Liquid and Sludge Removal Work Plan

Former McLouth Steel Site
County Property
1491 West Jefferson Avenue
Trenton, Michigan

December 28, 2018

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LIQUIDS AND SLUDGE REMOVAL WORK PLAN

FORMER MCLOUTH STEEL SITE
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1.0 Introduction

ASTI Environmental Corporation (ASTI) has prepared this Liquid and Sludge Removal Work Plan for the approximately 180 acre portion of the Former McLouth Steel site commonly known as the County Property (Parcel No: 54001990006705 and Parcel No: 54001990006706) located at 1491 W. Jefferson Avenue in the City of Trenton, Wayne County, Michigan (the "Property"). A Site Location Map is provided as **Figure 1**, and the Property is indicated on **Figure 2**.

This Liquid and Sludge Removal Work Plan was developed to implement the Statement of Work (SOW) contained in Appendix D of the Administrative Settlement Agreement and Covenant Not to Sue (the "Agreement") for the Property. This Liquid and Sludge Removal Work Plan shall also serve as the Field Sampling Plan portion of the Sampling and Analysis Plan required in the Agreement at Para. 36(b). Unless otherwise provided in Section 2.1 herein, all terms used in this Work Plan are defined as provided in the Agreement. The purpose of this Liquid and Sludge Removal Work Plan is to identify the steps that will be taken to assess and remove existing liquids and associated sludges as part of the Demolition Requirement and SOW activities at the Property (the "Site Activities"). This Liquid and Sludge Removal Work Plan will apply to the following 23 areas on the Property (the "Units"): consisting of 4 Areas of Concern (AOC), 18 Waste Management Units (WMU), and 1 additional area. The locations of the 23 Units are presented on the Site Features Map provided as **Figure 3**. Units and their boundary conditions have been established based on existing ALTA survey, aerial photographs, and historical drawings, including locating Units in the Mill Building based on the support column numbering system. All Units will be backfilled with inert materials, making it easy to locate Units after this project is completed.

- Areas of Concern (AOCs):
    - AOC 34 – Former Large Pond No. 3, AOC 35 – Dekishing Pit, AOC 36 – Former Pond Area No. 1, AOC 37 – Former Pond Area No.2
- Waste Management Units (WMUs):

- WMU 1 – Sedimentation Basin, WMU 9 – Centrifuge Sludge Pit, WMU 10 – Standby Sludge Basin, WMU 13 – Sludge Filter Press Loadout Area, WMU 15 – Waste Water Treatment Plant Sludge Management Units, WMU 23 – BOF Gas Sludge Pit, WMU 25 – K061 Settling Basin, WMU 42 – Concast Scale Pit, WMU 43 – Concast Grit Basin, WMU 49 – Downcoiler Sump, WMU 50 – South Motor Room Sump, WMU 51 – Basement Sump, WMU 52 – Scale Pit, WMU 53 – Roughing Mill Pit, WMU 54 – Old Four High Scale Pit, WMU 55 – Blooming Mill Scale Pit, WMU 56 – Reheat Sump, WMU 57 – Heater Area

- The South Motor Room Basement

2.0 General Procedures

The following general process will be used to assess, remove and dispose of existing liquids and associated sludges, clean and test remaining subsurface structures, and backfill each of the 23 Units. Units that have been partially backfilled and do not contain liquids or sludges will be backfilled to grade with inert materials as described below. As an option, backfill materials may include on-site or off-site inert fill, if analysis of those fill materials indicates that the concentrations of COIs are below applicable non-residential criteria for soils using the direct contact criteria under Part 201 of Michigan Act 451, and do not exceed 25 parts per million ("ppm") for PCBs).

All analytical results will be compared to generic non-residential cleanup criteria (GNRCC) under Part 201 of Michigan Act 451, except for PCBs as noted below. For liquid samples, results will be compared to drinking water (DW) criteria. For sludge and concrete samples, results will be compared to direct contact (DC) criteria for soils. Note that exceedance of a generic criteria does not indicate remediation is required, only that further site-specific assessment may be needed as described below.

2.1 Definitions

This section provides definitions of several terms as used in this Liquid and Sludge Removal Work Plan.

Basement – A building level either partially or entirely below grade intended for occupation and equipment. Basements are not designed to contain liquids.

Equipment Pit - An area with limited access designed to contain equipment. Equipment Pits were not originally designed to contain liquids but rather designed for access underneath or to the bottoms of recessed equipment.

Lagoon - An area designed to store or hold liquids. Lagoons include basins.

Liquid Phase – A visibly distinguishable layer of liquid within a Unit that is at least 1-inch in thickness.

Pit - An area with limited access designed to contain liquids. Pits may have been designed to house equipment along with liquids.

Pond - A large water feature identified on the 1950s and 1960s aerial photographs.

Sludge – A saturated solid associated with existing liquids (i.e., sludge can be generally described as a viscous mixture of liquid and solid components) and does not include fill materials previously placed in the Units by previous owners or operators, underlying soils, or engineered materials such as clay liners.

Sump – An area recessed below floor level designed to contain and manage liquids. Sumps are not designed to include equipment other than a pump to remove the liquids from the sump.

Unit – A Lagoon, Pit, Pond, or Sump originally designed to contain liquids that will be addressed by this work plan. Refer to Section 1.0 for a list of Units.

3.0 Sampling

The following sampling and analysis procedures will be used during assessment and removal activities for this Liquid and Sludge Removal Work Plan.

3.1 Sampling Procedures

The following standard operating procedures (SOPS) are referenced:

- Porous Media Core Sampling SOP
- Soil & Sludge Sampling SOP
- Surface Water/Liquid Sampling SOP
- Field Notebooks SOP

These SOPs are provided in **Attachment A** to this Work Plan.

3.2 Laboratory Selection

The selected laboratory will either participate in the Environmental Response Laboratory Network ("ERLN"), be accredited under the National Environmental Laboratory Accreditation

Program ("NELAP"), meet International Standardization Organization (ISO 17025) standards, or meet other nationally recognized programs as meeting the Quality System requirements.

3.3 Sample Analyses

The following analytical methods will be used for all sludge samples:

- Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260, Michigan TCL VOCs
- Semi-Volatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270, Michigan TCL SVOCs including Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Biphenyl (PCB) Aroclors by USEPA SW-846 Method 8082
- Metals (*Arsenic, Barium, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Nickel, Vanadium and Zinc)* by USEPA SW-846 Methods 6010 or 6020
- Mercury by USEPA SW-846 Method 7470/7471

The following analytical methods will be used for all liquid samples:

- VOCs by USEPA SW-846 Method 8260, Michigan TCL VOCs
- SVOCs by USEPA SW-846 Method 8270, Michigan TCL SVOCs including PAHs
- PCB Aroclors by USEPA SW-846 Method 8082
- Metals (*Arsenic, Barium, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Nickel, Vanadium and Zinc)* by USEPA SW-846 Methods 6010, 6020 & 7471A
- Mercury by USEPA SW-846 Method 245.1

The following table indicates the analysis that will be conducted for each Unit.

Table 1- Chemicals of Interest for Liquids and Sludges

Chemical of Interest	WMU-1 Sedimentation Basin	WMU-9 Centrifuge Sludge Pit	WMU-10 Standby Sludge Basin	WMU-13 Sludge Filter Press Loadout Area	WMU-15 WWTP	WMU-23 BOF Gas Sludge Pit	WMU-25 K061 Settling Basin	WMU-42 Concast Scale Pit	WMU-43 Concast Grit Basin	WMU-49 Downcoiler sump	WMU-50 South Motor room sump	WMU-51 Basement Sump	WMU-52 Scale Pit	WMU-53 Roughing Mill Pit	WMU-54 Old Four High Scale Pit	WMU-55 Blooming Mill Scale Pit	WMU-56 Reheat Sump	WMU-57 Heater Area	AOC-T34 Former Large Pond No. 3	AOC-T35 Dekishing Pit	AOC-T36 Former Pond Area No. 1	AOC-T37 Former Pond Area #2	South Motor Room Basement
Arsenic	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Barium	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Cadmium							X																
Chromium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Copper	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Iron																				X			
Lead	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Manganese	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mercury	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nickel	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Vanadium	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Zinc	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
VOCs	X	X	X		X		X	X		X	X	X	X		X	X	X						X
SVOCs	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
PCBs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

3.4 Off-site Disposal Requirements

In addition to the COIs listed above, liquids and sludges being disposed of off-site will be analyzed for the following parameters:

- Ammonia by USEPA SW-846 Method 350.1 or SM4500-NH3
- pH (Corrosivity) by USEPA Method SW 9040/9045
- Ignitability by USEPA SW-846 Methods SW 1010/1030
- Reactivity by SW-846 Chapter 7

Other methods may be substituted for the above if required to meet the project data quality objectives (DQOs) or if required by the project Quality Assurance Project Plan (QAPP).

3.5 Publicly Owned Treatment Works Requirements

In addition to the COIs discussed above, if liquids are to be discharged to the City of Trenton POTW, the liquids need to be tested for the following parameters and be below the specified limits. All discharges to the POTW will be conducted according to a permit to be obtained by the Owner's designated Operator, Cogent Recovery.

Parameter	*Limit*
Ammonia	17.27 mg/L (Maximum of 670 lbs. per day)
Arsenic	0.345 mg/L
Barium	20.78 mg/L
Biological Oxygen Demand (BOD)	140 mg/L (Maximum of 11,987 lbs. per day)
Boron	40.84 mg/L
Cadmium	0.115 mg/L
Chromium	3.45 mg/L
Copper	0.703 mg/L
Cyanide (Total)	0.125 mg/L
Grease and oil	70.0 mg/L
Hexavalent Chromium	2.03 mg/L
Lead	0.802 mg/L
Mercury (Low Level)	0.2 ng/L
Nickel	1.552 mg/L
Phosphorus	2.02 mg/L (Maximum of 112 lbs. per day)
Selenium	0.075 mg/L
Silver	3.751 mg/L
Total Suspended Solids	65 ppm (Maximum of 8,914 lbs. per day)
Zinc	2.82 mg/L

The sample analysis for the above discharge parameters will be conducted using the following analytical methods:

- Ammonia by USEPA SW-846 Method 350.3
- BOD by SM 5210 B
- Boron by USEPA SW-846 Method 200.8

- Cyanide (Total) by USEPA SW-846 Method 335.4
- Oil and grease, by USEPA Method 1664A
- Hexavalent Chromium by SM3500-Cr B
- Low Level Mercury by USEPA Method SW-846 1631E
- Selenium and Silver by USEPA SW-846 Method 200.8
- Phosphorous by SM 4500-P H
- Total Suspended Solids by SM2540 D

Other methods may be substituted for the above if required to meet the project data quality objectives (DQOs) or if required by the project Quality Assurance Project Plan (QAPP).

4.0 Assessment and Removal

Assessment and removal will consist of:

- Initial Assessment of the Units
- Removal and Disposal of Liquids and Sludges from Each Unit,
    - Including gravity draining of process piping
- Cleaning of Surfacing Materials
- Testing of the Units
- Backfilling and compaction (rolling) of the Empty and Cleaned Units

4.1 Initial Assessment of the Units

Step 1 Survey and record the USGS coordinates of each Unit.

Step 2 Document current site conditions. Documentation of the Unit will include at a minimum:

- Sufficient photographs to depict the current condition of all portions of the Unit (Minimum of two views of the Unit from opposite corners).
- Written description of the current condition of the Unit in the daily log. Written description must include nature and extent of visible existing fill (i.e. is the entire Unit filled or just a portion), description of the surface topography of the fill material, and description of vegetative cover (if any).

Step 3 Evaluate the Unit for the presence of liquids and sludges. If no liquids and associated sludges are present in the Unit no additional steps are required and the Unit may be filled to grade with inert materials.

Step 4 Identify a reference location from which the depth of the liquids and sludge in the Unit may be gauged. Care must be taken to ensure that this location can be accessed safely, will remain unchanged until final backfilling of the Unit, liquids removal activities will not interfere with access, and that the full depth of the liquids and sludge within the Unit can be gauged from the reference point. If the Unit consists of readily observable, multiple distinct areas with potentially different use histories, multiple references points will be selected for the Unit at a rate of one per distinct area. *Note if the location of the material cannot be accessed safely, then the depth of the material will not be gauged.*

Step 5 Mark the reference point with high visibility green paint or plastic flagging. On the Property, high visibility green will only be utilized by the environmental consultant (EC).

Step 6 Name the reference point with a unique identification code consisting of the three letter code "REF" identifying it as a reference point and a three letter and two number code identifying the Unit. If the Unit has more than one reference point, they will be designated with a single letter code in alphabetical order as designated. For example, the first reference point designated in WMU-1 would be labeled as follows:

- REF-WMU01-A

If a second reference point was required in WMU-1, it would be labeled as follows:

- REF-WMU01-B

Step 7 Ensure that the vertical and horizontal location of each reference point is surveyed, and the coordinates recorded.

Step 8 Determine the distance to the top of each phase of liquids and sludge in the Unit. Note, several phases of liquid (LNAPL, DNAPL, and dissolved phase) may be present in any Unit and the distance below the reference point to the top of each phase will be determined and recorded.

Step 9 Collect representative samples of each liquid phase greater than 1-inch in thickness from the Unit. Depending on the number and type of liquid phases present, a Coliwasa tube sampler or other appropriate sampling device will be required. Collect sufficient volume for analysis of the COIs as presented in **Table 1**. Samples will be collected directly into laboratory provided pre-cleaned and preserved bottles based on the analysis required.

Step 10 Collect one or more representative samples of any sludge present within the Unit. *Note, if the location of the material cannot be accessed safely, then the material will not be sampled until a safe procedure is identified*. More than one sample of the sludge will be required for larger Units or Units with distinct phases which may have different depositional histories. Sludge sampling may be conducted following removal of liquids from the Unit. Depending on the nature and depth of any sludge and/or the Unit, sludge samples may be collected by Ponar grab sampler, "Sludge Judge" sampler, or other appropriate device. Collect sufficient volume for analysis of the COIs as presented in **Table 1**. Samples will be collected directly into laboratory provided pre-cleaned and preserved bottles based on the analysis required.

Step 11 Label each sample with a unique identifier consisting of a three letter and two number code identifying the Unit, a one letter code identifying the sample as either a liquid (L) or sludge (S), The single letter code of the reference point, and a number identifying the order in which the sampled layer was encountered from the reference point. An example of a liquid phase encountered in WMU-1 from reference point C beneath two separate phases would be as follows:

- WMU01-L-C-3

A sludge from the same location would be labeled WMU01-S-C with no final number code unless more than one sludge phase is encountered.

Step 12 Place all collected samples on wet ice and package for safe delivery to the selected analytical laboratory.

Step 13 Complete a separate chain of custody for all of the samples collected each day. Typically, samples should be shipped to the laboratory on a daily basis. Strict chain of custody must be maintained for all samples.

Step 14 Samples will be analyzed for the COIs listed in **Table 1**, and any additional analysis required by the selected treatment or disposal facility.

4.2 <u>Removal and Disposal of Liquids and Sludges from Each Unit</u>

Step 1 Following receipt of the sample results, compare the samples in each Unit to the GNRCC.

- If all detected COI concentrations in the liquid samples are below the GNRCC for DW, the liquids will be considered "clean water" and can be used for dust suppression and/or cleaning activities on the

Property. Refer to the Dust Control Plan for details of the dust suppression program.

- If one or more COI is found to exceed the GNRCC for DW in one or more liquid sample from the Unit, the liquids will either be properly disposed of off-site or discharged to the City of Trenton POTW under permit.
- All sludge that exceed the GNRCC for DC will be properly disposed of off-site (for exceptions, refer to Step 7). .

Step 2 Floating Light Non-Aqueous Phase Liquids (LNAPL) and sinking Dense Non-Aqueous Phase Liquids (DNAPL), if identified during the Initial Assessment, will be removed from all Units and segregated for off-site disposal.

Step 3 If liquids being removed from the Unit are to be disposed by discharging to the City of Trenton POTW, compare the analytical results to the POTW permit requirements. If not all required parameters have been analyzed for all liquids in the Unit or not all COIs are below the POTW requirements, no liquids will be discharged from the Unit to the POTW.

- If all COIs and all required parameters are within the POTW permit requirements, and a permit has been obtained, liquids will be discharged to the POTW via pumping at a rate at or below the permit requirements. If necessary, a particulate filter will be placed in line with the pump to control total suspended solids (TSS) to or below the permit requirements.

Step 4 If liquids are to be disposed off-site, they will either be pumped directly into tanker trucks for transportation or will be pumped into temporary above grade storage tanks designed for this purpose. Liquids will not be pumped into another Unit or other existing below grade structure. Transport of all liquids off the Property will be conducted in compliance with all applicable Michigan Department of Transportation (MDOT), MDEQ, United States Environmental protection Agency (USEPA), and United States Department of Transportation rules and regulations. Emergency spill control equipment will be maintained on site for the loading and transport of liquids. Floating absorbent buoys will be maintained by each of three outfalls in the event of a release from one of the outfalls.

Step 5 If during removal of the liquids from the Unit, the liquids are found to be in communication with the local groundwater or surface water, removal of liquids

and sludge from the Unit will be halted. A Unit will be said to be in communication with the groundwater or surface water if any of the following criteria are met:

Small to Medium Volume Units

- Small to medium volume Units are defined as containing total liquids and sludge volumes of less than approximately 100,000 gallons. During removal of the liquids from the small to medium volume Units, the liquid level is found to recover at a rate exceeding one inch per 15 minutes using a vacuum truck unless the recovery is found to be caused by the transfer of liquids from one or more nearby Units.

- OR -

- After removal of approximately half of the estimated total volume of liquid in the Unit, the total volume of liquids in the Unit has not decreased by at least approximately 30%-40% or the level of the liquids in the Unit has not decreased by at least one inch. If during removal of liquids from one Unit the liquid levels in one or more nearby Unit(s) are seen to also be decreasing, liquids removal will continue from the Unit until at least one volume of the combined volume of all affected Units has been removed, including the liquid gravity drained from process piping.

Large Volume Units

- Large volume Units are defined as having approximately 100,000 gallons or more in liquids and sludge volume. During removal of the liquids from the large volume Units, an initial attempt will be made to decrease the level of liquids at least 10% within the Unit. The Unit will then be observed for up to 24 hours. If the liquid level is found to recover at least 5% or more in the 24 hours without a rain event, the Unit will be deemed in communication with surface water or groundwater.

Step 6 During removal of all liquids within a Unit, connected piping will be allowed to gravity drain into the Unit. Readily observable drainage from piping will be allowed to drain until no liquid is seen to be gravity draining from the piping or for 2-hours, whichever is shorter. Following drainage, the piping will be plugged.

Step 7 Following gravity draining of all piping connected to the Unit, and removal of all liquids, all associated sludges will be removed. Prior to removal of any sludge, ensure that sufficient samples have been collected and analyzed for the appropriate COIs as presented in Table 1.

Step 8 Following removal of all liquids and associated sludges in the Unit, any large debris present within the Unit will be cleaned and removed from the Unit. Cleaning of equipment will be conducted using high pressure wash with either potable water or liquids found to be "clean water" as described above. Cleaning fluids will be contained either within the Unit or in a separate cleaning area from which all cleaning fluids can be collected for disposal. The collected cleaning fluids will either be characterized the same way as the total fluids in the Unit, will be disposed in the same manner as the other fluids from the Unit, but may be temporarily batched in on-site storage units or frac tanks.

Step 9 Following removal of all large debris the Unit will be cleaned. Cleaning of the empty Unit will be conducted using high pressure wash to remove any residual sludge with either potable water or liquids found to be "clean water" as described above. Cleaning fluids will be contained either within the Unit or in a separate cleaning area from which all cleaning fluids can be collected for disposal. The collected cleaning fluids will either be characterized the same way as the total fluids in the Unit. Cleaning fluids will be disposed in the same manner as the other fluids from the Unit, but may be temporarily batched in on-site storage units or frac tanks.

4.3 Testing of the Units

Following the Removal of all liquids, debris, and associated sludge from the Unit, the Unit will be tested as follows:

Step 1 Units with no COIs detected in the liquid samples at concentrations above the GNRCC for DW and contain no sludges (which will be determined by the sampling plan on a case by case basis) will be considered "clean water" and may be backfilled without removal of liquids or cleaning (Refer to Section 2.2, Step 5). No samples will be collected from the concrete sidewalls or floors for these Units.

Step 2 Units that are determined to be in communication with groundwater or surface water, , will be backfilled without the removal of liquids and associated sludges

and without cleaning of the Unit's concrete sidewalls or floors but such action will not be taken without prior notice to the EPA.

Step 3 For all other Units, following cleaning of the concrete sidewalls and/or floor, the concrete floors will be sampled to document that concentrations of COIs in the concrete are below the GNRCC for DC. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

Step 4 Sampling locations will be uniquely noted on a representative diagram of the unit.

Step 5 If there are significant health and safety concerns associated with collection of confirmation samples from the empty Units, the samples will not be collected and the units will be backfilled. The contractor will provide notice of those safety concerns to the EPA prior to backfilling.

Step 6 Core samples of the concrete walls will be collected. The samples will be collected following the EPA procedure for porous media sampling (Refer to Attachment A).

Step 7 Each concrete sample will be analyzed for the COIs specific to that Unit as presented in Table 1. Samples will be collected directly into laboratory provided pre-cleaned and preserved bottles based on the analysis required.

Step 8 If all COIs are below the GNRCC for DC and less than 25 ppm for total PCBs in all samples collected from the Unit, cleaning will be considered complete. If one or more COI exceed the GNRCC for DC or total PCBs exceed 25 ppm, one of the following three options will be implemented.

1. Re-sample the areas to confirm that these areas are impacted above the criteria.
2. Re-clean and then re-sample the area until all COIs are found to be below the criteria.
3. Remove the concrete areas impacted with COIs above the criteria and dispose of the concrete in compliance with local, state and federal laws.

4.4 Backfilling of the Empty and Cleaned Units

Following testing, each Unit will be backfilled as follows:

Step 1 Prior to backfilling the Unit, the concrete floor and/or walls of the Unit will be "cracked" to reduce the future potential for buildup of water within the Unit. Cracking of the Unit may include either mechanical breaking of the concrete of the Unit's floor, drilling holes in the concrete floor, or other equivalent technique.

Step 2 The Unit will be backfilled with inert fill materials. Inert materials may include crushed concrete, asphalt millings or slag from the Property.

Step 3 If the Unit was previously not found to be in communication with the groundwater, following backfilling the Unit will be capped with a semi-impermeable surface such as compacted/rolled millings to prevent infiltration of precipitation that could cause exacerbation.

5.0 Discussion of Specific Units

This Liquid and Sludge Removal Work Plan procedure will be applied to the following Units on the Property. Other Units on the Property are not covered under this Liquid and Sludge Removal Work Plan. Refer to **Attachment B** for additional information and maps of each of the Units included in this Liquid and Sludge Removal Work Plan.

5.1 AOC 34 Former Large Pond No. 3

This Unit was previously filled in. No activities beyond documenting current conditions and surveying of the Unit are anticipated in this Unit.

5.2 AOC 35 Dekishing Pit

This Unit was previously filled in. No activities beyond documenting current conditions and surveying of the Unit are anticipated in this Unit.

5.3 AOC 36 Former Pond Area No. 1

This Unit was previously filled in. No activities beyond documenting current conditions and surveying of the Unit are anticipated in this Unit.

5.4 AOC 37 Former Pond Area No. 2

This Unit was previously filled in. No activities beyond documenting current conditions and surveying of the Unit are anticipated in this Unit.

5.5 WMU 1 Sedimentation Basin

This liquid filled basin may have a plastic liner and is anticipated tocontain approximately 4-million gallons of liquid and sludge. Based on the dimensions of the basin, it is anticipated that two reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations to properly document the Unit. Following removal of the liquids and sludge, the plastic liner, if present, will be removed and disposed off-site. Sludge in this basin will be removed to a depth of 2 feet BGS or until soil is contacted. The number of soil samples will be based on the DEQ Soil Verification guidance document. These samples will be collected from the surface only.

For portions of this Unit that are constructed over soils or fill material, no cleaning or post cleaning sampling will be conducted because the basin is lined with a plastic liner that will be

removed and disposed of off-site. Portions of this Unit that are lined with concrete will be cleaned and post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.6 WMU 9 Centrifuge Sludge Pit

This Unit was previously filled in. No activities beyond documenting current conditions and surveying of the Unit are anticipated in this Unit.

5.7 WMU 10 Standby Sludge Basin

This Unit contains a concrete basin for the emergency retention and dewatering of sludge from the WWTP thickener. The Unit is estimated to contain approximately 335,000-gallons of liquids and sludge.

The basin within the Unit is estimated to be 120 feet by 25 feet therefore; post cleaning sampling will be limited to two floor samples representing worse case impacts from visual observations.

5.8 WMU 13 CWWTP Sludge Filter Press Load-Out Area

This Unit consists of a concrete pad. No activities beyond documenting current conditions and surveying of the Unit are anticipated in this Unit.

5.9 WMU 15 Wastewater Treatment Plant Sludge Management Units

This Unit contains three large former clarifiers, an unknown number of other small basins and tanks, and connecting tunnels. The volume of liquids and sludge in this Unit are unknown at this time. All below grade pits or basins will be addressed as a single Unit utilizing the methods in this Liquid and Sludge Removal Work Plan. The above grade clarifier Units will also be addressed as individual Units except that following cleaning, the clarifiers and associated WWTP will not be demolished but will remain onsite as emergency secondary containment. Following all site activities clarifiers may be demolished.. Based on the configuration of the Unit, it is estimated that 20 reference points and characterization sample sets will be required. However, the number of reference points and samples may be adjusted based on field observations.

Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.10 WMU 23 BOF Gas Sludge Pit

This Unit contains a multi-chamber in-ground pit system. The current volume of liquids and sludge in the various chambers of this Unit are unknown at this time, however, it appears that one or more of the pits may communicate with groundwater or surface water. Based on the nature of this Unit, it is anticipated that 15 reference points and characterization samples will be required to properly characterize the Unit prior to addressing it. The number of reference points and characterization samples will be based on field observations.

The dimensions of the pits are currently not known. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.11 WMU 25 K061 Settling Basin

The sludge in this Unit is a K061 hazardous waste. However, characterization samples may identify that the liquids and/or sludge in this Unit may also meet the requirements for other hazardous waste codes. Therefore the liquids, sludge, and cleaning water from this Unit will be properly disposed of off-site as a K061 hazardous waste and will not be discharged to the POTW. The current volume of liquids and sludge in this Unit are unknown. The basin within the Unit is estimated to be 10 feet by 15 feet. Based on the dimensions of the basin and the previous use history, it is anticipated that one reference point and characterization sample set will be required. However, the number of reference points and sample may be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.12 WMU 42 Concast Scale Pit

This Unit contains a 38 foot by 18 foot by at least 40 foot deep concrete pit estimated to contain more than 200,000-gallons of liquids. Based on the dimensions of the pit, it is anticipated that two reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations.

Based on the depth to the liquids in this Unit, it may be in communication with the groundwater or surface water. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.13 WMU 43 Concast Grit Basin

This Unit contains a multi chamber in ground pit system. The current volume of liquids and sludge in this Unit are estimated to be approximately 180,000-gallons. Based on the nature of this Unit, it is anticipated that 13 reference points and characterization sample sets will be required to properly characterize the Unit prior to addressing the Unit. The number of reference points and characterization samples will be based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.14 WMU 49 Downcoiler Sump

This Unit consists of a basement area containing oil and water. The volume of the sump or sumps is currently unknown. Based on the known dimensions of the sump, it is currently anticipated that four reference points and characterization sample sets will be required to properly characterize the sump. The number of reference points and sample will be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.15 WMU 50 South Motor Room Sump and the South Motor Room Basement

These Units consists of a basement containing an unknown number of sumps containing oil and water beneath the south motor room. Since the south motor room basement is flooded, the amount of liquid and sludge in the basement and the sump(s) is unknown at this time. It is estimated that the unit contains approximately 5.2-million gallons of liquids and sludge. Currently it is anticipated that 10 reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations.

The South Motor Room Basement is assumed to be approximately 700 feet by 50 feet by 20 feet deep. Based on the estimated size of this Unit, it is anticipated that a sampling grid of 26 feet will be established for the collection of bottom samples. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.16 WMU 51 Six Stand Basement Sump

This Unit consists of a basement area containing oil and water. The sump is anticipated to be approximately 20 feet by 20 feet by 8 feet deep and to contain approximately 24,000-gallons of liquids and sludge. Based on the configuration of the sump, it is anticipated that five reference points and characterization sample sets will be required to characterize this unit. However, the number of reference points and sample may be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.17 WMU 52 Finish Stand Scale Pit

The Unit is anticipated to contain approximately 90,000-gallons of liquids and sludge. The pit is approximately 40 feet by 13 feet by 23 feet deep. Based on the dimensions and configuration of the pit, it is anticipated that four reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.18 WMU 53 Roughing Mill Scale Pit

The Unit is anticipated to contain approximately 90,000-gallons of liquids and sludge. The pit is approximately 45 feet by 13 feet by 23 feet deep. Based on the dimensions and configuration of the pit, it is anticipated that five reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.19 WMU 54 Old Four High Scale Pit

The Unit is anticipated to contain approximately 37,000-gallons of liquids and sludge. The pit is approximately 30 feet by 30 feet by 16 feet deep. Based on the dimensions and configuration of the pit, it is anticipated that five reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.20 WMU 55 Blooming Mill Scale Pit

The Unit contains an unknown volume of liquids and sludge in five sumps/pits. Based on the configuration of the Unit, five reference points and sets of characterization samples may be required. The numbers of samples to be collected following cleaning is currently unknown.

The post-cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observation.

5.21 WMU 56 Reheat Sump

The Unit is anticipated to contain approximately 61,000-gallons of liquids and sludge. The pit is approximately 22 feet by 31 feet by 12 feet deep. Based on the dimensions and configuration of the pit, it is anticipated that two reference points and characterization sample sets will be required. However, the number of reference points and sample may be adjusted based on field observations. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

5.22 WMU 57 Heater Area Drains Sump

The Unit is anticipated to contain approximately 1.4-million gallons of liquids and sludge. It is anticipated that two reference points and characterization sample sets will be required for this Unit based on size. The number and location of reference points and characterization samples will be based on field observations.

Based on the estimated size of this sump, it is anticipated that a sampling grid of 19 feet will be established for the bottom samples. Post cleaning sampling will be limited to two floor samples at the targeted locations representing worse case impacts from visual observations.

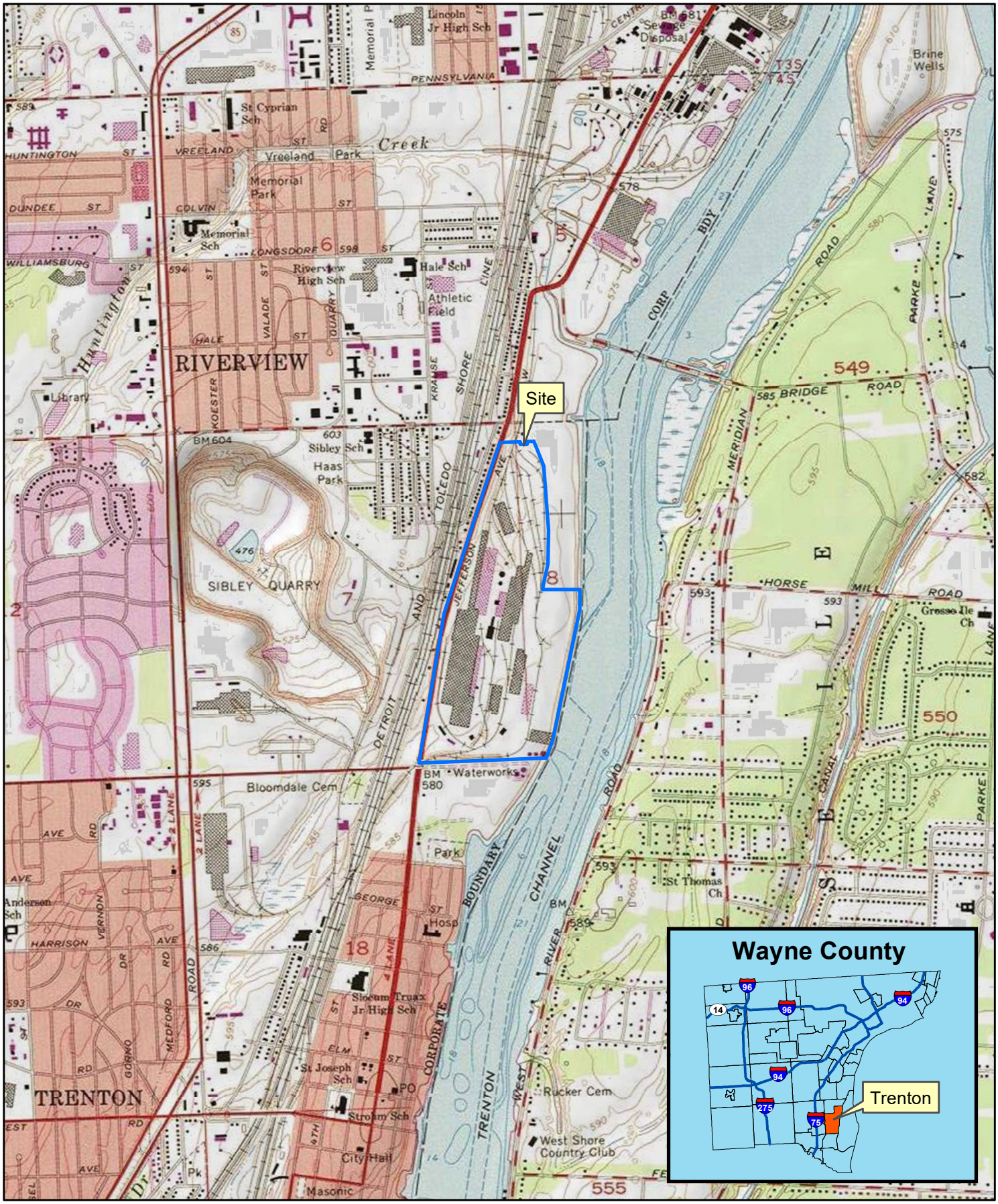
6.0 Applicable or Relevant & Appropriate Requirements

The following are the Applicable or Relevant and Appropriate Requirements (ARARs) for the work conducted as part of this Work Plan

- 40 CFR 110-140 – The Clean Water Act (Environmental Protection Agency (EPA)))
- 40 CFR 260-272 & 279 – The Resource Conservation and Recovery Act (EPA)
- 40 CFR 305 – The Comprehensive Environmental Response Compensation and Liability Act (EPA)
- Part 111 of Michigan P.A. 451 of 1994 – Hazardous Waste (Michigan Department of Environmental Quality (MDEQ)

- Part 115 of Michigan P.A. 451 of 1994 – Solid Waste (MDEQ)
- Part 201 of Michigan P.A. 451 of 1994 – Environmental Response (MDEQ)

Figures



Former McLouth Steel Trenton Plant

1491 West Jefferson Avenue
Trenton, MI

0 500 1,000 2,000 Feet

N

ASTI Environmental

Client: MSC Land Company, LLC
Created by: BJG, July 26, 2018, ASTI Project 10391

Figure 1 - Site Location Map

LEGEND

Subject Property

0 550 1,100 1,650

Approximate Scale in Feet

Former McLouth Steel Trenton Plant

1491 West Jefferson Avenue, Trenton, MI

ASTI Environmental

N

Created for: MSC Land Company, LLC

Figure 2 - County Property Map

ASTI Project 10391, SBW/BRB, July 16, 2018

LEGEND

Subject Property

0 550 1,100 1,650

Approximate Scale in Feet

ASTI Environmental

N

Former McLouth Steel Trenton Plant

1491 West Jefferson Avenue, Trenton, MI

Created for: MSC Land Company, LLC

Figure 3 - AOC and WMU Location Map

ASTI Project 10391, JMD/SBW, April 11, 2018

Attachment A

ASTI Sampling Standard Operating Procedures (SOPs)

ASTI ENVIRONMENTAL
STANDARD OPERATING PROCEDURE #6

FIELD NOTEBOOKS

MARCH 12, 2008
REVISION NO. 00

STANDARD OPERATING PROCEDURE PREPARED BY:

NAME MATT WHIPPLE DATE MARCH 12, 2008

STANDARD OPERATING PROCEDURE APPROVED BY:

CONTENT REVIEW
NAME PETER COLLINS DATE AUGUST 4, 2008

FORMAT REVIEW
NAME PETER COLLINS DATE AUGUST 4, 2008

FINAL REVIEW
NAME TOM WACKERMAN DATE OCTOBER 3, 2008

APPROVED BY DIRECTORS DATE NOVEMBER 10, 2008

ASTI ENVIRONMENTAL

STANDARD OPERATING PROCEDURE FOR

FIELD NOTEBOOKS

1.0 Scope and Applicability

This standard operating procedure (SOP) applies to the use of field notebooks by all ASTI employees collecting data from, or making observations at, any project location.

2.0 Summary of Method

Field notebooks will be used by ASTI employees in accordance with this SOP to ensure the collection of all necessary site-related data. They will be completed in a manner that ensures that these data and observations may be reliably used at a later date to understand the information collected, the environment from which these were collected, and the work performed.

3.0 Definitions

Not applicable.

4.0 Health & Safety Warnings

Not applicable.

5.0 Cautions

As described in Section 6, field staff shall make every effort to keep field notebooks as clean and dry as possible to maintain legibility of entries in the notebook.

6.0 Interferences

Not applicable

7.0 Personnel Qualifications/ Responsibilities

ASTI employees collecting data from project sites in field notebooks need to read and write legibly in English. It is the responsibility of each employee to make sure that the notes collected and drawings created are readable by others.

8.0 Equipment and Supplies

All field notes will be completed in the ASTI-approved and supplied field notebooks and written in ink. Notes are made in ink to provide evidence that entries were not altered. Notes in pencil are not allowed because they can be easily erased and altered; moreover, they may not be admissible as evidence in legal proceedings.

Field staff must carry extra pens to job to accommodate losses. Field staff will also bring a portable light source if data collection in unlit environments is expected and a means for protecting field notebooks from becoming wet if inclement weather is expected.

Wet Weather

While field activities in inclement weather are unavoidable, the use of ASTI-approved field notebooks, which are designed to be water-resistant, mitigates the problems caused by wet weather. When not making notes, field notebooks will be protected by covered clipboard, pack, inside pocket, etc.

Darkness

Field staff involved in work that must be conducted either at night or in unlit locations will carry, at the minimum, a flashlight and extra batteries in order to avoid hazards collect data/make observations. The preferred method for extended field data collection in lightless environments is through the use of a head mounted light.

Cold Weather

Cold weather can adversely affect the operation of ink pens. Field staff collecting data in extremely cold environments should carry extra pens in warmer places so that failed pens can be replaced.

9.0 Equipment Calibration and Set-up

Employees will check the remaining space available in their field notebooks prior to deploying to any job site. If there is any concern regarding the remaining free space available, the employee will carry an additional blank field notebook to the job site.

10.0 Procedure

Field notebooks should be prepared before initial use. This initial preparation includes:

A. Labeling the notebook cover in permanent, weatherproof ink with:
   - Your Name
   - ASTI Environmental, Inc.
   - Notebook Number (indicate in Roman numerals what field notebook this is. If this is your first field notebook, it should be labeled 'I'.)

B. Labeling the first page with:
   - Your Name
   - Notebook Number (clearly indicate in Roman numerals what number field notebook this is. If this is your first field notebook, it should be labeled 'I'
   - Statement: "If found, please return to ASTI Environmental, Inc., 10448 Citation Drive, Brighton, MI 48116 or call 1-800-395-ASTI"
   - Each page of the notebook will be numbered sequentially in the upper outside corner. This numbering may be done before or during use.

Before each use on a project site, the field notebook entry will start with:

- Date
- Project information (at a minimum: site name, site address, client name)
- Project Number
- Project location (City and State)
- ASTI Staff present
- Others present
- Time of arrival on site
- Time of start of work on site
- Weather conditions if working outdoors
  (including kind of precipitation, its intensity, wind strength and direction, sun/cloud cover, and temperature)
- Site conditions, including observations relevant to the project
- Site sketch sufficient to orient a third party reader to the site and work performed. This must include a north arrow.
- Equipment used
- Equipment calibration date/person
- Time of departure from site.

At a project site, the field notebook will be used to record:

- Any measurements taken on site (including time and location)
  - For discrete sample collection this will include, but not be limited to, sample number, sample matrix, and method of collection
  - For continuous or time weighted samples this will include sample number, sample medium, sample start time, and sample end time
- Any calculations performed on-site
- Any observations (which are distinguished from conclusions)

- Any photos or video taken on-site will be recorded (time, location, facing direction, description). Photo location and direction should be marked by photo number on a map in the notebook. Each photo should have a unique number and time designation and be listed in the field notebook
- Process descriptions
- Meeting and Conversation notes
- Equipment problems
- Decontamination Procedures

Each project will be started on the next available page of the notebook, leaving no blank pages. Entries will be made on each line, leaving no more than one line between entries. Incomplete or blank pages will contain a line drawn across them to prevent the addition of information. Upon completion of a page of notes, ASTI staff must sign and date the bottom of each page.

An important rule for entries into field notebooks is to distinguish *observations* from *conclusions.* For example, "The site is full of invasive species" and "Housekeeping at the facility is poor" are *conclusions*, not *observations.* Conclusions must be supported by observations, e.g., "The site contained Autumn olive, European buckthorn, and spotted knapweed" or "Small spills of oil and other materials as well as paper debris were observed on the floors and work surfaces in the production area"—observations that lead to a conclusion. While on site, ASTI staff should focus on making observations, not conclusions.

It is better to write more rather than less because more detail reduces ambiguity and the potential for misinterpretation. If you use abbreviations, even ones that you think are common, provide a definition. All numbers must have units.

Field notebooks may be used to record information, observations and data after leaving the site, for example, at a restaurant or hotel room. Such entries must be made in a section of the field notebook after the field observations and must be identified as made off-site. Finally, the date and time such entries are made must be recorded in the field notebook.

Field notebook entries may be corrected while on site or at a later time. Corrections are made as follows: (1) draw a single line through the incorrect entry (so that the original entry is still legible.) (2) Next, write the correction above/beside the strike-out, and date and initial the correction.

11.0 Data and Records Management

Active field notebooks will be maintained in the employee's office when not in use. Copies of field activities recorded in field notebooks will be made upon return to the office and placed in the project file. Only those notes related to the project can be placed in the project folder.

Once a field notebook has been filled it will remain in the employee's office at all times. Upon termination of employment all field notebooks must be provided to the Office Manger for archiving.

12.0 Quality Control and Quality Assurance

Field staff will review field notebook entries during and after field work to ensure all entries were made in accordance with this SOP. Field staff will incorporate recommendations made by peers, Project Managers, Directors and Sponsors with respect to improvements in making observations, recording data, and adherence to this SOP.

13.0 Update and Review Procedures

This SOP must be reviewed by a Director at any time a staff member determines that information and procedures appear to be missing or at variance with any other SOP. The Director may recommend changes to the SOP to the group of Directors.

14.0 References

ASTI *Personnel Policy Handbook.*

15.0 Attachments

Not Applicable.

ASTI ENVIRONMENTAL
STANDARD OPERATING PROCEDURE

POROUS MEDIA CHIP SAMPLING

JULY 10, 2018
REVISION NO. 1

STANDARD OPERATING PROCEDURE PREPARED BY:

NAME BRIAN EARL DATE JULY 10, 2018

STANDARD OPERATING PROCEDURE APPROVED BY:

CONTENT REVIEW
NAME_____ DATE_____

FORMAT REVIEW
NAME_____ DATE_____

FINAL REVIEW
NAME_____ DATE_____

APPROVED BY DIRECTORS DATE_____

ASTI ENVIRONMENTAL

STANDARD OPERATING PROCEDURE FOR

POROUS MEDIA CHIP SAMPLES

1.0 Scope and Applicability

This Standard Operating Procedure (SOP) applies to the collection of representative chip samples of porous surfaces. These procedures have been developed in general accordance with the United States Environmental Protection Agency (USEPA) Standard Operating Procedures (SOPs).

This SOP is an essential guide for all ASTI staff during collection of chip samples from porous media such as concrete and wood.

2.0 Summary of Method

The procedures in this SOP are used to ensure that samples representative of the true concentration of contaminants in a porous media are collected for characterization of the media. The following sections of this SOP are each divided into two parts. The procedures in this SOP are designed to act as a guide and may not be applicable to every sampling situation. Sampling procedures described in this SOP may need to be modified based on field conditions.

Samples are collected using a 1/2-inch wide cold chisel or other steel chisel and a hammer. Care must be taken to ensure that the chisel is cleaned properly prior to being used and between each sample. The chisel and hammer are used to break enough concrete off to fill a four ounce jar and collect a 10 gram sample in to a methanol kit.

3.0 Definitions

Chip – A fragment of the porous media to be sampled.
Porous Media – Material to be sampled that is permeable (i.e. cement or wood).

4.0 Health & Safety Warnings

Adequate health and safety measures must be taken into consideration during all site visits. ASTI employees are required to read and understand the Company's Corporate Health and Safety Plan prior to conducting any field work. Site Specific Health and Safety Plans must be developed for sites that will include porous media sampling and include detailed site information such as emergency phone numbers, emergency contact information, site hazards, site cautions, and MSDS sheets for chemicals used at these sites. *See ASTI SOP – Site Safety Plans.*

5.0 Cautions

1. Special care must be taken and precautions incorporated in this method must be followed to minimize cross-contamination of the sample.
2. The sampling team must take care to ensure that all sampling equipment materials are compatible with the contaminants of concern.
3. This method involves significant risk from flying debris. Eye protection MUST be worn while sampling porous media.

6.0 Interferences

The need to avoid contamination when collecting samples cannot be over-emphasized. Field collection personnel should be familiar with the potential sources of contamination, and implement those steps necessary for adequate control. Potential interferences that can cause contamination of samples that the sample collection team must be aware of include:

- Potential Sources of Contamination - These include improperly cleaned, and stored equipment, as well as atmospheric sources such as dirt and dust, automobile exhaust, laboratory workers, and cigarette smoke.
- Elevated Background Concentrations - Levels of contaminants can be a result of natural background or environmental contamination.
- Cross Contamination - The best way to control cross contamination is to minimize exposure of the sample and sampling equipment to possible sources of contamination. When possible, prior knowledge of sampling locations is used for planning collection activities to minimize chances of contamination from high sources, cross contamination resulting from sequentially sampling locations of high and low levels, and cross contamination during storage and transportation.
- Sampling Equipment Decontamination – Improper or incomplete decontamination of sampling equipment is a significant source of contamination. The decontamination of the sampling equipment used in vapor sampling is conducted primarily by the laboratory.

7.0 Personnel Qualifications/Responsibilities

All field staff must be trained by experienced field staff before performing Porous Media Sampling. Required field training is mandatory prior to leading a sampling team by new field staff. All field staff performing or assisting with sampling at sites that may be contaminated with hazardous substances are required to have 40-hour HAZWOPER training.

8.0 Equipment and Supplies

Equipment and supplies used during porous media sampling can change depending on the material to be sampled and site requirements, or other specific guidance; however, the following list presents the equipment generally required. These recommendations are

consistent with equipment used at ASTI sites. Disposable materials such as gloves, storage bags, and plastic wrap, may be used new without additional cleaning.

1. **Chisel -** A 1/2 inch steel cold chisel designed to break through concrete.
2. **Hammer** - a three pound hand sledge.
3. **Plastic Tube –** Individual plastic tubes for crushing pieces of the porous media if required.
4. **Electronic Scale –**

9.0 Equipment Calibration and Set-up

Not Applicable.

10.0 General Instructions

These procedures are for a typical sampling application; actual field conditions and procedures may vary.

Before Arriving at the Sampling Location

1. Verify that required sample bottles are available.
2. Verify that required equipment is available.
3. Determine the sampling locations.
4. Review the Site-Specific Health & Safety Plan (HASP)

Sample Collection

1. Confirm the appropriate sample location has been selected.
2. Record sample location identifier in the field logbook (Refer to ASTI's Field Logbook SOP).
3. Don a clean pair of chemical resistant gloves.
4. Don safety glasses.
5. Remove the pre-decontaminated chisel from the storage bag.
6. Beginning with the horizontal edges of the area to be sampled, begin chipping the horizontal edges approximately 1.5-inches apart and approximately 0.5-inch deep.
7. Chip the vertical lines approximately 1.5-inches apart and approximately 0.5–inch deep. Care should be taken not to fully dislodge the chip at this point.
8. Using the chisel and hammer carefully remove the chip such that it does not come into contact with any other surface other than the samplers gloves or the sample collection bottle.
9. Complete a second chip adjacent to the first to allow for the collection of sufficient volume for sampling.
10. Place the two chips into the disposable tubes provided by the laboratory for sample crushing.
11. Using the hammer break the chips up small enough to fit easily into the laboratory provided sample jars. If the chips are being pulverized in the field, continue to break the chips until they are composed primarily of particles of fine gravel size or smaller (approximately 2 or 3 millimeters in diameter).

12. Place the crushed or uncrushed (if laboratory will crush the sample) sample into the laboratory provided containers.
13. Place the sample(s) on ice and chill to approximately 6° C.
14. Fill out chain-of-custody and relinquish samples properly (it is important to note the canister serial numbers on the chain-of-custody).
15. Ship per standard chain of custody protocols to meet method holding times.
16. Decontaminate the chisel per the site HASP.

11.0 Data and Records Management

During sampling, field data collected should be carefully recorded in the field logbook. Logged sample data should be recorded for each sample including date and time sample collected, sample location, sample identification number, project number site name and weather conditions.

Any additional notes or observations should be recorded in field notebooks or on field data forms. For proper field notebook procedures please refer to the ASTI Corporate Field Notebook Standard Operating Procedures.

12.0 Quality Control and Quality Assurance / Quality Control

The collection of QA/QC samples must be an integral part of any sampling activities. The QA/QC procedures must be included in sampling activities to ensure the samples are representative of the subsurface conditions. A full QA/QC program should be implemented that includes the collection of at least one field duplicate per sampling event or one per 10 samples, whichever is greater. Duplicate samples shall be collected in separate sample containers, using the same procedures, at the a location adjoining the original sample. Preferably, duplicate samples should be collected simultaneous to collection of the primary sample using a sampling tee.

13.0 Update and Review Procedures

Review and update this SOP when new equipment and/or new technology is used or when relevant federal/state agencies issue new guidance. Update this SOP by incorporation of relevant portions of new guidance.

14.0 References

- Chip, Wipe, and Sweep Sampling, SOP #2011, USEPA, November 16, 1994
- Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), USEPA, May 2011
- ASTI Corporate Field Notebook Standard Operating Procedures.

15.0 Attachments

Not Applicable.

ASTI ENVIRONMENTAL
STANDARD OPERATING PROCEDURE

SOIL AND SLUDGE SAMPLING

September 7, 2018
REVISION NO. 005

STANDARD OPERATING PROCEDURE PREPARED BY:

NAME BRIAN J. EARL DATE SEPTEMBER 7, 2018

STANDARD OPERATING PROCEDURE APPROVED BY:

CONTENT REVIEW

NAME RICHARD J. WELSH DATE SEPTEMBER 7, 2018

FORMAT REVIEW

NAME _____ DATE_____

FINAL REVIEW

NAME _____ DATE_____

ASTI ENVIRONMENTAL

STANDARD OPERATING PROCEDURE FOR

SOIL AND SLUDGE SAMPLING

1.0 Scope and Applicability

The purpose of this standard operating procedure (SOP) is to describe the procedures to be used by ASTI employees during the collection of representative soil and sludge samples. Analysis of soil and sludge samples may determine whether concentrations of specific contaminants potentially exceed established action levels, or if the concentrations of contaminants present a potentially significant risk to health and safety.

2.0 Definitions

ASTM D 1586-98 – Standard Test Method for Penetration Test and Split-Spoon (Barrel) Sampling of Soils

DQOs – Data quality objectives
MDEQ – Michigan Department of Environmental Quality
OSHA – Occupational Safety and Health Administration
USEPA – United States Environmental Protection Agency
VOC – volatile organic compound

3.0 Summary of Method

Soil and sludge samples may be collected using a variety of methods and equipment depending on the depth of the desired sample, the type of sample required (disturbed vs. undisturbed), and the material type. Near-surface materials may be easily sampled using a spade, trowel and scoop. Sampling at greater depths may be performed using a hand auger or mechanical methods such as a direct push drill rig or hollow stem auger rig. Which method or methods of sample collection are to be used should be based on site conditions, analytes proposed for analysis, and the DQOs for the project. Whatever method is used to collect the sample, care must be taken to ensure that representative samples are collected and the potential for cross-contamination is reduced.

For samples to be analyzed by USEPA Method 5035 for VOCs, sub-sample aliquots to be tested for VOCs are collected first, as soon as possible after the sample has been extracted from the ground, from as undisturbed a portion of the sample as possible. VOC samples may be collected using a dedicated syringe-type coring device and immediately transferred into pre-weighed VOC vials containing reagent grade methanol as specified by the laboratory. The samples are then transferred to the laboratory using proper chain-of-custody protocols.

For samples being collected for the analysis of other compounds, sub-samples are taken and transferred to laboratory provided pre-clean sample bottles as appropriate to the analysis to be performed. When collecting samples for analysis care must be taken to ensure that the sample collected is representative of the conditions at the sampled depth and that samples are as

homogenous as possible. To achieve this, samples for non-volatile analysis may be mixed prior to filling the laboratory container.

4.0 Health & Safety Warnings

When working with potentially hazardous materials, follow USEPA, OSHA, MDEQ, Corporate and/or Site Specific Health & Safety Plan.

5.0 Cautions

There are two primary potential challenges associated with soil and sludge sampling – cross-contamination of samples and improper sample collection. Potential cross-contamination issues can be eliminated or minimized through the decontamination of sampling equipment (Refer to ASTI SOP – Decon). Improper sample collection can involve using contaminated equipment, disturbance of the matrix resulting in compaction of the sample, or inadequate homogenization of the samples, where required, resulting in variable, non-representative results.

6.0 Interferences

Not Applicable

7.0 Personnel Qualifications/Responsibilities

The collection of soil and sludge samples should be conducted by trained ASTI personnel familiar with the sampling protocols outlined in this SOP. Field sampling and monitoring may be performed by a single individual or by two or more persons depending upon the nature of the project and site and weather conditions. If deemed necessary, projects that require sampling at night should be conducted using two-person teams but may be reviewed on a case-by-case basis depending upon sampling location and suspected site hazards.

8.0 Equipment and Supplies

- Sample location maps/plot plan
- Work Plan
- Safety equipment/PPE, as specified in the site-specific Health and Safety Plan
- Tape measure
- Survey stakes or flags
- Camera
- Field potable scale or balance
- Stainless steel, plastic, or other appropriate homogenization bucket, bowl or pan
- Appropriate size sample containers supplied by the Laboratory
- Ziplock plastic bags
- Field book
- Chain of Custody records
- Field data sheets and sample labels
- Cooler
- Ice
- Decontamination supplies/equipment

9.0 Equipment Calibration and Set-up

Manufacturer specified calibration procedures and schedules will be conducted.

10.0 Procedure

10.1 Preparation

- Determine the extent of the sampling effort, the sampling methods to be employed, and the types and amounts of equipment and supplies required.
- Obtain necessary sampling and monitoring equipment.
- Decontaminate or pre-clean equipment, and ensure that it is in working order.
- Prepare schedules and coordinate with client and regulatory agencies, if appropriate.
- Use stakes, flagging, or buoys to identify and mark all sampling locations.

Specific site factors, including extent and nature of contaminant, should be considered when selecting sample location. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. All staked locations should be utility-cleared (MISS DIG) prior to sampling; and utility clearance should always be confirmed before beginning work if ground disturbance is required to reach the sampling depth.

10.2 Sample Collection

10.2.1 Collecting Samples for VOC analysis

Collection of samples for analysis of VOCs should be by USEPA Method 5035. Sub-samples are taken using a dedicated syringe-type coring device as soon as possible after the sample has been extracted from the ground. Samples shall be collected from as undisturbed portion of the material as possible, and immediately transferred into pre-weighed VOC vials containing reagent grade methanol as specified by the Laboratory.

1. Make arrangements with the laboratory to obtain appropriate Methanol Preservation Sampling Kits. The sampling kit includes one 40 mL VOA vial containing 10 mL methanol, labeled with the weight of the vial and methanol, one disposable sampling syringe and one 4 oz or 8 oz wide mouth glass jar for % solids.
2. Record the tracking or lot number(s) for the methanol in the field notebook. If more than one lot is used, each lot must be associated with the samples for which it was used.
3. Prior to collection, check the calibration of the balance per Section 9.0 above.
4. Prior to collection prepare a temperature blank sample using tap water.
5. Prior to collection, ensure a sufficient quantity of methanol field blanks, i.e., at least one per cooler and one per methanol lot, is available. The methanol field blank should be prepared by the lab/supplier.
6. Calibrate the syringe to estimate the amount of material needed to meet the target

weight (typically 10 g +/- 1 g for a 10 mL methanol preserved VOA vial with a 40 mL capacity), and use that syringe as a comparison for how much sample is needed. This calibration is performed because of the volumetric variability of native Michigan and fill soils and sludges required to obtain the necessary 10 g weight for sample analysis. Calibration is performed using steps 10 - 17 below, using the syringe only, and part of the material that is to be collected. The material used for calibration cannot be used as the sample. It must be extruded from the sampler and discarded at the site before collecting the sample. The sampler does not have to be cleaned between calibration using this step, and collection of the sample.

7. Place a kim-wipe or similar disposable tissue, used to prevent balance contamination, on the balance, and tare the scale.
8. Record the location, date, and time of sampling in the field log book. Do not place any labels, stickers, tape, etc. on the pre-weighed sample vials.
9. For methanol field blanks, the methanol blank should NOT be opened in the field, but should be handled and shipped like a water VOA trip blank, un-opened throughout the sampling process, then placed in the shipping cooler with the VOC samples.
10. Place the syringe to be used for the sample on the balance.
11. Record the weight in the field log book. If the balance features re-zeroing, zero the balance.
12. Remove the syringe. If a cap is provided, remove the cap and reserve it for future use.
13. Insert the open end of the syringe into a fresh face of undisturbed material, and fill it as appropriate according to the calibration of the syringe (Step 6). Care should be taken to minimize the amount of associated liquids collected into the syringe if sampling saturated soil samples or sludge samples associated with a liquid.
14. If necessary, use your gloved finger (a fresh pair of disposable gloves should be used for each new sample), or other appropriate instrument, and push the material deeper into the syringe sampler.
15. If a cap was provided, immediately cap the end of the syringe. Wipe the syringe clean.
16. Place the syringe on the balance. Read the weight, and subtract the weight of the syringe, as appropriate, to determine the weight of the material.
17. If the weight of the sample is determined to be more than the maximum amount allowed, extrude enough material to obtain the target amount within the specified tolerance, and re-weigh. See the table in this document, "Specifications for the Collection of Samples Using Methanol Preservation" for the applicable target sample size and tolerance.
18. If the weight of the sample is less than the minimum amount allowed, re-sample and repeat steps starting with Step 7.
19. Record the material weight in the field notebook. DO NOT RECORD the weight on the sample vial label.
20. Remove the cap from the sample vial, and place it in the vessel on the balance, with the septum upwards.

21. Insert the open end of the syringe sampler into the mouth of the vial, and carefully extrude the material, taking care to avoid spillage. Loss of several drops will not make a significant difference in the results. If a significant amount is spilled, a new sample must be collected, or the sample must be appropriately flagged to indicate estimated results.
22. Using a clean brush, paper towel, or other suitable material, thoroughly wipe excess material from the threads and vial body. Particles left on the threads will prevent a good seal.
23. Place the VOC cap on the sample vial. The cap must be tight; however, over-tightening should be avoided.
24. Gently swirl the sample and methanol for about 10 seconds to break up the material. DO NOT SHAKE.
25. Place the sample in a plastic bag on ice in a cooler.
26. Using the syringe sampler, take another sample from the material.
27. Cap and label the syringe with the sample identification.
28. Place the syringe with the sample in the plastic bag. This sample is for dry weight determination.
29. Decontaminate the balance using decontamination procedures appropriate for the type and level of contamination.

For further details regarding the procedures for collecting of samples via USEPA Method 5035 refer to the MDEQ Operational Memorandum No. 2, Attachment 6, Sampling Methods for Volatile Organic Compounds.

10.2.2 Collecting Samples for non-VOC analysis

Collection of samples for analysis other than VOCs should be done directly into laboratory provided pre-cleaned jars.

1. Make arrangements with the laboratory to obtain appropriate type and number of sample jars for the analysis to be requested.
2. Record the tracking or lot number(s) for the jars and any preservatives used in the field notebook. If more than one lot is used, each lot must be associated with the samples for which it was used.
3. Prior to collection prepare a temperature blank sample using tap water.
4. Record the location, date, and time of sampling in the field log book.
5. Place a sufficient amount of material to fill all jars into a pre-cleaned stainless steel bowl or other appropriate apparatus such as a large zip-lock bag.
6. Using a decontaminated stainless steel spoon or similar sampling device, mix the sample. The material should be mixed well prior to filling the rest of sample containers. If using a zip-lock bag, material may be mixed by kneading the material within the bag.
7. Using the spoon place sufficiently large sub-samples into each of the sample jars required for the requested analysis.

8. If necessary, use your gloved finger (a fresh pair of disposable gloves should be used for each new sample), or other appropriate instrument, and push the material deeper into the jar.
9. Using a clean brush, paper towel, or other suitable material, thoroughly wipe excess material particles from the threads and jar body. Particles left on the threads will prevent a good seal.
10. Place the cap on the sample jar. The cap must be tight; however, over-tightening should be avoided.
11. Place a label on the jar identifying location, date, and time of sampling, and the requested sample analysis.
12. Place the sample in a plastic bag on ice in a cooler.

11.0 Data and Records Management

Not Applicable.

12.0 Quality Control and Quality Assurance

There are no specific quality assurance (QA) activities which apply to the implementation of these procedures. However, the following QA procedures apply:

1. All data must be documented within the field notebooks.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

13.0 Update and Review Procedures

Not Applicable

14.0 References

Michigan Department of Environmental Quality Operational Memorandum 2 Attachment 6, Sampling Methods for Volatile Organic Compounds, October 22, 2004

U.S. Environmental Protection Agency. 1994. Standard Operating Procedures. Soil Sampling. S.O.P. #2012; Revision 0.0; 11/16/94; U.S. EPA Contract 68-C4-0022.

Mason, B.J. 1983. Preparation of Soil Sampling Protocol: Technique and Strategies. EPA-600/4-83-020.

Barth, D.S. and B.J. Mason. 1984. Soil Sampling Quality Assurance User's Guide. EPA-600/4-84-043.

U.S. Environmental Protection Agency. 1984 Characterization of Hazardous Waste Sites – A Methods Manual: Volume II. Available Sampling Methods, Second Edition. EPA-600/4-84-076.

de Vera, E.R., B.P. Simmons, R.D. Stephen, and D.L. Storm. 1980. Samplers and Sampling Procedures for Hazardous Waste Streams. EPA-600/2-80-018. ASTM D

1586-98, ASTM Committee on Standards, Philadelphia, Pennsylvania.

15.0 Attachments

Not Applicable.

ASTI ENVIRONMENTAL
STANDARD OPERATING PROCEDURE

SURFACE WATER/LIQUID SAMPLING

SEPTEMBER 12, 2018
REVISION NO. 01

STANDARD OPERATING PROCEDURE PREPARED BY:

NAME_BRIAN J. EARL_____ DATE_SEPTEMBER 12, 2018____

STANDARD OPERATING PROCEDURE APPROVED BY:

CONTENT REVIEW
NAME __RICHARD J. WELSH_____ DATE_SEPTEMBER 12, 2018___

FORMAT REVIEW
NAME _____ DATE_____

FINAL REVIEW
NAME _____ DATE_____

ASTI ENVIRONMENTAL

STANDARD OPERATING PROCEDURE FOR

SURFACE WATER/LIQUID SAMPLING

1.0 Scope and Applicability

This Standard Operating Procedure (SOP) describes general and specific procedures, methods and considerations to be used and observed when collecting surface water samples for field screening or laboratory analysis. This SOP applies to the collection of representative samples of surface waters and associated non-aqueous phase liquids (NAPLs).

2.0 Summary of Method

Sampling situations vary widely, and, therefore, no universal sampling procedure can be recommended. However, sampling of both aqueous and non-aqueous phase liquids is generally accomplished through the use of one of the following samplers or techniques:

- Direct "Dipping" Method
- Dip sampler
- Discrete Depth samplers; e.g., Kemmerer or Van Dorn bottles
- Peristaltic pumps
- Submersible Pumps
- Bailers

These sampling techniques will allow for the collection of representative samples from the majority of surface waters and impoundments encountered.

3.0 Definitions

DNAPL – Dense Non-aqueous Phase Liquid
LNAPL – Light Non-aqueous Phase Liquid
MDEQ – Michigan Department of Environmental Quality
OSHA – Occupational Safety and Health Administration
USEPA – United States Environmental Protection Agency
VOC – volatile organic compound

4.0 Health & Safety Warnings

When working with potentially hazardous materials, follow USEPA, OSHA, MDEQ, Corporate and/or Site Specific Health & Safety Plan. In addition, attention must be given to the hazards of working in and around large bodies of water or open pools of liquids.

5.0 Cautions

- Special care must be taken not to contaminate samples. This includes storing samples in a secure location to preclude conditions which could alter the properties of the sample.
- Documentation of field sampling is done in a bound logbook.
- Chain-of-custody documents shall be filled out and remain with the samples until custody is relinquished.
- Surface water samples for VOC analysis must be collected in to 40 ml glass vials with a Teflon® septa and preserved with hydrochloric acid. The samples should be collected with as little agitation or disturbance as possible. The vial should be filled so that there is a reverse or convex meniscus at the top of the vial and no bubbles or headspace should be present in the vial after it is capped.
- If a sampling device is used, care must be taken to ensure that the sampling device does not contact the sample container.
- All samples requiring preservation must be preserved as soon as practically possible, ideally immediately at the time of sample collection.

6.0 Personnel Qualifications/Responsibilities

The collection of surface water and liquid samples should be conducted by field personnel trained in and familiar with the sampling protocols outlined in this SOP. Field sampling and monitoring may be performed by a single individual or by two or more persons depending upon the nature of the project and site and weather conditions. Projects that require sampling at night must be conducted using two-person teams but may be reviewed on a case-by-case basis depending upon sampling location and suspected site hazards.

7.0 Equipment and Supplies

- ☐ Sample location maps/plot plan
- ☐ Work Plan
- ☐ Safety equipment/PPE, as specified in the site-specific Health and Safety Plan
- ☐ Water level meter or interface probe (if NAPLs are present)
- ☐ Survey stakes or flags, or marking spray paint
- ☐ Camera
- ☐ Sample collection equipment, may include:
    - Scoops
    - Peristaltic Pumps
    - Discrete Depth Samplers
    - Bailers
    - Buckets
    - Submersible Pumps
- ☐ Appropriate size and number of sample containers
- ☐ Field book
- ☐ Chain of Custody records
- ☐ Field data sheets and sample labels

- Cooler
- Ice
- Decontamination supplies/equipment

8.0 Procedure

The following methods may be used to collect surface water/liquid samples. The method selected for the sampling should be based on site specific conditions and project data quality objectives.

8.1 Direct "Dipping" Method

A sample may be collected directly into the sample container when the source is accessible by reaching from the edge or other means. The sampler should face upstream if there is a current and collect the sample without disturbing any other liquid layers or the bottom sediment or sludge. The sample should always be collected prior to the collection of a sediment or sludge sample at the same location. The sampler should be careful not to displace the preservative from a pre-preserved sample container, such as the 40-ml VOC vial.

8.2 Dip Samplers

Stainless steel (or other material if the liquid to be sampled is suspected to be incompatible with stainless steel) scoop provide a means of collecting samples from liquid bodies that are too deep to access. They have a limited reach of about eight feet or it may be attached to an extension in order to access the selected sampling location.

Using a scoop is similar to dipping using the sample bottle but care must be taken while transferring the sample to the bottles to minimize disturbance of the liquid.

8.3 Peristaltic Pump

The peristaltic pump can be used to collect a sample from any depth if the pump is located at or near the surface elevation of the liquid. The use of a conduit to which the tubing is attached, allows for the collection of a sample (to about a maximum depth of 25-foot) which is representative of the water column as a whole or discrete liquid phases (NAPLs). The pump intake is positioned in the liquid column at the desired depth by means of the conduit. Using this method, discrete samples may be collected by positioning the tubing intake at one depth or a vertical composite may be collected by moving the tubing intake at a constant rate vertically up and down the water column over the interval to be composited.

8.4 Discrete Depth Samplers

When discrete samples are desired from a specific depth, and the parameters to be measured do not require a Teflon®-coated sampler, a standard Kemmerer or Van Dorn sampler may be used. The Kemmerer sampler is a brass cylinder with rubber stoppers that leave the ends of the sampler open while being lowered in a vertical position, thus allowing free passage of water through the cylinder. The Van Dorn

sampler is plastic and is lowered in a horizontal position. In each case, a messenger is sent down a rope when the sampler is at the designated depth, to cause the stoppers to close the cylinder, which is then raised. Liquid is removed through a valve to fill respective sample containers. With multiple depth samples, care should be taken not to significantly disturb the bottom sediment or sludge, thus biasing the sample.

When metals and organic compounds parameters are of concern, then a double-check valve, stainless steel bailer or Kemmerer sampler should be used to collect the sample.

8.5 Submersible Pumps

Submersible pumps can be used to collect liquid samples directly into a sample container. The constituents of interest should be taken into consideration when choosing the type of submersible pump and tubing to be used. If trace contaminant sampling of extractable organic compounds and/or inorganic analytes will be conducted, the submersible pump and all of its components should be constructed of inert materials such as stainless steel and Teflon®. The tubing should also be constructed of Teflon®. If re- using the same pump between sample locations, the pump should be decontaminated using an appropriate cleaning solution(s) New tubing should be used at each sample location.

If the samples will be analyzed for water quality parameters only such as ammonia, nitrate-nitrite, phosphorus, or total organic carbon, the pump and tubing may be constructed of components other than stainless steel and Teflon®. For these parameters, the same pump and tubing may be re-used at each sampling station after rinsing with deionized water and then purging several volumes of sample water through the pump and tubing prior to filling the sample containers.

Either a grab or composite sample can be collected using a submersible pump. A composite sample can be collected by raising and lowering the pump throughout the liquid column. If a composite sample is collected, it may be necessary to pump the sample into a compositing vessel for mixing prior to dispensing into the sample containers. If a compositing vessel is required, it should be constructed of materials compatible with the constituents of concern and decontaminated between sample stations according to appropriate procedures, again depending on the constituents of concern.

8.6 Bailers

Teflon® or stainless steel bailers may also be used for surface liquid sampling if the project objectives do not necessitate a sample from a discrete interval in the water column. A closed-top bailer with a bottom check-valve is sufficient for many studies. As the bailer is lowered through the liquid column, liquid is continually displaced through the bailer until the desired depth is reached, at which point the bailer is retrieved. This technique may not be successful where strong currents are found.

9.0 Data and Records Management

Not Applicable.

10.0 Quality Control and Quality Assurance

There are no specific quality assurance (QA) activities which apply to the implementation of these procedures. However, the following QA procedures apply:

1. All data must be documented within the field notebooks. Refer to the SOP for Field Notebooks.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

11.0 References

Operating Procedure – Surface Water Sampling, U.S. Environmental Protection Agency Science and Ecosystem Support Division, February 28, 2013

12.0 Attachments

Not Applicable.

Attachment B

Unit Summary Sheets

Unit Description
Former McLouth Steel Facility County Property

AOC 34: Former Large Pond Area No. 3

Description: Former basin filled in between 1952 and 1956

Construction: Earthen basin

Size: Approximately 250’ x 900’

Latitude/Longitude: TBD

Contents: Fill material

Estimated Depth of Contents: N/A

Est. Volume of Contents: N/A

Demolition Area: NOS

Unit Subject to: EPA Work Plan, CERCLA

Special Considerations: None

Clearance Required:

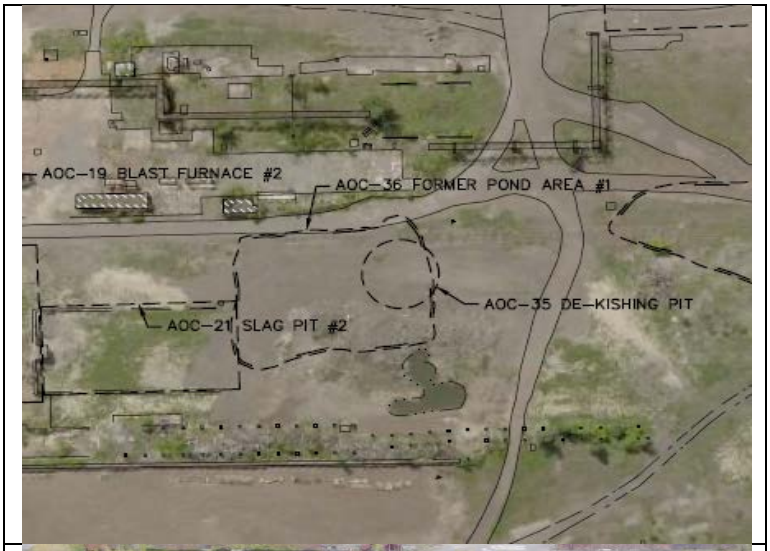
Confined Space Entry	No
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	No

Procedures

- No action

Unit Description
Former McLouth Steel Facility County Property

AOC 35: Dekishing Pit



Description: Pit for collecting kish removed from torpedo cars and ladles

Construction: Earthen pit

Size: TBD

Contents: Fill material

Estimated Depth of Contents: N/A

Est. Volume of Contents: N/A

Demolition Area: Area 9

Unit Subject to: EPA Work Plan, CERCLA

Special Considerations: None

Clearance Required:

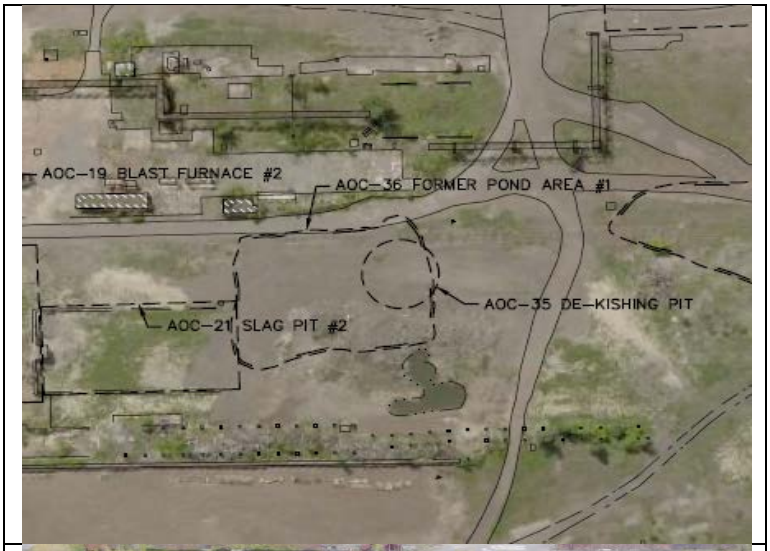
Confined Space Entry	No
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	No

Procedures

- Document current conditions (ASTI

Unit Description
Former McLouth Steel Facility County Property

AOC 36: Former Pond Area No. 1



Description: Three adjacent square former basins filled in between 1956 and 1961

Construction: Earthen basins

Size: Approximately 220’ x 150’ collectively

Contents: Fill material

Estimated Depth of Contents: N/A

Est. Volume of Contents: N/A

Demolition Area: NOS

Unit Subject to: EPA Work Plan, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	No
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	No

Procedures

- Document current conditions (ASTI)

Unit Description
Former McLouth Steel Facility County Property

AOC 37: Former Pond Area No. 2

Description: Three adjacent former basins in a triangle shape filled in between 1956 and 1961

Construction: Earthen basins

Size: Approximately 600’ long and 300’ at the base collectively

Contents: Fill material

Estimated Depth of Contents: N/A

Est. Volume of Contents: N/A

Demolition Area: NOS

Unit Subject to: EPA Work Plan, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	No
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	No

Procedures

- Document current conditions (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 1: Sedimentation Basin

Description: Basin for settling and oil separation of storm water and process wastewater from rolling and pickling operations

Construction: Earthen basin with liner

Size: 270’ x 100’ x 20’

Contents: TBD

Estimated Depth of Liquid: 20’

Est. Volume of Liquid: 4-million gallons

Demolition Area: Area 23

Unit Subject to: EPA Work Plan, AHERA, RCRA, CERCLA

Special Considerations: removal of WMU5 prior to work in this area; note condition of liner when removing

Clearance Required:

Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	Yes
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry (Cogent)
- Characterize liquids and sludges for disposal (Cogent)
- Remove overhead pipe and close (see WMU5)
- Remove and dispose of liquids and sludges. Gravity drain process piping (Cogent)
- Cap process and waste piping (Cogent)
- Remove equipment, remove and dispose of liner (Cogent)
- Clean Containment on north end (Cogent)
- Sample Containment (Cogent)
    - Documentation of cleaning completed (ASTI)
- Grub existing vegetation, cut trees to grade (do not remove root balls) (D21)
- Demolish above grade containment and building (D21)
- Backfill basin (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - Cover with impermeable surface to avoid exacerbation, if not connected to groundwater (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 9: Centrifuge Sludge Pit

Description: Former basin for dewatering sludge from the sinter plant

Construction: Earthen dikes

Size: TBD

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 15

Unit Subject to: EPA Work Plan, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	No
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	No

Procedures

- Document current conditions (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 10: Standby Sludge Basin

Description: Basin for emergency retention and dewatering of sludge from the CWWTP thickener

Construction: Concrete walled basin

Size: 120' x 25' x 15'

Contents: TBD

Estimated Depth of Contents: 15'

Est. Volume of Contents: 335,000-gallons

Demolition Area: Area 14

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	No
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Characterize liquids and sludges for disposal (Cogent)
- Remove and dispose of liquids and sludges. Remove and dispose of liner (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Demolish above grade containment (D21)
- Backfill basin (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - Cover with impermeable surface to avoid exacerbation, if not connected to groundwater (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 13: CWWTP Sludge Filter Press Loadout Area

Description: Filter cake loadout area for processed thickened CWWTP sludge disposal

Construction: TBD

Size: TBD

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 14

Unit Subject to: EPA Work Plan, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	No
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	No

Procedures

- Document current conditions (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 15: Wastewater Treatment Plant Sludge Management Units

Description: Clarifiers and tanks that accumulate waste in the CWWTP process

Construction: Metal clarifiers, pits, tunnels, buildings

Size: TBD

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 14

Unit Subject to: EPA Work Plan, AHERA, RCRA, CERCLA, TSCA

Special Considerations: Do not demolish clarifiers until project completed – to be used for emergency containment of process wastes.

Clearance Required:

Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	Yes
Cleaning Complete	Yes
Transformer Removal	Yes

Procedures

- Grub existing vegetation, cut trees to grade (do not remove root balls) (D21)
- Confined Space Entry Permit required for entry to tunnels or pits (Cogent)
- Characterize liquids and sludges for disposal (Cogent)
- Remove and dispose of liquids and sludges from all basins and tanks (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Remove miscellaneous equipment, containerized materials, special waste, transformers, if present (Cogent)
- Pre-demolition asbestos abatement (D21)
    - Asbestos clearance (D21)
    - Document asbestos removal complete (ASTI)
- Demolish above grade containment, tanks and equipment (D21)
- Break Floor/Walls (D21)
- Backfill basins (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - Cover with impermeable surface to avoid exacerbation, if not connected to groundwater (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 23: BOF Gas Sludge Pit

Description: Multi chamber in ground receiving pit for sludge from the wet scrubber air pollution control system for the basic oxygen furnaces

Construction: Concrete pits and trenches

Size: TBD

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 17

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: may be hazardous waste by characteristic, surface materials impacted from operations

Clearance Required:

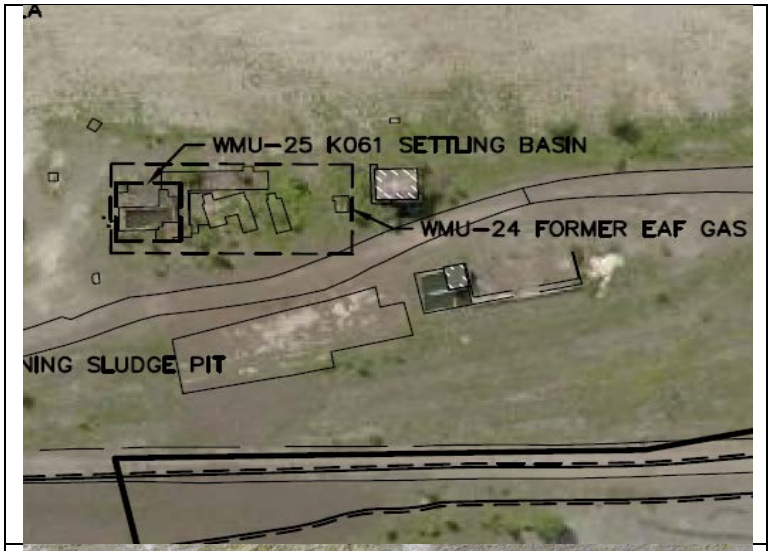
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Characterize surface materials immediately adjacent to Unit (Cogent)
- Remove and dispose of surface materials (Cogent)
- Confined Space Entry Permit required for entry to basins and pits (Cogent)
- Characterize contents of pits, channels and basins (Cogent)
- Remove and dispose of liquids and sludges, if any (Cogent)
- Remove and dispose of process solids on surface and in pits, channels and basins (Cogent)
- Cap process and waste piping (Cogent)
- Clean containment (optional, removal all containment) (Cogent)
- Sample containment (Cogent)
    - Document no longer listed hazardous waste
- Grub existing vegetation, cut trees to grade (do not remove root balls) (D21)
- Demolish containment to grade (D21)
    - Remove concrete channels, if feasible
- Break Floor/Walls (D21)
- Backfill containment area (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - No action to avoid exacerbation, stormwater does not collect in this area
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 25: K061 Settling Basin



Description: In ground basin for collection of K061 sludge from the gas cleaning system

Construction: Concrete basin

Size: 10’ x 15’

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 18

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

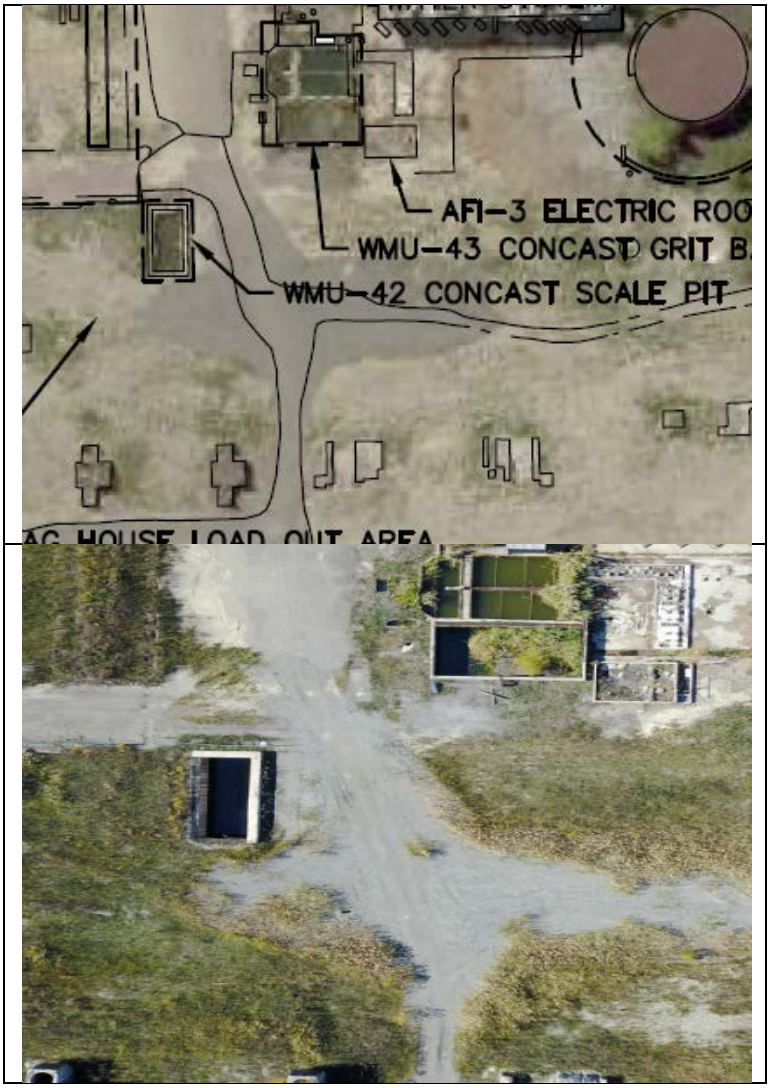
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize contents (Cogent)
- Remove and dispose of liquids and sludges, if any (Cogent)
- Cap process and waste piping (Cogent)
- Clean containment (Cogent)
- Sample containment (Cogent)
- Demolish containment to grade (D21)
- Break Floor/Walls (D21)
- Backfill containment area (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 42: Concast Scale Pit



Description: Basin for separating steel scale from the Concaster contact cooling water

Construction: Concrete pit

Size: 38”x18’x41”

Contents: TBD

Estimated Depth of Contents: 41’

Est. Volume of Contents: 200,000-gallons

Demolition Area: Area 25

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal or use as dust control (ASTI/Cogent)
- Remove and dispose of liquids and sludges (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Demolish containment to grade (D21)
- Break Floor/Walls (D21)
- Backfill containment area (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - Cover with impermeable surface to avoid exacerbation, if not connected to groundwater (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 43: Concast Grit Basin

Description: Interconnected basins for separating solids and oil from Concaster cooling water

Construction: Steel and concrete basins

Size: 40' x 60' x 10'

Contents: TBD

Estimated Depth of Contents: 10'

Est. Volume of Contents: 180,000-gallons

Demolition Area: Area 7

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

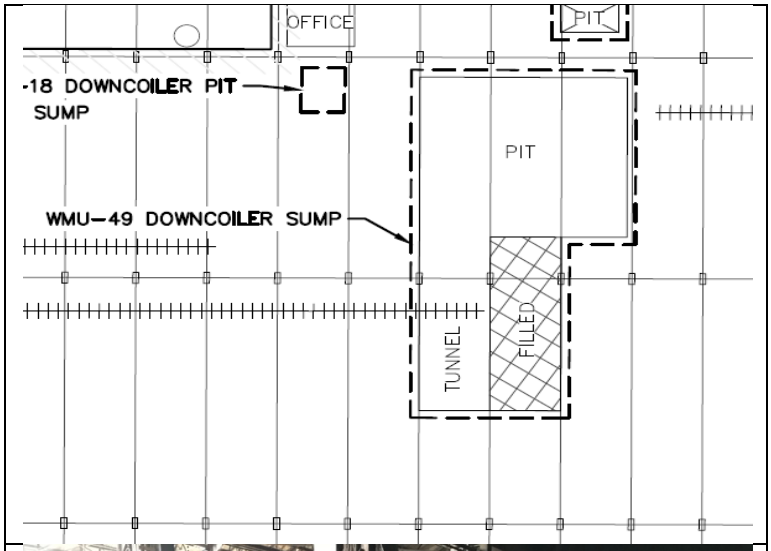
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal or dust control (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Demolish above grade containment (D21)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Due Care
    - No action required for surface impacts, liquids and sludges removed.
    - Cover with impermeable surface to avoid exacerbation, if not connected to groundwater (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 49: Downcoiler Sump



Description: Basement containing oil circulating pumps and oily water sumps

Construction: TBD

Size: TBD

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

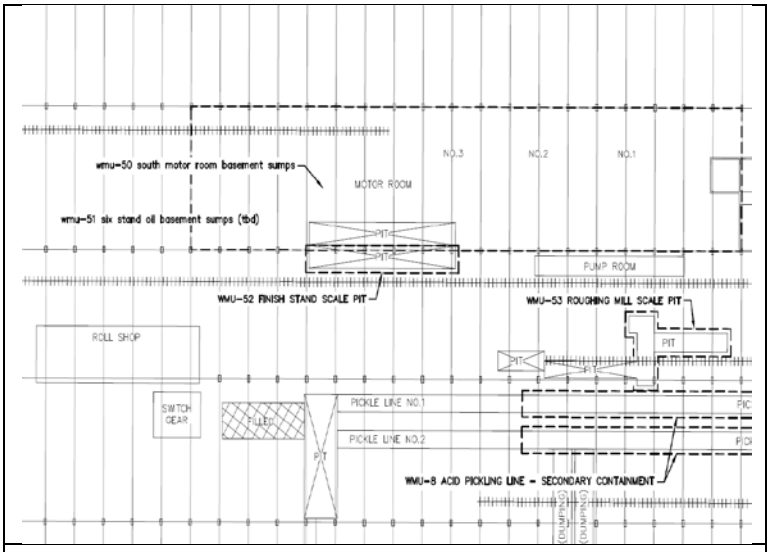
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 50: South Motor Room Sump



No Picture

Description: Sumps for management of oily water in the South Motor Room Basement

Construction: TBD

Size: 700’ x 50’ x 20’

Contents: TBD

Estimated Depth of Contents: 20’

Est. Volume of Contents: 5.2-milion gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA, TSCA

Special Considerations: None

Clearance Required:

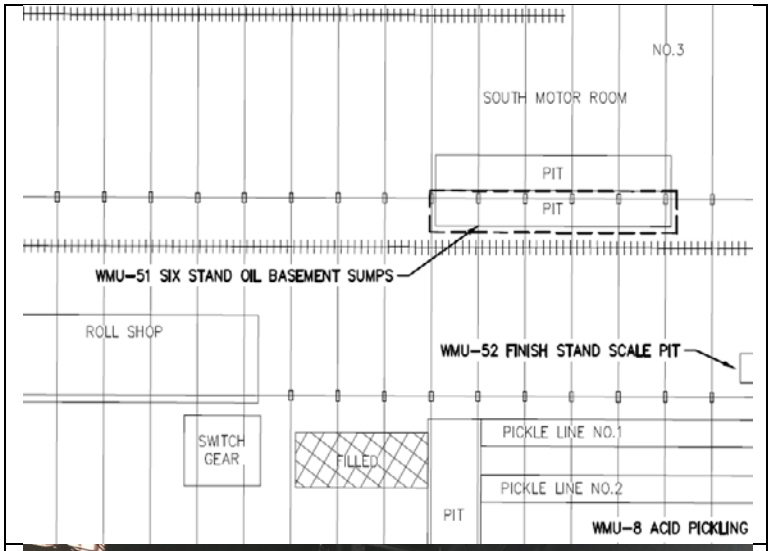
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes
Transformer removal	No

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 51: Six stand Basement Sump



Description: Sumps for management of oily water in the Six Stand Basement

Construction: TBD

Size: 20’ x 20’ x 8’

Contents: TBD

Estimated Depth of Contents: 8’

Est. Volume of Contents: 24,000-gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

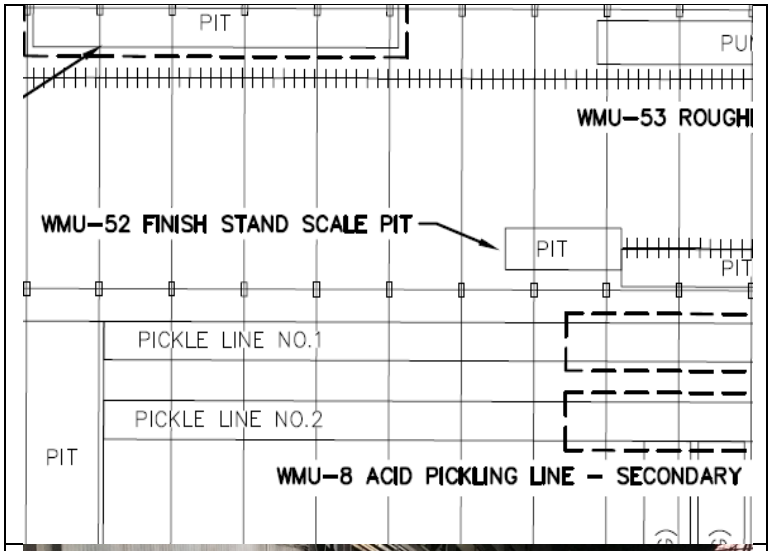
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 52: Finish Stand Scale Pit



Description: Sumps for separation of solids and oil

Construction:

Size: 40' x 13' x 23'

Contents: TBD

Estimated Depth of Contents: 23'

Est. Volume of Contents: 90,000-gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

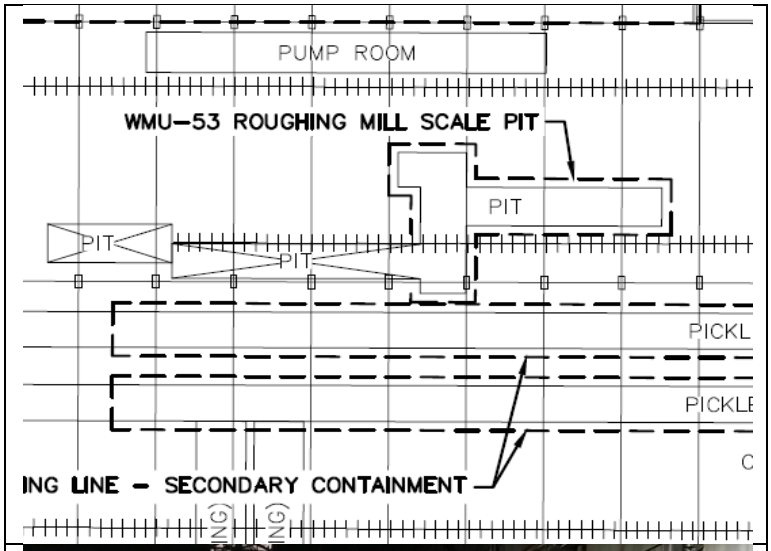
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

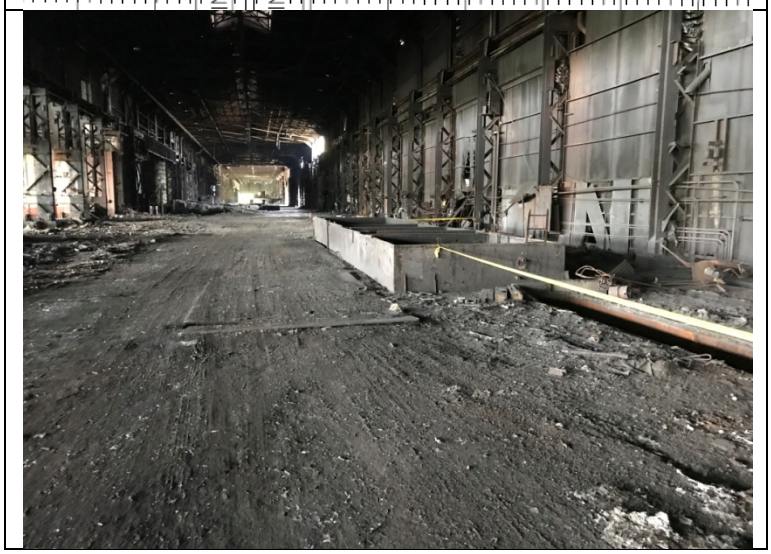
Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 53: Roughing Mill Scale Pit





Description: Sumps for separation of solids and oil

Construction:

Size: 45’ x 13’ x 23’

Contents: TBD

Estimated Depth of Contents: 23’

Est. Volume of Contents: 90,000-gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

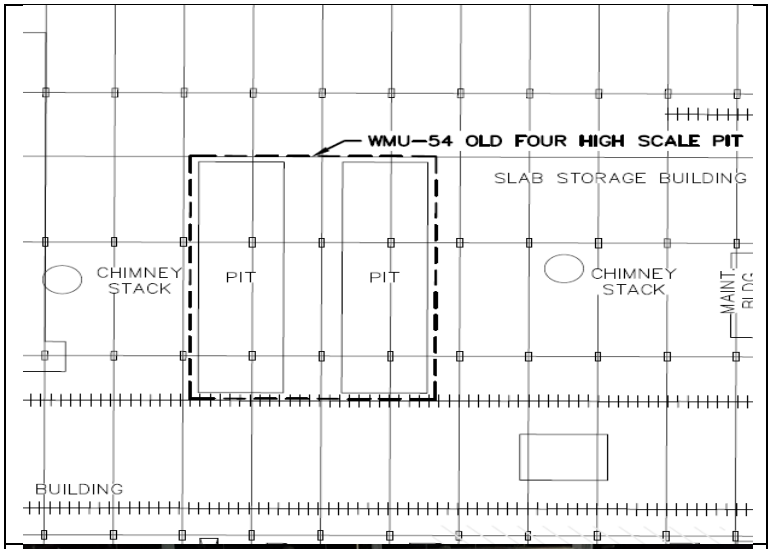
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 54: Old Four High Scale Pit



Description: Sumps for separation of solids and oil

Construction: TBD

Size: 31’ x 31’ x 16’

Contents: TBD

Estimated Depth of Contents: 16’

Est. Volume of Contents: 37,000 gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

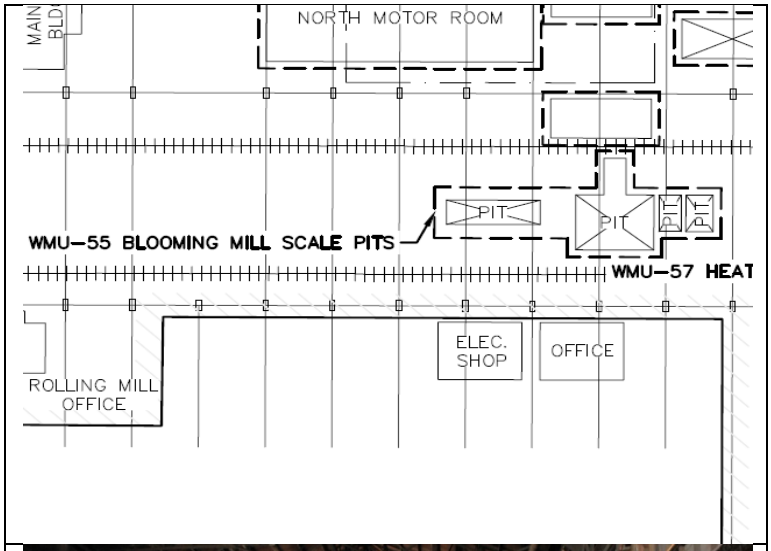
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 55: Blooming Mill Scale Pit



Description: Sumps for separation of solids and oil

Construction: TBD

Size: Five pits of various sizes

Contents: TBD

Estimated Depth of Contents: TBD

Est. Volume of Contents: TBD

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA

Special Considerations: None

Clearance Required:

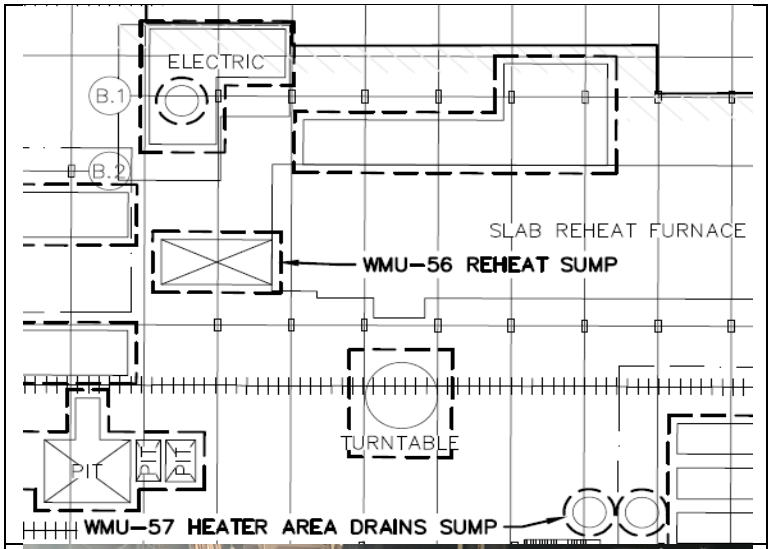
Confined Space Entry	Yes
Pre-Disposal Approval	No
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 56: Reheat Sump



Description: Sumps for separation of solids and oil

Construction: TBD

Size: 22’ x 31’ x 12’

Contents: TBD

Estimated Depth of Contents: 12’

Est. Volume of Contents: 61,000-gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

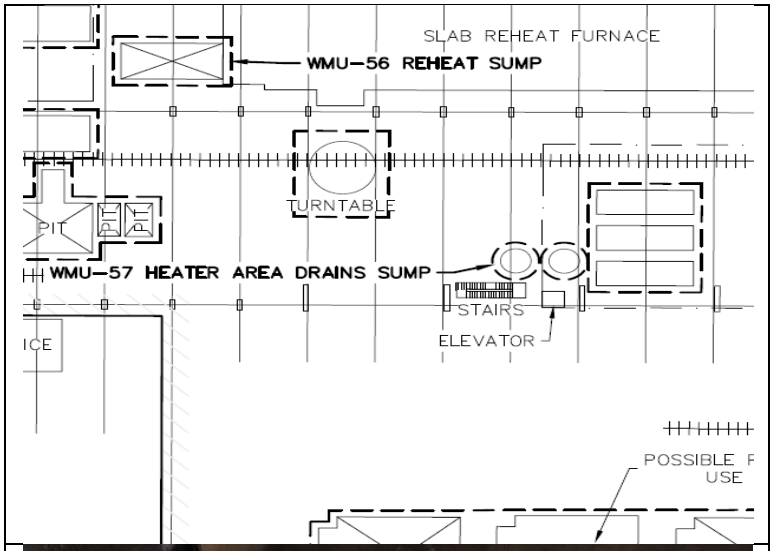
Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)

Unit Description
Former McLouth Steel Facility County Property

WMU 57: Heater Area Drains Sump



Description: Sumps for separation of solids and oil

Construction: TBD

Size: 75’ x 250’ x 10’

Contents: TBD

Estimated Depth of Contents: 10’

Est. Volume of Contents: 1.4-milion gallons

Demolition Area: Area 4

Unit Subject to: EPA Work Plan, RCRA, CERCLA

Special Considerations: None

Clearance Required:

Confined Space Entry	Yes
Pre-Disposal Approval	Yes
ACM Clearance	No
Cleaning Complete	Yes

Procedures

- Confined Space Entry Permit required each entry
- Characterize liquids and sludges for disposal (ASTI/Cogent)
- Remove and dispose of liquids and sludges. (Cogent)
- Cap process and waste piping (Cogent)
- Clean Containment (Cogent)
- Sample Containment (Cogent)
- Break Floor/Walls (D21)
- Backfill basin (D21)
- Cover with impermeable surface to avoid exacerbation (MSC)
- Closure Report (ASTI)