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## WORK PLAN

### House Street Disposal Area Plainfield Township, Kent County, Michigan

948079

July 12, 2019

File No. 16.0062335.52



#### PREPARED FOR:

Wolverine World Wide, Inc.  
Rockford, Michigan

#### Rose & Westra, a Division of GZA GeoEnvironmental, Inc.

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**Submitted Via Email Only**

July 12, 2019  
File No. 16.0062335.52

Mr. Jeffrey Kimble, On-Scene Coordinator (OSC)  
United States Environmental Protection Agency - Region 5  
9311 Groh Road  
Grosse Ile, MI 48135

Re: Work Plan  
House Street Disposal Site, Plainfield Township, Kent County, Michigan

Dear Mr. Kimble:

On behalf of Wolverine World Wide, Inc. (Wolverine), Rose & Westra, a Division of GZA GeoEnvironmental, Inc. (R&W/GZA), has prepared this Work Plan for the former Wolverine House Street Disposal Site in Plainfield Township, Kent County, Michigan. This WP was prepared in response to your letter dated April 29, 2019, which references the EPA Region 5 Unilateral Administrative Order for Removal Actions<sup>1</sup> (UAO) effective February 1, 2018, associated with the Former Wolverine Tannery and House Street Disposal Site and revised according to EPA's June 27, 2019 "Approval with Significant Modifications" letter. This work plan is subject to the same letter referenced in our earlier transmittal.

Very truly yours,

Rose & Westra, A Division of GZA GeoEnvironmental, Inc.

Loretta J. Powers  
Senior Project Manager

Jiangeng (Jim) Cai, P.E.  
Senior Consultant

Mark A. Westra  
Principal

**Attachment**

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1. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Docket No. V-W-18-C-004.



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- FIGURE 2 APPROXIMATE FENCING PLAN
- FIGURE 3 ADDITIONAL SOIL BORINGS, SOUTHWEST AREA
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- ATTACHMENT 3 ESTIMATED PROJECT SCHEDULE

Appendices to the QAPP such as Standard Operating Procedures will be incorporated by reference.



<b>Acronym</b>	<b>Definition</b>
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Constituent of Concern
EGLE	Department of Environment, Great Lakes, and Energy
EPA	United States Environmental Protection Agency
FSP	Field Sampling Plan
GAC	Granular Activated Carbon
GRDCC	MDEQ Part 201 Generic Residential Direct Contact Criteria
GRGCC	MDEQ Part 201 Generic Residential Groundwater Cleanup Criteria
GSI	Groundwater-Surface Water Interface
HASP	Health and Safety Plan
HSDS	House Street Disposal Site
HAZWOPER	Hazardous Waste Operations and Emergency Response
MIOSHA	Michigan Occupational Safety and Health Administration
NREPA	Michigan Natural Resources and Environmental Protection Act
µg/kg	Micrograms per kilograms
mg/l	Milligrams per liter
mil	Millimeter
OSHA	Occupational Safety and Health Administration
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PID	Photo-Ionization Detector
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
R&W/GZA	Rose & Westra, a Division of GZA GeoEnvironmental, Inc.
RCRA	Resource Conservation and Recovery Act
RML	Regional Removal Management Level (EPA)
RRD	Remediation and Redevelopment Division
Site	House Street Site, 1855 House Street NE, Plainfield Township, Michigan
SOP	Standard Operating Procedure
SVOCs	Semi-Volatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
UAO	Unilateral Administrative Order
VOCs	Volatile Organic Compounds
Wolverine	Wolverine World Wide, Inc.
WP	Work Plan
XRF	X-ray fluorescence



## 1.0 INTRODUCTION

On behalf of Wolverine, R&W/GZA) prepared this WP for the HSDS located at 1855 House Street NE, Plainfield Township, Kent County, Michigan (the Site), in response to the EPA's letter dated April 29, 2019 and the UAO<sup>2</sup> effective February 1, 2018, associated with the Former Wolverine Tannery and HSDS. This version is revised in response to EPA's June 27, 2019 "Approval with Significant Modifications" letter.

This WP contains references to ongoing PFAS investigation activities concurrently being performed under EGLE supervision pursuant to Part 201 of the NREPA. These references are included for factual background and context.

## 2.0 SITE BACKGROUND

R&W/GZA conducted an investigation on the Site in 2018; the results of which are summarized in the report *Implementation of 2018 Work Plan Summary Report* dated May 21, 2019 (2019 Report).

The Site encompasses approximately 76 acres in a rural agricultural and residential area of Plainfield Township. The Site was a licensed and regulated disposal facility from the mid-1960s through 1978. Until 1970, the Site received leather tanning waste from Wolverine's Tannery located in Rockford, Michigan. The EGLE RRD files indicate the Site's disposal license expired in 1978, but it appears no waste was disposed after 1970. Prior to Wolverine acquiring the HSDS in 1964 and Michigan's first disposal area licensing statute (PA 87 of 1965), Wolverine and other entities disposed of materials on the HSDS (perhaps as early as the 1940s). Further investigation would be necessary to confirm the exact dates of disposal and the entities responsible for disposal.

During the 2018 investigation, VOCs, SVOCs, metals, general chemistry parameters, and certain PFAS compounds were identified. Waste materials were found to be present at various depths and locations on approximately 26 acres of the HSDS. **Figure 1** is a Site Diagram including the general waste material locations.

## 3.0 CERCLA ACTION ITEMS

This section of the WP summarizes the planned responses to the required action items listed in the April 29, 2019 letter that will be undertaken unless alternative approaches are deemed adequate after evaluation and discussion with EPA. Each subsection references the numbered action item(s) in the April 29, 2019 letter.

### 3.1. HSDS WP

This WP is submitted to fulfill the April 29, 2019 letter Item 1 as it pertains to the HSDS.

### 3.2. HASP

A HASP for the Site as well as a QAPP (August 29, 2018 with revisions) and FSP (May 30, 2018) prepared by R&W/GZA, have already been submitted to EPA. A revised HASP incorporating EPA's proposed excavation activities as well as an Air Monitoring Plan will be submitted to the EPA prior to commencement of any on-Site tasks not included in the previously submitted HASP. The revised HASP and Air Monitoring Plans will fulfill the April 29, 2019 letter Items 2 and 3 as they pertain to the HSDS.

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<sup>2</sup> CERCLA Docket No. V-W-18-C-004



### 3.3. FENCING

Fencing will be placed around portions of the Site depicted on **Figure 2** as a means to satisfy the April 29, 2019 letter Item 9. Areas along the south and west Site boundaries where fencing is already present will be examined and, if needed, will be repaired or replaced. The remaining fencing will be a 6-foot-tall, chain-link fence. The fence will be installed with six gates of sufficient width and construction to provide access for equipment. The locations of the gates are also shown on **Figure 2**. For the areas where the fencing is present near HSDS boundaries, the fence will be constructed essentially on the property line, and a licensed land surveyor will be engaged to stake the boundaries prior to installation.

The fencing will be placed with permanent posts and rails. The posts will be buried at depth below grade to withstand freeze/thaw cycles and installed with concrete. The fencing installation specifications will be provided by a fencing installation contractor.

Clearing and grading will be performed as needed for the fence installation. Efforts will be made in areas with near surface waste materials to not expose the materials during the installation. If soil or waste materials are generated from the installation, it will be containerized for characterization and proper management.

The proposed fencing plan encompasses the majority of the soil and waste material samples collected from the HSDS. Except for nine samples, the fencing encompasses waste material and soil samples that exceed Part 201 GRDCC or other screening levels (except Part 201 GSI criteria). The proposed fence does not enclose nine soil samples at seven boring locations because of the relatively insignificant risk of exposure by trespassers. These include HS-SB-219 and HS-SB-224 [two depths] on the eastern portion of the Site and HS-SB-T6-050, HS-SB-T6-056 [two depths], HS-SB-T6-118, HS-SB-T6-121, and HS-SB-T6-122 within the Consumers Energy powerline easement. Although the soil samples contained arsenic concentrations greater than the Part 201 GRDCC, the detected concentrations are less than the EPA RMLs and the Part 201 non-residential soil direct contact criteria. In addition, the soil samples were at depths ranging from 3 to 12 feet (except one sample which was 2 to 3 feet bgs; HS-SB-T6-056), limiting the possibility of dermal contact or incidental ingestion exposures by trespassers.

Signs will be attached to the fencing approximately every 100 feet. The signs will be 24 inches by 36 inches with the following design/language:



By agreeing to this language, Wolverine is not agreeing that there is any “hazardous waste” at the site as defined in federal and state law. Wolverine reserves the right to discuss this further with EPA.



### 3.4. SOUTHWEST INVESTIGATION

Soil borings will be completed immediately west and south of the HSDS to fulfill Item 10 of the April 29, 2019 letter. The intent is to bound waste material identified in the southwestern corner of the HSDS. The approximate boring locations (placed at 25 feet intervals) are shown on **Figure 3**.

A drilling contractor will perform the soil exploration using a direct-push rig at the Tier 1 grid locations; soil samples will be collected continuously for field screening of metals and organic compounds using an XRF and a PID at 1-foot increments and observed for the presence of waste materials consistent with the methodology described in the QAPP. The soil samples will also be visually classified and logged on soil boring logs. The soil borings will be advanced until no waste materials are observed and XRF measurements, PID readings, and visual evaluation indicate no potential contamination or to a depth of 20 feet bgs, whichever is deeper.

At each boring location, perched groundwater, if encountered, will be documented on soil boring logs, and soil sample collection will be continued for XRF and PID screening and visual inspection as discussed above. If sufficient groundwater is present in the perched zone, a temporary well will be installed, and a groundwater sample will be collected from the temporary well following the procedure described in **Attachment 1**. As with the 2018 investigation, if a temporary well is low producing, the initial draw of water from the well will be collected for analysis with the analyte priority being the following: PFAS, VOCs, metals, SVOCs, and then miscellaneous inorganic and organic analytes.

If waste is encountered or the XRF/PID readings indicate potential contamination (as agreed upon by EPA and R&W/GZA) at any Tier 1 grid locations, additional soil borings will be completed at Tier 2 grid stations immediately next to that grid station (i.e., one location directly 25 feet west, and one Tier 2 location both north and south). If necessary, additional soil borings will be performed at tertiary grid stations immediately next to any Tier 2 grid station where waste is encountered. This process will be repeated until waste materials are not observed and no elevated levels are detected by the XRF and PID (as agreed upon by EPA and R&W/GZA) at the perimeter grid stations, and the extent of the waste materials is considered delineated. The boring locations may be adjusted in the field, based on site access and field observations. As may be deemed necessary to define the extent of waste or COCs, additional soil borings may be performed at the discretion of R&W/GZA or under the direction of EPA representatives in the field.

Once the extent of waste materials is delineated, the perimeter soil borings will be sampled for laboratory analysis to confirm the delineation (this may occur in Tier 1 or greater locations). At least two samples will be collected from each of the perimeter boring locations, one at the interval(s) where waste material was observed in the nearest boring (or the greatest XRF or PID reading), and another within 1 to 2 feet below the previous interval. Additional soil samples from these borings may be collected at the discretion of R&W/GZA or under the direction of EPA representatives in the field.

If waste material that is distinctly different than that previously observed on the HSDS (i.e., different color, appearance, or materially different XRF and PID screening results), two samples will be collected from the boring with such material. The samples will be collected from within the waste and from 1 to 2 feet below the waste. If waste material that is similar to waste material encountered in adjacent borings is encountered, R&W/GZA will discuss the findings with EPA. Up to two samples (within the waste and from 1 to 2 feet below the waste) will be submitted for laboratory analysis if directed by EPA.

Each soil and/or waste material sample will be submitted for the analysis of VOCs, SVOCs, metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, total chromium, hexavalent chromium, cobalt, copper,



iron, lead, magnesium, mercury, molybdenum, nickel, selenium, silver, sodium, titanium, thallium, vanadium and zinc), total ammonia, nitrate, nitrite, chloride, total and available cyanide, acetic acid, formic acid, total phosphorus, sulfate and sulfide in accordance with the methods described in the QAPP and FSP.

Sufficient soil will be collected and submitted to the laboratory so the TCLP SW-846 Method 1311 metal analysis can be performed if the laboratory identifies total metal concentration exceeding 20 times their maximum concentrations TCLP values for hazardous waste.

Sampling for PFAS will be performed for the concurrent investigation under EGLE jurisdiction. Refer to the FSP and QAPP for detailed subsurface exploration techniques and procedures of soil sampling, sample preservation, sample packaging, COC, field QA/QC sample requirement, and laboratory QA/QC requirement.

Matrix	Depth of Samples	Number of Samples	Sampling Strategy	Rationale and Target Area
Subsurface	(TBD)	58 - 68 (projected)	Biased Sampling	To confirm waste material extent in areas southwest of the HSDS

### 3.5. WEST ADJACENT SUSPECTED WETLAND AREAS

Two suspected wetland areas were identified west of the HSDS. These locations were evaluated using available wetland maps and a visual assessment. The locations of the suspected wetlands are shown on **Figure 4**. After obtaining access from the private property owners on which the suspected wetlands are located, R&W/GZA will conduct a wetland delineation of each area and determine what, if any, permitting or additional requirements are needed for the investigation described in this section.

To fulfill the April 29, 2019 letter Item 11, R&W/GZA will evaluate the possibility of surface infiltration flowing along a potential preferential flow path (referred to as “perched groundwater” in the April 29, 2019 letter) toward discharge into these areas from the HSDS. Two areas of soil borings are proposed. These areas are located between the HSDS and these suspected wetland areas. These investigation areas are shown on **Figure 4**. At each area, approximately 10 to 12 borings will be selected, using systematic random sampling strategy. For the area located northwest of the Site, a square grid of 60 feet by 60 feet will be laid out, and the first sample location will be randomly selected from the lower left 60 feet by 60 feet cell. From the first sample location, subsequent boring locations are selected at the nodes of a grid at an interval of 60 feet. For the area west of the Site, a square grid of 80 feet by 80 feet will be laid out, and the sample locations will be selected using the same method. The number or location of the soil borings may be adjusted in the field, depending on drill rig accessibility and limits of hand-augering depth. Additional soil borings may be performed at the discretion of R&W/GZA or under the direction of EPA supervising personnel in the field.

A drilling contractor will use a direct-push drill rig or complete hand augering for the soil borings; soil samples will be collected continuously. Samples will be field screened at 1-foot increments using a portable XRF instrument for metals and a MiniRAE 2000 PID for VOCs. The soil samples will also be visually classified and logged. The borehole will be advanced to a depth of 20 feet bgs or the water table, whichever is encountered first. No waste materials are anticipated in these borings, so the soil sample intervals will be based on visual, olfactory evidence, XRF measurements or PID screening results, and the depth at which perched groundwater is first encountered. Generally, two soil samples will be collected from each boring (one within the upper 2 feet of soil and one from the remainder of the borehole). If waste materials are encountered a separate waste material sample will be collected. Additional soil samples may be collected at the discretion of R&W/GZA or at the direction of EPA





representatives in the field. For boreholes where perched groundwater is encountered, R&W/GZA will install a temporary well and sample the perched groundwater at the end of the delineation sampling program.

Each soil sample will be submitted for the analysis of VOCs, SVOCs, metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, total chromium, hexavalent chromium, cobalt, copper, iron, lead, magnesium, mercury, molybdenum, nickel, selenium, silver, sodium, titanium, thallium, vanadium and zinc), total ammonia, nitrate, nitrite, chloride, total and available cyanide, acetic acid, formic acid, total phosphorus, sulfate and sulfide in accordance with the methods described in the QAPP and FSP.

Sufficient soil will be collected and submitted to the laboratory so the TCLP SW-846 Method 1311 metal analysis can be performed if the laboratory identifies total metal concentration exceeding 20 times their maximum concentrations TCLP values for hazardous waste.

Sampling for PFAS will be performed for the concurrent investigation under EGLE jurisdiction. Refer to the FSP and QAPP for detailed subsurface exploration techniques and procedures of soil sampling, sample preservation, sample packaging, COC, field QA/QC sample requirement, and laboratory QA/QC requirement.

Matrix	Depth of Samples	Number of Samples	Sampling Strategy	Rationale and Target Area
Subsurface	(TBD)	50 (projected)	Systematic Random Sampling	To evaluate potential presence of COCs from potential perched groundwater migration.

### 3.6. TCLP SOIL

During the 2018 investigation, chromium concentrations exceeded the TCLP screening value in six waste material samples (two of which were in one boring at different depths). This results in five areas with known chromium TCLP exceedances. If it is determined chromium is migrating off the Site at concentrations above applicable screening criteria, a tier-based approach to better delineate the waste material exceeding chromium TCLP will be used.

The April 29, 2019 letter directs Wolverine to prepare a WP to define, excavate, and dispose of offsite the contaminated soils in those areas. Accordingly, the following section discusses the delineation and excavation of these areas to fulfill the April 29, 2019 letter Item 4 as it pertains to the HSDS, unless alternative approaches are deemed adequate after evaluation and discussion with the EPA. Samples submitted for laboratory analysis will be analyzed for the referenced analytes in accordance with the methods described in the QAPP and FSP.

#### 3.6.1. TCLP Soil Delineation

The following TCLP soil/waste materials delineation will be implemented prior to any chromium TLCP removal. However, if it is determined chromium is not migrating off the Site above applicable screening criteria over the course of the investigation, approaches other than excavation may be evaluated and discussed with the EPA for EPA consideration.

The five areas with chromium TCLP exceedances and planned soil borings are shown on **Figure 5**. The extent of the chromium TCLP materials in these areas will be further delineated utilizing direct-push soil sampling, visual observation, and XRF screening. A tiered approach will be used, stepping out approximately 10 feet at each tier interval. The soil borings will be advanced until no waste materials are observed, XRF measurements, and visual evaluation indicate no potential chromium contamination above TCLP or to a depth of 20 feet bgs, whichever is deeper.



R&W/GZA field personnel will continuously screen soil samples collected as described in this subsection in the field for the presence of chromium including visual and XRF methods. Field screening will be performed in minimum 1-foot intervals.

R&W/GZA will select samples for laboratory analysis of TCLP chromium based on the XRF screening data and visual observation. For this analysis, if XRF screening for chromium identifies over 7,500,000 ug/kg (threshold set lower than the lowest XRF chromium concentration that correlates with a TCLP exceedance during the 2018 investigation as presented in **Attachment 2**), R&W/GZA will assume the waste material being screened would exceed the RCRA Maximum Concentration Level of Contaminants for the Toxicity Characteristic (5 mg/L). If the 7,500,000 ug/kg threshold is exceeded, an additional tier step out will be made. Once a boring is encountered where XRF chromium concentrations are below 7,500,000 ug/kg, two samples will be collected from the boring, one at a depth similar to the TCLP exceedance being delineated and one 2 feet below that interval. The chromium TCLP values will be used to delineate the TCLP exceeding waste material, which will be excavated and disposed of appropriately as described below unless approaches other than excavation are deemed adequate after evaluation and discussion with the EPA. Verification sampling (as described in **Section 3.6.2.**) will be used to confirm removal of the chromium TCLP exceedance areas.

These areas are further described as the following:

- Area 1: Northwestern portion of the HSDS; located around boring HS-SB-016 (one sample exceeding). The chromium TCLP exceedance in this area was identified between 7 to 13 feet bgs. The first tier of this delineation will include eight soil borings.
- Area 2: West-central portion of the HSDS; located around boring HS-TR-414-1. One sample exceeding chromium TCLP was collected 5 to 6 feet bgs. The first tier of this delineation will include eight soil borings.
- Area 3: East-central portion of the HSDS; located around boring HS-SB-518. One sample exceeding chromium TCLP was collected 8 to 15 feet bgs. The first tier of this delineation will include eight soil borings.
- Area 4: Southeastern portion of the HSDS; located around boring HS-SB-601. One sample exceeding chromium TCLP was collected 7 to 9 feet bgs. The first tier of this delineation will include seven soil borings (this tier already includes one soil boring that did not identify chromium TCLP exceedance).
- Area 5: Northwestern portion of the HSDS; located around boring HS-SB-102 (two samples exceeding). The chromium TCLP exceedances in this boring were identified between 7 to 13 feet bgs. The first tier of this delineation will include eight soil borings.

### 3.6.2. TCLP Soil Excavation

Once each area is delineated and a disposal facility has been identified and approved (see **Section 5.0**), soils and/or waste material above the chromium TCLP criteria will be removed using mechanical excavation as described below unless approaches other than excavation and disposal are deemed adequate after evaluation and discussion with the EPA. The depth and aerial extent of the soil and/or waste material to be removed will be based on the delineation sampling results.

#### Site Preparation Activities

The Site preparation tasks will include:

- Placement of signs on House Street to indicate truck traffic entering the road.
- Coordination of approval for soil and waste material disposal.



- Installation of silt fence, straw bales, and other best management practices appropriate to address storm water during the excavation activities and prevent soil erosion and surficial migration of excavated materials.
- Create a loading area within close proximity to the excavation exclusion zone. Protect ground surface using two layers of minimum 6-mil polyethylene sheeting.
- Create a gravel and crushed stone construction entrance and on-site tire wash station at the Site exit sufficient to minimize tracking of site soils offsite. The tire wash station will only be used when mud is visually present on the vehicle tire treads prior to leaving the Site (**Figure 5**).

#### Excavation and off-Site Transportation of Chromium TCLP Soil/Waste Material

In order to control the on-Site traffic, a U-shaped haul road primarily consisting of existing improvements will be constructed around the Site, as shown on **Figure 5**. A truck staging area will be located on the southern end of the west leg of the haul road. R&W/GZA will have staff stationed at the staging area and will be in radio contact with personnel at the excavation location. They will coordinate flow of the truck traffic and loading. In addition, the R&W/GZA representative stationed at the entrance gate will be responsible for tracking all vehicles and personnel who enter and leave the Site for the project. R&W/GZA will have a log documenting each person/vehicle's entrance and exit time, along with the volume of soil/waste (if appropriate).

R&W/GZA will commence excavation and removal of the impacted soil and waste material for off-Site transport and disposal. Excavation will be conducted using mechanical means. Overburden, if present, will be placed on two layers of minimum 6-mil polyethylene sheeting, with soil erosion control around the stockpile. The stockpile will be covered with plastic sheeting during rain events and at the end of each workday. Excavated chromium TCLP soil/waste material will be transported to an approved disposal facility. R&W/GZA will record the total volume of all soil and waste material transported off-Site (i.e., the estimated volume for each truck that leaves the Site) and will ensure that each shipment is being transported under properly documented uniform waste manifest documentation.

In accordance with the HASP, three work zones will be set up near each excavation area on the Site, the exclusion zone, the contamination reduction zone, and the support zone. Only personnel with 40-hour HAZWOPER training may be in the exclusion zone or the contaminant reduction zone. Truck drivers must remain in their vehicles while being loaded in the exclusion zone. Once they have left the exclusion zone, they can exit their trucks to cover the load prior to leaving the Site. Zones will be designated with orange snow fence and/or caution tape.

During the excavation activities, a designated "Competent Person" (OSHA) and "Qualified Person" (MIOSHA) from the subcontracted remediation contractor will be on-Site. The Competent Person/Qualified Person will ensure all provisions from CFR 1926 Subpart P (OSHA)/Construction Safety and Health Standard Part 9 (MIOSHA) are enacted and is responsible for determining the on-going safety of the excavation activities through monitoring, evaluation, and correcting hazards to workers. R&W/GZA, as the owner representative, will be responsible for periodic observation and monitoring of the activities, but not responsible for contractor's compliance with OSHA, MIOSHA, and other regulations. Refer to R&W/GZA's Site Specific HASP for further detail.

At a minimum, as part of the observation, R&W/GZA will collect daily documented excavation inspection checklists completed by the Competent/Qualified Person. R&W/GZA may also require the subcontracted excavation firm to complete periodic, documented safety inspections of any open excavations, and to correct any safety hazards noted during the inspections.

At the end of each shift, stock-piled material (if applicable) will be covered with polyethylene sheeting within the limits of the regulated work area.



Equipment will be cleaned of gross material between excavation areas to prevent tracking of possibly contaminated soil/waste material onto potentially lesser contaminated areas of the HSDS. Once all equipment is decontaminated at the end of the project, the decontamination pad and 3 inches of soil below the footprint of the pad will be removed for proper off-site disposal as well.

In addition, as previously indicated, R&W/GZA will monitor the ambient atmosphere within, and adjacent to, the excavation for VOCs and particulates in accordance with the HASP.

#### Collection of Verification Samples

Once the excavation or a portion of the excavation is believed to be “complete”, R&W/GZA will collect verification samples from the sidewalls and the base of the excavations in accordance with R&W/GZA’s SOPs and EGLE’s 2002 “*Sampling Strategies and Statistics Training Manual*”. The samples will be submitted for laboratory analysis of TCLP chromium. The overall excavation dimensions, sample number and locations, and collection details will be provided as a supplement to this WP after each excavation is completed. Upon EPA’s concurrence, R&W/GZA will implement the verification sampling.

#### Site Restoration Activities

Following confirmation (via laboratory results) of the completion of excavation activities, R&W/GZA will notify the subcontractor that site restoration activities can commence. Site restoration will include the following:

- **Backfilling:**  
The excavation will be backfilled using clean-imported sand backfill (or overburden, if available) to 6 inches below the existing grade or another appropriate grade. Fill material will be analyzed for metals, VOCs, SVOCs, and PFAS to confirm that the material is “clean” prior to being accepted for placement on-Site. Prior to placing backfill, a layer of geotextile fabric will be placed in the excavation to demarcate the clean fill from potentially impacted material. Backfill materials will be placed in continuous horizontal layers not exceeding 12-inch loose lifts. In excavation areas within 10 feet of a vehicle road, the top 5 feet will be compacted with a heavy vibratory roller or equivalent alternative approved by R&W/GZA and suitable for the Site conditions.

R&W/GZA will be responsible for recording the total volume of all imported materials (i.e., sand backfill) and document the specifics of each bill of lading for each delivery/shipment of material.

- **Site Restoration:**  
Following the backfilling activities, the subcontractor will place topsoil in the areas to be seeded. Once the topsoil is placed, the area will be seeded with a mix that is shallow-rooted and drought tolerate. Silt fence and staked hay bales will remain until growth has been established.

### 3.7. DATA EVALUATION AND REPORTING

The information and data collected during completion of the WP will be evaluated by R&W/GZA relative to the previously presented objectives. The work performed will be summarized, data will be compiled, and conclusions and recommendations presented in a report. The report will include figures and tables summarizing the information collected during the WP.

### 4.0 **OFF-SITE MIGRATION CONTROL**

Based on the existing data, the likelihood of off-Site COC migration via air deposition is low during the investigation and fence-installation tasks in this WP. During excavation tasks as described in **Section 3.4**, air monitoring will be



conducted as indicated in the revised HASP provided to the EPA. If the data from the air monitoring indicates additional measures should be taken to mitigate air deposition, excavation activities will cease until a mitigation plan can be developed in consultation with the EPA.

The waste materials present below ground surface are unlikely to migrate via surface run-off. During the 2018 investigation at the HSDS, no surface run-off concerns were identified. As such, they are similarly not expected during the investigation and fence-installation phases of this WP. During excavation tasks as described in **Section 3.4**, the subcontractor will be required to implement additional soil erosion and sedimentation control in accordance with applicable laws and industry standards.

## **5.0 INVESTIGATION DERIVED WASTE DISPOSAL**

Investigation-derived soil or waste materials from the proposed investigation work will be containerized in either 55-gallon drums or enclosed roll-off boxes and staged at the Site before being properly managed. The soil or waste material will be sampled and analyzed for TCLP VOCs, SVOCs, metals, PFAS, and waste characteristics including ignitability, reactivity, and corrosivity. According to the EPA Off-Site Rule (40 CFR 300.440), the waste will be disposed of in a facility operating in compliance with RCRA, TSCA, or other applicable Federal or State requirements.

Groundwater from sampling will be contained in aboveground polyethylene tanks and treated using GAC and tested for COCs and PFAS. The water will be treated until the effluent concentrations meet EPA Health Advisory Level for PFOS and PFOA, and EGLE Part 201 GRGCC protective of drinking water uses for residential properties. The treated water will be discharged to the ground surface at the Site. The treatment system may include two or more sets of GAC canisters in series with the spent carbon removed from the Site by Culligan for off-Site incineration or an alternate carbon treatment such as a subcontracted mobile treatment system. Conversely, if COCs other than PFOS or PFOA are identified in the treated water above their most restrictive screening level, the water may be hauled off-Site for proper treatment and/or disposal. Again, this will be conducted in accordance with applicable RCRA, TSCA, or other applicable Federal or State requirements.

## **6.0 ANTICIPATED SCHEDULE**

Following EPA's acceptance of the final WP, and unless alternative approaches are deemed adequate after evaluation and discussion with the EPA, R&W/GZA anticipates the following schedule:

- 1- Approximately 4 to 6 weeks from on-Site mobilization will be required to complete the proposed field work (assuming chromium TCLP exceedance delineation is completed). This does not include the excavation of the chromium TCLP soil areas.
- 2- A draft report summarizing the data and activities described in Item 1 above will be submitted one calendar month from receipt of the last electronic data deliverable from the lab.
- 3- If needed, once the chromium soil TCLP excavation areas are delineated (including receipt of electronic data deliverables from the lab), an amendment to this WP detailing the excavation areas, process, and anticipated schedule will be submitted within two weeks for EPA's review.
- 4- Installation of the fencing is anticipated to take two months, including surveying and pre-installation clearing. This task will be on-going during the implementation of the investigation tasks but is anticipated to be completed prior to the commencement of excavation.



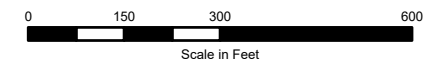
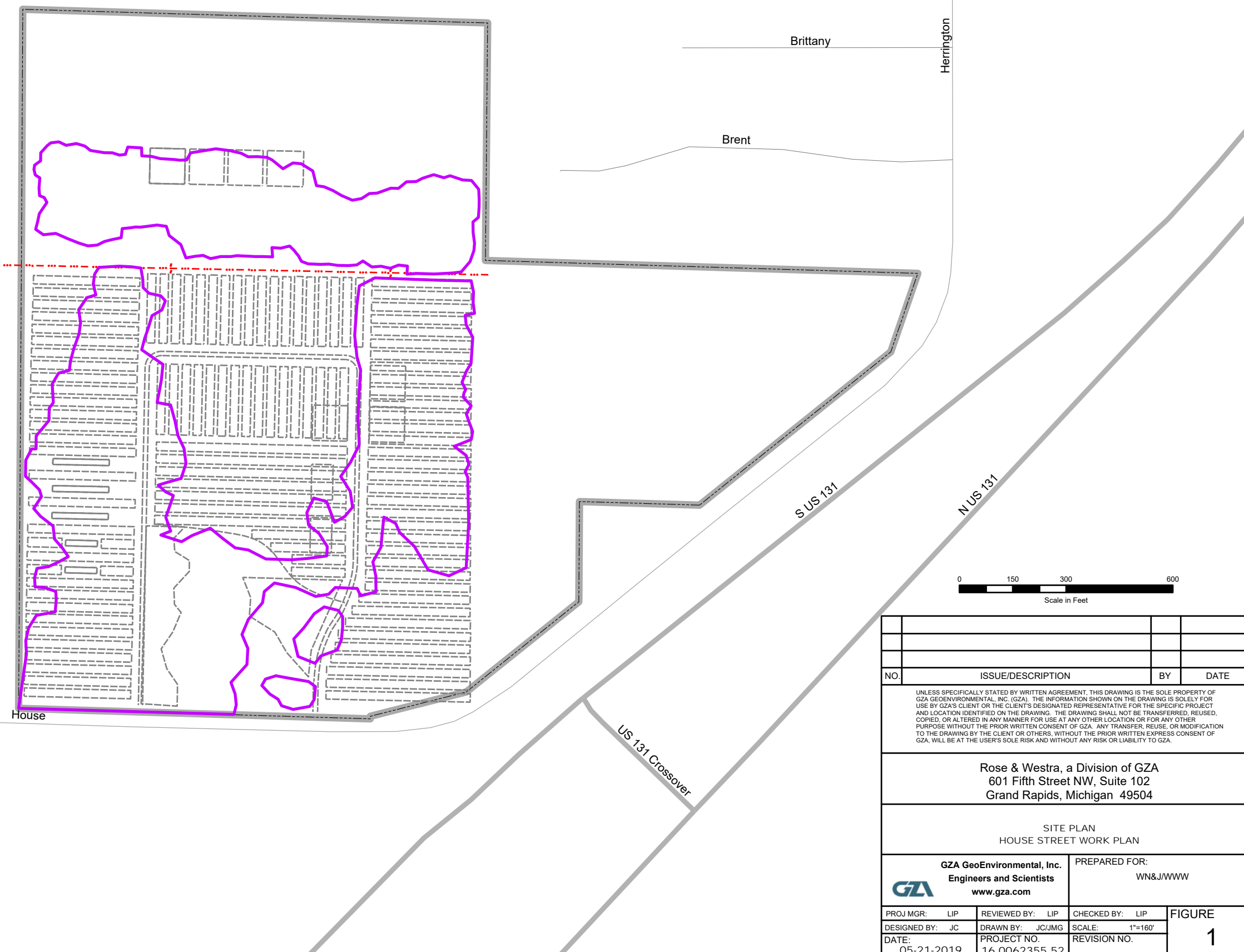
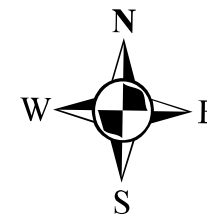
The anticipated schedule does not consider weather-related delays or drilling beyond Tier 1 locations as described in **Sections 3.2, 3.3, and 3.4.1**. If delineation extends beyond Tier 1, additional implementation time will be required. This schedule also assumes that two direct-push rigs are being used. An estimated project schedule is included in as **Attachment 3**. This schedule is tentative as until the extent of removal activities are delineated; the estimated time for excavation cannot be estimated.

## 7.0 REFERENCES

- R&W/GZA. 2018. *Extent of Contamination Study Removal Work Plan, House Street Disposal Area, Plainfield Township, Kent County, Michigan*. Submitted to USEPA May 29, 2018.
- R&W/GZA. 2018. *Field Sampling Plan, House Street Disposal Area*. Submitted to USEPA May 30, 2018.
- R&W/GZA. 2018. *Health and Safety Plan, Former Wolverine Tannery and House Street Disposal Area*. Submitted to USEPA May 29, 2018.
- R&W/GZA. 2018. *Quality Assurance Project Plan, Former Wolverine Tannery and House Street Disposal Area, Revision 2*. Submitted to USEPA August 29, 2018 with errata pages submitted October 31, 2018 and April 15, 2019.
- R&W/GZA. 2019. *HSDS Implementation of the 2018 Work Plan Summary Report*. Submitted to USEPA May 21, 2019.
- USEPA. 2019. *RE: Wolverine Tannery and House Street Disposal State: Required CERCLA Actions*. Letter dated April 29, 2019.
- USEPA. 2019. *RE: Work Plan, House Street Disposal Area, Plainfield Township, Kent County, Michigan: Approval with Significant Modifications*. Letter dated June 27, 2019.



## FIGURES



**Legend**

- ESTIMATED EXTENT OF WASTE MATERIAL
- Power Line
- 1966 Proposed Site Plan
- APPROXIMATE HOUSE ST SITE BOUNDARY

**ROADS**

- Minor Roads and Two tracks
- Highways
- Primary County Roads
- Local County Roads
- Major City Roads
- Minor City Roads

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SITE PLAN HOUSE STREET WORK PLAN			
<b>GZA GeoEnvironmental, Inc.</b> Engineers and Scientists <a href="http://www.gza.com">www.gza.com</a>		PREPARED FOR: WN&J/WWW	
PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: LIP	<b>FIGURE</b>  <b>1</b>
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=160'	
DATE: 05-21-2019	PROJECT NO: 16.0062355.52	REVISION NO:	



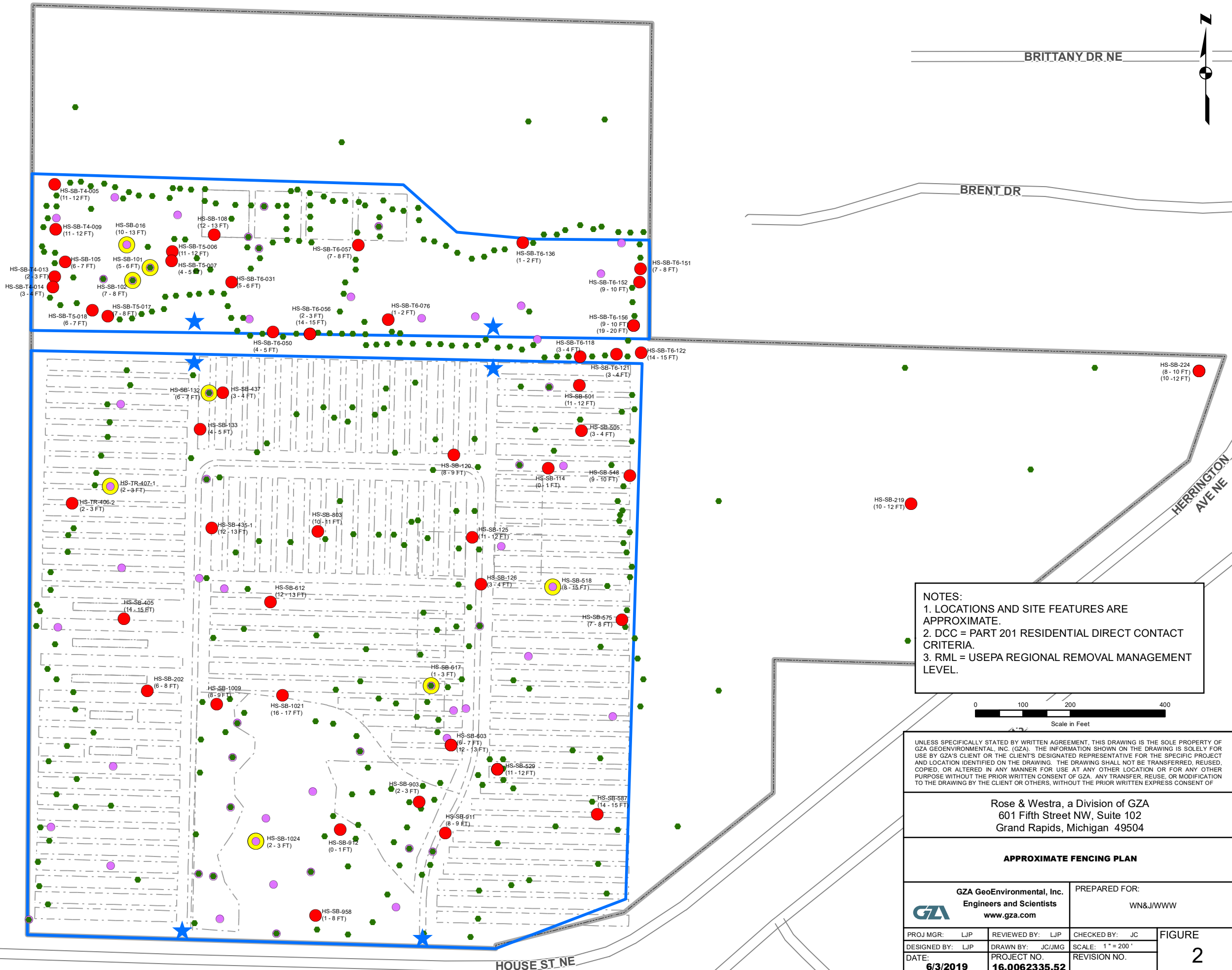
© 2019 - GZA GeoEnvironmental, Inc. J:\16.xx Grand Rapids\16.0062300D\16.0062335.52\Drawings\_GIS\CAD\House\_WP\_F2\_DCC\_RMLs.mxd, 6/3/2019, 4:06:24 PM, julia.groenier

BRITTANY DR NE

BRENT DR

HERRINGTON AVE NE

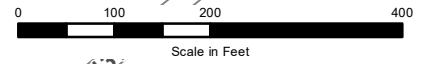
HOUSE ST NE



**Legend**

- APPROXIMATE GATE LOCATION
- SOIL SAMPLE LOCATION
- SOIL SAMPLE CONCENTRATION > DCC OR RML
- WASTE MATERIAL SAMPLE LOCATION
- WASTE SAMPLE CONCENTRATION > DCC OR RML
- APPROXIMATE FENCING BOUNDARY
- 1966 PROPOSED SITE PLAN
- APPROXIMATE HOUSE ST SITE BOUNDARY

**NOTES:**  
 1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.  
 2. DCC = PART 201 RESIDENTIAL DIRECT CONTACT CRITERIA.  
 3. RML = USEPA REGIONAL REMOVAL MANAGEMENT LEVEL.



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**APPROXIMATE FENCING PLAN**

<b>GZA GeoEnvironmental, Inc.</b> Engineers and Scientists www.gza.com		PREPARED FOR: WN&J/WWW	
PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: JC	<b>FIGURE</b> <b>2</b>
DESIGNED BY: LJP	DRAWN BY: JC/JMG	SCALE: 1" = 200'	
DATE: 6/3/2019	PROJECT NO. 16.0062335.52	REVISION NO.	

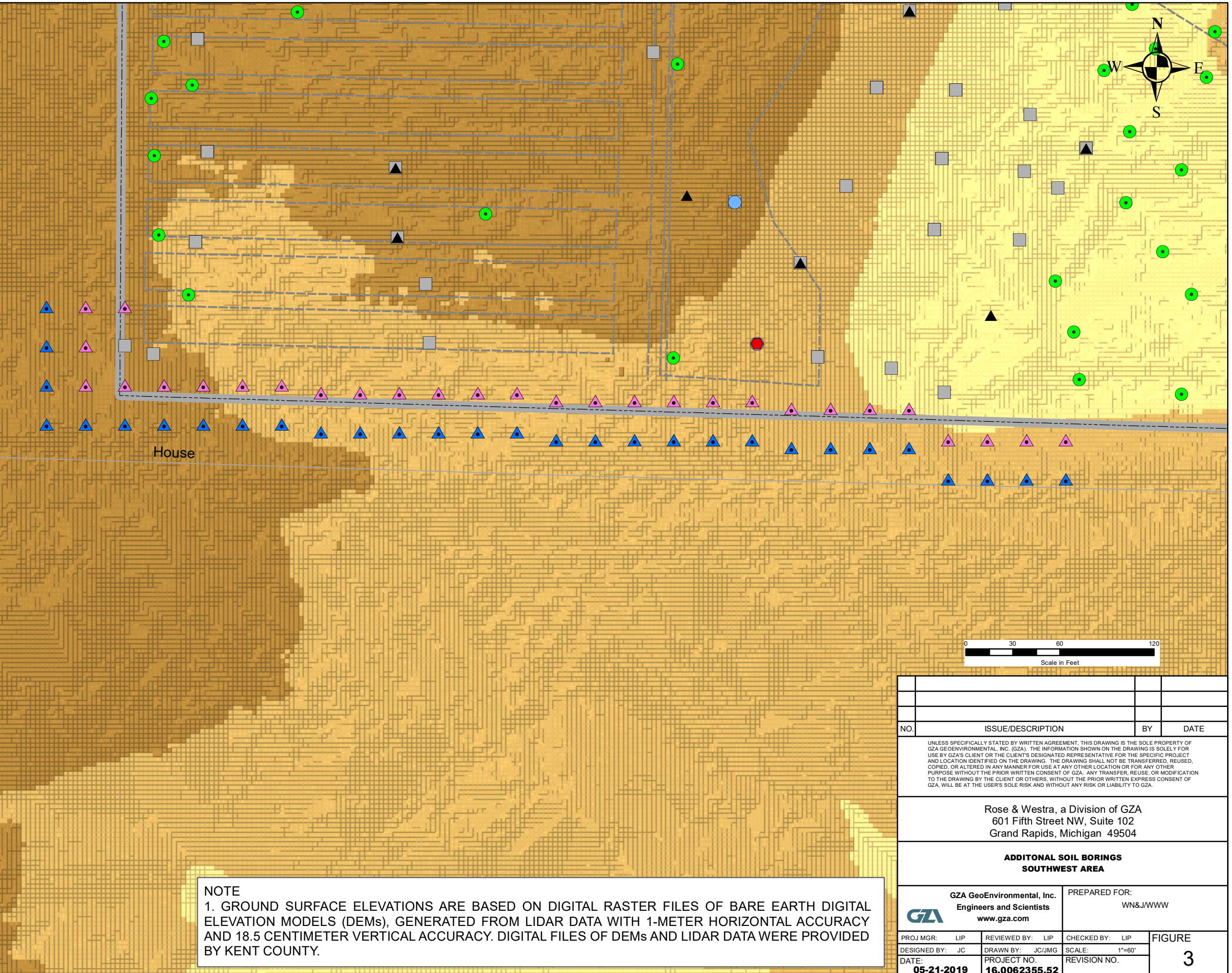
### Legend

- ▲ TIER 1
- ▲ TIER 2
- RED WASTE MATERIAL
- BROWN WASTE MATERIAL
- ▲ BLACK WASTE MATERIAL
- WHITE WASTE MATERIAL
- GRAY WASTE MATERIAL
- NO WASTE MATERIAL OBSERVED
- 1966 Proposed Site Plan
- APPROXIMATE HOUSE ST SITE BOUNDARY

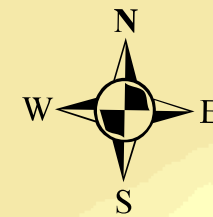
### GROUND SURFACE ELEVATION, FT

588.3293457 - 600
600.0000001 - 620
620.0000001 - 640
640.0000001 - 660
660.0000001 - 680
680.0000001 - 700
700.0000001 - 720
720.0000001 - 740
740.0000001 - 760
760.0000001 - 780
780.0000001 - 800
800.0000001 - 820
820.0000001 - 840
840.0000001 - 860
860.0000001 - 880
880.0000001 - 900
900.0000001 - 920
920.0000001 - 940
940.0000001 - 960



**NOTE**  
 1. 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.

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<b>ADDITIONAL SOIL BORINGS SOUTHWEST AREA</b>			
<b>GZA GeoEnvironmental, Inc.</b> Engineers and Scientists www.gza.com		PREPARED FOR: WN&J/WWW	
PROJ MGR: LIP	REVIEWED BY: LIP	CHECKED BY: LIP	<b>FIGURE 3</b>
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1"=60'	
DATE: 05-21-2019	PROJECT NO. 16.0062355.52	REVISION NO.	

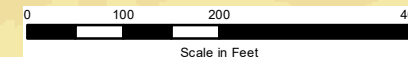
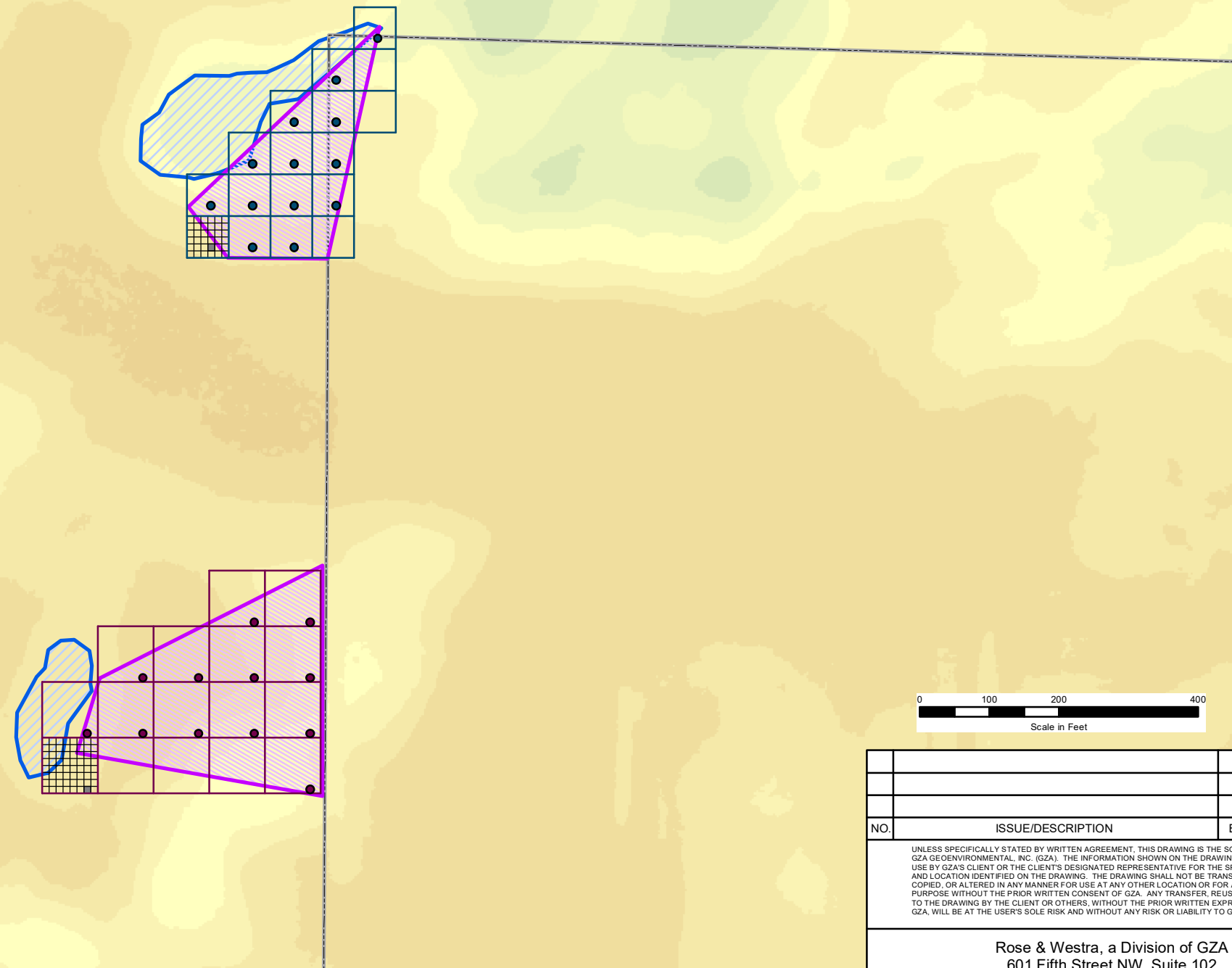


**Legend**

- 60 FT GRID BLOCK SYSTEMATIC GRID SAMPLE LOCATION
- 80 FT GRID BLOCK SYSTEMATIC GRID SAMPLE LOCATION
- 60 FT GRID BLOCK
- 80 FT GRID BLOCK
- 10 FT SUB-GRID CELL
- WETLAND\_INV\_SELECT\_SUBGRID
- APPROXIMATE WETLAND INVESTIGATION
- APPROXIMATE HOUSE ST SITE BOUNDARY
- NWI PLUS WETLAND
- NWI WETLAND AREA
- MDEQ POTENTIAL WETLAND RESTORATION
- MINOR ROADS AND TWO
- HIGHWAYS
- PRIMARY COUNTY ROADS
- LOCAL COUNTY ROADS
- MAJOR CITY ROADS
- MINOR CITY ROADS

**GROUND SURFACE ELEVATION, FT**

- 710.0000001 - 720
- 720.0000001 - 730
- 730.0000001 - 740
- 740.0000001 - 750
- 750.0000001 - 760
- 760.0000001 - 770
- 770.0000001 - 780
- 780.0000001 - 790
- 790.0000001 - 800
- 800.0000001 - 810
- 810.0000001 - 820



**NOTES**

1. 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.

2. APPROXIMATELY 12 TO 13 BORINGS ARE PROPOSED IN EACH INVESTIGATION AREA USING A SYSTEMATIC RANDOM SAMPLING STRATEGY, DEPENDING ON ACCESSIBILITY.

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<b>WEST ADJACENT SUSPECTED WETLAND AREAS INVESTIGATION</b>			
<b>GZA GeoEnvironmental, Inc.</b> Engineers and Scientists www.gza.com		PREPARED FOR: WN&J/WWW	
PROJ MGR: LIP DESIGNED BY: JC DATE: 06-03-2019	REVIEWED BY: LIP DRAWN BY: JC/JMG PROJECT NO.: 16.0062355.52	CHECKED BY: LIP SCALE: 1"=1500' REVISION NO.	<b>FIGURE</b>  <b>4</b>

© 2019 - GZA GeoEnvironmental, Inc. J:\16.xx Grand Rapids\16.0062355.52\16.0062355.52\Draw\_GIS\GIS\_CAD\KENT\Soil\Survey.mxd, 6/3/2019, 1:31:18 PM, julia.gremler



AREA 1

AREA 5

AREA 3

AREA 2

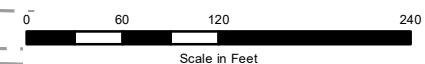
AREA 4

Legend

- PROPOSED TIER 1 SAMPLE LOCATION
- PROPOSED TIER 2 SAMPLE LOCATION
- APPROXIMATE LOCATION OF TIRE WASH STATION
- TRUCK TRAFFIC PATTERN
- APPROXIMATE HAUL ROAD
- 1966 PROPOSED SITE PLAN
- APPROXIMATE HOUSE ST SITE BOUNDARY

TCLP CONCENTRATION (ug/L)

- 0.00000 - 310.00000
- 310.00001 - 950.00000
- 950.00001 - 1600.00000
- 1600.00001 - 5000.00000
- 5000.00001 - 18000.00000



NOTE:  
1. LOCATIONS AND SITE FEATURES ARE APPROXIMATE.

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CHROMIUM TCLP SOIL DELINEATION

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Engineers and Scientists  
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PREPARED FOR:  
WN&J/WWW

PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE <b>5</b>
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: 1" = 120'	
DATE: 6/3/2019	PROJECT NO. 16.0062335.52	REVISION NO.	



## **ATTACHMENT 1 – PERCHED GROUNDWATER SAMPLING PROCEDURE**

**EQUIPMENT AND MATERIALS**

- Peristaltic Pump and associated tubing;
- Poly sheeting;
- Ziploc® Bags
- Appropriate sample containers, pre-preserved as necessary;
- Ice and a sample cooler;
- Sample data sheets, pencil/ballpoint pen, sharp knife (locking blade), calculator, camera, and engineering scale;
- Field-data sheets, sample labels, chain-of-custody records and custody seals; and
- Appropriate health and safety PPE and an approved site-specific Health and Safety Plan.

**PROCEDURES**

1. Review the boring log for well screen information.
2. Measure depth to groundwater from the ground surface (measure depth from the top of temporary casing and subtract the casing stick-up from the measurement). Record depth to groundwater on boring log.
3. Insert the HDPE tubing into the casing taking care to minimize agitation within the temporary well point. Bottom of the tubing should be a minimum of 6" above the bottom of the borehole where possible.
4. Attach silastic tubing to the HDPE tubing and connect to the pump.
5. Begin purging the borehole taking care to capture purge water into a laboratory-cleaned and unpreserved container. This water will be submitted to the lab if the well is purged dry prior to sampling.
6. If the well has sufficient recharge, purge 3 well volumes prior to sampling. Note that purge water must be containerized.
7. Once 3 well volumes have been purged, collect samples with PFAS collected first followed by VOCs and SVOCs. Remaining samples can be collected in order of decreasing volatility.
8. If the well is purged dry prior to 3 well volumes, then it can be allowed to recharge and the recharge water sampled without additional purging.
9. If the well does not recharge within a reasonable period of time, the initial purge shall be decanted into laboratory-provided containers and submitted for analysis.

**RECORDS AND DOCUMENTATION**

The details of the sampling shall be recorded on the GZA boring log. If needed, additional information can be attached as a separate sheet.

Refer to GZA's SOP A09: *Chain-of-Custody, Sample Handling and Shipping* procedures for documentation requirements and GZA's SOP A10: *Decontamination Procedure* for decontamination requirements.



## **ATTACHMENT 2 – XRF TO TCLP EXCEEDANCE COMPARISON**

Chromium: XRF Comparison to TCLP Exceedances

House Street Site  
 1855 House Street NE  
 Plainfield Township, Kent County, MI

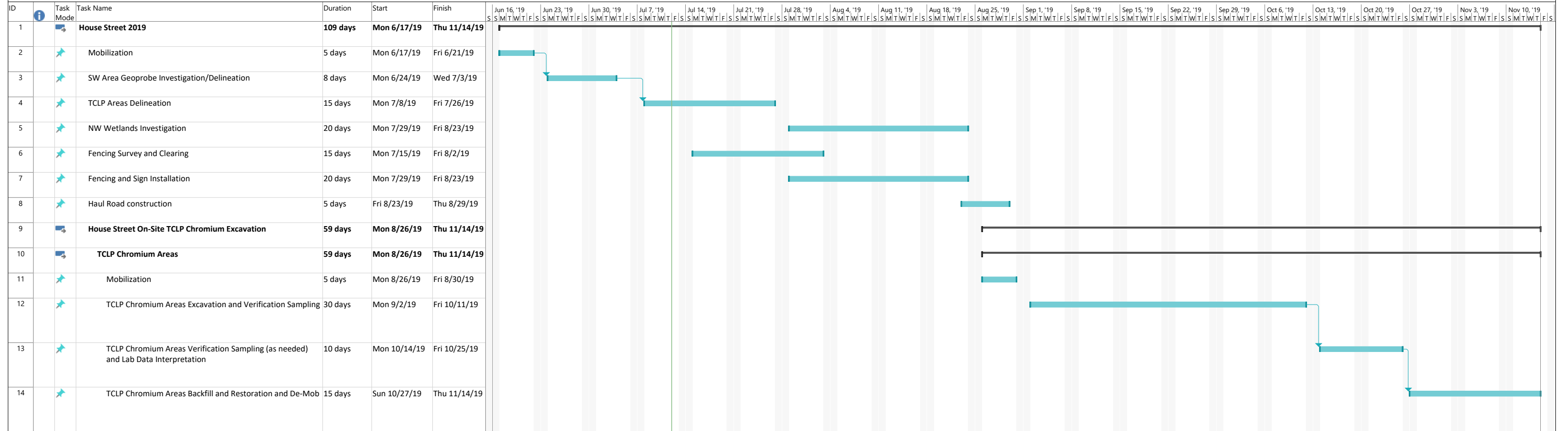
Location	Sample Name	LABID	DEPTH_TOP	DEPTH_BOTM	ANALTPARAM	CAS	Total Cr Criterion	RCRA Screening	XRF_Resul ug/kg	Total Cr Result ug/kg	TCLP/Leachate_Result ug/L	TCLP > RCRA?	Note
HS-SB-016	HS-SB-016(10-13)	TJ31069-022	10.00	13.00	Chromium, Total	7440-47-3	NP	5000	20,502,000	10,000,000	5,300	YES	XRF depth interval result from 12-13 feet bgs
HS-SB-102	HS-SB-102 (7-8)	TF16008-012	7.00	8.00	Chromium, Total	7440-47-3	NP	5000	25,262,000	39,000,000	8,000	YES	XRF results from dried sample
HS-SB-102	HS-SB-102 (11-12)	TF16008-013	11.00	12.00	Chromium, Total	7440-47-3	NP	5000	14,510,000	18,000,000	18,000	YES	
HS-SB-518	HS-SB-518 (8-15)	TK03015-007	8.00	15.00	Chromium, Total	7440-47-3	NP	5000	25,673,000	69,000,000	8,100	YES	XRF depth interval result from 8-9 feet bgs (greatest in the 8-15 foot bgs interval)
HS-SB-601	HS-SB-601(7-9)	TJ02023-018	7.00	9.00	Chromium, Total	7440-47-3	NP	5000	12,075,000	13,000,000	8,400	YES	XRF depth interval result from 7-8 feet bgs (greatest in the 7-9 foot bgs interval)
HS-TR-414-1	HS-TR-414-1 (5-6)	TK03015-002	5.00	6.00	Chromium, Total	7440-47-3	NP	5000	8,438,000	68,000,000	12,000	YES	





## **ATTACHMENT 3 – ESTIMATED PROJECT SCHEDULE**

**House Street Site  
2019 Estimated Project Schedule**



Project: HS - Draft Schedule Date: Fri 7/12/19

Task	Milestone	Project Summary	Inactive Milestone	Manual Task	Manual Summary Rollup	Start-only	External Tasks	Deadline	Manual Progress
Split	Summary	Inactive Task	Inactive Summary	Duration-only	Manual Summary	Finish-only	External Milestone	Progress	



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