

<sup>2:/</sup>bbonectz/S0S0/S0S0-0164 ГФКЕ ОВІОИ ГЛИВЕВ-ЛЬВ/2Л1KAEλ-DEbL/S01648ND/DMC/BND ГФИD 2Л1KAEλ-S00164.9MB

Approx Sq Ft:	720
Utilities:	Disconnected
Materials:	Wood sitting on wood platform









#### **BUILDING 2**

Approx Sq Ft:	420
Utilities:	Never Connected
Materials:	Used Semi Trailer on wheels
•	and blocks

#### **BUILDING 3**

Approx Sq Ft:	710
Utilities:	No Electric, former propane
	Heater removed/disconnected
Materials:	Wood structure on slab

Approx Sq Ft:	100
Utilities:	Never Connected
Materials:	Wood Shed

Approx Sq Ft:	340
Utilities:	Never connected
Materials:	Wood on slab









#### **BUILDING 6**

Approx Sq Ft:	420
Utilities:	Never connected
Materials:	Used semi-trailer on
	Wheels and blocks

#### **BUILDING 7**

Approx Sq Ft:	1260
Utilities:	Exterior electric disconnected
Materials:	Wood on slab

Approx Sq Ft:	464
Utilities:	Disconnected
Materials:	Wood on slab

Approx Sq Ft:	120
Utilities:	Never connected
Materials:	Wood Shed









#### **BUILDING 10**

Approx Sq Ft:	1200
Utilities:	Never connected
Materials:	Wood on posts

#### **BUILDING 11**

Approx Sq Ft:	1480
Utilities:	Never connected
Materials:	Wood on posts

Approx Sq Ft:	100
Utilities:	Never connected
Materials:	Wood Shed

Approx Sq Ft:	700
Utilities:	Never connected
Materials:	Old Semi Trailer on blocks









#### **BUILDING 14**

Approx Sq Ft:	320
Utilities:	Never connected
Materials:	Wood on wood platform

### **BUILDING 15**

Approx Sq Ft:	120
Utilities:	Never connected
Materials:	Wood Shed

Approx Sq Ft:	120
Utilities:	Never connected
Materials	Wood shed

Approx Sq Ft:	960
Utilities:	Disconnected
Materials	Wood on slab





### **BUILDING 18**

Approx Sq Ft:	1170
Utilities:	None
Materials:	Wood, stem wall,
	filled with doors, etc

Approx Sq Ft:	600
Utilities:	None
Materials:	Wood, subject to
	salvage by DDA prior





#### INTERNATIONAL

Airside Office Park 100 Airside Drive Moon Township, PA 15108

## Hazardous Material Report for the Former Lake Orion Lumber Yard



## Prepared for: Village of Lake Orion Downtown Development Authority

Date: April 11, 2024

# Michael Baker

April 11, 2024

Village of Lake Orion Downtown Development Authority Matthew Gibb Executive Director 118 N Broadway Street Lake Orion, MI 48362

Re: Pre-Demolition Hazardous Materials and Asbestos Survey

Dear Matthew Gibb:

I am pleased to provide you with this letter report, detailing the environmental sampling services that Michael Baker International, Inc. (Michael Baker) has recently provided for your department.

#### Scope of Work

Michael Baker was requested to conduct limited hazardous material inspections for the presence of asbestoscontaining materials (ACM)\, lead-containing paint (LCP), and other hazardous materials within thirty-two (32) buildings of the former Lake Orion Lumber Yard, located at 215 South Broadway, in the village of Lake Orion, Oakland County, in Michigan. The purpose of the inspection was to meet the requirements of the United States Environmental Protection Agency (USEPA), State of Michigan, and the National Emission Standards for Hazardous Air Pollutants (NESHAP) standards. The NESHAP standard (40 CFR, Part 61) requires that an asbestos inspection be conducted prior to renovation/demolition activities of any structure or dwelling. The buildings that were inspected during this project were Buildings 1-17,18A, 18B, 19A, 19B, 20A, 20B, 21A, 21B, 22, 23, 24, 25A, 25B, 25C, and 26.

#### Field Visit Investigation

The survey was conducted during February 29 and March 1,2024, by a Michigan-licensed Asbestos Inspector (Gary R. Case – Michigan License A13352). The Michael Baker field inspector identified fifty-three (53) suspected building materials from the trailers. The bulk material samples were collected and analyzed for the presence of asbestos. Samples were submitted using chain-of-custody documentation to EMSL Analytical, Inc. in Cinnaminson, New Jersey. EMSL is accredited by the American Industrial Hygiene Association (AIHA) and the U.S. National Institute of Standards and Technology, under the National Voluntary Laboratory Accreditation Program (NIST/NVLAP) for bulk material analysis for asbestos. The bulk asbestos samples were analyzed by Polarized Light Microscopy (PLM), Environmental Protection Agency (EPA) Method for Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116 (7/93 Edition). The specific information for all of the building components that were sampled as suspected ACM is provided in Attachment A.

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#### Findings and Recommendations

#### Asbestos Survey

As for the building materials recorded in Table 1 which is the Summary of ACM, the laboratory analyses of the material samples indicated that three (3) of the sampled materials contained asbestos greater than the EPA criteria level of 1% asbestos by weight and/or in accordance with USEPA NESHAP regulations. The final laboratory analytical report for these samples is submitted to confirm this determination and is contained in Attachment B.

The ACM is listed below.

Building	Material Number	Material	Location(s)	Quantity
1	#11	Thermal Insulation Board	Room1	4 Square Feet
		(White)		
1	#15	Vinyl Floor Tile and Floor Adhesive	Room 3	20 Square Feet
		(12"x12" White VFT & Black FA)		
24	#49	Asphaltic Roofing Material	Roof	600 Square Feet
		(Gray Rolled Sheeting and Tar Materials)		

While the materials can be managed in-place with little potential hazard, due to the proposed demolition project, all of the ACM that will be impacted or disturbed should be safely removed and disposed of, accordingly, by an asbestos abatement firm that is licensed by the State of Michigan. Abatement plans for the regulated ACM should be designed in accordance with USEPA and other federal, state, and local regulations and/or using appropriate guidelines by an Asbestos Project Designer. All abatement activities should be overseen and managed by an experienced and licensed Asbestos Supervisor. Removal notifications, activities, and disposal must be completed in accordance with USEPA (40 CFR Part 61), OSHA (29 CFR 1926.1101), and Michigan regulations, as well as other applicable federal, state, and local regulations.

#### Paint Survey

Based upon the age of the selected buildings, the buildings contain building components that are coated with LCP (see Table 2). The exterior and interiors of the selected buildings had areas of damaged or deteriorated paint. If the buildings are demolished, the selected contractor should be responsible for the safe and proper handling of the painted items according to all federal, state, and local regulations. All of the activities should be overseen and managed by an experienced supervisor and trained workers. The contractor should comply with the OSHA lead standard, which regulates occupational exposure to lead.

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Other Hazardous Materials Survey

An investigation for evidence of mold, water intrusion, other hazardous materials, safety issues, and other hazards was conducted in the buildings. Several items, such as thermostats and fluorescent lights that may contain mercury, and ballasts that may contain PCBs were searched for throughout the buildings. The results of the investigation for other hazards and the field data to support the following environmental and safety hazard concerns are documented within Table 3. All of the items should be corrected and/or handled prior to the proposed demolition project to ensure that the current building conditions do not represent any safety concerns during the project.

Michael Baker was pleased to assist with this project and to work with your fine employees. Should you have any questions regarding this report, please do not hesitate to contact me at (412) 260-1280.

Sincerely,

MICHAEL BAKER INTERNATIONAL, INC.

Mor

Gary R. Case Project Manager

Attachment(s)

#### <u>Disclaimer</u>

The information that is presented in this report reflects the conditions that were observed in the building(s) during the time frame this inspection was conducted. Although every effort was made to identify the potential suspect building materials and components, there is no guarantee that additional building materials in these damaged buildings are not present. Conditions may exist in the building(s), such that inaccessible materials may only become apparent during demolition activities. If any hidden, suspicious material is encountered, it is recommended that the material be analyzed to confirm its asbestos content.



## TABLE 1

### SURVEY OF ASBESTOS-CONTAINING MATERIALS

## FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Category of ACM	Approximate Quantity of Asbestos	Condition of Material
11	Thermal Insulation Board	White	Friable ACM	4 Square Feet	Damaged
15	Vinyl Floor Tile and Floor Adhesive	12" x 12" White VFT and Black FA	Category I Non-friable ACM	20 Square Feet	Damaged
49	Asphaltic Roofing Material	Gray Roll Sheeting and Tar Materials	Category I Non-friable ACM	600 Square Feet	Damaged

#### TABLE 2

### SURVEY OF LEAD PAINT

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Buildings	Component	Locations	Color	Substrate	Condition	Findings	Recommendations
All Buildings	All painted components	Interior and Exterior	All Paint Colors	All Substrates	All Conditions	All paint contains at least a trace of lead and must be addressed according to OSHA requirements.	If impacted by demolition activities, proper handling and/or removal of the lead- containing paint is needed.

\* The requirements of the Occupational Safety and Health Administration (OSHA) Construction Standards need to be invoked if any metal content is present in the paint that may be affected by renovation activities. OSHA does not provide a minimum concentration criteria level for lead; however, it requires precautions and protection for workers and the working environment be taken at any work place where an exposure to airborne metals may occur.

#### TABLE 3

#### SUMMARY OF OTHER POTENTIALLY HAZARDOUS WASTE

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Buildings	Light Bulbs	Ballasts	Thermostats	Other Hazardous Materials	Recommendations		
1	4 - 4' bulbs	1	1	Various bottles, sons, and containers of			
3	6 - 4' bulbs	3	0	normal commercial and industrial products (such as cleaners, solvents, and oils) were			
All of the Other Buildings	0	0	0	located in the buildings.			
				If impacted by demolition activities, proper handling			
			There is a plastic 5-gallon gas container within Building 13.	and/or removal of these components is needed.			
				There is a propane tank within Building 25B.			
				There are two aboveground fuel storage tanks located on site.			
				There is a large tanker truck and a motorcycle located on site.			

NOTE: These are approximate quantities tallied at the time of the survey. Actual quantities should be field verified upon removal and/or demolition of the buildings.

## ATTACHMENT A

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 1**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
1	Wall and Ceiling	White Top Coat with Tan Base Coat	Throughout the Building	No	LC - 01A (M)	None Detected	Room 2	No	Not Applicable	Not Applicable
	Plaster		2 a		LC - 01A (SC)	None Detected	Room 2			
					LC - 01B (M)	None Detected	Room 2			
					LC - 01B (SC)	None Detected	Room 2			
					LC - 01C (M)	None Detected	Room 2			
					LC - 01C (SC)	None Detected	Room 2			
2	Wall and Ceiling Board	White, with White	Throughout the	No	LC - 02A	None Detected	Room 3	No	Not Applicable	Not Applicable
		Joint Compound	Dunung		LC - 02B	None Detected	Room 3			
3	Vinyl Floor	9" x 9" Brown and Bod Stroaks VET	Room 1	No	LC - 03A	None Detected	Room 1	No	Not Applicable	Not Applicable
	Adhesive	and Black FA			LC - 03B (VFT)	None Detected	Room 1			
					LC - 03B (FA)	None Detected	Room 1			
4	Floor Adhesive	Black, under 9" x 9" Wood Floor Tiles	Throughout the Building	No	LC - 04A	None Detected	Room 4	No	Not Applicable	Not Applicable
			Danding		LC - 04B	None Detected	Room 4			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 1**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
5	Ceiling Tile	14" x 14" Solid	Throughout the Building	Yes	LC - 05A	None Detected	Room 1	No	Not Applicable	Not Applicable
			Dananig		LC - 05B	None Detected	Room 1			
6	Ceiling Tile	14" x 32" Solid	Throughout the Building	Yes	LC - 06A	None Detected	Room 3	No	Not Applicable	Not Applicable
			, , , , , , , , , , , , , , , , , , ,		LC - 06B	None Detected	Room 3			
7	Ceiling Tile	1' x 1' Solid	Throughout the Building	Yes	LC - 07A	None Detected	Room 4	No	Not Applicable	Not Applicable
			2 4		LC - 07B	None Detected	Room 4			
8	Ceiling Tile Adhesive	Brown, under 14" x 14" Solid	Throughout the Building	No	LC - 08A	None Detected	Room 1	No	Not Applicable	Not Applicable
					LC - 08B	None Detected	Room 1			
9	Ceiling Tile Adhesive	Brown, under 14" x 32" Solid	Throughout the Building	No	LC - 09A	None Detected	Room 3	No	Not Applicable	Not Applicable
	7.6.100.10	01 00	2 4		LC - 09B	None Detected	Room 3			
10	Ceiling Tile Adhesive	Brown, under 1' x 1' Solid	Throughout the Building	No	LC - 10A	None Detected	Room 4	No	Not Applicable	Not Applicable
			<b>J</b>		LC - 10B	None Detected	Room 4			
11	Thermal Insulation	White	Room 1	Yes	LC - 11A	20% Chrysotile	Room 1	Yes	4 Square Feet	Damaged
	Board				LC - 11B	Not Analyzed	Room 1			
					LC - 11C	Not Analyzed	Room 1			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 1**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
12	Caulking	White	Throughout the Building	No	LC - 12A LC - 12B	None Detected	Room 1 Room 1	No	Not Applicable	Not Applicable
13	Asphaltic Roofing Material	Brown Shingles	Exterior Roof over Side Door	No	LC - 13A LC - 13B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
14	Asphaltic Roofing Material	Black Membrane and Black Tar	Exterior Roof	No	LC - 14A LC - 14B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
15	Vinyl Floor Tile and Floor Adhesive	9" x 9" White VFT and Black FA	Room 1	No	LC - 15A (VFT) LC - 15A (FA) LC - 15B (VFT) LC - 15B (FA)	2% Chrysotile None Detected Not Analyzed None Detected	Room 1 Room 1 Room 1 Room 1	Yes	20 Square Feet	Damaged

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
16	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 16A LC - 16B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 3**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
17	Wall and Ceiling Board	White, with White Joint Compound	Throughout the Building	No	LC - 17A LC - 17B	None Detected	Room 1 Room 1	No	Not Applicable	Not Applicable
18	Ceiling Tile	2' x 2' Wavy	Throughout the Building	Yes	LC - 18A LC - 18B	None Detected	Room 1 Room 1	No	Not Applicable	Not Applicable
19	Asphaltic Roofing Material	Green Shingles	Exterior Roof	No	LC - 19A LC - 19B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 27**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
20	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 20A LC - 20B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 4**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
21	Wall and Ceiling Board	White, with White Joint Compound	Throughout the Building	No	LC - 21A	None Detected	Room 1	No	Not Applicable	Not Applicable
					LC - 21B	None Detected	Room 1			
22	Asphaltic Roofing	Black Roll	Exterior Roof	No	LC - 22A	None Detected	Roof	No	Not Applicable	Not Applicable
	Material				LC - 22B	None Detected	Roof			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 5**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
		N	) SUSPEC	T MATE	ERIALS IDENTIFI	ED IN THIS	BUILDIN	G.		

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
23	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 23A LC - 23B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 7**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
24	Wall and	White, with White	Throughout the	No	LC - 24A	None Detected	Room 1	No	Not Applicable	Not Applicable
	Celling board	Joint Compound	Bullaing		LC - 24B	None Detected	Room 1			
25	Asphaltic	Black Tar Paper	Throughout the	No	LC - 25A	None Detected	Room 1	No	Not Applicable	Not Applicable
	Material		Bullaing		LC - 25B	None Detected	Room 1			
26	Asphaltic	Gray Shingles	Exterior Roof	No	LC - 26A	None Detected	Roof	No	Not Applicable	Not Applicable
	Material				LC - 26B	None Detected	Roof			
27	Asphaltic	Red/Gray Shingles	Exterior Roof	No	LC - 27A	None Detected	Roof	No	Not Applicable	Not Applicable
	Material				LC - 27B	None Detected	Roof			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 8**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
28	Asphaltic Roofing Material	Green Shingles	Exterior Roof	No	LC - 28A LC - 28B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
29	Asphaltic Roofing Material	Red Shingles	Exterior Roof	No	LC - 29A LC - 29B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
		N	O SUSPEC	Т МАТЕ	ERIALS IDENTIFI	ED IN THIS	BUILDIN	G.		

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 10**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
30	Asphaltic Siding	Red Shingles	Exterior	No	LC - 30A LC - 30B	None Detected	Exterior Exterior	No	Not Applicable	Not Applicable
31	Asphaltic Roofing Material	Black Roll	Exterior Roof	No	LC - 31A LC - 31B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
32	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 32A LC - 32B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
33	Asphaltic Roofing Material	Green Shingles	Exterior Roof	No	LC - 33A LC - 33B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 12**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
34	Asphaltic Roofing Material	Gray Shingles	Exterior Roof	No	LC - 34A LC - 34B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 13**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
35	Asphaltic Roofing	Red Shingles	Exterior Roof	No	LC - 35A (S)	None Detected	Roof	No	Not Applicable	Not Applicable
	Material				LC - 35A (T)	None Detected	Roof			
					LC - 35B	None Detected	Roof			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
		NC	O SUSPEC	Т МАТЕ	RIALS IDENTIFI	ED IN THIS	BUILDIN	G.		

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
		NC	O SUSPEC	Т МАТЕ	ERIALS IDENTIFI	ED IN THIS	BUILDIN	G.		

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
36	Asphaltic Roofing	Brown Shingles	Exterior Roof	No	LC - 36A (S)	None Detected	Roof	No	Not Applicable	Not Applicable
	Material				LC - 36A (T)	None Detected	Roof			
					LC - 36B (S)	None Detected	Roof			
					LC - 36B (T)	None Detected	Roof			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
		NC	O SUSPEC	Т МАТЕ	ERIALS IDENTIFI	ED IN THIS	BUILDIN	G.		

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 18A**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
37	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 37A LC - 37B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 18B**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
38	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 38A LC - 38B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 19A**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
		NC	O SUSPEC	Т МАТЕ	ERIALS IDENTIFI	ED IN THIS	BUILDIN	G.		

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 19B**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
39	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 39A LC - 39B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 20A**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
40	Asphaltic Roofing Material	Rubber Membrane and Sealant	Exterior Roof	No	LC - 40A LC - 40B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
41	Asphaltic Roofing Material	Black Shingles	Exterior Roof	No	LC - 41A LC - 41B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 20B**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
42	Asphaltic Roofing Material	Red Shingles	Exterior Roof	No	LC - 42A LC - 42B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 21A**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
43	Asphaltic Roofing Material	Gray Membrane and Glue	Exterior Roof	No	LC - 43A LC - 43B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
44	Asphaltic Roofing Material	Green Shingles	Exterior Roof	No	LC - 44A LC - 44B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 21B**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
45	Asphaltic Roofing Material	Gray Membrane and Glue	Exterior Roof	No	LC - 45A LC - 45B	None Detected	Roof Roof	No	Not Applicable	Not Applicable
46	Asphaltic Roofing Material	Green Shingles	Exterior Roof	No	LC - 46A LC - 46B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 22**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
47	Asphaltic Roofing Material	Gray Roll	Exterior Roof	No	LC - 47A LC - 47B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
48	Asphaltic Roofing Material	Brown Shingles	Exterior Roof	No	LC - 48A LC - 48B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
49	Asphaltic Roofing Material	Gray Roll Sheeting and Tar Materials	Exterior Roof	No	LC - 49A LC - 49B	4% Chrysotile Not Analyzed	Roof Roof	Yes	600 Square Feet	Damaged

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 25A**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
50	Asphaltic Roofing Material	Gray Shingles	Exterior Roof	No	LC - 50A LC - 50B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 25B**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
51	Asphaltic Roofing Material	Gray Shingles	Exterior Roof	No	LC - 51A LC - 51B	None Detected	Roof Roof	No	Not Applicable	Not Applicable

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

## **BUILDING 25C**

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
52	Asphaltic Roofing	Gray Roll	Exterior Roof	No	LC - 52A	None Detected	Roof	No	Not Applicable	Not Applicable
	Material				LC - 52B	None Detected	Roof			

### FORMER LAKE ORION LUMBER YARD LAKE ORION, MICHIGAN

Homogeneous Material Number	Material Type	Material Description	Material Locations	Friable	Sample Numbers	Sample Results	Sample Locations	Asbestos- Containing Material	Approximate Quantity of Asbestos	Condition of Material
53	Asphaltic Roofing Material	Gray Shingles	Exterior Roof	No	LC - 53A LC - 53B	None Detected	Roof Roof	No	Not Applicable	Not Applicable



## PHASE II ENVIRONMENTAL SITE ASSESSMENT

215 S. Broadway Street, Lake Orion, Michigan AKT Peerless Project No. 9984F-3-20

#### **1.0 Introduction**

Village of Lake Orion Downtown Development Authority (DDA; Client) retained AKT Peerless to conduct a Phase II Environmental Site Assessment (ESA) of the property located at 215 S. Broadway Street in Lake Orion, Oakland County, Michigan (the subject property). This Phase II ESA was conducted in accordance with AKT Peerless' Proposal for a Phase II ESA (Proposal Number PF-31525), dated November 10, 2022, and is based on ASTM International Standard Practice E 1903-19, *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process* (ASTM Standard Practice E 1903).

The Phase II ESA scope of work was intended to evaluate the recognized environmental conditions (RECs) identified by AKT Peerless during its November 2022 Phase I ESA (see Section 2.4).

AKT Peerless' Phase II ESA report documents the field activities, sampling protocols, and laboratory results associated with this assessment. AKT Peerless' Phase II ESA was performed for the benefit of Village of Lake Orion DDA, who may rely on the contents and conclusions of this report.

#### 2.0 Background

#### 2.1 Site Description and Physical Setting

The subject property is located in the northeast ¼ of Section 11 in the Village of Lake Orion (T.4N./R.10E.), Oakland County, Michigan. The subject property is located on the east side of South Broadway Street between Atwater Street and Paint Creek.

See the following table for additional subject property details. For ease of reference in this report, AKT Peerless has designated each of the subject property parcels with a letter. These designations have no relevance to legally recorded data about the subject property.

Parcel	Address	Tax Identification Number	Owner of Record	Approximate Acreage
А	215 S. Broadway Street	09-11-228-016	John Nowels	1.28
В	215 S. Broadway Street	09-11-228-004	John R. Nowels	0.26
С	215 S. Broadway Street	09-11-228-020	Lake Orion Lumber Co.	2.57

#### **Subject Property Identifiers**

Parcel A is improved with one 1,408-square foot commercial building (Subject Building 1), currently used as the Lake Orion Lumber office, and one 1,280-square foot storage building (Subject Building 2). In



addition, Parcel C is improved with seven outbuildings. Outbuildings 1, 5, and 6 are currently used for miscellaneous equipment storage. Outbuildings 2, 3, and 4 were formerly used as office space, but are no longer used for a significant or obvious purpose. Outbuilding 7 contains a saw room as well as lumber storage. Several other lean-to structures are present on Parcel C, which are currently used for lumber storage, as well as the remains of two collapsed sheds.

Refer to Figure 1 for a topographic site location map. See Figure 2 for a site map.

#### 2.2 Subject Property History and Land Use

The subject property has operated as a lumberyard since at least 1900, and has contained the subject buildings, associated outbuildings, and woodsheds since at least 1926. Parcels A and C of the subject property additionally operated as a coal yard from at least 1926 until at least the late 1970s, while Parcel B was occupied by a bulk gasoline storage facility from at least 1926 until approximately 1980.

#### 2.3 Adjacent Property Land Use

The adjoining properties have included various residential and commercial developments since at least 1926. The southern adjoining property (i.e., M-24 & Atwater; 295 South Broadway Street; and 303 S. Broadway Street) operated as a gasoline station with four bulk gasoline storage tanks in addition to three gasoline underground storage tanks (USTs) in the 1930s and 1940s, and the southwestern adjoining property (261 S. Broadway Street) operated as a gasoline station in the 1930s through 1950s.

#### 2.4 Previous Environmental Investigations

On November 9, 2022, AKT Peerless prepared a Phase I ESA of the subject property in accordance with United States Environmental Protection Agency (USEPA) Standards and Practices for All Appropriate Inquiry [(AAI), 40 Code of Federal Regulations (CFR) Part 312] and ASTM International Standard Practice E 1527-21 (ASTM Standard Practice E 1527).

At the time of the assessment, Subject Building 1 was used as offices by Lake Orion Lumber. Subject Building 2 was leased out by Lake Orion Lumber to an auto parts sales business, which utilized the building for storage. Parcel B was undeveloped, heavily vegetated, and not used for a significant or obvious purpose. Parcel C contained numerous outbuildings used for storage by Lake Orion Lumber, some of which were in considerable disrepair. The uses of these outbuildings is summarized in Section 2.1 above.

The following RECs were identified in connection with the subject property:

- **REC 1** Parcels A and C of the subject property have been used for lumber storage since at least 1926. Lumber storage during this time period typically involved the placement and/or processing of chemically treated wood often on unpaved surfaces. In addition to lumber, coal was formerly stored at the subject property for sale and consumptive use (i.e., Subject Building 1 historically utilized coal heating). The long-term exterior storage of lumber and other materials and the storage of coal on Parcels A and C represents an REC.
- REC 2 Parcel A contained a rail line from at least 1926 until 1980, with rail spurs extending from the rail line across Parcel A and the northwestern portion of Parcel C, terminating near Subject Building 2 and Outbuilding 1. The construction of rail lines and spurs may include the use of fill material of unknown origin as ballast to support the ties and rails. Furthermore, maintenance of rail lines



and spurs may include the use of dust control agents. The potential also exists for leaks or spills of hazardous materials or petroleum products associated with the use of rail lines and spurs. The presence of a rail line on Parcel A and rail spurs on Parcel A and the northwestern portion of Parcel C therefore represents an REC.

- **REC 3** Parcel B was historically used as a bulk gasoline station from at least 1926 until the mid-1980s, with up to five aboveground storage tanks (ASTs) present on the parcel prior to their apparent removal in the mid-1980s. The bulk gasoline station also included a pump house and automotive service garage. No information regarding the removal of the bulk gasoline station or subsequent subsurface investigations were identified during this assessment. It is also unknown as to whether the bulk gasoline station utilized USTs. According to aerial photographs, Parcel B was used for exterior storage of lumber and other materials following removal of the ASTs by 1990. The historical use of Parcel B as a bulk gasoline station and subsequent use of Parcel B for exterior materials storage therefore represents an REC.
- REC 4 Based on a review of fire insurance maps and aerial photographs, an oil house was located on the northwestern portion of Parcel C in 1926 and up to four ASTs were present on the eastern portion of Parcel C from approximately 1976 until approximately 1999. The contents of these ASTs were not identified during this assessment, although, according to the subject property owner, at least some of these ASTs were replaced by two USTs containing diesel and kerosene. The former presence of an oil house on the northwestern portion of Parcel C and up to four bulk ASTs on the eastern portion of Parcel C represents an REC.
- **REC 5** The southern adjoining property (i.e., M-24 and Atwater; 295 South Broadway Street; and 303 S. Broadway Street) was operated as a bulk gasoline station from at least the 1930s through the 1950s. The total number of ASTs and USTs historically present on this adjoining property is unknown; however, at least four orphan USTs were discovered on the property between 1993 and 2003 and fire insurance maps depict four gasoline ASTs. Subsurface investigations on the adjoining property confirmed the presence of volatile organic compounds (VOCs) and lead in soil and groundwater at concentrations in excess of Part 201 Residential Cleanup Criteria (RCC). Contaminated soil remains present on the southern adjoining property and groundwater is expected to flow northeast toward the subject property. Therefore, the historical use of, and documented contamination at, the southern adjoining property represents an REC.
- **REC 6** A gasoline station with between two and four USTs was historically present on the southwestern adjoining property (i.e., 261 S. Broadway Street) from at least 1934 until at least 1963. No information regarding the removal of these USTs or subsequent subsurface investigations were identified during this assessment. The historical use of the southwestern adjoining property as a gasoline station therefore represents an REC.

AKT Peerless recommended further investigation to evaluate the nature, extent, magnitude, and materiality of the above-identified RECs.

In addition to the RECs identified above, the following historical recognized environmental condition (HREC) was identified in connection with the subject property:

HREC 1 - According to Michigan Department of Licensing and Regulatory Affairs (LARA) Bureau of Fire Services (BFS) records and the subject property owner, one 20,000-gallon diesel UST (Tank 1) and one 20,000-gallon kerosene UST (Tank 2) were installed on the northeastern portion of Parcel C



of the subject property in January 1986 to replace ASTs that were removed in 1985. Tanks 1 and 2 were removed from the ground in June 2000, at which time a confirmed release (C-0516-00) was reported. Insight Environmental Services, Inc. completed a Leaking Underground Storage Tank (LUST) Closure Report in July 2000. Ten soil samples were collected from the sidewalls of the excavation and one groundwater sample was collected from the floor of the excavation. Analytical results indicated that 1,2,4-trimethylbenzene (1,2,4-TMB) was detected in one soil sample at a concentration above the Part 201 Generic Cleanup Criteria for Groundwater Surface Water Interface Protection (GSIP). In addition, 1,2,4-TMB was detected in the groundwater sample at a concentration above Part 201 Generic Cleanup Criteria for Groundwater Surface Water Interface (GSI) and Drinking Water (DW). This investigation associated with the confirmed release was administratively closed on November 1, 2000, and unrestricted residential use of the subject property was granted. A Risk-Based Corrective Action (RBCA) Pathway Analysis was completed as part of the Closure Report. The RBCA evaluated all possible exposure pathways and determined further remediation was not necessary. The "closed" status of the confirmed release investigation therefore represents an HREC.

AKT Peerless did not recommend further evaluation of this HREC.

#### 3.0 Phase II Environmental Site Assessment Activities

The following sections summarize the subsurface investigation activities conducted by AKT Peerless.

#### 3.1 Scope of Assessment

To further evaluate the RECs identified in Section 2.4, AKT Peerless conducted a subsurface investigation at the subject property that included: (1) the advancement of nineteen soil borings (SB-1 through SB-19); (2) the installation of eight temporary groundwater monitoring wells (SB-2-GW, SB-6-GW, SB-9-GW, SB-12-GW, SB-14-GW, SB-16-GW, SB-17-GW, and SB-18-GW); and (3) the collection of seventeen soil samples and eight groundwater samples. The following samples were submitted for laboratory analyses:

- Seventeen soil samples for VOCs, semi-volatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PNAs), polychlorinated biphenyls (PCBs), one or more of the Michigan Ten Metals (i.e., arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc), creosote acid extractables, ethylene glycol, pesticides, and/or vanadium.
- Eight groundwater samples for VOCs, SVOCs, PNAs, one or more of the Michigan Ten Metals (dissolved), creosote, ethylene glycol, and/or pesticides.

The following table summarizes each REC, the site investigation activities performed to address each REC, and the laboratory parameters used to address each REC.



#### **Summary of Investigation Activity**

REC #	Environmental Concern	Investigation Activity	Analytical Parameters
1	Historical use of Parcels A and C as a lumber yard, including lumber storage (interior and exterior), coal storage, and other exterior materials storage.	SB-4*, SB-5*, SB-7, SB-8, SB-9, SB-9-GW, SB-10, SB-11, SB-12, SB-12-GW	VOCs, PNAs, SVOCs, Michigan Ten Metals, vanadium, PCBs, creosote, and/or pesticides
2	Historical presence of a rail line and/or rail spurs on Parcels A and C.	SB-1, SB-3, SB-4*, SB-5*	VOCs, PNAs, Michigan Ten Metals, vanadium, PCBs, and/or creosote
3	Historical use of Parcel B as a bulk gasoline station with up to five bulk ASTs and subsequent use of Parcel B for exterior lumber and other materials storage.	SB-13, SB-14, SB-14-GW SB-15, SB-16, SB-16-GW	VOCs, PNAs, PCBs, ethylene glycol, cadmium, chromium, and/or lead
4	Former presence of an oil house on the northwestern portion of Parcel C and up to four bulk ASTs on the eastern portion of Parcel C.	SB-6, SB-6-GW, SB-18, SB-18-GW, SB-19	VOCs, PNAs, cadmium, chromium, lead, and/or PCBs
5	Historical use of the southern adjoining property (i.e., 295 S. Broadway Street) as a bulk gasoline station, with documented contamination in soil and groundwater.	SB-17-GW	VOCs, PNAs, lead
6	Historical use of the southwestern adjoining property (i.e., 261 S. Broadway Street) as a gasoline station with up to four USTs.	SB-2-GW	VOCs, PNAs, lead

\*Note: Soil boring intended to evaluate more than one REC.

#### 3.1.1 Soil Evaluation

On December 6 and December 7, 2022, AKT Peerless advanced nineteen soil borings at the subject property. AKT Peerless used hydraulic drive/direct-push (Geoprobe®) procedures following the guidance outlined in ASTM Standard Practice E 1903. AKT Peerless collected continuous soil samples from the soil borings to depths of up to 20 feet below ground surface (bgs), the maximum depth explored. AKT Peerless personnel inspected, field-screened, and logged the samples collected at each soil boring location.

Refer to Figure 2 for a site map with soil boring locations. Boring logs are provided in **Appendix A**.

#### 3.1.2 Groundwater Evaluation

AKT Peerless encountered groundwater in eight of the soil borings advanced at the subject property (i.e., at soil boring locations SB-2, SB-6, SB-9, SB-12, SB-14, SB-16, SB-17, and SB-18). AKT Peerless installed a



temporary groundwater monitoring well at these soil boring locations. A one-inch polyvinyl chloride (PVC) riser with a five-foot screen was utilized for each temporary groundwater monitoring well.

Refer to Figure 2 for a site map with the temporary groundwater monitoring well locations.

#### 3.2 Quality Assurance/Quality Control

To ensure the accuracy of data collected during on-site activities, AKT Peerless implemented proper quality assurance/quality control (QA/QC) measures. The QA/QC procedures included, but were not limited to, (1) decontamination of sampling equipment before and between sampling events, (2) calibration of field equipment, (3) documentation of field activities, and (4) sample preservation techniques.

#### 3.2.1 Decontamination of Equipment

During sample collection, AKT Peerless adhered to proper decontamination procedures. Sampling equipment was decontaminated using the following methods to minimize potential cross-contamination of soil and groundwater samples:

- Steam-cleaning or washing and scrubbing the equipment with non-phosphate detergent
- Rinsing the equipment
- Air-drying the equipment

#### 3.2.2 Calibration of Field Equipment

AKT Peerless utilized an organic vapor meter/photoionization detector (OVM/PID) during subsurface investigation activities at the subject property. The OVM/PID was maintained in a calibrated condition using 100 parts per million (ppm) isobutylene span gas prior to subsurface investigation activities.

#### 3.2.3 Documentation of Activities

During AKT Peerless' subsurface investigation activities, subject property conditions (i.e., soil boring locations, weather conditions) were documented. AKT Peerless visually inspected the soil and groundwater samples and prepared a geologic log for each soil boring. The logs include soil characteristics such as (1) color, (2) composition (e.g., sand, clay, or gravel), (3) soil moisture and water table depth, and (4) signs of possible contamination (i.e., stained or discolored soil, odors). Soil types were classified in accordance with ASTM Standard Practice D-2488, *Unified Soil Classification System*. All soil and groundwater samples were delivered to Fibertec Environmental Services' analytical laboratory in Holt, Michigan under chain-of-custody documentation.

See **Appendix B** for AKT Peerless' soil boring logs. See Figure 2 for a site map with soil boring locations.

#### 3.2.4 Sample Preservation Techniques

AKT Peerless collected soil samples according to USEPA Publication SW-846, *Test Methods for Evaluating Solid Waste*. Soil and groundwater samples were collected into laboratory-supplied containers, stored on ice or at approximately four degrees Celsius, and submitted under chain-of-custody documentation.

Soil samples collected for VOCs analyses were field preserved with methanol in accordance with USEPA Method 5035. Soil samples collected for PNAs, SVOCs, PCBs, and metals analyses were stored in unpreserved, eight-ounce wide-mouth jars.



Groundwater samples collected from the temporary monitoring wells were collected with a peristaltic pump and dedicated tubing. Groundwater samples for VOCs analyses were collected with zero headspace into 40-mL glass vials and preserved with hydrochloric acid. Groundwater samples for metals analyses were collected into high-density polyethylene (HDPE) bottles and preserved with nitric acid. Groundwater samples collected for analysis of PNAs, SVOCs, creosote, pesticides, and ethylene glycol were collected into 250-mL amber glass jars.

#### 3.3 Laboratory Analysis and Methods

AKT Peerless submitted seventeen soil samples and eight groundwater samples for laboratory analyses. The following table summarizes the location, depth, matrix, and laboratory analyses for each sample.

Sample Identification	Sample Matrix	Sample/Well Screen Depth Interval (feet bgs)	Laboratory Analytical Parameter(s)	
SB-1	Soil	(1'-2')	VOCs, PNAs, Michigan Ten Metals, PCBs, creosote	
SB-2-GW	Groundwater	(10'-15')	VOCs, PNAs, lead	
SB-3	Soil	(1.5'-2.5')	VOCs, PNAs, Michigan Ten Metals, PCBs, creosote	
SB-4	Soil	(1'-2')	VOCs, PNAs, Michigan Ten Metals, PCBs, creosote, vanadium	
SB-5	Soil	(1.5'-2.5')	VOCs, PNAs, Michigan Ten Metals, PCBs, creosote, vanadium	
SB-6	Soil	(2'-3')	VOCs, PNAs, PCBs	
SB-6-GW	Groundwater	(10'-15')	VOCs, PNAs, cadmium, chromium, lead	
SB-7	Soil	(3.5'-4.5')	VOCs, SVOCs, Michigan Ten Metals, PCBs, creosote, pesticides	
SB-8	Soil	(5'-6')	VOCs, SVOCs, Michigan Ten Metals, PCBs, creosote, pesticides	
SB-9	Soil	(9.5′-10.5′)	VOCs, SVOCs, Michigan Ten Metals, creosote, pesticides	
SB-9-GW	Groundwater	(9'-14')	VOCs, SVOCs, Michigan Ten Meals, creosote, pesticides	

#### Sample Collection Summary



Sample Identification	Sample Matrix	Sample/Well Screen Depth Interval (feet bgs)	Laboratory Analytical Parameter(s)	
SB-10	Soil	(1'-2')	VOCs, SVOCs, Michigan Ten Meals, creosote, pesticides	
SB-11	Soil	(0.5'-1.5')	VOCs, SVOCs, Michigan Ten Meals, creosote, pesticides	
SB-12	Soil	(7'-8')	VOCs, SVOCs, Michigan Ten Metals, PCBs, creosote, pesticides	
SB-12-GW	Groundwater	(6'-11')	VOCs, SVOCs, Michigan Ten Meals, creosote, pesticides	
SB-13	Soil	(6.5'-7.5')	VOCs, PNAs, lead	
SB-14	Soil	(1.5'-2.5')	VOCs, PNAs, lead	
SB-14-GW	Groundwater	(9'-14')	VOCs, lead	
SB-15	Soil	(2'-3')	VOCs, PNAs, lead	
SB-16	Soil	(2.5'-3.5')	VOCs, PNAs, PCBs, cadmium, chromium, lead, ethylene glycol	
SB-16-GW	Groundwater	(3'-8')	VOCs, PNAs, cadmium, chromium, lead, ethylene glycol	
SB-17-GW	Groundwater	(9'-14')	VOCs, PNAs, lead	
SB-18	Soil	(6.5'-7.5')	VOCs, PNAs, lead	
SB-18-GW	Groundwater	(6'-11')	VOCs, PNAs, lead	
SB-19	Soil	(0.5'-1.5')	VOCs, PNAs, lead	

The laboratory analyzed the samples for: (1) VOCs in accordance with USEPA Method 8260D; (2) PNAs, SVOCs, and creosote acid extractables in accordance with USEPA Method 8270E; (3) metals in accordance with USEPA Methods 6020B, 7470A, and 7471B; (4) PCBs in accordance with USEPA Method 8082A; pesticides in accordance with USEPA Method 8081B; and ethylene glycol in accordance with USEPA Method 8015C.

#### 4.0 Evaluation and Presentation of Results

#### 4.1 Subsurface Conditions

The following sections summarize the physical soil and groundwater conditions at the subject property.



#### 4.1.1 Soil and Groundwater Conditions based on Published Material

According to the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS) publication, *Soil Survey of Oakland County, Michigan* (1982), the soil at the subject property is classified as the Urban land-Spinks-Oshtemo group, which is described as urban land and nearly level to rolling, well drained sandy soils; on outwash plains, beach ridges, and moraines.

According to the Michigan Department of Natural Resources (MDNR) Geological Survey Division's publication, *Quaternary Geology of Southern Michigan* (1982), the Quaternary geology at the subject property is classified as "Glacial outwash sand and gravel and postglacial alluvium," described as pale brown to pale reddish brown, fine to coarse sand alternating with layers of small gravel to heavy cobbles, mixed lithology of sedimentary, igneous, and metamorphic rocks, well to poorly-sorted, well-stratified, in places cross-bedded. Occurs as fluvial terraces along present and abandoned drainage ways, as fans and sheets flanking end moraines, and as deltas along glacial lake margins. Soil thickness ranges from three to 60 feet. Typically, glacial outwash sand and gravel are associated with moderate to high hydraulic permeability and may allow the movement of contaminants through groundwater.

AKT Peerless did not identify site-specific groundwater information in published material.

#### 4.1.2 Soil and Groundwater Conditions based on Field Observations

During subsurface investigation activities, AKT Peerless encountered the following soil types:

- FILL from below the pavement/concrete slab or topsoil to approximately two feet bgs. This fill appeared generally as a poorly graded gravel and was found with a dark brown or black sand. In one boring location (SB-5) brick was noted.
- SAND from below the gravel to 20 feet bgs, the maximum depth explored. This sand consisted of a brown silty/fine-grained sand.
- CLAY from below the sand layer to 20 feet bgs, the maximum depth explored. This clay was only encountered in borings on Parcel B and consisted of a soft gray clay, coarse enough to be silt in some places.

AKT Peerless encountered groundwater at select soil boring locations at depths between 3.5 feet bgs and 12 feet bgs. Groundwater appeared to be consistent across the site.

With the exception of the fill material encountered, subsurface soils at the subject property are consistent with the description of "glacial outwash sand and gravel and postglacial alluvium" as described in *Quaternary Geology of Southern Michigan*.

See Figure 2 for a site map with soil boring locations. See Appendix A for AKT Peerless' soil boring logs.

#### 4.2 Laboratory Analytical Results

AKT Peerless collected soil and groundwater samples for the purpose of evaluating general site environmental conditions and to support future land use planning. When appropriate, analytical results were compared to Part 201 Generic RCC provided in Michigan Administrative Rules 299.1 through 299.50.



#### 4.2.1 Soil Analytical Results

AKT Peerless submitted seventeen soil samples laboratory analyses of VOCs, SVOCs, PNAs, PCBs, one or more of the Michigan Ten Metals, creosote, ethylene glycol, pesticides, and/or vanadium. The results of the laboratory analyses of the soil samples are summarized in the table below:

Parameter	Chemical Abstract Service (CAS) Number	Sample Identification with Criteria Exceedance (depth)	Part 201 Generic RCC Exceeded/Established Criteria (µg/kg)	Maximum Concentration (μg/kg)/Sample Location
Arsenic	7440-38-2	SB-1 (1'-2') SB-3 (1.5'-2.5') SB-5 (1.5'-2.5') SB-7 (3.5'-4.5') SB-8 (5'-6')	GSIP / 4,600 DWP / 4,600 DC / 7,600	9,800 / SB-1, SB-2
Chromium (total)	7440-47-3	SB-1 (1'-2') SB-3 (1.5'-2.5') SB-4 (1'-2') SB-5 (1.5'-2.5') SB-7 (3.5'-4.5') SB-8 (5'-6') SB-9 (9.5'-10.5') SB-10 (1'-2') SB-11 (0.5'-1.5') SB-12 (7'-8') SB-16 (2.5'-3.5')	GSIP / 3,300	16,000 / SB-7
Mercury	7439-97-6	SB-1 (1'-2') SB-3 (1.5'-2.5') SB-4 (1'-2')	GSIP / 50	240 / SB-1
Selenium	7782-49-2	SB-1 (1'-2')	GSIP / 400	470 / SB-1
Benzo(a)pyrene	50-32-8	SB-1 (1'-2')	DC / 2,000	2,600 / SB-1
Benzene	71-43-2	SB-15 (2'-3')	DWP / 100	780 / SB-15
n-Butylbenzene	104-51-8	SB-15 (2'-3')	DWP / 1,600	9,600 / SB-15
sec-Butylbenzene	135-98-8	SB-15 (2'-3')	DWP / 1,600	4,100 / SB-15
Ethylbenzene	100-41-4	SB-15 (2'-3')	DWP / 1,500 GSIP / 360	1,700 / SB-15
Isopropyl benzene	98-82-8	SB-15 (2'-3')	GSIP / 3,200	3,500 / SB-15
2-Methylnaphthalene	91-57-6	SB-15 (2'-3')	GSIP / 4,200	5,100 / SB-15

#### **Summary of Soil Analytical Results**



Parameter	Chemical Abstract Service (CAS) Number	Sample Identification with Criteria Exceedance (depth)	Part 201 Generic RCC Exceeded/Established Criteria (µg/kg)	Maximum Concentration (µg/kg)/Sample Location
Naphthalene	91-20-3	SB-15 (2'-3')	GSIP / 730	9,700 / SB-15
n-Propylbenzene	103-65-1	SB-15 (2'-3')	DWP / 1,600	20,000 / SB-15
1,2,4-Trimethylbenzene	95-63-6	SB-15 (2'-3')	DWP / 2,100 GSIP / 570	3,500 / SB-15
Xylenes	1330-20-7	SB-15 (2'-3')	GSIP / 980	4,100 / SB-15

#### Notes:

Sample identification: SB-# indicates soil boring location and (#-#) indicates sample depth interval in feet bgs.  $\mu g/kg - micrograms$  per kilogram

GSIP – Groundwater Surface Water Interface Protection Cleanup Criteria

DWP – Drinking Water Protection Cleanup Criteria

DC – Direct Contact Cleanup Criteria

In addition to the parameters identified in the table above, barium, cadmium, copper, lead, vanadium, zinc, benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, toluene, 1,2,3-trimethylbenzene, and 1,3,5-trimethylbenzene were detected in one or more soil samples collected from the subject property at concentrations above analytical laboratory method detection limits (MDLs), but below Part 201 Generic RCC. Ethylene glycol, PCBs, pesticides, creosote acid extractables, and other SVOCs beyond PNAs were not detected in soil samples collected from the subject property at concentrations above Part 201 Generic RCC.

Refer to Figure 3 for a site map with soil analytical results exceeding Part 201 Generic RCC. Refer to Table 1 for a summary of soil analytical results. Refer to **Appendix B** for a complete analytical laboratory report.

#### 4.2.2 Groundwater Analytical Results

AKT Peerless submitted eight groundwater samples for laboratory analysis of VOCs, SVOCs, PNAs, one or more of the Michigan Ten Metals, creosote, ethylene glycol, and/or pesticides. The results of the laboratory analyses of the groundwater samples are summarized in the table below:



Parameter	CAS Number	Sample Identification with Criteria Exceedance (well screen depth interval)	Part 201 Generic RCC Exceeded/Established Criteria (μg/L)	Maximum Concentration (µg/L)/Sample Location
Chromium (total)	7440-47-3	SB-16-GW (3'-8')	GSI / 11	18 / SB-16-GW
Lead (total)	7439-92-1	SB-14-GW (4'-9') SB-16-GW (3'-8') SB-17-GW (4'-9') SB-18-GW (6'-11')	DW / 4.0	46 / SB-16-GW

#### Summary of Groundwater Analytical Results

Notes:

Sample identification: SB-#-GW indicates temporary monitoring well location and (#-#) indicates well screen depth interval in feet bgs.

μg/L – micrograms per liter

DW – Drinking Water Cleanup Criteria

GSI – Groundwater Surface Water Interface Cleanup Criteria

AKT Peerless notes that, with the exception of the groundwater sample collected from temporary groundwater monitoring well SB-14-GW, each groundwater sample collected for metals analyses was analyzed for total metals and dissolved metals. While the groundwater sample collected from temporary monitoring well SB-14-GW was not analyzed for dissolved metals, dissolved metals were not identified at concentrations above analytical laboratory MDLs or Part 201 Generic RCC in the remaining samples, therefore indicating that the detected total metals in groundwater samples are likely due to the presence of entrained sediment within the groundwater samples and are not likely due to an environmental release.

In addition to the parameters listed in the table above, barium, cadmium, and zinc were detected in the groundwater samples at concentrations above laboratory MDLs, but below Part 201 Generic RCC. Remaining target parameters were not detected in the groundwater samples collected from the subject property at concentrations above laboratory MDLs.

Refer to Figure 4 for a site map with groundwater analytical results exceeding Part 201 Generic RCC. Refer to Table 2 for a summary of groundwater analytical results. Refer to **Appendix B** for a complete analytical laboratory report.

#### 5.0 Summary, Conclusions, and Recommendations

The following sections summarize the investigation conducted by AKT Peerless at the subject property.

#### 5.1 Summary of Environmental Concerns

Based on AKT Peerless' November 2022 Phase I ESA, the following RECs were identified:

- Historical use of Parcels A and C as a lumber yard, including lumber storage (interior and exterior), coal storage, and other exterior materials storage;
- Historical presence of a rail line and/or rail spurs on Parcels A and C;



- Historical use of Parcel B as a bulk gasoline station with up to five bulk ASTs and subsequent use of Parcel B for exterior lumber and other materials storage;
- Former presence of an oil house on the northwestern portion of Parcel C and up to four bulk ASTs on the eastern portion of Parcel C;
- Historical use of the southern adjoining property (i.e., 295 S. Broadway Street) as a bulk gasoline station, with documented contamination in soil and groundwater; and
- Historical use of the southwestern adjoining property (i.e., 261 S. Broadway Street) as a gasoline station with up to four USTs.

#### 5.2 Summary of Subsurface Investigation

On December 6 and December 7, 2022, AKT Peerless conducted a subsurface investigation at the subject property to evaluate the RECs identified in AKT Peerless' November 2022 Phase I ESA. During the investigation, AKT Peerless: (1) advanced 19 soil borings (SB-1 through SB-19); (2) installed eight temporary groundwater monitoring wells (SB-2-GW, SB-6-GW, SB-9-GW, SB-12-GW, SB-14-GW, SB-16-GW, SB-17-GW, and SB-18-GW); and (3) collected 17 soil samples and eight groundwater samples for laboratory analyses.

#### 5.3 Conclusions

AKT Peerless conducted soil and groundwater sampling in areas most likely to be impacted by contaminants based on the past use of the subject property and select adjoining properties. The results of the investigation indicate the following:

- Arsenic was detected in the soil samples collected from soil boring locations SB-1, SB-3, SB-5, SB-7, and SB-8 (Parcels A and C) at concentrations exceeding the Part 201 Generic Cleanup Criterion for DWP, GSIP, and/or DC.
- Chromium (total) was detected in the soil samples collected from soil boring locations SB-1, SB-3, SB-4, SB-5, SB-7, SB-8, SB-9, SB-10, SB-11, SB-12, and SB-16 (Parcels A, B, and C) at concentrations exceeding the Part 201 Generic Cleanup Criterion for GSIP.
- Mercury was detected in the soil samples collected from soil boring locations SB-1, SB-3, and SB-4 (Parcel A) at concentrations exceeding the Part 201 Generic Cleanup Criterion for GSIP.
- Selenium was detected in the soil sample collected from soil boring location SB-1 (Parcel A) at a concentration exceeding the Part 201 Generic Cleanup Criterion for GSIP.
- Benzo(a)pyrene was detected in the soil sample collected from soil boring location SB-1 (Parcel A) at a concentration exceeding the Part 201 Generic Cleanup Criterion for DC.
- Benzene, n-butylbenzene, sec-butylbenzene, ethylbenzene, isopropyl benzene, 2methylnaphthalene, naphthalene, n-propylbenzene, 1,2,4-trimethylbenzene, and xylenes were detected in the soil sample collected from soil boring location SB-15 (Parcel B) at concentrations exceeding the Part 201 Generic Cleanup Criteria for DWP and/or GSIP.
- Chromium (total) was detected in one shallow groundwater sample collected from the temporary monitoring well installed at soil boring location SB-16 (Parcel B) at a concentration exceeding the Part 201 Generic Cleanup Criterion for GSI.
- Lead (total) was detected in four shallow groundwater samples collected from the temporary monitoring wells installed at soil boring locations SB-14, SB-16, SB-17, and SB-18. (Parcels B and C) Lead was identified at a concentration exceeding the Part 201 Generic Cleanup Criterion for DW at each of these locations.



Based on laboratory analytical results, Parcels A, B, and C of the subject property meet the definition of a "facility," as defined in Part 201 of the NREPA.

#### 5.4 Recommendations

AKT Peerless recommends any future owner(s)/operator(s) prepare a Baseline Environmental Assessment (BEA). Section 26(1)(c) of Part 201 provides certain liability protections to a person who becomes an owner or operator of a "facility" on, or after June 5, 1995 if they comply with both of the following, or unless other defenses apply: a BEA is conducted prior to or within 45 days after the earlier of the date of purchase, occupancy, or foreclosure, and the owner or operator discloses the results of the BEA to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Remediation and Redevelopment Division (RRD) and subsequent purchaser or transferee.

In addition, because the subject property meets the definition of a "facility," AKT Peerless recommends that the current subject property owner conduct a Section 20107(a) Compliance Analysis to assure compliance with Due Care obligations. Due Care obligations include:

- Undertaking measures to prevent exacerbation of existing contamination.
- Exercising Due Care by undertaking response activities to mitigate unacceptable exposure to hazardous substances, mitigate fire and explosion hazards due to hazardous substances, and allow for the intended use of the subject property in a manner that protects health and safety.
- Taking reasonable precautions against the reasonably foreseeable acts or omissions of a third party and the consequences that could result from those acts or omissions.
- Provide notifications to EGLE and others in regard to mitigating fire and explosion hazards, discarded or abandoned containers, contamination migrating beyond property boundaries, as applicable.
- Comply with any land use or resource use restrictions established or relied on in connection with the response activities at the facility.
- Not impede the effectiveness or integrity of any land use or resource use restrictions employed at the facility in connection with response activities.

#### 6.0 Limitations

The information and opinions obtained in this report are for the exclusive use of Village of Lake Orion DDA. No distribution to or reliance by other parties may occur without the express written permission of AKT Peerless. AKT Peerless will not distribute this report without your written consent or as required by law or by a Court order. The information and opinions contained in the report are given in light of that assignment. The report must be reviewed and relied upon only in conjunction with the terms and conditions expressly agreed upon by the parties and as limited therein. Any third parties who have been extended the right to rely on the contents of this report by AKT Peerless (which is expressly required prior to any third-party release), expressly agrees to be bound by the original terms and conditions entered into by AKT Peerless and Village of Lake Orion DDA.

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guarantee that the information provided is exhaustive or that the information provided by Village of Lake Orion DDA or third parties is complete or accurate.

#### 7.0 Signatures of Environmental Professionals

The following individuals contributed to the completion of this report.

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