WORK PLAN FOR
PHASE II PCB CONTAMINATION INVESTIGATION

CITY OF THE VILLAGE OF DOUGLAS PROJECT
FORMER CHASE MANUFACTURING PROPERTY
200 BLUE STAR HIGHWAY
DOUGLAS, MICHIGAN

BROWNFIELD REDEVELOPMENT GRANT
PROJECT # 450889-71 & 450889-68
INITIAL SUBMITTAL: 1 JULY 2016
UPDATED: 25 JULY 2016

INTRODUCTION AND BACKGROUND

This Work Plan describes the proposed Phase II Investigation to determine the extent of PCB contamination and other tasks (the "Work Plan") related to the redevelopment of the property referenced above ("Property" and "Site"). The Property is comprised of approximately 7.2 acres of land formerly operated by Chase Manufacturing and other companies associated with automotive and hardware industries. Operations included metal plating, painting, buffing, die casting, metal forming, welding and stamping. The property is owned by Haworth, Inc. and is planned to be developed by Geerlings Development Company, Inc. (the "Developer") for light industrial manufacturing.

Releases of hazardous substances including chlorinated volatile organic compounds (CVOCs) and polychlorinated biphenyls (PCBs) to soil and/or groundwater have occurred at the Property. The Michigan Department of Environmental Quality (MDEQ) has funded investigations and various response activities, including an air sparge/soil vapor extraction system which operated from 2006 to 2013 to mitigate VOC impacts near the building. Although not currently operating, the system has been winterized and remains on Site. Sub-slab soil gas and indoor air samples have identified trichloroethylene (TCE) and other solvents at concentrations exceeding Part 201 Vapor Intrusion Screening Values. If not mitigated, an on-going vapor intrusion risk exists throughout the building.

The Developer completed Phase I and II Environmental Site Assessments (ESAs) at the Site in the Fall of 2015 and a follow-up Phase II investigation in December 2015. In addition to the vapor intrusion risks mentioned above, the locations of three former die casting machines were identified and soils in the vicinity of the former die casting pits were sampled for PCBs. Sample results indicated PCB concentrations exceed Michigan Part 201 residential and nonresidential cleanup standards, as well as capped and uncapped Toxic Substances Control Act (TSCA) standards.

OBJECTIVES

In January of 2016, the City of the Village of Douglas (the "City") applied for a Brownfield Redevelopment Grant to further investigate and remediate the contamination on Site

(including TCE and PCB contamination and remediation) and develop a Baseline Environmental Assessment (BEA) and Due Care Plan, among other activities. Instead of awarding grant/loan monies for all investigation and remediation activities, it was decided to complete the project in phases so that additional funds are not committed until the extent and potential cleanup costs of the PCB contamination are better understood. The objective of this Work Plan is to define the magnitude and extent of the PCB contamination in the soil and groundwater near the former die cast pit area. Additionally, this Work Plan includes an evaluation of the inactive air sparge/soil vapor extraction (SVE) system on Site to determine its potential use for vapor mitigation beneath the building, as well as a review of existing MDEQ files related to the system.

OVERVIEW OF PRIOR PCB INVESTIGATION RESULTS

As mentioned above, investigations in the fall and winter of 2015 identified PCB contamination in soil inside the building in the northeastern portion of the Site likely associated with oils containing PCBs that were used for former die casting activities that occurred prior to the year 1971 (Figure 1). The results of these initial investigations are shown in Figure 2 and Table 1. A ground penetrating radar (GPR) survey located three steel plates, believed to be the locations of former die cast pits. Recent interviews with personnel familiar with former operations indicated the die cast machines were lined up east-west along the north interior of the building (i.e., in line with the “north pit”), and not in the alignment of the three identified steel plates. The implications of the recent interviews are discussed below.

In summary, the maximum concentration around the north pit was 12,000 ppm (parts per million, or mg/kg) PCBs in the shallow sample from GP-17. Of note, the GP-18 sample at a depth of 14.5-15’ had a concentration of 2,000 ppm PCBs (this soil sample contained metal shavings and heavy oil staining, potentially indicative of the area around the base of the former pit). Concentrations at 5’ intervals above this depth ranged from 2.0 to 3.4 ppm PCBs. The maximum concentration around the east pit was 7.9 ppm in GP-22 (1.2-1.7’ sample). Concentrations of samples collected in the vicinity of the west pit were all less than 1 ppm. The maximum depth of soils analyzed during previous investigations was 15’. Given the concentrations of PCBs found at depth, the proposed investigation will involve advancing the borings to a greater depth (20’) as described below.

REGULATORY BACKGROUND

Although the release of PCBs was pre-1978 and therefore not subject to certain parts of the Toxic Substances Control Act (TSCA), definition of the extent of PCBs is necessary to determine the associated risks and liabilities, especially given the relatively high concentrations of PCBs identified on Site. Under 40 CFR §761.50a(3)(i)(A):

(A) Sites containing these wastes are presumed not to present an unreasonable risk of injury to health or the environment from exposure to PCBs at the site. However, the EPA Regional Administrator may inform the owner or operator of the site that there is reason to believe that spills, leaks, or other uncontrolled releases or discharges, such as leaching, from the site constitute ongoing disposal that may present an unreasonable risk of injury to health or the environment from exposure to PCBs at the site, and may require the owner or operator to generate data necessary to characterize the risk. If after reviewing any such data, the EPA Regional Administrator makes a finding, that an unreasonable risk exists, then he or she may

direct the owner or operator of the site to dispose of the PCB remediation waste in accordance with §761.61 such that an unreasonable risk of injury no longer exists.

Although cleanups of pre-1978 PCB spills are not required to comply with 40 CFR §761.61, other than for management of remediation waste, given the open-ended nature of the potential cleanup liability/ responsibility of this TSCA regulation, further assessment is proposed. In a conversation with ERM, EPA indicated the levels found at the Site may present an unreasonable risk and that additional definition and a conceptual site model would be required to appropriately identify the potential receptors, exposure pathways, and related risks.

Cleanup levels are established under TSCA as well as the Michigan Natural Resources and Environmental Protection Act (NREPA), Part 201 Environmental Response. 40 CFR §761.61 "PCB remediation waste" provides the cleanup concentrations and disposal options for PCB remediation waste such as that found at the Site. Specifically, 40 CFR §761.61(a)(4)(i)(A) specifies remediation levels and decontamination levels for bulk PCB remediation waste (e.g., contaminated soil). The following table outlines the potentially applicable clean-up criteria.

Cleanup Criteria*	**Concentration (mg/kg or ppm)**	**Notes**
TSCA		
Unrestricted Use	1	If post 1978 release and TSCA applies
High occupancy area, capped and left in place with deed restriction	>1 ≤10	High occupancy refers to 335 hours or more exposure per year (6.7 hours per week); cap requirement is 6 inches of asphalt or concrete
Low occupancy area, left in place with deed restriction	≤25	Low occupancy refers to less than 335 hours (an average of 6.7 hours per week); no cap required
Low occupancy area, left in place with deed restriction	>25 ≤ 50	Fencing and signage are required
Low occupancy area, capped and left in place with deed restriction	>50 ≤ 100	6 inch asphalt or concrete cap is required
Michigan Part 201		
Residential	4	Unrestricted use, applicable when TSCA does not apply
Nonresidential	16 (20 is proposed criteria in pending Administrative Rules package	Notice on deed required that site will remain nonresidential in use; no cap/cover required; applicable when TSCA does not apply

*If excavated, any concentrations exceeding 50 ppm must be sent to a TSCA-licensed landfill.

The former die cast pit area requires a concrete floor for future operations and it is unlikely that a "high occupancy" condition would exist at this nonresidential site. Therefore, a PCB cleanup level of 100 ppm may be an appropriate target with replacement of the concrete floor following remediation.

On-going discussions with MDEQ and EPA have indicated that PCB remediation would likely be achieved via either a "Coordinated Approval" process with MDEQ and EPA or a "Risk Based" approach with EPA. A "Coordinated Approval" with MDEQ and EPA under 40 CFR § 761.77 (see draft letter in Attachment A,) would involve MDEQ approval of PCB cleanup and disposal in the form of a permit or other enforceable document, such as No Further Action documentation, with oversight and final approval from EPA. The "Risk Based" approach would also involve working closely with both MDEQ and EPA to prepare

a cleanup plan after the proposed investigation is completed. The cleanup plan would be provided to EPA for approval and would include proposed cleanup levels that meet TSCA requirements as well as Michigan's Part 201 requirements.

The ultimate decision of the option to follow for PCB remediation will be made based on the results of the investigation outlined in this Work Plan. For example, if the investigation reveals a limited extent of PCB contamination and contaminated materials can be disposed of via a TSCA pre-approved method, a "Performance-Based" disposal option could be followed (i.e., cleanup to 1 ppm with no EPA involvement). Both MDEQ and EPA have agreed that site characterization data will help inform decisions regarding the preferred cleanup option(s) and that the decisions for PCB remedial actions will not be made until the extent and magnitude of contamination is better understood.

PROPOSED SCOPE OF WORK

As previously indicated, ERM conducted interviews with a former Haworth employee (Mr. Tom Dykstra) and an employee of the owner prior to Haworth (Mr. Bob Glover). Mr. Dykstra was familiar with the Site at the time the die cast pits were filled/covered, and Mr. Glover was familiar with the Site after the machines were removed up to the time the pits were filled/covered. They both recalled die cast machines aligned in an east-west orientation near the north wall in line with the "north pit." Mr. Glover recalled the machines may have extended into the adjacent room to the west, where four machines shared one common pit that was about 6 feet deep. Mr. Glover recalled the pits to be approximately 10 feet deep in the area previously investigated to the east. Since there are no known methods or information sources available to precisely locate these additional pits, we propose five discrete soil borings in line with the north pit extending to the west and three additional borings in the room to the west (see Figure 3).

Based on the soil results on the east side of the "north pit", which increase in concentration away from the steel plate, there may have been another die cast pit to the east of the "north pit." This will be determined through the proposed step-out sampling as described below.

Proposed PCB Investigation

40 CFR § 761 Subparts N and O provide methods for site characterization and cleanup verification, respectively, using grid-based sampling and composite analysis techniques. Site characterization using these methods is not mandatory, and both MDEQ and EPA have agreed that using a discrete "step-out" approach and not compositing samples will allow for a better definition of the contaminated area. This approach will be more conducive to providing more precise boundaries of contamination and will likely streamline remediation efforts. Therefore, the TSCA "Subpart N" and "Subpart O" methods in the original work plan will be replaced by discrete sampling.

"North Pit"

The proposed discrete sampling method would result in 16 total "step-out" soil borings around the "north pit" approximately 10 feet away from the previous boring locations (see Figure 3). From each of these borings, soil samples would be collected at depths of 1', 5', 10', 15', and 20'. Based on the results of previous investigations indicating PCB

concentrations greater than 1 ppm at depths to 15' to the east of the north pit, the samples from the 8 borings collected to the northeast (3), east (3), and southeast (2) of the north pit would be analyzed for PCBs at each of the 5 depths for a total of 40 samples for analysis. Samples previously collected and analyzed to the west of the north pit have yielded concentrations exceeding 1 ppm but at shallower depths. As a result, the samples from borings to the northwest (3) and west (3) would be analyzed at the 1', 5', and 10' intervals. The samples collected at the 15' and 20' depths would be held and not analyzed unless the concentrations at the 10' intervals exceed 1 ppm. The samples from borings to the southwest of the North Pit would be analyzed at the 1' and 5' intervals and the remaining samples would be held and not analyzed unless the samples collected shallower exceed 1 ppm.

Additional step-out samples ("Round 2") near the North Pit would be collected as needed based on the results. The costs associated with "Round 2" sampling would be based on the time, material and subcontractor costs for Round 1. Any required Round 2 costs would be provided to MDEQ for approval prior to implementation.

"East Pit"

Using the same methodology explained above, a total of 7 soil borings will be performed 5' away from the previous boring locations near the east pit (see Figure 3). Samples collected from borings to the northwest (2) and west (3) of the east pit would be analyzed at the 1' and 5' depth interval and the samples from the 10', 15', and 20' interval would be held. Samples from borings to the southwest of the east pit (2) would be analyzed at the 1', 5', and 10' interval with samples at the 15' and 20' interval held.

As explained above, additional step-out samples near the east pit would be collected as needed based on the results. As mentioned above, the costs associated with "Round 2" sampling would be based on the time, material and subcontractor costs for Round 1. Any required Round 2 costs would be provided to MDEQ for approval prior to implementation.

Concrete Sampling

Previous investigations identified two layers of concrete inside the building in the investigation area. It is assumed that the lower layer of concrete was exposed at the surface during the die cast activities. A total of 10 samples of crushed concrete from the lower layer are proposed for sampling. No concrete samples are proposed during any "Round 2" contingency soil boring activities.

Outside north of the building, no asphalt samples will be collected since no releases to the exterior ground surface are believed to have occurred.

Methodology

The proposed procedures for collection and analysis of all samples follow.

<u>Soils</u>

Prior to sampling, the Geoprobe® and other sampling equipment will be cleaned using a detergent wash-rinse followed by a solvent wash-rinse. Loose dirt will be brushed from the surface, and the equipment will be a) cleaned in a detergent solution, b) rinsed with

potable or deionized water, c) washed with a solvent solution of limonene and isopropyl alcohol (IPA), and d) rinsed with a limonene/IPA solution.

As described above, at each sampling point surrounding the “source area” soil samples will be collected at the surface (directly below the concrete, approximately 1 foot below the top of the concrete) and at 5’, 10’, 15’, 20’ depths. The samples will be collected using a pre-cleaned, stainless steel soil coring device and placed into sample jars. Lab analysis will be completed per § 761.272 (using U.S. EPA Method 8082).

Samples from the five soil borings in line with the north pit extending to the west (shown in Figure 3) and three additional borings in the room to the west will be collected and analyzed at the surface, 5’, 10’ and 15’ intervals for a total of 32 samples collected/analyzed.

In advance of all soil sampling activities, concrete (ranging from 1’-2’ in depth) will need to be removed in advance using concrete coring equipment.

Groundwater

According to MDEQ records, MW-03-11 is located downgradient (north) of and in the vicinity of the subject area. ERM will collect one groundwater sample from this well for PCB analysis. If this well is not present, a temporary well will be set in the general vicinity (and beyond the boundary of any soil PCB detections) at the end of the Geoprobe® soil investigation.

Concrete

A total of 10 samples of crushed concrete are proposed for sampling, to be collected from the “lower floor.” These samples will be collected following coring for the soil borings either with a hammer drill or a small coring device. Samples will be composited through the upper approximately 3 inches. Samples will be handled and analyzed the same as the soil samples. Wipe sampling is not proposed.

Health and Safety

In accordance with 40 CFR 1910, all of the work conducted at the facility will be governed by the procedures set forth in a health and safety plan. The plan will identify hot zones, contamination reduction zones and support areas, emergency contacts and services, decontamination procedures, and personnel protective equipment to be employed during specific work activities. The plan will also identify and address measures to protect workers from physical hazards expected to be present during the project. All workers participating in field activities will have appropriate training including, but not limited to 40 hour HAZWOPER training.

All boring locations will be cleared in accordance with ERM’s subsurface clearance policy which requires an electromagnetic (EM) and ground penetrating radar (GPR) survey in the vicinity of each boring, and hand auger clearance to a minimum 5-foot depth at each boring location. For boring locations within a “critical zone” (i.e., a pipe, tank, utility, or other structure), hand auger clearance to 8 feet will be conducted. A subsurface sanitary sewer line is present approximately 5 feet south of the north wall of the building near the

investigation area. Two 4,800 volt underground cables also exist near the investigation area. One parallels the north wall of the building about 10 feet north of the north wall and then travels beneath the floor of the building to the south toward the electrical boxes in the southwest portion of the investigation area. The other also parallels the north wall of the building and is approximately 40 feet north of the wall under the parking area. The underground cables can be de-energized during the site investigation. Care will be taken when investigation activities occur near these utilities.

Investigation-Derived Waste

The wastes generated from the investigation including extra soil from sampling, decontamination wash waters, and personal protective equipment (including rags, gloves, booties, and other disposable personal protective equipment) will be contained in labeled drums for later management in accordance with the provisions detailed in 40 CFR §761.61. These materials will be managed in a manner to minimize the potential for the release of PCBs to the environment.

Air Sparge/Soil Vapor Extraction System Assessment and MDEQ File Review

The on-site air sparge/SVE system will be evaluated to determine its potential use for vapor mitigation beneath the floor of the building. The evaluation will consist of a specification review of the system components (blower, air/water separator, etc.) and an on-site visit with Clean Harbors (successor to Great Lakes, the contractor MDEQ retained to operate the system). Clean Harbors will provide input on the applicability of using the system to mitigate vapor intrusion risk. In addition, a review of MDEQ files for the Site will be performed to better understand the SVE system relative to the magnitude and extent of the existing TCE plume.

Reporting

A Phase II PCB Investigation summary report will be prepared that outlines the investigation activities, results, and conclusions. The report will also include a summary of the air sparge/SVE system assessment and the MDEQ file review. Specifically, the report will consist of the following:

- Assessment Scope
- Investigation Activities – to include sampling and analytical methodologies, field observations, etc.
- Analytical Results – to include tables and figures, as necessary, comparing results to MDEQ Part 201 and TSCA cleanup criteria as well as an assessment of any potential migratory pathways
- Air Sparge/SVE System assessment results – to include the applicability of using the existing system to mitigate vapor intrusion risk beneath the building floor
- Conclusions – to include a discussion of the magnitude and extent of PCB contamination and options and costs for remediation (self-implementing, performance-based disposal, risk-based disposal approval, coordinated approval) and/or additional investigation.

SCHEDULE

Planning for the proposed scope of work will be initiated immediately upon receipt of MDEQ authorization to proceed. The exact timing of the proposed scope of work will depend on contractor availability but will be performed as efficiently as possible in a timely manner. The goal is to define the extent of the contamination in one mobilization. To expedite the investigation and help reduce costs associated with multiple mobilizations, two Geoprobe® rigs are planned with oversight and sampling provided by three ERM staff, and soil analysis will be expedited (within 24-48 hours as opposed to the standard 10-14 days). If a single lab (ALS) cannot keep up with the sample through-put using a second lab will be explored. Although faster analytical results are more costly than standard turn-around times, this approach will save costs to the project and will allow for the investigation to proceed more efficiently.

SELECT LIMITATIONS AND OTHER ASSUMPTIONS

Previous investigations and other information have revealed several factors that may limit sampling and investigation efficiencies at the Site. Some limitations and assumptions include the following:

- Chemical storage room area – Based on site drawings and photographs, some borings may be required inside the Chemical Storage Room to the north of the main building wall. Haworth indicated that any materials within that room can be easily moved, but some poly tote tanks are likely too large to fit through the existing door and may need to stay within the building during sampling (moved aside). In addition, the Geoprobe® will not be able to enter this space. As a result, samples from these locations will need to be collected using a hand auger, which will result in depth limitations unless the ceiling of the structure can be removed. Two or more borings will need to be taken within the fenced area directly west of the chemical storage room.

- Underground utilities – As shown in Figure 3, there is a sanitary sewer and power supply lines within the proposed investigation area. The locations of these utilities will need to be confirmed with GPR/EM and other methods since they are in the vicinity of proposed boring locations. Haworth has indicated that the power lines can be de-energized upon coordination with their contractor. As a result, an alternate lighting source may be required for sampling conducted within the chemical storage building, or inside the main building if sampling occurs near the line that runs north-south to the west of the “west pit” (Figure 3).

- Concrete debris – Large concrete debris was encountered at depths during previous investigations that a hand auger or Geoprobe® could not penetrate (ERM’s standard protocol is to hand-clear all boring locations to a depth of 5 feet). In some instances new boring locations nearby had to be selected after hitting refusal at depths beyond 5 feet. This required additional concrete coring. As a result, boring production averaged just 5 per day.

- Concrete core samples – A void space was identified under some portions of the concrete floor during previous investigation activities. In some instances, pieces of the concrete core fell into the void space and had to be moved aside in order to

advance the sampling device. This may pose a challenge for collecting concrete samples for analysis.

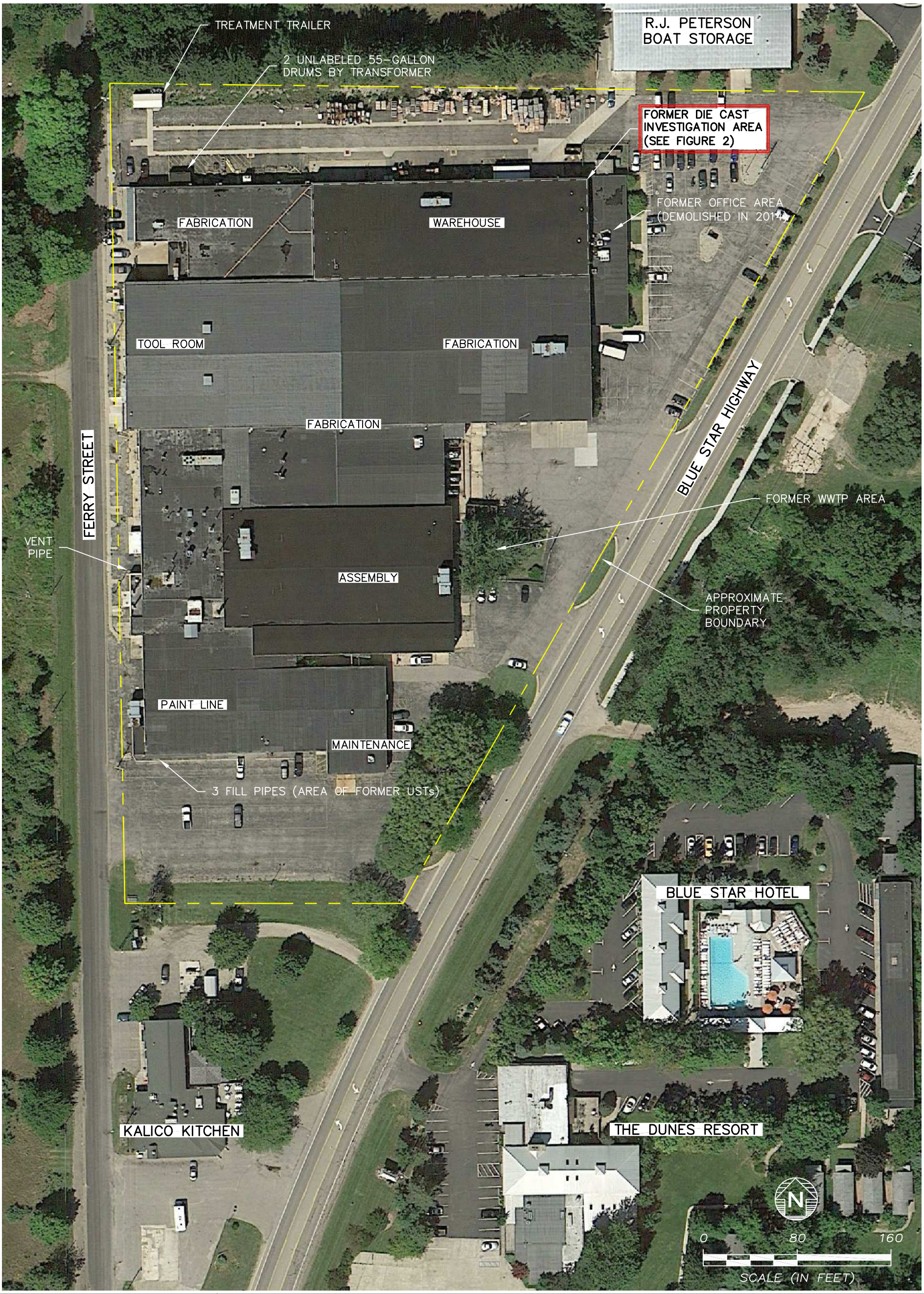
The estimated cost to perform the initial sampling tasks and the SVE system review described above is $95,200. The cost includes project management (including preparation of project updates, communication with project team, and the quarterly report/reimbursement requests), development of a Health and Safety Plan, and field sampling, analysis, and reporting. A detailed breakdown of estimated costs is provided in Attachment C. We request a contingency of 10% to cover incidental costs such as step out borings due to encountered obstructions and related additional cores, additional utility clearance/protection requirements, strategy discussions with MDEQ and/or EPA, etc.

“Round 2” sampling would occur if necessary after results of “Round 1” samples are known. The costs associated with “Round 2” would be based on the time, material and subcontractor costs for Round 1. Any required Round 2 costs would be provided to MDEQ for approval prior to implementation. Please note that, depending on the number of borings and samples required to adequately define the extent of contamination, the current budget may be exceeded. It is possible that additional funds may be necessary to fully define the extent of PCB contamination, especially given the potential identification of additional “source areas” along the north wall and in the area previously not investigated to the west.

Please feel free to contact Andrew DeWitt or Tom O’Connell if you have any questions or comments.

Figures

SITE LAYOUT MAP



CADD Review RMK	ERM®	**HAWORTH DOUGLAS PLANT** 200 BLUE STAR HIGHWAY DOUGLAS, MICHIGAN	CHK'D BY: CO
DRAWN BY: GML			0317523
Date Drawn/Rev'd 07/24/15		Environmental Resources Management	FIGURE 1

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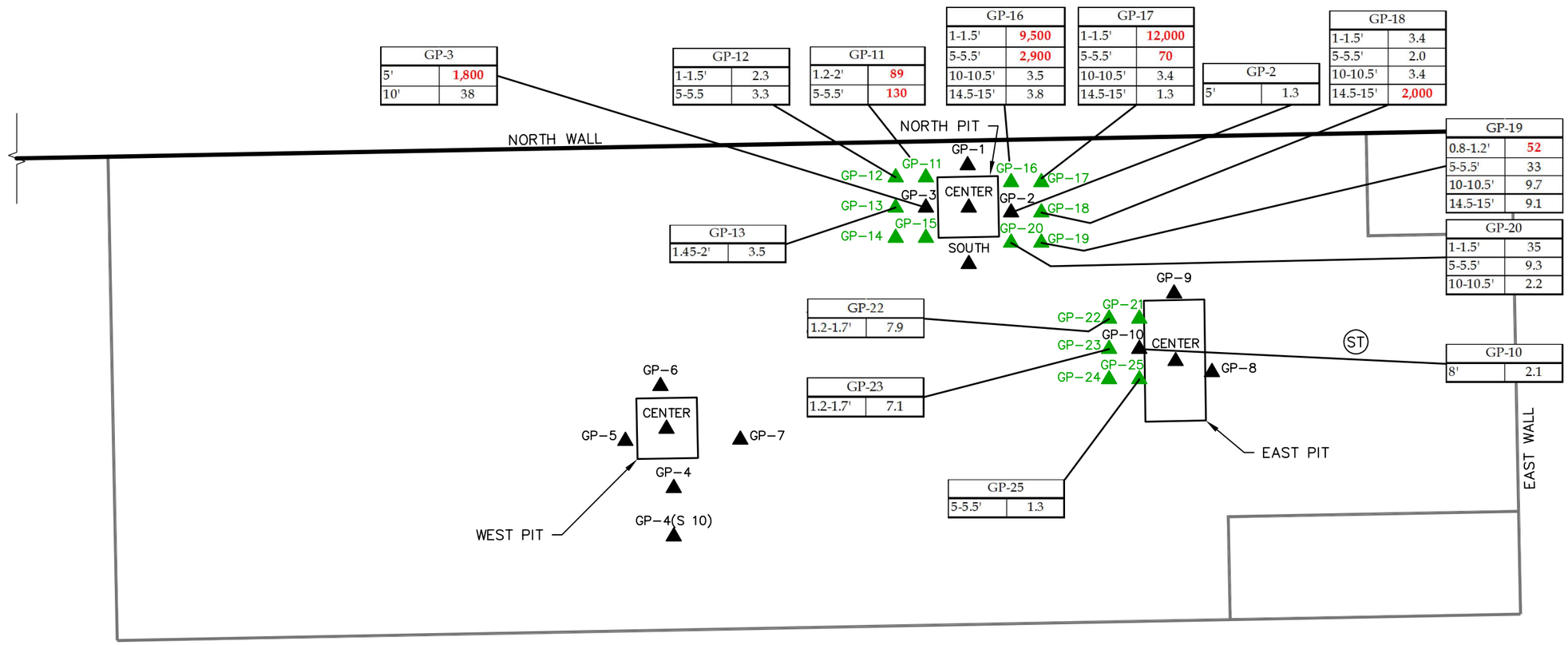
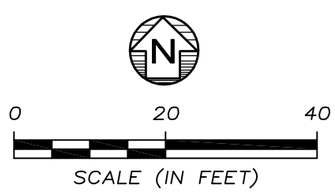
FORMER DIE CAST AREA SOIL SAMPLE PCB CONCENTRATIONS





Notes:
- PCB concentrations are in mg/kg
- Only results exceeding 1 mg/kg are shown
- Samples analyzed using EPA Method 8082 and concentrations shown are the total sum of Aroclor 1248 and Aroclor 1254
- Red colored results exceed the 50 mg/kg TSCA cleanup standard per 40 CFR 761. If TSCA standards do not apply, Michigan Part 201 Nonresidential Criteria of 16 mg/kg is applicable

LEGEND

(ST) STORM WATER CATCH BASIN

GP-7 ▲ SEPTEMBER 2015 GEOPROBE SOIL BORING LOCATION

GP-14 ▲ DECEMBER 2015 GEOPROBE SOIL BORING LOCATION

Drawn By GML	HAWORTH DOUGLAS PLANT 200 BLUE STAR HIGHWAY DOUGLAS, MICHIGAN	CHK'D DRR
CADD Review RMK		0317523
Date Drawn/Rev'd 9/28/15 – 1/14/16	Environmental Resources Management	FIGURE 2

ERM®

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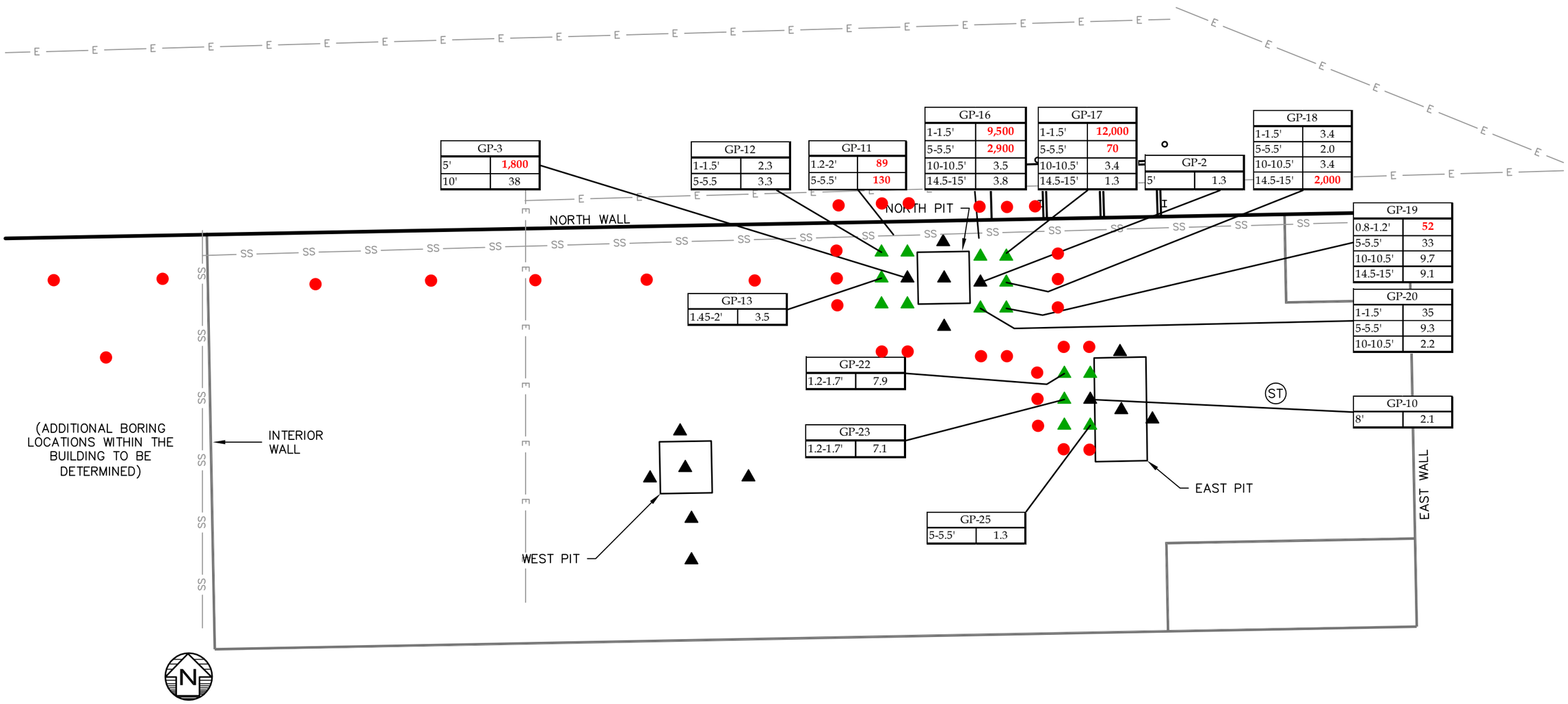
FORMER DIE CAST AREA SOIL SAMPLE PCB CONCENTRATIONS



LEGEND

- Proposed Boring Location
- ST — STORM WATER CATCH BASIN
- ▲ — SEPTEMBER 2015 GEOPROBE SOIL BORING LOCATION
- GP–14 ▲ — DECEMBER 2015 GEOPROBE SOIL BORING LOCATION

Notes:
- PCB concentrations are in mg/kg
- Only results exceeding 1 mg/kg are shown
- Samples analyzed using EPA Method 8082 and concentrations shown are the total sum of Aroclor 1248 and Aroclor 1254
- Red colored results exceed the 50 mg/kg TSCA cleanup standard per 40 CFR 761. If TSCA standards do not apply, Michigan Part 201 Nonresidential Criteria of 16 mg/kg is applicable

Drawn By GML	ERM®	FORMER CHASE MANUFACTURING PROPERTY 200 BLUE STAR HIGHWAY DOUGLAS, MICHIGAN	CHK'D DRR
CADD Review RMK			0356540
Date Drawn/Rev'd 9/28/15 – 1/14/16		Environmental Resources Management	FIGURE 3

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Attachment A
Draft Coordinated Approval Letter

1 July 2016

Regional Administrator
c/o Mr. Peter Ramanauskas
USEPA Region 5
77 West Jackson Boulevard LU-9J
Chicago, Illinois 60604-3507

Dear Mr. Ramanauskas:

Subject: Application for Coordinated Approval in Accordance with 40 CFR §761.77(c); City of the Village of Douglas Former Chase Manufacturing Property; 200 Blue Star Highway, Douglas, Michigan

The City of the Village of Douglas, in coordination with the Michigan Department of Environmental Quality (MDEQ), is requesting Toxic Substance Control Act of 1976 Coordinated Approval for the Phase II PCB Contamination Investigation in accordance with the requirements of Title 40 of the Code of Federal Regulations (CFR) §761.77(c) for the Former Chase Manufacturing Property with polychlorinated biphenyls (PCBs) contaminated environmental media.

In accordance with 40 CFR §761.77(a), we are submitting the following information:

- a copy of the work plan;
- an initial soil investigation report (dated 15 January 2016).

The City of the Village of Douglas appreciates the guidance and assistance provided by the Region 5 TSCA Program. I look forward to receiving written agency approval of our application shortly after the MDEQ issues an approved decision document. If you have any questions or need additional information to provide the approval, please contact me at 269-857-1438.

Sincerely,

William LeFevere, City Manager
City of the Village of Douglas
86 West Center Street
Douglas, MI 49406
269-857-1438
wlefevere@ci.douglas.mi.us

cc: Mr. Joe Cisneros, Environmental Protection Agency, Region 5
Mike Gurnee, MDEQ
Dr. Deborah MacKenzie-Taylor, MDEQ
Frank Ballo, MDEQ District Supervisor
Kathleen Shirey, MDEQ Chief Field Operations Manager
Andrew DeWitt, ERM
Tom O'Connell, ERM

Attachment B
Prior Phase II Data

Table 1 - Summary of Soil Sampling Results
Haworth - Douglas
200 Blue Star Hwy, Douglas, Michigan

Parameter	CAS Number	Drinking Water Protection Criteria		Soil Volatilization to Indoor Air Inhalation Criteria		Direct Contact Criteria		TSCA, Subpart D Cleanup Standards		Groundwater Surface Water Interface Protection Criteria	Analytical Results										
		Residential	Non Residential	Residential	Non Residential	Residential	Non Residential	Uncapped	Capped		GP-1 5'	GP-1 8'	GP-1 15'	GP-2 5'	GP-2 8'	GP-2 15'	GP-3 5'	GP-3 10'	GP-3 15'	GP-4 3'	GP-4 (S10) 5'
											9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/21/2015	9/22/2015
PCBs USEPA 8082 (µg/Kg)																					
Total Arochlors	Varies	NLL	NLL	3,000,000	16,000,000	4,000	16,000	1,000	10,000	NLL	BDL	BDL	BDL	1,300	BDL	BDL	1,800,000	38,000	BDL	160	BDL

Parameter	CAS Number	Analytical Results																			
		GP-4 (S10) 8'	GP-4 (S10) 15'	GP-5 5'	GP-5 8'	GP-5 15'	GP-6 5'	GP-6 8'	GP-6 15'	GP-7 5'	GP-7 8'	GP-7 15'	GP-8 5'	GP-8 8'	GP-8 15'	GP-9 5'	GP-9 8'	GP-9 15'	GP-10 5'	GP-10 8'	GP-10 15'
		9/22/2015	9/22/2015	9/21/2015	9/21/2015	9/21/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015	9/22/2015
PCBs USEPA 8082 (µg/Kg)																					
Aroclor 1248	12672-29-6	BDL	BDL	BDL	BDL	BDL	340	BDL	BDL	98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Aroclor 1254	11097-69-1	BDL	BDL	82	BDL	BDL	150	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	110	2,100	270

Parameter	CAS Number	Analytical Results																			
		GP-11 1.2-2'	GP-11 5-5.5'	GP-11 10-10.5'	GP-11 14.5-15'	GP-12 1-1.5'	GP-12 5-5.5'	GP-12 10-10.5'	GP-12 14.5-15'	GP-13 1.45-2'	GP-13 5-5.5'	GP-13 10-10.5'	GP-13 14.5-15'	GP-14 1-1.5'	GP-14 5-5.5'	GP-14 10-10.5'	GP-14 14.5-15'	GP-15 2.3-2.8'	GP-15 5-5.5'	GP-15 10-10.5'	GP-15 14.5-15'
		12/17/2015	12/17/2015	12/18/2015	12/18/2015	12/17/2015	12/17/2015	12/18/2015	12/18/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015
PCBs USEPA 8082 (µg/Kg)																					
Aroclor 1248	12672-29-6	48,000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Aroclor 1254	11097-69-1	41,000	130,000	BDL	BDL	2,300	3,300	BDL	BDL	3,500	460	BDL	BDL	290	BDL	BDL	BDL	260	BDL	BDL	BDL

Parameter	CAS Number	Analytical Results																			
		GP-16 1-1.5'	GP-16 5-5.5'	GP-16 10-10.5'	GP-16 14.5-15'	GP-17 1-1.5'	GP-17 5-5.5'	GP-17 10-10.5'	GP-17 14.5-15'	GP-18 1-1.5'	GP-18 5-5.5'	GP-18 10-10.5'	GP-18 14.5-15'	GP-19 0.8-1.2'	GP-19 5-5.5'	GP-19 10-10.5'	GP-19 14.5-15'	GP-20 1-1.5'	GP-20 5-5.5'	GP-20 10-10.5'	GP-20 14.5-15'
		12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/17/2015	12/17/2015	12/17/2015	12/17/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015
PCBs USEPA 8082 (µg/Kg)																					
Aroclor 1248	12672-29-6	BDL	BDL	BDL	2,600	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Aroclor 1254	11097-69-1	9,500,000	2,900,000	3,500	1,200	12,000,000	70,000	3,400	1,300	3,400	2,000	3,400	2,000,000	52,000	33,000	9,700	9,100	35,000	9,300	2,200	BDL

Parameter	CAS Number	Analytical Results																			
		GP-21 1.2-1.7'	GP-21 5-5.5'	GP-21 10-10.5'	GP-21 14.5-15'	GP-22 1.2-1.7'	GP-22 5-5.5'	GP-22 10-10.5'	GP-22 14.5-15'	GP-23 1.2-1.7'	GP-23 5-5.5'	GP-23 10-10.5'	GP-23 14.5-15'	GP-24 1-1.5'	GP-24 5-5.5'	GP-24 10-10.5'	GP-24 14.5-15'	GP-25 1-1.5'	GP-25 5-5.5'	GP-25 10-10.5'	GP-25 14.5-15'
		12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015	12/18/2015
PCBs USEPA 8082 (µg/Kg)																					
Aroclor 1248	12672-29-6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	880	BDL	BDL
Aroclor 1254	11097-69-1	370	BDL	BDL	BDL	7,900	250	200	BDL	7,100	BDL	310	BDL	160	BDL	BDL	BDL	96	410	BDL	BDL

Notes:
- Cleanup criteria per MDEQ RRD Operational Memorandum #1, Attachment 1, 12/30/13.
- BDL Indicates Below Detection Limit.
- NLL Indicates parameter is not likely to leach under most soil conditions.
- Red results exceed the referenced Part 201 non-residential direct contact criteria (applicable if TSCA does not apply).
- Red outlined cells exceed 50,000 ug/kg (50 mg/kg) TSCA disposal standard per 40 CFR 761. If excavated, these soils would require disposal in a TSCA licensed landfill.

Attachment C
Cost Estimate

COST ESTIMATE FOR PHASE II INVESTIGATION
CLIENT: City of Douglas
SITE: Fomer Chase Manufacturing, Douglas, MI

Date: 7.25.16
Project No.: 0356540
Estimated By: ADW
Approved By: TPO

TASK NUMBER	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	LABOR	LABOR EXPENSE	EXPENSE MARKUP	EXPENSE COST	SUBCTR/EXP MARKUP	SUBCTR/EXP COST	SUBTOTALS
1	**Soil Investigation - Round 1**										
	1a. HASP/Utility Review/Planning										
	Geologist	2	HR	$101	$202						
	Geologist	4	HR	$107	$428						
	Management Review	4	HR	$210	$840						
	APC (9.8% of labor)	$630		9.8%		$62					$1,532
	1b. Miss Dig, Utility Locate, De-energize lines										
	Sr. Management	1	HR	$210	$210						
	Senior Geologist	8	HR	$128	$1,024						
	Geologist	8	HR	$107	$856						
	Electrical Contractor to de-energize lines	1	LS	$300					$30	$300	
	Utility Locate/GPR Contractor	1	LS	$700					$70	$700	
	APC (9.8% of labor)	$2,090		9.8%		$205					$3,395
	1c. Field Work/-Drilling, Coring, Sampling										
	Sr. Management	1	HR	$210	$210						
	Senior Geologist	70	HR	$128	$8,960						
	Geologist	70	HR	$107	$7,490						
	APC (9.8% of labor)			9.8%		$1,633					
	Truck Rental	10	Days	$100.00			$100	$1,000			
	Meals (for 2 ERM staff)	8	Days	$40.00			$32	$320			
	Geoprobe (2 rig)	1	LS	$14,000					$1,400	$14,000	
	IDW Drums ($50/drum)	8	EA	$45					$36	$360	
	Concrete Core Cutting	1	LS	$3,500					$350	$3,500	
	Misc Sampling Equipment	1	LS	$500			$50	$500			
	Lab Courier Service	3	Days	$50			$15	$150			$40,106
	1d. Laboratory Analysis Round 1										
	Soil (PCBs) - Rush analysis (80 north/35 east /32 west/10 concrete/1 water)	158	ea	$130					$2,054	$20,540	$22,594
	1e. Documentation/field notes/lab coordination										
	Geologist	8	HR	$107	$856						
	APC (9.8% of labor)	$856		9.8%		$84					$940
	Subtotal Task 1								**Total Round 1**		**$68,566**
2	**SVE System Investigation**										
	Sr. Management	1	HR	$210	$210						
	Geologist	6	HR	$107	$642						
	Sr. Geologist	20	HR	$117	$2,340						
	SVE Contractor Site Visit	1	LS	$1,000				$1,000			
	Truck Rental	2	Days	$100.00			$20	$200			
	APC (9.8% of labor)	$3,192		9.8%		$313					
	Subtotal Task 2										**$4,725**
3	**Data Summary/Tables/Figures/Logs**										
	3a. Data Summary Tables, Figures, Logs										
	Sr. Management	1	HR	$210	$210						
	Sr. Geologist	8	HR	$128	$1,024						
	Geologist	16	HR	$107	$1,712						
	Admin - Logs	16	HR	$69	$1,104						
	CAD	8	HR	$103	$824						
	APC (9.8% of labor)	$4,874		9.8%		$478					$5,352
	3b. Report/Options and Cost Evaluation										
	Sr. Management	16	HR	$210	$3,360						
	Sr. Geologist	4	HR	$128	$512						
	Geologist	24	HR	$107	$2,568						
	CAD	16	HR	$103	$1,648						
	Admin	3	HR	$69	$207						
	APC (9.8% of labor)	$8,295		9.8%		$813					$9,108
	Subtotal Task 3										**$14,460**
4	**Project Management**										
	Sr. Management	16	HR	$210	$3,360						
	Geologist	32	HR	$107	$3,424						
	APC (9.8% of labor)	$6,784		9.8%		$665					
	Subtotal Task 4										**$7,449**
				Totals	**$44,221**	**$4,251**	**$217**	**$3,170**	**$3,940**	**$39,400**	**$95,199**
				10% Contingency							**$9,519.93**

KEY ASSUMPTIONS
- No IDW management costs included.
- Sub/Exp. Markup 10%