.61	666.0	82.7	87.3	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-29A	633.13	630.3	3.5	13.5	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-29B	633.89	630.5	16.8	21.8	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-29C	633.60	630.4	27.2	32.2	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-29D	633.19	630.7	37.1	42.1	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-2S	799.66	797.6	77.9	82.5	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-30A	672.78	673.0	46.9	51.5	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-30B	673.09	673.4	51.5	56.1	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-30C	672.90	673.1	77.4	82.0	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-30D	673.37	673.6	112.7	117.3	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-30E	672.32	672.9	123.2	127.7	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-31A	639.30	639.5	17.1	21.6	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-31B	639.27	639.3	26.0	30.5	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-31C	639.27	639.4	41.3	45.8	2	PVC	S	Flush
House Street	R&W/GZA	HS-MW-31D	638.96	639.1	48.8	53.4	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-31E	638.95	639.2	64.1	68.7	2	PVC	D	Flush
House Street	R&W/GZA	HS-MW-32A	727.36	724.8	60.9	65.5	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-32B	727.85	725.1	79.1	83.7	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-32C	727.72	725.1	108.8	113.4	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-32D	727.55	725.0	142.3	146.9	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-3P	790.15	787.7	19.3	24.3	2	PVC	P	Stickup
House Street	R&W/GZA	HS-MW-3S	790.69	788.1	70.1	75.0	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-4S	784.88	782.3	70.2	74.8	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-5D	781.99	779.3	190.5	200.5	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-5P	781.55	779.1	17.7	22.4	2	PVC	P	Stickup
House Street	R&W/GZA	HS-MW-5S	781.79	779.2	60.3	65.0	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-6D	773.44	771.0	157.5	162.5	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-6S	773.34	770.7	58.2	62.9	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-7S	791.09	788.9	69.9	74.5	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-8	745.09	742.2	30.0	35.0	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-9D	820.88	818.2	204.3	209.3	2	PVC	D	Stickup
House Street	R&W/GZA	HS-MW-9M	820.66	817.9	126.8	131.8	2	PVC	S	Stickup
House Street	R&W/GZA	HS-MW-9S	820.20	817.8	26.2	31.2	2	PVC	P	Stickup
North Kent Landfill	NKL	NKLF-MW-35	900.23	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-48	901.64	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-53	893.99	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-54	912.79	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-55	893.11	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-56	867.88	866.4	*ND*	43.97	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-57	894.35	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-60	844.35	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-61	841.14	839.8	*ND*	28.47	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-63	840.81	839.1	*ND*	102.41	*ND*	*ND*	*D*	*ND*
North Kent Landfill	NKL	NKLF-MW-65	835.27	834.2	*ND*	21.87	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-66	874.57	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-67	902.72	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-68	900.98	899.2	*ND*	92.79	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-69	893.04	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-70	897.8	895.6	*ND*	63.33	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-71	894.71	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-72	882.18	879.5	*ND*	26.98	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-73	900.19	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-74	880.34	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-75	881.23	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-76	849.47	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-77	837.14	834.2	*ND*	22.8	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-78	883.89	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-80	888.05	887.4	*ND*	42.44	*ND*	*ND*	*S*	*ND*
North Kent Landfill	NKL	NKLF-MW-81	834.71	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-MW-82	896.26	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-TW-02	900.95	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-TW-04	858.20	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-TW-05	838.64	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
North Kent Landfill	NKL	NKLF-TW-06	883.99	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
Wolven	EGLE	WV-DEQ-MW10-121	764.74	763.865	*ND*	120.72	*ND*	*ND*	*D*	*ND*

TABLE 3
MONITORING WELL INSTALLATION INFORMATION
Areas 11/12
Algoma and Plainfield Townships, Kent County, MI

Site Location	Well Ownership/ Data Provider	Well Field ID	Top of Casing Elevation (ft)	Ground Surface Elevation (ft)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Casing Diameter (in)	Casing Type	Aquifer Zone	Protective Casing Type
Wolven	EGLE	WV-DEQ-MW10-177	764.934	763.865	*ND*	177.63	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW10-55	764.909	763.376	*ND*	55.21	*ND*	*ND*	*S*	*ND*
Wolven	EGLE	WV-DEQ-MW10-84	764.442	763.376	*ND*	84.14	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW10-95	764.931	763.376	*ND*	95.25	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW11-130	859.121	855.95	*ND*	130.22	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW11-137	859.212	855.763	*ND*	136.65	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW11-145	859.14	855.95	*ND*	145.71	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW11-57	858.794	855.95	*ND*	56.99	*ND*	*ND*	*S*	*ND*
Wolven	EGLE	WV-DEQ-MW11-95	859.129	855.763	*ND*	95.47	*ND*	*ND*	*S*	*ND*
Wolven	EGLE	WV-DEQ-MW2D	877.53	877.80	*ND*	168.72	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW2S	877.57	877.80	*ND*	58.04	*ND*	*ND*	*S*	*ND*
Wolven	EGLE	WV-DEQ-MW9-114	712.079	712.402	*ND*	114.07	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW9-131	712.031	712.402	*ND*	130.97	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW9-57	712.128	712.562	*ND*	56.85	*ND*	*ND*	*ND*	*ND*
Wolven	EGLE	WV-DEQ-MW9-73	712.096	712.562	*ND*	73.34	*ND*	*ND*	*D*	*ND*
Wolven	EGLE	WV-DEQ-MW9-94	711.979	712.562	*ND*	94.09	*ND*	*ND*	*D*	*ND*
Wolven	R&W/GZA	WV-MW-1	859.24	859.2	137.8	142.8	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-10D	751.00	748.6	165	170	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-10M	751.19	748.7	69.9	74.9	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-10S	751.26	748.4	7.0	12.0	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-11D	735.96	733.0	158.9	163.9	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-11S	735.89	732.8	29.4	34.4	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-12D	771.12	771.4	179.2	184.2	2	PVC	D	Flush
Wolven	R&W/GZA	WV-MW-12M	770.75	771.3	146.6	151.6	2	PVC	D	Flush
Wolven	R&W/GZA	WV-MW-12S	771.06	771.3	75.8	80.8	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-13D	823.91	821.3	58.8	63.8	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-13M	823.75	821.6	18.1	23.1	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-13S	823.68	821.3	1.7	6.7	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-14D	872.05	872.3	142.3	147.3	2	PVC	D	Flush
Wolven	R&W/GZA	WV-MW-14S	872.18	872.5	8.9	13.9	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-15A	721.25	721.5	9.0	14	2	PVC	P	Flush
Wolven	R&W/GZA	WV-MW-15B	721.07	721.4	33.1	38.1	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-15C	720.84	721.3	43.7	48.5	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-15D	721.09	721.3	135.1	137.8	2	PVC	D	Flush
Wolven	R&W/GZA	WV-MW-16D	823.45	820.9	91.7	96.7	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-16S	823.42	820.9	17.5	22.5	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-2D	791.36	790.5	30.2	35.2	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-2S	793.39	790.6	20.2	25.2	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-3D	823.28	820.7	57.5	62.5	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-3S	823.31	820.6	5.1	10.1	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-4	854.99	852.5	130.2	135.2	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-5D	865.07	862.0	68.7	73.7	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-5S	865.01	862.1	61.5	66.5	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-6D	786.51	784.1	99.1	104.1	2	PVC	D	Stickup
Wolven	R&W/GZA	WV-MW-6S	786.62	784.6	13.3	18.3	2	PVC	S	Stickup
Wolven	R&W/GZA	WV-MW-7D	727.36	727.8	89.5	94.5	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-7M	728.19	728.5	49.9	54.9	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-7S	727.61	728.0	16.1	21.1	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-8D	845.81	846.0	117.2	122.2	2	PVC	D	Flush
Wolven	R&W/GZA	WV-MW-8M	845.74	845.9	60.0	65.0	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-8S	845.55	846.0	30.0	35.0	2	PVC	S	Flush
Wolven	R&W/GZA	WV-MW-9	859.86	857.4	92.3	97.3	2	PVC	S	Stickup

Abbreviations
ND = No data provided/ available
ft = feet
bgs = below ground surface
in = inches
NKL = Kent County North Kent Landfill
EGLE = Michigan Department of Environment, Great Lakes, and Energy
R&W/GZA = Rose & Westra, a Division of GZA
P = perched zone
S = shallow zone
D = deep zone

Notes
1) Elevations are provided in North American Vertical Datum of 1988 (NAVD 88).
2) North Kent Landfill elevations converted from NGVD29 to NAVD88 by R&W/GZA by subtracting 0.43 feet from provided elevation.

TABLE 4
MONITORING WELL STATIC WATER LEVELS
Areas 11/12
Algoma and Plainfield Townships, Kent County, MI

Site Location	Well Field ID	November 4, 2019 Static Water Level Elevation (ft)
House Street	HS-DEQ-MW1D	739.09
House Street	HS-DEQ-MW1I	748.63
House Street	HS-DEQ-MW1S	749.96
House Street	HS-DEQ-MW3D	748.76
House Street	HS-DEQ-MW3S	839.76
House Street	HS-DEQ-MW4-102	687.91
House Street	HS-DEQ-MW4-16	729.17
House Street	HS-DEQ-MW4-53	688.26
House Street	HS-DEQ-MW4-80	688.11
House Street	HS-DEQ-MW4-85	688.07
House Street	HS-DEQ-MW4-90	688.00
House Street	HS-DEQ-MW4-97	687.77
House Street	HS-DEQ-MW5D	740.83
House Street	HS-DEQ-MW5S	*Dry*
House Street	HS-DEQ-MW6D	650.30
House Street	HS-DEQ-MW6S	*Dry*
House Street	HS-DEQ-MW7-102	751.35
House Street	HS-DEQ-MW7-33	751.20
House Street	HS-DEQ-MW7-87	751.33
House Street	HS-DEQ-MW7-94	751.36
House Street	HS-DEQ-MW8D	652.76
House Street	HS-DEQ-MW8S	653.68
House Street	HS-MW-10D	734.19
House Street	HS-MW-10M	726.19
House Street	HS-MW-10S	726.18
House Street	HS-MW-11D	719.37
House Street	HS-MW-11M	719.35
House Street	HS-MW-11S	720.13
House Street	HS-MW-12A	*ND*
House Street	HS-MW-12B	*ND*
House Street	HS-MW-12C	*ND*
House Street	HS-MW-12D	*ND*
House Street	HS-MW-12E	*ND*
House Street	HS-MW-13A	*ND*
House Street	HS-MW-13B	*ND*
House Street	HS-MW-13C	*ND*
House Street	HS-MW-14D	660.09
House Street	HS-MW-14M	661.24
House Street	HS-MW-14S	656.70
House Street	HS-MW-15D	635.56
House Street	HS-MW-15M	634.13
House Street	HS-MW-15S	630.84
House Street	HS-MW-17D	689.38
House Street	HS-MW-17M	689.45
House Street	HS-MW-17S	703.64
House Street	HS-MW-18D	663.55
House Street	HS-MW-18S	670.37
House Street	HS-MW-19D	649.16
House Street	HS-MW-19S	651.59
House Street	HS-MW-1D	727.41
House Street	HS-MW-1S	728.00
House Street	HS-MW-20D	648.97
House Street	HS-MW-20M	649.07
House Street	HS-MW-20S	649.12
House Street	HS-MW-21D	638.75
House Street	HS-MW-21M	637.58
House Street	HS-MW-21S	637.79
House Street	HS-MW-23A	723.53
House Street	HS-MW-23B	723.47
House Street	HS-MW-23C	723.48
House Street	HS-MW-23D	723.45
House Street	HS-MW-24A	723.25
House Street	HS-MW-24B	723.21
House Street	HS-MW-25D	627.83
House Street	HS-MW-25S	627.93
House Street	HS-MW-26D	640.12
House Street	HS-MW-26M	639.96
House Street	HS-MW-26S	636.05
House Street	HS-MW-27A	644.51
House Street	HS-MW-27B	644.58
House Street	HS-MW-27C	645.51

TABLE 4
MONITORING WELL STATIC WATER LEVELS
Areas 11/12
Algoma and Plainfield Townships, Kent County, MI

Site Location	Well Field ID	November 4, 2019 Static Water Level Elevation (ft)
House Street	HS-MW-27D	645.74
House Street	HS-MW-27E	645.61
House Street	HS-MW-28A	629.35
House Street	HS-MW-28B	629.37
House Street	HS-MW-28C	629.30
House Street	HS-MW-28D	630.25
House Street	HS-MW-28E	630.35
House Street	HS-MW-29A	*ND*
House Street	HS-MW-29B	*ND*
House Street	HS-MW-29C	*ND*
House Street	HS-MW-29D	*ND*
House Street	HS-MW-2S	725.55
House Street	HS-MW-30A	631.99
House Street	HS-MW-30B	632.00
House Street	HS-MW-30C	632.35
House Street	HS-MW-30D	632.53
House Street	HS-MW-30E	632.54
House Street	HS-MW-31A	624.83
House Street	HS-MW-31B	625.05
House Street	HS-MW-31C	624.83
House Street	HS-MW-31D	624.69
House Street	HS-MW-31E	624.77
House Street	HS-MW-32A	720.65
House Street	HS-MW-32B	720.67
House Street	HS-MW-32C	720.90
House Street	HS-MW-32D	720.75
House Street	HS-MW-3P	763.67
House Street	HS-MW-3S	724.86
House Street	HS-MW-4S	724.49
House Street	HS-MW-5D	724.82
House Street	HS-MW-5P	758.61
House Street	HS-MW-5S	724.82
House Street	HS-MW-6D	725.47
House Street	HS-MW-6S	725.44
House Street	HS-MW-7S	726.43
House Street	HS-MW-8	724.19
House Street	HS-MW-9D	744.72
House Street	HS-MW-9M	744.56
House Street	HS-MW-9S	793.72
North Kent Landfill	NKLF-MW-35	867.33
North Kent Landfill	NKLF-MW-48	870.29
North Kent Landfill	NKLF-MW-53	872.08
North Kent Landfill	NKLF-MW-54	877.50
North Kent Landfill	NKLF-MW-55	867.98
North Kent Landfill	NKLF-MW-56	845.56
North Kent Landfill	NKLF-MW-57	862.99
North Kent Landfill	NKLF-MW-60	834.09
North Kent Landfill	NKLF-MW-61	834.67
North Kent Landfill	NKLF-MW-63	752.97
North Kent Landfill	NKLF-MW-65	834.86
North Kent Landfill	NKLF-MW-66	871.83
North Kent Landfill	NKLF-MW-67	863.70
North Kent Landfill	NKLF-MW-68	867.15
North Kent Landfill	NKLF-MW-69	855.72
North Kent Landfill	NKLF-MW-70	848.12
North Kent Landfill	NKLF-MW-71	862.76
North Kent Landfill	NKLF-MW-72	856.81
North Kent Landfill	NKLF-MW-73	895.07
North Kent Landfill	NKLF-MW-74	871.50
North Kent Landfill	NKLF-MW-75	870.84
North Kent Landfill	NKLF-MW-76	848.24
North Kent Landfill	NKLF-MW-77	832.26
North Kent Landfill	NKLF-MW-78	836.08
North Kent Landfill	NKLF-MW-80	867.52
North Kent Landfill	NKLF-MW-81	831.74
North Kent Landfill	NKLF-MW-82	863.27
North Kent Landfill	NKLF-TW-02	863.72
North Kent Landfill	NKLF-TW-04	846.15
North Kent Landfill	NKLF-TW-05	835.50
North Kent Landfill	NKLF-TW-06	854.24
Wolven	WV-DEQ-MW10-121	719.14

TABLE 4
MONITORING WELL STATIC WATER LEVELS
Areas 11/12
Algoma and Plainfield Townships, Kent County, MI

Site Location	Well Field ID	November 4, 2019 Static Water Level Elevation (ft)
Wolven	WV-DEQ-MW10-177	721.88
Wolven	WV-DEQ-MW10-55	723.29
Wolven	WV-DEQ-MW10-84	720.09
Wolven	WV-DEQ-MW10-95	715.81
Wolven	WV-DEQ-MW11-130	757.03
Wolven	WV-DEQ-MW11-137	757.20
Wolven	WV-DEQ-MW11-145	756.95
Wolven	WV-DEQ-MW11-57	815.57
Wolven	WV-DEQ-MW11-95	810.62
Wolven	WV-DEQ-MW2D	753.80
Wolven	WV-DEQ-MW2S	826.21
Wolven	WV-DEQ-MW9-114	711.27
Wolven	WV-DEQ-MW9-131	711.27
Wolven	WV-DEQ-MW9-57	703.29
Wolven	WV-DEQ-MW9-73	711.32
Wolven	WV-DEQ-MW9-94	711.39
Wolven	WV-MW-1	751.30
Wolven	WV-MW-10D	749.49
Wolven	WV-MW-10M	747.82
Wolven	WV-MW-10S	742.24
Wolven	WV-MW-11D	*Artesian Conditions*
Wolven	WV-MW-11S	726.20
Wolven	WV-MW-12D	716.97
Wolven	WV-MW-12M	716.94
Wolven	WV-MW-12S	721.81
Wolven	WV-MW-13D	803.32
Wolven	WV-MW-13M	820.92
Wolven	WV-MW-13S	820.91
Wolven	WV-MW-14D	731.14
Wolven	WV-MW-14S	861.25
Wolven	WV-MW-15A	*ND*
Wolven	WV-MW-15B	*ND*
Wolven	WV-MW-15C	*ND*
Wolven	WV-MW-15D	*ND*
Wolven	WV-MW-16D	761.52
Wolven	WV-MW-16S	815.71
Wolven	WV-MW-2D	785.38
Wolven	WV-MW-2S	790.29
Wolven	WV-MW-3D	802.01
Wolven	WV-MW-3S	819.14
Wolven	WV-MW-4	753.96
Wolven	WV-MW-5D	802.39
Wolven	WV-MW-5S	802.11
Wolven	WV-MW-6D	765.11
Wolven	WV-MW-6S	781.51
Wolven	WV-MW-7D	715.73
Wolven	WV-MW-7M	715.73
Wolven	WV-MW-7S	715.71
Wolven	WV-MW-8D	754.38
Wolven	WV-MW-8M	823.77
Wolven	WV-MW-8S	823.75
Wolven	WV-MW-9	824.90
Rogue River	Dam Seawall	680.71
Rogue River	E Bridge Street Bridge	680.34
Rogue River	Rogue River Road Bridge	618.90
Rogue River	Jericho Ave Bridge	672.24
Rogue River	USGS04118500	630.419
Rogue River	Rogue River at Rum Creek	692.84

Abbreviations
ND = No data provided/available
ft = feet

Notes
1) Elevations are provided in North American Vertical Datum of 1988 (NAVD 88).
2) Water level static measurements were completed on November 4, 2019 by R&W/GZA, AECOM (for EGLE), and North Kent Landfill.
3) North Kent Landfill elevations converted from NGVD29 to NAVD88 by R&W/GZA by subtracting 0.43 feet from provided elevation.

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-1D	HS-MW-1D	HS-MW-1D	HS-MW-1D	HS-MW-1S	HS-MW-1S	HS-MW-1S	HS-MW-1S	HS-MW-2S	HS-MW-2S	HS-MW-2S	HS-MW-2S	HS-MW-3S
Sample Name						HS-MW-1D	HS-GW-MW1D	HS-GW-MW1D	HS-GW-MW-1D	HS-MW-1S	HS-GW-MW1S	HS-GW-MW1S	HS-GW-MW-1S	HS-MW-2	HS-GW-MW2	HS-GW-MW2	HS-GW-MW-2S	HS-MW-3S
Well Screen Interval (Feet below ground surface)						172.3-176.9	172.3-176.9	172.3-176.9	172.3-176.9	67.4-72.1	67.4-72.1	67.4-72.1	67.4-72.1	77.9-82.5	77.9-82.5	77.9-82.5	77.9-82.5	70.1-75
Laboratory Sample ID(s)						UC16019-001	UE30036-007	UI28005-011	UL05055-005	UC16019-002	UE30036-008	UI28005-010	UL05055-003	UC16019-003	UE30036-015	UI28005-012	UL05055-009	UC16019-005
Sample Date						03/11/2019	05/29/2019	09/27/2019	12/02/2019	03/11/2019	05/29/2019	09/27/2019	12/02/2019	03/11/2019	05/30/2019	09/27/2019	12/03/2019	03/13/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.0072	<0.0068	<0.0069	<0.007	<0.0076	<0.007	<0.0071	<0.0071	<0.0072	<0.0071	<0.0075	<0.007
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.0056	0.0057	0.005	0.0054	0.0057	0.0059	0.0051	0.0054	0.079	0.099	0.089	0.04	0.38
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	0.034
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.0072	<0.0068	<0.0069	<0.007	<0.0076	<0.007	<0.0071	<0.0071	<0.0072	<0.0071	<0.0075	<0.007
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	0.0038	<0.0035	<0.0035	0.097	0.11	0.094	0.028	0.68
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	0.0035	0.04	0.034	0.026	0.022	0.046	0.055	0.03	0.022	1.5
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	0.0095	0.011	0.01	0.0063	0.093
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	0.023	0.022	0.018	0.0065	0.14
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	0.0053	0.0051	<0.0035	<0.0035	0.053	0.072	0.05	0.03	0.35
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.0091	0.0098	0.0087	0.01	0.0095	0.013	0.0064	0.0072	0.0088	0.019	0.006	0.0044	***0.69***
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	0.0042	0.0044	0.0034	0.0038	0.0046	0.012	<0.0035	0.006	<0.0035	<0.0036	<0.0036	<0.0037	***0.032***
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.013	0.014	0.012	0.014	0.014	0.025	0.0064	0.013	0.0088	0.019	0.006	0.0044	***0.72***
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	0.012	0.015	0.014	0.0076	0.11
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0034	<0.0034	<0.0035	<0.0038	<0.0035	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.019	0.02	0.017	0.023	0.065	0.074	0.038	0.041	0.33	0.4	0.31	0.14	4

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-3S	HS-MW-3S	HS-MW-3S	HS-MW-3S	HS-MW-4S	HS-MW-4S	HS-MW-4S	HS-MW-4S	HS-MW-5D	HS-MW-5D	HS-MW-5D	HS-MW-5D	HS-MW-5D
Sample Name						HS-MW-3S DUP	HS-GW-MW3S	HS-GW-MW3S	HS-GW-MW-3S	HS-MW-4	HS-GW-MW4	HS-GW-MW4S	HS-GW-MW-4S	HS-MW-5D	HS-GW-MW5D	HS-GW-MW5D	HS-GW-MW-5D	HS-GW-MW-5D DUP
Well Screen Interval (Feet below ground surface)						70.1-75	70.1-75	70.1-75	70.1-75	70.2-74.8	70.2-74.8	70.2-74.8	70.2-74.8	190.5-200.5	190.5-200.5	190.5-200.5	190.5-200.5	190.5-200.5
Laboratory Sample ID(s)						UC16019-006	UE30036-016	UI26001-008	UL05055-011	UC16019-015	UE30036-014	UI26001-009	UL05055-020	UC16019-013	UE30036-005	UI26001-007	UL05055-018	UL05055-019
Sample Date						03/13/2019	05/30/2019	09/24/2019	12/03/2019	03/15/2019	05/30/2019	09/24/2019	12/04/2019	03/14/2019	05/28/2019	09/24/2019	12/04/2019	12/04/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0071	<0.0069	<0.0071	<0.007	<0.0069	<0.007	<0.0074	<0.0071	<0.0069	<0.0073	<0.007	<0.0072
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.39	0.5	0.4	0.57	0.058	0.055	0.033	0.1	<0.0035	<0.0034	<0.0036	0.005	0.0068
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	0.04	0.065	0.056	0.05	0.56	0.46	0.27	0.74	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0071	<0.0069	<0.0071	<0.007	<0.0069	<0.007	<0.0074	<0.0071	<0.0069	<0.0073	<0.007	<0.0072
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.6	0.92	0.71	0.75	0.18	0.19	0.14	0.38	<0.0035	<0.0034	<0.0036	0.0053	0.0077
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	1.3	2.1	1.7	1.6	3	2.9	2.1	4.6	<0.0035	<0.0034	0.0058	0.013	0.02
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.09	0.13	0.1	0.14	0.095	0.071	0.047	0.23	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.15	0.34	0.2	0.24	0.19	0.19	0.15	0.45	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.33	0.41	0.36	0.51	0.22	0.2	0.12	0.48	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	***0.63***	***0.89***	***0.83***	***0.73***	***1.5***	***1.4***	***0.82***	***2.1***	<0.0018	0.0028	0.0035	0.008	0.013
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***0.032***	***0.057***	***0.024***	***0.023***	***4.5***	***3.2***	***1.1***	***2.3***	0.0053	0.011	0.0083	0.01	***0.015***
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	***0.66***	***0.95***	***0.85***	***0.75***	***6***	***4.6***	***1.9***	***4.4***	0.0053	0.014	0.012	0.018	0.028
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.11	0.14	0.13	0.16	0.094	0.075	0.048	0.21	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0035	<0.0035	<0.0037	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	3.7	5.6	4.5	4.8	10	8.7	4.8	12	0.0053	0.014	0.018	0.041	0.063

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-5S	HS-MW-5S	HS-MW-5S	HS-MW-5S	HS-MW-6D	HS-MW-6D	HS-MW-6D	HS-MW-6D	HS-MW-6S	HS-MW-6S	HS-MW-6S	HS-MW-6S	HS-MW-7S
Sample Name						HS-MW-5S	HS-GW-MW5S	HS-GW-MW5S	HS-GW-MW-5S	HS-MW-6D	HS-GW-MW6D	HS-GW-MW6D	HS-GW-MW-6D	HS-MW-6S	HS-GW-MW6S	HS-GW-MW6S	HS-GW-MW-6S	HS-MW-7S
Well Screen Interval (Feet below ground surface)						60.3-65	60.3-65	60.3-65	60.3-65	157.5-162.5	157.5-162.5	157.5-162.5	157.5-162.5	58.2-62.9	58.2-62.9	58.2-62.9	58.2-62.9	69.9-74.5
Laboratory Sample ID(s)						UC16019-012	UE30036-004	UI26001-006	UL05055-021	UC21029-008	UE30036-009	UI28005-004	UL05055-028	UC21029-007	UE30036-010	UI28005-005	UL05055-027	UC23028-001
Sample Date						03/14/2019	05/28/2019	09/24/2019	12/04/2019	03/20/2019	05/29/2019	09/26/2019	12/05/2019	03/20/2019	05/29/2019	09/26/2019	12/05/2019	03/21/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.16	<0.14	<0.14	<0.14	<0.007	<0.0071	<0.0072	<0.0071	<0.0073	<0.0069	<0.0072	<0.0072	<0.0071
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	1.9	1.6	1.4	1.4	<0.0035	<0.0036	<0.0036	<0.0036	0.047	0.0052	0.034	0.0046	0.0051
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	1.7	3.5	2.2	3.4	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.16	<0.14	<0.14	<0.14	<0.007	<0.0071	<0.0072	<0.0071	<0.0073	<0.0069	<0.0072	<0.0072	<0.0071
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	3.1	3.1	2.8	3.5	<0.0035	<0.0036	<0.0036	<0.0036	0.061	0.011	0.036	<0.0036	<0.0035
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	7.5	11	9.9	15	<0.0035	<0.0036	<0.0036	<0.0036	0.085	0.039	0.074	0.013	0.011
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.56	0.52	0.47	0.43	<0.0035	<0.0036	<0.0036	<0.0036	0.0046	<0.0035	0.0036	<0.0036	<0.0035
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	1.6	1.8	1.4	2.4	<0.0035	<0.0036	<0.0036	<0.0036	0.015	0.0043	0.012	<0.0036	<0.0035
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	1.5	1.6	1.3	1.3	<0.0035	<0.0036	<0.0036	<0.0036	0.031	0.0053	0.021	<0.0036	<0.0035
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	***8.5***	***11***	***8.2***	***11***	<0.0018	<0.0018	<0.0018	<0.0018	0.044	0.028	0.043	0.012	0.0029
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***42***	***100***	***59***	***71***	<0.0035	<0.0036	<0.0036	<0.0036	0.0087	0.0059	0.005	0.0046	<0.0035
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	***51***	***110***	***67***	***82***	ND	ND	ND	ND	0.053	0.034	0.048	0.017	0.0029
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.65	0.61	0.54	0.51	<0.0035	<0.0036	<0.0036	<0.0036	0.0078	<0.0035	0.006	<0.0036	<0.0035
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.07	<0.07	<0.071	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0036	<0.0036	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	69	130	87	110	ND	ND	ND	ND	0.3	0.099	0.23	0.034	0.019

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-7S	HS-MW-7S	HS-MW-7S	HS-MW-7S	HS-MW-8	HS-MW-8	HS-MW-8	HS-MW-8	HS-MW-9D	HS-MW-9D	HS-MW-9D	HS-MW-9D	HS-MW-9D
Sample Name						HS-MW-7S DUP	HS-GW-MW7S	HS-GW-MW7S	HS-GW-MW-7S	HS-MW-8	HS-GW-MW8	HS-GW-MW8	HS-GW-MW-8	HS-MW-9D	HS-GW-MW9D	HS-GW-MW9D DUP	HS-GW-MW9D	HS-GW-MW-9D
Well Screen Interval (Feet below ground surface)						69.9-74.5	69.9-74.5	69.9-74.5	69.9-74.5	30-35	30-35	30-35	30-35	204.3-209.3	204.3-209.3	204.3-209.3	204.3-209.3	204.3-209.3
Laboratory Sample ID(s)						UC23028-002	UE30036-017	UI26001-004	UL05055-022	UC23028-003	UE30036-006	UI26001-010	UL05055-031	UC21029-006	UE24001-014	UE24001-015	UI26001-014	UL12091-004
Sample Date						03/21/2019	05/30/2019	09/23/2019	12/04/2019	03/21/2019	05/29/2019	09/24/2019	12/06/2019	03/19/2019	05/22/2019	05/22/2019	09/25/2019	12/09/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0069	<0.0067	<0.007	<0.0072	<0.0071	<0.0078	<0.0075	<0.007	<0.0072	<0.0071	<0.0068	<0.0076
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.0053	0.006	0.0046	0.0055	0.026	0.028	0.075	0.086	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	0.078	0.033	0.09	0.12	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0069	<0.0067	<0.007	<0.0072	<0.0071	<0.0078	<0.0075	<0.007	<0.0072	<0.0071	<0.0068	<0.0076
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	0.044	0.035	0.13	0.11	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.0099	0.0089	0.0089	0.01	0.15	0.085	0.39	0.32	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	0.0066	0.0066	0.012	0.017	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	0.037	0.044	0.06	0.074	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	0.016	0.024	0.028	0.031	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.003	0.0035	0.0029	0.003	***0.38***	***0.35***	***1.3***	***0.7***	<0.0017	<0.0018	<0.0018	<0.0017	<0.0019
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0035	0.0037	0.0047	0.0091	***0.14***	***0.051***	***0.099***	***0.12***	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.003	0.0072	0.0076	0.012	***0.52***	***0.4***	***1.4***	***0.82***	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	0.0055	0.0067	0.01	0.011	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0034	<0.0035	<0.0036	<0.0035	<0.0039	<0.0038	<0.0035	<0.0036	<0.0036	<0.0034	<0.0038
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.018	0.022	0.021	0.028	0.88	0.66	2.2	1.6	ND	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-9M	HS-MW-9M	HS-MW-9M	HS-MW-9M	HS-MW-9S	HS-MW-9S	HS-MW-9S	HS-MW-9S	HS-MW-9S	HS-MW-10D	HS-MW-10D	HS-MW-10D	HS-MW-10D
Sample Name						HS-MW-9M	HS-GW-MW9M	HS-GW-MW9M	HS-GW-MW-9M	HS-MW-9S	HS-GW-MW9S	HS-GW-MW9S	HS-GW-MW-9S	HS-GW-MW-9S DUP	HS-MW-10D	HS-GW-MW10D	HS-GW-MW10D	HS-GW-MW-10D
Well Screen Interval (Feet below ground surface)						126.8-131.8	126.8-131.8	126.8-131.8	126.8-131.8	26.2-31.2	26.2-31.2	26.2-31.2	26.2-31.2	26.2-31.2	188.2-193.2	188.2-193.2	188.2-193.2	188.2-193.2
Laboratory Sample ID(s)						UC21029-005	UE24001-013	UI26001-020	UL12091-003	UC21029-004	UE24001-012	UI26001-016	UL12091-013	UL12091-014	UC21029-003	UE24001-003	UI26001-015	UL05055-006
Sample Date						03/19/2019	05/22/2019	09/25/2019	12/09/2019	03/19/2019	05/22/2019	09/25/2019	12/11/2019	12/11/2019	03/18/2019	05/20/2019	09/25/2019	12/02/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	0.0039	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.0069	<0.0071	<0.0071	<0.0073	<0.007	<0.0074	<0.0077	<0.0074	<0.0075	<0.007	<0.0072	<0.007
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.0069	<0.0071	<0.0071	<0.0073	<0.007	<0.0074	<0.0077	<0.0074	<0.0075	<0.007	<0.0072	<0.007
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	0.0049	0.0049	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0018	<0.0017	<0.0018	<0.0018	<0.0018	<0.0017	<0.0018	0.0048	0.0049	<0.0019	<0.0017	<0.0018	<0.0018
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	0.0049	<0.0037	0.0076	0.0081	<0.0038	<0.0035	<0.0036	<0.0035
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	0.0049	ND	0.012	0.013	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0038	<0.0037	<0.0038	<0.0035	<0.0036	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	0.0049	0.0039	0.017	0.018	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-10M	HS-MW-10M	HS-MW-10M	HS-MW-10M	HS-MW-10M	HS-MW-10S	HS-MW-10S	HS-MW-10S	HS-MW-10S	HS-MW-11D	HS-MW-11D	HS-MW-11D	HS-MW-11D
Sample Name						HS-MW-10M	HS-GW-MW10M	HS-GW-MW10M	HS-GW-MW10M DUP	HS-GW-MW-10M	HS-MW-10S	HS-GW-MW10S	HS-GW-MW10S	HS-GW-MW-10S	HS-MW-11D	HS-GW-MW11D	HS-GW-MW11D	HS-GW-MW-11D
Well Screen Interval (Feet below ground surface)						126.4-131.4	126.4-131.4	126.4-131.4	126.4-131.4	126.4-131.4	48.3-58.3	48.3-58.3	48.3-58.3	48.3-58.3	153.6-158.6	153.6-158.6	153.6-158.6	153.6-158.6
Laboratory Sample ID(s)						UC21029-002	UE24001-002	UI26001-017	UI26001-018	UL05055-010	UC21029-001	UE24001-001	UI26001-019	UL05055-001	UC16019-011	UE24001-016	UI28005-003	UL05055-013
Sample Date						03/18/2019	05/20/2019	09/25/2019	09/25/2019	12/03/2019	03/18/2019	05/20/2019	09/25/2019	12/02/2019	03/14/2019	05/22/2019	09/26/2019	12/03/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.007	<0.0072	<0.0071	<0.0071	<0.007	<0.0078	<0.0072	<0.0071	<0.0076	<0.0075	<0.0073	<0.0075
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.0085	0.0063	0.0075	0.0079	0.0089	<0.0035	0.004	<0.0036	0.0037	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	0.0047	0.0049	<0.0036	0.0037	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.007	<0.0072	<0.0071	<0.0071	<0.007	<0.0078	<0.0072	<0.0071	<0.0076	<0.0075	<0.0073	<0.0075
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.0048	0.0036	0.0039	0.0039	0.0039	0.006	0.0084	0.014	0.013	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.0084	0.0072	0.0096	0.0094	0.01	0.012	0.015	0.018	0.021	<0.0019	<0.0019	<0.0018	<0.0019
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***0.013***	0.012	0.012	0.011	***0.013***	***0.04***	***0.036***	***0.024***	***0.024***	<0.0038	<0.0037	<0.0036	<0.0038
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.021	0.019	0.022	0.02	0.023	0.052	0.051	0.042	0.045	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.0036	<0.0035	<0.0036	<0.0035	<0.0039	<0.0036	<0.0035	<0.0038	<0.0037	<0.0036	<0.0038
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.035	0.029	0.033	0.032	0.036	0.063	0.068	0.056	0.065	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-11M	HS-MW-11M	HS-MW-11M	HS-MW-11M	HS-MW-11S	HS-MW-11S	HS-MW-11S	HS-MW-11S	HS-MW-12A	HS-MW-12B	HS-MW-12C	HS-MW-12D	HS-MW-12E
Sample Name						HS-MW-11M	HS-GW-MW11M	HS-GW-MW11M	HS-GW-MW-11M	HS-MW-11S	HS-GW-MW11S	HS-GW-MW11S	HS-GW-MW-11S	HS-GW-MW-12A	HS-GW-MW-12B	HS-GW-MW-12C	HS-GW-MW-12D	HS-GW-MW-12E
Well Screen Interval (Feet below ground surface)						96.4-101.4	96.4-101.4	96.4-101.4	96.4-101.4	21.2-31.2	21.2-31.2	21.2-31.2	21.2-31.2	15.4-20.4	51.5-56.5	127.7-132.7	158.7-163.7	187.5-192.5
Laboratory Sample ID(s)						UC16019-010	UE24001-018	UI28005-002	UL05055-012	UC16019-009	UE24001-017	UI28005-001	UL05055-014	UK29008-021	UK29008-012	UK29008-011	UK29008-010	UK29008-013
Sample Date						03/14/2019	05/22/2019	09/26/2019	12/03/2019	03/14/2019	05/22/2019	09/26/2019	12/03/2019	11/27/2019	11/25/2019	11/25/2019	11/25/2019	11/25/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.0072	<0.0074	<0.0073	<0.0072	<0.0075	<0.0077	<0.0071	<0.0072	<0.0073	<0.0076	<0.0068	<0.007
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.014	0.013	0.046	0.05	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	0.13	0.14	<0.0035
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.0072	<0.0074	<0.0073	<0.0072	<0.0075	<0.0077	<0.0071	<0.0072	<0.0073	<0.0076	<0.0068	<0.007
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	0.016	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	0.13	0.12	<0.0035
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	0.0045	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	0.0054	0.12	0.091	<0.0035
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	0.036	0.037	<0.0035
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	0.07	0.072	<0.0035
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	0.076	0.09	<0.0035
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0018	<0.0018	<0.0018	<0.0018	0.0024	0.0028	<0.0019	0.0041	0.0089	0.0023	***0.19***	***0.17***	<0.0017
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	0.0063	<0.0037	<0.0038	<0.0034	<0.0035
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	0.0024	0.0028	ND	0.0041	0.015	0.0023	***0.19***	***0.17***	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	0.0039	<0.0037	0.039	0.038	<0.0035
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0036	<0.0037	<0.0036	<0.0036	<0.0038	<0.0038	<0.0036	<0.0036	<0.0037	<0.0038	<0.0034	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.014	0.013	0.046	0.071	0.0024	0.0028	ND	0.0041	0.019	0.0077	0.79	0.76	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-14D	HS-MW-14D	HS-MW-14D	HS-MW-14D	HS-MW-14D	HS-MW-14M	HS-MW-14M	HS-MW-14M	HS-MW-14M	HS-MW-14S	HS-MW-14S	HS-MW-14S	HS-MW-14S
Sample Name						HS-MW-14D	HS-MW-14D DUP	HS-GW-MW14D	HS-GW-MW14D	HS-GW-MW14D	HS-MW-14M	HS-GW-MW14M	HS-GW-MW14M	HS-GW-MW-14M	HS-MW-14S	HS-GW-MW14S	HS-GW-MW14S	HS-GW-MW-14S
Well Screen Interval (Feet below ground surface)						109-114	109-114	109-114	109-114	109-114	68.1-73.1	68.1-73.1	68.1-73.1	68.1-73.1	13-23	13-23	13-23	13-23
Laboratory Sample ID(s)						UB27031-003	UB27031-004	UE18016-008	UI12010-007	UK29008-016	UB27031-001	UE18016-009	UI12010-009	UK29008-015	UB27031-002	UE18016-010	UI12010-008	UK29008-014
Sample Date						02/26/2019	02/26/2019	05/17/2019	09/10/2019	11/25/2019	02/26/2019	05/17/2019	09/10/2019	11/25/2019	02/26/2019	05/17/2019	09/10/2019	11/25/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0073	<0.0074	<0.0074	<0.007	<0.0071	<0.0073	<0.0075	<0.0069	<0.0071	<0.0072	<0.0072	<0.0069
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0073	<0.0074	<0.0074	<0.007	<0.0071	<0.0073	<0.0075	<0.0069	<0.0071	<0.0072	<0.0072	<0.0069
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	0.005	<0.0036	<0.0034
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	0.0065	<0.0036	<0.0034
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0019	<0.0018	<0.0019	<0.0019	<0.0017	<0.0018	<0.0018	<0.0019	<0.0017	<0.0018	0.0047	0.0023	<0.0017
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	0.0036	<0.0034
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0047	0.0059	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	0.0054	<0.0036	<0.0034
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0038	<0.0034	<0.0036	<0.0036	<0.0036	<0.0034
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022	0.0059	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-15D	HS-MW-15D	HS-MW-15D	HS-MW-15D	HS-MW-15M	HS-MW-15M	HS-MW-15M	HS-MW-15M	HS-MW-15S	HS-MW-15S	HS-MW-15S	HS-MW-15S	HS-MW-17D
Sample Name						HS-MW-15D	HS-GW-MW15D	HS-GW-MW15D	HS-GW-MW15D	HS-MW-15M	HS-GW-MW15M	HS-GW-MW15M	HS-GW-MW15M	HS-MW-15S	HS-GW-MW15S	HS-GW-MW15S	HS-GW-MW15S	HS-MW-17D
Well Screen Interval (Feet below ground surface)						108.6-118.6	108.6-118.6	108.6-118.6	108.6-118.6	44.8-49.8	44.8-49.8	44.8-49.8	44.8-49.8	6.9-16.9	6.9-16.9	6.9-16.9	6.9-16.9	222.1-227.1
Laboratory Sample ID(s)						UB28086-006	UE18016-005	UI21016-005	UK19008-012	UB28086-005	UE18016-006	UI21016-004	UK21036-009	UB28086-004	UE18016-007	UI21016-003	UK21036-010	UC09042-006
Sample Date						02/27/2019	05/16/2019	09/19/2019	11/20/2019	02/27/2019	05/16/2019	09/19/2019	11/19/2019	02/27/2019	05/16/2019	09/19/2019	11/19/2019	03/07/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0073	<0.0073	<0.0069	<0.0074	<0.0076	<0.0075	<0.0073	<0.0074	<0.0073	<0.0077	<0.0069	<0.007
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	0.0073	0.0058	0.0068	0.0073	0.43
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	0.022
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0073	<0.0073	<0.0069	<0.0074	<0.0076	<0.0075	<0.0073	<0.0074	<0.0073	<0.0077	<0.0069	<0.007
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	0.56
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	0.004	0.96
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	0.11
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	0.3
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	0.27
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0019	<0.0018	<0.0018	<0.0017	<0.0018	<0.0019	<0.0019	<0.0018	<0.0018	<0.0018	<0.0019	0.0018	***1***
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	***0.06***
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0018	***1.1***
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	0.12
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0036	<0.0034	<0.0037	<0.0038	<0.0037	<0.0036	<0.0037	<0.0036	<0.0038	<0.0034	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	0.0073	0.0058	0.0068	0.013	3.8

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-17D	HS-MW-17D	HS-MW-17D	HS-MW-17M	HS-MW-17M	HS-MW-17M	HS-MW-17M	HS-MW-17S	HS-MW-17S	HS-MW-17S	HS-MW-17S	HS-MW-18D	HS-MW-18D
Sample Name						HS-GW-MW17D	HS-GW-MW17D	HS-GW-MW17D	HS-MW-17M	HS-GW-MW17M	HS-GW-MW17M	HS-GW-MW-17M	HS-MW-17S	HS-GW-MW17S	HS-GW-MW17S	HS-GW-MW-17S	HS-MW-18D	HS-GW-MW18D
Well Screen Interval (Feet below ground surface)						222.1-227.1	222.1-227.1	222.1-227.1	167.3-172.3	167.3-172.3	167.3-172.3	167.3-172.3	105.8-110.8	105.8-110.8	105.8-110.8	105.8-110.8	140.6-145.6	140.6-145.6
Laboratory Sample ID(s)						UE25011-001	UI19006-002	UL12091-010	UC09042-005	UE25011-003	UI12010-016	UL12091-012	UC09042-003	UE25011-002	UI12010-014	UL12091-007	UC02020-006	UE24001-004
Sample Date						05/23/2019	09/16/2019	12/10/2019	03/07/2019	05/23/2019	09/11/2019	12/11/2019	03/06/2019	05/23/2019	09/11/2019	12/10/2019	03/01/2019	05/21/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.007900001	<0.0074	<0.0074	<0.0071	<0.0066	<0.0068	<0.0071	<0.0069	<0.0067	<0.0075	<0.0073	<0.0074
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.41	0.47	0.42	0.004	0.0039	0.0036	0.0038	0.014	0.02	0.014	0.018	0.029	0.031
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	0.024	0.028	0.029	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.007900001	<0.0074	<0.0074	<0.0071	<0.0066	<0.0068	<0.0071	<0.0069	<0.0067	<0.0075	<0.0073	<0.0074
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.5	0.57	0.49	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	0.015	0.014
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	1	1.1	1	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	0.0074	0.0082
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.11	0.12	0.12	<0.0037	<0.0036	<0.0033	<0.0034	0.0041	0.0058	0.0034	0.0042	0.018	0.02
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.3	0.33	0.31	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	0.011	0.011
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.31	0.27	0.28	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	0.0054	0.022	0.024
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	***1.2***	***1.2***	***1.1***	<0.0019	<0.0018	<0.0017	<0.0017	<0.0018	<0.0017	<0.0017	<0.0019	0.014	0.015
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***0.058***	***0.072***	***0.076***	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	***1.3***	***1.3***	***1.2***	ND	ND	ND	ND	ND	ND	ND	ND	0.014	0.015
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.13	0.13	0.14	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	0.0044	0.0048	0.0073	0.015	0.017
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.004	<0.0037	<0.0037	<0.0036	<0.0033	<0.0034	<0.0035	<0.0035	<0.0033	<0.0038	<0.0037	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	4	4.3	4	0.004	0.0039	0.0036	0.0038	0.018	0.03	0.022	0.035	0.13	0.14

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-18D	HS-MW-18D	HS-MW-18S	HS-MW-18S	HS-MW-18S	HS-MW-18S	HS-MW-19D	HS-MW-19D	HS-MW-19D	HS-MW-19D	HS-MW-19S	HS-MW-19S	HS-MW-19S
Sample Name						HS-GW-MW18D	HS-GW-MW18D	HS-MW-18S	HS-GW-MW18S	HS-GW-MW18S	HS-GW-MW-18S	HS-MW-19D	HS-GW-MW19D	HS-GW-MW19D	HS-GW-MW-19D	HS-MW-19S	HS-GW-MW19S	HS-GW-MW19S
Well Screen Interval (Feet below ground surface)						140.6-145.6	140.6-145.6	12.8-22.8	12.8-22.8	12.8-22.8	12.8-22.8	85.9-95.9	85.9-95.9	85.9-95.9	85.9-95.9	58.4-61.4	58.4-61.4	58.4-61.4
Laboratory Sample ID(s)						UI12010-006	UK19008-015	UC02020-007	UE24001-005	UI12010-010	UK21036-020	UC02020-005	UE24001-007	UI26001-003	UL12091-019	UC02020-004	UE24001-006	UI26001-002
Sample Date						09/10/2019	11/20/2019	03/01/2019	05/21/2019	09/10/2019	11/21/2019	02/28/2019	05/21/2019	09/23/2019	12/12/2019	02/28/2019	05/21/2019	09/23/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0068	<0.0075	<0.0074	<0.0073	<0.0068	<0.007	<0.007	<0.007	<0.0069	<0.0072	<0.0081	<0.0069	<0.0077
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.025	0.029	0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0068	<0.0075	<0.0074	<0.0073	<0.0068	<0.007	<0.007	<0.007	<0.0069	<0.0072	<0.0081	<0.0069	<0.0077
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.012	0.014	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.0062	0.0072	<0.0037	<0.0036	<0.0034	0.0043	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.018	0.02	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.01	0.011	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.021	0.022	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.015	0.015	<0.0019	<0.0018	<0.0017	<0.0017	<0.0018	<0.0018	<0.0017	<0.0018	<0.002	<0.0017	<0.0019
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.015	0.015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.016	0.016	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0035	<0.0035	<0.0034	<0.0036	<0.004	<0.0034	<0.0038
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.12	0.13	0.0037	ND	ND	0.0043	ND	ND	ND	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-19S	HS-MW-20D	HS-MW-20D	HS-MW-20D	HS-MW-20D	HS-MW-20M	HS-MW-20M	HS-MW-20M	HS-MW-20M	HS-MW-20M	HS-MW-20S	HS-MW-20S	HS-MW-20S
Sample Name						HS-GW-MW-19S	HS-MW-20D	HS-GW-MW20D	HS-GW-MW20D	HS-GW-MW-20D	HS-MW-20M	HS-GW-MW20M	HS-GW-MW20M	HS-GW-MW20M DUP	HS-GW-MW-20M	MW-20S	HS-GW-MW20S	HS-GW-MW20S
Well Screen Interval (Feet below ground surface)						58.4-61.4	126.1-131.1	126.1-131.1	126.1-131.1	126.1-131.1	101.5-106.5	101.5-106.5	101.5-106.5	101.5-106.5	101.5-106.5	61.1-66.1	61.1-66.1	61.1-66.1
Laboratory Sample ID(s)						UL12091-016	UC09042-002	UE30036-003	UI19006-022	UK29008-019	UC09042-001	UE30036-002	UI19006-020	UI19006-021	UK29008-002	UC06036-001	UE30036-001	UI19006-019
Sample Date						12/11/2019	03/06/2019	05/28/2019	09/18/2019	11/27/2019	03/06/2019	05/28/2019	09/18/2019	09/18/2019	11/26/2019	03/04/2019	05/28/2019	09/18/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.0071	<0.0073	<0.007	<0.0069	<0.0074	<0.0069	<0.0069	<0.007	<0.0071	<0.0071	<0.0074	<0.0071
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0036	0.16	0.17	0.17	0.15	0.071	0.068	0.069	0.07	0.06	0.015	0.016	0.018
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	0.0095	0.0088	0.008	0.0084	0.0077	<0.0036	<0.0037	<0.0035
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.0071	<0.0073	<0.007	<0.0069	<0.0074	<0.0069	<0.0069	<0.007	<0.0071	<0.0071	<0.0074	<0.0071
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.097	0.098	0.11	0.098	0.083	0.079	0.08	0.085	0.062	0.013	0.013	0.016
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.042	0.042	0.046	0.043	0.16	0.16	0.15	0.14	0.13	0.014	0.017	0.019
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.047	0.052	0.05	0.049	0.015	0.015	0.015	0.014	0.014	0.0042	0.0043	0.0047
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.07	0.078	0.077	0.076	0.043	0.042	0.039	0.045	0.038	0.0056	0.0082	0.0094
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.088	0.1	0.1	0.1	0.038	0.038	0.036	0.034	0.034	0.0068	0.0085	0.0093
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0018	***0.09***	***0.12***	***0.12***	***0.11***	***0.16***	***0.17***	***0.17***	***0.17***	***0.15***	0.016	0.022	0.022
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	***0.04***	***0.034***	***0.033***	***0.032***	***0.029***	<0.0036	<0.0037	<0.0035
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	***0.09***	***0.12***	***0.12***	***0.11***	***0.2***	***0.2***	***0.2***	***0.2***	***0.18***	0.016	0.022	0.022
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.045	0.054	0.052	0.049	0.017	0.017	0.015	0.016	0.014	<0.0036	0.0039	0.0045
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0036	<0.0035	<0.0035	<0.0037	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	0.64	0.71	0.73	0.68	0.64	0.63	0.62	0.61	0.54	0.075	0.093	0.1

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-20S	HS-MW-21D	HS-MW-21D	HS-MW-21D	HS-MW-21D	HS-MW-21D	HS-MW-21D	HS-MW-21M	HS-MW-21M	HS-MW-21M	HS-MW-21M	HS-MW-21S	HS-MW-21S
Sample Name						HS-GW-MW-20S	HS-MW-21D	HS-GW-MW21D	HS-GW-MW21D DUP	HS-GW-MW21D	HS-GW-MW-21D	HS-GW-MW-21D DUP	HS-MW-21M	HS-GW-MW21M	HS-GW-MW21M	HS-GW-MW-21M	HS-MW-21S	HS-GW-MW21S
Well Screen Interval (Feet below ground surface)						61.1-66.1	76.2-86.2	76.2-86.2	76.2-86.2	76.2-86.2	76.2-86.2	76.2-86.2	59-64	59-64	59-64	59-64	9.8-19.8	9.8-19.8
Laboratory Sample ID(s)						UK29008-001	UB28086-003	UE18016-001	UE18016-002	UI19006-003	UL12091-001	UL12091-002	UB28086-002	UE18016-003	UI19006-004	UK29008-020	UB28086-001	UE18016-004
Sample Date						11/26/2019	02/27/2019	05/16/2019	05/16/2019	09/16/2019	12/09/2019	12/09/2019	02/27/2019	05/16/2019	09/16/2019	11/27/2019	02/27/2019	05/16/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	0.0058	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0072	<0.0073	<0.0073	<0.0072	<0.0072	<0.0071	<0.0075	<0.0073	<0.0071	<0.0074	<0.0073	<0.0074
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.018	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.007	<0.0072	<0.0073	<0.0073	<0.0072	<0.0072	<0.0071	<0.0075	<0.0073	<0.0071	<0.0074	<0.0073	<0.0074
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.012	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.013	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.0067	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.0092	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.013	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.023	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0018	<0.0019	<0.0018	<0.0018	<0.0019	0.0028	0.0026
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.023	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0028	0.0026
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.0064	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0035	<0.0037	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.1	ND	ND	ND	0.0058	ND	ND	ND	ND	ND	ND	0.0028	0.0026

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-21S	HS-MW-21S	HS-MW-23A	HS-MW-23A	HS-MW-23B	HS-MW-23B	HS-MW-23C	HS-MW-23C	HS-MW-23D	HS-MW-23D	HS-MW-24A	HS-MW-24B	HS-MW-25D
Sample Name						HS-GW-MW21S	HS-GW-MW21S	HS-GW-MW23A	HS-GW-MW23A	HS-GW-MW23B	HS-GW-MW23B	HS-GW-MW23C	HS-GW-MW23C	HS-GW-MW23D	HS-GW-MW23D	HS-GW-MW24A	HS-GW-MW24B	HS-MW-25D
Well Screen Interval (Feet below ground surface)						9.8-19.8	9.8-19.8	72.1-77.1	72.1-77.1	137.9-142.8	137.9-142.8	210.2-215	210.2-215	238.9-243.9	238.9-243.9	55.6-60.4	225.2-230	65.7-70.7
Laboratory Sample ID(s)						UI19006-006	UK29008-022	UI21016-007	UL05055-032	UI21016-009	UL05055-033	UI26001-001	UL05055-034	UI21016-008	UL12091-008	UL12091-009	UL12091-015	UC02020-009
Sample Date						09/16/2019	11/27/2019	09/20/2019	12/06/2019	09/20/2019	12/06/2019	09/23/2019	12/06/2019	09/20/2019	12/10/2019	12/10/2019	12/11/2019	03/01/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0074	<0.007	<0.0072	<0.0071	<0.0068	<0.007	<0.007	<0.0071	<0.0069	<0.0072	<0.007	<0.0074	<0.0072
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0037	0.0036	0.02	0.018	0.015	0.014	0.26	0.28	0.23	0.14	<0.0035	<0.0037	0.016
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0074	<0.007	<0.0072	<0.0071	<0.0068	<0.007	<0.007	<0.0071	<0.0069	<0.0072	<0.007	<0.0074	<0.0072
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	0.011	0.0094	0.0081	0.0071	0.22	0.23	0.15	0.076	<0.0035	<0.0037	<0.0036
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	0.02	0.019	0.019	0.015	0.091	0.09	0.016	0.011	<0.0035	<0.0037	0.008
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	0.064	0.067	0.067	0.043	<0.0035	<0.0037	0.0054
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	0.05	0.057	0.037	0.02	<0.0035	<0.0037	0.0056
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	0.0047	<0.0035	0.0061	0.0044	0.22	0.26	0.24	0.16	<0.0035	<0.0037	0.011
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.0034	0.0031	0.013	0.012	0.0075	0.0082	0.03	0.03	0.013	0.0056	<0.0017	<0.0018	0.016
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0037	<0.0035	0.0042	***0.015***	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	***0.072***
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.0034	0.0031	0.017	0.027	0.0075	0.0082	0.03	0.03	0.013	0.0056	ND	ND	***0.088***
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	0.1	0.11	0.13	0.08	<0.0035	<0.0037	0.0091
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0035	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0036	<0.0035	<0.0037	<0.0036
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.0034	0.0067	0.073	0.073	0.056	0.049	1	1.1	0.88	0.54	ND	ND	0.14

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-25D	HS-MW-25D	HS-MW-25D	HS-MW-25S	HS-MW-25S	HS-MW-25S	HS-MW-25S	HS-MW-26D	HS-MW-26D	HS-MW-26D	HS-MW-26D	HS-MW-26M	HS-MW-26M
Sample Name						HS-GW-MW25D	HS-GW-MW25D	HS-GW-MW25D	HS-MW-25S	HS-GW-MW25S	HS-GW-MW25S	HS-GW-MW25S	HS-MW-26D	HS-GW-MW26D	HS-GW-MW26D	HS-GW-MW-26D	HS-MW-26M	HS-GW-MW26M
Well Screen Interval (Feet below ground surface)						65.7-70.7	65.7-70.7	65.7-70.7	51.1-56.1	51.1-56.1	51.1-56.1	51.1-56.1	79.6-84.6	79.6-84.6	79.6-84.6	79.6-84.6	61.7-66.7	61.7-66.7
Laboratory Sample ID(s)						UE15023-008	UI19006-009	UL05055-004	UC02020-008	UE15023-007	UI19006-012	UL05055-002	UC02020-003	UE15023-009	UI12010-013	UK21036-008	UC02020-002	UE15023-011
Sample Date						05/14/2019	09/17/2019	12/02/2019	03/01/2019	05/14/2019	09/17/2019	12/02/2019	02/28/2019	05/15/2019	09/11/2019	11/19/2019	02/28/2019	05/15/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0074	<0.0073	<0.0077	<0.0073	<0.0072	<0.0076	<0.0074	<0.0074	<0.0071	<0.0077	<0.007	<0.0076	<0.0074
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.012	0.011	0.018	0.017	0.01	0.0082	0.012	<0.0037	<0.0036	<0.0038	<0.0035	0.0044	0.0046
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0074	<0.0073	<0.0077	<0.0073	<0.0072	<0.0076	<0.0074	<0.0074	<0.0071	<0.0077	<0.007	<0.0076	<0.0074
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.0069	0.007	0.0082	0.0083	0.0045	0.0045	0.0057	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.0047	0.0045	0.0054	0.0046	<0.0036	<0.0038	0.0039	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.0045	<0.0037	0.005	0.004	<0.0036	<0.0038	0.0049	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.01	0.0076	0.012	0.0089	0.0056	0.0068	0.0092	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.014	0.01	0.015	0.012	0.0091	0.011	0.014	0.0022	<0.0018	<0.0019	<0.0017	0.006	0.0055
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***0.051***	***0.039***	***0.042***	***0.11***	***0.071***	***0.057***	***0.061***	<0.0037	<0.0036	<0.0038	<0.0035	***0.014***	0.011
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.065	0.049	0.057	***0.12***	***0.08***	0.068	***0.075***	0.0022	ND	ND	ND	0.02	0.017
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.0086	0.0061	0.0087	0.007	0.0043	0.0047	0.0067	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0038	<0.0037	<0.0036	<0.0038	<0.0037	<0.0037	<0.0036	<0.0038	<0.0035	<0.0038	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.11	0.085	0.11	0.17	0.1	0.092	0.12	0.0022	ND	ND	ND	0.024	0.021

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-26M	HS-MW-26M	HS-MW-26S	HS-MW-26S	HS-MW-26S	HS-MW-26S	HS-MW-26S	HS-MW-27A	HS-MW-27B	HS-MW-27B	HS-MW-27C	HS-MW-27C	HS-MW-27D
Sample Name						HS-GW-MW26M	HS-GW-MW-26M	HS-MW-26S	HS-GW-MW26S	HS-GW-MW26S	HS-GW-MW26S DUP	HS-GW-MW-26S	HS-GW-MW-27A	HS-GW-MW27B	HS-GW-MW-27B	HS-GW-MW27C	HS-GW-MW-27C	HS-GW-MW27D
Well Screen Interval (Feet below ground surface)						61.7-66.7	61.7-66.7	25.8-30.8	25.8-30.8	25.8-30.8	25.8-30.8	25.8-30.8	21.6-26.2	35.4-38	35.4-38	41.3-45.9	41.3-45.9	52.4-56.4
Laboratory Sample ID(s)						UI12010-017	UK21036-005	UC02020-001	UE15023-010	UI12010-015	UI12010-018	UK21036-001	UK19008-001	UI12010-002	UK19008-003	UI12010-001	UK19008-002	UI12010-003
Sample Date						09/11/2019	11/19/2019	02/28/2019	05/15/2019	09/11/2019	09/11/2019	11/19/2019	11/18/2019	09/09/2019	11/18/2019	09/09/2019	11/18/2019	09/09/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.0073	<0.0073	<0.0073	<0.0076	<0.0073	<0.0073	<0.0077	<0.0068	<0.0075	<0.0072	<0.0075	<0.0068
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.0049	0.0053	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	0.004	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.0073	<0.0073	<0.0073	<0.0076	<0.0073	<0.0073	<0.0077	<0.0068	<0.0075	<0.0072	<0.0075	<0.0068
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	0.0056	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	0.0067	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	0.0069	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.0054	0.0052	<0.0018	<0.0018	<0.0019	<0.0018	<0.0018	0.0051	<0.0017	<0.0019	<0.0018	<0.0019	<0.0017
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***0.016***	***0.017***	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.021	0.022	ND	ND	ND	ND	ND	0.0051	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0037	<0.0036	<0.0036	<0.0038	<0.0037	<0.0037	<0.0038	<0.0034	<0.0037	<0.0036	<0.0038	<0.0034
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.026	0.028	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-27D	HS-MW-27E	HS-MW-27E	HS-MW-28A	HS-MW-28A	HS-MW-28B	HS-MW-28B	HS-MW-28C	HS-MW-28C	HS-MW-28D	HS-MW-28D	HS-MW-28D	HS-MW-28E
Sample Name						HS-GW-MW-27D	HS-GW-MW27E	HS-GW-MW-27E	HS-GW-MW28A	HS-GW-MW-28A	HS-GW-MW28B	HS-GW-MW-28B	HS-GW-MW28C	HS-GW-MW-28C	HS-GW-MW28D	HS-GW-MW-28D	HS-GW-MW-28D DUP	HS-GW-MW28E
Well Screen Interval (Feet below ground surface)						52.4-56.4	58.5-62.5	58.5-62.5	39.1-43.7	39.1-43.7	43.3-47.9	43.3-47.9	49.2-53.8	49.2-53.8	62.2-66.8	62.2-66.8	62.2-66.8	82.7-87.3
Laboratory Sample ID(s)						UK21036-002	UI12010-004	UK19008-004	UI19006-013	UK21036-018	UI19006-005	UK21036-019	UI19006-001	UK21036-016	UI19006-010	UK21036-014	UK21036-015	UI19006-011
Sample Date						11/19/2019	09/09/2019	11/18/2019	09/17/2019	11/21/2019	09/16/2019	11/21/2019	09/16/2019	11/21/2019	09/17/2019	11/21/2019	11/21/2019	09/17/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	0.011	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0076	<0.0073	<0.0074	<0.0072	<0.0072	<0.0074	<0.0075	<0.0076	<0.0071	<0.007	<0.0072	<0.0074	<0.007
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0038	<0.0036	<0.0037	0.0063	0.0047	0.0083	0.0092	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0076	<0.0073	<0.0074	<0.0072	<0.0072	<0.0074	<0.0075	<0.0076	<0.0071	<0.007	<0.0072	<0.0074	<0.007
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0038	0.01	0.0074	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0038	0.0037	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0019	0.0031	0.0025	<0.0018	<0.0018	0.0023	<0.0019	<0.0019	<0.0018	<0.0017	<0.0018	<0.0018	<0.0018
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	0.0031	0.0025	ND	ND	0.0023	ND	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0038	<0.0036	<0.0037	<0.0036	<0.0036	<0.0037	<0.0038	<0.0038	<0.0035	<0.0035	<0.0036	<0.0037	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	0.017	0.0099	0.0063	0.0047	0.011	0.0092	0.011	ND	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-28E	HS-MW-29A	HS-MW-29B	HS-MW-29C	HS-MW-29D	HS-MW-30A	HS-MW-30A	HS-MW-30A	HS-MW-30A	HS-MW-30B	HS-MW-30B	HS-MW-30B	HS-MW-30C
Sample Name						HS-GW-MW-28E	HS-GW-MW-29A	HS-GW-MW-29B	HS-GW-MW-29C	HS-GW-MW-29D	HS-GW-MW30A	HS-GW-MW30A	HS-GW-MW-30A	HS-GW-MW-30A DUP	HS-GW-MW30B	HS-GW-MW30B	HS-GW-MW-30B	HS-GW-MW30C
Well Screen Interval (Feet below ground surface)						82.7-87.3	3.5-13.5	16.8-21.8	27.2-32.2	37.1-42.1	46.9-51.5	46.9-51.5	46.9-51.5	46.9-51.5	51.5-56.1	51.5-56.1	51.5-56.1	77.4-82
Laboratory Sample ID(s)						UK21036-017	UK19008-006	UK21036-003	UK21036-004	UK19008-005	UG03026-005	UI19006-014	UK19008-010	UK19008-011	UG03026-007	UI21016-001	UK19008-014	UG06001-001
Sample Date						11/21/2019	11/18/2019	11/19/2019	11/19/2019	11/18/2019	07/02/2019	09/17/2019	11/20/2019	11/20/2019	07/02/2019	09/19/2019	11/20/2019	07/03/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.007	<0.0069	<0.007	<0.007	<0.0071	<0.0069	<0.0071	<0.0084	<0.0072	<0.0075	<0.007	<0.0074
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0036	0.018	0.024	0.011	0.0035	0.0061	0.0068	0.0072	0.0069	0.0071	0.0074	0.0073	0.0057
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.01	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.007	<0.0069	<0.007	<0.007	<0.0071	<0.0069	<0.0071	<0.0084	<0.0072	<0.0075	<0.007	<0.0074
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.0056	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.025	<0.0034	<0.0035	<0.0035	0.0038	<0.0035	<0.0035	<0.0042	0.0038	<0.0038	0.0038	<0.0037
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.01	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.0064	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.017	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0018	0.036	<0.0017	<0.0018	<0.0018	0.0033	0.0025	0.003	0.0027	0.0064	0.0035	0.0041	<0.0018
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0036	***0.32***	0.004	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	***0.36***	0.004	ND	ND	0.0033	0.0025	0.003	0.0027	0.0064	0.0035	0.0041	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0036	0.01	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0035	<0.0034	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0042	<0.0036	<0.0038	<0.0035	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	0.46	0.028	0.011	0.0035	0.013	0.0093	0.01	0.0096	0.017	0.011	0.015	0.0057

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-30C	HS-MW-30C	HS-MW-30D	HS-MW-30D	HS-MW-30D	HS-MW-30E	HS-MW-30E	HS-MW-30E	HS-MW-31A	HS-MW-31A	HS-MW-31A	HS-MW-31B	HS-MW-31B
Sample Name						HS-GW-MW30C	HS-GW-MW30C	HS-GW-MW30D	HS-GW-MW30D	HS-GW-MW30D	HS-GW-MW30E	HS-GW-MW30E	HS-GW-MW30E	HS-GW-MW31A	HS-GW-MW31A	HS-GW-MW31A	HS-GW-MW31B	HS-GW-MW31B
Well Screen Interval (Feet below ground surface)						77.4-82	77.4-82	112.7-117.3	112.7-117.3	112.7-117.3	123.2-127.7	123.2-127.7	123.2-127.7	17.1-21.6	17.1-21.6	17.1-21.6	26-30.5	26-30.5
Laboratory Sample ID(s)						UI19006-015	UK21036-026	UG03026-008	UI21016-002	UK21036-024	UG03026-006	UI19006-016	UK21036-025	UG03026-003	UI13033-001	UK21036-006	UG03026-001	UI13033-004
Sample Date						09/17/2019	11/22/2019	07/02/2019	09/19/2019	11/22/2019	07/02/2019	09/17/2019	11/22/2019	07/01/2019	09/12/2019	11/19/2019	07/01/2019	09/12/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	0.0047	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0069	<0.0069	<0.0071	<0.007	<0.0071	<0.0074	<0.0069	<0.0077	<0.007	<0.007	<0.0073	<0.0073	<0.0075
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.0055	0.0055	0.0048	0.0053	0.0056	0.0055	0.0063	0.0059	0.011	0.0055	0.0068	0.014	0.012
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0069	<0.0069	<0.0071	<0.007	<0.0071	<0.0074	<0.0069	<0.0077	<0.007	<0.007	<0.0073	<0.0073	<0.0075
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	0.0041	0.0049
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	0.0071	0.0075	0.0053	0.011	0.011
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	0.006	0.0042
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	0.0038	<0.0037
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	0.0043	0.0056	0.0082
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0017	<0.0017	<0.0018	<0.0018	<0.0018	<0.0018	<0.0017	<0.0019	0.0035	0.0038	0.0032	0.022	0.012
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	0.0059	0.005
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	0.0035	0.0038	0.0032	0.028	0.017
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	0.0051	0.0059
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0034	<0.0036	<0.0035	<0.0036	<0.0037	<0.0034	<0.0038	<0.0035	<0.0035	<0.0036	<0.0036	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.0055	0.0055	0.0048	0.0053	0.0056	0.0055	0.011	0.0059	0.022	0.017	0.02	0.078	0.063

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-31B	HS-MW-31C	HS-MW-31C	HS-MW-31C	HS-MW-31D	HS-MW-31D	HS-MW-31D	HS-MW-31E	HS-MW-31E	HS-MW-31E	HS-MW-31E	HS-MW-32A	HS-MW-32A
Sample Name						HS-GW-MW31B	HS-GW-MW31C	HS-GW-MW31C	HS-GW-MW31C	HS-GW-MW31D	HS-GW-MW31D	HS-GW-MW31D	HS-GW-MW31E	HS-GW-MW31E DUP	HS-GW-MW31E	HS-GW-MW31E	HS-GW-MW32A	HS-GW-MW32A
Well Screen Interval (Feet below ground surface)						26-30.5	41.3-45.8	41.3-45.8	41.3-45.8	48.8-53.4	48.8-53.4	48.8-53.4	64.1-68.7	64.1-68.7	64.1-68.7	64.1-68.7	60.9-65.5	60.9-65.5
Laboratory Sample ID(s)						UK19008-013	UG03026-004	UI13033-003	UK21036-007	UG03026-002	UI13033-002	UK21036-027	UG06001-002	UG06001-003	UI13033-005	UK19008-009	UE25011-005	UI07020-001
Sample Date						11/20/2019	07/01/2019	09/12/2019	11/19/2019	07/01/2019	09/12/2019	11/22/2019	07/03/2019	07/03/2019	09/12/2019	11/20/2019	05/24/2019	09/06/2019
Parameter (µg/L)																		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0073	<0.0075	<0.007	<0.0073	<0.0072	<0.0069	<0.0075	<0.0075	<0.0072	<0.0068	<0.007	<0.0073	<0.0074
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	0.012	0.018	0.016	0.015	0.012	0.011	0.0076	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0073	<0.0075	<0.007	<0.0073	<0.0072	<0.0069	<0.0075	<0.0075	<0.0072	<0.0068	<0.007	<0.0073	<0.0074
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.0043	0.005	0.0052	0.0048	<0.0036	0.0035	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.013	0.011	0.0095	0.01	0.0082	0.0069	0.0053	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.0072	0.0051	0.0048	0.0047	0.0042	0.0035	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.018	<0.0037	<0.0035	<0.0036	0.0037	0.0038	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.017	0.006	0.0063	0.0073	0.0074	0.0064	0.0041	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	0.052	0.01	0.0086	0.0079	0.0073	0.0075	0.0074	<0.0019	<0.0018	<0.0017	<0.0018	<0.0018	<0.0019
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	***0.014***	0.0077	0.0059	0.0052	0.0044	0.0053	0.007	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	0.066	0.018	0.015	0.013	0.012	0.013	0.014	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.014	0.004	0.0045	0.0057	0.006	0.0048	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0037	<0.0035	<0.0036	<0.0036	<0.0034	<0.0037	<0.0037	<0.0036	<0.0034	<0.0035	<0.0036	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.15	0.067	0.061	0.061	0.053	0.053	0.031	ND	ND	ND	ND	ND	ND

TABLE 6
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS (HSDS, 2019)
Areas 11/12
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water[2]	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface[2]	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation[2]	EGLE Residential Recommended Volatilization to Indoor Air Interim Action Screening Level - Groundwater[3]	U.S. EPA Residential Tap Water Regional Removal Management Levels[4]	HS-MW-32A	HS-MW-32B	HS-MW-32B	HS-MW-32B	HS-MW-32C	HS-MW-32C	HS-MW-32C	HS-MW-32D	HS-MW-32D	HS-MW-32D
Sample Name						HS-GW-MW-32A	HS-GW-MW32B	HS-GW-MW32B	HS-GW-MW32B	HS-GW-MW32C	HS-GW-MW32C	HS-GW-MW32C	HS-GW-MW32D	HS-GW-MW32D	HS-GW-MW32D
Well Screen Interval (Feet below ground surface)						60.9-65.5	79.1-83.7	79.1-83.7	79.1-83.7	108.8-113.4	108.8-113.4	108.8-113.4	142.3-146.9	142.3-146.9	142.3-146.9
Laboratory Sample ID(s)						UK29008-003	UE25011-006	UI07020-003	UK29008-004	UE25011-007	UI07020-002	UK29008-005	UE25011-008	UI07020-004	UK29008-006
Sample Date						11/26/2019	05/24/2019	09/06/2019	11/26/2019	05/24/2019	09/06/2019	11/26/2019	05/24/2019	09/06/2019	11/26/2019
Parameter (µg/L)															
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0068	<0.0074	<0.0069	<0.0069	<0.0076	<0.0071	<0.0074	<0.0074	<0.0069	<0.0071
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0068	<0.0074	<0.0069	<0.0069	<0.0076	<0.0071	<0.0074	<0.0074	<0.0069	<0.0071
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	0.0044	<0.0035
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	ID	NCL	NCL	<0.0017	<0.0018	<0.0017	<0.0017	<0.0019	<0.0018	<0.0019	<0.0018	<0.0017	<0.0018
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NLV	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0034	<0.0037	<0.0035	<0.0035	<0.0038	<0.0036	<0.0037	<0.0037	<0.0035	<0.0035
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	0.0044	ND

TABLE 6 NOTES
Areas 11/12
Plainfield Township, Kent County, MI

NOTES:

1. Concentration and criteria units are micrograms per Liter (µg/L) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits. "ND" indicates the parameters used in the calculation were not detected. "NC" indicates not calculated.
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated June 25, 2018.

   Abbreviations Include:

   "ID" indicates insufficient data to develop criterion.

   "NA" indicates a criterion or value is not available or, in the case of background, not applicable.

   "NCL" indicates no criterion listed in EGLE Table 1.

   "NLV" indicates the substance is not likely to volatilize under most conditions.

   Footnotes Include:

   (A) - The criterion is the State of Michigan drinking water standard.

   (D) - The calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or 1.0E+9 ppb.

   (E) - Criterion is the aesthetic drinking water value.

   (F) - Criterion is based on adverse impacts to plant life and phytotoxicity.

   (G) - Groundwater surface water interface (GSI) criterion depends on the pH or water hardness, or both, of the receiving surface water. EGLE's Footnote (G) GSI/GSIPC Calculation spreadsheet was utilized to calculate GSI criterion presented. The Rogue River is the receiving surface water for the Site. Hardness (220 mg $CaCO_3$/L) and pH (7.5 standard units) used in the calculations were the lowest (most-conservative) of the calculated mean and median of the Rogue River surface water samples collected in Rockford, MI at the former tannery (TA-SW-01, TA-SW-02, TA-SW-03, TA-SW-05, and TA-SW-07) rounded to two significant digits and water hardness or pH for the Rogue River near Rockford published in United States Geological Survey Circular 323, "Water Resources of the Grand Rapids Area, Michigan," Table 1, 1954.

   (L) - Criteria for lead are derived using a biologically based model. The generic residential drinking water criterion of 4µg/L is linked to the generic residential soil direct contact criterion of 400 mg/kg.

   (M) - Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit.

   (N) - The concentrations of all potential sources of nitrate-nitrogen (e.g., ammonia-N, nitrite-N, nitrate-N) in groundwater that is used as a source of drinking water shall not, when added together, exceed the nitrate drinking water criterion of 10,000 ug/L.

   (P) - Amenable cyanide methods or method OIA-1677 shall be used to quantify cyanide concentrations for compliance with all groundwater criteria.

   (S) - Criterion defaults to the hazardous substance-specific water solubility limit.

   (V) - Criterion is the aesthetic drinking water value.

   (W) - Concentrations of trihalomethanes in groundwater shall be added together to determine compliance with the Michigan drinking water standard of 80µg/L.

   (AA) - Use 10,000 µg/L where groundwater enters a structure through the use of a water well, sump or other device. Use 28,000µg/L for all other uses.

   (CC) - The generic GSI criteria are based on the toxicity of unionized ammonia (NH_3); the criteria are 29 µg/L and 53 µg/L for cold water and warm water surface water, respectively. As a result, the GSI criterion shall be compared to the percent of the total ammonia concentration in the groundwater that will become NH_3 in the surface water. This percent NH_3 is a function of the pH and temperature of the receiving surface water and was estimated using the table of this footnote titled "Percent NH_3 in Aqueous Ammonia Solutions for 0-30°C and pH 6-10." This approach uses a default temperature of 68°F and 85°F for cold water and warm water surface water, respectively. The percent conversion factor in the table for cold water (20°C or 68°F) and pH (8.0 standard units) is 3.82%.

   (EE) - The applicable GSI criteria for phosphorus is 1,000 µg/L.

   (FF) - The chloride GSI criteria shall not apply for surface waters of the state that are not designated as a public water supply source.

   (JJ) - Compliance with the drinking water criteria shall require comparing the sum of the PFOA and PFOS groundwater concentrations to the drinking water criterion of 0.07 µg/L.
3. EGLE Residential Groundwater Recommended Volatilization to Indoor Air Interim Action Screening Levels (RIASLs) for were based on EGLE's Toxics Steering Group's "Media-Specific Interim Action Screening Levels," published in August 2017. The EGLE published the RIASLs in August 2017, and recently removed the RIASLs from the EGLE website. The EGLE is reportedly evaluating the RIASLs for appropriate use and applicability. These are included for reference.

   Abbreviations Include:

   "NCL" indicates no value listed in the Media-Specific Interim Action Screening Levels table.

   Footnotes Include:

   (M) - Site-specific criterion may be below target detection limits (TDL).
4. U.S. EPA Residential Tap Water Regional Removal Management Levels (RMLs) were based on "Generic RML Tables," updated November 2018.
5. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria or Media-Specific Interim Action Screening Levels. U.S. EPA RMLs are provided for reference only and results detected above the EPA RMLs are not bolded or italicized.
6. Abbreviations include:

   "< RL" indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.

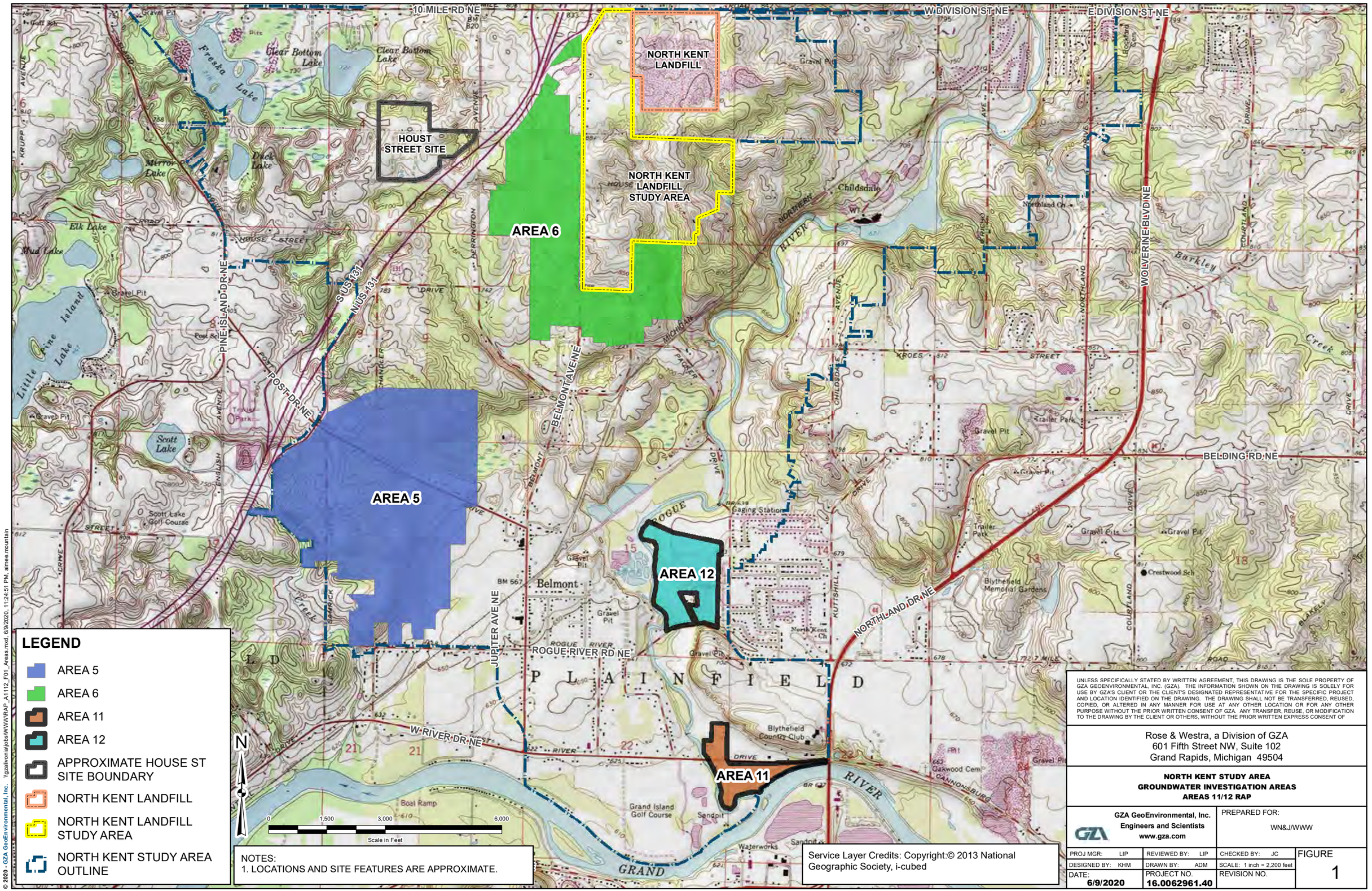
   "DUP" indicates a duplicate sample.

   "B" indicates the parameter was also detected in the method blank.

   "H" indicates the sample wasa analyzed out of holding time.

   "J" indicates the parameter was detected at a concentration greater than the limit of quantitation (LOQ) but less than the detection limit (DL) and the result is estimated.
7. Sample names presented are from Shealy Environmental Services, Inc. laboratory reports. Sample names presented in ALS Environmental lab reports may have minor differences based on laboratory interpretation of the chains of custody.
8. Well screen interval presented is the top of the well screen to the bottom of the well screen in feet below ground surface.

FIGURES



LEGEND

- AREA 5
- AREA 6
- AREA 11
- AREA 12
- APPROXIMATE HOUSE ST SITE BOUNDARY
- NORTH KENT LANDFILL
- NORTH KENT LANDFILL STUDY AREA
- NORTH KENT STUDY AREA OUTLINE

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

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NORTH KENT STUDY AREA
GROUNDWATER INVESTIGATION AREAS
AREAS 11/12 RAP

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE
DESIGNED BY: KHM	DRAWN BY: ADM	SCALE: 1 inch = 2,200 feet	1
DATE: **6/9/2020**	PROJECT NO. **16.0062961.40**	REVISION NO.	

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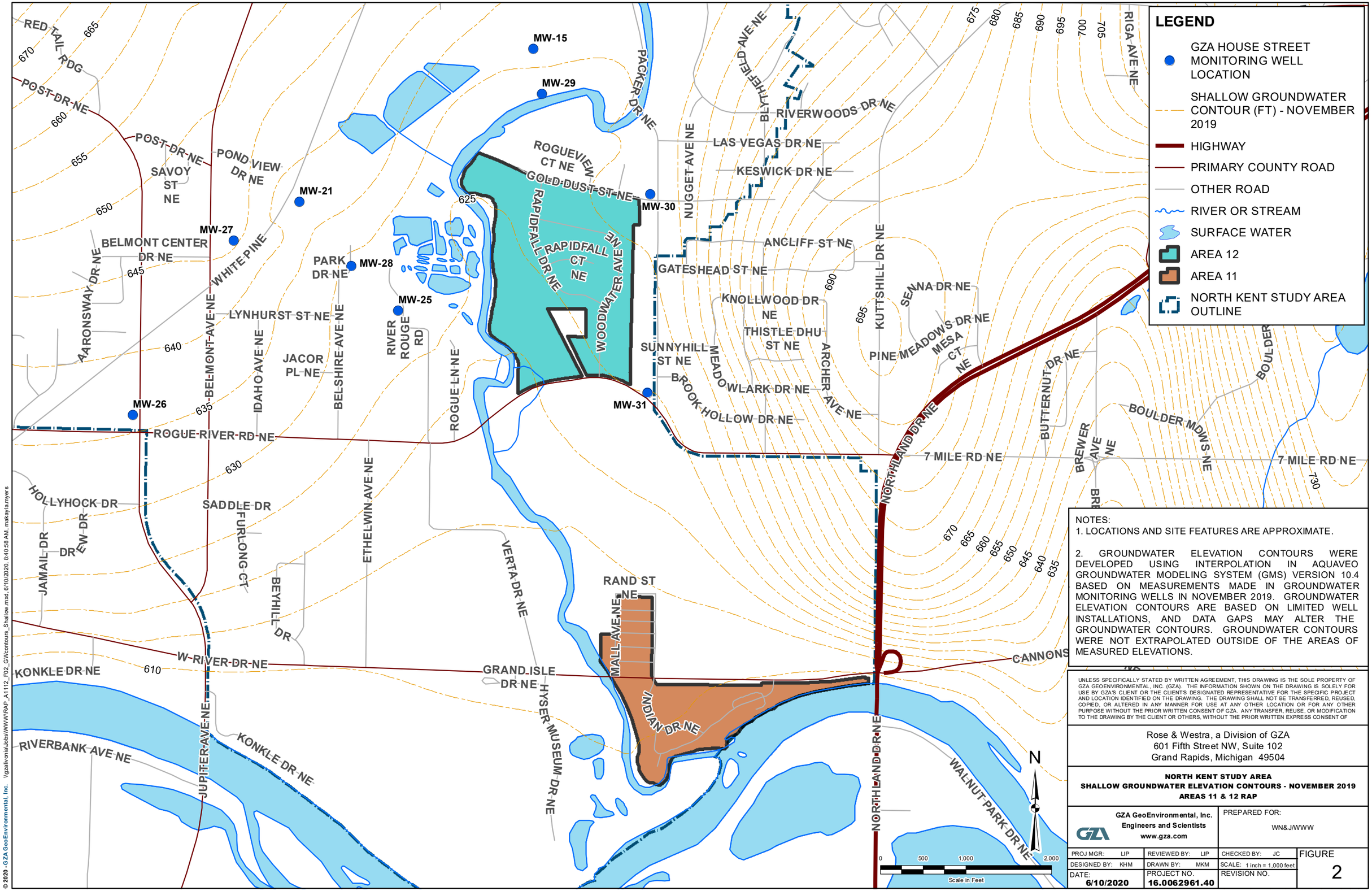

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. GROUNDWATER ELEVATION CONTOURS WERE DEVELOPED USING INTERPOLATION IN AQUAVEO GROUNDWATER MODELING SYSTEM (GMS) VERSION 10.4 BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATION CONTOURS ARE BASED ON LIMITED WELL INSTALLATIONS, AND DATA GAPS MAY ALTER THE GROUNDWATER CONTOURS. GROUNDWATER CONTOURS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREAS OF MEASURED ELEVATIONS.

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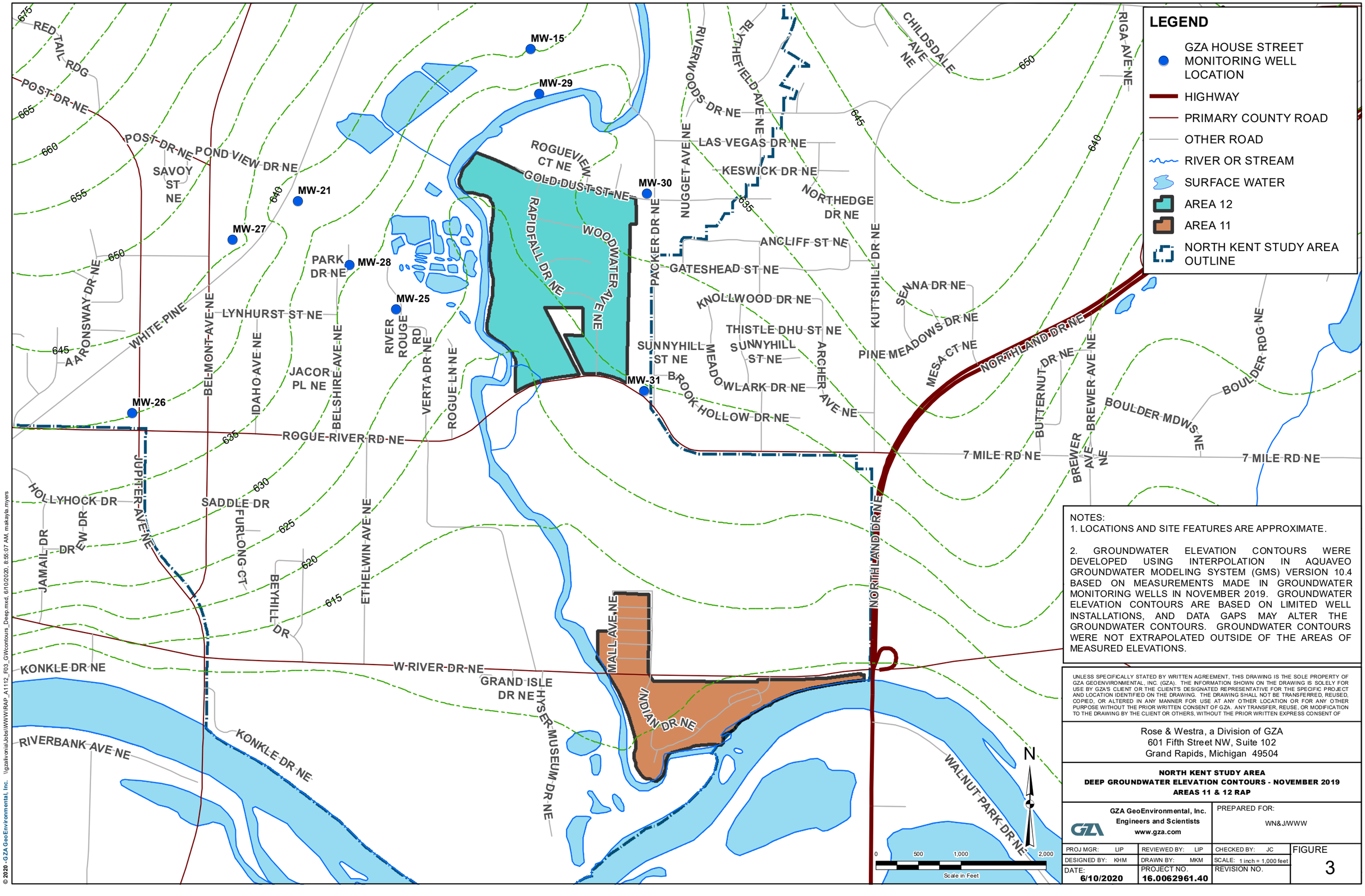
NORTH KENT STUDY AREA
SHALLOW GROUNDWATER ELEVATION CONTOURS - NOVEMBER 2019
AREAS 11 & 12 RAP

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 2
DESIGNED BY: KHM	DRAWN BY: MKM	SCALE: 1 inch = 1,000 feet	
DATE: 6/10/2020	PROJECT NO. 16.0062961.40	REVISION NO.	

 \\gzalivonia\Jobs\WWW\RAP_A1112_F02_GWcontours_Shallow.mxd, 6/10/2020, 8:40:58 AM, makayla.myers



NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. GROUNDWATER ELEVATION CONTOURS WERE DEVELOPED USING INTERPOLATION IN AQUAVEO GROUNDWATER MODELING SYSTEM (GMS) VERSION 10.4 BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATION CONTOURS ARE BASED ON LIMITED WELL INSTALLATIONS, AND DATA GAPS MAY ALTER THE GROUNDWATER CONTOURS. GROUNDWATER CONTOURS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREAS OF MEASURED ELEVATIONS.

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NORTH KENT STUDY AREA
DEEP GROUNDWATER ELEVATION CONTOURS - NOVEMBER 2019
AREAS 11 & 12 RAP

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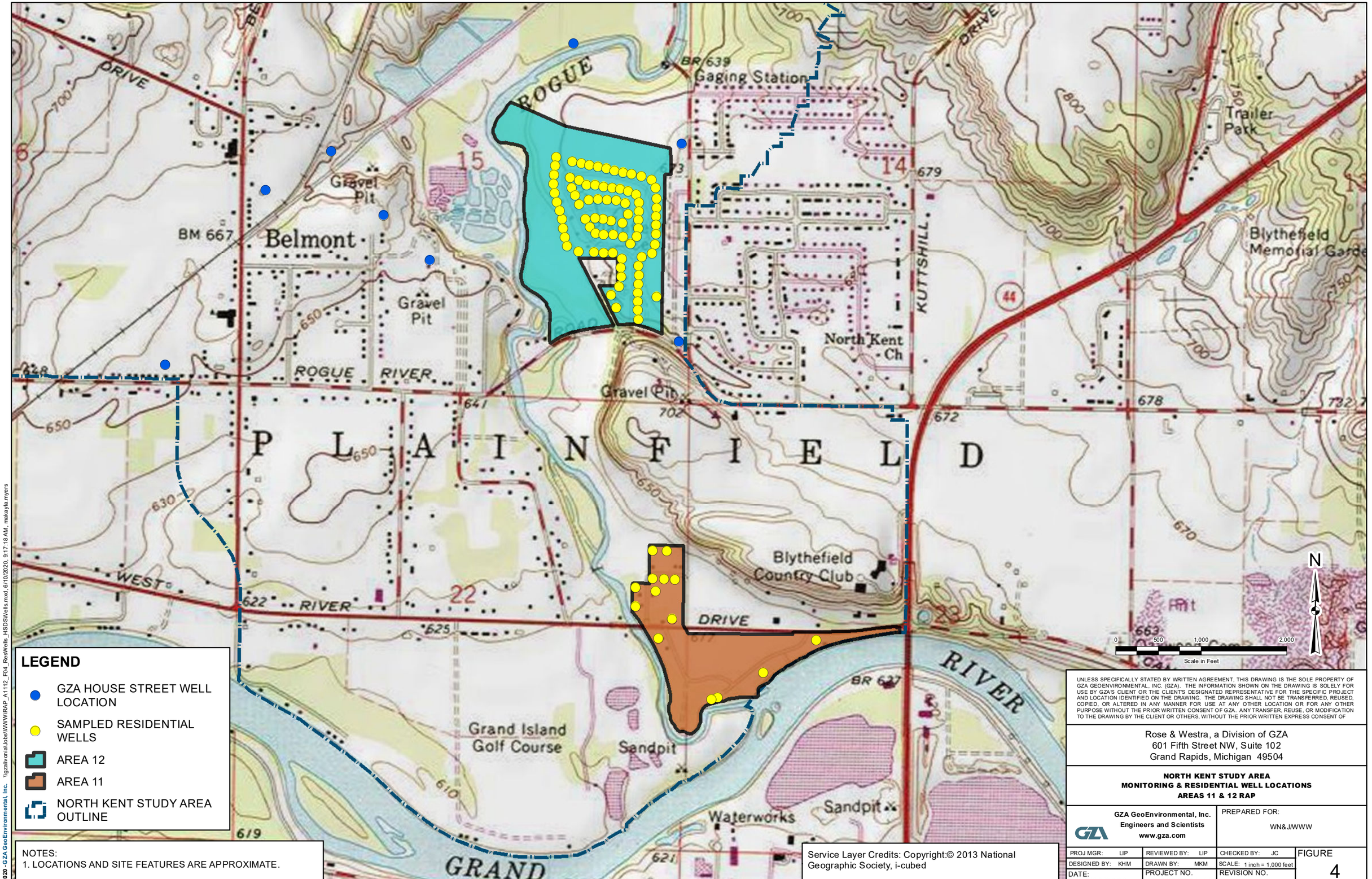
PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 3
DESIGNED BY: KHM	DRAWN BY: MKM	SCALE: 1 inch = 1,000 feet	
DATE: 6/10/2020	PROJECT NO. 16.0062961.40	REVISION NO.	



LEGEND

- GZA HOUSE STREET WELL LOCATION
- SAMPLED RESIDENTIAL WELLS
- AREA 12
- AREA 11
- NORTH KENT STUDY AREA OUTLINE

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

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NORTH KENT STUDY AREA
MONITORING & RESIDENTIAL WELL LOCATIONS
AREAS 11 & 12 RAP

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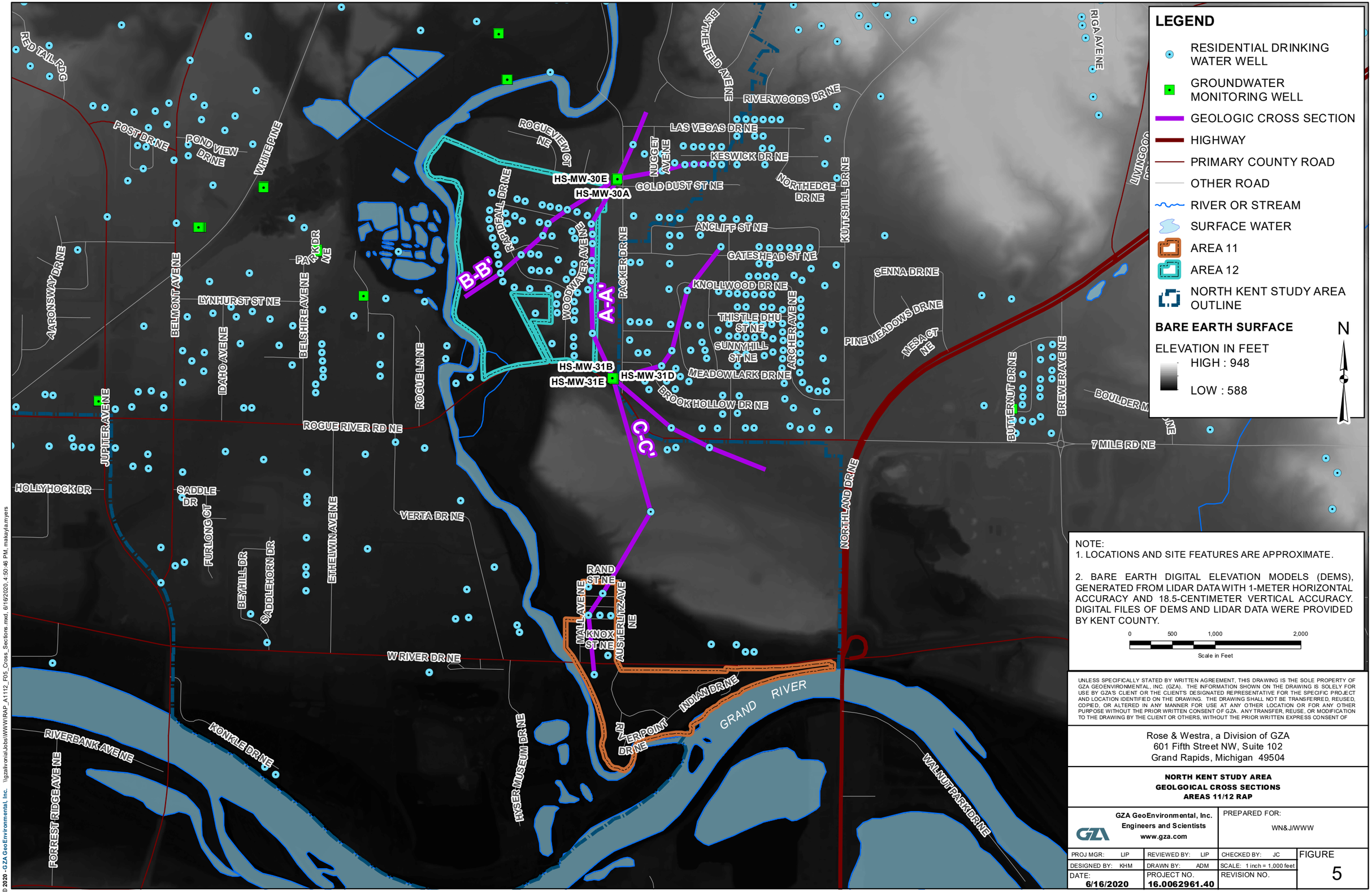
PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 4
DESIGNED BY: KHM	DRAWN BY: MKM	SCALE: 1 inch = 1,000 feet	
DATE: 6/10/2020	PROJECT NO. 16.0062961.40	REVISION NO.	



NOTE:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.

0 500 1,000 2,000
Scale in Feet

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NORTH KENT STUDY AREA
GEOLGOICAL CROSS SECTIONS
AREAS 11/12 RAP

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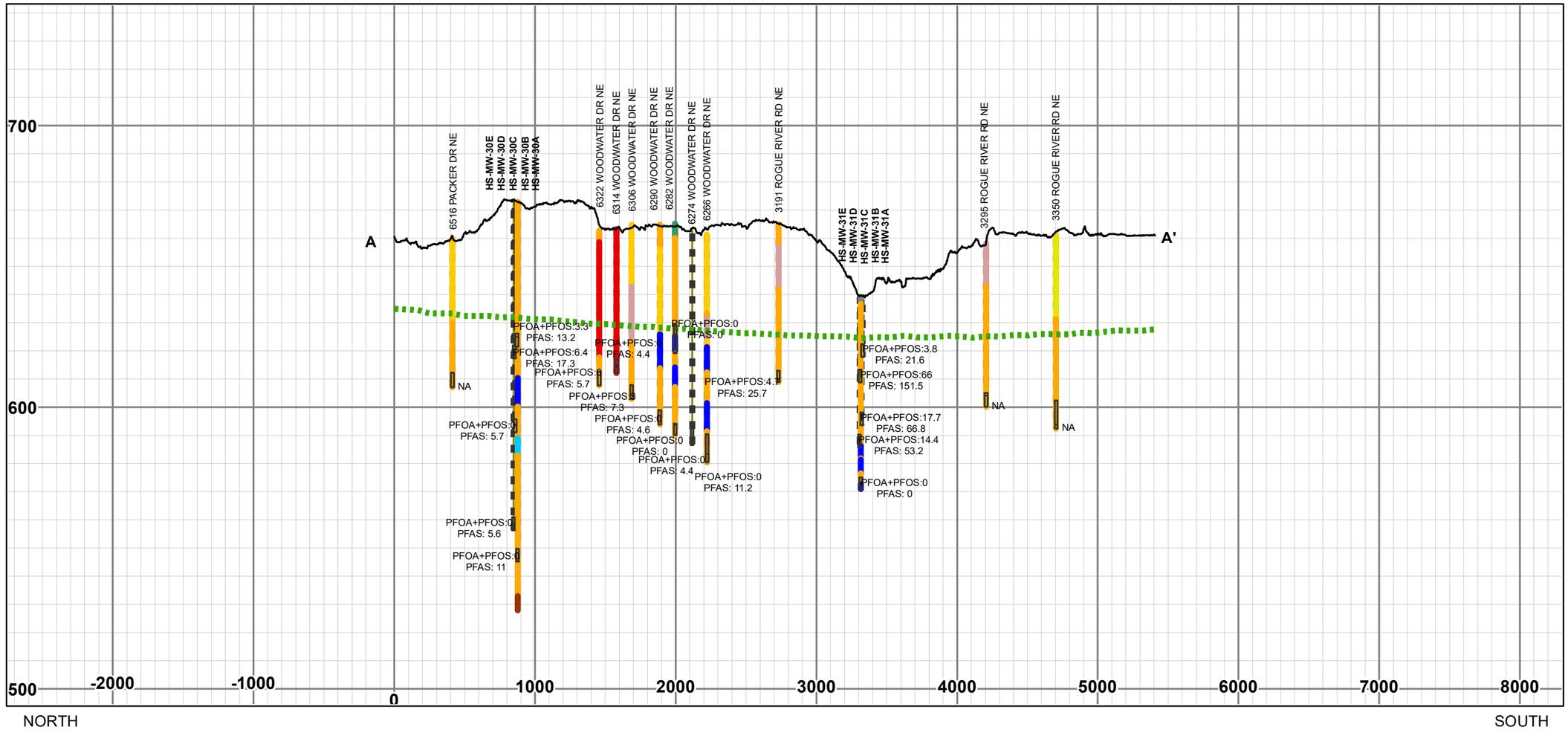
PREPARED FOR:
WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 5
DESIGNED BY: KHM	DRAWN BY: ADM	SCALE: 1 inch = 1,000 feet	
DATE: 6/16/2020	PROJECT NO. 16.0062961.40	REVISION NO.	



CROSS SECTION LEGEND

WELL SCREEN

PFOA+PFOS (ng/L)
PFAS (ng/L)
0 = NOT DETECTED
NA = NOT AVAILABLE

ESTIMATED GROUNDWATER TABLE (11/2019)

GROUND SURFACE

BOREHOLE LITHOLOGY

- GRAVEL
- SAND AND GRAVEL
- SAND
- SAND/GRAVEL WITH CLAY/SILT
- CLAY/SILT WITH SAND/GRAVEL
- SILT
- CLAY AND SILT
- CLAY
- TOP SOIL
- BEDROCK
- NOT AVAILABLE

OVERVIEW MAP LEGEND

- PROPOSED PERIMETER MONITORING WELL
- PROPOSED INVESTIGATION MONITORING WELL
- RESIDENTIAL WATER WELL
- MONITORING WELL
- CROSS SECTION LINE
- HIGHWAY
- PRIMARY COUNTY ROAD
- OTHER ROAD
- RIVER OR STREAM
- SURFACE WATER
- AREA 11
- AREA 12

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

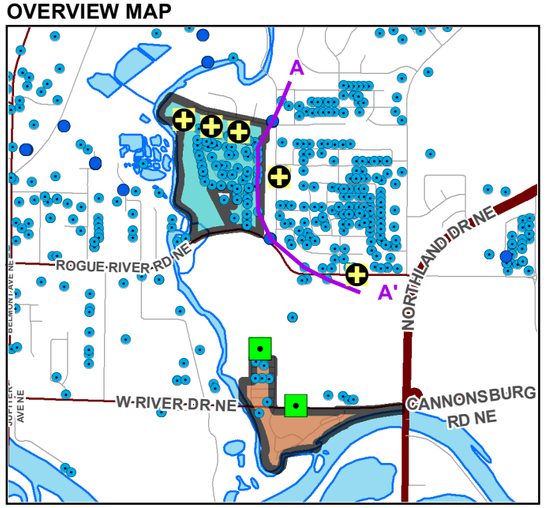
2. GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.

3. ESTIMATED GROUNDWATER TABLE WAS DEVELOPED BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATIONS WERE NOT MEASURED FROM RESIDENTIAL WATER SUPPLY WELLS.

4. WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

5. CONCENTRATIONS OF TOTAL PFAS AND PFOA+PFOS DEPICTED ARE MAXIMUM CONCENTRATIONS DETECTED AT THE SPECIFIED LOCATION.

OVERVIEW MAP



N

0 1,500 3,000 6,000
SCALE IN FEET

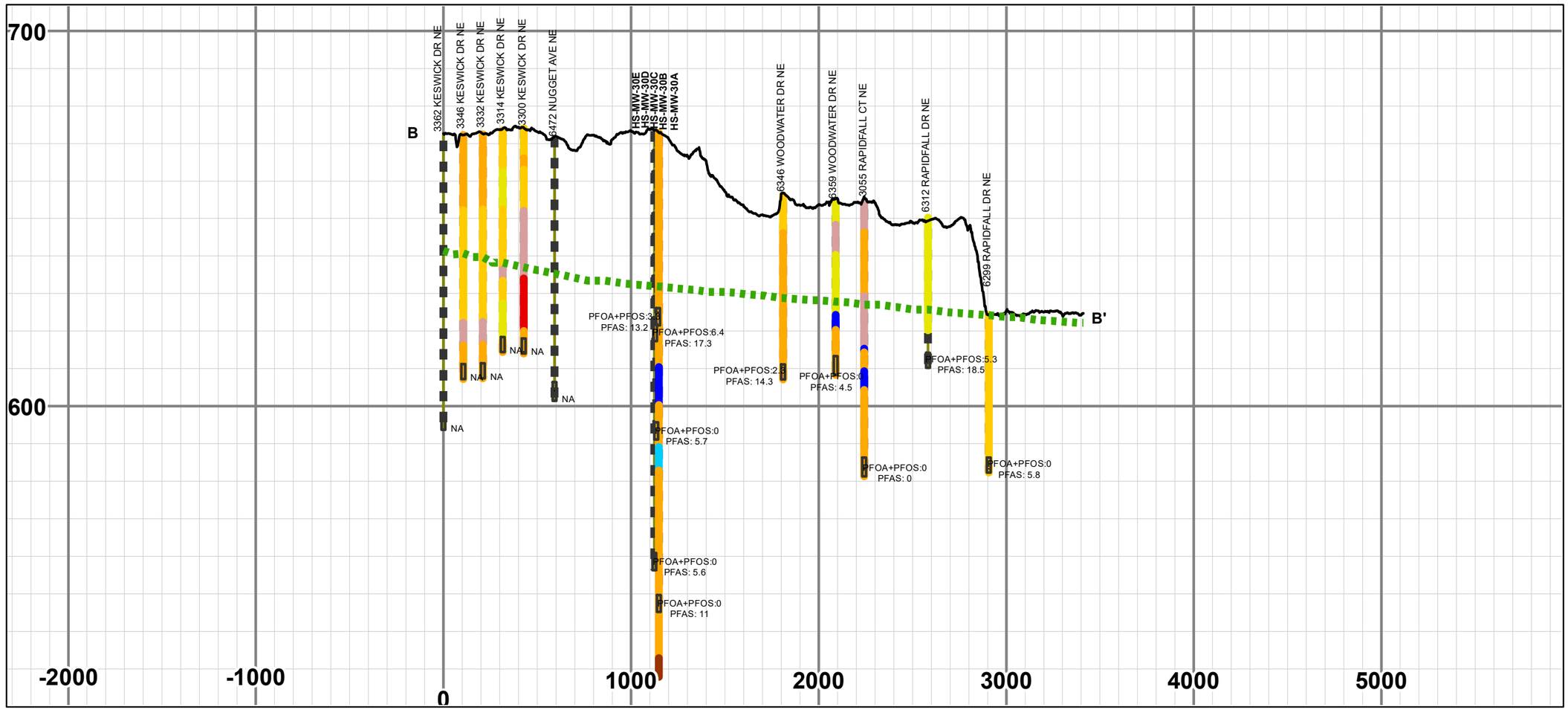
ROSE & WESTRA, A DIVISION OF GZA
601 FIFTH STREET NW, SUITE 102
GRAND RAPIDS, MICHIGAN 49504

NORTH KENT STUDY AREA
GEOLOGICAL CROSS SECTION A-A'
AREAS 11/12 RAP

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: WN&J/WWW

PROJ MGR: LJP	REVIEWED BY: MW	CHECKED BY: LMN	FIGURE 6
DESIGNED BY: JC	DRAWN BY: JC	SCALE: 1:36,000	
DATE: 06/10/2020	PROJECT NO: 16.0062961.40	REVISION NO:	



CROSS SECTION LEGEND

WELL SCREEN

PFOA+PFOS (ng/L)
PFAS (ng/L)
0 = NOT DETECTED
NA = NOT AVAILABLE

ESTIMATED GROUNDWATER TABLE (11/2019)

GROUND SURFACE

BOREHOLE LITHOLOGY

- GRAVEL
- SAND AND
- SAND
- SAND/GRAVEL WITH CLAY/SILT
- CLAY/SILT WITH SAND/GRAVEL
- CLAY AND
- CLAY
- BEDROCK
- NOT

OVERVIEW MAP LEGEND

- PROPOSED PERIMETER MONITORING WELL
- PROPOSED INVESTIGATION MONITORING WELL
- RESIDENTIAL WATER WELL
- MONITORING WELL
- CROSS SECTION LINE
- HIGHWAY
- PRIMARY COUNTY ROAD
- OTHER ROAD
- RIVER OR STREAM
- SURFACE WATER
- AREA 11
- AREA 12

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

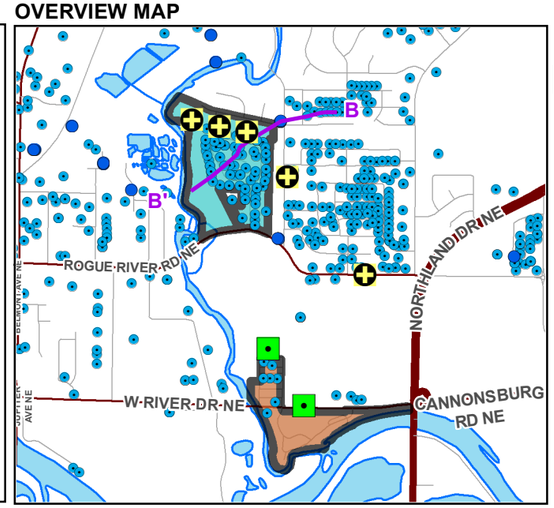
2. GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.

3. ESTIMATED GROUNDWATER TABLE WAS DEVELOPED BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATIONS WERE NOT MEASURED FROM RESIDENTIAL WATER SUPPLY WELLS.

4. WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

5. CONCENTRATIONS OF TOTAL PFAS AND PFOA+PFOS DEPICTED ARE MAXIMUM CONCENTRATIONS DETECTED AT THE SPECIFIED LOCATION.

OVERVIEW MAP



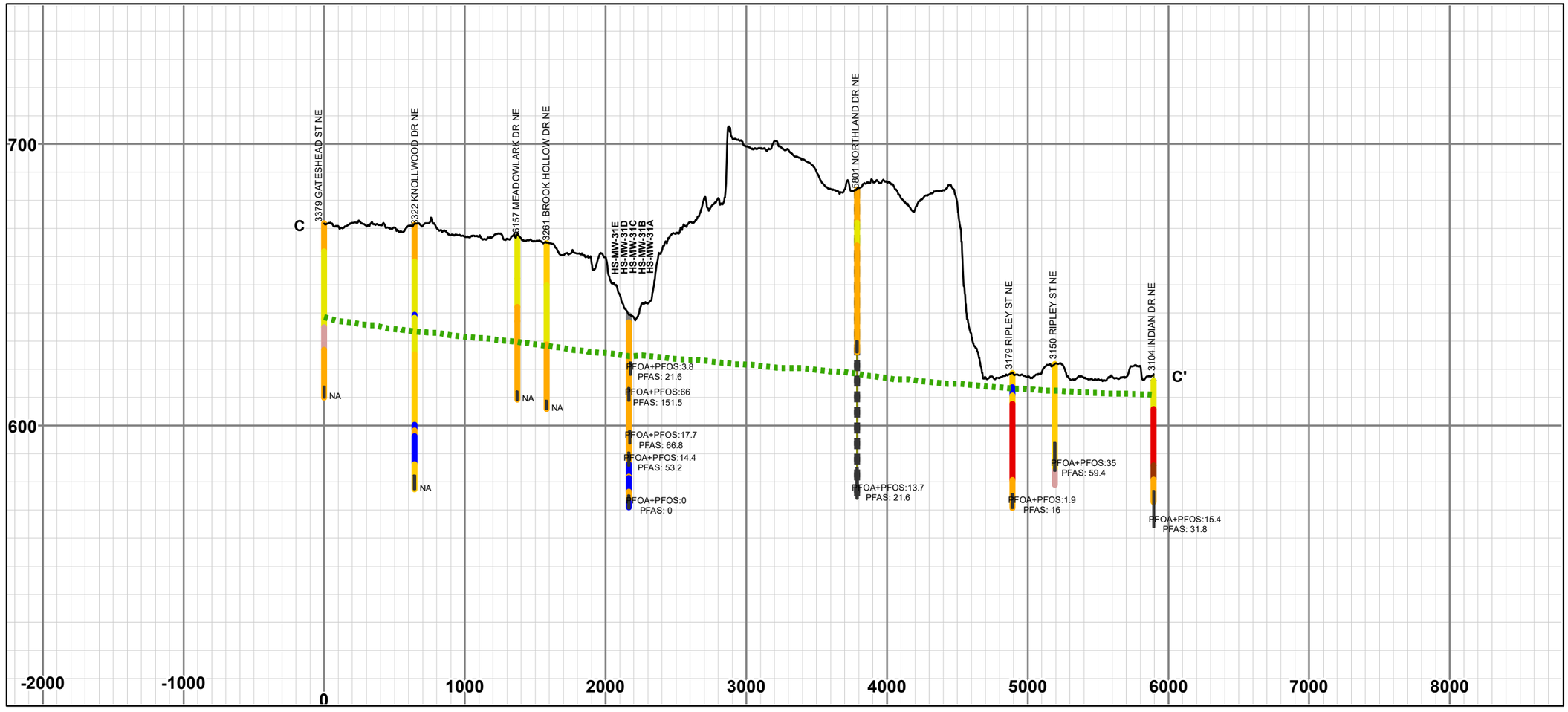
N

0 1,500 3,000 6,000
SCALE IN FEET

ROSE & WESTRA, A DIVISION OF GZA
601 FIFTH STREET NW, SUITE 102
GRAND RAPIDS, MICHIGAN 49504

NORTH KENT STUDY AREA
GEOLOGICAL CROSS SECTION B-B'
AREAS 11/12 RAP

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		WN&J/WWW	
PROJ MGR: LJP	REVIEWED BY: MW	CHECKED BY: LMN	FIGURE 7
DESIGNED BY: JC	DRAWN BY: JC	SCALE: 1:36,000	
DATE: 06/10/2020	PROJECT NO: 16.0062961.40	REVISION NO:	



CROSS SECTION LEGEND

WELL SCREEN

- PFOA+PFOS (ng/L)
  PFAS (ng/L)
  0 = NOT DETECTED
  NA = NOT AVAILABLE
- ESTIMATED GROUNDWATER TABLE (11/2019)
- GROUND SURFACE

BOREHOLE LITHOLOGY

- GRAVEL
- SAND AND GRAVEL
- SAND
- SAND/GRAVEL WITH CLAY/SILT
- CLAY/SILT WITH SAND/GRAVEL
- SILT
- CLAY
- BEDROCK
- NOT AVAILABLE

OVERVIEW MAP LEGEND

- PROPOSED PERIMETER MONITORING WELL
- PROPOSED INVESTIGATION MONITORING WELL
- RESIDENTIAL WATER WELL
- MONITORING WELL
- CROSS SECTION LINE
- HIGHWAY
- PRIMARY COUNTY ROAD
- OTHER ROAD
- RIVER OR STREAM
- SURFACE WATER
- AREA 11
- AREA 12

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

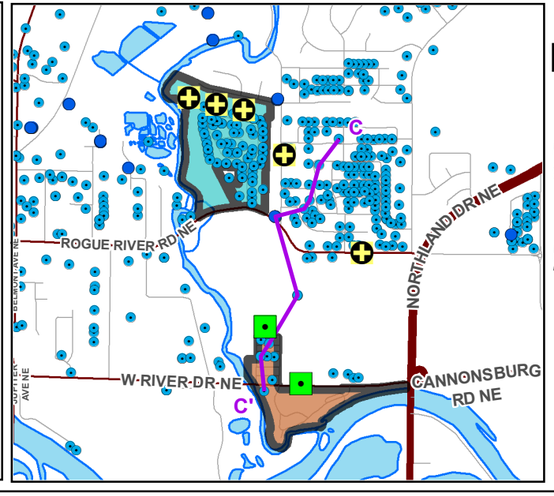
2. GROUND SURFACE ELEVATIONS ARE BASED ON DIGITAL RASTER FILES OF BARE EARTH DIGITAL ELEVATION MODELS (DEMS), GENERATED FROM LIDAR DATA WITH 1-METER HORIZONTAL ACCURACY AND 18.5-CENTIMETER VERTICAL ACCURACY. DIGITAL FILES OF DEMS AND LIDAR DATA WERE PROVIDED BY KENT COUNTY.

3. ESTIMATED GROUNDWATER TABLE WAS DEVELOPED BASED ON MEASUREMENTS MADE IN GROUNDWATER MONITORING WELLS IN NOVEMBER 2019. GROUNDWATER ELEVATIONS WERE NOT MEASURED FROM RESIDENTIAL WATER SUPPLY WELLS.

4. WELL SCREEN ELEVATIONS PROVIDED IN FEET ABOVE MEAN SEA LEVEL, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). RESIDENTIAL WELL SCREEN ELEVATIONS AND BOREHOLE LITHOLOGY ELEVATIONS WERE CALCULATED USING WELL INFORMATION PROVIDED BY THE STATE OF MICHIGAN'S WELLOGIC DATABASE AND GROUND SURFACE ELEVATIONS OF THE CENTER OF THE PPN GENERATED FROM LIDAR DATA PROVIDED BY KENT COUNTY. ELEVATIONS ARE ROUNDED TO THE NEAREST FOOT.

5. CONCENTRATIONS OF TOTAL PFAS AND PFOA+PFOS DEPICTED ARE MAXIMUM CONCENTRATIONS DETECTED AT THE SPECIFIED LOCATION.

OVERVIEW MAP



N

0 1,500 3,000 6,000
SCALE IN FEET

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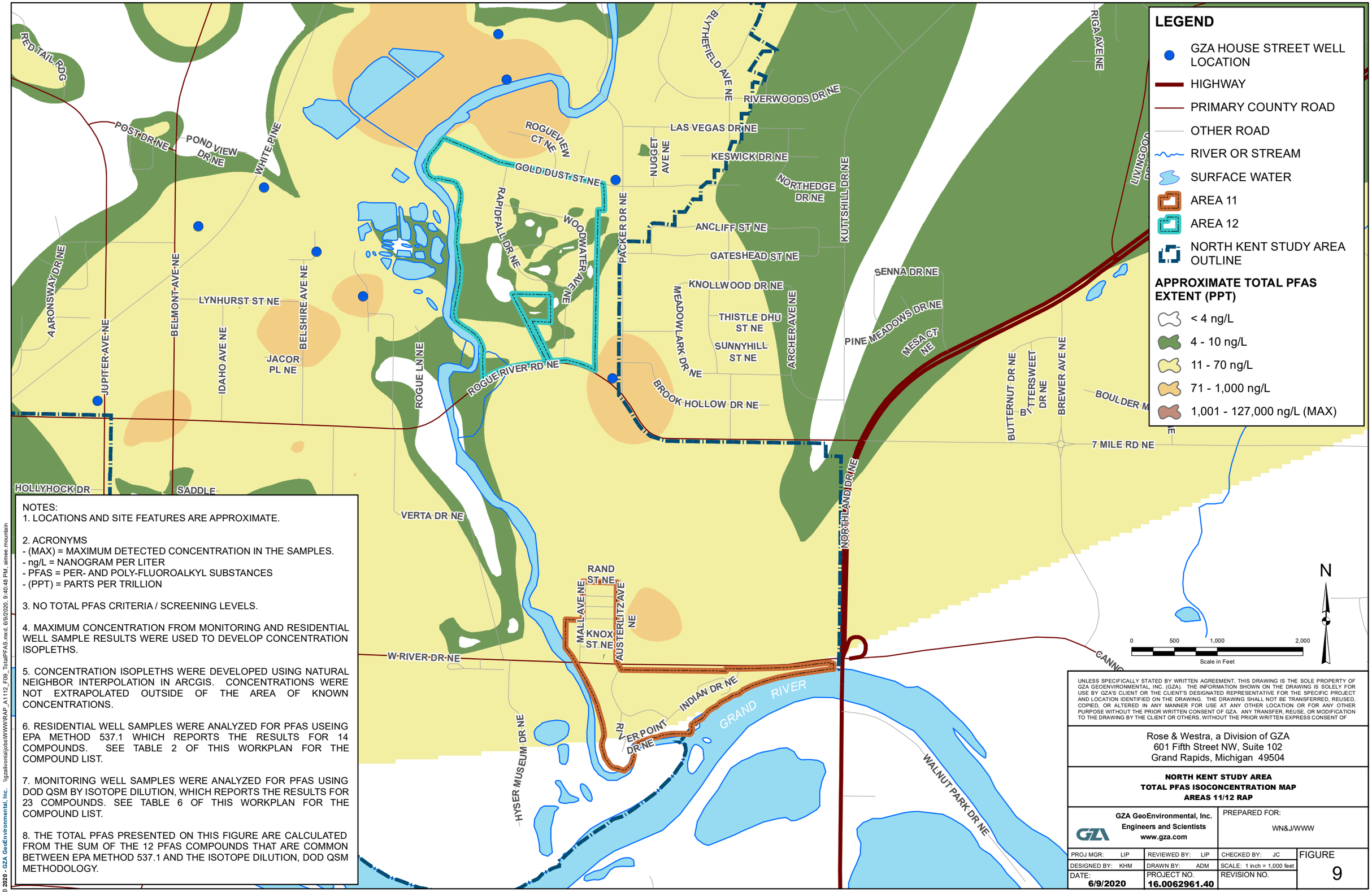
601 FIFTH STREET NW, SUITE 102
GRAND RAPIDS, MICHIGAN 49504

NORTH KENT STUDY AREA
GEOLOGICAL CROSS SECTION C-C'
AREAS 11/12 RAP

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		WN&J/WWW	
PROJ MGR: LJP	REVIEWED BY: MW	CHECKED BY: LMN	FIGURE
DESIGNED BY: JC	DRAWN BY: JC	SCALE: 1:36,000	8
DATE: 06/10/2020	PROJECT NO: 16.0062961.40	REVISION NO:	



LEGEND

- GZA HOUSE STREET WELL LOCATION
- HIGHWAY
- PRIMARY COUNTY ROAD
- OTHER ROAD
- RIVER OR STREAM
- SURFACE WATER
- AREA 11
- AREA 12
- NORTH KENT STUDY AREA OUTLINE

APPROXIMATE TOTAL PFAS EXTENT (PPT)

- < 4 ng/L
- 4 - 10 ng/L
- 11 - 70 ng/L
- 71 - 1,000 ng/L
- 1,001 - 127,000 ng/L (MAX)

N

0 500 1,000 2,000

Scale in Feet

NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. ACRONYMS
- (MAX) = MAXIMUM DETECTED CONCENTRATION IN THE SAMPLES.
- ng/L = NANOGRAM PER LITER
- PFAS = PER- AND POLY-FLUOROALKYL SUBSTANCES
- (PPT) = PARTS PER TRILLION

3. NO TOTAL PFAS CRITERIA / SCREENING LEVELS.

4. MAXIMUM CONCENTRATION FROM MONITORING AND RESIDENTIAL WELL SAMPLE RESULTS WERE USED TO DEVELOP CONCENTRATION ISOPLETHS.

5. CONCENTRATION ISOPLETHS WERE DEVELOPED USING NATURAL NEIGHBOR INTERPOLATION IN ARCGIS. CONCENTRATIONS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREA OF KNOWN CONCENTRATIONS.

6. RESIDENTIAL WELL SAMPLES WERE ANALYZED FOR PFAS USEING EPA METHOD 537.1 WHICH REPORTS THE RESULTS FOR 14 COMPOUNDS. SEE TABLE 2 OF THIS WORKPLAN FOR THE COMPOUND LIST.

7. MONITORING WELL SAMPLES WERE ANALYZED FOR PFAS USING DOD QSM BY ISOTOPE DILUTION, WHICH REPORTS THE RESULTS FOR 23 COMPOUNDS. SEE TABLE 6 OF THIS WORKPLAN FOR THE COMPOUND LIST.

8. THE TOTAL PFAS PRESENTED ON THIS FIGURE ARE CALCULATED FROM THE SUM OF THE 12 PFAS COMPOUNDS THAT ARE COMMON BETWEEN EPA METHOD 537.1 AND THE ISOTOPE DILUTION, DOD QSM METHODOLOGY.

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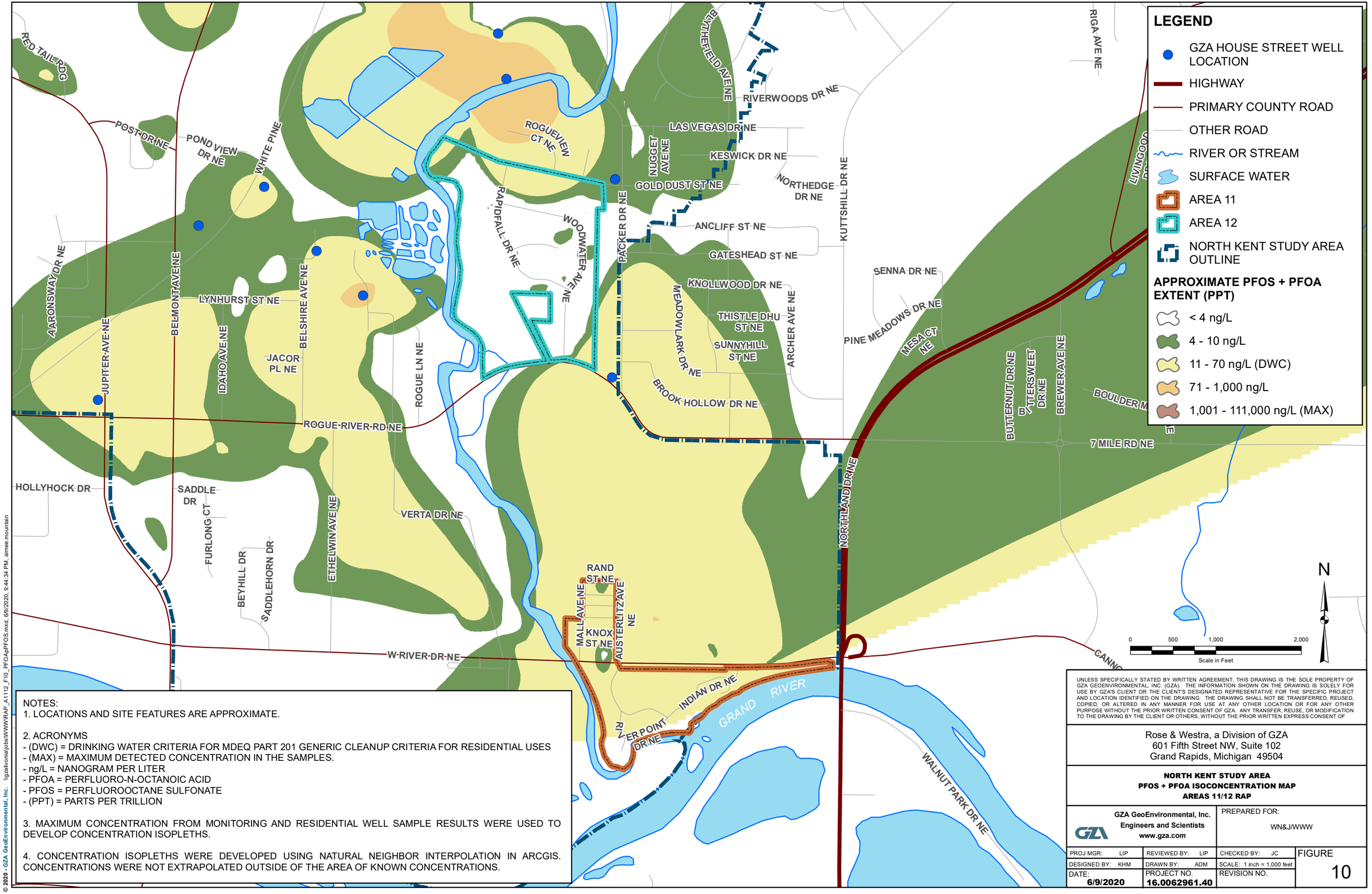
Grand Rapids, Michigan 49504

NORTH KENT STUDY AREA
TOTAL PFAS ISOCONCENTRATION MAP
AREAS 11/12 RAP

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 9
DESIGNED BY: KHM	DRAWN BY: ADM	SCALE: 1 inch = 1,000 feet	
DATE: 6/9/2020	PROJECT NO. 16.0062961.40	REVISION NO.	



NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. ACRONYMS
- (DWC) = DRINKING WATER CRITERIA FOR MDEQ PART 201 GENERIC CLEANUP CRITERIA FOR RESIDENTIAL USES
- (MAX) = MAXIMUM DETECTED CONCENTRATION IN THE SAMPLES.
- ng/L = NANOGRAM PER LITER
- PFOA = PERFLUORO-N-OCTANOIC ACID
- PFOS = PERFLUOROOCTANE SULFONATE
- (PPT) = PARTS PER TRILLION

3. MAXIMUM CONCENTRATION FROM MONITORING AND RESIDENTIAL WELL SAMPLE RESULTS WERE USED TO DEVELOP CONCENTRATION ISOPLETHS.

4. CONCENTRATION ISOPLETHS WERE DEVELOPED USING NATURAL NEIGHBOR INTERPOLATION IN ARCGIS. CONCENTRATIONS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREA OF KNOWN CONCENTRATIONS.

Rose & Westra, a Division of GZA
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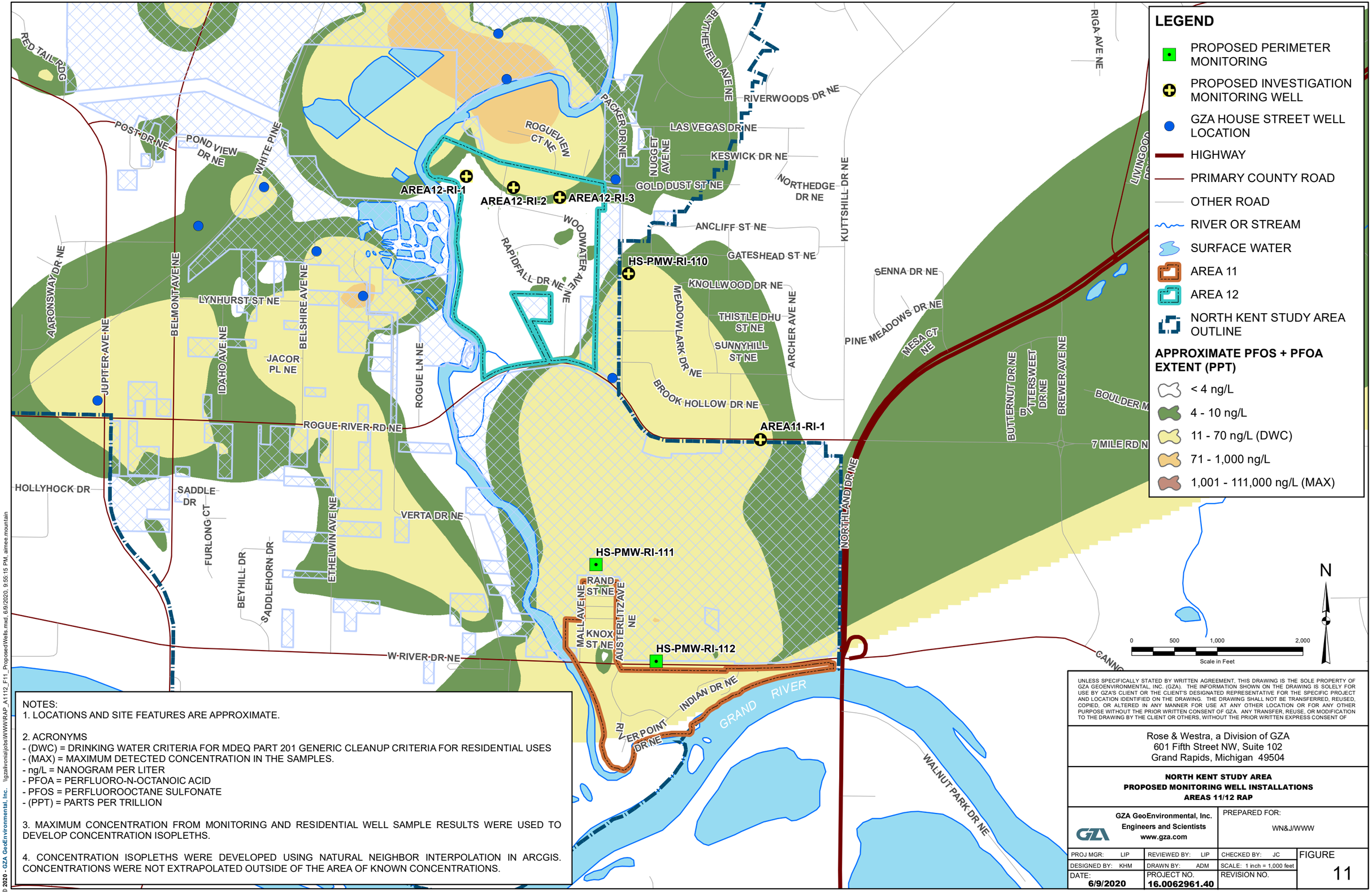
NORTH KENT STUDY AREA
PFOS + PFOA ISOCONCENTRATION MAP
AREAS 11/12 RAP

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 10
DESIGNED BY: KHM	DRAWN BY: ADM	SCALE: 1 inch = 1,000 feet	
DATE: 6/9/2020	PROJECT NO. 16.0062961.40	REVISION NO.	



NOTES:
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

2. ACRONYMS
- (DWC) = DRINKING WATER CRITERIA FOR MDEQ PART 201 GENERIC CLEANUP CRITERIA FOR RESIDENTIAL USES
- (MAX) = MAXIMUM DETECTED CONCENTRATION IN THE SAMPLES.
- ng/L = NANOGRAM PER LITER
- PFOA = PERFLUORO-N-OCTANOIC ACID
- PFOS = PERFLUOROOCTANE SULFONATE
- (PPT) = PARTS PER TRILLION

3. MAXIMUM CONCENTRATION FROM MONITORING AND RESIDENTIAL WELL SAMPLE RESULTS WERE USED TO DEVELOP CONCENTRATION ISOPLETHS.

4. CONCENTRATION ISOPLETHS WERE DEVELOPED USING NATURAL NEIGHBOR INTERPOLATION IN ARCGIS. CONCENTRATIONS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREA OF KNOWN CONCENTRATIONS.

Rose & Westra, a Division of GZA
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NORTH KENT STUDY AREA
PROPOSED MONITORING WELL INSTALLATIONS
AREAS 11/12 RAP

GZA GeoEnvironmental, Inc.
Engineers and Scientists
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PREPARED FOR: WN&J/WWW

PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: JC	FIGURE 11
DESIGNED BY: KHM	DRAWN BY: ADM	SCALE: 1 inch = 1,000 feet	
DATE: 6/9/2020	PROJECT NO. 16.0062961.40	REVISION NO.	

APPENDIX A – 2019 GROUNDWATER SAMPLING SUPPLEMENTAL MEMORANDUM

Rose & Westra
A Division of GZA

GEOTECHNICAL
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ECOLOGICAL
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APPENDIX A
2019 GROUNDWATER SAMPLING SUPPLEMENTAL MEMORANDUM

June 18, 2020
File No. 16.0062961.40

PREPARED FOR:
Wolverine World Wide, Inc.
Rockford, Michigan

Rose & Westra, a Division of GZA GeoEnvironmental, Inc.
601 Fifth Street NW | Suite 102 | Grand Rapids, MI 49504
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1.0 INTRODUCTION

Since April 2017, Wolverine has voluntarily and proactively worked with EGLE, the Kent County Health Department (KCHD), and Michigan Department of Health and Human Services (MDHHS) to establish zones for drinking water well testing, provided alternate (bottled) water service, point of use (faucet) water filters, and point of entry (whole house) filter systems. As of December 2019, R&W/GZA has installed monitoring wells at twenty-nine (29) locations totaling eighty-four (84) wells within the House Street Study Area as shown on **Figure 4** of the Draft Areas 11 and 12 Response Activity Plan, North Kent Study Area, submitted to EGLE on June 18, 2020 (Draft Areas 11 and 12 RAP [R&W/GZA, 2020]). Of the 29 locations, seven (7) are located on the HSDS property, one (1) is on the adjoining Michigan Department of Transportation (MDOT) parcel, three (3) are located on the US-131 right-of-way (ROW), and the remaining eighteen (18) are placed within or surrounding the PFAS plume.

2.0 INVESTIGATION METHODOLOGY

2.1 GROUNDWATER INVESTIGATIONS

R&W/GZA retained drilling contractors to perform subsurface exploration and monitoring well installation to continue delineation of the extent of PFOA and PFOS both vertically and laterally in the NKSA. Since 2017, R&W/GZA oversaw the installation of eighty-four (84) groundwater monitoring wells at 29 locations in the HSDS study area. At most of the locations, multi-depth cluster wells were installed. The borings were drilled using either hollow stem auguring or rotosonic techniques. Soil samples were collected and logged every 5 feet. At certain locations VAP groundwater samples were collected every 10 feet in the saturated zone and submitted to an independent laboratory for the PFAS analysis using isotope dilution methodology in accordance with the most recent version of the DoD QSM procedures.

Monitoring well screen intervals were selected based on PFAS VAP sampling results and geological conditions. Each monitoring well was constructed of factory-slotted, 0.010-inch, 5-foot long PVC screen (in a few cases, 10-foot), and flush-threaded well casing. The annular space surrounding the well screen was filled with sand filter pack to approximately 3 feet above the top of the well screen, followed by a one- to one-and-one-half-foot-thick hydrated bentonite seal. The remaining annulus was filled with cement and bentonite grout to approximately 1 foot bgs. The wells were finished with a steel protective casing set in a concrete pad. A locking expansion cap was placed in the top of the PVC casing. The NKSA-wide soil boring logs and well installation logs were included in the GSI RAP (R&W/GZA 2020). Static water level measurements are provided on **Table 4** of the Draft Areas 11 and 12 RAP. See **Figure 4** of the Draft Areas 11 and 12 RAP for the groundwater monitoring well and residential groundwater sampling locations.

Following installation, the newly installed wells were developed to remove sediment from the sand filter pack and well casing. The wells were developed using a 12-volt Mini-Typhoon® submersible pump equipped with dedicated tubing for each well. The pump was decontaminated between wells using a water and Alconox® wash with a water rinse. The wells were developed until the water ran clear. The development water was containerized and staged prior to proper disposal. The tubing and other disposable materials used during the well development were placed in a separate drum and stored for proper disposal.

In addition, surface water level measurement gauges were installed in the following locations in the Rogue River:

- Rockford Dam Seawall;
- East Bridge Street Bridge;

- Rogue River Road Bridge; and
- Jericho Avenue Bridge

The water levels measured from these locations were used in combination with available gaging height data at USGS gaging station, USGS04118500, to evaluate surface water levels in the Rogue River.

2.2 GROUNDWATER SAMPLING METHODS

Groundwater sampling followed the low-flow purging and sampling procedures identified in the project QAPP approved by EGLE in December 2018 (R&W/GZA, 2018). The wells were purged using either a GeoTech Peristaltic Pump or a GeoTech Bladder Pump and control box. Static water levels in the monitoring wells were measured to maintain stabilized drawdowns during purging. Field indicator parameters, temperature, pH, dissolved oxygen, specific conductance, ORP and turbidity, were monitored using a YSI PRO and field turbidity meters in accordance with the low-flow sampling SOP in the project QAPP. Once the field parameters stabilized, a groundwater sample was collected by disconnecting the tubing from the flow-through cell and collecting the sample directly from the tubing.

Groundwater samples were collected in laboratory-supplied sample containers labeled with the well ID, sample time and date, and analytes. The samples were packed in coolers with ice and shipped to the laboratory under chain-of-custody control via overnight express shipping.

As the subsurface exploration and monitoring well installation progressed, the newly installed wells were added to the sampling list in the quarter following their installation and development.

Groundwater sampling was conducted quarterly throughout 2019. See **Table 1** below for sampling dates. The objective of the groundwater sampling was to provide data to evaluate water quality in the newly installed wells relative to historic, spatial, and temporal concentration trends.

Table 1 – Quarterly Groundwater Sampling Event Dates

Quarter	Dates Sampled
Quarter 1	February 26 – March 31
Quarter 2	May 14 – May 30[1]
Quarter 3	September 6 – September 27
Quarter 4	November 18 – December 12

Note:
1. Newly-installed well series 30 and 31 sampled from July 1 through July 3, 2019.

Due to the well installation schedule all 84 wells were not sampled all four quarters. **Table 2**, below, lists the wells that were sampled during Quarter 1 and those that were added during subsequent sampling rounds. Well construction information is provided **Table 3** of the Draft Areas 11 and 12 RAP.

Table 2: House Street Study Area Well Additions

Quarter	Wells Sampled
Quarter 1	HS-MW-1S, HS-MW-1D, HS-MW-2S, HS-MW-3S, HS-MW-4S, HS-MW-5D, HS-MW-5S, HS-MW-6D, HS-MW-6S, HS-MW-7S, HS-MW-8, HS-MW-9D, HS-MW-9M, HS-MW-9S, HS-MW-10D, HS-MW-10M, HS-MW-10S, HS-MW-11D, HS-MW-11M, HS-MW-11S, HS-MW-15D, HS-MW-15M, HS-MW-15S, HS-MW-17D, HS-MW-17M, HS-MW-17S, HS-MW-18D, HS-MW-18S, HS-MW-19D, HS-MW-19S, HS-MW-20D, HS-MW-20M, HS-MW-20S, HS-MW-21D, HS-MW-21M, HS-MW-21S, HS-MW-25D, HS-MW-25S, HS-MW-26D, HS-MW-26M, HS-MW-26S
Quarter 2	Quarter 1 wells plus: HS-MW-30A, HS-MW-30B, HS-MW-30C, HS-MW-30D, HS-MW-30E, HS-MW-31A, HS-MW-31B, HS-MW-31C, HS-MW-31D, HS-MW-31E, HS-MW-32A, HS-MW-32B, HS-MW-32C, HS-MW-32D
Quarter 3	Quarter 1 and Quarter 2 wells plus: HS-MW-23A, HS-MW-23B, HS-MW-23C, HS-MW-23D, HS-MW-27A, HS-MW-27B, HS-MW-27C, HS-MW-27D, HS-MW-27E, HS-MW-28A, HS-MW-28B, HS-MW-28C, HS-MW-28D, HS-MW-28E
Quarter 4	Quarter 1, Quarter 2, and Quarter 3 wells plus: HS-MW-12A, HS-MW-12B, HS-MW-12C, HS-MW-12D, HS-MW-12E, HS-MW-24A, HS-MW-24B, HS-MW-29A, HS-MW-29B, HS-MW-29C, HS-MW-29D

3.0 STUDY AREA SAMPLING RESULTS

Groundwater analytical results for PFAS are provided on **Table 6** of the Draft Areas 11 and 12 RAP. The analytical reports and associated electronic data deliverables were previously provided to EGLE.

4.0 QA/QC

Investigative QA/QC procedures are outlined in the project QAPP approved by EGLE in December 2018 and subsequently revised. Selected data have or will be validated according to performance requirements and the QA/QC limits in Table D.1.1 of the project QAPP. In addition, R&W/GZA consulted the general guidance in the EPA Contract Laboratory Program National Functional Guidance for Organic and Inorganic Superfund Data Review and relevant analytical methods to assess data usability.

In R&W/GZA's opinion, the field and laboratory quality control results indicate that the sampling and analyses performed in generating the data described in this Report were generally consistent with the analytical methods and the project QAPP requirements. The project data are acceptable and suitable for site characterization purposes and consequently can be used for decision-making purposes. The limitations identified by the applied qualifiers should be considered when using the data.

5.0 REFERENCES

R&W/GZA. (2018). Quality Assurance Project Plan, Former Wolverine Tannery, House Street Disposal Area, and Wolven/Jewell Area, Per- and Polyfluoroalkyl Substances Investigation Program. Grand Rapids, MI: R&W/GZA.

R&W/GZA. (2020). Areas 11 and 12 Response Activity Plan, North Kent Study Area. Submitted to EGLE June 18, 2020.

GZA GeoEnvironmental, Inc.