



PRECISION
GEOTECHNICAL SOLUTIONS

EXCEEDING EXPECTATIONS

GEOTECHNICAL INVESTIGATION REPORT

FOR

**BURKESVILLE-CUMBERLAND INDUSTRIAL
DEVELOPMENT AUTHORITY**

CUMBERLAND RIVER INDUSTRIAL PARK

BURKESVILLE, KENTUCKY

MARCH 30, 2022



REPORT OF GEOTECHNICAL EXPLORATION
CUMBERLAND RIVER INDUSTRIAL PARK
BURKESVILLE, KENTUCKY

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REPORT OF GEOTECHNICAL EXPLORATION
CUMBERLAND RIVER INDUSTRIAL PARK
BURKESVILLE, KENTUCKY

I. INTRODUCTION & SCOPE OF SERVICES

As we proposed, we conducted a geotechnical exploration which is summarized in the following report. Our services included a review of the project information provided, conducting a subsurface exploration that utilized soil borings and/or test pit excavations to obtain samples for modeling the soil conditions at the subject site, an analysis of the data and information obtained and providing recommendations for the soil supports portions of the project.

II. PROVIDED INFORMATION

We understand that Burkesville-Cumberland Industrial Development Authority (BCIDA) is planning to develop a 93-acre parcel of land in Burkesville, Kentucky known as the Cumberland River Industrial Park. Site development is proposed and includes the construction of utilities, the construction of a new access roads, associated grading, and drainage, building pads, etc. We have been provided or assumed the following information:

- Minimum 10-year pavement life: both asphalt (light and heavy duty) and concrete pavement are considered as options.
- Roadways shall be designed for heavy (industrial) use.
- Proposed buildings may be between 25,000 SF to 300,000 SF.

If any of this information is incorrect, please let us know so we can reassess our scope of services needed and provide best fits recommendations for the project.

III. AREA/SITE INFORMATION

The site is located in the Mississippian Plateaus Physiographic Region of Kentucky. This area consists of a limestone plain characterized by thousands of sink holes, sinking streams, streamless valleys, springs, and caverns. This Karst terrain is dominated by a thick layer of Mississippian-age limestone. This limestone is soluble and can easily erode by water moving throughout the ground. Below is a figure of the location of the site with respect to the regional physiography. Published topographic mapping by the United States Geological Survey (USGS) indicates the elevations in the site vicinity is generally around 600 feet.

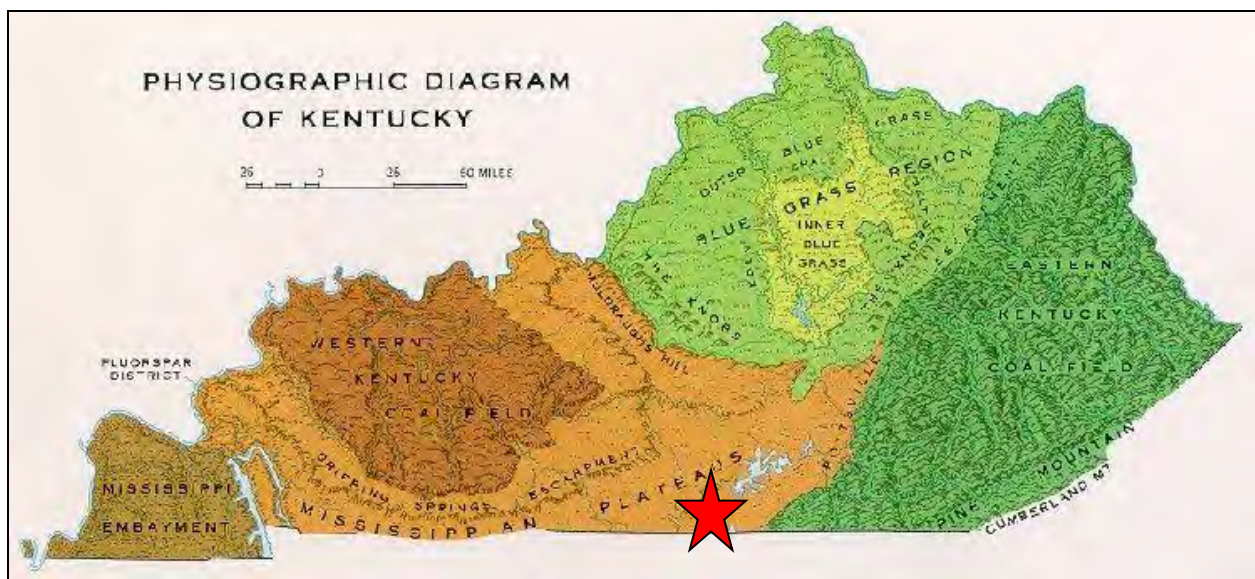


Figure 1: University of Kentucky - Physiographic Map of Kentucky

3A SITE GEOLOGY

The site is mapped in the western portion of the USGS Geologic Map of the Burkesville Quadrangle, Kentucky (dated 1963). The Quadrangle indicates the project site is located in an area underlain by the St. Louis Limestone of Mississippian deposits.

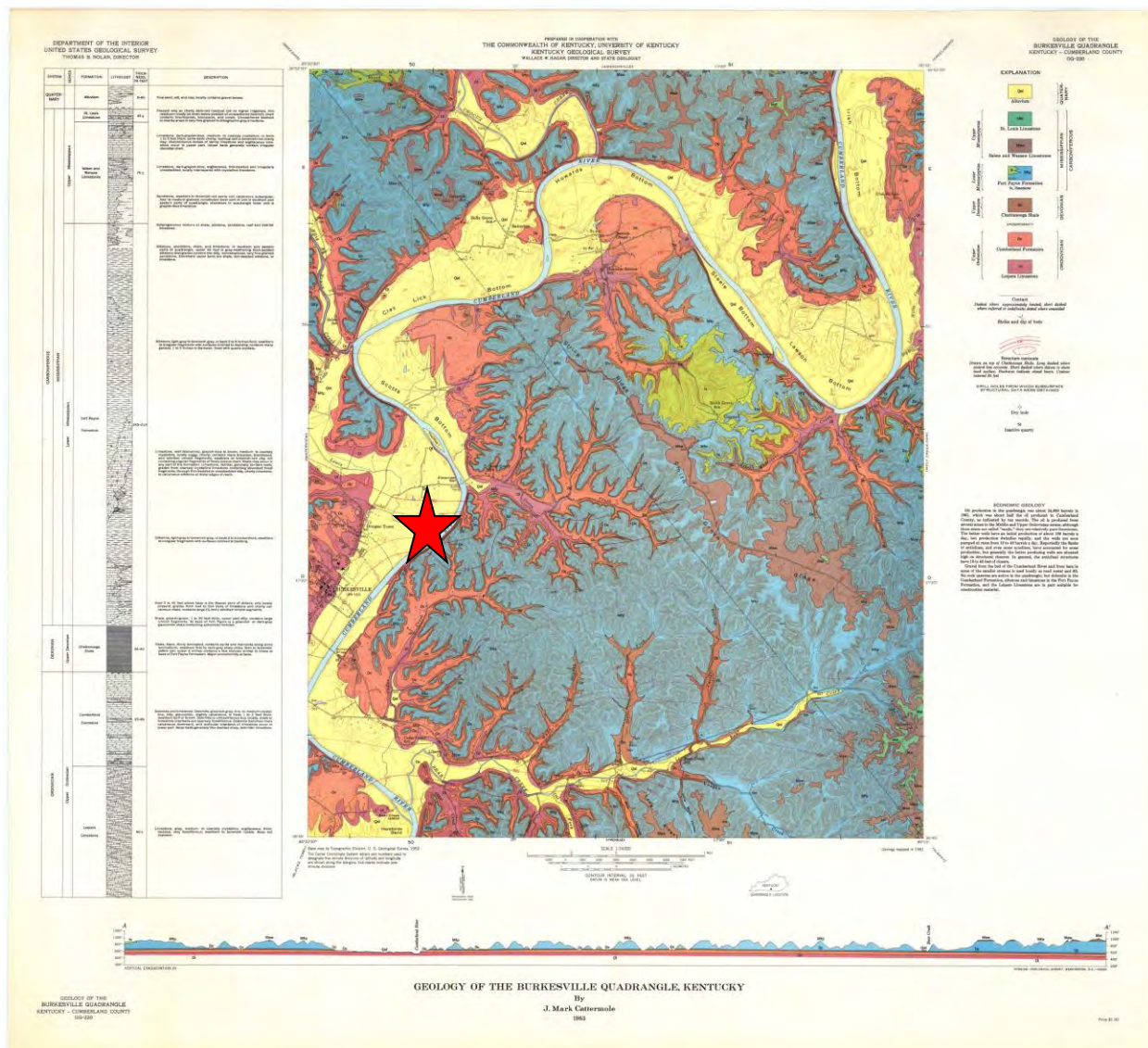


Figure 2: USGS Site Vicinity Map. A site located in the western portion of the Burkesville Quadrangle, Kentucky, 1963. Approximate site location indicated by red marker.

3B PUBLISHED SITE SOIL CONDITIONS

According to the USDA Soil Survey of Cumberland County (NRCS website), the soils underlying the project site consist of the soil series, Hu, Huntington Silt Loam, HoC2, Holston silt loam, NeD, Nelse fine sandy loam, MnC2, Monongahela silt loam, and Nk, Newark silt loam. Roughly 88% of the area included in the proposed development and has a Hydrologic Soil Group of 'B' and better, while the remaining 12% falls between Soil Group 'C' and 'D'. Soil Groups 'B' have a moderate infiltration rate when thoroughly wet, while Soil Group 'C' has a slow infiltration rate (equates to more runoff).

The following describes the soil series characteristics and limitations with respect to construction.

- The dominant soil has a Hydrologic Soil Group of B.
- Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained, or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

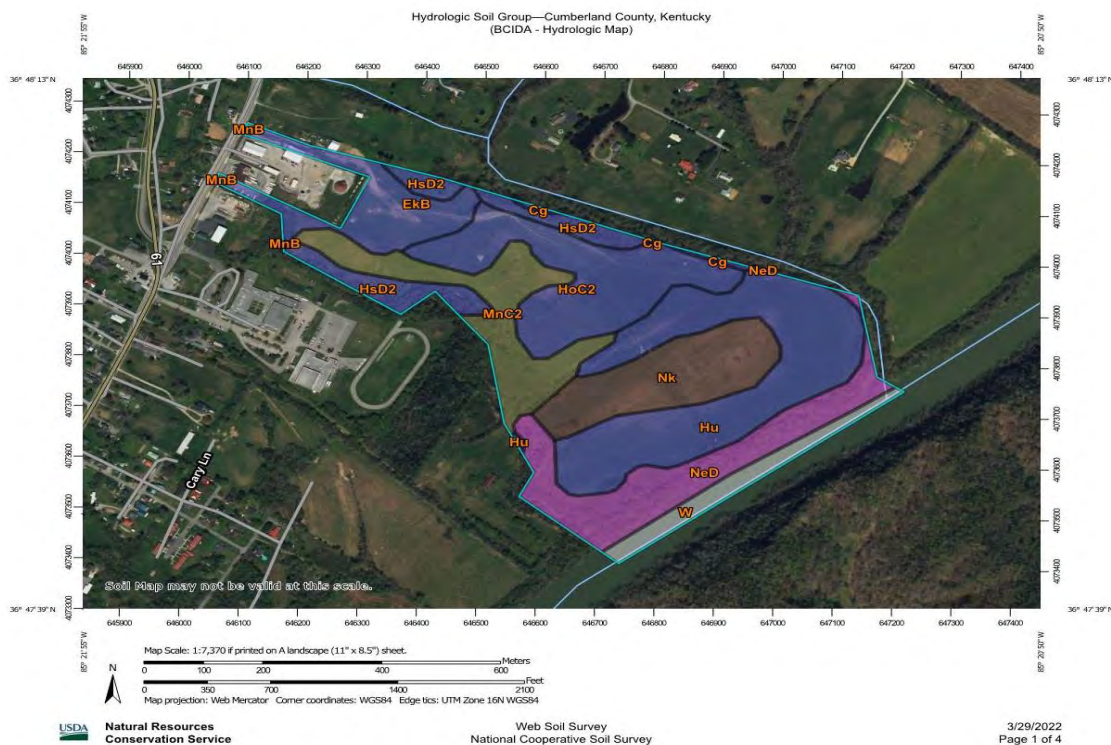


Figure 3: USDA Soil Survey Map of the Project Site.

IV. FIELD FINDINGS

4 SITE SURFACE OBSERVATIONS

A site reconnaissance and subsurface borings were conducted by Precision Engineering on March 24th and 25th, 2022. Precision personnel performed sixteen (16) soil borings, collected samples, and transported them back to Precision's laboratory in Tompkinsville, KY for analysis.

The Project site is located on the west side of Highway 61 (Main Street) in Burkesville, Kentucky.

The site ground cover consisted of well-maintained grassed areas with vegetated ground cover. The site is accessed by a paved driveway.

V. SURFACE CONDITIONS

By the soil collected during the onsite geotechnical investigation, the local material is a highly variable mixture of clay, silt, and sand. The site is located adjacent to the Cumberland River and is comprised on Alluvium deposits.

General Methodology used

The subsurface conditions encountered at each of our soil boring locations are shown on the Boring Logs in the Appendix. It should be noted that our soil borings were sampled according to the procedures presented in the appendix. The Boring logs represent our interpretations of the subsurface conditions based on field logs, visual examination of field samples by an engineer or trained technician, and tests of the samples collected. The letters in parentheses following the soil descriptions are the soil classifications in accordance with the Unified Soil Classification System. It should be noted that the stratification lines shown on the soil boring logs represent approximate transitions between material types. In-situ stratum changes could occur gradually or at slightly different depths. Water levels shown on the boring logs represent the conditions only at the time of our exploration.

5A SOIL CONDITIONS

We performed sixteen (16) soil borings across the proposed site area (see the Boring Location Map for locations).

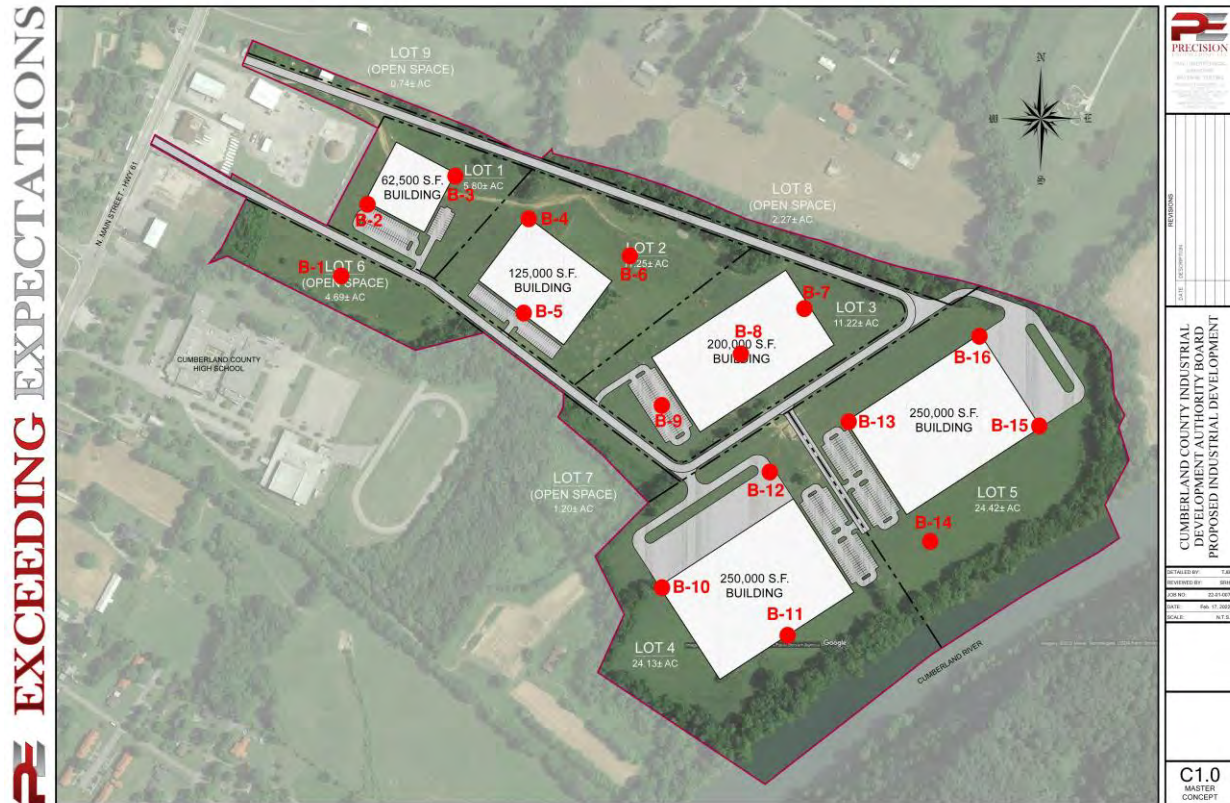


Figure: Boring Plan – Location of bores and test pit locations.

5B GROUNDWATER CONDITIONS

Groundwater was NOT observed in any of the borings. Typical water conditions on these sites are either very shallow ponding or in pockets just above isolated soil lenses.

In sites underlain by significant amounts of old fill, water conditions that usually affect construction and performance of project consist of trapped/perched water zones which occur in variable areas in the old fill mass. Perched water sources are often not linked to the more continuous relatively stable ground water table that typically occurs at greater depths. Site excavation activities or ground disturbance can expose these features and the resulting seepage can vary greatly.

VI LABORATORY TESTING

Laboratory testing was performed on selected soil samples from our borings. Detailed descriptions of our testing and the results of our testing are included in the Appendix. Test performed at the discretion of our field engineer included:

- Moisture content
- Atterberg limits
- California bearing capacity tests (including standard proctors)

GEOTECHNICAL DISCUSSION AND RECOMMENDATION

VII DISCUSSION-GEOTECHNICAL ISSUES

Based on our experience with similar projects and the conditions observed during our subsurface exploration, we believe the site can be adapted for the proposed development. The primary geotechnical concerns for this site project are:

- Soft Soil Conditions
- Expansive Soils
- Depth of Rock

The following section of this report discuss each issue. However, recommendations to address the issues are contained in later sections of the report.

7A Soft Soil Conditions

Soft soil was predominantly detected throughout the site. Most borings were terminated at a depth of 15' where fat clay was collected. Bore B-13 was taken to a deeper depth of 25'. (We attempted to bore B-5 to a depth of 25' but refusal was found at 12.5'). From this effort we determined that sand is encountered between 15' and 20' in depth. Development on any weak soil includes an inherent risk relative to an undisturbed site. The degree of risk is a function of the understanding of the subsurface conditions and the ability of the engineer to correctly model the site. The most significant concerns with this site are differential settlement and variable support of foundations and floor slabs. To remove all risk associated with the weak soil will

require undercutting all unsuitable soils and bringing the site up to the required finished subgrade elevation using compacted structural soil fill.

7B Expansive Soils

All of our borings indicate the presence of a lean clay. Clay is an expansive soil which means it expands when saturated and contracts when dry. This movement of the soil can create stresses on footings, slabs, etc. which generally lead to cracking or differential settlement. For this reason, all grades proposed throughout the site shall be sloped such that runoff flows away from all foundations. Soil remediation should be anticipated during construction for all areas beneath the proposed building additions and the proposed roadway.

7C Depth of Rock

We feel rock was never encountered during our exploration and is expected to be 50-60' below the existing grade of the site. This depth of rock likely creates an uneconomical approach to foundations which may be required to rest on rock. Other foundation design methods are recommended, such as piers, if such foundation methods are sought. We did meet refusal on bores B-3 and B-5 at depths of 6' and 12.5', respectively, but are confident this was an isolated hardpan (single rock) at each instance.





Figure 4: Boring activity on site; Cumberland River Industrial Park.

VIII CONSTRUCTION APPROACH OPTIONS

Because of the overlying material that exists on-site, some remediation approaches may be necessary to remediate risk with respect to settlement.

8A Shallow Inverted "T" Foundation.

This option includes the same minor undercutting depth (only as needed directly beneath the footing), and recompacting the spoils/gravel up to finished subgrade elevations. Over the recompacted building area, a cheaper option is to use either an inverted-T foundation system with a structural slab or a combination heavily reinforced, turned down footing and a structural slab.

IX EARTHWORK

Historically, more change orders occur during the earthwork portion of construction than in almost any other part of the project. Further, the site and preparation phase of construction always affects the future performance of project structures and pavements. Add into this, the fact that earthwork is the portion of work most influenced by wet weather and unknown conditions and timewise, this section of the report could be the most important to prevent and minimize delays and costs during construction and for the life of the project.

Please review the concerns listed in Section VII prior to reading the following recommendations. If problems occur that the recommendations do not address or do not adequately remedy, please contact Precision Engineering as soon as possible.

GENERAL EARTHWORK

If filling activities are needed, our laboratory tests indicate that the on-site soils are suitable for use as structural fill material provided the material is placed and compacted in accordance with the following guidelines and specifications.

After the subgrade has been approved to receive new fill, the fill may commence with the following procedures and guidelines recommended:

- Place fill in maximum 8-inch-thick loose lifts.
- Fill lifts should be compacted to at least 95 percent of the soil's maximum dry density and maintain the moisture content of compacted fill within minus 3 to optimum moisture content.
- Maximum particle size of the soil should be limited to 8 inches in any dimension with no large concentrations of large fragments.
- Density testing should be performed to verify percent compaction and moisture content of the material as it is being placed and compacted. Please note that because of the rocky nature of the soils, density testing may not be accurate. Thus, a Precision engineer should be on site to provide recommendations utilizing proof rolling.
- Observation of fill stability is also critical, so it is recommended to observe the operation of the filling equipment traversing over the new fill to document movement.
- Soils should not be over compacted and construction traffic should be kept to minimum to assure compaction is achieved and that the soil is not allowed to break down.
- Retain a representative of Precision to observe and document fill placement and compaction operations.

9A GENERAL NOTES

- If any placement problems occur, Precision should be retained to provide additional recommendations, as needed.

X SITE DRAINAGE

During construction, water must not be allowed to pond in excavations or undercutting will likely be required. During the life of the project, slope the subgrade and other site features so that the surface water flows away from the site structures.

Diversion ditches should be used to keep surface water from accumulating at or near site structures. Drainage from pavement areas must be diverted into storm sewers and not be allowed to sheet flow to adjacent pavement edges. Note that poor site drainage could contribute to significant damage to the building and pavement by inducing settlement. Proper site drainage is essential to protect the project elements.

Wet conditions are possible in excavations during on-site construction. Daylighting wet zones for drainage for the use of French/rock drains may be prudent or cost-effective methods of de-watering wet areas of the site. Pumping with long-flexible hoses day-lighted hundreds of feet away or other types of pumping could also be utilized if necessary. Precision should be retained to observe all excavations in locations of springs or other water-bearing features.

XI FOUNDATIONS

Based on the possible construction scenarios, we feel there are a couple of construction methods suitable and economical for this project.

11A INVERTED “T” FOUNDATION

The use of inverted-T foundations and floating reinforced floor slabs is likely the best method of construction for this particular site. The inverted-T slab foundation consists of a reinforced concrete foundation and reinforced concrete stem wall. This foundation system provides more flexural strength when compared to a conventional concrete foundation system. This additional flexural strength can help lessen your risk of differential settlement along the foundations.

Note: the use of floating floor slabs enables the floor slabs not to be tied to the foundations. An inverted “T” foundation or turned down foundation may be sized using a maximum allowable bearing pressure of 1,500 pounds per square foot.

Additional design considerations for project foundations are outlined as follows:

- The use of turned down slabs or thickened slab sections to support load bearing walls is discouraged. If a differential settlement occurs, cracking could occur in the transition area.
- All exterior footing bottoms should bear at least 30 inches below finished exterior.
- Grading (KBC Table 1805.2.1 for Perry County).
- Interior footings (those not exposed to freezing) may be placed at nominal depths or 12 inches deep, whichever is deeper.
- Include control joints at suitable intervals to help accommodate differential foundation movements.

XII SEISMIC SITE CLASSIFICATION

The latest edition of the Kentucky Building Code was reviewed to determine the site seismic classification. Based on our review of the geologic data, our experience and subsurface conditions encountered, we recommend a seismic **SITE CLASS "D"** for design purposes.

A detailed geotechnical earthquake engineering analysis was not performed since it was beyond the scope of our authorized work. However, based on a review of published literature and our experience with similar subsurface conditions, we believe the potential for slope instability, liquefaction, and surface rupture due to faulting or lateral spreading resulting from earthquake motions is low. However, this potential could be elevated during wet periods of the year unless adequate drainage is provided.

XIII CONCRETE SLAB-ON-GRADE

Free Floating Reinforced Floor Slab – For any of the foundation options described above (excluding waffle slab foundations), free floating floor slabs should be considered. The floor slab should be independent of the foundations to allow for the movement between the foundations and the floor slab. At least 6 inches (compacted thickness) of stone should be used for slab stone base. The slab should be reinforced to resist bending in lieu of simply using welded wire mesh.

Other measures to reduce the risk of differential settlement and its effects on the floor slab include:

- The use of Geogrid TX-5 beneath the base stone;
- Thicker base stone beneath the floor slab;
- Thicker than normal concrete floor slab;
- Higher flexural strength concrete for the floor slab;

XIV BELOW GRADE WALL/STRUCTURES

Some pits or loading docks may be planned as part of this project. The most prevalent issues regarding these features deal with shallow water/wet conditions at or near the excavation depths. If retaining walls or other below grade structures are utilized on-site, they will be

subjected to lateral earth pressures due to the backfill behind them. Below-grade walls should be designed to provide sufficient drainage at the rear of the walls to relieve hydrostatic pressure. Below-grade structures will likely require additional dewatering measures as well as larger than normal cutbacks on the excavation and construction.

Also, since these below grade walls will obviously require suitable foundation bearing support, adequate consideration of loading and settlement tolerances should be made by the design team and Precision should be provided with in depth details of the locations of pits and foundation criteria of each location.

XV PAVEMENT RECOMMENDATIONS

We understand the proposed facility could have moderate traffic loading for its operational use. Adequate soil/subgrade support is critical for any pavement area. Please refer to the recommendations contained in the earthwork section of this report for the subgrade preparation. Prior to stone base placement, we recommended an additional heavy proof roll of the subgrade should be performed to verify subgrade conditions. Recommendations for undercutting/repair of the subgrade can be made at that time by a Precision geotechnical engineer.

Adequate drainage and slope of the pavement subgrade and pavement section should be provided to promote adequate drainage. Edges of the pavement should be provided a means of water outlet by extending the aggregate base course through to side ditches or providing drainpipes and weep holes at catch basin walls.

The following pavement recommendations are based on our experience with similar materials and loading conditions. The recommendations assume that the soil subgrade will be compacted according to the recommendations contained in this report.

15A ASPHALT PAVEMENT

We performed two California Bearing Ratio tests and measured values 6.6 and 6.8 percent. Thus, a value of 6 percent was used for this analysis. We recommend that the light duty pavement section be utilized in all new areas of pavement restricted mostly to employee parking stalls and that heavy duty pavement section be used in all other areas.

Thus, generalized pavement designs for both NEW light-duty, NEW heavy-duty, and existing roadway pavement are given below based on laboratory determined soil classifications and CBR tests.

Please note that DGA shall be placed in maximum lifts of 6 inches then compacted for any new pavement areas.

(NEW) Light-Duty Asphalt Pavement Section	
Pavement Section	Thickness (in inches)
Asphalt Surface Course	1.5
Asphalt Binder Course	2.5
Dense-Graded Aggregate (DGA)	8.0

(NEW) Heavy-Duty Asphalt Pavement Section	
Pavement Section	Thickness (in inches)
Asphalt Surface Course	1.5
Asphalt Binder Course	3.5
Dense-Graded Aggregate (DGA)	10.0

The dense graded aggregate should be placed and compacted in accordance with Kentucky department of highways standard specifications, latest edition. The asphalt should be mixed, placed, and compacted in accordance with Kentucky department of highways standard specifications, latest edition. It is common practice to place the base stone and binder course prior to completion of construction without placing the surface course. It should be noted that repeated passes of heavily loaded construction traffic on the binder course will likely decrease the service life on your pavement.

15B RIGID PAVEMENT (CONCRETE)

Reinforced concrete pavement is proposed to be used in areas where the pavement is subjected to high stresses such as entrances/exits, dumpster pads, and other areas of the project site.

We recommend a minimum DGA thickness of 6 inches beneath new concrete pavement and a minimum concrete thickness of 6 inches for new concrete pavement areas. We recommend a compressive strength of 4,000 PSI concrete be used. If this assumed compressive strength concrete is not used for this project, Precision should be contacted, and new rigid pavement recommendations may be necessary. Obviously, thicker concrete pavement sections can be used in select areas where heavy wheel loads are expected. For dumpster pads and reuse container pads, the concrete pads should be large enough to accommodate both the refuse container and all axles of the truck.

XVI RECOMMENDATIONS

We recommend that this report be provided to the various design team members, the contractors, and the project owner. Potential contractors should be informed of this report in the instruction to bidders' sections of the bid documents. A geotechnical exploration, such as the one we performed, uses widely spaced borings to attempt to model the subsurface conditions at the site. Because no exploration contains complete data or a complete model, there is always a possibility that conditions between borings will be different from those at specific boring locations. Thus, it is possible that some subsurface conditions will not be anticipated by the project team or contractor. If this report is included or referenced in the actual contract documents, it shall be explicitly understood that this report is for informational purposes only. Precision shall not be responsible for the opinions of, or conclusions drawn by, others.

It has been our experience that the construction process often disturbs soil conditions and this process, no matter how much experience we use to anticipate construction methodology, is not completely predictable. Therefore, changes or modifications to our recommendations are likely needed due to these possible variances. Experienced Precision geotechnical personnel should be used unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend that the owner retain Precision to provide this service based upon our familiarity with the project, the subsurface conditions, and the intent of our recommendations.

This report is based on the provided project information, the subsurface conditions observed at the time of the report, and our experience with similar conditions. As such, it cannot be applied to other project sites, types, or combinations thereof. If the project information section in this

report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. Our recommendations may then require modification. No section or portion of the report (including Appendix information) can be used as a stand-alone article to make distinct changes or assumptions. The entire report and Appendix should be used together as one resource.

We wish to remind you that our exploration services include storing the soil and/or rock core samples collected and making them available for inspection for 30 days. The soil and rock core samples are then discarded unless you request otherwise. Rock cores are kept typically until the foundation installation is complete, and then discarded. Please inform us if you wish to keep any of the obtained samples.



APPENDIX

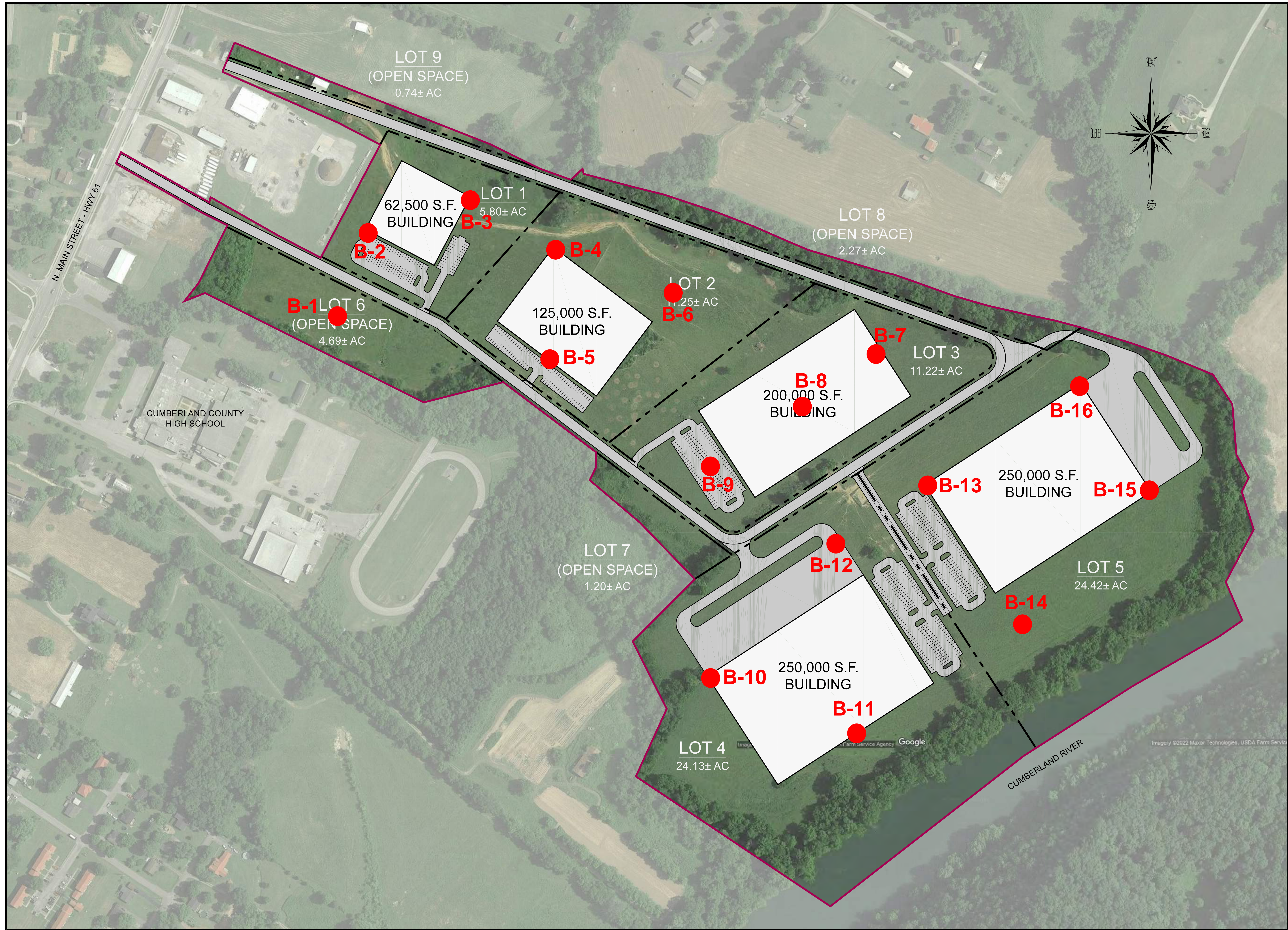
Boring Location Map Soil Boring Logs

APPENDIX 'A'

Boring Location Map



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DATE	DESCRIPTION

**CUMBERLAND COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY BOARD
 PROPOSED INDUSTRIAL DEVELOPMENT**

DETAILED BY:	TJB
REVIEWED BY:	SRH
JOB NO:	22-01-007
DATE:	Feb. 17, 2022
SCALE:	N.T.S.







Imagery ©2022 Maxar Technologies, USDA Farm Service Agency, Google

APPENDIX 'B'

Soil Boring Logs



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Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-1				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/25/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/25/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/25/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 571.26		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
					Topsoil (3 inches)					
		1	3 4 5		SW - Well graded sands, gravelly sand. Minimal fines.				22.0	
		2	3 5 7		SW - Well graded sands, gravelly sand. Minimal fines.			24	21.8	
5		3	3 5 10		SW - Well graded sands, gravelly sand. Minimal fines.				25.9	
		4	5 6 8		SW - Well graded sands, gravelly sand. Minimal fines.				21.6	
10										



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Boring Log: Sheet 1 of 2



Standard Penetration Slit Spoon Sampler (SPT)



California Sampler



Shelby Tube



CPP Sampler



Bulk/ Bag Sample



Stablized Ground water



Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No.: B-1
Address: Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 571.26
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 4 5		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		24.0	
					SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'			




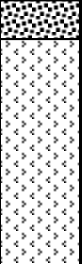



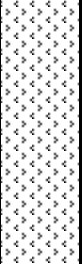


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Boring Log: Sheet 2 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-2
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 587.34
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	3 3 4		SW - Well graded sands, gravelly sand. Minimal fines.		20.6	
5		2	5 5 9		SW - Well graded sands, gravelly sand. Minimal fines.	21	27.8	
		3	7 8 9		SW - Well graded sands, gravelly sand. Minimal fines.		26.4	
10		4	6 6 9		SW - Well graded sands, gravelly sand. Minimal fines.		19.7	




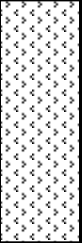

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Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample








-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-2
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 587.34
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	7 12 12		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions. SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'		19.6	
20								



Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample
-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No.: B-3
Address: Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 599.57
		Total Depth of Boring: 6.5'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
	Standard Penetration Slit Spoon Sampler (SPT)	1	2 1 3		SW - Well graded sands, gravelly sand. Minimal fines.		24.2	
	Standard Penetration Slit Spoon Sampler (SPT)	2	3 3 4		SW - Well graded sands, gravelly sand. Minimal fines.	23	21.0	
5	Standard Penetration Slit Spoon Sampler (SPT)	3	4 6 50/4		SW - Well graded sands, gravelly sand. Minimal fines.		22.4	
					Refusal @ 6.5'			
10								



PRECISION
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Boring Log: Sheet 1 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No.: B-4
Address: Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 583.47
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	2 2 2		SW - Well graded sands, gravelly sand. Minimal fines.		21.0	
5		2	5 5 7		SW - Well graded sands, gravelly sand. Minimal fines.	24	20.7	
		3	6 8 10		SW - Well graded sands, gravelly sand. Minimal fines.		19.5	
10		4	4 5 6		SW - Well graded sands, gravelly sand. Minimal fines.		19.2	



PRECISION
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Boring Log: Sheet 1 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-4
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 583.47
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	3 4 5		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		21.7	
					Boring Terminated @ 15.0'			



PRECISION
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Boring Log: Sheet 2 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-5
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 563.97
		Total Depth of Boring: 12.5'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	2 3 4		SW - Well graded sands, gravelly sand. Minimal fines.		21.3	
5		2	8 8 9		SW - Well graded sands, gravelly sand. Minimal fines.	22	18.3	
		3	5 7 8		SW - Well graded sands, gravelly sand. Minimal fines.		17.1	
10		4	3 2 3		SW - Well graded sands, gravelly sand. Minimal fines.		19.2	
					Refusal @ 12.5'			



PRECISION
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Boring Log: Sheet 1 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-6				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/25/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/25/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/25/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 576.31		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
					Topsoil (3 inches)					
	▲	1	2 2 3		SW - Well graded sands, gravelly sand. Minimal fines.				22.5	
5	▲	2	4 7 8		SW - Well graded sands, gravelly sand. Minimal fines.			22	23.2	
	▲	3	5 8 10		SW - Well graded sands, gravelly sand. Minimal fines.				23.6	
10	▲	4	7 9 12		SW - Well graded sands, gravelly sand. Minimal fines.				24.6	




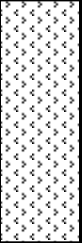

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Boring Log: Sheet 1 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-6
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 576.31
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	6 7 9		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		22.2	
					SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'			




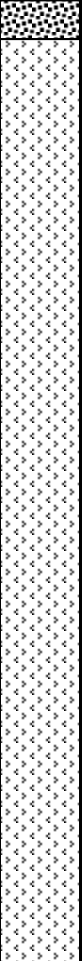



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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample






-  Stablized Ground water
-  Groundwater At time of Drilling



Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No.: B-7
Address: Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 578.40
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	3 4 5		SW - Well graded sands, gravelly sand. Minimal fines.		20.4	
5		2	5 5 7		SW - Well graded sands, gravelly sand. Minimal fines.	25	23.3	
		3	3 6 8		SW - Well graded sands, gravelly sand. Minimal fines.		23.9	
10		4	5 6 7		SW - Well graded sands, gravelly sand. Minimal fines.		20.3	


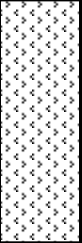



Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No.: B-7
Address: Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 578.40
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 5 6		<p>Lithology</p> <p><u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors</p> <p><u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.</p> <p>SW - Well graded sands, gravelly sand. Minimal fines.</p>		21.2	
20					Boring Terminated @ 15.0'			



PRECISION
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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-8				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/25/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/25/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/25/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 581.69		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
					Topsoil (3 inches)					
	▲	1	3 3 4		SW - Well graded sands, gravelly sand. Minimal fines.				20.2	
5	▲	2	4 5 7		SW - Well graded sands, gravelly sand. Minimal fines.			23	20.8	
	▲	3	7 9 12		SW - Well graded sands, gravelly sand. Minimal fines.				21.1	
10	▲	4	7 10 14		SW - Well graded sands, gravelly sand. Minimal fines.				21.4	




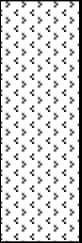

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Boring Log: Sheet 1 of 2

- ▲ Standard Penetration Slit Spoon Sampler (SPT)
- ▲ California Sampler
- ▨ Shelby Tube
- ▨ CPP Sampler
- ⊠ Bulk/ Bag Sample

- ▽ Stabilized Ground water
- ▽ Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-8
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/25/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/25/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/25/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 581.69
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	7 7 11		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions. SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'		17.3	
20								



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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample






-  Stablized Ground water
-  Groundwater At time of Drilling



Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-9				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/25/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/25/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/25/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 577.44		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
					Topsoil (3 inches)					
		1	2 3 3		SW - Well graded sands, gravelly sand. Minimal fines.				20.5	
5		2	5 5 6		SW - Well graded sands, gravelly sand. Minimal fines.			22	21.7	
		3	6 6 7		SW - Well graded sands, gravelly sand. Minimal fines.				23.9	
10		4	8 8 13		SW - Well graded sands, gravelly sand. Minimal fines.				20.0	





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Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample






-  Stablized Ground water
-  Groundwater At time of Drilling



Project: BCIDA				Project Number: 22-01-007		Client: BCIDA		Boring No. B-9		
Address Burkesville, KY						Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610		
Logged By: Steve Harris, PE				Date	Started: 3/25/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches	
Drill Crew: Crew #1					Completed: 3/25/2022		Hammer Type:			
USA Ticket Number: N/A					Backfilled: 3/25/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches	
				Groundwater Depth: N/A		Elevation: 577.44		Total Depth of Boring: 15'		
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					<u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
15		5	5 5 8		SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'				20.2	



PRECISION
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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample






-  Stablized Ground water
-  Groundwater At time of Drilling



Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-10				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/24/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/24/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/24/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 559.05		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
					Topsoil (3 inches)					
	▲	1	2 3 3		SW - Well graded sands, gravelly sand. Minimal fines.				29.8	
5	▲	2	3 3 4		SW - Well graded sands, gravelly sand. Minimal fines.			26	26.5	
	▲	3	3 3 3		SW - Well graded sands, gravelly sand. Minimal fines.				28.6	
10	▲	4	4 5 7		SW - Well graded sands, gravelly sand. Minimal fines.				25.5	



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Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-10
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 559.05
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 4 4		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		20.6	
					SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'			




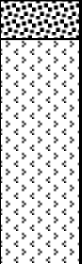



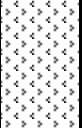


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Boring Log: Sheet 2 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-11
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 565.09
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	2 2 3		SW - Well graded sands, gravelly sand. Minimal fines.		25.3	
		2	3 3 3		SW - Well graded sands, gravelly sand. Minimal fines.	23	24.3	
5								
		3	2 3 4		SW - Well graded sands, gravelly sand. Minimal fines.		24.4	
		4	3 2 4		SW - Well graded sands, gravelly sand. Minimal fines.		23.2	
10								




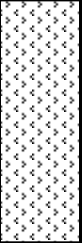
PRECISION
ENGINEERING, LLC

Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-11
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 565.09
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 4 6		<p>Lithology</p> <p><u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors</p> <p><u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.</p> <p>SW - Well graded sands, gravelly sand. Minimal fines.</p> <p>Boring Terminated @ 15.0'</p>		23.5	



PRECISION
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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample






-  Stablized Ground water
-  Groundwater At time of Drilling



Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-12				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/24/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/24/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/24/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 564.33		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
				Topsoil (3 inches)						
	▲	1	2 3 4		SW - Well graded sands, gravelly sand. Minimal fines.		26.6			
5	▲	2	3 4 5		SW - Well graded sands, gravelly sand. Minimal fines.	26	22.5			
	▲	3	3 5 9		SW - Well graded sands, gravelly sand. Minimal fines.		20.6			
10	▲	4	4 7 9		SW - Well graded sands, gravelly sand. Minimal fines.		20.8			



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Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-12
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 564.33
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 4 4		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		22.2	
					SW - Well graded sands, gravelly sand. Minimal fines. Boring Terminated @ 15.0'			



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Boring Log: Sheet 2 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-13
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 562.02
		Total Depth of Boring: 25'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	2 2 2		SW - Well graded sands, gravelly sand. Minimal fines.		25.4	
5		2	3 3 4		SW - Well graded sands, gravelly sand. Minimal fines.	26	26.2	
		3	2 2 3		SW - Well graded sands, gravelly sand. Minimal fines.		24.6	
10		4	5 7 8		SW - Well graded sands, gravelly sand. Minimal fines.		15.2	



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Boring Log: Sheet 1 of 3

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-13
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 562.02
		Total Depth of Boring: 25'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 5 6		SW - Well graded sands, gravelly sand. Minimal fines.		17.3	
20		6	4 3 4		SP - Poorly Graded Sand, gravelly sands.		20.2	





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Boring Log: Sheet 2 of 3

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample






- Stablized Ground water
- Groundwater At time of Drilling



Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No. B-13				
Address Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/24/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/24/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/24/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 562.02		Total Depth of Boring: 25'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
25		7	5 6 8		SP - Poorly Graded Sand, gravelly sands. Boring Terminated @ 25.0'				20.1	



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Boring Log: Sheet 3 of 3

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-14
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 565.76
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	3 4 6		SW - Well graded sands, gravelly sand. Minimal fines.		25.3	
5		2	4 4 5		SW - Well graded sands, gravelly sand. Minimal fines.	24	23.7	
		3	3 3 5		SW - Well graded sands, gravelly sand. Minimal fines.		25.0	
10		4	4 4 5		SW - Well graded sands, gravelly sand. Minimal fines.		25.6	




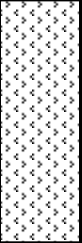

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Boring Log: Sheet 1 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-14
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 565.76
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 5 7		<p>Lithology</p> <p><u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors</p> <p><u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.</p> <p>SW - Well graded sands, gravelly sand. Minimal fines.</p> <p>Boring Terminated @ 15.0'</p>		26.1	
20								




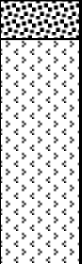



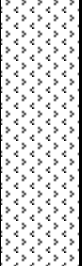

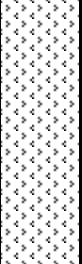
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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No.: B-15
Address: Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 565.96
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
					Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.			
					Topsoil (3 inches)			
		1	3 4 6		SW - Well graded sands, gravelly sand. Minimal fines.		26.5	
5		2	4 5 6		SW - Well graded sands, gravelly sand. Minimal fines.	24	25.2	
		3	3 4 6		SW - Well graded sands, gravelly sand. Minimal fines.		26.2	
10		4	5 5 7		SW - Well graded sands, gravelly sand. Minimal fines.		23.5	




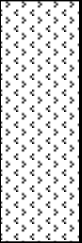

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Boring Log: Sheet 1 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling






Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-15
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 565.96
		Total Depth of Boring: 15'	



Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	4 4 6		<p>Lithology</p> <p><u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors</p> <p><u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.</p> <p>SW - Well graded sands, gravelly sand. Minimal fines.</p> <p>Boring Terminated @ 15.0'</p>		24.1	
20								



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Boring Log: Sheet 2 of 2

-  Standard Penetration Slit Spoon Sampler (SPT)
-  California Sampler
-  Shelby Tube
-  CPP Sampler
-  Bulk/ Bag Sample

-  Stablized Ground water
-  Groundwater At time of Drilling

Project: BCIDA		Project Number: 22-01-007		Client: BCIDA		Boring No.: B-16				
Address: Burkesville, KY				Drilling Contractor: M&W Drilling		Drill Rig Type: Geoprobe 6610				
Logged By: Steve Harris, PE		Date	Started: 3/24/2022		Bit Type: Hollow Stem Auger		Diameter: 2 inches			
Drill Crew: Crew #1			Completed: 3/24/2022		Hammer Type:					
USA Ticket Number: N/A			Backfilled: 3/24/2022		Hammer Weight: 140 lbs		Hammer Drop: 30 inches			
			Groundwater Depth: N/A		Elevation: 564.22		Total Depth of Boring: 15'			
Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology			Plasticity Index	Moisture Content (%)	Additional Test
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.					
					Topsoil (3 inches)					
	▲	1	4 3 4		SW - Well graded sands, gravelly sand. Minimal fines.				25.2	
5	▲	2	4 4 4		SW - Well graded sands, gravelly sand. Minimal fines.			21	25.2	
	▲	3	3 4 5		SW - Well graded sands, gravelly sand. Minimal fines.				24.9	
10	▲	4	3 4 5		SW - Well graded sands, gravelly sand. Minimal fines.				23.9	



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Boring Log: Sheet 1 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling

Project: BCIDA	Project Number: 22-01-007	Client: BCIDA	Boring No. B-16
Address Burkesville, KY		Drilling Contractor: M&W Drilling	Drill Rig Type: Geoprobe 6610
Logged By: Steve Harris, PE	Date	Started: 3/24/2022	Bit Type: Hollow Stem Auger
Drill Crew: Crew #1		Completed: 3/24/2022	Hammer Type:
USA Ticket Number: N/A		Backfilled: 3/24/2022	Hammer Weight: 140 lbs
		Groundwater Depth: N/A	Elevation: 564.22
		Total Depth of Boring: 15'	

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology	Plasticity Index	Moisture Content (%)	Additional Test
15		5	5		Lithology <u>Soil Group Name:</u> modifier, color, moisture, density/consistency, grain size, other descriptors <u>Rock Description:</u> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		18.6	
			5					
			6					
					Boring Terminated @ 15.0'			



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Boring Log: Sheet 2 of 2

- Standard Penetration Slit Spoon Sampler (SPT)
- California Sampler
- Shelby Tube
- CPP Sampler
- Bulk/ Bag Sample

- Stablized Ground water
- Groundwater At time of Drilling



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