Underwood Farm Road Development

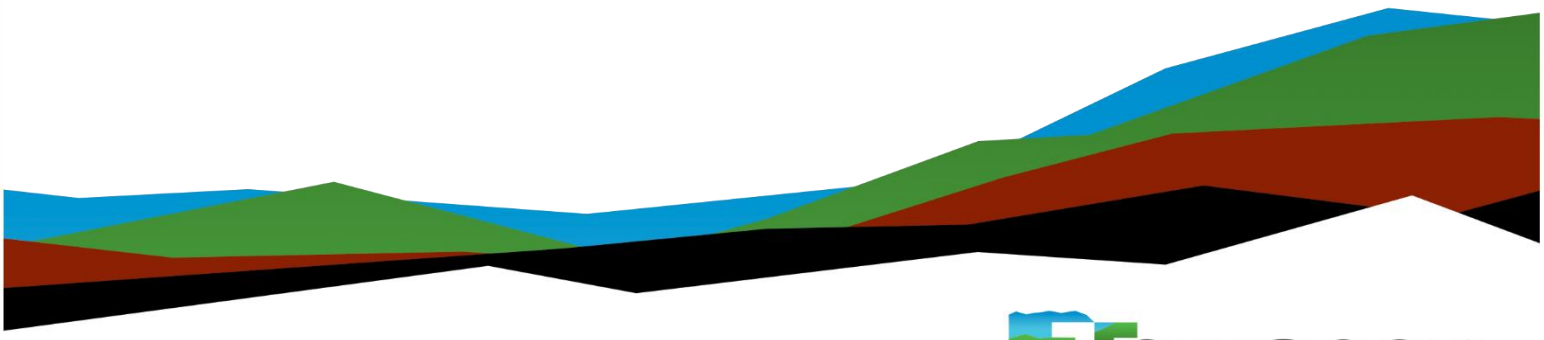
Preliminary Geotechnical Engineering Report

Cleveland, Georgia

August 6, 2025 | Terracon Project No. 49255017

Prepared for:

Grace of Georgia Developments LLC
78 Lindbergh Drive
Atlanta, GA 30305



Terracon
Explore with us

Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

2105 Newpoint Place, Suite 600
Lawrenceville, GA 30043
P (770) 623-0755
Terracon.com

August 6, 2025

Grace of Georgia Developments LLC
78 Lindbergh Drive
Atlanta, GA 30305

Attn: Grace of Georgia Developments LLC
P: 302-573-0268
E: devynnglanz@dlbp.us

Re: Preliminary Geotechnical Engineering Report
Underwood Farm Road Development
475 Underwood Farm Road
Cleveland, Georgia
Terracon Project No. 49255017

Dear Ms. Glanz:

We have completed the scope of Preliminary Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. P49255017 dated January 24, 2025, an authorized on June 20, 2025. This report presents the findings of the subsurface exploration and provides preliminary geotechnical recommendations concerning earthwork and the design and construction of foundations and floor slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Maggie Burdell, G.I.T.
Staff Geologist

William J. Sheffield, P.E.
Principal | Geotechnical Manager

Table of Contents

Attachments

Note: This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you back to this page. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

Introduction

This report presents the results of our subsurface exploration and Preliminary Geotechnical Engineering services performed for the proposed hotel, assisted living facility, and medical office building to be located at 475 Underwood Farm Road in Cleveland, Georgia. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Preliminary site preparation and earthwork
- Preliminary foundation design
- Preliminary floor slab design
- Preliminary pavement design

The geotechnical engineering Scope of Services for this project included the advancement of a limited number of test borings, engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown on the **Site Location** and **Exploration Plan**, respectively.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	An email request for proposal was provided by Devynn Glanz on January 14, 2025. An additional preliminary site plan was provided by Dominic Lawson on June 20, 2025 The following files were provided: ■ 2025-01-13 boring locations.pdf ■ 2025-06-20 prelim siteplan.pdf
Project Description	The project includes construction of a multi-use development on a 27.19 acre site.

Item	Description
Proposed Structure	Structures associated with the project include an assisted living facility, a medical office building, a hotel, two detention ponds, retaining walls, and associated paved roads.
Building Construction	Not provided; we anticipate that the structures will be constructed using structural steel or cast-in-place concrete with a concrete slab-on-grade.
Finished Floor Elevation	The finished floor elevations are anticipated to be about 1550 feet for assisted living facility pad, about 1560 for the medical office building pad, and about 1505 for the hotel pad based on the plans provided.
Maximum Loads (assumed)	Anticipated structural loads were not provided. In the absence of information provided by the design team, we will use the following loads in estimating settlement based on our experience with similar projects. ▪ Columns: 250 to 500 kips ▪ Walls: 4 to 6 kips per linear foot (klf) ▪ Slabs: 150 pounds per square foot (psf)
Grading/Slopes	Proposed finished grade elevations for the building pads are expected to be at about 1550, 1560, and 1505 feet as noted above based on the provided plans. Approximately 8 feet of cut and 44 feet of fill will be required to develop final grade for the assisted living facility pad, 30 feet of cut and fill for the medical office building pad, and 27 feet of cut and 7 feet of fill for the hotel pad, excluding remedial grading requirements.
Below-Grade Structures	Basements are not proposed.
Free-Standing Retaining Walls	Currently 1 retaining wall is proposed around the hotel pad and 2 retaining walls are proposed near the planned detention ponds.
Pavements	Paved driveway entrance roads and a roundabout are proposed. A preferred pavement surfacing has not been identified to us as part of the preliminary information. Asphalt surfacing is common in the area for projects of this nature and is the assumed preference.
Building Code	2018 IBC.

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at 475 Underwood Farm Road in Cleveland, Georgia. The site is 27.19 acres in size. Latitude/Longitude (approximate): 34.57560° N / 83.75707° W See **Site Location**
Existing Improvements	There is a house and barn in the southeastern portion of the site.
Current Ground Cover	The site is forested.
Existing Topography	Elevations range from 1460 feet to 1590 feet with a total relief of approximately 130 feet.

Geotechnical Characterization

Site Geology

The project site is located in the Piedmont Physiographic Province of Georgia which is characterized by medium to high grade metamorphic rocks and scattered igneous intrusions. The term metamorphic describes rocks that have been subjected to high temperatures and/or pressures, usually deep within the earth's crust. These high temperatures and pressures cause the textural and mineralogical characteristics of the original rock to be altered and can also cause certain rock types to fully melt, becoming what is known as magma. Magma is less dense than the surrounding solidified rock and tends to move upward through fractures and joints, displacing the surrounding rock. This rock type is known as an igneous intrusion. Metamorphic rocks are predominant in this region but, due to erosion and uplift, both of these rocks will eventually become exposed at the land surface.

The subsurface bedrock in this region has undergone differing rates of weathering, which often produces a considerable variation in depth to competent rock over short horizontal distances. It is also not unusual for lenses and boulders of hard rock and zones of partially weathered rock to be present within the soil mantle above the general bedrock level. The typical residual soil profile consists of clayey soils near the surface, where soil weathering is more advanced, underlain by sandy silts and silty sands, which often consist of saprolites (native soils which maintain the original fabric of the parent rock). Generally, the soil becomes harder with depth to the top of parent crystalline rock or "massive bedrock" which occurs at depth.

The boundary between soil and rock is typically not sharply defined. A transitional zone termed "partially weathered rock" is normally found overlying bedrock. Partially weathered rock (PWR) is defined for engineering purposes as residual material with a standard penetration resistance exceeding 100 blows per foot (bpf).

According to the USGS bedrock geology map, the site is underlain by biotitic gneiss, mica schist, amphibolite, and granitic gneiss.

Typical Subsurface Profile

The borings drilled at the site generally encountered residual soils, partially weathered rock (PWR), and auger refusal materials. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Typical Subsurface Profile

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Stratum 1	2 to 4 inches	**Topsoil**	--
Stratum 2	3 to 43 feet	**Residuum** Sandy Silt Silty Sand	Stiff to Very Stiff Loose to Very Dense
Stratum 3[1]	5 to 31 feet	**PWR** Silty Sand	Very Dense
Stratum 4[2]	5 to 43 feet	**Auger Refusal Materials**	--

1. **Not encountered in B-7**
2. **Encountered in all borings**

Specific conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in situ, the transition between materials may be gradual. Details for each of the borings are presented on the boring logs included in the **Exploration Results**.

Groundwater

The boreholes were observed while drilling and after completion for the presence and level of groundwater. Groundwater was not observed in the borings while drilling, or for the short duration that the borings were allowed to remain open. However, this does not necessarily mean the borings terminated above groundwater. Due to the low permeability of the soils encountered in the borings, a relatively long period of time may be necessary for a groundwater level to develop and stabilize in a borehole in these materials. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. In addition, perched water can develop over low permeability soil or rock strata. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Seismic Site Class

The 2018 International Building Code (2018 IBC) requires a site soil profile determination extending a depth of 100 feet for seismic site classification. The current scope requested does not include the required 100-foot soil profile determination. Subsurface explorations at this site were extended to a maximum depth of 43 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Based on the standard penetration resistance values from the soil borings drilled at the site, it is our professional opinion that the **Seismic Site Classification is C**. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

Geotechnical Overview

The purpose of this study was not to provide specific foundation design recommendations for structures, but to assess general conditions relative to their potential impact on the proposed development.

Preliminary geotechnical engineering recommendations for foundation systems and earthwork phases of the project are outlined below. These preliminary recommendations are based upon the results of data presented herein, engineering analyses, and our

current understanding of the proposed project. These preliminary recommendations should not be used for final design. Once more formalized plans are developed for the site, additional soil borings and evaluation will be needed.

Borings generally encountered residual soils, partially weathered rock, and auger refusal materials. Materials were composed of sandy silt and silty sand. Groundwater was not encountered within the maximum depths of exploration during or at the completion of drilling.

Preliminary Earthwork

Earthwork is anticipated to include clearing and grubbing, excavations, and engineered fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria necessary to appropriately prepare the site.

Site Preparation

Prior to placing fill, existing vegetation, topsoil, and root mats should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas.

Mature trees are located within or near the footprint of some of the proposed buildings, which will require removal at the onset of construction. Tree root systems can remove substantial moisture from surrounding soils. Where trees are removed, the full root ball and all associated dry and desiccated soils should be removed. The soil materials which contain less than 5 percent organics can be reused as engineered fill provided the material is moisture conditioned and properly compacted.

Where fill is placed on existing slopes steeper than 5H:1V, benches should be cut into the existing slopes prior to fill placement. The benches should have a minimum vertical face height of 1 foot and a maximum vertical face height of 3 feet and should be cut wide enough to accommodate the compaction equipment. This benching will help provide a positive bond between the fill and natural soils and reduce the possibility of failure along the fill/natural soil interface.

Although no evidence of fill or underground facilities (such as septic tanks, cesspools, basements, and utilities) was observed during the exploration and site reconnaissance, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed, and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Excavation

Based on the results of our borings, we anticipate that difficult to excavate materials, such as PWR, possible rock lenses, and boulders will be encountered during mass grading and utility installation throughout the site and especially in the northern portion of the site in the planned hotel area. Excavation techniques will vary based on the weathering of the materials, fracturing and jointing in the rock, and the overall stratigraphy of the feature.

Very dense soil and PWR typically require loosening by ripping with large dozers pulling single tooth rippers in mass excavation and possibly blasting in confined (trench) excavation. Any ripped PWR fragments can be re-used and mixed into engineered fill provided that it is pulverized to less than four inches in diameter and mixed with soil to create a well graded fill material. Typically, large compaction equipment such as a Caterpillar 815 is required to properly compact and break down very dense soil and PWR.

Excavation of auger refusal material (apparent rock) typically requires blasting. Mass excavation by blasting is generally less expensive on a cubic yard basis than blasting in trenches; therefore, it may be more cost effective to over-excavate (overshoot) the auger refusal materials below planned footings and utilities and backfill the over-excavated area with engineered soil fill. This will allow conventional installation of foundation and utilities. In addition, support of the building on engineered fill will aid in limiting differential settlement between areas supported on rock and engineered fill.

The descriptions provided below are a guide to conditions generally encountered in the region of the project site. Required excavation techniques will vary based on weathering of the materials to be excavated, and the fracturing, jointing and overall stratigraphy of the feature. Actual field conditions usually display a gradual weathering progression with poorly defined and uneven boundaries between layers of different materials. We recommend that the following definitions for rock in earthwork excavation be included in bid documents:

Excavation Type	Definition
Mass Excavation	Any material occupying an original volume of more than 1 cubic yard which cannot be excavated with a single-toothed ripper drawn by a crawler tractor having a minimum draw bar pull rating of not less than 56,000 pounds usable pull (Caterpillar D-8K or larger).
Trench Excavation	Any material occupying an original volume of more than 1/2 cubic yard which cannot be excavated with a backhoe having a bucket curling rate of not less than 25,600 pounds, using a rock bucket and rock teeth (Caterpillar M318 or larger).

Removal of rock by blasting is expensive. Hence, control of quantities is important. Survey methods are the best way to measure in-place rock quantities using cross-sectioning when the top of rock is identified by ripping or large excavator, as per the rock definition. However, there may be site constraints or conditions that will hinder the use of ripping or a large excavator to identify rock. Contractors may request that the soil overburden be left in-place, and the top of rock "profile" be estimated using an air-track drill. This approach is open to interpretation, and can result in greater rock excavation quantities and costs. Before the definition of rock is changed by using air-track drilling or other approach, the owner and design team should agree to the change while being aware of potential additional costs.

In addition, we recommend pricing for mass and trench rock excavation be obtained prior to award of the grading contract. Excavation limits beyond those required to install utilities should also be defined.

It should be noted that boulders and/or discontinuous rock lenses will likely be encountered during grading. Boulders will likely need to be reduced in size prior to placement, wasted on site in non-developed areas or hauled off site. This could result in a reduction of the excavated material available for use as engineered fill material.

Actual field conditions usually display a gradual weathering progression with poorly defined and uneven boundaries between layers of different materials. Rock levels in the Piedmont physiographic province can vary considerably in short horizontal distances and may be at higher or lower elevation between our boring locations.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below, or within 10 feet of structures, pavements or constructed slopes. General fill is material used to achieve grade outside of these areas.

Soils used for structural and general fill should meet the following material property requirements:

Soil Type [1,2,3]	USCS Classification	Acceptable Parameters (for Structural Fill)
Fine Grain	CL and ML	Liquid Limit less than 45 Plasticity index less than 25
Granular	SP, SM, SC, and SW	Less than 50% passing No. 200 sieve
On-Site Soils [4]	ML and SC	Liquid Limit less than 45 Plasticity index less than 25

Soil Type [1,2,3]	USCS Classification	Acceptable Parameters (for Structural Fill)

1. Structural and general fill should consist of approved materials free of organic matter and debris. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. All fill should have a maximum dry density of at least 95 pounds per cubic foot (pcf) as determined by the standard Proctor test (ASTM D 698).
3. Any materials proposed as fill from off-site sources should be tested for compliance with these criteria before being hauled to the site.
4. Re-use of existing fill should meet the requirements noted above.

Fill Placement and Compaction Requirements

Structural and general fill should meet the following compaction requirements.

Item	Structural Fill	General Fill
Maximum Lift Thickness	8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used	Same as structural fill
Minimum Compaction Requirements [1,2]	98% of max. dry density within 1 foot of floor slabs or finished pavement subgrades 95% of max. dry density below foundations and more than 1 foot below finished floor slabs or pavement subgrades	92% of max.
Water Content Range [1,2,3]	Fine Grain Soils: -2% to +3% of optimum Granular: -2% to +3% of optimum	As required to achieve min. compaction requirements

Item	Structural Fill	General Fill

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).
2. Fill should be tested for compaction and moisture content during placement. Should the results of the in-place density tests indicate that the specified moisture or compaction requirements have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
3. Moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without pumping when proofrolled.

Utility Trench Backfill

Any soft or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with structural fill or bedding material in accordance with public works specifications for the utility being supported. This recommendation is particularly applicable to utility work requiring grade control and/or in areas where subsequent grade raising could cause settlement in the subgrade supporting the utility. Trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

On-site materials are considered suitable for backfill of utility and pipe trenches from 1 foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors.

Grading and Drainage

Adequate positive drainage should be provided during construction and maintained throughout the life of the development to prevent an increase in moisture content of the foundation, pavement and backfill materials. Surface water drainage should be controlled to prevent undermining of fill slopes and structures during and after construction.

Gutters and downspouts that drain water a minimum of 10 feet beyond the footprint of the proposed structures are recommended. This can be accomplished through the use of splash-blocks, downspout extensions, and flexible pipes that are designed to attach to

the end of the downspout. Flexible pipe should only be used if it is daylighted in such a manner that it gravity-drains collected water. Splash-blocks should also be considered below hose bibs and water spigots.

It is recommended that all exposed earth slopes be seeded to provide protection against erosion as soon as possible after completion. Seeded slopes should be protected until the vegetation is established. Sprinkler systems should not be installed behind or in front of walls or near slopes.

Groundwater Considerations

Groundwater was not encountered in any of the borings during our exploration. Based on our understanding of the proposed development, we do not expect groundwater to affect construction. If groundwater is encountered during construction, some form of temporary or permanent dewatering may be required. Conventional dewatering methods, such as pumping from sumps, should likely be adequate for temporary removal of any groundwater encountered during excavation at the site. Well points would likely be required for significant groundwater flow, or where excavations penetrate groundwater.

Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of grade-supported improvements such as floor slabs and pavements. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

Excavations or other activities resulting in ground disturbance have the potential to affect adjoining properties and structures. Our scope of services does not include review of available final grading information or consider potential temporary grading performed

by the contractor for potential effects such as ground movement beyond the project limits. A preconstruction/ precondition survey should be conducted to document nearby property/infrastructure prior to any site development activity. Excavation or ground disturbance activities adjacent or near property lines should be monitored or instrumented for potential ground movements that could negatively affect adjoining property and/or structures.

Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, and pavements), evaluation and remediation of existing fill materials, as well as proofrolling and mitigation of unsuitable areas delineated by the proofroll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts. Any areas that do not meet the compaction specifications should be reworked to achieve compliance.

In areas of foundation excavations, the bearing subgrade should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

Preliminary Foundations

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the proposed structures with column loads between 250 and 500 kips can be supported by a shallow, spread footing foundation system bearing on residual soils or structural fill extending to residual soils. Allowable soil bearing pressures on the order of 3,000 psf bearing are anticipated to be suitable for foundations bearing on structural fill or residual soils. Depending on finished grades, higher bearing pressures may be available where PWR and rock are present.

For column loads greater than 500 kips that are not supported on PWR or rock, ground improvement with aggregate piers may be necessary. Further exploration and analysis should be performed during the supplemental geotechnical exploration once structure locations, loads, and elevations are established.

Preliminary Floor Slabs

The materials encountered in our borings appear suitable for supporting floor slabs. Additional floor slab recommendations will be provided during the supplemental geotechnical study once plans are more developed.

Preliminary Pavements

The materials encountered in our borings appear suitable for supporting pavements depending upon proposed grades. For preliminary purposes, we believe typical pavement sections will be acceptable on the site, but pavement design needs to be performed using anticipated traffic loadings once determined. Additional pavement recommendations will be provided during the supplemental geotechnical study once plans are more developed.

Supplemental Geotechnical Exploration

Once development plans are more established, a supplemental geotechnical exploration should be performed to establish foundation design and site development recommendations. The supplemental study will include additional soil test borings and possibly rock coring, as well as additional laboratory testing and engineering analysis. We can provide a scope and fee for the supplemental exploration upon request.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner

is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly affect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

Attachments

Exploration and Testing Procedures

Field Exploration

Number of Borings	Approximate Boring Depth (feet)	Location
7	5 to 43 feet (auger refusal)	General Building Pad Locations

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were obtained by interpolation from the provided preliminary site plan dated June 20, 2025. If elevations and a more precise boring layout are desired, we recommend borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted rotary drill rig using continuous flight hollow-stem augers. Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. Groundwater was not observed at these times in the boreholes. For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Site Location and Exploration Plans

Contents:

Site Location

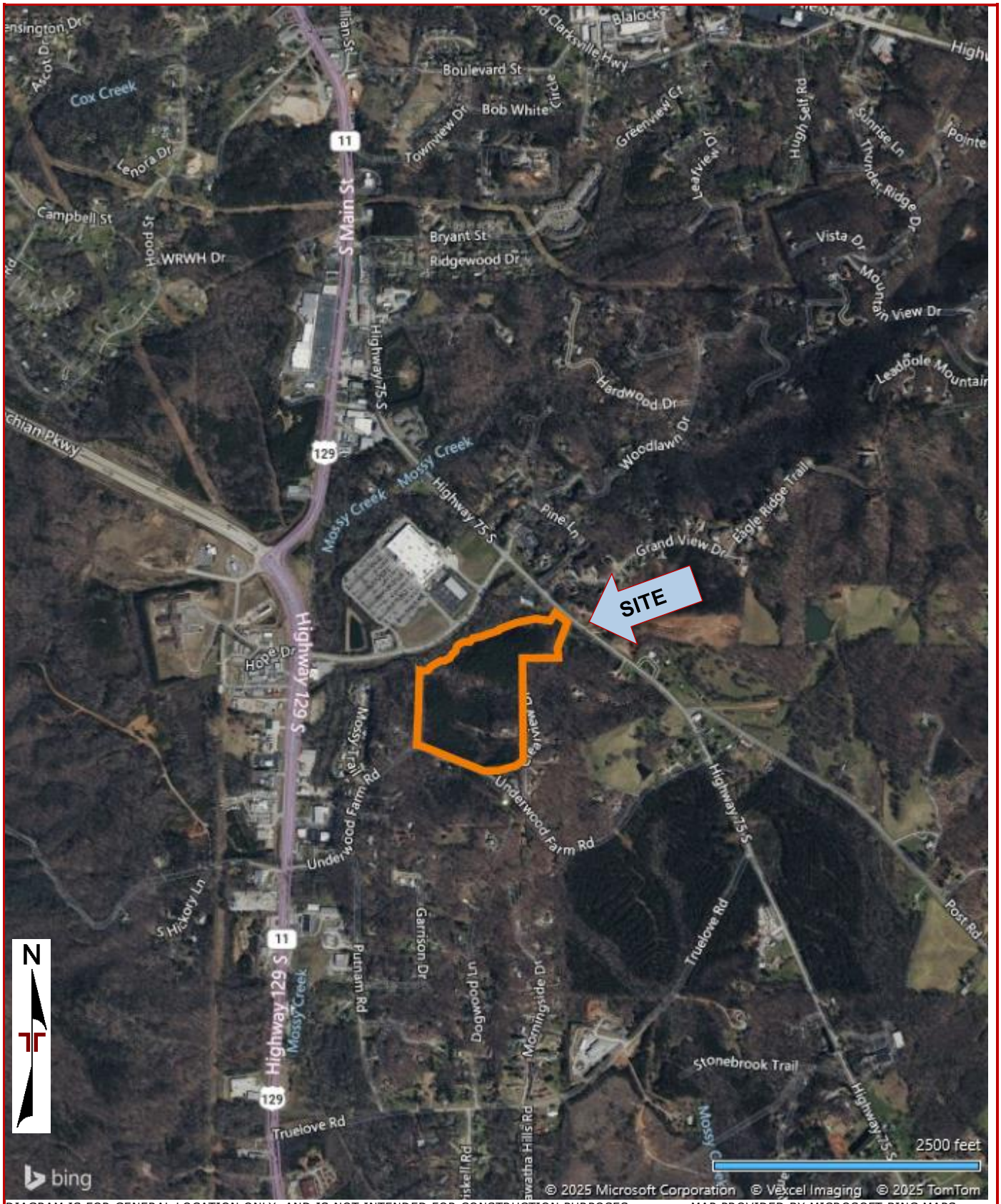


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

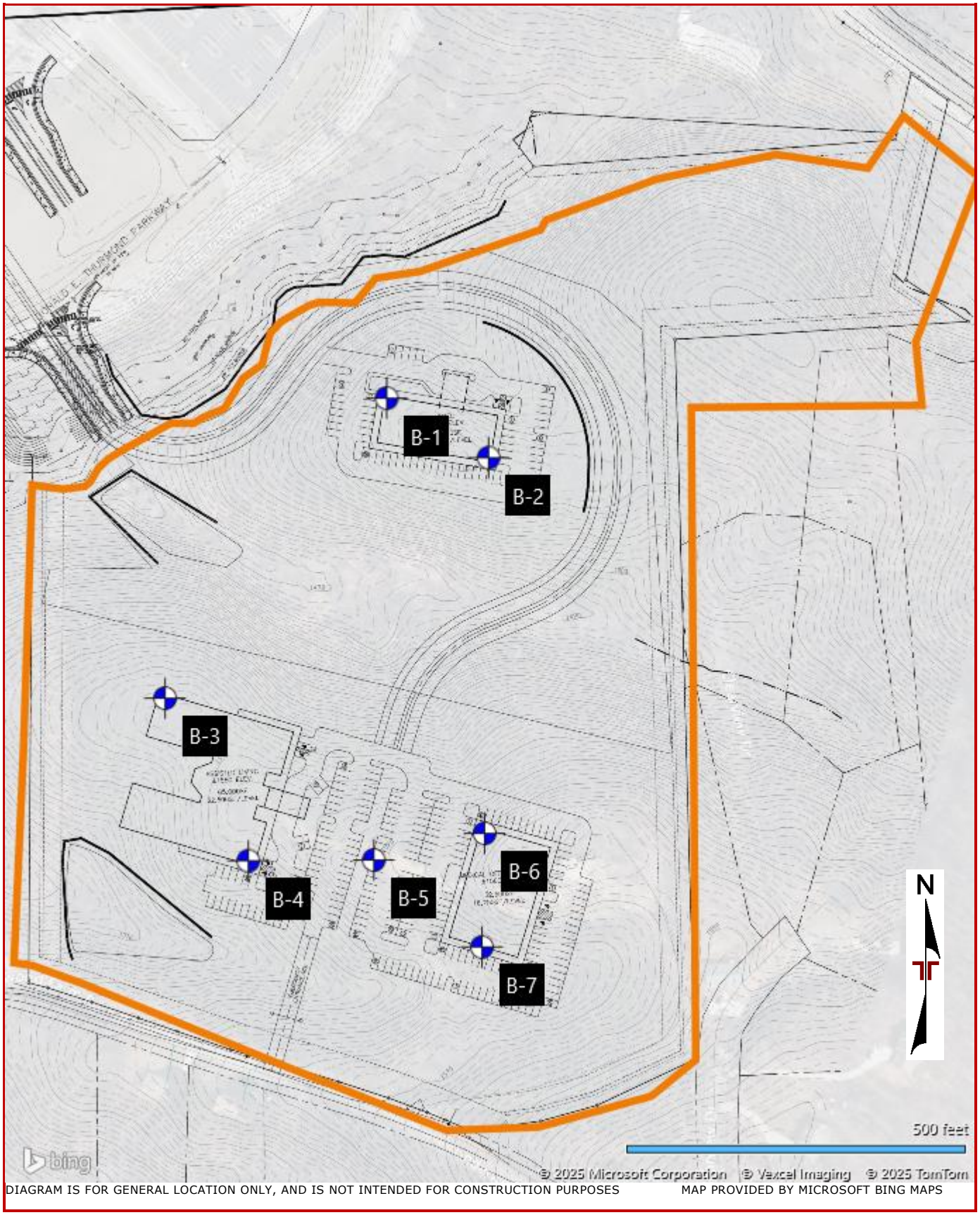


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Results

Contents:

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-1

Location: See Exploration Plan

Latitude: 34.5765° Longitude: -83.7572°

Graphic Log	Depth (Ft.)	Elevation: 1520 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)
	0.3	**TOPSOIL**, 3 Inches 1519.75					
		RESIDUUM - SILTY SAND (SM), trace mica, fine to medium grained sand, brown-red and black, moist, medium dense				5-5-6 N=11	
		- with mica	5			6-7-8 N=15	
		- gray-orange and tan				5-6-8 N=14	
			10			4-5-5 N=10	
		- gray-brown	15			5-5-6 N=11	
		- gray and white, tan	20			7-7-10 N=17	
		- with rock fragments, dense	25			4-10-25 N=35	
	28.0	1492					
		PARTIALLY WEATHERED ROCK - SAMPLED AS SILTY SAND (SM), trace rock fragments, fine to medium grained sand, gray-tan, moist, very dense				N=50/4"	
	30.0	1490	30				
		Auger Refusal at 30 Feet					

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-2

Location: See Exploration Plan

Latitude: 34.5762° Longitude: -83.7567°

Depth (Ft.) Elevation: 1530 (Ft.)

Graphic Log	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)
0.3 **TOPSOIL**, 3 Inches 1529.75					
RESIDUUM - SILTY SAND (SM), trace mica and quartzite, fine to medium grained sand, orange-white, moist, medium dense				9-8-8 N=16	
- tan, white	5			11-10-9 N=19	
- trace mica, gray				9-6-11 N=17	
	10			6-7-7 N=14	
- black and gray				5-5-6 N=11	
	15				
- gray and tan				6-8-8 N=16	
	20				
- micaceous, brown-gray				5-4-6 N=10	
	25				
28.0 1502					
PARTIALLY WEATHERED ROCK - SAMPLED AS SILTY SAND (SM), with mica, fine to medium grained sand, gray-tan, moist, very dense 30.0 1500				N=50/3"	
Auger Refusal at 30 Feet	30				

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-3

Location: See Exploration Plan

Latitude: 34.5753° Longitude: -83.7583°

Graphic Log	Depth (Ft.)	Elevation: 1546 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)
	0.2	**TOPSOIL**, 2 Inches 1545.83					
	3.0	**RESIDUUM - SILTY SAND (SM)**, trace quartzite, trace mica, fine to medium grained sand, tan-red, moist, very dense 1543				13-26-30 N=56	
	5.0	**PARTIALLY WEATHERED ROCK - SAMPLED AS SILTY SAND (SM)**, trace mica and quartzite, fine to medium grained sand, white, moist, very dense 1541				10-50/5" N=50/5"	
		Auger Refusal at 5 Feet	5				

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes
Offset 10 Feet Northeast
Auger Refusal at 4 Feet

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-4

Location: See Exploration Plan

Latitude: 34.5746° Longitude: -83.7579°

Graphic Log	Depth (Ft.)	Elevation: 1548 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)
	0.2	**TOPSOIL**, 2 Inches 1547.83					
		RESIDUUM - SILTY SAND (SM), trace mica, fine to medium grained sand, brown-red, moist, medium dense				5-6-8 N=14	
						6-7-11 N=18	
		- with silt, brown-black	5			4-6-7 N=13	
		- with root fragments				6-5-9 N=14	
			10				
						8-10-12 N=22	
			15				
	18.0	1530					
		PARTIALLY WEATHERED ROCK - SAMPLED AS SILTY SAND (SM), with mica, fine to medium grained sand, brown-black, moist, very dense				4-11-50/5" N=61/11"	
			20				
	22.0	1526					
		Auger Refusal at 22 Feet					

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-5

Location: See Exploration Plan

Latitude: 34.5746° Longitude: -83.7572°

Depth (Ft.)	Elevation: 1568 (Ft.)	Field Test Results
0.3	**TOPSOIL**, 3 Inches — 1567.75	
	PARTIALLY WEATHERED ROCK - SAMPLED AS SILTY SAND (SM), trace quartzite and mica, fine to medium grained sand, white, moist, very dense	N=50/5"
3.0	1565	
	RESIDUUM - SILTY SAND (SM), with mica, fine to medium grained sand, white and black, moist, medium dense	8-6-7 N=13
5		6-8-8 N=16
	- brown, loose	3-3-5 N=8
10		
	- brown-orange, medium dense	10-9-10 N=19
15		
	- purple-gray, loose	4-3-4 N=7
20		
	- with silt, gray, medium dense	7-10-18 N=28
25		
28.0	1540	
	PARTIALLY WEATHERED ROCK - NO RECOVERY	N=50/0"
30		
31.0	1537	
	Auger Refusal at 31 Feet	

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-6

Location: See Exploration Plan

Latitude: 34.5747° Longitude: -83.7567°

Depth (Ft.) Elevation: 1568 (Ft.)

Depth (Ft.)	Elevation	Description	Field Test Results
0.3	1567.67	**TOPSOIL**, 4 Inches	
		RESIDUUM - SILTY SAND (SM), trace mica, fine to coarse grained sand, brownish red, moist, medium dense	7-11-12 N=23
		- brown, reddish brown, dense	6-10-20 N=30
		- yellowish brown, medium dense	6-12-10 N=22
		- gray	7-10-11 N=21
			6-7-16 N=23
		- dark gray, white, dense	11-16-27 N=43
23.0	1545		
		PARTIALLY WEATHERED ROCK - SAMPLED AS SILTY SAND (SM), trace mica, fine to medium grained sand, dark gray, bluish gray, white, moist, very dense	24-50/5" N=50/5"
		- with rock fragments, fine to coarse grained sand, light gray, yellowish white, partial recovery	N=50/1"
30.0	1538		
		Auger Refusal at 30 Feet	

Depth (Ft.): 5, 10, 15, 20, 25, 30

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Underwood Farm Road Development
475 Underwood Farm Road | Cleveland, GA
Terracon Project No. 49255017

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Log No. B-7

Location: See Exploration Plan

Latitude: 34.5743° Longitude: -83.7567°

Depth (Ft.)	Elevation: 1564 (Ft.)	Field Test Results
0.3	**TOPSOIL**, 3 Inches — 1563.75	
	RESIDUUM - SILTY SAND (SM), trace mica, fine to medium grained sand, orangish brown, moist, medium dense	6-6-8 N=14
	- reddish brown	8-8-9 N=17
8.0	— 1556	4-6-7 N=13
	SANDY SILT (ML), trace mica, fine to medium grained sand, light brown, moist, stiff	6-6-8 N=14
13.0	— 1551	
	SILTY SAND (SM), trace mica, fine to medium grained sand, pink, moist, medium dense	10-10-14 N=24
	- yellowish brown, black	6-9-10 N=19
23.0	— 1541	
	SANDY SILT (ML), with mica, fine to medium grained sand, yellowish brown, light purple, moist, very stiff	5-7-9 N=16
	- trace mica, yellowish brown	8-10-13 N=23
33.0	— 1531	
	SILTY SAND (SM), fine to medium grained sand, gray, yellowish brown, moist, medium dense	7-8-12 N=20
	- fine to coarse grained sand, gray	6-9-11 N=20
43.0	— 1521	
	Auger Refusal at 43 Feet	

Depth (Ft.): 5, 10, 15, 20, 25, 30, 35, 40

Water Level Observations

Sample Type

Water Content (%)

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
None Encountered While Drilling

Drill Rig
CME 45

Hammer Type
Automatic

Driller
Northeast Drilling

Notes

Advancement Method
Hollow Stem Auger

Abandonment Method
Backfilled with soil cuttings

Boring Started
07-26-2025

Boring Completed
07-26-2025

Supporting Information

Contents:

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

General Notes

Sampling	Water Level	Field Tests
Split Spoon	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Relative Density	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3
Loose	4 - 9
Medium Dense	10 - 29
Dense	30 - 50
Very Dense	> 50

Consistency of Fine-Grained Soils
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Soft	less than 0.25	0 - 1
Soft	0.25 to 0.50	2 - 4
Firm	0.50 to 1.00	5 - 8
Stiff	1.00 to 2.00	9 - 15
Very Stiff	2.00 to 4.00	16 - 30
Hard	> 4.00	> 30

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 4 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.