REMEDIAL ACTION PLAN

8920 LAISY AVENUE &
3420 EAST 93RD STREET
CLEVELAND, OHIO 44104

OCTOBER 1, 2024

PREPARED FOR:
CUYAHOGA COUNTY LAND REUTILIZATION CORPORATION
812 HURON ROAD E, SUITE 800
CLEVELAND, OHIO 44115

PREPARED BY:
THE MANNIK & SMITH GROUP, INC.
1800 INDIAN WOOD CIRCLE
MAUMEE, OHIO 43537

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

The Mannik & Smith Group, Inc. (MSG) identified the presence of select volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), Resource Conservation and Recovery Act (RCRA) metals, and polychlorinated biphenyls (PCBs) above applicable regulatory standards on the property, located at 3420 East 93rd Street and 8920 Laisy Avenue, Cleveland, Cuyahoga County, Ohio (hereinafter referred to as the "Subject Property"). A Subject Property Location Map is presented as Figure 1, which is included in Appendix A.

1.1 Site Description

The Subject Property consists of a combined 11.75 acres of vacant commercial land situated between East 88th Street and East 93rd Street, both of which provide access to and from the Subject Property. No buildings are presently developed at the Subject Property. Concrete building foundations are present in the northwest, central, and eastern portions of the Subject Property and the remainder of the Subject Property consists of wooded and/or vacant land.

1.2 Site History

The Subject Property was first developed for industrial purposes circa 1922 and utilized by the National Bronze & Aluminum Foundry Company (8920 Laisy Avenue). By the early 1950s, industrial development expanded in this area and the Subject Property was subsequently utilized by the Harshaw Chemical Company. In addition, by 1952, the central and east portions of the Subject Property were developed with a large industrial building, which was utilized by the Cleveland Transit System. Various industries occupied the buildings from the 1970s to the 1990s when the buildings were razed in the late 1970s to early 1980s (8920 Laisy Avenue) and in the mid to late 1990s (3420 East 93rd Street).

Additionally, historical Sanborn Maps depict three oil underground storage tanks (USTs) in the southeast corner of the Subject Property and a gasoline UST in the west-central portion of the Subject Property from at least 1951 through at least 1973.

The possible presence of USTs was confirmed in March 2024 when a combined electromagnetic induction (EM) and ground penetrating radar (GPR) survey was completed within these areas of the Subject Property, which identified strong EM in-phase (metal) anomalies that were interpreted to be potential orphan USTs.

1.3 Previous Environmental Investigations

MSG completed a Phase I ESA at the Subject Property in October 2023 that identified the following Recognized Environmental Conditions (RECs) / Identified Areas (IAs):

REC-1/IA-1: The likely release of petroleum products at the Subject Property associated with historical on-property petroleum USTs on the southeast portion of the Subject Property.

REC-2/IA-2: The likely release of petroleum products at the Subject Property associated with historical on-property gasoline UST on the southwest portion of the Subject Property.

REC-3/IA-3 & IA-4: The likely release of polychlorinated biphenyls (PCBs) associated with former transformer houses/transformers located on the northern portion of the Subject Property.

REC-4/IA-5: The likely release of hazardous and/or petroleum products associated with the long-term industrial uses of the Subject Property (entire property).

REC-5/IA-5: The likely presence of hazardous and/or petroleum products at the Subject Property associated with the placement of historical fill material throughout the Subject Property (entire property).

REC-6/IA-6: The likely presence of PCBs and/or petroleum products on the southern portion of the Subject Property due to a release/spill of transformer oil in August 1985.

Subsequently, MSG also completed a Phase II ESA of the Subject Property in June 2024 and identified soil and groundwater samples above applicable Bureau of Underground Storage Tank Regulations (BUSTR) Closure Action Levels and/or Ohio EPA Voluntary Action Program (VAP) standards, as described below:

Soil Analytical Results – IAs 1 & 2

- Naphthalene was detected above the BUSTR Closure Action Level, but below the VAP Residential, Commercial/Industrial, and Construction/Excavation Worker Generic Numeric Standards (GNS) in SB-2 (2-4') within IA-1; and,
- Low levels of several other VOCs, PAHs, and/or total petroleum hydrocarbons (TPH) diesel range organics (DRO) and oil range organics (ORO) were detected in the submitted soil samples collected from IAs 1 and 2; however, all detections are below their respective BUSTR Closure Action Levels and/or Ohio VAP Residential (unrestricted use) GNS.

Soil Analytical Results – IAs 3 & 4

- Benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected above the VAP Residential (unrestricted use), but below the Commercial/Industrial and Construction/Excavation Worker GNS in SB-15 (0-2') within IA-3;
- Benzo(a)pyrene was also detected in SB-15 (0-2') above both the VAP Residential and Commercial/Industrial GNS;
- Aroclor 1260 was detected above the VAP Residential (unrestricted use), but below the Commercial/Industrial and Construction/Excavation Worker GNS in SB-14 (0-2') and above the VAP Residential and Construction/Excavation Worker, but below the Commercial/Industrial GNS in SB-15 (0-2') within IA-3; and,
- Low levels of several other metals, VOCs, and/or semi-volatile organic compounds (SVOCs) were detected in the submitted soil samples collected from IAs 3 and 4; however, all detections are below their respective GNS.

Soil Analytical Results – IA-5

- Lead was detected above the VAP Residential and Construction/Excavation Worker GNS, but below the Commercial/Industrial GNS in SB-8 (5-7') and SB-20 (0-2');
- Benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and/or indeno(1,2,3-cd)pyrene were detected above the VAP Residential (unrestricted use), but below the Commercial/Industrial and Construction/Excavation Worker GNS in SB-7 (0-2'), SB-8 (10-12'), SB-8 (5-7'), SB-20 (0-2'), and SB-24 (0-2');
- Benzo(a)pyrene was detected above both the VAP Residential and Commercial/Industrial GNS in SB-7 (0-2'). Benzo(a)pyrene was also detected above the VAP Residential (unrestricted use), but below the Commercial/Industrial and Construction/Excavation Worker GNS in SB-8 (10-12'), SB-8 (5-7'), SB-20 (0-2'), and SB-24 (0-2'); and,
- Low levels of several other metals, VOCs, and/or SVOCs were detected in the submitted soil samples collected from IA-5; however, all detections are below their respective Ohio VAP Residential (unrestricted use) GNS.

Soil Analytical Results – IA-6

- PCBs were not detected above their respective laboratory reporting limits in any of the samples collected from IA-6.

Groundwater Analytical Results

- 1,2,4-trimethylbenzene, 1-methylnaphthalene, and/or naphthalene were detected in MW-2 and MW-16 above their respective Ohio VAP Unrestricted Potable Use Standards (UPUS) and/or BUSTR Drinking Water Action Level; and,
- Low levels of several other metals, VOCs, and PAHs were detected in groundwater samples from across the Subject Property; however, all detections are below their respective Ohio VAP UPUS.

Soil Vapor Point Sampling Results

MSG used the U.S. EPA VISL Calculator to evaluate the soil vapor analytical results. MSG entered the maximum concentration of each detected VOC compound into the VISL Calculator to identify if the detected VOCs pose a potential risk to indoor air via the vapor intrusion pathway. The attached Table 7 presents the analytical results of identified constituents in the collected soil vapor samples, which are summarized as:

- Low levels of VOCs were detected at each location below their respective US EPA VISL Target Sub-Slab & Near-Source Soil Gas Concentrations for both Residential and Commercial Land Use;
- The calculated indoor air concentrations were below both their respective VAP Residential and Commercial / Industrial Indoor Air Standards; and,
- The calculated cumulative carcinogenic risk and non-carcinogenic hazard quotients are below their respective target threshold risk and hazard values for both residential and commercial receptors.

1.4 Current Environmental Concerns

As noted above, select metals, VOCs, PAHs, and PCBs are present in soil and/or groundwater underlying the Subject Property. Moreover, several USTs are suspected to be present in the southwest and southeast corner of the Subject Property. Accordingly, the Cuyahoga County Land Reutilization Corporations (Land Bank) intends to mitigate the soil and groundwater impacts and remove the petroleum USTs at the Subject Property prior to site redevelopment.

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

As described in Section 1.3, select VOCs, PAHs, RCRA metals, and PCBs were detected at levels of concern in soil and/or groundwater at the Subject Property. The following is a summary of the applicable regulations and cleanup standards (BUSTR and Ohio EPA VAP) that will apply to the cleanup of the Subject Property.

2.1 Soil Cleanup Standards

Table 2.1 summarizes exceedances to applicable BUSTR and Ohio VAP generic direct-contact soil chemicals of concern (COCs) associated with the former use of the Subject Property and the maximum concentrations detected in Subject Property soils.

Table 2.1 Chemicals of Concern – Applicable Soil Cleanup Standards

Parameter	Applicable Ohio VAP Soil Cleanup Standards (mg/Kg)			BUSTR Closure Action Levels (mg/Kg)	Max Detected Site Conc. (mg/kg)	Sample ID and Depth (ft)
	Residential	Commercial / Industrial	Construction / Excavation			
Lead	400	800	400	--	520	SB-8 (5'-7')
Naphthalene	96	420	560	0.511	0.53	SB-2 (2'-4')
Benzo(a)anthracene	23	610	9,600	--	210	SB-15 (0'-2')
Benzo(a)pyrene	2.3	62	230	--	160	SB-15 (0'-2')
Benzo(b)fluoranthene	23	620	10,000	--	210	SB-15 (0'-2')
Dibenz(a,h)anthracene	2.3	62	1,000	--	17	SB-15 (0'-2')
Indeno(1,2,3-cd)pyrene	23	620	10,000	--	58	SB-15 (0'-2')
Aroclor 1260	4.8	28	450	--	37	SB-15 (0'-2')

2.2 Groundwater Cleanup Standards

Table 2.2 summarizes exceedances to applicable BUSTR and Ohio VAP UPUS for COCs associated with the former use of the Subject Property and the maximum concentrations detected in Subject Property groundwater.

Table 2.2 Chemicals of Concern – Applicable Groundwater Standards

Parameter	Ohio VAP UPUS (ug/L)	BUSTR Drinking Water Action Level (ug/L)	Max Detected Site Concentration (ug/L)	Sample ID
1,2,4-Trimethylbenzene	15	15	24	MW-2
Naphthalene	1.4	1.4	320	MW-2
1-Methylnaphthalene	11	--	110	MW-2

3.0 EVALUATION OF CLEANUP ALTERNATIVES

The following sections summarize the objectives of the proposed remedial actions, alternative remedial options, the recommended remedial alternative, and justification for the recommendation.

3.1 Remedial Objectives

The existing subsurface contamination poses a direct threat to the city's most sensitive underserved residents. Accordingly, the Cuyahoga County Land Bank plans to complete sub-surface remediation of hazardous substances to help prepare the Subject Property for redevelopment. The Cuyahoga County Land Bank plans to use grant funding opportunities to finance:

- The removal of impacted soil from the Subject Property; and,
- The closure and removal of petroleum USTs (if determined to be present) at the Subject Property under BUSTR guidelines.

Completing these remedial tasks will reduce hazardous substance exposure pathways for future occupants of the Subject Property, thereby facilitating redevelopment of the Subject Property. Because the redevelopment plans of the Subject Property are not yet final, the Ohio VAP Residential GNS for soil cleanup standards discussed in Section 2.0 will be the target cleanup standards for the Subject Property.

3.2 Potential Remedial Alternatives – BUSTR Regulated Subsurface Contamination (RECs/IAs 1 &2)

3.2.1 Alternative No. 1 – No Action

The no action alternative would be the lowest cost alternative. However, the no action alternative would not mitigate the potential threats to human health and the environment that are known to exist at the Subject Property. In addition, the no action alternative would not facilitate preparation of the Subject Property for the planned redevelopment.

3.2.2 Alternative No. 2 – Permanent UST Closure & Removal

This alternative includes the proper closure and removal of the petroleum USTs and the removal of contaminated soil surrounding the USTs under BUSTR guidelines.

Naphthalene was detected in soil boring SB-2 from two-feet below ground surface (bgs) to four-feet bgs near the UST system. SB-2 was advanced on the west side of the suspected UST cavity.

Additionally, 1,2,4-trimethylbenzene and naphthalene were detected in groundwater near the suspected UST cavity from MW-2, which was installed on the west side of the suspected UST cavity.

Therefore, to facilitate the remediation of subsurface soils and groundwater within REC-1/IA-1, the USTs will be removed from the Subject Property, along with contaminated soils, in accordance with BUSTR UST closure guidelines.

Although subsurface impacts were not identified in soil or groundwater samples (SB-9, SB-10, MW-10) collected proximate to the former reported gasoline UST in the west portion of the Subject Property, the UST should be removed, if present, in accordance with BUSTR UST closure guidelines.

An environmental construction contractor will complete UST and soil removal activities, transport petroleum contaminated soils and residual UST liquids to an approved landfill for disposal, transport the removed USTs to an approved landfill or recycling center, backfill the UST excavation, seed and straw the area of disturbance for site reuse, and assist in the collection of confirmation and waste characterization samples, as necessary.

- The construction contractor will:
  - Mobilize to the Subject Property with the proper equipment;
  - Excavate overburden soil to confirm the presence of USTs and visually inspect the USTs for signs of deterioration;
  - Stockpile overburden, non-petroleum impacted soil, at the Subject Property for subsequent backfill material.
  - Remove residual liquids, if any, from the USTs for proper disposal;
  - Remove USTs from the ground;
  - Excavate and stockpile petroleum contaminated soils at the Subject Property for characterization;
  - Load, transport, and dispose of petroleum contaminated soils at an approved landfill;
  - Load, transport, and dispose of the USTs at an approved landfill, or recycling center;
  - Assist in the collection of confirmation and waste characterization samples (as necessary);
  - Backfill the UST excavation with clean soil, seed, and straw for site reuse.

An environmental consulting firm will oversee soil removal activities, collect confirmation samples from excavation sidewalls and bottoms for laboratory analysis, document final quantities of soil removed and backfilled placed, and prepare a remedial actions completion report following the soil removal activities. On-going groundwater monitoring may be required.

- The environmental consultant will:
  - Monitor and oversee the UST/soil removal activities in accordance with BUSTR guidelines;
  - Collect confirmation samples from the UST cavity and from excavated/stockpiled material to determine if the materials meet acceptable BUSTR closure action levels;
  - Prepare a BUSTR Closure Assessment Report or remedial actions completion report documenting UST and petroleum contaminated soil removal and disposal activities.

One consideration that may make excavation slightly more difficult to implement is the increased frequency of heavy rainfall events that has been experienced in recent years in East Cleveland, Ohio. Although efforts will be made to schedule the work in the dry weather months, the amount of precipitation over a short period of time from one of these heavy rainfall events could cause delays in the implementation of the excavation work.

This alternative would remove the source of the petroleum contamination at the Subject Property near the suspected UST and would meet the remediation objectives. Human health and environmental risks posed by the petroleum impacts would be mitigated and the impediments to site redevelopment would be removed. This alternative has the greatest ability to meet the objectives of the redevelopment plans for the Site for REC-1/IA-1.

3.3 Potential Cleanup Alternatives – Hazardous Subsurface Contamination (Soil – contaminated areas throughout the entire Subject Property)

3.3.1 Alternative No. 1 – No Action

The no action alternative would be the lowest cost alternative. However, the no action alternative would not mitigate the potential threats to human health and the environment that are known to exist at the Subject Property. In addition, the no action alternative would not facilitate preparation of the Subject Property for redevelopment and therefore the hazardous substance subsurface impact would remain an impediment for the planned redevelopment.

3.3.2 Alternative No. 2 – Capping

Capping is an effective way to prevent potential receptors from coming into direct contact with contaminated soils, if the cap is maintained. However, capping is not an effective way to control other exposures, such as the direct contact risks for potential residential land use scenarios (the end land use scenario for the Subject Property has yet to be determined). In addition, an institutional control would need to be recorded on the deed to prevent residential use of the property, or portions of the property (to meet the objective of eliminating the direct contact pathway for residents).

Capping would consist of transporting clean fill material to the Subject Property and capping the impacted areas with at least two-feet of clean material. Contaminated areas include soil borings SB-7, SB-14, SB-15, SB-20, and SB-24.

3.3.3 Alternative No. 3 – Soil Removal Activities

This alternative includes the removal of shallow surface soils (0'-2' below ground surface) located proximate to soil borings SB-7, SB-14, SB-15, SB-20, and SB-24 and shallow surface soils (5'-7' below ground surface) located proximate to soil boring SB-8 under Ohio EPA VAP guidelines.

Accordingly, four separate areas (proximate to SB-14/SB-15, SB-7, SB-20, and SB-24) would be excavated to a depth of approximately two-feet bgs and one separate area (proximate to SB-8) would be excavated to a depth of approximately seven-feet bgs.

A total of approximately 100 tons of impacted soil from all areas would be removed.

An environmental construction contractor will complete soil removal activities, transport contaminated soils to an approved landfill for disposal, backfill, seed and straw the area of disturbance for site reuse, and assist in the collection of confirmation and waste characterization samples, as necessary.

- The construction contractor will:
  - Mobilize to the Subject Property with the proper equipment;
  - Excavate contaminated soils;
  - Load, transport, and dispose of contaminated soils at an approved landfill;
  - Assist in the collection of confirmation and waste characterization samples (as necessary);
  - Backfill with clean soil, seed, and straw area of disturbance for site reuse.

An environmental consulting firm will oversee soil removal activities, collect confirmation samples, document final quantities of soil removed and backfilled placed, and prepare a remedial actions completion report following the soil removal activities.

- The environmental consultant will:
  - Monitor and oversee the soil removal activities;
  - Collect confirmation samples to determine if the backfill materials meet acceptable VAP standards;
  - Prepare a remedial action completion report documenting contaminated soil removal and disposal activities.

This alternative would remove the source of the contamination at the Subject Property and would meet the remediation objectives. Human health and environmental risks posed by the subsurface impacts would be mitigated and the impediments to site redevelopment would be removed. This alternative would present the greatest ability to meet unrestricted use criteria objectives of the redevelopment plans for the Subject Property.

3.4 Potential Cleanup Alternatives – Hazardous Subsurface Contamination (Groundwater)

3.4.1 Alternative No. 1 – No Action

The no action alternative would be the lowest cost alternative. The Subject Property is located within an Urban Setting Designation (USD) and therefore, remediating groundwater to UPUS is not necessary as potential receptors are not drinking the groundwater. Although, an institutional control would likely need to be recorded on the deed to prevent the installation of potable water wells at the Subject Property, this alternative would present the greatest ability to meet redevelopment objective plans for the Subject Property.

3.4.2 Alternative No. 2 – Groundwater Remediation

Groundwater remediation can be employed through a wide variety of state-of-the-art remediation technologies. These technologies can include the following, but not limited to dual-phase extraction (DPE), bio-enzyme application, air sparging, groundwater pump and treat, and in-situ chemical oxidation. Although groundwater remediation technologies can enjoy exceptional success, the Subject Property is located within an USD and therefore, remediating groundwater to UPUS is not necessary, as potential receptors are not drinking the groundwater.

Accordingly, costs to remediation groundwater through remediation technologies were not calculated.

3.5 Recommended Brownfield Cleanup Alternatives

<u>Potential Cleanup Alternatives – BUSTR Regulated Subsurface Contamination (RECs/IAs 1 &2):</u>

Alternative No. 2 (Permanent UST Closure & Removal) would meet the project objectives by removing suspect USTs and by mitigating human health and environmental risks posed by the petroleum contamination present in sub-surface soils and groundwater prior to planned redevelopment activities. This alternative has the greatest ability to meet the objectives of the redevelopment plans for the Subject Property.

Potential Cleanup Alternatives – (Soil contaminated areas throughout the entire Subject Property)
Alternative No. 3 (Soil Removal Activities) would meet the project objectives by mitigating human health and environmental risks posed by the hazardous substance contamination present in sub-surface soils prior to planned re-development activities. This alternative has the greatest ability to meet the objectives of the redevelopment plans for the Subject Property.

Potential Cleanup Alternatives – Hazardous Subsurface Contamination (Groundwater):

Alternative No. 1 (No Action) would meet the project objectives posed by sub-surface groundwater contamination. Although, an institutional control would likely need to be recorded on the deed to prevent the installation of potable water wells at the Subject Property, this alternative would present the greatest ability to meet redevelopment objective plans for the Subject Property.

4.0 CONCLUSIONS

The remedial alternatives were evaluated based on effectiveness in meeting the remedial objectives, ability to be implemented, cost-effectiveness, ability to meet project time constraints, and the intended future use of the Subject Property. We consider the following remedial alternatives to be the most technically feasible, the most likely to protect human health and the environment, and the timeliest options to meet the project goals:

- BUSTR Regulated Subsurface Contamination (RECs/IAs 1 &2) – Alternative No. 2
- Soil contaminated areas throughout the entire Subject Property – Alternative No. 3
- Hazardous Subsurface Contamination (Groundwater) – Alternative No. 1

5.0 REFERENCES

ASTM E2893-16e1, Standard Guide for Greener Cleanups, ASTM International, West Conshohocken, PA, 2016, www.astm.org.

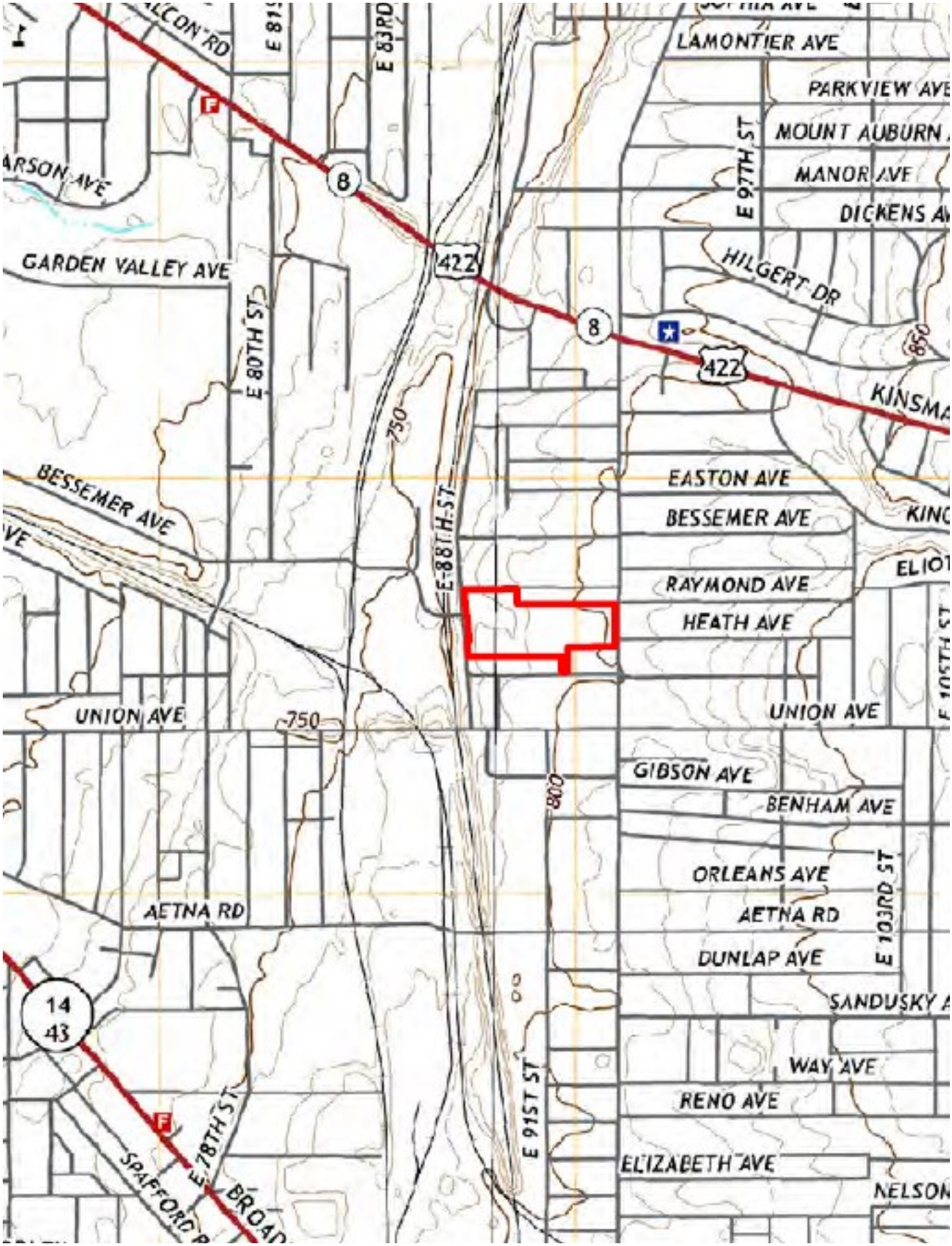
FEMA, July 27, 2024. Flood Zone Map No. 39035C0184E and 39035C0203E. https://msc.fema.gov/portal/search#searchresultsanchor

MSG. Phase I Environmental Site Assessment, 8920 Laisy Avenue and 3420 East 93rd Street, Cleveland, Cuyahoga County, Ohio, October 2023.

MSG. Phase II Environmental Site Assessment, 8920 Laisy Avenue and 3420 East 93rd Street, Cleveland, Cuyahoga County, Ohio, June 2024.

USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.F. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 1515 pp. doi: 10.7930/NCA4.2018.

APPENDIX A
FIGURES



Mannik Smith GROUP

Figure 1: Subject Property Location – 8920 Laisy Ave & 3420 East 93rd Street

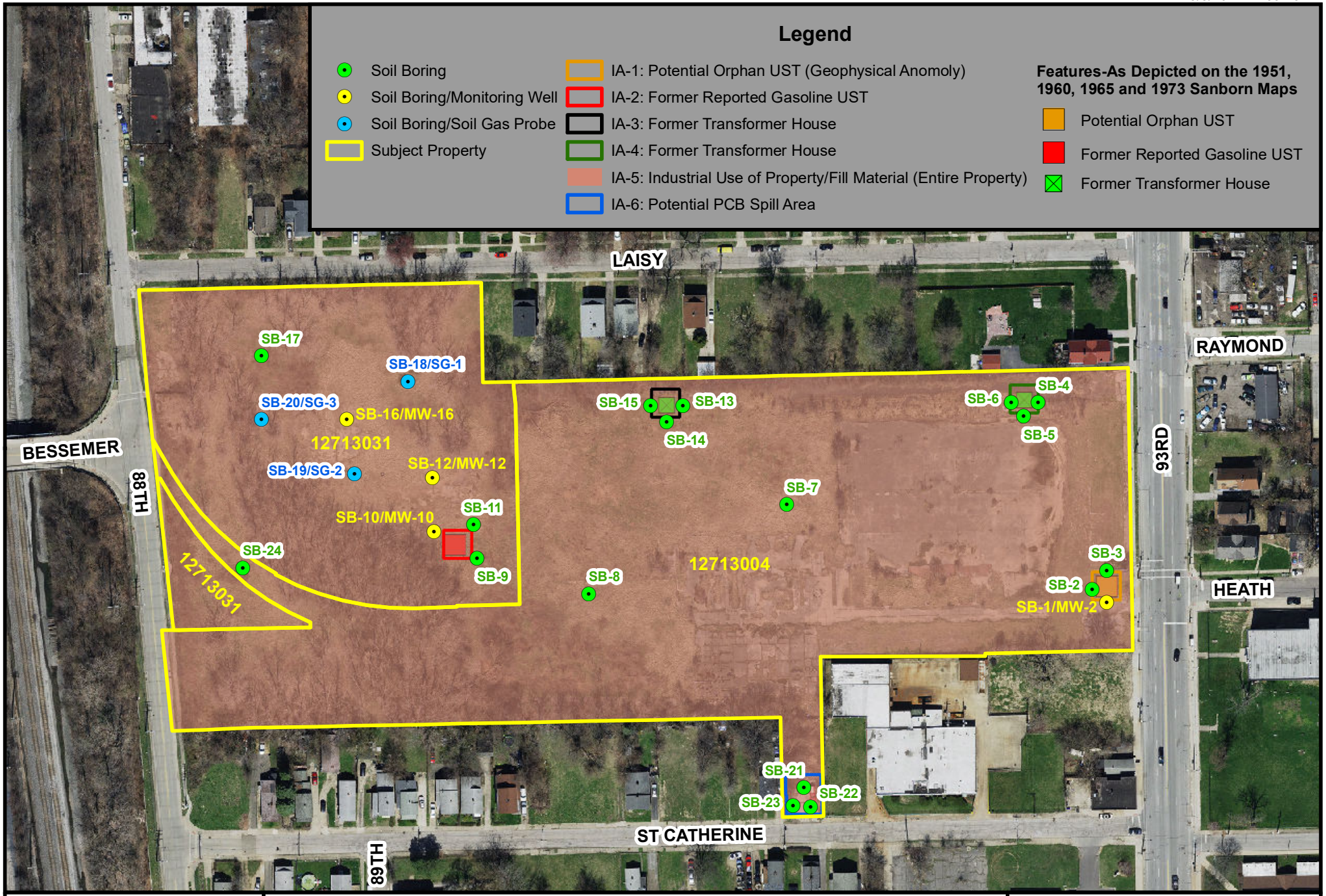
Notes
USGS Quadrangle, The National Map
Shaker Heights, OH 2019

N

NTS

Path: W:\Projects\Projects K-O\ODAS0003\ENGAPPS\GIS\53-Laisy93rd\ODAS0003_53_Samples.mxd

Date Saved: 5/8/2024 11:35:28 AM



Mannik Smith GROUP
TECHNICAL SKILL. CREATIVE SPIRIT.
www.MannikSmithGroup.com

Figure 2: Sample Location Map
8920 Laisy Avenue & 3420 East 93rd Street
Cleveland, Ohio

Notes
The Cuyahoga county photography, dated April 2023, is provided by OGRIP as part of the Ohio Statewide Imagery Program.

Feet
0 75 150