



Soil Excavation and Sampling Plan

Ford Motor Company

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Figure 1 Excavation Location Map

1. Introduction

GHD has prepared this Soil Investigation and Sampling Plan (SESP) in response to a gasoline release in the City of Flat Rock, Michigan (City). The objective of this SESP is to support the soil excavation/delineation and confirmation sampling activities in order to evaluate potential impacts as a result of the release at the Flat Rock Assembly Plant located at 1 International Dr, Flat Rock, MI 48134 (Site).

The following tasks will be completed to achieve the objective:

- Excavation and removal of impacted soil.
 - The areal limits and depth of the excavation will be determined based on the visual observations of impacts, field screening results and facility infrastructure.
- Collection of soil samples within the excavation following final excavation limits based on visual observations of impacts, field screening results or facility infrastructure limitations.

Figure 1 is a site location map which depicts the area of planned excavation.

2. Soil Investigation

To date, preliminary soil delineation work along the corridor of the UST piping has been conducted. An area of soil impacts has been identified along the UST pipe trace. The purpose of the excavation is to remove the impacted soils identified at this location.

Excavation activities will be conducted in compliance with applicable United States Occupational Safety and Health Administration (OSHA) standards. The soil will be removed using the following procedures:

- Open cut excavation methods will be used. In the event excavation depths are expected to exceed 4 ft below ground surface (bgs), protective systems such as sloping, benching, shoring and shielding systems are required.
- The material in the impacted areas is mostly composed of angular gravel, previously disturbed soils, and possible sand, silts and clays and is therefore classified as Soil Type "B" within OSHA's system of classification of soils for excavations (1926 Subpart P – Excavations). Soil Type "B" requires a slope of 1:1 (1 foot horizontal for every vertical foot, a slope of approximately 45 degrees).
- Excavation will be guided by a photoionization detector (PID) and visual and olfactory evidence of impacts to soil. GHD will screen soils using a PID equipped with a 10.6 electron volt (eV) lamp for total volatiles organic compounds (VOCs).
- Soils will be live loaded directly into trucks for subsequent off-Site disposal and/or staged at an approved soil staging area location. Excavated soil not directly loaded will be placed on minimum 6-mil thick visqueen at an approved soil staging area. Any soils left on Site overnight will be covered daily with a minimum 6-mil thick visqueen to prevent potential run off from inclement weather.
- Free-phase liquids will be recovered, to the extent possible, sampled upon recovery for waste characterization, and appropriately containerized and stored in a protected area pending waste characterization and proper disposal.
- Material designated for off-site disposal will be transported to the appropriate facility using trucks and/or trailers, as appropriate.

If any unknown subsurface features are encountered during the excavation process, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) will be notified immediately.

3. Soil Sampling

Confirmation soil sample locations will be selected based on the field observations, field screening results, and equal representation throughout the excavation area. Confirmation soil samples will be collected from the base of the excavation at an approximate density of one per each 500 square feet. Confirmation soil samples will be collected from each sidewall at an approximate density of one per each 20 linear feet.

Soil samples will be placed directly into laboratory-supplied containers and submitted to an accredited laboratory for analyses. The laboratory analyses and analytical methods are listed below:

- Target Compound List (TCL) and additional Gasoline Volatile Organic Compounds (VOCs) by EPA Method 8260+
- TPH GRO by SW-846 Method 8015C

3.1 Assessment Criteria

Soil analytical results will be assessed with respect to the applicable exposure pathways from “Table 3: Non-Residential Soil Criteria” of the Michigan Department of Environment, Great Lakes (EGLE) Clean up Criteria Requirements for Response Activity.

4. Quality Assurance/Quality Control Program

A Quality Assurance/Quality Control (QA/QC) program will be implemented to ensure quality data is generated. This program will involve both field and laboratory QA/QC measures. The QA/QC program will be initiated to ensure that if any form of sample contamination occurs, or if any lack of precision in the analytical methods employed is evident, the potential source and degree of the contamination or analytical imprecision can be identified and properly addressed.

Samples will be collected in laboratory-supplied sampling containers with the appropriate preservative and submitted under chain-of-custody protocol to the analytical laboratory for chemical analysis. From the time of collection to the time of submission to the laboratory, samples will be stored in a cooler, and packed on ice to maintain sample integrity.

The following measures will be implemented for quality assurance:

- Prior to collection of each sample, sampling field personnel will don a new pair of disposable nitrile gloves and will use dedicated sampling materials at each sample location.
- Pre-cleaned laboratory supplied sampling containers will be used.
- Sampling equipment will be decontaminated prior to field use and after each sample is collected to prevent cross contamination between samples. Duplicate samples will be collected concurrently with original samples; therefore, sampling equipment will not be decontaminated before collection of the duplicate samples.
- Samples will be submitted to the analytical laboratory following chain-of-custody procedures. The chain-of-custody forms document the condition and handling of the samples throughout the collection, transportation, and final analyses of the samples.
- Field duplicates will be prepared as a check on analytical procedures. Field duplicates are samples of materials collected in the field from the same location, at the same time and analyzed for the same constituents. They are used to test the consistency of the sampling method and precision of the laboratory. At a minimum, one field duplicate will be prepared for every ten samples submitted to the laboratory or at least one per day on days when sampling occurs. Duplicates will be labeled so that the laboratory is unaware of their identity as duplicates (blind duplicates).

- A matrix spike and spike duplicate (MS/MSD) will be prepared as a check on analytical procedures. MS/MSD are samples of materials collected in the field from the same location, at the same time, that have known concentrations of analytes of interest added to the samples prior to sample preparation and analysis. The purpose of the MS/MSD is to document the accuracy and precision of the method for that specific sample. At a minimum, one MS/MSD will be prepared for every 20 samples submitted to the laboratory.
- Following receipt of the analytical data from the laboratory, a GHD chemist will perform a data quality assessment and validation. The evaluation of the analytical data is based on the QA/QC information provided by the laboratory including laboratory blank data, laboratory duplicate data, and laboratory surrogate spike and check recovery data, as well as sample holding times, field duplicate analysis, MS/MSD sample analysis, and reagent blank analysis.

5. Health and Safety

All on-Site activities must be completed in compliance with all applicable Federal and local Safety and Health regulations to include, but not limited to, the Occupational Safety and Health Administration (OSHA) 29 CFR 1910 and 29 CFR 1926. The OSHA excavation standard (29 CFR 1926.650 652) sets forth the safety requirements for all excavation activities.

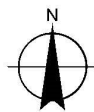
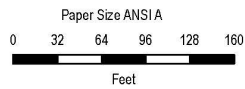
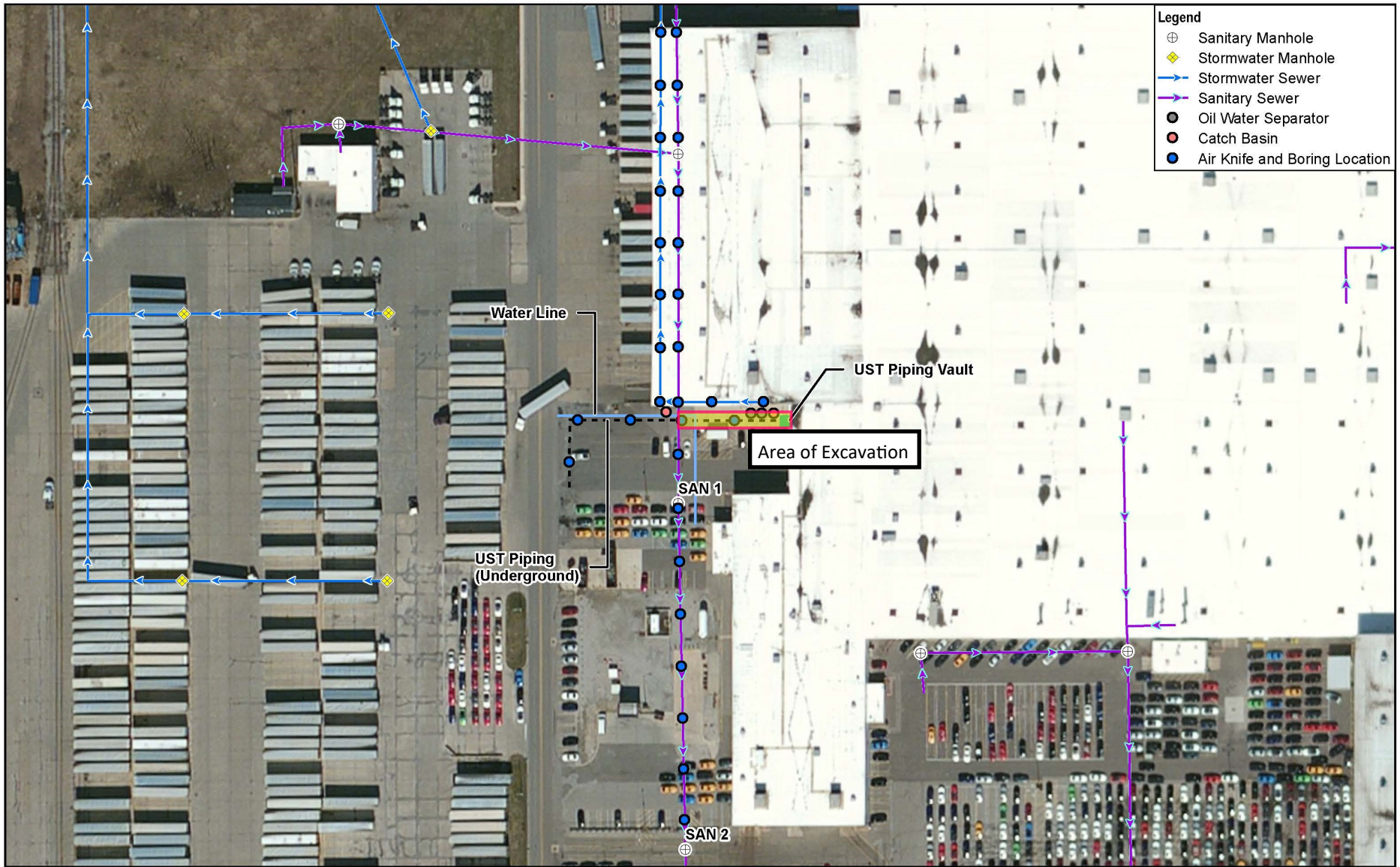
Prior to beginning any work at the Site, all personnel must be aware of, and comply with, the Site Health and Safety requirements. This includes, but is not limited to:

- Monitoring of the workspace with a multi-gas monitor.
- Donning task appropriate and risk appropriate personal protective equipment (PPE).
- Use of Stop Work Authority and controls such as allowing the excavation to ventilate or partially covering impacted soils are options in the event of elevated VOCs. Respirators with appropriate cartridges also may be required.
- Report all safety incidents to Site Safety personnel.
- Additional Site-specific safety procedures will be discussed prior to the start of excavation and loading activities.

6. Reporting

Sampling data will be collected, compiled, and assessed in accordance with applicable guidelines/legislation. The manually-collected sampling data will be entered into an electronic database, and it will undergo a QA/QC review. Data entry forms and field notes will be kept on-Site and retained for reference upon completion of the project. If necessary, full laboratory analysis data packages will be provided, and associated data validation processes will be arranged. To make decisions in a timely manner, data will be shared with site representatives, applicable property owners, stakeholders, and government agencies as soon as it becomes available and following quality review.

As the sampling plan proceeds and results are obtained, the plan may be revised as necessary and appropriate to meet the objectives as previously stated.



FLAT ROCK, MICHIGAN

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Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane Michigan South FIPS 2113 Feet

EXCAVATION LOCATION MAP

FIGURE 1



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