

# Due Care Plan

*3801 West Jefferson Property*  
*Detroit, Michigan*

**City of Detroit**  
**2 Woodward Avenue, Suite 401, Detroit, MI 48226**

**November 2, 2015**  
**NTH Project No. 62-140614-100C**

**NTH Consultants, Ltd.**  
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Mr. Raymond Scott  
City of Detroit  
Buildings, Safety Engineering and  
Environmental Department  
2 Woodward Avenue, Suite 401  
Detroit, Michigan 48226

November 2, 2015  
NTH Project No. 62-140614-100C

**RE: Due Care Plan  
3801 Jefferson Avenue Property  
Detroit, Michigan**

Dear Mr. Scott:

NTH Consultants, Ltd. (NTH) has prepared this Due Care Plan (Plan) for the above referenced property. This documentation was developed in accordance with Section 20107a of Part 201 of the Natural Resources and Environmental Protection Act, 1994 P.A. 451, as amended (NREPA). This Plan and any other documentation of compliance must be maintained and followed by the City of Detroit.

Based on the presence of contamination detected during a recent environmental study by NTH, the property is classified as a "facility" as defined by NREPA. This Plan includes proposed response activities to address the identified contamination at the property. Some of the response activities include the installation of an exposure barrier and demarcation fabric, and procedures for soil handling and fugitive dust control during redevelopment of the property into a City park. After the installation of the exposure barrier, this Plan should be updated to reflect the as-built condition of the property.

We appreciate this opportunity to be of service to you. Should you have any questions or require additional information, please call us at (248) 662-2740.

Sincerely,

NTH Consultants, Ltd.

Cliff J. Andrews  
Senior Project Professional

Bhushan C. Modi  
Project Manager

CJA/BCM/kg

Attachments



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## 1.0 INTRODUCTION

On behalf of the City of Detroit (City), NTH Consultants, Ltd. (NTH) has prepared this Due Care Plan (Plan) for the 3801 West Jefferson property located in Detroit, Michigan. The subject property is approximately 4.7 acres in size and contains a warehouse building, paved parking lot and ship dock, and grass-covered areas. At the time of the previous studies by NTH, the building was used for storage of aluminum ingots.

NTH conducted Phase I and Phase II Environmental Site Assessments (ESAs) at the property. The results of the Phase II ESA identified the presence of heavy metals, volatile organic compounds and polynuclear aromatic compounds in the subsurface soil above the Michigan Department of Environmental Quality's (MDEQ's) Part 201 Generic Residential Cleanup Criteria (GRCC). Based on this data, the property is a "facility".

*According to Section 20101(1)(s) of Part 201 of Act 451, "facility means any area, place, parcel or parcels of property, or portion of a parcel of property where a hazardous substance in excess of the concentrations that satisfy the cleanup criteria for unrestricted residential use has been released, deposited, disposed of, or otherwise comes to be located."*

The City anticipates acquiring the property in December 2015. To provide liability protection from pre-existing contamination, a Baseline Environmental Assessment (BEA) dated June 30, 2015, was submitted to the MDEQ on behalf of the City.

NREPA requires that a person who owns or operates property that he/she has knowledge is a "facility" must do all of the following tasks even if they are not liable for the existing subsurface contamination:

1. Undertake measures as are necessary to prevent exacerbation.



2. Exercise due care by undertaking response activity necessary to mitigate unacceptable exposure to hazardous substances, mitigate fire and explosion hazards due to hazardous substances, and allow for the intended use of the property in a manner that protects the public health and safety.
3. Take reasonable precautions against the reasonably foreseeable acts or omissions of a third party and the consequences that could result from those acts or omissions.
4. Provide reasonable cooperation, assistance, and access to the persons that are authorized to conduct response activities at the property.
5. Comply with appropriate land use or resource use restrictions established or relied on in connection with the response activities.
6. Not impede the effectiveness or integrity of appropriate land use or resource use restriction.

This Plan outlines how the proposed activities at the property will satisfy the requirements of NREPA and the associated administrative rules on behalf of the City.

The property will be redeveloped into a public park and merged with the adjacent Riverside Park. The redevelopment work at the property will entail demolition of the existing building and parking lot and construction of a new parking lot, paved walkways and landscaped areas. A conceptual site plan provided by the City is included in Appendix A.

If the property use changes or any buildings are constructed on the property, the methods for compliance with due care responsibilities should be reviewed and this Plan should be updated. If the property is sold, this Plan and NTH's environmental reports should be provided to the new property owner.



## **2.0 DETAILED CHARACTERISTICS OF PROPERTY USE**

### **2.1 Property Location and Legal Description**

The “*facility*” for which this Plan has been prepared is located at 3801 West Jefferson property located in Detroit, Wayne County, Michigan. A site plan depicting the property boundaries is included as Boring Location Plan in Appendix A. The legal description and plat map of the property are also included in Appendix A.

### **2.2 General Vicinity Characteristics**

The property is located in a recreational and industrial use area of the City of Detroit. The property is bounded by W. Jefferson Avenue to the north, Riverside Park to the east, Detroit River to the south, and Port of Detroit – Nicholson Terminal to the west.

Groundwater in the area is generally present in both the glacial deposits and in the underlying bedrock. Shallow groundwater in the area of the property, if present, is expected to be erratic due to the high clay content of the glacial soils. Intermittent accumulation of perched water may be encountered where granular soils or fill materials overlie the clay. No groundwater was encountered in any of the borings drilled during NTH’s Phase II ESA.

### **2.3 Historical Property Uses**

The property was part of the Detroit River and reclaimed between 1890s and the early 1930s. Between 1890s and 1930s, the property was occupied by ship docks, a residential dwelling, boat houses and an office for a lumber yard. From the early 1930s to about 1949, the property was occupied by a residential dwelling and coal yard. The coal yard remained at the property until the mid-1970s. In 1949, the east portion of the existing building was constructed with a 1,000-gallon gasoline underground storage tank (UST), oil house and railroad spur. An addition was constructed to the building in 1970. From 1949 to about 2006, the building operated as the Detroit Newspaper warehouse. Since about 2006, the property has been used for storage of aluminum ingots.



Municipal records indicate that one 1,000-gallon gasoline UST was installed in the building in 1949. In 1987, the UST was filled with concrete and closed in-place. The location of the closed-in-place UST was determined during the Phase II ESA.

## **2.4 Property Features**

The property contains a warehouse building with a railroad spur, paved parking lot, paved ship dock with two overhead cranes, steel seawall and grass-covered areas. The property is serviced by the municipal potable water supply and combined sewer systems, as well as private natural gas, electric and communication utilities.

## **2.5 Current / Proposed Property Uses**

The building is used to store aluminum ingots. The City intends to demolish the existing building and redevelop the property into a public park. Based on the conceptual site plan provided by City, the redeveloped property will contain paved parking lot, walkways and landscaped areas. Under City's ownership, the future use of the property will not include any use or storage of significant quantities of hazardous substances.



### **3.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS**

Environmental investigations conducted at the property by NTH are summarized below.

#### **3.1 Phase I Environmental Site Assessment**

NTH performed a Phase I Environmental Site Assessment (ESA) in accordance with ASTM E1527-13, and the results of this study were presented in a report dated May 19, 2015. The Phase I ESA report identified the following recognized environmental conditions (RECs):

- The property was formerly a part of Detroit River and was reclaimed to support the current development. No information on the backfill soil used for land reclamation purposes is readily available. As such, the environmental nature and origin of the backfill soil are unknown.
- Past uses of the property include lumber yard, coal yard and warehouse with an oil house. No information is readily available regarding the past occupants' hazardous material handling, storage or waste disposal practices implemented on the premises.
- Railroad spur is located at the property and railroad ties were noted to be stored east of the building.
- One UST is located inside the building and is reportedly closed-in-place. No information is available to evaluate the environmental status of the UST and surrounding soils.
- One vent pipe was noted on the north exterior wall of the building. The significance of this pipe could not be determined.



- Based on the information provided by the current property owners regarding a previous subsurface investigation, the property is a “*facility*” as defined by Part P.A. 451, Part 201, as amended.
- Soil and/or groundwater contamination was identified on the westerly and easterly adjacent sites.

### **3.2 Phase II Environmental Site Assessment**

NTH conducted a Phase II ESA in accordance with ASTM E1903-11 to evaluate the RECs identified in the Phase I ESA report. The results of the Phase II ESA were included in a report dated June 9, 2015.

During Phase II ESA, a visual survey was conducted to determine the significance of the vent pipe observed on the exterior north wall of the building and to confirm the location of the 1,000-gallon gasoline UST which was closed-in-place in 1987. The vent pipe was traced using a utility locating device and it terminated in an area inside the building that was covered with a concrete patch. This area was further evaluated by geoprobe borings and an obstruction indicative of UST was encountered.

The subsurface investigations comprised of advancing 11 geoprobe borings, designated as GP-1 through GP-11, three exploratory probes, designated as P-1 through P-3, and analysis of soil samples. The borings were drilled to depths of up to 28 feet at the approximate locations depicted on the Boring Location Plan in Appendix A. The soil conditions at the explored locations consisted of up to 19 feet of sandy and clayey fill soil with pieces of brick, coal, porcelain tile, roofing materials, slag and wood. The fill soil is underlain by native clayey soils to the explored depths. Obstructions were encountered at P-1 at a depth of about 2 feet, and also at GP-5, P-2 and P-3 at depths of about 12 feet. As previously indicated, an UST is present at the location of P-1. The significance of obstructions at GP-5, P-2 and P-3 could not be precisely determined, but appear to be rubble materials in the fill soil. No groundwater was encountered in any of the borings.



Fourteen soil samples were collected from the borings and analyzed for volatile organic compounds (VOCs), polynuclear aromatic compounds (PNAs) and 10 metals commonly of concern in Michigan (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc). The results of the laboratory analysis were compared to the MDEQ’s Revised Part 201 GRCC and Screening Levels – Table 2 published on December 30, 2013, pursuant to NREPA.

Specifically, the results of the soil analysis were compared to the Part 201 residential direct contact (DC) criteria, drinking water protection (DWP) criteria, groundwater/surface water interface protection (GSIP) criteria, soil volatilization to indoor air criteria (SVIIC), infinite source soil volatilization to ambient air criteria (VSIC), particulate soil inhalation criteria (PSIC), soil saturation concentration screening levels (SSCSL). The results of the metals analyses were also compared to the statewide default background (SWDB) concentrations, as established by MDEQ. Additionally VOCs and PNAs results were also compared to the Residential Vapor Intrusion Soil and Groundwater Screening Levels contained in MDEQ Guidance Document for the Vapor Intrusion Pathway dated May 2013. The comparison between the Part 201 GRCC and laboratory data is presented in Table 1 in Appendix B.

The results of soil sample analysis identified the following contaminants above Part 201 GRCC:

Contaminant	CAS Nos.	Sample Location	Criteria Exceeded
Arsenic	7440382	S-3 from GP-3	DWP and GSIP
		GP-2, S-1 from GP-3, GP-4, S-1 and S-3 from GP-5, GP-6, GP-8, GP-9, GP-10 and S-2 from GP-11	DWP, GSIP and DC
Chromium	7440473	GP-2 and GP-6	GSIP
		S-3 from GP-5, GP-9 and GP-10	DWP and GSIP
Copper	7440508	S-3 from GP-3, S-1 and S-3 from GP-5, GP-6, GP-7 and GP-8	GSIP
Lead	7439921	GP-6	DC
		S-3 from GP-5	DWP and DC



Contaminant	CAS Nos.	Sample Location	Criteria Exceeded
Mercury	7439976	S-3 from GP-3, GP-4, GP-6, GP-9 and GP-10	GSIP
Selenium	7782492	GP-2, S-1 from GP-3, GP-4, S-1 from GP-5, GP-8, GP-9 and GP-10	GSIP
Zinc	7440666	S-3 from GP-3, GP-4, S-3 from GP-5, GP-6 and GP-8	GSIP
Benzene	71432	S-1 from GP-3	DWP
		GP-2, and S-1 and S-2 from GP-11	DWP and SVIIC
n-Butylbenzene	104518	S-1 from GP-11	DWP
Ethylbenzene	100414	S-2 from GP-11	DWP
		GP-2, GP-6 and S-1 from GP-11	DWP and GSIP
Naphthalene	91203	GP-2, S-3 from GP-5 and S-1 from GP-11	GSIP
		GP-6	DWP and GSIP
n-Propylbenzene	103651	S-1 from GP-11	DWP
Toluene	108883	S-1 from GP-11	GSIP
Trichloroethylene	79016	GP-9	DWP
1,2,4-Trimethylbenzene	95636	GP-2, GP-6 and S-1 and S-2 from GP-11	DWP and GSIP
1,3,5-Trimethylbenzene	108678	GP-2 and S-1 from GP-11	DWP and GSIP
Xylenes	1330207	S-1 from GP-3, GP-6 and S-2 from GP-11	GSIP
		GP-2 and S-1 from GP-11	DWP and GSIP
Acenaphthene	83329	GP-6	GSIP
Benzo(a)pyrene	50328	S-3 from GP-3, GP-4 and GP-6	DC
Fluoranthene	206440	S-3 from GP-3, GP-4 and GP-6	GSIP
Fluorene	86737	GP-6	GSIP
2-Methylnaphthene	91576	S-1 from GP-3, S-1 from GP-5 and S-1 from GP-11	GSIP
		GP-6	DWP and GSIP
Phenanthrene	85018	S-1 and S-3 from GP-3, GP-4, S-1 and S-3 from GP-5, GP-8 and GP-10	GSIP
		GP-6	DWP and GSIP

Additionally, certain VOCs and PNAs were detected soil samples above Residential Vapor Intrusion Soil Screening Levels, which means that there is a potential risk from vapor intrusion into the existing building or future buildings. Thus, if any buildings are constructed on the property, the methods for compliance with due care responsibilities should be reviewed and this Plan should be updated.



## **4.0 EXPOSURE PATHWAY EVALUATION**

A pathway evaluation was conducted to determine which risk-based criteria are relevant and applicable at the property. The property use and the geologic and hydrogeologic conditions are used in this evaluation.

### **4.1 PROPERTY USE PLAN**

The City intends to demolish the existing building and redevelop the property into a public park with paved parking lot, sidewalks and landscaped areas. Thus, in accordance with NREPA, the appropriate exposure scenarios would be consistent with *Nonresidential land use*.

### **4.2 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS**

The geologic conditions at the property are summarized in the NTH Phase II ESA report. NTH investigated subsurface conditions to depths of approximately 28 feet. The soil conditions at the explored locations generally consisted of up to 19 feet of sandy and clayey fill soil underlain by native clayey soils. No groundwater was encountered in any of the borings. Due to close proximity of the Detroit River, any groundwater encountered at the property is likely in hydraulic connection with the river.

### **4.3 ANALYSIS OF EXPOSURE AND MIGRATION PATHWAYS**

Part 201 allows for evaluation of relevant pathways of exposure. A pathway is considered relevant when the exposure route exists, even if exposure controls are or will be relied upon to prevent exposure, and even if detected contaminant concentrations are less than applicable criteria. As part of the pathway evaluation, the geologic and hydrogeologic characteristics of the property may be considered when evaluating if a pathway is relevant. Depending on site-specific factors (e.g., soil and groundwater conditions), certain pathways may be eliminated; that is, the pathways may be determined not to be relevant, and thus not applicable to assessment of risk at the property.



If a pathway is relevant, the corresponding Part 201 cleanup criteria are applicable to evaluate risk at the property unless the pathway is reliably restricted. The potential pathways of migration and exposure that are considered include:

- Ingestion of impacted groundwater;
- Migration of contaminated groundwater into surface water or sediment;
- Direct contact (including soil ingestion) with impacted soil;
- Inhalation of impacted particulate (soil) and/or volatilized compounds from soil and/or groundwater.

A discussion of the relevance of each pathway at the property and a conclusion as to the applicability for risk assessment purposes is presented below.

#### ***Ingestion of Impacted Groundwater Pathway***

This pathway relates to contaminants dissolved in the groundwater or chemicals absorbed on the soil being dissolved into water passing through the impacted soil, leaching the contaminants from the soil into the groundwater, and groundwater being drawn from the ground and ingested as drinking water.

No groundwater was encountered in the boring drilled at the property. Any perched groundwater (if encountered) in the fill soil is not likely to be present in sufficient quantities to support potable water well. Due the close proximity of the Detroit River and that municipal drinking water is drawn from the river, this pathway is relevant at this property and the Drinking Water Criteria (for groundwater) and the Drinking Water Protection Criteria (for soil) are applicable for all land uses.



### ***Migration of Contaminated Groundwater into a Surface Water Pathway***

This pathway relates to migration of contaminants through the groundwater or chemicals absorbed on the soil being dissolved into water passing through the impacted soil and venting to a surface water body or wetland.

Considering the close proximity of the property to the Detroit River, there will be a likely hydraulic connection between the perched groundwater (if encountered) at the property and the surface water of the river. As such, this pathway is relevant at this property and the Groundwater Surface Water Interface Criteria (for groundwater) and the Groundwater Surface Water Interface Protection Criteria (for soil) are applicable.

### ***Direct Contact with Soil Pathway***

This pathway relates to human dermal contact with or ingestion of contaminated soil. The direct contact with soil pathway is relevant for all land uses, and as such the Direct Contact Criteria is applicable.

### ***Inhalation of Impacted Particulate and/or Volatilized Compounds Pathway***

This pathway relates to contaminants volatilizing from the soil, migrating through the vadose zone soils, and either venting to the atmosphere or into enclosed spaces (e.g. basements, utility trenches, buildings), and then being inhaled. This exposure pathway also relates to soil particles with adsorbed contaminants becoming airborne and being inhaled.

The soil particulate pathway and the ambient air inhalation pathways are relevant for all land uses. As such, the Particulate Soil Inhalation Criteria and the Volatile Soil Inhalation Criteria to ambient air are applicable. The property currently includes a building structure. If the existing building remains then the inhalation of compounds volatilized to the indoor air pathway is relevant for the property. Therefore, the Soil Volatilization to Indoor Air Inhalation Criteria and the Groundwater Volatilization to Indoor Air Inhalation Criteria (for any perched groundwater that might be observed in the future) are applicable.



In addition, the Vapor Intrusion Screening Levels included in the Remediation Division's Guidance Document for the Vapor Intrusion Pathway (May 2013) have also been used to evaluate risk.

### ***Summary of Relevant Pathways and Applicable Criteria***

Based on the pathway evaluation, the following pathways are considered relevant to evaluating risk at the property. Based on the property uses, a Nonresidential land use category is appropriate. The following Part 201 Generic Nonresidential Cleanup Criteria and Screening Levels associated with each relevant pathway are considered applicable for compliance with Michigan regulations:

- Ingestion of Impacted Groundwater Pathway
  - Drinking Water Protection Criteria (DWP)
  - Drinking Water Criteria (DW)
  
- Migration of Contaminated Groundwater into a Surface Water Pathway
  - Groundwater Surface Water Interface Criteria (GSI)
  - Groundwater Surface Water Interface Protection Criteria (GSIP)
  
- Direct Contact With Soil
  - Soil Direct Contact Criteria (DC)
  
- Inhalation of Impacted Particulate and/or Volatilized Compounds Pathway
  - Particulate Soil Inhalation Criteria (PSIC)
  - Volatile Soil Inhalation Criteria (VSIC)
  - Soil Volatilization to Indoor Air Inhalation Criteria (SVIIC) for facility determination, and the Vapor Intrusion Screening Levels for supplemental risk evaluation
  - Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC), and the Vapor Intrusion Screening Levels for supplemental risk evaluation



## 5.0 HAZARDOUS SUBSTANCE INFORMATION AND CRITERIA OF CONCERN

Criteria of concern are those criteria that are applicable and those which are exceeded by contaminant concentrations detected at the property. The hazardous substances detected during NTH's Phase II ESAs were compared to the Part 201 Generic *Nonresidential* Cleanup Criteria and Screening Levels identified in the previous section as being applicable for due care risk evaluation based on the current and known future uses of the property.

The comparison to the applicable Part 201 Generic Nonresidential Cleanup Criteria is presented in Table 2 in Appendix B. The comparison indicates that only the following contaminants were detected in soil samples above the applicable Generic Nonresidential Criteria, which are appropriate for the use as a recreational property that is not contiguous to residential property:

Contaminant	CAS Nos.	Sample Location	Criteria Exceeded
Arsenic	7440382	GP-2, S-1 and S-3 from GP-3 GP-4, S-1 and S-3 from GP-5, GP-6, GP-8, GP-9, GP-10 and S-2 from GP-11	DWP and GSIP
Chromium	7440473	GP-2 and GP-6	GSIP
		S-3 from GP-5, GP-9 and GP-10	DWP and GSIP
Copper	7440508	S-3 from GP-3, S-1 and S-3 from GP-5, GP-6, GP-7 and GP-8	GSIP
Lead	7439921	S-3 from GP-5	DWP
Mercury	7439976	S-3 from GP-3, GP-4, GP-6, GP-9 and GP-10	GSIP
Selenium	7782492	GP-2, S-1 from GP-3, GP-4, S-1 from GP-5, GP-8, GP-9 and GP-10	GSIP
Zinc	7440666	S-3 from GP-3, GP-4, S-3 from GP-5, GP-6 and GP-8	GSIP
Benzene	71432	GP-2, S-1 from GP-3 and S-2 from GP-11	DWP
		S-1 from GP-11	DWP and GSIP
n-Butylbenzene	104518	S-1 from GP-11	DWP



Contaminant	CAS Nos.	Sample Location	Criteria Exceeded
Ethylbenzene	100414	GP-6 and S-2 from GP-11	DWP
		GP-2 and S-1 from GP-11	DWP and GSIP
Naphthalene	91203	GP-2, S-3 from GP-5, GP-6 and S-1 from GP-11	GSIP
Toluene	108883	S-1 from GP-11	GSIP
Trichloroethylene	79016	GP-9	DWP
1,2,4-Trimethylbenzene	95636	GP-2, GP-6 and S-1 and S-2 from GP-11	DWP and GSIP
1,3,5-Trimethylbenzene	108678	GP-2 and S-1 from GP-11	DWP and GSIP
Xylenes	1330207	S-1 from GP-3, GP-6 and S-2 from GP-11	GSIP
		GP-2 and S-1 from GP-11	DWP and GSIP
Acenaphthene	83329	GP-6	GSIP
Benzo(a)pyrene	50328	GP-6	DC
Fluoranthene	206440	S-3 from GP-3, GP-4 and GP-6	GSIP
Fluorene	86737	GP-6	GSIP
2-Methylnaphthene	91576	S-1 from GP-3, S-1 from GP-5, GP-6 and S-1 from GP-11	GSIP
Phenanthrene	85018	S-1 and S-3 from GP-3, GP-4, S-1 and S-3 from GP-5, GP-6, GP-8 and GP-10	GSIP

The comparison to the applicable MDEQ Nonresidential Vapor Intrusion Soil is also presented in Table 2 in Appendix B. The comparison indicates that certain VOCs and PNAs were detected in excess of the Nonresidential Vapor Intrusion Screening Levels.

***Applicable Criteria of Concern***

Applicable criteria of concern are those for which pathways are both relevant and where contamination is present above the corresponding criterion. Based on the pathway analysis and the contaminants identified as being present, the following are the applicable criteria of concern at the property:

- DW and DWP
- GSI and GSIP
- DC



## 6.0 PLAN FOR RESPONSE ACTIVITIES

The purpose of the proposed response activities is to satisfy the due care obligations of the City. The response activities described herein are based on City intentions to demolish the existing building and redevelop the property into a public park with paved parking lot, walkways and landscaped areas. During future use of the property as a public park, City will continue maintaining the landscaped areas.

- *Take reasonable precautions against the reasonably foreseeable acts or omissions of a third party:* The notifications indicated in Section 6.1 will serve to comply with this requirement.
- *Prevent exacerbation of the existing contamination:* The measures described in Section 6.2 serve to comply with this requirement. Based on available information the existing building and parking lot will be demolished. To maintain the approximate pre-existing infiltration in areas that are currently unpaved, the approximate current site grades will be maintained. To maintain the small amount of infiltration in areas where building and paved surfaces are currently located, any subsurface excavations required to facilitate demolition will be backfilled with approximately one foot of clayey soil.
- *Eliminate unacceptable exposures:* Based on the current property use described in Section 2.0, the exposure pathway evaluation in Section 4.0 and the hazardous substance evaluation in Section 5.0, the criteria / pathway of concern for human exposure is DW, DWP, GSI, GSIP and DC.
  - To address exceedances of the DW and DWP, no wells will be installed at the property.



- To address exceedances of the GSI and GSIP, the existing seawall along the southern property boundary will be maintained and any future storm sewers will be connected to municipal sewer system. As previously indicated, groundwater was not encountered to depths of approximately 28 feet. Thus, suggesting that the seawall is preventing water from the adjacent Detroit River from entering the property, and likewise will also prevent surface runoff or perched groundwater at the property from entering the river.
- To address exceedances of the DC, an exposure barrier consisting of paved surface and landscape materials will be installed at the property, as indicated in the Exposure Barrier section of this Plan.

### **6.1 Third Party Notifications**

Reasonable precautions against the acts of a third party will be taken by providing a written notice of the general nature and extent of contamination at the property and potential unacceptable exposures to easement holders of existing utilities at the property. This notice will be provided by sending a copy of the Construction & Utility Worker Information Sheet contained in Appendix C with a cover letter from the City.

If there is transfer of an interest in the property, the City will provide NTH environmental reports to the potential purchasers and indicate to them that the property is a *facility*.

### **6.2 Controls During Construction**

The planned redevelopment of the property entails demolition of the existing building and parking lot, and the installation of new paved parking lot and sidewalks and landscaped areas. This section details activities that will be implemented to mitigate potential exposures to hazardous substances identified at the property.



### ***Health and Safety Plan***

A copy of this Plan should be provided to project contractors who may have the potential to be exposed to contaminated soil during future construction activities. Based on the information contained in this Plan, each contractor shall be responsible to develop their own site-specific Health and Safety Plan (HASP) in accordance with applicable regulatory requirements. The site-specific HASP will outline measures to be taken to protect workers during construction activities. Should unknown conditions be encountered during on-site activity, the HASP shall be revised as appropriate.

### ***Site Security***

During periods of significant construction activities, the property shall be accessible only to authorized employees, agents, representatives, contractors and consultants of the City. The construction area will be secured against unauthorized access by posting signs restricting access to authorized personnel. The City will require its contractors to prohibit unauthorized access to the property.

### ***Demolition***

The planned demolition will include removal of the existing building, floor slabs, foundations, closed-in-placed UST, subsurface utilities and pavements. All excavations shall be backfilled to designed grade using imported, non-contaminated clayey soil to limit infiltration.

### ***Exposure Barrier***

Once demolition of the existing improvements has been completed, an exposure barrier protective of the direct contact pathway will be installed to protect the public against exposure to existing soil conditions. The exposure barrier will also limit migration of contaminated soil through wind or water erosion. The exposure barrier will extend across the entire property and will consist of the following components:



- Paved surfaces: All paved surfaces will function as the “hard surface” portion of the exposure barrier. Industry standard construction materials and designs will be used to construct the “hard surface” portion of the barrier.
- Landscaped areas and around trees: The exposure barrier will include a visual demarcation material covered by 12 inches of imported, non-contaminated clayey soil.

If geotextile fabric, snow-fence or other similar material are used as a demarcation layer then penetrations made to install plants/shrubs, signage, etc., will be minimized to limit the damage to the demarcation material. The clean fill cover layer will be removed and the demarcation material will be carefully cut to the approximate size of the proposed penetration. The area around the penetration will be repaired with demarcation material consistent with the manufacturer’s recommended overlap so as to cover any damaged areas and to minimize any gaps around the penetration. The area will then be backfilled with non-contaminated fill soil and covered with grass or landscape mulch.

The existing soil will be relocated onsite as necessary to prepare the subgrade and the exposure barrier will be installed directly on the existing soil. Some of the existing soil may be removed for offsite disposal. The soil slated for offsite disposal must be subjected to waste characterization analysis and handled in accordance with the requirements of this Plan.

It may be necessary to expose soil beneath the exposure barrier for future construction or maintenance activities including work on buried utilities. The Construction & Utility Worker Information Sheet included in Appendix C shall be provided to all the contractors who may have the potential to be exposed to contaminated soil during future construction activities.

### ***Control of Contaminated Media***

During future construction activity, control of contaminated media will be provided through a dust control program, procedures to address encountered groundwater, and a program to prevent tracking of contaminated soils.



### ***Fugitive Dust Control Program***

A fugitive dust control program must be implemented when it is likely that conditions will be favorable for significant dust generation. If airborne dust/particulates are observed during construction, then areas of non-vegetative ground surface, open excavations, stockpiled soils, etc. will be sprayed with water or dust suppressant material as necessary to prevent airborne dispersion and off-site migration of the soil particulates.

### ***Dewatering / Groundwater / Storm-Water Management***

Construction and utility workers may encounter perched groundwater or surface runoff and depending on the quantity of water encountered, dewatering may be necessary. If groundwater is to be handled onsite, it may only be allowed to infiltrate in areas of similar contamination to the source location. The infiltration location should be located as far from the property boundaries as possible and measures must be taken to prevent runoff to adjacent properties.

Should offsite disposal of groundwater and/or storm water that has accumulated within any excavation be necessary, the water must be characterized prior to determining appropriate pre-treatment and/or disposal options. Disposal options may consist of the following:

- Discharge to the DWSD combined sewer with appropriate permits and clearances.
- Temporary on-site storage (e.g. frac tank) and subsequent discharge to the combined sewer or transport to a licensed offsite disposal facility.

### ***Soil Erosion and Sediment Control***

For the construction activities where significant surface disturbance will occur, a Soil Erosion and Sedimentation Control (SESC) Plan will be prepared in accordance with local and state requirements. The proposed SESC measures to control sediment and/or erosion may include:

- A gravel tracking mat will be constructed at the work area exit to provide a zone through which loose soils can dislodge from truck tires.



- The area immediately outside the property will be periodically swept and scraped to prevent tracking of soil and dispersion of dust from the property. Material will be swept back onto the property.
- Silt fence will be installed around the perimeter of the property.
- Inlet filters will be placed over catch basins. The filters will be periodically cleaned.

#### ***Program to Prevent Tracking of Contaminated Soils***

Reasonable precautions must be followed to minimize the tracking of soil including appropriate decontamination procedures for equipment prior to leaving the work area (e.g. such as cleaning tires and tracks). If soil has been tracked out of the work area or offsite, the areas must be cleaned using appropriate methods.

#### ***Soil Relocation***

The contaminated soil shall only be relocated as follows:

- Soil may only be relocated onsite to areas similarly contaminated.
- Excess soil shall be properly characterized and, if necessary, disposed of at a licensed landfill facility, in accordance with the terms of the accepting landfill.
- If evidence of additional soil contamination not previously known is encountered during construction activities, it must be evaluated prior to relocating. The materials may then can only be relocated if it is determined that such relocation will not cause exacerbation.



### ***Methods for Handling Contaminated Soils Before and During Offsite Transport***

Excess contaminated soil that cannot be reused on-site in accordance with the soil relocation provisions of this Plan shall be disposed in a licensed landfill. The soil designated for landfill disposal will be managed as follows:

- Soil removed from the subsurface will be either directly loaded for transportation to a landfill facility or stockpiled in a predetermined location. The staging area(s) shall be limited to areas covered by an impervious barrier or an area acceptable in accordance with the Soil Relocation provisions of this Plan.
- Stockpiled soil shall be covered with a rain barrier (such as plastic sheeting or visqueen) to prevent washout to adjoining areas.
- Soil may need to be further characterized, if required by the receiving landfill facility.
- Offsite soil disposal activities will be recorded with appropriate documentation such as manifests, trucking logs, receipts or other documentation.
- No soils from the property will be transported to an offsite location other than a licensed landfill.

### ***Preventing and Mitigating Future Releases***

Significant hazardous substance use during construction activities at the property will be managed in a manner to prevent product releases to the environment. Areas designated for storage and handling will be identified and bulk storage of construction related hazardous substances would be in an area with secondary containment to prevent spillage into the soils. Temporary fuel tanks will be of a double-wall construction, with spill containment around the fill port.



### ***Existing Contamination Not Previously Known***

The historical investigations have identified varying soil conditions. It is possible that other areas of contamination or contamination differing in type or magnitude from that identified during NTH's Phase II ESA may be present at the property. As such, if evidence of contamination not described herein or soil conditions differing from those described in NTH's Phase II ESA report are encountered, then such contamination shall be adequately characterized and managed in accordance with the applicable requirements, guidelines and regulations.



## 7.0 EVALUATION OF COMPLIANCE WITH SECTION 7A OBLIGATIONS

The City will satisfy the due care obligations for the property as follows:

### *Prevent Exacerbation*

The City will not exacerbate existing contamination. Compliance with this Plan will result in the following response activities designed to prevent exacerbation:

- Compliance with soil relocation provisions.
- Compliance with the fugitive dust control plan.
- Groundwater and dewatering management activities.
- Storm water and soil erosion control measures.
- Management of any existing contamination that was not previously known.
- Response activities to address a release resulting from construction activities.

### *Mitigate Unacceptable Exposures*

The City or their representatives will undertake efforts to mitigate unacceptable exposures of hazardous substances to construction workers, utility workers, future occupants and site visitors, and others by undertaking the following activities as outlined in this Plan:

- Notifying contractors of existing contamination and requirements for a HASP.
- Site security provisions.
- Installation and maintenance of exposure barrier described in this Plan.
- Operation and Maintenance activities sufficient to protect against exposures through direct contact with soil pathway as outlined this Plan.



***Take Reasonable Precautions***

The City will take reasonable precautions against the actions of third parties through notifications of environmental conditions as outlined in this Plan.

***Provide Reasonable Cooperation***

There are no known parties authorized to conduct response actions at the property. If City becomes aware of any such authorized parties, reasonable cooperation will be provided.

***Comply with Land Use Restrictions***

There are no known land use restrictions at the property.

***Do Not Impede Land Use Restrictions***

There are no known land use restrictions at the property.



## **APPENDIX A**

**BORING LOCATION PLAN;**

**LEGAL DESCRIPTION; PLAT MAP; &**

**CONCEPTUAL SITE PLAN**

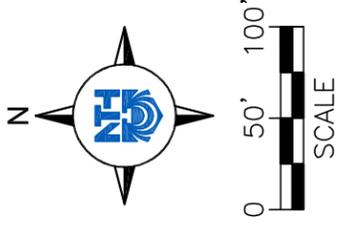


**LEGEND**

- LIMITS OF STUDY AREA
- ////// EXISTING BUILDING
- +++++ RAILROAD TRACKS
- GP  APPROXIMATE GEOPROBE LOCATION
- P  APPROXIMATE PROBE LOCATION

NOTE: LOCATIONS AND DIMENSIONS ARE APPROXIMATE. NOT A LEGAL SURVEY.

<p>3801 WEST JEFFERSON PROPERTY DETROIT MICHIGAN</p>		<p>FIGURE: <b>1</b></p>	
<p>NTH PROJECT No.: 62-140614 CAD FILE NAME: 140614-BLP-100A</p>	<p>DESIGNED BY: JAV PLOT DATE: 6/15/2015</p>	<p>DRAWN BY: KBD DRAWING SCALE: 1" = 100'</p>	<p>CHECKED BY: JAV INCEPTION DATE: 05-15-2015</p>
<p>NTH CONSULTANTS, Ltd. Infrastructure Engineering and Environmental Services</p>		<p>NTH</p>	



## General Property Information

City of Detroit

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Parcel: 14000001-3 Unit: CITY OF DETROIT

## Property Address [collapse]

3801 W JEFFERSON  
, 48216

## Owner Information [collapse]

RIVERVIEW TRENTON RAILROAD  
PO BOX 869  
WARREN, MI 48090-0869

Unit: 01

## Taxpayer Information [collapse]

SEE OWNER INFORMATION

## General Information for Tax Year 2014 [collapse]

<b>Property Class:</b>	301 - 301-INDUSTRIAL	<b>Assessed Value:</b>	\$624,162
<b>School District:</b>	D -	<b>Taxable Value:</b>	\$624,162
<b>State Equalized Value:</b>	\$624,162	<b>Map #</b>	14
<b>DISTRICT</b>	5	<b>Date of Last Name Chg:</b>	02/28/2013

<b>Date Filed:</b>	
<b>Notes:</b>	N/A
<b>Census Block Group:</b>	N/A

<b>Historical District:</b>	N/A
-----------------------------	-----

<b>Principal Residence Exemption</b>	<b>June 1st</b>	<b>Final</b>
		-
<b>2014</b>	0.0000 %	0.0000 %

Previous Year Info	MBOR Assessed	Final S.E.V.	Final Taxable
<b>2013</b>	\$624,162	\$624,162	\$624,162
<b>2012</b>	\$624,162	\$624,162	\$624,162

## Land Information [collapse]

	<b>Frontage</b>	<b>Depth</b>
<b>Lot 1:</b>	617.98 Ft.	0.00 Ft.
<b>Lot 2:</b>	0.00 Ft.	0.00 Ft.
<b>Lot 3:</b>	0.00 Ft.	0.00 Ft.
<b>Total Frontage:</b>	617.98 Ft.	<b>Average Depth:</b> 0.00 Ft.

<b>Total Acreage:</b>	4.71
<b>Zoning Code:</b>	2011 AUTH

<b>Total Estimated Land Value:</b>	\$799,302	<b>Mortgage Code:</b>	
<b>Land Improvements:</b>	\$102,546	<b>Lot Dimensions/Comments:</b>	N/A
<b>Renaissance Zone:</b>	NO		
<b>Renaissance Zone Expiration Date:</b>			

**Legal Information for 1400001-3** [collapse]

S JEFFERSON THAT PT OF PC 78 & PC 77 DESC AS FOLS BEG AT A PTE ON SLY LINE OF JEFFERSON AVE 50 FT WD & W LINE OF W GRAND BLVD TH S 27D 56M 30S E 556.10 FT ALG W LINE OF W GRAND BLVD TO THE U S HARBOR LINE TH WLY 506.48 FT ALG SD HARBOR LINE TH N 27D 58M 25S W 350.26 FT TO S LINE JEFFERSON AVE TH N 58D 58M 35S E 0.37 FT TH ON CURVE TO L 123.24 FT RAD 179.75FT TH N 19D 41M 35S E 186.87 FT TH N 19D 42M E 307.87 FT TO P O B 14/--- 204,948 SQ FT

**Sales Information****1 sale record(s) found.**

Sale Date	Sale Price	Instrument	Grantor	Grantee	Terms Of Sale	Liber/Page
09/22/2006	\$3,145,000.00	PTA	DETROIT NEWSPAPER AGENCY	DETROIT INTERNATIONAL BRIDGE COMPAN	ARMS LENGTH	

**Building Information****1 building(s) found.**

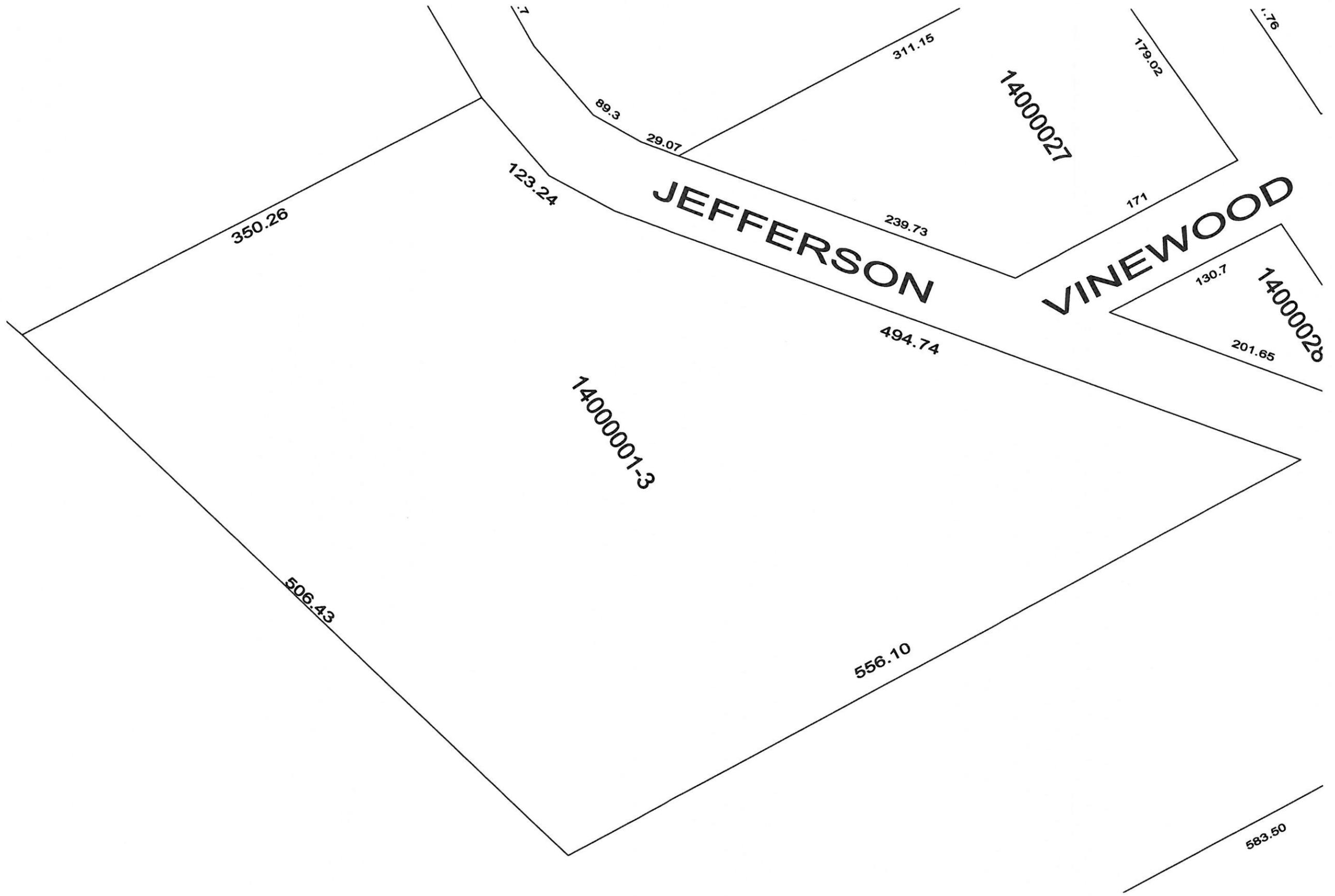
Description	Floor Area	Yr Built
<input type="checkbox"/> Commercial/Industrial Building 1 - Warehouse, Storage	80116 Sq. Ft.	1949

**General Information**

<b>Floor Area:</b>	80116 Sq. Ft.	<b>Estimated TCV:</b>	N/A
<b>Occupancy:</b>	Warehouse, Storage	<b>Class:</b>	C
<b>Stories Above Ground:</b>	1	<b>Average Story Height:</b>	32
<b>Basement Wall Height:</b>	N/A	<b>Year Remodeled:</b>	0
<b>Year Built:</b>	1949	<b>Heat:</b>	Space Heaters, Gas with Fan
<b>Percent Complete:</b>	100%	<b>Functional Percent Good:</b>	100%
<b>Physical Percent Good:</b>	37%	<b>Effective Age:</b>	56 yrs.
<b>Economic Percent Good:</b>	100%		

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**LEGEND**

- ① BASEBALL FIELD
- ② MULTIPURPOSE FIELD
- ③ BOAT LAUNCH
- ④ RIVERSIDE PAVILION
- ⑤ J.W. WESTCOTT/FIRE BOAT
- ⑥ PLAYSCAPE
- ⑦ RIVERWALK
- ⑧ PLAZA
- ⑨ OVERLOOK

PARKING LOT	# SPACES
①	95
②	90
③	35
<b>TOTAL UNITS</b>	<b>220</b>
BOAT TRAILER	# SPACES
④	40





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## **APPENDIX B**

### **ANALYTICAL SUMMARY TABLES**

**Table 1: SUMMARY OF CHEMICAL ANALYSES - RESIDENTIAL SOIL**  
**3801 West Jefferson Property**  
**NTH Project No. 62-140614-100C**

Sample Designation	Sample Depth (ft)	Collect Date	Michigan 10 Metals										Volatile Organic Compounds														
			Arsenic	Barium	Cadmium	Chromium, Total	Copper	Lead	Mercury, Total	Selenium	Silver	Zinc	Benzene	n-Butylbenzene	sec-Butylbenzene	cis-1,2-Dichloroethylene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Propylbenzene	Toluene	Trichloroethylene	1,2,3-Trimethylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes	Other Volatile Organic Compounds
			7440-38-2	7440-39-3	7440-43-9	7440-47-3	7440-50-8	7439-92-1	7439-97-6	7782-49-2	7440-22-4	7440-66-6	71-43-2	104-51-8	135-98-8	156-59-2	100-41-4	98-82-8	91-20-3	103-65-1	108-88-3	79-01-6	526-73-8	95-63-6	108-67-8	1330-20-7	Various
GP-1 S-1	(1.0' - 3.0')	5/28/2015	1,900	6,100	<50	3,500	3,100	2,300	<50	<200	<100	8,700	<50	<58	<58	<50	<50	<290	<330	<100	<50	<58	<100	<120	<100	<150	ND
GP-2 S-1	(4.5' - 6.0')	5/27/2015	12,000	94,000	300	20,000	72,000	62,000	100	560	<100	120,000	3,100	180	<61	<50	5,000	<310	1,900	1,000	1,400	<61	2,000	8,500	2,300	24,000	ND
GP-3 S-1	(0.5' - 1.5')	5/27/2015	18,000	190,000	500	10,000	54,000	220,000	110	1,400	270	120,000	190	<58	<58	<50	140	<290	590	<100	1,200	<58	140	260	<100	1,300	ND
GP-3 S-3	(11.0' - 12.5')	5/27/2015	6,400	68,000	620	7,900	160,000	160,000	320	340	380	370,000	<50	<65	<65	<50	<50	<320	<330	<100	62	<65	<100	<130	<100	<150	ND
GP-4 S-1	(7.0' - 9.0')	5/27/2015	13,000	110,000	600	12,000	34,000	300,000	180	810	100	530,000	<50	160	450	<50	<50	500	<330	240	<50	<50	<100	420	<100	<150	ND
GP-5 S-1	(2.0' - 3.0')	5/28/2015	15,000	65,000	490	6,300	110,000	58,000	88	1,300	<100	110,000	<50	<60	<60	<50	<50	<300	<330	<100	310	<60	<100	<120	<100	460	ND
GP-5 S-3	(9.0' - 10.5')	5/28/2015	11,000	130,000	1,000	33,000	180,000	870,000	73	380	130	390,000	<50	160	98	<50	<50	<350	2,500	<100	<50	<70	280	330	370	<150	ND
GP-6 S-3	(10.5' - 11.0')	5/28/2015	13,000	210,000	570	22,000	150,000	530,000	790	380	420	260,000	63	210	<63	<50	1,500	<310	60,000	<100	150	<63	730	2,400	750	1,400	ND
GP-7 S-1	(5.0' - 7.0')	5/28/2015	4,000	28,000	96	5,900	170,000	85,000	120	<200	<100	46,000	<50	<60	<60	<50	<50	<300	<330	<100	60	<60	<100	<120	<100	<150	ND
GP-8 S-1	(2.0' - 3.0')	5/28/2015	14,000	100,000	1,600	18,000	120,000	140,000	58	1,700	200	210,000	59	<57	<57	<50	86	<280	410	<100	320	64	<100	170	<100	530	ND
GP-9 S-1	(1.5' - 3.5')	5/28/2015	13,000	97,000	680	34,000	45,000	60,000	220	1,000	<100	120,000	<50	<60	<60	140	<50	<300	<330	<100	180	610	<100	<120	<100	180	ND
GP-10 S-1	(4.0' - 5.0')	5/28/2015	14,000	93,000	670	45,000	57,000	140,000	180	1,500	<100	170,000	<50	<63	<63	<50	<50	<310	<330	<100	<50	<63	<100	<130	<100	<150	ND
GP-11 S-1	(5.5' - 7.0')	5/27/2015	1,700	15,000	73	5,200	7,300	28,000	<50	<200	<100	18,000	4,900	6,400	890	<50	9,200	880	7,400	3,300	14,000	<62	12,000	46,000	23,000	72,000	ND
GP-11 S-2	(8.0' - 9.5')	5/27/2015	8,200	62,000	150	18,000	17,000	15,000	90	330	<100	52,000	1,700	350	150	<50	370	<300	460	400	310	<60	460	2,400	640	1,100	ND
PART 201 RESIDENTIAL SOIL CLEANUP CRITERIA	SWDB	5,800	75,000	1,200	18,000	32,000	21,000	130	410	1,000	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Various
	DWP	4,600	1.30E+06	6,000	30,000	5.80E+06	7.00E+05	1,700	4,000	4,500	2.40E+06	100	1,600	1,600	1,400	1,500	91,000	35,000	1,600	16,000	100	NA	2,100	1,800	5,600	Various	
	GSIP	4,600	4.40E+05	3,000	3,300	73,000	2.50E+06	50	400	100	1.70E+05	4,000	ID	ID	12,000	360	3,200	730	ID	5,400	4,000	NA	570	1,100	820	Various	
	SVIIC	NLV	NLV	NLV	NLV	NLV	NLV	48,000	NLV	NLV	NLV	1,600	ID	ID	22,000	87,000	4.00E+05	2.50E+05	ID	3.30E+05	1,000	NA	4.30E+06	2.60E+06	6.30E+06	Various	
	VSIC	NLV	NLV	NLV	NLV	NLV	NLV	52,000	NLV	NLV	NLV	13,000	ID	ID	1.80E+05	7.20E+05	1.70E+06	3.00E+05	ID	2.80E+06	11,000	NA	2.10E+07	1.60E+07	4.60E+07	Various	
	VSIC 5M	NLV	NLV	NLV	NLV	NLV	NLV	52,000	NLV	NLV	NLV	34,000	ID	ID	4.20E+05	1.00E+06	1.70E+06	3.00E+05	ID	5.10E+06	25,000	NA	5.00E+08	3.80E+08	6.10E+07	Various	
	VSIC 2M	NLV	NLV	NLV	NLV	NLV	NLV	52,000	NLV	NLV	NLV	79,000	ID	ID	9.90E+05	2.20E+06	2.80E+06	3.00E+05	ID	1.20E+07	57,000	NA	5.00E+08	3.80E+08	1.30E+08	Various	
	PSIC	7.20E+05	3.30E+08	1.70E+06	2.60E+05	1.30E+08	1.00E+08	2.00E+07	1.30E+08	6.70E+06	ID	3.80E+08	2.00E+09	4.00E+08	2.30E+09	1.00E+10	5.80E+09	2.00E+08	1.30E+09	2.70E+10	1.30E+08	NA	8.20E+10	8.20E+10	2.90E+11	Various	
DC	7,600	3.70E+07	5.50E+05	2.50E+06	2.00E+07	4.00E+05	1.60E+05	2.60E+06	2.50E+06	1.70E+08	1.80E+05	2.50E+06	2.50E+06	2.50E+06	2.20E+07	2.50E+07	1.60E+07	2.50E+06	5.00E+07	1.10E+05	NA	3.20E+07	3.20E+07	4.10E+08	Various		
SSCSL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.00E+05	1.00E+07	1.00E+07	6.40E+05	1.40E+05	3.90E+05	NA	1.00E+07	2.50E+05	5.00E+05	NA	1.10E+05	94,000	1.50E+05	Various	
Residential Vapor Intrusion Soil Screening Levels			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	450	50	50	198	250	443	141	10,100	50	3,180	2,200	1,660	291	Various

NOTES:

- [1] Part 201 CRITERIA EFFECTIVE DATE: DECEMBER 30, 2013
- [2] SAMPLES COLLECTED BY NTH CONSULTANTS PERSONNEL AND ANALYZED BY FIBERTEC ENVIRONMENTAL SERVICES OF HOLT, MICHIGAN.
- [3] ALL VALUES PRESENTED AS µG/KG - MICROGRAMS PER KILOGRAM (= PARTS PER BILLION).
- [4] ID - INADEQUATE DATA TO DEVELOP CRITERION / NA - CRITERIA NOT AVAILABLE
- [5] NLV - CHEMICAL IS NOT LIKELY TO VOLATILIZE UNDER MOST CONDITIONS
- [6] ND - NOT DETECTED ABOVE LABORATORY REPORTED METHOD DETECTION LIMITS
- [7] SWDB - STATE-WIDE DEFAULT BACKGROUND
- [8] DWP - RESIDENTIAL DRINKING WATER PROTECTION CRITERIA
- [9] GSIP - GROUNDWATER / SURFACE WATER INTERFACE PROTECTION CRITERIA BASED ON WATER HARDNESS OF 150mg CaCO<sub>3</sub>/L.
- [10] SVIIC - SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA.
- [11] VSIC - VOLATILE SOIL INHALATION CRITERIA (AMBIENT AIR; INFINITE SOURCE).
- [12] VSIC 5M - FINITE VSIC FOR 5 METER SOURCE THICKNESS
- [13] VSIC 2M - FINITE VSIC FOR 2 METER SOURCE THICKNESS
- [14] PSIC - PARTICULATE SOIL INHALATION CRITERIA
- [15] DC - DIRECT CONTACT CRITERIA
- [16] SSCSL - SOIL SATURATION CONCENTRATION SCREENING LEVELS
- [17] - REPORTED CONCENTRATION EXCEEDS ONE OR MORE APPLICABLE PART 201 CRITERIA

**Table 1: SUMMARY OF CHEMICAL ANALYSES - RESIDENTIAL SOIL (CONTINUED)**  
**3801 West Jefferson Property**  
**NTH Project No. 62-140614-100C**

Sample Designation	Sample Depth (ft)	Collect Date	Polynuclear Aromatics															PCBs	
			Acenaphthene 83-32-9	Acenaphthylene 208-96-8	Anthracene 120-12-7	Benzo(a)anthracene 56-55-3	Benzo(a)pyrene 50-32-8	Benzo(b)fluoranthene 205-99-2	Benzo(g,h,i)perylene 191-24-2	Benzo(k)fluoranthene 207-08-9	Chrysene 218-01-9	Dibenzo(a,h)anthracene 53-70-3	Fluoranthene 206-44-0	Fluorene 86-73-7	Indeno(1,2,3-cd)pyrene 193-39-5	2-Methylnaphthalene 91-57-6	Phenanthrene 85-01-8	Pyrene 129-00-0	Polychlorinated Biphenyls
GP-1 S-1	(1.0' - 3.0')	5/28/2015	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	ND	
GP-2 S-1	(4.5' - 6.0')	5/27/2015	<330	<330	<330	570	500	610	400	<330	380	<330	370	1,800	550	750	--		
GP-3 S-1	(0.5' - 1.5')	5/27/2015	<330	<330	340	930	730	1,100	690	330	1,200	<330	550	5,800	3,100	1,500	ND		
GP-3 S-3	(11.0' - 12.5')	5/27/2015	860	460	1,900	4,100	4,200	4,100	2,500	1,400	4,400	550	7,300	770	2,200	340	6,500	10,000	
GP-4 S-1	(7.0' - 9.0')	5/27/2015	1,600	<330	3,300	4,100	4,000	4,900	2,400	1,400	4,100	600	10,000	2,100	2,400	920	11,000	9,700	
GP-5 S-1	(2.0' - 3.0')	5/28/2015	<330	<330	760	2,300	1,900	2,800	1,300	900	3,100	390	4,100	610	1,200	8,100	7,000	4,600	
GP-5 S-3	(9.0' - 10.5')	5/28/2015	1,200	<330	1,800	1,300	760	1,000	440	<330	1,300	<330	4,200	1,800	440	2,700	7,500	4,100	
GP-6 S-3	(10.5' - 11.0')	5/28/2015	57,000	3,200	37,000	18,000	16,000	12,000	7,100	4,700	17,000	1,700	34,000	29,000	6,200	74,000	110,000	63,000	
GP-7 S-1	(5.0' - 7.0')	5/28/2015	340	<330	<330	620	470	560	340	<330	410	<330	840	<330	<330	<330	760	1,100	
GP-8 S-1	(2.0' - 3.0')	5/28/2015	<330	<330	400	2,800	3,500	2,400	2,800	510	3,500	780	2,200	<330	1,500	2,300	2,500	4,700	
GP-9 S-1	(1.5' - 3.5')	5/28/2015	<330	<330	370	1,100	870	1,400	360	440	1,100	<330	2,100	<330	430	1,000	1,800	1,800	
GP-10 S-1	(4.0' - 5.0')	5/28/2015	<330	<330	660	1,700	1,600	2,000	1,000	670	1,600	<330	3,300	<330	1,000	<330	2,200	3,400	
GP-11 S-1	(5.5' - 7.0')	5/27/2015	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	7,600	<330	<330	
GP-11 S-2	(8.0' - 9.5')	5/27/2015	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	740	<330	<330	
PART 201 RESIDENTIAL SOIL CLEANUP CRITERIA	SWDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	DWP	3.00E+05	5,900	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	7.30E+05	3.90E+05	NLL	57,000	56,000	4.80E+05	
	GSIP	8,700	ID	ID	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	5,500	5,300	NLL	4,200	2,100	ID	
	SVIIC	1.90E+08	1.60E+06	1.00E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	1.00E+09	5.80E+08	NLV	2.70E+06	2.80E+06	1.00E+09	
	VSIC	8.10E+07	2.20E+06	1.40E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	7.40E+08	1.30E+08	NLV	1.50E+06	1.60E+05	6.50E+08	
	VSIC 5M	8.10E+07	2.20E+06	1.40E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	7.40E+08	1.30E+08	NLV	1.50E+06	1.60E+05	6.50E+08	
	VSIC 2M	8.10E+07	2.20E+06	1.40E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	7.40E+08	1.30E+08	NLV	1.50E+06	1.60E+05	6.50E+08	
	PSIC	1.40E+10	2.30E+09	6.70E+10	ID	1.50E+06	ID	8.00E+08	ID	ID	ID	ID	9.30E+09	9.30E+09	ID	6.70E+08	6.70E+06	6.70E+09	
DC	4.10E+07	1.60E+06	2.30E+08	20,000	2,000	20,000	2.50E+06	2.00E+05	2.00E+06	2,000	4.60E+07	2.70E+07	20,000	8.10E+06	1.60E+06	2.90E+07	1,200		
SSCSL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Residential Vapor Intrusion Soil Screening Levels			4.32E+05	1.68E+05	3.56E+07	NA	NA	NA	NA	NA	NA	NA	NA	7.09E+05	NA	7,480	5,140	6.47E+07	1,940

NOTES:

- [1] PART 201 CRITERIA EFFECTIVE DATE: DECEMBER 30, 2013
- [2] SAMPLES COLLECTED BY NTH CONSULTANTS PERSONNEL AND ANALYZED BY FIBERTEC ENVIRONMENTAL SERVICES OF HOLT, MICHIGAN.
- [3] ALL VALUES PRESENTED AS µG/KG - MICROGRAMS PER KILOGRAM (≈ PARTS PER BILLION).
- [4] ID - INADEQUATE DATA TO DEVELOP CRITERION / NA - CRITERIA NOT AVAILABLE
- [5] NLV - CHEMICAL IS NOT LIKELY TO VOLATILIZE UNDER MOST CONDITIONS
- [6] ND - NOT DETECTED ABOVE LABORATORY REPORTED METHOD DETECTION LIMITS
- [7] SWDB - STATE-WIDE DEFAULT BACKGROUND
- [8] DWP - RESIDENTIAL DRINKING WATER PROTECTION CRITERIA
- [9] GSIP - GROUNDWATER / SURFACE WATER INTERFACE PROTECTION CRITERIA BASED ON A WATER HARDNESS of 150mg CaCO<sub>3</sub>/L.
- [10] SVIIC - SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA.
- [11] VSIC - VOLATILE SOIL INHALATION CRITERIA (AMBIENT AIR; INFINITE SOURCE).
- [12] VSIC 5M - FINITE VSIC FOR 5 METER SOURCE THICKNESS
- [13] VSIC 2M - FINITE VSIC FOR 2 METER SOURCE THICKNESS
- [14] PSIC - PARTICULATE SOIL INHALATION CRITERIA
- [15] DC - DIRECT CONTACT CRITERIA
- [16] SSCSL - SOIL SATURATION CONCENTRATION SCREENING LEVELS
- [17] - REPORTED CONCENTRATION EXCEEDS ONE OR MORE APPLICABLE PART 201 CRITERIA

**Table 2: SUMMARY OF CHEMICAL ANALYSES - NONRESIDENTIAL SOIL**  
**3801 West Jefferson Property**  
**NTH Project No. 62-140614-100C**

Sample Designation	Sample Depth (ft)	Collect Date	Michigan 10 Metals										Volatile Organic Compounds														
			Arsenic	Barium	Cadmium	Chromium, Total	Copper	Lead	Mercury, Total	Selenium	Silver	Zinc	Benzene	n-Butylbenzene	sec-Butylbenzene	cis-1,2-Dichloroethylene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Propylbenzene	Toluene	Trichloroethylene	1,2,3-Trimethylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes	Other Volatile Organic Compounds
			7440-38-2	7440-39-3	7440-43-9	7440-47-3	7440-50-8	7439-92-1	7439-97-6	7782-49-2	7440-22-4	7440-66-6	71-43-2	104-51-8	135-98-8	156-59-2	100-41-4	98-82-8	91-20-3	103-65-1	108-88-3	79-01-6	526-73-8	95-63-6	108-67-8	1330-20-7	Various
GP-1 S-1	(1.0' - 3.0')	5/28/2015	1,900	6,100	<50	3,500	3,100	2,300	<50	<200	<100	8,700	<50	<58	<58	<50	<50	<290	<330	<100	<50	<58	<100	<120	<100	<150	ND
GP-2 S-1	(4.5' - 6.0')	5/27/2015	12,000	94,000	300	20,000	72,000	62,000	100	560	<100	120,000	3,100	180	<61	<50	5,000	<310	1,900	1,000	1,400	<61	2,000	8,500	2,300	24,000	ND
GP-3 S-1	(0.5' - 1.5')	5/27/2015	18,000	190,000	500	10,000	54,000	220,000	110	1,400	270	120,000	190	<58	<58	<50	140	<290	590	<100	1,200	<58	140	260	<100	1,300	ND
GP-3 S-3	(11.0' - 12.5')	5/27/2015	6,400	68,000	620	7,900	160,000	160,000	320	340	380	370,000	<50	<65	<65	<50	<50	<320	<330	<100	62	<65	<100	<130	<100	<150	ND
GP-4 S-1	(7.0' - 9.0')	5/27/2015	13,000	110,000	600	12,000	34,000	300,000	180	810	100	530,000	<50	160	450	<50	<50	500	<330	240	<50	<50	<100	420	<100	<150	ND
GP-5 S-1	(2.0' - 3.0')	5/28/2015	15,000	65,000	490	6,300	110,000	58,000	88	1,300	<100	110,000	<50	<60	<60	<50	<50	<300	<330	<100	310	<60	<100	<120	<100	460	ND
GP-5 S-3	(9.0' - 10.5')	5/28/2015	11,000	130,000	1,000	33,000	180,000	870,000	73	380	130	390,000	<50	160	98	<50	<50	<350	2,500	<100	<50	<70	280	330	370	<150	ND
GP-6 S-3	(10.5' - 11.0')	5/28/2015	13,000	210,000	570	22,000	150,000	530,000	790	380	420	260,000	63	210	<63	<50	1,500	<310	60,000	<100	150	<63	730	2,400	750	1,400	ND
GP-7 S-1	(5.0' - 7.0')	5/28/2015	4,000	28,000	96	5,900	170,000	85,000	120	<200	<100	46,000	<50	<60	<60	<50	<50	<300	<330	<100	60	<60	<100	<120	<100	<150	ND
GP-8 S-1	(2.0' - 3.0')	5/28/2015	14,000	100,000	1,600	18,000	120,000	140,000	58	1,700	200	210,000	59	<57	<57	<50	86	<280	410	<100	320	64	<100	170	<100	530	ND
GP-9 S-1	(1.5' - 3.5')	5/28/2015	13,000	97,000	680	34,000	45,000	60,000	220	1,000	<100	120,000	<50	<60	<60	140	<50	<300	<330	<100	180	610	<100	<120	<100	180	ND
GP-10 S-1	(4.0' - 5.0')	5/28/2015	14,000	93,000	670	45,000	57,000	140,000	180	1,500	<100	170,000	<50	<63	<63	<50	<50	<310	<330	<100	<50	<63	<100	<130	<100	<150	ND
GP-11 S-1	(5.5' - 7.0')	5/27/2015	1,700	15,000	73	5,200	7,300	28,000	<50	<200	<100	18,000	4,900	6,400	890	<50	9,200	880	7,400	3,300	14,000	<62	12,000	46,000	23,000	72,000	ND
GP-11 S-2	(8.0' - 9.5')	5/27/2015	8,200	62,000	150	18,000	17,000	15,000	90	330	<100	52,000	1,700	350	150	<50	370	<300	460	400	310	<60	460	2,400	640	1,100	ND
PART 201 NONRESIDENTIAL SOIL CLEANUP CRITERIA	DWP	4,600	1.30E+06	6,000	30,000	5.80E+06	7.00E+05	1,700	4,000	13,000	5.00E+06	100	4,600	4,600	1,400	1,500	2.60E+05	1.00E+05	4,600	16,000	100	NA	2,100	1,800	5,600	Various	
	GSIP	4,600	4.40E+05	3,000	3,300	75,000	2.50E+06	50	400	100	1.70E+05	4,000	ID	ID	12,000	360	3,200	730	ID	5,400	4,000	NA	570	1,100	820	Various	
	SVIIC	NLV	NLV	NLV	NLV	NLV	NLV	89,000	NLV	NLV	NLV	8,400	ID	ID	41,000	4.60E+05	7.30E+05	4.70E+05	ID	6.10E+05	1,900	NA	8.00E+06	4.80E+06	1.20E+07	Various	
	VSIC	NLV	NLV	NLV	NLV	NLV	NLV	62,000	NLV	NLV	NLV	45,000	ID	ID	2.10E+05	2.40E+06	2.00E+06	3.50E+05	ID	3.30E+06	14,000	NA	2.50E+07	1.90E+07	5.40E+07	Various	
	VSIC 5M	NLV	NLV	NLV	NLV	NLV	NLV	62,000	NLV	NLV	NLV	99,000	ID	ID	4.30E+05	3.10E+06	2.00E+06	3.50E+05	ID	3.60E+07	25,000	NA	6.00E+08	4.60E+08	6.50E+07	Various	
	VSIC 2M	NLV	NLV	NLV	NLV	NLV	NLV	62,000	NLV	NLV	NLV	2.30E+05	ID	ID	1.00E+06	6.50E+06	3.00E+06	3.50E+05	ID	3.60E+07	58,000	NA	6.00E+08	4.60E+08	1.30E+08	Various	
	PSIC	9.10E+05	1.50E+08	2.20E+06	2.40E+05	5.90E+07	4.40E+07	8.80E+06	5.90E+07	2.90E+06	ID	4.70E+08	8.80E+08	1.80E+08	1.00E+09	1.30E+10	2.60E+09	8.80E+07	5.90E+08	1.20E+10	5.90E+07	NA	3.60E+10	3.60E+10	1.30E+11	Various	
	DC	37,000	1.30E+08	2.10E+06	9.20E+06	7.30E+07	9.00E+05	5.80E+05	9.60E+06	9.00E+06	6.30E+08	8.40E+05	8.00E+06	8.00E+06	8.00E+06	7.10E+07	8.00E+07	5.20E+07	8.00E+06	1.60E+08	6.60E+05	NA	1.00E+08	1.00E+08	1.00E+09	Various	
SSCSL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.00E+05	1.00E+07	1.00E+07	6.40E+05	1.40E+05	3.90E+05	NA	1.00E+07	2.50E+05	5.00E+05	NA	1.10E+05	94,000	1.50E+05	Various	
Nonresidential Vapor Intrusion Soil Screening Levels			NA	NA	NA	NA	NA	NA	NA	NA	NA	84.5	7,560	738	165	3,990	304	8,940	2,370	1.69E+05	50	53,500	36,900	27,900	4,890	Various	

NOTES:

- [1] Part 201 CRITERIA EFFECTIVE DATE: DECEMBER 30, 2013
- [2] SAMPLES COLLECTED BY NTH CONSULTANTS PERSONNEL AND ANALYZED BY FIBERTEC ENVIRONMENTAL SERVICES OF HOLT, MICHIGAN.
- [3] ALL VALUES PRESENTED AS µG/KG - MICROGRAMS PER KILOGRAM (≈ PARTS PER BILLION).
- [4] ID - INADEQUATE DATA TO DEVELOP CRITERION / NA - CRITERIA NOT AVAILABLE
- [5] NLV - CHEMICAL IS NOT LIKELY TO VOLATILIZE UNDER MOST CONDITIONS
- [6] NA- CRITERION NOT AVAILABLE
- [7] ND - NOT DETECTED ABOVE LABORATORY REPORTED METHOD DETECTION LIMITS
- [8] SWDB - STATE-WIDE DEFAULT BACKGROUND
- [9] DWP - RESIDENTIAL DRINKING WATER PROTECTION CRITERIA
- [10] GSIP - GROUNDWATER / SURFACE WATER INTERFACE PROTECTION CRITERIA BASED ON WATER HARDNESS OF 150mg CaCO<sub>3</sub>/L.
- [11] SVIIC - SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA.
- [12] VSIC - VOLATILE SOIL INHALATION CRITERIA (AMBIENT AIR; INFINITE SOURCE).
- [13] VSIC 5M - FINITE VSIC FOR 5 METER SOURCE THICKNESS
- [14] VSIC 2M - FINITE VSIC FOR 2 METER SOURCE THICKNESS
- [15] PSIC - PARTICULATE SOIL INHALATION CRITERIA
- [16] DC - DIRECT CONTACT CRITERIA
- [17] SSCSL - SOIL SATURATION CONCENTRATION SCREENING LEVELS
- [18] - REPORTED CONCENTRATION EXCEEDS ONE OR MORE APPLICABLE PART 201 CRITERIA

**Table 2: SUMMARY OF CHEMICAL ANALYSES - NONRESIDENTIAL SOIL (CONTINUED)**  
**3801 West Jefferson Property**  
**NTH Project No. 62-140614-100C**

Sample Designation	Sample Depth (ft)	Collect Date	Polynuclear Aromatics															PCBs	
			Acenaphthene 83-32-9	Acenaphthylene 208-96-8	Anthracene 120-12-7	Benzo(a)anthracene 56-55-3	Benzo(a)pyrene 50-32-8	Benzo(b)fluoranthene 205-99-2	Benzo(g,h,i)perylene 191-24-2	Benzo(k)fluoranthene 207-08-9	Chrysene 218-01-9	Dibenzo(a,h)anthracene 53-70-3	Fluoranthene 206-44-0	Fluorene 86-73-7	Indeno(1,2,3-cd)pyrene 193-39-5	2-Methylnaphthalene 91-57-6	Phenanthrene 85-01-8		Pyrene 129-00-0
GP-1 S-1	(1.0' - 3.0')	5/28/2015	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	ND
GP-2 S-1	(4.5' - 6.0')	5/27/2015	<330	<330	<330	570	500	610	400	<330	380	<330	640	<330	370	1,800	550	750	--
GP-3 S-1	(0.5' - 1.5')	5/27/2015	<330	<330	340	930	730	1,100	690	330	1,200	<330	1,200	<330	550	5,800	3,100	1,500	ND
GP-3 S-3	(11.0' - 12.5')	5/27/2015	860	460	1,900	4,100	4,200	4,100	2,500	1,400	4,400	550	7,300	770	2,200	340	6,500	10,000	--
GP-4 S-1	(7.0' - 9.0')	5/27/2015	1,600	<330	3,300	4,100	4,000	4,900	2,400	1,400	4,100	600	10,000	2,100	2,400	920	11,000	9,700	ND
GP-5 S-1	(2.0' - 3.0')	5/28/2015	<330	<330	760	2,300	1,900	2,800	1,300	900	3,100	390	4,100	610	1,200	8,100	7,000	4,600	--
GP-5 S-3	(9.0' - 10.5')	5/28/2015	1,200	<330	1,800	1,300	760	1,000	440	<330	1,300	<330	4,200	1,800	440	2,700	7,500	4,100	--
GP-6 S-3	(10.5' - 11.0')	5/28/2015	57,000	3,200	37,000	18,000	16,000	12,000	7,100	4,700	17,000	1,700	34,000	29,000	6,200	74,000	110,000	63,000	--
GP-7 S-1	(5.0' - 7.0')	5/28/2015	340	<330	<330	620	470	560	340	<330	410	<330	840	<330	<330	<330	760	1,100	--
GP-8 S-1	(2.0' - 3.0')	5/28/2015	<330	<330	400	2,800	3,500	2,400	2,800	510	3,500	780	2,200	<330	1,500	2,300	2,500	4,700	--
GP-9 S-1	(1.5' - 3.5')	5/28/2015	<330	<330	370	1,100	870	1,400	360	440	1,100	<330	2,100	<330	430	1,000	1,800	1,800	--
GP-10 S-1	(4.0' - 5.0')	5/28/2015	<330	<330	660	1,700	1,600	2,000	1,000	670	1,600	<330	3,300	<330	1,000	<330	2,200	3,400	--
GP-11 S-1	(5.5' - 7.0')	5/27/2015	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	7,600	<330	<330	--
GP-11 S-2	(8.0' - 9.5')	5/27/2015	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	740	<330	<330	--
PART 201 NONRESIDENTIAL SOIL CLEANUP CRITERIA	DWP	8.80E+05	17,000	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	7.30E+05	8.90E+05	NLL	1.70E+05	1.60E+05	4.80E+05	NLL
	GSIP	8,700	ID	ID	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	5,500	5,300	NLL	4,200	2,100	ID	NLL
	SVIIC	3.50E+08	3.00E+06	1.00E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	1.00E+09	1.00E+09	NLV	4.90E+06	5.10E+06	1.00E+09	1.60E+07
	VSIC	9.70E+07	2.70E+06	1.60E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	8.90E+08	1.50E+08	NLV	1.80E+06	1.90E+05	7.80E+08	8.10E+05
	VSIC 5M	9.70E+07	2.70E+06	1.60E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	8.80E+08	1.50E+08	NLV	1.80E+06	1.90E+05	7.80E+08	2.80E+07
	VSIC 2M	9.70E+07	2.70E+06	1.60E+09	NLV	NLV	ID	NLV	NLV	ID	NLV	NLV	8.80E+08	1.50E+08	NLV	1.80E+06	1.90E+05	7.80E+08	2.80E+07
	PSIC	6.20E+09	1.00E+09	2.90E+10	ID	1.90E+06	ID	3.50E+08	ID	ID	ID	ID	4.10E+09	4.10E+09	ID	2.90E+08	2.90E+06	2.90E+09	6.50E+06
DC	1.30E+08	5.20E+06	7.30E+08	80,000	8,000	80,000	7.00E+06	8.00E+05	8.00E+06	8,000	1.30E+08	8.70E+07	80,000	2.60E+07	5.20E+06	8.40E+07	4,800	4,800	
SSCSL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nonresidential Vapor Intrusion Soil Screening Levels			7.26E+06	2.82E+06	5.98E+08	NA	NA	NA	NA	NA	NA	NA	NA	1.19E+07	NA	1.26E+05	86,300	1.09E+09	39,100

NOTES:

- [1] PART 201 CRITERIA EFFECTIVE DATE: DECEMBER 30, 2013
- [2] SAMPLES COLLECTED BY NTH CONSULTANTS PERSONNEL AND ANALYZED BY FIBERTEC ENVIRONMENTAL SERVICES OF HOLT, MICHIGAN.
- [3] ALL VALUES PRESENTED AS µG/KG - MICROGRAMS PER KILOGRAM (≈ PARTS PER BILLION).
- [4] ID - INADEQUATE DATA TO DEVELOP CRITERION / NA - CRITERIA NOT AVAILABLE
- [5] NLV - CHEMICAL IS NOT LIKELY TO VOLATILIZE UNDER MOST CONDITIONS
- [6] NA - CRITERION NOT AVAILABLE
- [7] ND - NOT DETECTED ABOVE LABORATORY REPORTED METHOD DETECTION LIMITS
- [8] SWDB - STATE-WIDE DEFAULT BACKGROUND
- [9] DWP - RESIDENTIAL DRINKING WATER PROTECTION CRITERIA
- [10] GSIP - GROUNDWATER / SURFACE WATER INTERFACE PROTECTION CRITERIA BASED ON A WATER HARDNESS of 150mg CaCO<sub>3</sub>/L.
- [11] SVIIC - SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA.
- [12] VSIC - VOLATILE SOIL INHALATION CRITERIA (AMBIENT AIR; INFINITE SOURCE).
- [13] VSIC 5M - FINITE VSIC FOR 5 METER SOURCE THICKNESS
- [14] VSIC 2M - FINITE VSIC FOR 2 METER SOURCE THICKNESS
- [15] PSIC - PARTICULATE SOIL INHALATION CRITERIA
- [16] DC - DIRECT CONTACT CRITERIA
- [17] SSCSL - SOIL SATURATION CONCENTRATION SCREENING LEVELS
- [18]   - REPORTED CONCENTRATION EXCEEDS ONE OR MORE APPLICABLE PART 201 CRITERIA



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## **APPENDIX C**

### **CONSTRUCTION & UTILITY WORKER INFORMATION SHEET**

# Construction & Utility Worker Information Sheet

## 3801 West Jefferson Avenue Property, Detroit, Michigan

Soil testing shows that there is contamination on the property and that skin contact with soil or groundwater (if present) could present an increased risk.

The Michigan Department of Environmental Quality (MDEQ) has developed criteria (acceptable concentrations) for contaminants in soil and groundwater. Construction activities at this site would be classified as a *non-residential use*. In the samples collected to date, the contaminants that have been detected above applicable MDEQ's nonresidential criteria are:

- Arsenic
- Chromium
- Copper
- Lead
- Mercury
- Selenium
- Zinc
- Benzene
- n-Butylbenzene
- Ethylbenzene
- Naphthalene
- Toluene
- Trichloroethylene
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Xylenes
- Acenaphthene
- Benzo(a)pyrene
- Fluoranthene
- Fluorene
- 2-Methylnaphthene
- Phenanthrene

At this time, it should be assumed that all fill or non-native soil and perched groundwater (if present) are contaminated above the nonresidential criteria. The nonresidential criteria are based on daily exposure for 21 years. Reducing the length of exposure to contaminated materials can lower the risk.

**Note:** Contamination is also present that could present a risk if groundwater is ingested. However, the property is served by municipal drinking water and wells are prohibited. Therefore, contaminants detected above the drinking water criteria are not listed.

## **Special measures to protect construction workers and general public**

Contractors will need to prepare a Site-Specific Health and Safety Plan for their employees as required by MiOSHA.

The contaminated soil and groundwater must be handled and disposed of in an environmentally acceptable manner. The procedures outlined below should protect the public and maintain control of the contaminated materials:

- Site security must be maintained to keep members of the public away from areas where contaminated soil or groundwater is exposed.
- Soil must not be tracked off site – this includes on the boots or clothing of workers, the tires and undercarriage of trucks, and on tracked equipment.
- Soil must be placed on plastic sheeting or a paved surface, and covered to prevent mixing with clean materials.
- Erosion control measures shall be employed as necessary.
- Contaminated soil shall not be relocated to any offsite location.
- All fill soil should be considered contaminated and must be returned to their original location or disposed of in a landfill. Soil may need to be further characterized, as required by the receiving landfill.
- Assume that the groundwater at the site is also contaminated. Therefore, groundwater may be left in place, disposed at a licensed disposal facility or discharged to a DWSD sewer with an appropriate permit.
- Copies of all disposal documentation must be provided to City of Detroit for their records.