

FINAL

SUBSURFACE INVESTIGATION REPORT

AO 1 SEP 23

**FORMER YMCA GROUNDS
455 PARK AVENUE WEST
MANSFIELD, OHIO 44906**



CONDUCTED 28 AUGUST 2023

SUBMITTED TO:

**Mr. Marc Milliron, Manager Codes and Permits
City of Mansfield
30 North Diamond Street
Mansfield, Ohio 44903**

SUBMITTED BY:

**Mr. Troy A. Cramer, M.S., M.B.A., CIEC, CHMM
Certified Environmental, Inc.
60 Foxcroft Circle
Lexington, OH 44904**



1 September 2023

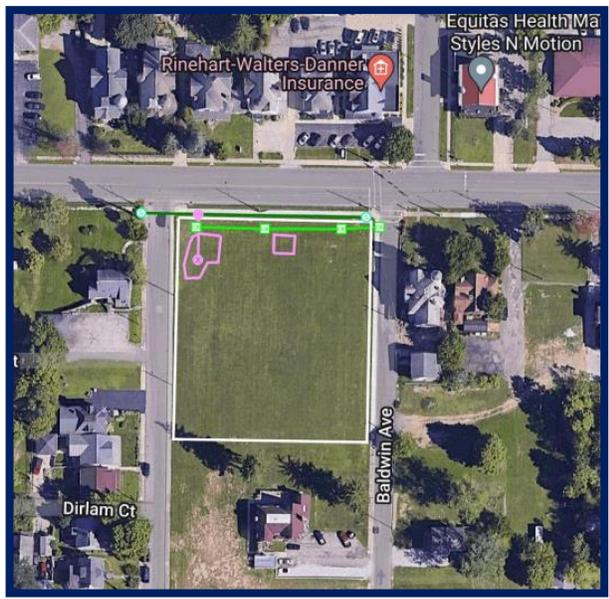
Mr. Marc Milliron, Manager Codes and Permits
 City of Mansfield
 30 North Diamond Street
 Mansfield, Ohio 44903

RE: Summary of Underground (Soil Boring) Investigation Former Mansfield YMCA Property

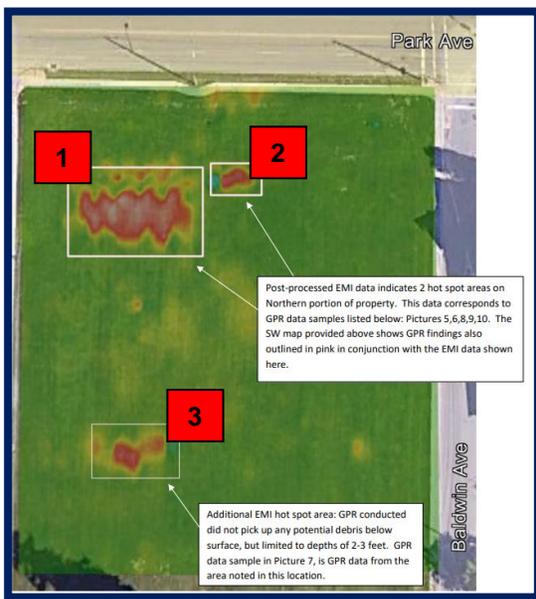
Dear Mr. Milliron:

Certified Environmental, Inc. (hereinafter CEI), performed a subsurface investigation of the former YMCA grounds located at 455 Park Avenue West, Mansfield, Ohio on 28 August 2023. The purpose of the subsurface investigation was to definitively establish the presence (or absence) of possible construction and demolition debris (C&DD) left behind following the demolition of the YMCA building and parking lots. Following demolition of the structure and parking lots, the site was backfilled with soil and seeded.

Results of the ground penetrating radar (GPR) and electromagnetic induction (EMI) verified three (3) areas on the property with highly irregular anomalies below ground surface (bgs) at a depth of approximately 2' bgs. Two (2) large anomalies were located along the northern edge of the approximately 1.25 acre site and another along the back southwest corner (not quite as definitive as the northern two (2) locations). It was these three (3) areas that soil borings were advanced to verify the presence of C&DD. Refer to figures below showing locations of suspect debris field(s). Table No. 1 provides a summary of debris fields and GPS coordinates.



GPR AND EMI VERIFIED BGS DEBRIS FIELDS ON NORTHERN EDGE OF SITE



TWO NORTHERN LOCATIONS; EMI PICKED UP A 3RD ON SW CORNER

TABLE 1: COORDINATES AND DESCRIPTION OF "HOT SPOT" LOCATIONS

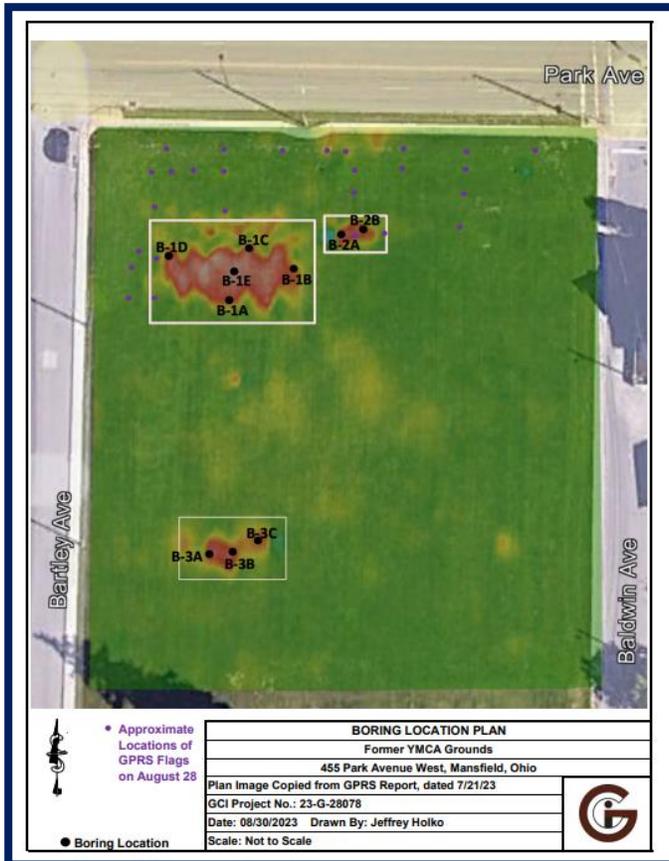
Number	Location	Latitude	Longitude	Comments
1	NW	40° 45' 31.30"N	82° 31' 55.42"W	Buried Debris Likely at 2' to 3' BGS
2	North Center	40° 45' 31.12"N	82° 31' 56.11"W	Buried Debris Likely at 1.5' to 2' BGS
3	SW	40° 45' 29.85"N	82° 31' 55.17"W	Inconclusive w/GRP at 1.5' to 2' BGS

Based on the GPR and EMI scan of the 1.25 acre site, CEI has narrowed the likely C&DD locations to three (3) specific “hot spots”. For a complete report of the GPR and EMI underground investigation, refer to Attachment No. 1.

Results of the subsurface investigation showed the presence of C&DD at all three (3) identified locations. The C&DD ranged from brick, concrete, asphalt, wood, rubber, and plastic. Depth typically started within about 1’ to 2’ bgs and extended down to depths of over 11’ (NW debris field). CEI collected a total of ten (10) soil borings. Borings were advanced until auger refusal was encountered and the boring could not be advanced further. Table No. 2 provides a summary of subsurface investigation sampling for each one of the three (3) debris fields and corresponding depths.

CEI mobilized a truck-mounted rotary drill rig (with automatic sampling hammer) to the site on 28 August 2023 and drilled ten (10) standard penetration test borings, 4.5” in diameter. Five (5) borings (B-1A to B-1E) were performed at the northwest anomaly area (Hot Spot #1), two (2) borings (B-2A & B-2B) were performed at the north-central anomaly area (Hot Spot #2), and three (3) borings (B-3A to B-3C) were performed at the southwest anomaly area (Hot Spot #3).

- Borings B-1A to B-1E extended to a depth range of 5.5’ to **11.3’**. Each boring terminated with auger refusal in fill.
- Boring B-2A extended to a depth of 3.5’, where auger refusal in fill was encountered. Boring B-2B encountered fill to a depth of 5’. Below the fill, we encountered natural soils to the termination depth of 9.5’.
- Borings B-3A & B-3B encountered fill to respective depths of **8’** and 6’. Below the fill in both borings, we encountered natural soils to the termination depths of 9.5’. Boring B-3C extended to a depth of 6’, where auger refusal in fill was encountered.



SOIL BORING LOCATIONS



TABLE 2: SUBSURFACE INVESTIGATION RESULTS

Number	Location	Latitude	Longitude	Width (N to S)	Length (E to W)	Approx Depth	CU FT	CU YD	Boring	Depth C&DD Summary / Comments									
1	NW	40° 45' 31.30"N	82° 31' 55.42"W	50'	40'	11'	22,000	815	B-1A	0' to 1.5' – Asphalt & Concrete									
										1.5' to 3.0' – Brick & Concrete									
										4.0' to 5.5' – Brick, Concrete, & Metal									
										6.0' to 7.5' – Brick & Concrete									
										8.0' to 8.4' – Glass & Concrete									
									B-1B	0' to 1.5' – Clean Fill									
										1.5' to 3.0' – Wood & Concrete									
										4.0' to 5.5' – Concrete, Brick, & Glass									
										6.0' to 7.5' – Concrete, Wood, Brick, & Glass									
										8.0' to 9.5' – Concrete, Brick, & Rubber									
									B-1C	10.0' to 11.3' – Plastic									
										0' to 1.5' – Clean Fill									
										1.5' to 3.0' – Concrete & Brick									
										4.0' to 5.5' – Clean Fill (Clay / Sand)									
										6.0' to 7.5' – Concrete & Brick									
B-1D	8.0' to 8.3' – Concrete																		
	0' to 1.5' – Clean Fill																		
B-1E	1.5' to 3.0' – Concrete & Brick																		
	4.0' to 4.5' – Concrete																		
	0' to 1.5' – Clean Fill																		
2	N Center	40° 45' 31.12"N	82° 31' 56.11"W	25'	25'	5'	3,125	115	B-2A	1.5' to 3.0' – Clean Fill (Clay / Sand)									
										4.0' to 5.5' – Concrete, Wood, & Glass									
										0' to 1.5' – Concrete & Brick									
										1.5' to 3.5' – Asphalt & Concrete									
										0' to 1.5' – Asphalt & Concrete									
									B-2B	1.5' to 3.0' – Asphalt									
										4.0' to 5.5' – Brick									
										6.0' to 7.5' – No C&DD / Native Materials									
										8.0' to 8.4' – No C&DD / Native Materials									
										0' to 1.5' – Clean Fill									
									3	SW	40° 45' 29.85"N	82° 31' 55.17"W	30'	40'	8'	9,600	355	B-3A	1.5' to 3.0' – Wood
																			4.0' to 5.5' – Wood
																			6.0' to 7.5' – Concrete
																			8.0' to 9.5' – No C&DD / Native Materials
																			0' to 1.5' – Brick & Asphalt
B-3B	1.5' to 3.0' – Brick & Asphalt																		
	4.0' to 5.5' – No C&DD																		
	6.0' to 7.5' – No C&DD																		
	8.0' to 8.4' – No C&DD / Native Materials																		
	0' to 1.5' – Brick & Asphalt																		
B-3C	1.5' to 3.0' – No C&DD																		
	4.0' to 5.5' – No C&DD																		
	6.0' – Concrete & Metal																		

The complete subsurface investigation report is included under Attachment No 2. Results from the GPR and EMI yielded three (3) anomalies (potential debris fields). Results from the subsurface investigation confirmed the presence of C&DD at all three (3) locations. CEI estimates (low end) approximately 1,285 cubic yards (CU YD) of soils are impacted with C&DD.

Certified Environmental, Inc., appreciates the opportunity to provide you with our environmental consulting services. If you have any questions regarding the information contained in this report or need further assistance please contact our office at (419) 884-2123, (419) 544-1297, or email at CEITCRAMER@AOL.COM.

Sincerely yours,

CERTIFIED ENVIRONMENTAL, INC.



Troy A. Cramer, M.S., M.B.A., CIEC, CHMM
 Environmental Manager

Attachments:

1. GPR and EMI Underground Investigation
2. Subsurface Investigation



FINAL

**GROUND PENETRATING RADAR SCAN
INVESTIGATION REPORT**

AO 5 AUGUST 2023

**FORMER YMCA GROUNDS
455 PARK AVENUE WEST
MANSFIELD, OHIO 44906**



CONDUCTED 21 JULY 2023

SUBMITTED TO:

**Mr. Marc Milliron, Manager Codes and Permits
City of Mansfield
30 North Diamond Street
Mansfield, Ohio 44903**

SUBMITTED BY:

**Mr. Troy A. Cramer, M.S., M.B.A., CIEC, CHMM
Certified Environmental, Inc.
60 Foxcroft Circle
Lexington, OH 44904**



5 August 2023

Mr. Marc Milliron, Manager Codes and Permits
 City of Mansfield
 30 North Diamond Street
 Mansfield, Ohio 44903

RE: Summary of Ground Penetrating Radar Scan Former Mansfield YMCA Property

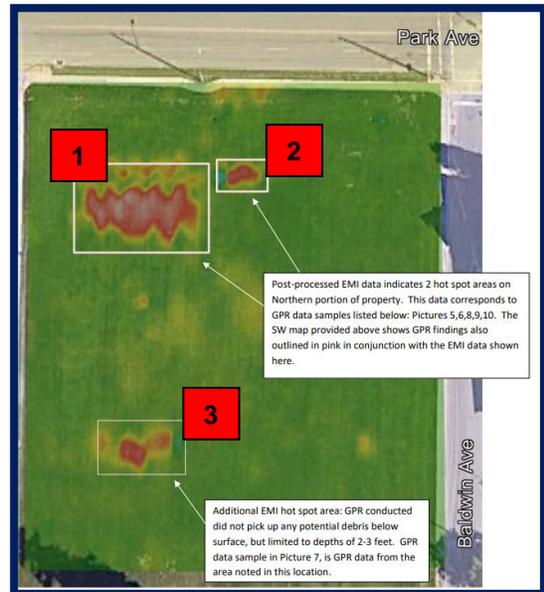
Dear Mr. Milliron:

Certified Environmental, Inc. (hereinafter CEI), performed a non-invasive scan of the former YMCA grounds located at 455 Park Avenue West, Mansfield, Ohio on 21 July 2023. The purpose of the investigation was to determine the presence (or absence) of possible construction and demolition debris (C&DD) left behind following the demolition of the YMCA building and parking lots. Following demolition of the structure and parking lots, the site was backfilled with soil and seeded.

Results of the ground penetrating radar (GPR) and electromagnetic induction (EMI) verified three (3) areas on the property with highly irregular anomalies below ground surface (bgs) at a depth of approximately 2' bgs. Two (2) large anomalies were located along the northern edge of the approximately 1.25 acre site and another along the back southwest corner (not quite as definitive as the northern two (2) locations). It will be these three (3) areas that soil borings will be advanced to verify the presence of C&DD. Refer to figures below showing locations of suspect debris field(s).



GPR AND EMI VERIFIED BGS DEBRIS FIELDS ON NORTHERN EDGE OF SITE



TWO NORTHERN LOCATIONS; EMI PICKED UP A 3RD ON SW CORNER

TABLE 1: COORDINATES AND DESCRIPTION OF “HOT SPOT” LOCATIONS

Number	Location	Latitude	Longitude	Comments
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2	North Center	40° 45' 31.12"N	82° 31' 56.11"W	Buried Debris Likely at 1.5' to 2' BGS
3	SW	40° 45' 29.85"N	82° 31' 55.17"W	Inconclusive w/GRP at 1.5' to 2' BGS

Mr. Marc Milliron
5 August 2023
Page 2

Based on the GPR and EMI scan of the 1.25 acre site, CEI has narrowed the likely C&DD locations to three (3) specific "hot spots". CEI will perform soil borings during the week of August 21st to verify type of C&DD and possible bottom depth, if able to be ascertained. Results of the soil borings will be provided in follow-on report. For a complete report of the GPR and EMI underground investigation, refer to Attachment No. 1.

Certified Environmental, Inc., appreciates the opportunity to provide you with our environmental consulting services. If you have any questions regarding the information contained in this report or need further assistance please contact our office at (419) 884-2123, (419) 544-1297, or email at CEITCRAMER@AOL.COM.

Sincerely yours,

CERTIFIED ENVIRONMENTAL, INC.



Troy A. Cramer, M.S., M.B.A., CIEC, CHMM
Environmental Manager

Attachments:

1. GPR and EMI Underground Investigation



Summary of Underground GPR and EMI Investigation for Buried Structures

Prepared For: Certified Environmental

Prepared By:
Matt Higginbotham
Matt.Higginbotham@gprsinc.com
Project Manager-Cleveland
216-318-3665
July 21, 2023

July 21, 2023

Certified Environmental

Attn: Troy Cramer

Email: ceitcramer@aol.com

Site: 455 Park Avenue West, Mansfield, Ohio 44906

We appreciate the opportunity to provide this report for our work completed on July 21, 2023.

PURPOSE

The purpose of the project was to search for buried structures/debris within the project boundaries provided by the client. The scope of work consisted of 1 location measuring approximately 1.25 acres. The client marked the desired locations prior to our scanning and our markings were then placed onto the surface using spray paint and flags.

EQUIPMENT

- **Underground Scanning GPR Antenna.** The antenna with frequencies ranging from 250 MHz-450 MHz is mounted in a stroller frame which rolls over the surface. The surface needs to be reasonably smooth and unobstructed in order to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the feasibility of GPR. The data is displayed on a screen and marked in the field in real time. The total depth achieved can be as much as 8' or more with this antenna but can vary widely depending on the types of materials being scanned through. Some soil types such as clay may limit maximum depths to 3' or less. As depth increases, targets must be larger in order to be detected and non-metallic targets can be especially difficult to locate. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **Electromagnetic Pipe Locator.** The EM locator can passively detect the electromagnetic fields from live AC power or from radio signals travelling along some conductive utilities. It can also be used in conjunction with a transmitter to connect directly to accessible, metallic pipes or tracer wires. A current is sent through the pipe or tracer wire at a specific frequency and the resulting EM field can then be detected by the receiver. A utility's ability to be located depends on a variety of factors including access to the utility, conductivity, grounding, interference from other fields, and many others. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **GPS.** This handheld GPS unit offers accuracy down to 4 inches; however, the accuracy will depend on the satellite environment and obstructions and should not be considered to be survey-grade. Features can be collected as points, lines, or areas and then exported into Google Earth or overlaid on a CAD drawing. For more information, please visit: [Link](#)
- **Frequency Domain Electromagnetic Induction (EMI).** The EMI is moved over the surface without coming in contact with the surface so it is not affected by the terrain. However, EMI results are affected by surface features including vehicles, reinforced concrete, and buildings and will not be used in the vicinity of above-ground obstructions. Data is displayed on a control unit indicating the conductivity of the earth or buried objects. The data is post-processed and displayed in a color-coded contour map which shows relative changes in conductivity. This contour map will be provided by GPRS for interpretation by the client. For more information, please visit: [Link](#)

PROCESS

The process typically begins with using the EM pipe locator to locate pipes or utilities throughout the scan area. First, the transmitter is used to connect to and trace any visible risers, tracer wires, or accessible, conductive utilities provided that there is an exposed, metallic surface. The areas are then swept with the receiver to detect live power or radio frequency signals. Locations and depths are painted or flagged on the surface. Depths cannot always be provided depending on the location method and can be prone to error.

Initial GPR scans were then collected in order to evaluate the data and calibrate the equipment. Based on these findings, a scanning strategy is formed, typically consisting of scanning the entire area in a grid with 5 foot scan spacing in order to locate any potential utilities that were not found with the pipe locator. The GPR data is viewed in real time and anomalies in the data are located and marked on the surface along with their depths using spray paint, pin flags, etc.

LIMITATIONS

Please keep in mind that there are limitations to any subsurface investigation. The equipment may not achieve maximum effectiveness due to soil conditions, above ground obstructions, reinforced concrete, and a variety of other factors. No subsurface investigation or equipment can provide a complete image of what lies below. Our results should always be used in conjunction with as many methods as possible including consulting existing plans and drawings, exploratory excavation or potholing, visual inspection of above-ground features, and utilization of services such as One Call/811. Depths are dependent on the dielectric of the materials being scanned so depth accuracy can vary throughout a site. Relevant scan examples were saved and will be provided in this report.

FINDINGS

The subsurface conditions at the time of the scanning allowed for maximum GPR depth penetration of 2-3 feet in most areas. Multiple utilities were able to be located such as storm lines and sanitary lines using either the GPR or EM pipe locator. A gas line was confirmed to be located outside of the project boundary. The EMI yielded spikes in the data in 3 areas that could be potential areas of buried debris/structures. These are outlined in the data on page 4. The following pages will provide additional details regarding our findings.

Post-Processed EMI Data





Picture 1: Photo depicts pathway of GPR scan completed in North central area of property where hot spot was detected via EMI. The pink box indicates area of potential buried debris. Photo can be correlated with GPR data sample 10.



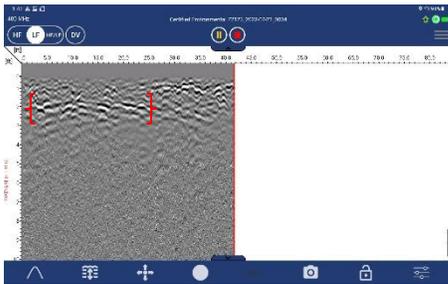
Picture 2: Photo depicts pathway of storm line (light green) and sanitary line (dark green) present within scan area.



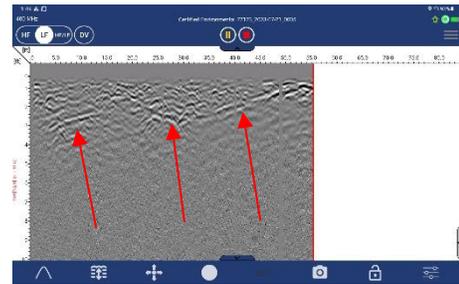
Picture 3: Photo depicts area of property in Northwest corner. This area showed as a hot spot based on EMI data. The pink area shows an outline of potential buried debris below surface. The white arrow indicates pathway of GPR scan.



Picture 4: Additional photo of Northwest corner of GPR scan completed in other direction. Pink lines show area of potential buried debris.



Picture 5: GPR data sample from Northwest area of property. The red brackets indicate potential area of buried debris at ~2 feet deep.

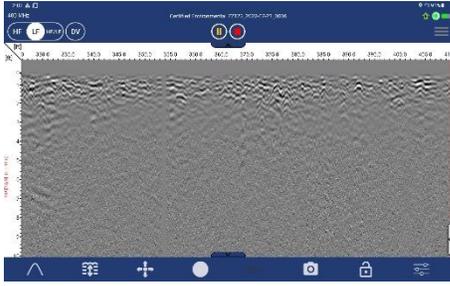


Picture 6: Additional GPR data sample from NW area of property. The red arrows indicate potential buried debris at a depth of ~2-3 feet.

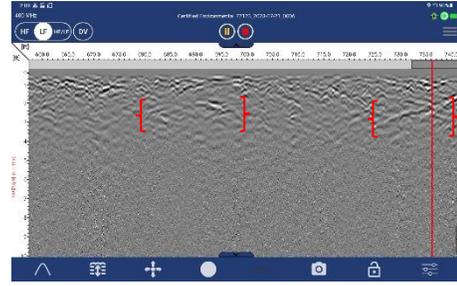
GPR Data Screenshots and Photos

455 Park Avenue West, Mansfield, Ohio
44906

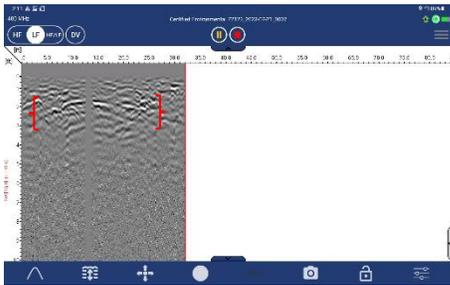




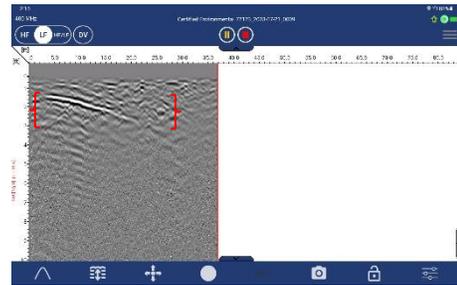
Picture 7: GPR data sample from EMI hot spot area in Southwest portion of property, GPR was unable to verify potential buried debris in this location.



Picture 8: Additional GPR data sample from NW area of property. The red brackets indicate potential buried debris at depth of ~2-3 feet.



Picture 9: GPR data sample from North Central area of property. The red brackets indicate potential buried debris in the North Central portion of property at a depth of ~2 feet.



Picture 10: Additional GPR data sample of North Central area of property. The red brackets indicate area of potential buried debris ~1.5 feet in depth.

GPR Data Screenshots and Photos

455 Park Avenue West, Mansfield, Ohio
44906



CLOSING

GPRS, Inc. has been in business since 2001, specializing in underground storage tank location, concrete scanning, utility locating, and shallow void detection for projects throughout the United States. I encourage you to visit our website (www.gprsinc.com) and contact any of the numerous references listed.

In summary, the EMI was performed initially on the property and the data was processed while on site. Data retrieved from EMI data showed 3 “hot spot” area on the property. Investigative GPR scanning was performed following EMI data processing in search of potential buried debris. GPR data was limited to ~3 feet in most areas. GPR data in these areas suggests potential areas of buried debris. Most reactions noted by GPR appeared at ~2-3 feet in depth to the top of the potential debris under the surface. Please see attached EMI data results overlaid on GPS mapping for reference on hot spot locations.

GPRS appreciates the opportunity to offer our services, and we look forward to continuing to work with you on future projects. Please feel free to contact us for additional information or with any questions you may have regarding this report.

Signed,

Matt Higginbotham

Matt Higginbotham
Project Manager—Cleveland



Direct: 216-318-3665

Matt.Higginbotham@gprsinc.com

www.gprsinc.com

Reviewed,

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Micah Stair
Area Manager—Northeast Ohio



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September 1, 2023

Mr. Troy Cramer
Certified Environmental, Inc.
60 Foxcroft Circle
Lexington, Ohio 44904

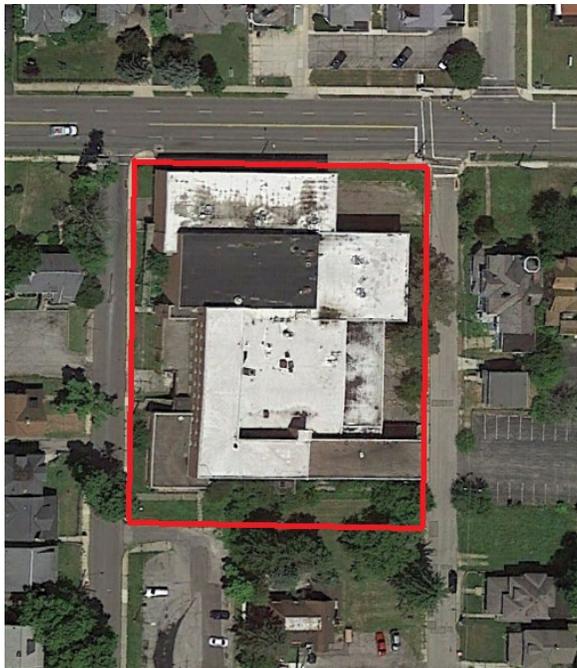
**Reference: Subsurface Exploration Letter
Former YMCA Grounds
455 Park Avenue West, Mansfield, Ohio
GCI Project No. 23-G-28078**

Dear Mr. Cramer:

As authorized, Geotechnical Consultants, Inc. (GCI) performed a subsurface exploration and prepared this letter for the referenced property in Mansfield, Ohio. We performed our work in accordance with our proposal dated June 26, 2023.

Site Location and Project Description

The project site is an undeveloped grassed parcel on the western side of the City of Mansfield. The site formerly contained a YMCA, with a building encompassing much of the property. See the aerial images below (images were obtained from Google Earth). Photos of the site at the time of our drilling follow.



Aerial Image (dated July 2018)



Aerial Image (date August 2022)



Taken at SW Corner of Property, Facing N



Taken at SW Corner of Property, Facing NE

Prior to our subsurface exploration, GCI was provided with the following documents:

- “GPR Survey for 455 Park Avenue West (Former YMCA)”, prepared by Chem-Tech Consultants, Inc. and dated December 1, 2020
- “Summary of Underground GPR and EMI Investigation for Buried Structures”, prepared by GPRS and dated July 21, 2023
- “Final Ground Penetrating Radar Scan Investigation Report”, prepared by Certified Environmental, Inc. and dated August 5, 2023

The latter two documents listed above contained a map showing three areas of the site (which will be referred as ‘anomaly areas’ in the following section of the report) where ground penetrating radar (GPR) and electromagnetic induction (EMI) showed “highly irregular anomalies”. GCI was requested to perform subsurface borings at these three areas.

Subsurface Exploration

GCI mobilized a truck-mounted rotary drill rig (with automatic sampling hammer) to the site on August 28, 2023 and drilled ten (10) standard penetration test borings. Five (5) borings (B-1A to B-1E) were performed at the northwest anomaly area, two (2) borings (B-2A & B-2B) were performed at the north-central anomaly area, and three (3) borings (B-3A to B-3C) were performed at the southwest anomaly area.

Borings B-1A to B-1E extended to a depth range of 5.5’ to 11.3’. Each boring terminated with auger refusal in fill.

Boring B-2A extended to a depth of 3.5’, where auger refusal in fill was encountered.

Boring B-2B encountered fill to a depth of 5’. Below the fill, we encountered natural soils to the termination depth of 9.5’.

Borings B-3A & B-3B encountered fill to respective depths of 8’ and 6’. Below the fill in both borings, we encountered natural soils to the termination depths of 9.5’.

Boring B-3C extended to a depth of 6’, where auger refusal in fill was encountered.

The appendix of this report contains a plan showing the location of each boring. We have also included a log for each boring, followed by photos of each of our split-spoon samples.

Final

We prepared this letter for the exclusive use of Certified Environmental, Inc. and their consultants, for specific application to the described project in Mansfield, Ohio in accordance with generally accepted geotechnical engineering practices. We make no warranty, expressed or implied.

We hope this letter satisfies your current needs. If you have any questions, comments or need for additional information, please call. It is a pleasure to be of service to you on this project and we look forward to providing you additional services.

Respectfully submitted,
Geotechnical Consultants, Inc.



Jeffrey M. Holko, P.E.
Senior Project Manager



Curtis L. Miller, P.E.
In-House Reviewer

Distribution: Mr. Troy Cramer @ Certified Environmental, Inc. – pdf via e-mail
GCI Project File 23-G-28078

Attachments: General Notes for Soil Sampling and Classification
Boring Location Plan
Boring Logs and Photos (20 sheets)



GENERAL NOTES FOR SOIL SAMPLING AND CLASSIFICATIONS

BORINGS, SAMPLING AND GROUNDWATER OBSERVATIONS:

Drilling and sampling were conducted in accordance with procedures generally recognized and accepted as standard methods of exploration of subsurface conditions. The borings were drilled using a truck-mounted drill rig using auger boring methods with standard penetration testing performed in each boring at intervals ranging from 1.5 to 5.0 feet. The stratification lines on the logs represent the approximate boundary between soil types at that specific location and the transition may be gradual.

Water levels were measured at drill locations under conditions stated on the logs. This data has been reviewed and interpretations made in the text of the report. Fluctuations in the level of the groundwater may occur due to other factors than those present at the time the measurements were made.

The Standard Penetration Test (ASTM-D-1586) is performed by driving a 2.0 inch O.D. split barrel sampler a distance of 18 inches utilizing a 140 pound hammer free falling 30 inches. The number of blows required to drive the sampler each 6 inches of penetration are recorded. The summation of the blows required to drive the sampler for the final 12 inches of penetration is termed the Standard Penetration Resistance (N). Soil density/consistency in terms of the N-value is as follows:

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-10	Loose	0-4	Soft
10-30	Medium Dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	Very Stiff
		30 +	Hard

SOIL MOISTURE TERMS

Soil Samples obtained during the drilling process are visually characterized for moisture content as follows:

MOISTURE CONTENT	DESCRIPTION
Damp	Soil moisture is much drier than the Atterberg plastic limit (where soils are cohesive) and generally more than 3% below Standard Proctor "optimum" moisture conditions. Soils of this moisture generally require added moisture to achieve proper compaction.
Moist	Soil moisture is near the Atterberg plastic limit (cohesive soils) and generally within $\pm 3\%$ of the Standard Proctor "optimum" moisture content. Little to no moisture conditioning is anticipated to be required to achieve proper compaction and stable subgrades.
Very Moist	Soil moisture conditions are above the Atterberg plastic limit (cohesive soils) and generally greater than 3% above Standard Proctor "optimum" moisture conditions. Drying of the soils to near "optimum" conditions is anticipated to achieve proper compaction and stable subgrades.
Wet	Soils are saturated. Significant drying of soils is anticipated to achieve proper compaction and stable subgrades.

SOIL CLASSIFICATION PROCEDURE:

Soil samples obtained during the drilling process are preserved in plastic bags and visually classified in the laboratory. Select soil samples may be subjected to laboratory testing to determine natural moisture content, gradation, Atterberg limits and unit weight. Soil classifications on logs may be adjusted based on results of laboratory testing.

Soils are classified in accordance with the ASTM version of the Unified Soil Classification System. ASTM D-2487 "Classification of Soils for Engineering Purposes (Unified Soil Classification System) describes a system for classifying soils based on laboratory testing. ASTM D-2488 "Description and Identification of Soil (Visual-Manual Procedure) describes a system for classifying soils based on visual examination and manual tests.

Soil classifications are based on the following tables (see reverse side):

GENERAL NOTES FOR SOIL SAMPLING AND CLASSIFICATIONS

PARTICLE SIZE DEFINITION		CONSTITUENT MODIFIERS	
Boulders:	>12"		
Cobbles:	3" to 12"	Trace	Less than 5%
Gravel:	Coarse: 3/4" to 3"	Few	5-10%
	Fine: No. 4 (3/16") to 3/4"	Little	15-25%
Sand:	Coarse No. 10 (2.0mm) to No. 4 (4.75mm)	Some	30-45%
	Medium No. 40 (0.425mm) to No. 10 (2.0mm)	Mostly	50-100%
	Fine No. 200 (0.074mm) to No. 40 (0.425mm)		
Silt & Clay	<0.074mm; classification based on overall plasticity; in general clay particles <0.005mm.		

ASTM/UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of materials is larger than No. 200 sieve size)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	<i>Clean Gravel (less than 5% fines)</i>	
	GW	Well-graded gravel, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines
	<i>Gravels with fines (more than 12% fines)</i>	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS More than 50% of coarse fraction smaller than No. 4 sieve size	<i>Clean Sands (Less than 5% fines)</i>	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly-graded sands, gravelly sands, little or no fines
	<i>Sands with fines (More than 12% fines)</i>	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:		
Less than 5 percentGW, GP, SW, SP		
Greater than 12 percentGM, GC, SM, SC		
5 to 12 percentBorderline cases requiring dual symbols: SP-SM, GP-GM, etc.		
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size)		
SILTS AND CLAYS Liquid Limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays or low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	CL-ML	Inorganic silty clay of slight plasticity, P.I. between 4 and 7
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid Limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays or medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils



• Approximate Locations of GPRS Flags on August 28

● Boring Location

BORING LOCATION PLAN	
Former YMCA Grounds	
455 Park Avenue West, Mansfield, Ohio	
Plan Image Copied from GPRS Report, dated 7/21/23	
GCI Project No.: 23-G-28078	
Date: 08/30/2023 Drawn By: Jeffrey Holko	
Scale: Not to Scale	



TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-1A

CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			From	To	0-6				6-12
	0.0-1.5	SS	2	2	3	Moist		Topsoil	
								FILL: brown sandy lean clay with asphalt and concrete	
	1.5-3.0	SS	8	14	11	Moist		brown sandy lean clay with gravel	
								from 2' - 3', brick and concrete mixed into the fill	
	4.0-5.5	SS	6	8	6	Moist		mix of brown sandy lean clay, brick, and concrete; piece of metal in the sample	
5									
	6.0-7.5	SS	1	2	2	Moist		mix of brick, clay, concrete, and sand	
	8.0-8.4	SS	50/5"			Moist	8.4		brown sandy lean clay with glass, rock fragments, and concrete
								AUGER REFUSAL: 8.4'	
10								After drilling and pushing auger spoils into the borehole, the borehole was about 2.9' deep.	

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-1A Split-Spoon Sample Photos

Note: Material at left side of photo is the top of the sample; right side is bottom. This is also the case for sample photos of the other borings.



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 5.5'



Depth: 6' – 7.5'



Depth: 8' – 8.4'

TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-1B

CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			From	To	12-18				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	0-1.5	SS	2	2	4	Moist		Topsoil FILL: brown sandy lean clay	
	1.5-3.0	SS	3	9	9	Moist		near 2.5' depth, wood and concrete mixed with clay and sand	
	4.0-5.5	SS	6	6	3	Moist		mix of sand, concrete, brick, and glass	
5	6.0-7.5	SS	2	2	4	Very Moist		mix of sand, rock fragments, clay, concrete, wood, brick, glass, and topsoil	
	8.0-9.5	SS	4	2	2	Wet		groundwater seepage at 8' mix of sand, rock fragments, concrete, brick, and rubber-like material (dark material in photo)	
10	10.0-11.3	SS	3	9	50/4"	Wet		mix of clay, sand, rock fragments, plastic to about 11'	
							11.3	gray sandstone fragments	
								AUGER REFUSAL: 11.5'	
								After drilling and pushing auger spoils into the borehole, the borehole was about 4.5' deep.	

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-1B Split-Spoon Sample Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 5.5'



Depth: 6' – 7.5'



Depth: 8' – 9.5'



Depth: 10' – 11.3'

TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-1C

CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION <u>None</u> FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Proportions Used Trace Less than 5% Few 5 to 10% Little 15 to 25% Some 30 to 45% Mostly 50 to 100%	140 lb Wt. x 30" fall on 2" O.D. Sampler <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Cohesionless Density</td> <td style="width: 33%;">Cohesive Consistency</td> </tr> <tr> <td>0 - 10 Loose</td> <td>0 - 4 Soft</td> </tr> <tr> <td>10 - 30 Medium Dense</td> <td>4 - 8 Medium Stiff</td> </tr> <tr> <td>30 - 50 Dense</td> <td>8 - 15 Stiff</td> </tr> <tr> <td>50 + Very Dense</td> <td>15 - 30 Very Stiff</td> </tr> <tr> <td></td> <td>30 + Hard</td> </tr> </table>	Cohesionless Density	Cohesive Consistency	0 - 10 Loose	0 - 4 Soft	10 - 30 Medium Dense	4 - 8 Medium Stiff	30 - 50 Dense	8 - 15 Stiff	50 + Very Dense	15 - 30 Very Stiff		30 + Hard
Cohesionless Density	Cohesive Consistency													
0 - 10 Loose	0 - 4 Soft													
10 - 30 Medium Dense	4 - 8 Medium Stiff													
30 - 50 Dense	8 - 15 Stiff													
50 + Very Dense	15 - 30 Very Stiff													
	30 + Hard													

LOCATION OF BORING See Boring Location Plan

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			0-6	6-12	12-18				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	0.0-1.5	SS	3	3	6	Moist		Topsoil FILL: brown sandy lean clay with rock fragments	
	1.5-3.0	SS	10	9	10	Moist		intermixed concrete intermixed sand, concrete, and brick	
	4.0-5.5	SS	6	1	1	Moist		clayey sand	
5	6.0-7.5	SS	6	2	14	Moist		mix of concrete and brick groundwater seepage at 8'	
	8.0-8.3	SS	50/3"			Wet	8.3		mix of sand, concrete, and clay AUGER REFUSAL: 8.3'
10								After drilling and pushing auger spoils into the borehole, the borehole was about 5.1' deep.	

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-1C Split-Spoon Sample Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 5.5'



Depth: 6' – 7.5'



Depth: 8' – 8.3'

Boring B-1D Split-Spoon Sample Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 4.5'

TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-1E

CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			0-6	6-12	12-18				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	0.0-1.5	SS	2	2	2	Moist		Topsoil FILL: brown sandy lean clay	
	1.5-3.0	SS	3	5	7	Moist		soft sandy lean clay concrete near 2.7' depth	
5	4.0-5.5	SS	8	6	50/4"	Moist	5.5	mix of concrete, clay, rock fragments, glass, wood, and rubber-like material auger spoils at 5.5' refusal depth contained concrete, rock fragments, clay, wood, and glass	
								AUGER REFUSAL: 5.5'	
								After drilling, the auger spoils filled the borehole to the surface.	
10									

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-1E Split-Spoon Sample and Auger Spoils Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 4.5'



Auger Spoils at Refusal Depth

TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-2A

CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
<u>None</u> FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Trace Less than 5% Few 5 to 10% Little 15 to 25% Some 30 to 45% Mostly 50 to 100%	Cohesionless Density	Cohesive Consistency
		0 - 10 Loose 10 - 30 Medium Dense 30 - 50 Dense 50 + Very Dense	0 - 4 Soft 4 - 8 Medium Stiff 8 - 15 Stiff 15 - 30 Very Stiff 30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			From	To	To				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	0.0-1.5	SS	3	4	4	Moist		Topsoil FILL: brown sandy lean clay with concrete and brick	
	1.5-2.5	SS	7	50		Moist		silty sand with clay and asphalt brown sandy lean clay	
							3.5	concrete fragments came up with auger spoils at auger refusal	
								AUGER REFUSAL: 3.5'	
5								After drilling, the auger spoils filled the borehole to the surface.	
10									

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-2A Split-Spoon Sample and Auger Spoils Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Auger Spoils at Refusal Depth

TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-2B

CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			0-6	6-12	12-18				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	0.0-1.5	SS	6	7	14	Moist		Topsoil FILL: brown sandy lean clay intermixed asphalt and concrete	
	1.5-3.0	SS	5	7	8	Moist		brown sandy lean clay asphalt, clay, and rock fragments	
	4.0-5.5	SS	5	1	4	Moist		brown to dark brown sandy lean clay with gravel, trace brick	
5							5.0	Brown Sandy Lean Clay (CL) - glacial till - low to moderate plasticity, some f-c sand, few gravel	
	6.0-7.5	SS	5	5	5	Moist			
	8.0-9.5	SS	5	6	10	Moist			
							9.5		
10								BOTTOM OF BORING: 9.5'	
								After drilling, the auger spoils filled the borehole to the surface.	

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-2B Split-Spoon Sample and Auger Spoils Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 5.5'



Depth: 6' – 7.5'



Depth: 8' – 9.5'

TEST BORING LOG

PROJECT NAME **Former YMCA Grounds - Mansfield, Ohio** BORING NO. **B-3A**

CLIENT **Certified Environmental, Inc.** PROJ. _____ SURF. ELEV. _____
 NO. **23-G-28078** DATE DRILLED **8/28/2023**

GROUND WATER OBSERVATION None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Proportions Used Trace Less than 5% Few 5 to 10% Little 15 to 25% Some 30 to 45% Mostly 50 to 100%	140 lb Wt. x 30" fall on 2" O.D. Sampler <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Cohesionless Density</th> <th style="text-align: left;">Cohesive Consistency</th> </tr> <tr> <td>0 - 10 Loose</td> <td>0 - 4 Soft</td> </tr> <tr> <td>10 - 30 Medium Dense</td> <td>4 - 8 Medium Stiff</td> </tr> <tr> <td>30 - 50 Dense</td> <td>8 - 15 Stiff</td> </tr> <tr> <td>50 + Very Dense</td> <td>15 - 30 Very Stiff</td> </tr> <tr> <td></td> <td>30 + Hard</td> </tr> </table>	Cohesionless Density	Cohesive Consistency	0 - 10 Loose	0 - 4 Soft	10 - 30 Medium Dense	4 - 8 Medium Stiff	30 - 50 Dense	8 - 15 Stiff	50 + Very Dense	15 - 30 Very Stiff		30 + Hard
Cohesionless Density	Cohesive Consistency													
0 - 10 Loose	0 - 4 Soft													
10 - 30 Medium Dense	4 - 8 Medium Stiff													
30 - 50 Dense	8 - 15 Stiff													
50 + Very Dense	15 - 30 Very Stiff													
	30 + Hard													

LOCATION OF BORING See Boring Location Plan

DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
			0-6	6-12	12-18				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	0.0-1.5	SS	3	5	6	Moist		Topsoil FILL: brown sandy lean clay	
	1.5-3.0	SS	4	3	3	Moist		wood noted in sample from 2.5' - 3'	
5	4.0-5.5	SS	2	2	3	Very Moist		intermixed wood	
	6.0-7.5	SS	5	2	2	Very Moist		very small amount of recovery; recovery only contained a few pieces of concrete	
	8.0-9.5	SS	5	7	9	Moist	8.0	Brown Sandy Lean Clay (CL) - glacial till - low to moderate plasticity, some f-c sand, few gravel	
10							9.5	BOTTOM OF BORING: 9.5'	
								After drilling and pushing auger spoils into the borehole, the borehole was about 0.3' deep.	

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-3A Split-Spoon Sample Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 1.5' – 3' (with wood from 2.5' – 3' shown)



Depth: 4' – 5.5'



Depth: 6' – 7.5'



Depth: 8' – 9.5'

TEST BORING LOG

PROJECT NAME Former YMCA Grounds - Mansfield, Ohio BORING NO. B-3B
 CLIENT Certified Environmental, Inc. PROJ. _____ SURF. ELEV. _____
 NO. 23-G-28078 DATE DRILLED 8/28/2023

GROUND WATER OBSERVATION						Proportions Used		140 lb Wt. x 30" fall on 2" O.D. Sampler					
None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS						Trace	Less than 5%	Cohesionless Density		Cohesive Consistency			
						Few	5 to 10%	0 - 10	Loose	0 - 4	Soft		
						Little	15 to 25%	10 - 30	Medium Dense	4 - 8	Medium Stiff		
						Some	30 to 45%	30 - 50	Dense	8 - 15	Stiff		
						Mostly	50 to 100%	50 +	Very Dense	15 - 30	Very Stiff		
										30 +	Hard		
LOCATION OF BORING						See Boring Location Plan							
DEPTH	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION					
			From 0-6	To 6-12	To 12-18			Remarks include color, type of soil, etc. Rock-color, type, condition, hardness					
	0.0-1.5	SS	6	4	4	Moist		X	Topsoil				
								X	FILL: brown sandy lean clay with trace brick and trace asphalt				
	1.5-3.0	SS	3	3	3	Moist		X					
								X					
	4.0-5.5	SS	10	14	3	Moist		X	intermixed rock fragments				
5								X					
	6.0-7.5	SS	1	1	1	Very Moist	6.0	/	Brown Lean Clay (CL) - moderate plasticity, few sand, mottled				
								/					
	8.0-9.5	SS	5	5	6	Moist	8.0	/	Brown Sandy Lean Clay (CL) - glacial till - low to moderate plasticity, some f-c sand, few gravel				
								/					
							9.5	/					
10								/	BOTTOM OF BORING: 9.5'				
								/	After drilling and pushing auger spoils into the borehole, the borehole was about 0.6' deep.				

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Boring B-3B Split-Spoon Sample Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 5.5'



Depth: 6' – 7.5'



Depth: 8' – 9.5'

Boring B-3C Split-Spoon Sample Photos



Depth: 0' – 1.5'



Depth: 1.5' – 3'



Depth: 4' – 5.5'



Auger spoils at refusal depth