

November 27, 2013

The Hollingsworth Companies Two Centre Plaza Clinton, Tennessee 37716

ATTENTION: Ms. Amanda Hensley AHensley@HollingsworthCos.com

Subject: REPORT OF PRELIMINARY GEOTECHNICAL EXPLORATION Mountain Road Property Anderson County, Tennessee GEOServices Project No. 21-13654

Dear Ms. Hensley:

We are submitting the results of the geotechnical exploration performed for the subject project. The geotechnical exploration was performed in accordance with our Proposal Number 11-13370, dated October 30, 2013. The following report presents our findings and recommendations for the proposed development. Should you have any questions regarding this report, or if we can be of any further assistance, please contact us at your convenience.

Sincerely,

GEOServices, LLC

Dennis A. Huckaba, P.E. Principal

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Adam C. Alexander, P.E. Geotechnical Manager TN 114,515

ACA/DAH/rjr

<u>Submitted to:</u> Ms. Amanda Hensley The Hollingsworth Companies Two Centre Plaza Clinton, Tennessee 37716

Hollingsu

Industrial Building Program



MOUNTAIN ROAD PROPERTY

ANDERSON COUNTY, TENNESSEE

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GEOServices, LLC-Geotechnic

Submitted by:

GEOSERVICES, LLC PROJECT NO. 21-13654

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this geotechnical exploration was to characterize the subsurface conditions for the approximately 26 acres of land located on Mountain Road in Anderson County, Tennessee and provide geotechnical recommendations for general site grading, suitability of the onsite soils for use as structural soil fill, and depth of refusal material.

1.2 PROJECT INFORMATION AND SITE DESCRIPTION

The project site is located along Mountain Road, approximately 1,600 feet north of its intersection with First Quality Drive in Anderson County, Tennessee. The approximately 25.83 acre site currently consists of undeveloped property. The project site is bordered to the north by an Unnamed Tributary to Buffalo Creek, to the east by Mountain Road, to the south by an existing industrial building and detention pond, and to the west by an undeveloped lot (lot 3). Existing site ground cover consists of grass, bare earth, and areas of dense mature trees.

Project information was provided in the form of a parcel map titled "Survey for Joe Hollingsworth" dated July 30, 2013 and prepared by McGrew Engineering and Surveying. It is our understanding that the proposed construction will likely consist of two steel framed industrial buildings and their associated parking and driveway areas. Based on available USGS topographic information, the project site generally slopes downhill from the east to the west with existing elevations ranging from approximately 1030 feet mean sea level (msl) in the eastern portion of the property bordering Mountain Road, to approximately 970 feet msl in the southwest portion of the site. The existing elevations in the proposed building pads range from approximately 994 feet msl in the vicinity of boring B-20 (lot 2), to approximately 1014 feet msl in the vicinity of boring B-13 (lot 1). From the provided information, it appears the proposed finished floor elevations



(FFE) for lot 1 and lot 2 are 1006 and 1010 feet msl, respectively. Therefore, we expect maximum earthwork cuts and fills of less than 20 feet to reach planned subgrade elevation.

1.3 SCOPE OF STUDY

This geotechnical exploration involved a site reconnaissance, field drilling, and engineering analysis. The following sections of this report present discussions of the field exploration, site conditions, and conclusions and recommendations. Following the text of this report, Appendix A presents figures and test boring record.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air, on, or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

2.0 EXPLORATION AND TESTING PROGRAMS

2.1 FIELD EXPLORATION

The site subsurface conditions were explored with twenty (20) soil test borings. The soil test boring locations and depths were selected by The Hollingsworth Companies and located in the field by GEOServices, LLC personnel. Drilling was performed on November 6th and 7th, 2013. The depths provided reference the ground surface elevations at the site that existed at the time of the exploration and were approximated from the provided site plan. The borings were advanced using 3.25-inch inside diameter hollow stem augers (HSA) with a CME-550 ATV track mounted drill rig. Within each boring, SPT and split-spoon sampling were performed at approximate 2.5-foot intervals in the upper 10 feet, and 5 feet intervals thereafter. The drill crew worked in



general accordance with ASTM International (ASTM) D 6151 method for HSA drilling. Sampling of overburden soil was performed in general accordance with ASTM D 1586 per the standard penetration test (SPT) procedures. The borings were backfilled with soil cuttings before departing the site. Detailed information pertaining to each boring location can be found on the boring logs provided in Appendix A of this report.

In split–spoon sampling, a standard 2-inch O.D. split-spoon sampler is driven into the bottom of the boring with a 140 pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the last 12 inches of the standard 18 inches of total penetration is recorded as the Standard Penetration Resistance (N-value). These N-values are indicated on the boring logs at the testing depth, and provide an indication of the relative density of granular materials and strength of cohesive materials.

2.2 LABORATORY TEST PROGRAM

After completion of the field drilling and sampling phase of this project, the soil samples were returned to our laboratory where they were visually classified in general accordance with the Unified Soil Classification System (USCS – ASTM D 2487) by a GEOServices geotechnical professional.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGIC CONDITIONS

The project site lies in the Appalachian Valley and Ridge Physiographic Province of East Tennessee. This Province is characterized by elongated, northeasterly-trending ridges formed on highly resistant sandstone and shale. Between ridges, broad valleys and rolling hills are formed primarily on less resistant limestone, dolomite, and shale.



Published geologic information indicates that the project site is underlain by bedrock from the Reedsville Shale formation of the Chickamauga Group. This formation is primarily composed of greenish-gray calcareous shale with medium-grained, fossiliferous limestone. Bedrock from this formation typically weathers to produce a thin, shaly residual soil with areas of thick clay from limestone units.

Since the bedrock underlying this site contains carbonate rock (I.e. limestone/dolomite) it is susceptible to the hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes. Carbonate rock, while appearing very hard and resistant, is soluble in slightly acidic water. This characteristic, plus differential weathering of the bedrock mass is responsible for the hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging to overlying soil-supported structures. Sinkholes occur primarily due to differential weathering of the bedrock and "flushing" or "raveling" of overburden soils into the cavities in the bedrock. The loss of solids creates a cavity or "dome" in the overburden. Growth of the dome over time or excavation over the dome can create a condition in which rapid, local subsidence or collapse of the roof of the dome occurs.

A certain degree of risk with respect to sinkhole formation and subsidence should be considered at any site located within carbonate geologic settings. While a rigorous effort to assess the potential for sinkhole development at this site was beyond our scope of service, we did not encounter any obvious signs of surficial sinkhole activity. In addition, few closed depressions, which are indicative of past sinkhole activity, were observed on the United States Geological Survey (USGS – Norris Quadrangle, TN) topographic map approximately 3,000 feet north and west of this site.

It is our opinion that the risk of sinkhole development at this site is no greater than at other sites located within similar geologic settings which have been developed successfully. However, the owner must be willing to accept a low to moderate risk of sinkhole development at this site. The



risk of sinkhole development can be reduced by following the recommendations provided in the *Sinkhole Corrective Actions* (Section 5.5) section of this report.

3.2 SOIL STRATIGRAPHY

The following subsurface description is of a generalized nature to highlight the subsurface stratification features and material characteristics at the boring locations. The boring logs included in Appendix A of this report should be reviewed for specific information at each boring location. Information on actual subsurface conditions exists only at the specific boring locations and is relevant only to the time that this exploration was performed. Variations may occur and should be expected at the site

Surface

A surficial layer of topsoil, ranging from 3 to 24 inches in thickness, was encountered in each boring performed on site. However, areas of deep top soil were isolated to borings B-14 and B-15, which encountered 24 and 18 inches of topsoil, respectively. The topsoil layers encountered on site were generally 3 to 8 inches in thickness.

Residual Soil

Beneath the existing surficial layer encountered, residual soils were encountered to depths ranging from 6.2 to 20 feet beneath the existing ground surface. Residual soils are formed from the in-place weathering of the underlying parent bedrock. The residual soils generally consisted of orangish brown, reddish brown, tan, and brown fat clays (CH) and lean clays (CL) with varying amounts chert, silt, and limestone fragments. The SPT N-values used to evaluate the consistency of the residual soils ranged from 7 bpf to 50 blows per 2 inches of penetration, indicating a relative consistency of firm to very hard. It should be noted that the very hard consistency soil (SPT N-values greater than 50 bpf) were generally encountered nearing auger



refusal depths and near weathered rock layers, which likely inflated the N-values. Therefore, the residual soil consistency was generally firm to stiff.

Weathered Rock

Beneath the residual soil encountered in borings B-19 and B-20, and beneath the topsoil layer encountered in boring B-11, weathered rock was encountered to depths ranging from 2.3 to 12.8 feet beneath the existing ground surface. The weathered rock encountered was generally gray and light brown limestone. The SPT N-values used to evaluate the consistency of the weathered rock encountered ranged from 49 bpf to 50 blows per 3 inches of penetration, indicating a relative soil consistency of hard to very hard.

Auger Refusal

Auger refusal conditions were encountered in eight (8) soil test borings conducted on site (borings B-6, B-10, B-11, B-13, and B-17 through B-20) at depths ranging from 2.3 to 17.7 feet beneath the existing ground surface. Auger refusal is a designation applied to any material that cannot be penetrated by the power auger. Auger refusal may indicate dense gravel or cobble layers, boulders, rock ledges or pinnacles, or the top of continuous bedrock. Rock coring was beyond our scope of services for this exploration. Therefore, the character and continuity of the refusal material could not be determined. Based on the limited sampling performed, auger refusal depths encountered at this site most likely corresponds to the top of continuous bedrock.

Subsurface Water

Subsurface water was not encountered in any of the borings performed on site at the completion of drilling. Subsurface water levels may fluctuate due to seasonal changes in precipitation amounts. However, areas of perched water may exist in the overburden and/or near the contact with bedrock. The contractor should determine that actual subsurface water level at the time of construction.



4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 SITE ASSESSMENT

The results of our soil test borings indicate that the site is generally underlain by residual soil, with isolated areas of weathered rock and areas of deep topsoil zones. The residual soils encountered were generally firm or better in consistency. Based on the results of our exploration, it is our opinion that the site is generally adaptable for the proposed construction. However, as with most sites, there are some obstacles that should be addressed prior to construction. These include undocumented historical use of the site, deep topsoil zones, and difficult excavations due to shallow bedrock.

Fill material was not encountered in any of the borings performed on site. However, historical aerial imagery shows disturbances across the south and southwestern portions of the site, likely associated with adjacent commercial development. Therefore, it is possible that fill material may be encountered in areas not explored that could contain abundant organic matter, compressible zones, debris, and other deleterious material. These soils, if encountered, should be remediated at the engineer's discretion.

As mentioned previously, a deep topsoil layer was encountered in borings B-14 and B-15 approximately 18 to 24 inches in thickness. We recommend that prior to construction, the topsoil be removed from site during grading. More detailed information on subgrade preparation can be found herein.

Auger refusal materials were encountered at depths ranging from 2.3 to 18.2 feet beneath the existing ground surface. Generally, the weathering process is erratic and variations in the rock profile can occur in small lateral distances. Therefore, it is likely that some partially weathered rock and/or rock pinnacles or ledges requiring difficult excavation techniques will be encountered on site



areas between our boring locations. As such, the possibility exists that difficult excavations techniques such as hoe-ramming or blasting may be required in portions of the site that were not disclosed by the soil test borings. Based on the soil test borings, it appears that difficult excavations may be encountered in the vicinity of borings B-6, B-10, B-11 and B-13, depending on the final proposed grades. For ease of review, a table of auger refusal elevations has been provided below.

Boring	Refusal Depth (feet)	Approximate Refusal Elev. (feet)	Assumed Finished Grade (feet)
B-6	6.8	999.2	1006
B-10	6.2	1005.8	1012
B-11	2.3	1018.7	N/A
B-13	6.2	1007.8	1010
B-17	18.2	998.8	1010
B-18	17.7	997.3	1010
B-19	12.8	993.2	1010
В-20	8.1	986.9	1010

Table 1 – Boring Refusal Depths

Due to the presence of varying refusal depths in portions of this site, bedrock may be encountered during foundation excavation. This combination of bearing conditions (i.e., soil and rock) can cause differential foundation settlement which can result in unsatisfactory long-term performance of the structure. To provide uniform support conditions, it will be necessary to undercut any foundation excavations where rock is encountered to a depth of at least 2 feet beneath the anticipated foundation bearing elevation. The undercut areas should be replaced with compacted dense graded aggregate to reduce the potential for differential stress caused by point loading. Foundations in transition areas between one or more bearing condition should be given special consideration. These considerations should include additional reinforcement or a



thickened foundation section and closely spaced control joints in the masonry to either side of the transition.

We recommend that the exposed subgrade be thoroughly proofrolled with a fully loaded (with soil or rock), tandem-axle dump truck or other pneumatic tired construction equipment of similar weight (prior to the placement of soil fill, basestone, or concrete slab-on-grade subgrade). A GEOServices geotechnical engineer, or qualified representative, should observe proofrolling or evaluate the stability of the near surface soils by other methods, as applicable. Additional areas judged to perform unsatisfactorily should be remediated at the geotechnical engineer's direction. GEOServices personnel should be retained to perform close construction observations to help identify unsuitable areas during earthwork grading. In addition, we recommend close foundation subgrade observations be performed by a qualified geotechnical engineer upon excavation of the proposed foundations. Any unsuitable areas encountered should be undercut and replaced with compacted dense graded aggregate or lean concrete (flowable fill).

If the recommendations set forth in the following sections of this report are followed, it is the opinion of GEOServices that the proposed structures can be supported using shallow foundations. If the owner elects to move forward with development of this property, GEOServices can perform a more detailed geotechnical exploration to provide additional recommendations for use in design and construction of the proposed foundations and pavement areas, if requested.

4.2 SITE PREPARATION RECOMMENDATIONS

4.2.1 Subgrade

All vegetation, unsuitable soils (organics and/or fill soil), rock fragments greater than 6 inches, and other debris should be removed from the proposed construction areas. After completion of stripping operations and any required excavations to reach planned subgrade elevation, we recommend that the subgrade be proofrolled with a fully-loaded, tandem-axle dump truck or other



pneumatic-tired construction equipment of similar weight. The geotechnical engineer or his representative should observe proofrolling. Areas judged to perform unsatisfactorily by the engineer should be undercut and replaced with structural soil fill or remediated at the geotechnical engineer's recommendation. Areas to receive structural soil fill should also be proofrolled prior to the placement of any fill.

4.2.2 Structural Soil Fill

Material considered suitable for use as structural fill should be clean soil free of organics, trash, and other deleterious material, containing no rock fragments greater than 6 inches in any one dimension. Preferably, structural soil fill material should have a standard Proctor maximum dry density of 90 pcf or greater and a plasticity index (PI) of 35 percent or less. All material to be used as structural fill should be tested by the geotechnical engineer to confirm that it meets the project requirements before being placed.

If moderate to high plasticity materials are to be used as structural soil fill, special consideration with regard to soil moisture content must be maintained during placement and compaction. If possible, the higher plasticity soils should be placed in the lower sections of earthwork fills and the upper, approximately five feet, below subgrade elevation be composed of low plasticity soil (less than 30 percent). We also recommend that any off site borrow material meet the PI and density requirements provided above.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 98 percent of the soil's maximum dry density per the standard Proctor method (ASTM D 698) and within the range of minus (-) 2 percent to plus (+) 3 percent of the optimum moisture content. Each lift should be tested by geotechnical personnel to confirm that the contractors' method is capable of achieving the project requirements before placing any subsequent lifts. Any areas which have become soft or frozen should be removed before additional structural fill is placed.



Any fill slopes should be compacted in horizontal benches, to the above specifications, beyond the actual horizontal limits of the slope. The excess fill should then be cut from the face of the fill slope using a dozer or other earthwork equipment. The pushing of soil over the slope and compacting the soil to the slope edge generally does not provide adequate compaction for the face of the slope and should be avoided.

4.2.3 Dense Graded Aggregate

Dense graded aggregate should be Type A, Class A, and Grading E in accordance with Section 903.05 of the Tennessee Department of Transportation specifications. The crushed stone fill should be placed in loose, horizontal lifts not exceeding 10 inches in loose thickness. Each lift should be compacted to at least 98 percent of maximum dry density per the standard Proctor method (ASTM D698). Each lift should be compacted and tested by geotechnical personnel to confirm that the contractor's method is capable of achieving the project requirements before placing any subsequent lifts.

4.3 SLOPE RECOMMENDATIONS

We understand that cut and fill slopes may be required to reach the proposed finished grade elevations at the site. Based on the materials encountered in the soil test borings and our experience with slopes in this geologic setting, we recommend a minimum inclination of 2:1 (horizontal:vertical) for design of structural fill and residual soil cut slopes. Sampling and laboratory testing should be performed to determine actual soil strength prior to completion of the final slope design.

Compound slopes will be required if more than one type of material is encountered within a cut slope excavation. Where required, a bench having a width sufficient for the operation of bulldozer should be construction at the transition between the two material types. The bench should be sloped down towards the cut slope and laterally to drain. Where the natural ground line drains



toward the slope, we recommend that a ditch be constructed at the crest of the cut slope. Ditches should also be constructed at the toes of the cut slopes to control surface water runoff.

A sufficient width for the operation of a bulldozer should be maintained at the toe of the slope and periodic removal of spall or sloughed materials should be anticipated, especially with the more steep angles provided herein. Alternatively, consideration should be given to a protective slope covering such as shot-crete.

The outer edge of fill should be at least 10 feet beyond building areas and 5 feet beyond paved areas before sloping. Fill slopes should initially be constructed beyond the design slope edge due to the difficulty of compacting the edge of slopes. The fill could then be cut back leaving the exposed face well compacted. Fill slopes should be adequately compacted in accordance with the recommendations of this report. Cut and fill slope surfaces should be protected from erosion by grassing or other means. Permanent slopes of 3H:1V or flatter may be desirable for mowing.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 FOUNDATION CONSTRUCTION

Foundation excavations should be opened, the subgrade evaluated, remedial work performed (if required), and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in terms of maintaining dry footing trenches) and after construction. Soil backfill for footings should be placed in accordance with the recommendations for structural fill presented herein.



5.2 EXCAVATIONS

Auger refusal materials were encountered in eight (8) of the soil test borings conducted on site at depths ranging from 2.3 to 18.2 feet beneath the existing ground surface elevation. Auger refusal conditions generally correspond to materials which require hoe-ramming and/or blasting for removal. Typically, soils penetrated by augers can be removed with conventional earthmoving equipment. However, excavation equipment varies, and field refusal conditions may vary. Generally, the weathering process is erratic and variations in the rock profile can occur in small lateral distances. Therefore, depending on the proposed finished floor elevations it is possible that some partially weathered rock and/or rock pinnacles or ledges requiring difficult excavation techniques may be encountered in site areas between our boring locations. The owner should be aware that some partially weathered rock, bedrock or boulders may be encountered which will require blasting and/or mechanical breakers (hoe-ram) for removal.

We caution against extensive overblasting in building areas (blasting below finished grade) during the site grading operations. Typically, overblasting often damages below grade bedrock by fracturing and/or heaving the rock from its original position. This often creates difficulties for foundations and floor slabs supported on these materials by creating voids in the rock unit and greatly reducing the support capacity and/or increasing the subsidence potential of the underlying heaved material. Any areas damaged by overblasting should be evaluated by the Geotechnical Engineer to determine appropriate corrective measures. To avoid the risks associated with overblasting, careful monitoring of shot elevations should be maintained.

5.2.1 Excavation Safety

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually solely responsible for site safety. This information is provided only as a service, and under no circumstances should GEOServices be assumed responsible for construction site safety.



5.3 MOISTURE SENSITIVE SOILS

The moderately plastic fine-grained soils encountered at this site will be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. Construction traffic patterns should be varied to prevent the degradation of previously stable subgrade. In addition, the soils at this site which become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. We caution if site grading is performed during the wet weather season increases in the undercut volume required due to the marginal fills should be expected. Further for site fills, methods such as discing and allowing the material to dry will be required to meet the required compaction activities during dry weather. However, November through March is typically the difficult grading period due to the limited drying conditions that exist.

5.4 DRAINAGE AND SURFACE WATER CONCERNS

To reduce the potential for undercutting, water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, subsurface water, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the building(s) and beneath the floor slab(s). The grades should be sloped away from the building(s) and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building(s).



5.5 SINKHOLE RISK REDUCTION AND CORRECTIVE ACTIONS

Based on our experience, corrective actions can also be performed to reduce the potential for sinkhole development at this site. These corrective actions would decrease but not eliminate the potential for sinkhole development. Much can be accomplished to decrease the potential of future sinkhole activity by proper grade selection and positive site drainage.

In general, the portions of a site that are excavated to achieve the desired grades will have a higher risk of sinkhole development than the areas that are filled, because of the exposure of relic fractures in the soil to rainfall and runoff. On the other hand, those portions of a site that receive a modest amount of fill (or that have been filled in the past) will have a decreased risk of sinkhole development caused by rainfall or runoff because the placement of a cohesive soil fill over these areas effectively caps the area with a relatively impervious "blanket" of remolded soil. Therefore, the recommendations that follow incorporate a modest remedial treatment program designed to make the surface of the soil in excavated areas less permeable.

Although it is our opinion that the risk of ground subsidence associated with sinkhole formation cannot be eliminated, we have found that several measures are useful in site design and development to reduce this potential risk. These measures include:

- Maintaining positive site drainage to route surface waters well away from structural areas both during construction and for the life of the structure.
- The scarification and re-compaction of the upper 6 to 10 inches of soil in earthwork cut areas.
- Verifying that subsurface piping beneath structures is carefully constructed and pressure tested prior to its placement in service.
- The use of pavement or lined ditches, particularly in cut areas, to collect and transport surface water to areas away from structures.

Considerations when building within a sinkhole prone area are to provide positive surface drainage away from any proposed building or parking area both during and after construction.



Backfill in utility trenches of other excavations should consist of compacted, well-graded material such as dense graded aggregate or compacted on site soils. The use of an open graded stone such as No. 57 stone is not recommended unless the stone backfill is provided an exit path and not allowed to pond. If sinkhole conditions are observed, the type of corrective action is most appropriately determined by GEOServices on a case-by-case basis.

6.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only, and no environmental assessment efforts have been performed. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the borings will not become evident until construction. We recommend that GEOServices be retained to observe the project construction in the field. GEOServices cannot accept responsibility for conditions which deviate from those described in this report if not retained to perform construction observation and testing. If variations appear evident, then we will re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and conclusions modified or verified in writing. Also, if the scope of the project should change significantly from that described herein, these recommendations may need to be reevaluated.



APPENDIX A

Figures and Test Boring Records







GE		2	٨٣	Mountair	Road Pro	perty	/			LOG OF BORING B-1
GEOServices, LLC-Geotechnic	al and Materials En	uineers	An		ounty, ler		see			SHEETTOF 1
		gineer o	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
	ION			B-1				וח		
	overher 6, 20	10	SUDE		1007.0					
	No [ЛЕРТН	FT	ELEV.	1007.0	F1.				
SAMPLED	20.0 FT	61	M	LLL V.						FLEV FT
TOP OF ROCK		DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	[DEPTH	FT.	ELEV.		FT.				ELEV. FT.
FOOTAGE CORED (LI	F)		FT.	-						AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE D	EPTH	20.0	FT.	ELEV.	987.0	FT.				ELEVFT.
BORING ADVANCED	BY:		POWER A		Х					PROPOSED FFE: FT.
STRATUM	SAMPLI	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS	•	STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	
-										Topsoil (4 inches)
—										-
_	1.0	2.5	1	SS	24					-
2.5 - 1004.5										-
—										–
-										-
_	3.5	5.0	2	SS	16					
5.0 — 1002.0										
-										-
—										–
_	6.0	7.5	3	SS	16					-
7.5 - 999.5										_
—										–
-										-
_	8.5	10.0	4	SS	12					Lean CLAY (CL) - with trace chert fragments.
10.0 — 997.0										the upper 5 feet - tan and reddish brown - slight
-										 moist to very moist with increasing depth - stiff
_										very stiff (RESIDUUM)
_										_
12.5 - 994.5										-
—										–
_										-
-	13.5	15.0	5	SS	15					_
15.0 — 992.0										–
-										-
_										–
_										–
17.5 – 989.5										-
										F
-										-
20.0 — 987.0		1		<u>ı </u>					<u> </u>	Boring Terminated at 20 feet
REMARKS:										
						_				

GE		2		Mountain	Road Pro	perty	/			LOG OF BORING B-2
GERServices II C.Reetechni	ral and Materials En	lineers	An	derson C	ounty, Tei	nnes	see			SHEET 1 OF 1
		igineer a	G	EOServices	s Project # 2	1-136	54			DRILLER Boyd Butler
				D O						
BORING NO. / LOCA			0.155					. 0	KT OF	
	November 6, 20		- SURF.		1001.0	FT.				
REFUSAL:	20.0 FT	61	н. - м	ELEV.		FI.				ELEV ET
		 DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	[DEPTH	FT.	ELEV.		FT.				ELEV. FT.
FOOTAGE CORED (L	.F)		FT.	-		•				AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE	DEPTH	20.0	FT.	ELEV.	981.0	FT.				ELEVFT.
BORING ADVANCED	BY:		POWER /	UGERING	х					PROPOSED FFE: FT.
STRATUM	SAMPL	E DEPTH	SAMPLE		FIELD	-	LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	
_										Topsoil (4 inches)
—										–
-	1.0	2.5	1	SS	13					-
25 - 9985										
										–
-										-
_	3.5	5.0	2	SS	14					
5.0 — 996.0										L
-										-
—										F
_										<u>-</u>
7.5 – 993.5										-
—										-
_										-
_	8.5	10.0	3	SS	24					- Fat CLAY (CH) - with chert fragments and sand
10.0 — 991.0										
-										 to very moist with increasing depth - stiff to hard (RESIDUUM)
-										-
—										–
12.5 — 988.5										-
_										–
_	40 F	15.0			25					–
-	13.5	15.0	4		25					-
15.0 — 986.0										
_										<u> </u>
-										-
										-
										Ē
-										-
-	18.5	20.0	5	SS	33					F
20.0 - 981.0										-
20.0 001.0										Boring Terminated at 20 feet
REMARKS										

GEEServices, LLC-Gestechnic	cal and Materials En	gineers	An Gi	Mountain derson C		LOG OF BORING B-3 SHEET 1 OF 1				
			0.	200011100		1 100	01			ON-SITE REP.
BORING NO. / LOCAT	ION			B-3				DI	RY ON	COMPLETION ? Yes
DATE N	lovember 6, 20	13	SURF	ACE ELEV.	990.0	FT.				WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No [DEPTH	FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
TOP OF ROCK	<u>12.5</u> FI.	 DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	[DEPTH	FT.	ELEV.		FT.				ELEVFT.
FOOTAGE CORED (L	F)		FT.							AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE D	DEPTH	12.5	FT.	ELEV.	977.5	FT.				ELEVFT.
BORING ADVANCED	BY:		POWER A		Х					PROPOSED FFE:FT.
STRATUM	SAMPLE	DEPTH	SAMPLE		FIELD		LABOR	ATORY		
FT. ELEV.	FROM FT.	FT.	OR RUN NO.	TYPE	N-Value	Qu			%М	STRATUM DESCRIPTION
										Topsoil (5 inches)
- - 2.5 - 987.5 - - 5.0 - 985.0	1.0 3.5	2.5 5.0	1	SS	14					Lean CLAY (CL) - with trace root structure and black oxide staining - brown and reddish brown - moist - stiff (RESIDUUM)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6.0 8.5	7.5	3	SS	7					 Lean CLAY (CL) - dark reddish brown - moist - firm to stiff (RESIDUUM) Boring Terminated at 12.5 feet
- - 15.0 - 975.0 - - 17.5 - 972.5 - - 20.0 - 970.0										
REMARKS:										

CE	e a c			Mountair	n Road Pro	perty	1			LOG OF BORING B-4
BELServices, LLC-Restechnic	al and Materials En	lineers	An	derson C	County, Ter	nes	see			SHEET 1 OF 1
		gineero	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
BORING NO. / LOCAT	ION			B-4				DF	RY ON	I COMPLETION ? Yes
DATE N	ovember 6, 20	13	SURF	ACE ELEV.	999.0	FT.				WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No E	DEPTH	FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	12.5 FT.	3.8	М							ELEVFT.
TOP OF ROCK	C		FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	L =)		FT.	ELEV.		FT.				
BOTTOM OF HOLE D	EPTH	12.5	FT.	ELEV.	986.5	FT.				ELEV. FT.
BORING ADVANCED	BY:		POWER		Х					PROPOSED FFE: 1006 FT.
STRATUM	SAMPLE	DEPTH	SAMPLE		FIELD		LABOR	TORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	ULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	
-										Topsoil (3 inches)
_										<u>–</u>
_	1.0	2.5	1	SS	10					<u> </u>
2.5 - 996.5										-
_										 Lean CLAY (CL) - with sand - brown, orangish
—	3.5	5.0	2	SS	8					brown, and reddish brown - moist - firm to stiff
- 50 - 9940										– (RESIDUUM)
-										_
—										—
_	6.0	7.5	3	SS	9					- -
7.5 – 991.5										
_										-
_	9.5	10.0	4	22	10					<u> </u>
- 080.0	0.0	10.0	-	55	12					 Lean CLAY (CL) - brown and gray - slightly mois
- 10.0 - 989.0										stiff (RESIDUUM)
—										—
_										- -
12.5 — 986.5										Boring Terminated at 12.5 feet
_										
_										_
- 084.0										-
15.0 <u> </u>										-
—										<u> </u>
_										-
17.5 - 981.5										_
-										H
_										
-										-
20.0 — 979.0			L	<u>ı </u>						L
REMARKS:										

CE	E C	2		Mountair	n Road Pro	perty	1			LOG OF BORING $B-5$
BELServices, LLC-Restechnic	al and Materials En	lineers	Ar	Iderson C	County, Ter	nes	see			SHEET 1 OF 1
	ar ana materiale th	gineer a	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
BORING NO. / LOCAT	ION			B-5				D	RY ON	COMPLETION ? Yes
DATE N	ovember 6, 20	13	SURF	ACE ELEV.	1005.0	FT.				WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No E	DEPTH	FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	12.5 FT.	3.8	М			_				ELEVFT.
TOP OF ROCK	[FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	=)		FT.	ELEV.		FT.				
BOTTOM OF HOLE D) EPTH	12.5	FT.	ELEV.	992.5	FT.				ELEV. FT.
BORING ADVANCED	BY:		POWER	AUGERING	х					PROPOSED FFE: 1006 FT.
STRATUM	SAMPLE	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	1
-										Topsoil (3 inches)
_										Fat CLAY (CH) - with trace chert fragments - lig
_	1.0	2.5	1	SS	12					brown - moist - stiff (RESIDUUM)
2.5 — 1002.5										
_										-
—	3.5	5.0	2	SS	12					-
- 5.0 - 1000.0										-
-										-
										–
_	6.0	7.5	3	SS	18					<u> </u>
7.5 – 997.5										Fat CLAY (CH) - orangish brown - moist - stiff t verv stiff (RESIDUUM)
_										
_	0 E	10.0	Α	<u> </u>	10					–
- 005.0	0.5	10.0	4	33	12					-
10.0 <u> </u>										-
—										-
_										-
12.5 – 992.5										Boring Terminated at 12.5 feet
_										
_										
-										-
15.0 — 990.0 —										-
—										<u>-</u>
-										-
17.5 – 987.5										-
-										F
										Г —
-										-
20.0 — 985.0		1							1	1
REMARKS:										

Moderson County, Tonnessee GEOBardeer, Priget # 21-13864 Bit Status	C		E C	2		Mountair	n Road Pro	perty	/			log of boring $B-6$
CEOService Project # 21-13864 DRILE RE	GEBS anvious				Ar	nderson C	County, Ter	nnes	see			SHEET 1 OF 1
BORING NO. / LOCATION B-6 DRY ON COMPLETION? Yue ONTE November 6, 2013 SUMPLOE 100.0 PT. SAMPLED 68 FD 21 SUMPLOE 100.0 PT. SAMPLED 68 FD 21 N ELEV. 999.2 PT. APTENDATE PDT PT. SAMPLED 68 FD PT. PT. ELEV. 999.2 PT. APTER THRS: DEPTH DPT. PT. APTER 24 HRS: DEPTH DPT. PT. APTER 24 HRS: DEPTH TP. PT. ELEV. PT. PT. PT. PDVER AUGENRY APTER 24 HRS: DEPTH TD. PT. TP. PT. PT. <td>DEUGERVICES</td> <td>, LLC-DE®lecillin</td> <td>al and Materials ch</td> <td>ĝilicers</td> <td>G</td> <td>EOService</td> <td>s Project # 2</td> <td>1-136</td> <td>54</td> <td></td> <td></td> <td>DRILLER Boyd Butler</td>	DEUGERVICES	, LLC-DE®lecillin	al and Materials ch	ĝilicers	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
November 6. 2013 SURFACE ELEV. 1008.0 FT. Variable Control (0.2013) Variable Control (0.2	BORING N	NO. / LOCAT	ION			B-6				DI	RY OI	N COMPLETION ? Yes
BEFURALT Yes DEPTH 64 Tr. ELEV 999.2 Tr. COMPLETION DEPTH Dry Tr. SAME DD AB FT. 2.1 m FT. ELEV FT.	DATE	Ν	lovember 6, 20	13	SURF	ACE ELEV.	1006.0	FT.				WATER LEVEL DATA (IF APPLICABLE)
SAMPLE E.B. T. Z.1 M DFO FOR ACCORD DEPTH PT. ELEV. PT. FT. BEGM CORNING DEPTH PT. ELEV. PT. ELEV. PT. OTOTOO FOR ACCORD DFT E.B. SAMPLE DEPTH PT. ELEV. PT. PROPOSED DFTE T. DORING ADVANCED DFT TO SAMPLE DEPTH SAMPLE DEPTH SAMPLE DEPTH SAMPLE DEPTH PROPOSED DFTE T. T. TOTO TO FOR ACCORD TO SAMPLE DEPTH T. T. 007.00 FT. TO DORING ADVANCED DEPTH TO SAMPLE DEPTH SAMPLE DEPTH SAMPLE DEPTH SAMPLE DEPTH T. T. T. 100.0 TO TO SAMPLE DEPTH TO SAMPLE DEPTH T. LEEV. T. T. 2.5 TO 1.0 2.5 1 SS 13 I I I I I I I I I I I </td <td>REFUSAL</td> <td>:</td> <td>Yes [</td> <td>DEPTH 6.8</td> <td>FT.</td> <td>ELEV.</td> <td>999.2</td> <td>FT.</td> <td></td> <td></td> <td></td> <td>COMPLETION: DEPTH Dry FT.</td>	REFUSAL	:	Yes [DEPTH 6.8	FT.	ELEV.	999.2	FT.				COMPLETION: DEPTH Dry FT.
DIP OF OCK DEPTH T.F. ELEV. T.F. POOTAGE CORED (JP)	SAMPLED)	6.8 FT.	2.1	М							ELEVFT.
BELAN CONNOL DEPTH	TOP OF R	OCK	[FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
Control or Price Derrit Intervention of the term of the term of the term of term	BEGAN C		L F)		FT.	ELEV.		FT.				
BORING ADVANCED BY: POWER AUGERING X PROPOSED FFE 100 FT. TEATURE FR0 TO OR SAMPLE GETH CARDATION RESULTS STRATUNEGON/FON FF. FR0 TO OR SAMPLE GETH RESULTS STRATUNEGON/FON TO OR Image: Strature Strat	BOTTOM	OF HOLE D) DEPTH	6.8	FT.	ELEV.	999.2	FT.				ELEV. FT.
STRATUM SAMPLE DEPTH SAMPLE SAMPLE RESULTS ABORATORY STRATUM DESCRIPTION r. IDEX PT. PT. PT. RUNNO. TYPE N-Value Ool L P MM 2.5 - 100.5 - 1.0 2.5 1 SS 13 I <td></td> <td></td> <td>BY:</td> <td></td> <td>POWER</td> <td>AUGERING</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td>PROPOSED FFE: 1006 FT.</td>			BY:		POWER	AUGERING	Х					PROPOSED FFE: 1006 FT.
DEPTH FR.0M TO OR SAMPLE PEESUTS RESUTS RESUTS STRATUM DESCRIPTION - <t< td=""><td>STR</td><td>АТИМ</td><td>SAMPLE</td><td>E DEPTH</td><td>SAMPLE</td><td></td><td>FIELD</td><td></td><td>LABOR</td><td>ATORY</td><td></td><td></td></t<>	STR	АТИМ	SAMPLE	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
Image: Price Price <td>DE</td> <td>РТН</td> <td>FROM</td> <td>то</td> <td>OR</td> <td>SAMPLE</td> <td>RESULTS</td> <td></td> <td>RES</td> <td>ULTS</td> <td></td> <td>STRATUM DESCRIPTION</td>	DE	РТН	FROM	то	OR	SAMPLE	RESULTS		RES	ULTS		STRATUM DESCRIPTION
- - 10 2.5 1 S8 13 - <td>FT.</td> <td>ELEV.</td> <td>FT.</td> <td>FT.</td> <td>RUN NO.</td> <td>TYPE</td> <td>N-Value</td> <td>Qu</td> <td>LL</td> <td>PI</td> <td>%M</td> <td>————————————————————————————————————</td>	FT.	ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%M	— ———————————————————————————————————
2.5 - 1.0 2.5 1 SS 13 - Lean CLAY (CL) - with trace chert fragments - orangish brown and reddish brown - stiff (RESIDUUM) 5.0 - 1001.0 - <t< td=""><td>-</td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Topsoil (4 inches)</td></t<>	-	-										Topsoil (4 inches)
2.5 - 100 2.5 1 SS 13 - Lean CLAY (CL) - with trace chert fragments - orangish brown and reddish brown - slightly moist - orangish brown and reddish brown - slightly moist - stiff (RESIDUUM) 5.0 - 100.0 - - - - - 7.5 - 998.5 - 6.0 6.4 3 SS 5005' - <t< td=""><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><u> </u></td></t<>		_										<u> </u>
2.5 - 1003.5 -<	_	_	1.0	2.5	1	SS	13					–
	2.5 -	1003.5										Lean CLAY (CL) - with trace chert fragments -
3.6 5.0 2 SS 10 - - 5.0 - 1001.0 - - - - - - - - 7.5 - 998.5 - - - - - - - - 10.0 - 996.0 - - - - - - 12.5 - 991.0 - - - - - - 17.5 - 998.5 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	_	-										orangish brown and reddish brown - slightly moi
5.0 - 1001.0 -<		-	3.5	5.0	2	SS	10					
10.0 -	5.0	- 1001.0										-
7.5 - 998.5 6.0 6.4 3 SS 50/5" -	-	-										-
10.0 - 996.0 -<		_										Lean CLAY (CL) - dark brown and reddish brown
7.5 - 996.5 - </td <td>_</td> <td>_</td> <td>6.0</td> <td>6.4</td> <td>3</td> <td>SS</td> <td>50/5"</td> <td></td> <td></td> <td></td> <td></td> <td>moist - very hard (RESIDUUM)</td>	_	_	6.0	6.4	3	SS	50/5"					moist - very hard (RESIDUUM)
10.0 - 996.0 - - - 12.5 - 993.5 - - 15.0 - - 991.0 - - - - 17.5 - - 988.5 - -	7.5 -	998.5										
10.0 - 996.0 - - 12.5 - 993.5 - - 15.0 - - 991.0 - - 17.5 - 988.5 - - - 20.0 - 986.0 -	_	-										-
10.0 - 996.0 - - 12.5 - 993.5 - - 15.0 - - - 15.0 - - - - - 17.5 - - - <		-										<u>-</u>
12.5 - 993.5 - - 12.5 - 993.5 - - - 15.0 - 991.0 - - - 17.5 - 988.5 - - - 20.0 - 986.0 - REMARKS: -	10.0	- 996.0										<u>–</u>
- -		-										-
12.5 - 993.5 - - 15.0 - - - 17.5 - 988.5 - - - 20.0 - 986.0 - REMARKS: -	_	-										H
12.5 - 993.5 		_										-
- -	12.5 -	- 993.5										-
15.0 - 991.0 - - - - 17.5 - 988.5 - - - 20.0 - 986.0 - REMARKS: -		_										 -
15.0 - 991.0 	_	-										–
13.0 - 991.0 - - - 17.5 - 988.5 - - 20.0 - 986.0 REMARKS:	15.0	- 001.0										-
17.5 - 988.5 - - - - - - 20.0 - 986.0	15.0	- 991.0										F
17.5 - 988.5 - - - - - - 20.0 - 986.0 REMARKS:	_	-										<u>-</u>
17.5 - 988.5 		-										<u>-</u>
	17.5 -	- 988.5										-
20.0 — 986.0 — — — — — — — — — — — — — — — — — — —	-	_										F
20.0 - 986.0	_	_										-
20.0 — 986.0 REMARKS:	-	-										-
REMARKS:	20.0 -	- 986.0		8	8	<u> </u>		r				
	R	EMARKS:										

C		E C	2		Mountain	Road Pro	perty	/			LOG OF BORING B-7
REEService	s UC-Restechnic	ral and Materials En	uineers	An	derson C	county, Tei	nnes	see			SHEET 1 OF 1
DEBJEIVICE	5, LLG-0601861111	cal alla Materials Li	iğinicer s	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
DODING					D 7						
BURING	NO. / LOCAT			0.155					. D	RTU	
	N	lovember 6, 20	013	SURF.	ACE ELEV.	1013.0	FT.				
REFUSA	L: D			FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
	ROCK	<u></u>		- FT	FI FV		FT				AFTER 1 HRS' DEPTH TNP FT
BEGAN (FT.	ELEV.		FT.				ELEV. FT.
FOOTAG	E CORED (L	F)		FT.	-		-				AFTER 24 HRS. DEPTH TNP FT.
воттом		DEPTH	20.0	FT.	ELEV.	993.0	FT.				ELEVFT.
BORING	ADVANCED	BY:		POWER /		х					PROPOSED FFE: 1006 FT.
STI	RATUM	SAMPL	E DEPTH	SAMPLE		FIELD	•	LABOR	ATORY		
D	EPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS		STRATUM DESCRIPTION
FT.	ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	Ы	%М	
	_										Topsoil (4 inches)
-	_										<u>-</u>
	_	1.0	2.5	1	SS	14					-
2.5	- 1010.5										Lean CLAY (CL) - with trace chert fragments -
-											reddish brown and brown - moist - stiff (RESIDUUM)
	_										- (NEORDOOM)
-		3.5	5.0	2	SS	13					
5.0 -	- 1008.0										
	_										-
-	_										F
	_	6.0	7.5	3	SS	11					<u> </u>
7.5	- 1005.5										 _
-											<u>-</u>
	_										-
-	_	8.5	10.0	4	SS	10					
10.0 -	- 1003.0										L
	_										-
-											F
	_										-
12.5	- 1000.5										Lean CLAY (CL) - brown and light brown - moist
-	_										
	_										-
	_	13.5	15.0	5	SS	11					–
15.0 -	998.0										–
	_										-
-											
-	_										<u> </u>
17.5	995.5										-
-	_										F
Ι.	_										Ľ
	_	18.5	20.0	6	SS	8					_
20.0	993.0										Boring Terminated at 20 feet
											Downg rommated at 20 root
F	REMARKS:										
I											

GE		5		LOG OF BORING B-8 SHEET 1 OF 1						
GEOServices, LLC-Geotechni	cal and Materials En	igineers	G	EOService	s Project # 2	21-136	54			DRILLER Boyd Butler
	ΓΙΟΝ			B-8				D	RY OI	N COMPLETION ? Yes
	lovember 6 20)13	SURF			FT		•		WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No [DEPTH	FT.	ELEV.	1008.0	- FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	20.0 FT.	6.1	М	-		-				ELEVFT.
TOP OF ROCK	I	DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	[DEPTH	FT.	ELEV.		FT.				
FOOTAGE CORED (L	.F) DEPTH	20.0		FI FV	-20.0	FT				AFTER 24 HRS. DEPTH <u>INP</u> FT. ELEV ET
	BV.				×					
	ы.		FOWER		~	_				
STRATUM	SAMPLI FROM	E DEPTH	SAMPLE	SAMPI F				ATORY		STRATI IN DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%M	
_										Topsoil (4 inches)
—										–
-	1.0	2.5	1	SS	15					-
2.52.5										–
—										<u>-</u>
_										 Lean CLAY (CL) - with silt - orangish brown and reddish brown - slightly moist - stiff (PESIDUUM)
-	3.5	5.0	2	SS	13					
5.0 — -5.0										<u> -</u>
_										<u> -</u>
-										–
—	6.0	7.5	3	SS	14					
7.5 – -7.5										-
-										–
—	8.5	10.0	4	SS	11					<u> -</u>
_ 10.0	0.0									<u> -</u>
										–
—										<u> -</u>
_										<u> -</u>
12.512.5										-
—										-Lean CLAY (CL) - with trace limestone fragments
-										 tan and reddish brown - moist - stiff to hard (RESIDUUM)
-	13.5	15.0	5	SS	14					-
15.0 — -15.0										<u>-</u>
_										<u> </u>
_										_
—										<u>-</u>
17.5 – -17.5										
- 1						1				-
—	18.5	20.0	6	SS	43					F
20.020.0			-	-	-					-
20.0 -20.0						_			_	Boring Terminated at 20 feet
REMARKS:										

GE		5	۸n	Mountair	n Road Pro			LOG OF BORING B-9		
GEOServices, LLC-Geotechnie	cal and Materials En	gineers	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
			_		,		-			ON-SITE REP.
BORING NO. / LOCAT	ION			B-9				DI	RY ON	I COMPLETION ? Yes
DATE N	lovember 6, 20	13	SURF	ACE ELEV.	1008.0	FT.				WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No [FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	<u>20.0</u> FI.	0.1 06.1	M	FI FV		FT				ELEV FT. AFTER 1 HRS' DEPTH TNP FT
BEGAN CORING	[FT.	ELEV.		FT.				ELEV. FT.
FOOTAGE CORED (L	F)		FT.	•		-				AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE	EPTH	20.0	FT.	ELEV.	988.0	FT.				ELEVFT.
BORING ADVANCED	BY:		POWER		Х	-				PROPOSED FFE: 1006 FT.
STRATUM	SAMPLE	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	ULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	Topsoil (4 inches)
<u> </u>										
-	1.0	2.5	1	22	13					_
<u> </u>	1.0	2.5	I	55	15					–
2.3 - 1005.5										
-										-
-	3.5	5.0	2	SS	8					-
5.0 — 1003.0										–
-										-
_	6.0	7.5	2		45					 Lean CLAY (CL) - with trace chert fragments -
— <u> </u>	6.0	7.5	3	55	15					- reddish brown and tan - moist - firm to very stiff
7.5 – 1000.5										– (RESIDOOM)
-										-
	8.5	10.0	4	SS	16					<u>-</u>
10.0 — 998.0										—
-										-
-										–
—										—
12.5 – 995.5										-
-										
_	13.5	15.0	5	SS	11					<u>–</u>
15.0 — 993.0										
-										-
_										 Fat CLAY (CH) - light brown - moist - stiff
—										(RESIDUUM)
17.5 — 990.5										<u>–</u>
-										_
—	18.5	20.0	6	SS	11					F
										[⁻
										Boring Terminated at 20 feet
REMARKS:										

GE	\$ } 9	5	An		LOG OF BORING B-10 SHEET 1 OF 1					
GEOServices, LLC-Geotechnic	al and Materials En	gineers	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
				B-10				ח		
	ovember 6, 20	13	SURE		1012.0	ET		DI		
REFUSAL:	Yes E	DEPTH 6.2	FT.	ELEV.	1005.8	FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	6.2 FT.	1.9	М	-						ELEVFT.
TOP OF ROCK	C	DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	C	DEPTH	FT.	ELEV.		FT.				
BOTTOM OF HOLE D	EPTH	6.2	FT.	ELEV.	1005.8	FT.				ELEV. FT.
BORING ADVANCED	BY:		POWER	AUGERING	x					PROPOSED FFE: FT.
STRATUM	SAMPLE	E DEPTH	SAMPLE	- 	FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	ULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	
-										-
_										-
—	1.0	2.5	1	SS	50/3"					—
2.5 – 1009.5										 Fat CLAY (CH) - with abundant limestone fragments - light brown - dry to wet - very hard
-										– (RESIDUUM)
_	3.5	5.0	2	SS	50/4"					_
5.0 — 1007.0										
-										-
_										Auger Refusal at 6.2 feet
										—
7.5 – 1004.5										-
-										-
10.0 — 1002.0										_
-										-
-										-
— —										—
12.5 – 999.5										-
-										-
_										-
15.0 — 997.0										<u> </u>
-										-
-										-
— —										_
17.5 – 994.5										- -
-										–
										-
20.0 — 992.0										
REMARKS:										

CECS Mountain Road Property										LOG OF BORING B-11	
GEOServices, LLC-Geotechnic	cal and Materials Eng	ineers	G	EOService	s Project # 2 [°]	1-136	54			DRILLER Boyd Butler	
			_		-,		-			ON-SITE REP.	
BORING NO. / LOCAT	ION		B-11						RY ON	COMPLETION ? Yes	
DATE N	lovember 6, 201	13	SURFACE ELEV. 1021.0 FT.							WATER LEVEL DATA (IF APPLICABLE)	
REFUSAL:	Yes D	EPTH 2.3	FT.	ELEV.	1018.7	FT.				COMPLETION: DEPTH Dry FT.	
TOP OF ROCK	<u> </u>	EPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.	
BEGAN CORING	D	EPTH	FT.	ELEV.		FT.				ELEVFT.	
FOOTAGE CORED (L	F)		FT.							AFTER 24 HRS. DEPTH TNP FT.	
BOTTOM OF HOLE D	DEPTH	2.3	FT.	ELEV.	1018.7	FT.				ELEVFT.	
BORING ADVANCED	BY:		POWER A	UGERING	Х					PROPOSED FFE:FT.	
STRATUM	SAMPLE	DEPTH	SAMPLE		FIELD		LABORA	ATORY			
DEPTH FT. ELEV.	FROM FT.	TO FT.	OR RUN NO.	SAMPLE TYPE	RESULTS	Qu		PI	%M	STRATUM DESCRIPTION	
_									, o	Topsoil (8 inches)	
										—	
_										Weathered Rock	
2.5 – 1018.5										Auger Refusal at 2.3 feet	
_											
_											
- 1016.0										-	
										_	
—										—	
_										- 	
7.5 – 1013.5										-	
_										-	
—										—	
- 10.0 - 1011.0										-	
-										-	
_										-	
_										_	
12.5 — 1008.5										_	
_										-	
—										—	
- 15.0 — 1006.0										- 	
-										-	
_										-	
—										<u> </u>	
17.5 – 1003.5										<u> </u>	
-										-	
_										-	
20.0 — 1001.0											
REMARKS:	REMARKS: Auger Refusal at 1.5 feet. Offset 5 feet East. Unable to obtain sample due to split spoon leading off weathered rock										

GE			LOG OF BORING B-12							
GEOServices, LLC-Geotec	hnical and Materials Er	gineers	An		ounty, ler	1nes	5 66			SHEET 1 OF 1
		-	9	EOService	S PTOJECI # 2	1-130	54			ON-SITE REP.
BORING NO. / LOC	ATION			B-12				D	RY ON	COMPLETION ? Yes
DATE	November 6, 20)13	SURFACE ELEV. 1005.0 FT.							WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No		FT. ELEVFT.							COMPLETION: DEPTH Dry FT.
SAMPLED	20.0 FT.	6.1	M							
BEGAN CORING		DEPTH	FT.	ELEV.		FT.				AFTER THRS: DEPTH INP FT.
FOOTAGE CORED	(LF)		FT.							AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE	DEPTH	20.0	FT.	ELEV.	985.0	FT.				ELEVFT.
BORING ADVANCE	D BY:		POWER A		Х					PROPOSED FFE: FT.
STRATUM	SAMPL	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	Topsoil (3 inches)
_										
_	1.0	2.5	1	22	14					-
2.5 1002	F. 1.0	2.5	I		14					—
2.5 - 1002.	5									 Lean CLAY (CL) - reddish brown and tan - moist -
_										- stiff (RESIDUUM)
_	3.5	5.0	2	SS	14					-
5.0 — 1000.	0									—
_										-
_	6.0	7.5	2		47					- Lean CLAY (CL) - with chert fragments - reddish
	6.0	7.5	3	55	17					brown and tan - moist - very stiff (RESIDUUM)
7.5 – 997.5 —										
-										- Lean CLAY (CL) - reddish brown and tan - moist -
_	8.5	10.0	4	SS	19					very stiff (RESIDUUM)
10.0 — 995.0)									
-										-
_										-
—										_
12.5 - 992.5	5									-
_										-
-	13.5	15.0	5	SS	11					—
)									Lean CLAY (CL) - light brown and reddish brown
-										moist - firm to stiff (RESIDUUM)
_										-
—										_
17.5 – 987.5	5									
- 1										-
-	18.5	20.0	6	SS	7					_
- 20.0 - 985 ()		-							
_0.0										Boring Terminated at 20 feet
REMARK	S:									

Mountain Road Property										LOG OF BORING B-13
GE	Uī		An	derson C	County, Ter	nnes	see			SHEET 1 OF 1
GLUServices, LLC-Beulechnic	al and Materials En	jincers	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
BORING NO. / LOCAT	ION			B-13				D	RY ON	COMPLETION ? Yes
DATE N	lovember 6. 20	13	SURFACE FLEV 1014.0 FT							WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	Yes [DEPTH 6.2	FT.	ELEV.	1007.8	FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	6.2 FT.	1.9	М	-		_				ELEVFT.
TOP OF ROCK	[FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
EEGAN CORING	L F)		FT.	ELEV.		FT.				ELEVFI. AFTER 24 HRSDEPTHTNPFT
BOTTOM OF HOLE D) DEPTH	6.2	FT.	ELEV.	1007.8	FT.				ELEV. FT.
BORING ADVANCED	BY:		POWER		х					PROPOSED FFE: 1010 FT.
STRATUM	SAMPLE	DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	ULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	Tapacil (7 inches)
-										
_										-
—	1.0	2.5	1	SS	10					—
2.5 – 1011.5										Lean CLAY (CL) - with trace root structure in the
-										upper 3 feet and trace chert fragments - reddish
_	3.5	5.0	2	SS	14					(RESIDUUM)
5.0 — 1009.0										
-										-
_										-
										Auger Refusal at 6.2 feet
7.5 – 1006.5										-
-										-
_										_
10.0 — 1004.0										
-										-
-										_
—										—
12.5 - 1001.5										-
-										-
_										-
15.0 — 999.0										_
-										-
-										_
— —										—
17.5 – 996.5 –										-
-										-
_										-
20.0 — 994.0										
REMARKS:										

ſ	GE S Mountain Road Property										LOG OF BORING B-14
GEOService	es, LLC-Geotechnic	al and Materials En	lineers	Ar			nnes:	5 66			SHEET OF 1
				G	EOService	s Project # 2	1-130	54			ON-SITE REP
BORING	NO. / LOCAT	ION			B-14				D	RY O	DN COMPLETION ? Yes
DATE	N	lovember 7, 20	13	SURF	ACE ELEV.	1007.0	FT.	WATER LEVEL DATA (IF APPLICABLE)			
REFUSA	L:	No [DEPTH	FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
SAMPLE	D	12.5 FT.	3.8	М							ELEV. FT.
TOP OF	ROCK	[FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
ECOTAG	E CORED (L	L F)		FT.	ELEV.		FT.				ELEVFT. AFTER 24 HRSEPTHTNPET
BOTTOM) DEPTH	12.5	FT.	ELEV.	994.5	FT.				ELEV. FT.
BORING	ADVANCED	BY:		POWER	AUGERING	х	-				PROPOSED FFE: 1010 FT.
STI	RATUM	SAMPLE	E DEPTH	SAMPLE		FIELD	-	LABOR	ATORY		
D	EPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS		STRATUM DESCRIPTION
FT.	ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%M	и
	-										-
-	_										Topsoil (24 inches)
-	_	1.0	2.5	1	SS	8					
2.5	- 1004.5										-
-	_										–
-	_	35	5.0	2	SS	11					<u>–</u>
5.0	1002.0	0.0	0.0	-	00						-
5.0 -	- 1002.0										-
-	_										–
_	_	6.0	7.5	3	SS	19					Lean CLAY (CL) - with chert fragments and black
7.5	999.5										oxide staining - reddish brown - moist - firm to
-	_										
-	_										Ē
	-	8.5	10.0	4	SS	16					-
10.0 -	997.0										<u>-</u>
-	_										Ē
	_										-
12.5	- 001 5										
- 12.5											Boring Terminated at 12.5 feet
	-										-
-	_										
15.0 -	992.0										–
	-										-
-	_										<u> </u>
-	_										–
17.5	- 989.5										-
-	_										–
-											<u>-</u>
20.0	0.97.0										<u> </u>
20.0	- 907.0										
F	REMARKS										

GE		LOG OF BORING B-15								
GEOServices, LLC-Geotechnic	al and Materials En	gineers	A	EQService	S Project # 2	1-136	54			DRILLER Boyd Butter
			0		3 T TOJOOL # 2	1-100	54			ON-SITE REP.
BORING NO. / LOCAT	ION			B-15				D	RY ON	COMPLETION ? Yes
DATE N	lovember 7, 20	13	SURFACE ELEV. 1005.0 FT.							WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No [FT.	ELEV.		FT.				COMPLETION: DEPTH Dry FT.
SAMPLED	12.5 FT.	3.8	M							ELEV. FT.
BEGAN CORING	ſ)FPTH	FI.	ELEV.		FT.				FIEV FI
FOOTAGE CORED (L	- F)		FT.			•				AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE	EPTH	12.5	FT.	ELEV.	992.5	FT.				ELEVFT.
BORING ADVANCED	BY:		POWER		Х					PROPOSED FFE: 1010 FT.
STRATUM	SAMPLE	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	OLTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	
-										Topsoil (18 inches)
-	1.0	25	1	SS	11					
	1.0	2.0		00						
-										–
-										-
-	3.5	5.0	2	SS	10					–
5.0 — 1000.0										-
-										-
-	60	7.5	з	55	14					- Lean CLAY (CL) - with trace chert fragments an
75 - 9975	0.0	7.5	5	00	14					trace root structure - orangish brown and reddis
7.5 <u> </u>										
-										-
_	8.5	10.0	4	SS	23					–
10.0 — 995.0										–
-										-
-										-
12.5 002.5										–
12.5 - 992.5										Boring Terminated at 12.5 feet
-										-
_										-
15.0 — 990.0										–
-										-
_										-
<u> </u>										–
17.5 - 987.5										<u> </u>
-										-
_										-
20.0 — 985.0										
REMARKS:										

GE	E C	LOG OF BORING B-16								
GEOServices, LLC-Geotechnic	al and Materials En	lineers	An	derson C	ounty, Ter	nes	see			SHEET 1 OF 1
			G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
BORING NO. / LOCAT	ION			B-16				D	RY ON	COMPLETION ? Yes
DATE N	ovember 7 20	13								WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	No E	DEPTH	FT. ELEV. FT.							COMPLETION: DEPTH Dry FT.
SAMPLED	20.0 FT.	6.1	M	-						ELEV. FT.
TOP OF ROCK	[DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.
BEGAN CORING	E	DEPTH	FT.	ELEV.		FT.				ELEVFT.
FOOTAGE CORED (LF	-)		FT.							AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE D	EPTH	20.0	FT.	ELEV.	997.0	FT.				ELEVFT.
BORING ADVANCED	BY:	•	POWER A	UGERING	Х					PROPOSED FFE: 1010 FT.
STRATUM	SAMPLE	DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS	-	RES	OLTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М	Topsoil (4 inches)
-										
_										–
—	1.0	2.5	1	SS	17					–
2.5 — 1014.5										-
_										 Fat CLAY (CH) - with trace chert fragments -
—	35	5.0	2	SS	22					- reddish brown - slightly moist - very stiff
- 1012.0	0.0	0.0	-	00						– (RESIDUUM)
5.0 <u> </u>										_
—										–
-	6.0	7.5	3	SS	22					-
7.5 - 1009.5										
—										_
-										-
_	8.5	10.0	4	SS	9					
10.0 — 1007.0										
-										-
—										F
_										<u> </u>
12.5 — 1004.5										_
—										Fat CLAY (CH) - with abundant limestone
_										 slightly moist to moist - stiff to very hard
-	13.5	15.0	5	SS	18					– (RESIDUUM)
15.0 — 1002.0										-
_										-
-										_
_										—
17.5 — 999.5										<u>–</u>
-										-
 _	18.5	20.0	6	SS	50/5"					F
	10.0	20.0	U U		50/0					-
20.0 — 997.0										Boring Terminated at 20 feet
REMARKS:	REMARKS:									

GF		LOG OF BORING B-17								
GEOServices, LLC-Geotechni	cal and Materials E	ingineers	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler
			-		,		-			ON-SITE REP.
BORING NO. / LOCAT	ΓΙΟΝ	_		B-17 DRY ON C						N COMPLETION ? Yes
DATE N	November 7, 2	013	SURFACE ELEV. 1017.0 FT.							WATER LEVEL DATA (IF APPLICABLE)
REFUSAL:	Yes	DEPTH 18.2	FT.	ELEV.	998.8	FT.				COMPLETION: DEPTH Dry FT.
	<u>18.2</u> FT.	5.5 DEPTH	M	ELEV/		ET				
BEGAN CORING		DEPTH	FT.	ELEV.		FT.				ELEV. FT.
FOOTAGE CORED (L	.F)		FT.			•				AFTER 24 HRS. DEPTH TNP FT.
BOTTOM OF HOLE	DEPTH	18.2	FT.	ELEV.	998.8	FT.				ELEVFT.
BORING ADVANCED	BY:		POWER	AUGERING	Х					PROPOSED FFE: 1010 FT.
STRATUM	SAMPL	E DEPTH	SAMPLE		FIELD		LABOR	ATORY		
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS		STRATUM DESCRIPTION
FT. ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%M	Topsoil (4 inches)
-										
-	1.0	25	1	55	20					-
	1.0	2.5	, I	00	20					
-										–
-										
_	3.5	5.0	2	SS	21					 Lean CLAY (CL) - with silt - orangish brown and reddish brown - dry to slightly moist - stiff to very
5.0 — 1012.0										
-										-
-	6.0	75	3	55	11					-
7.5 - 1009.5	0.0	7.5	0	00						<u> </u>
7.5 <u> </u>										F
-										Lean CLAY (CL) - with abundant silt and
_	8.5	10.0	4	SS	27					limestone fragments - light brown and reddish
10.0 — 1007.0										brown - dry - very stiff (RESIDUUM)
-										-
-										-
12.5 1004.5										F
12.3 - 1004.5										Ē.
-										
_	13.5	15.0	5	SS	22					Lean CLAY (CL) - reddish brown - slightly moist - very stiff (RESIDUUM)
15.0 — 1002.0										
-										-
-										-
17.5 000.5										F
17.5 – 999.5										F
-										Auger Refusal at 18.2 feet
-										–
20.0 — 997.0										1
	I									
REMARKS:										

C	Mountain Road Property											LOG OF BORING B-18
REEServi	ces II C-Restechnic	al and Materials F	nuineers	Ar	Iderson C	County, Ter	nes	see				SHEET 1 OF 1
ole del vi	663, 220-060(66/iiii)	ai aila materiais L	ngineer a	G	EOService	s Project # 2	1-136	54				DRILLER Boyd Butler ON-SITE REP.
BORING	G NO. / LOCAT	ION	_		B-18				D	RY O	N CO	OMPLETION ? Yes
DATE	Ν	lovember 7, 20	013	SURF	ACE ELEV.	1015.0	FT.					WATER LEVEL DATA (IF APPLICABLE)
REFUS	AL:	Yes	DEPTH 17.7	FT.	ELEV.	997.3	FT.					COMPLETION: DEPTH Dry FT.
SAMPL	ED .	17.7 FT.	5.4	М								ELEVFT.
	ROCK			FT.	ELEV.		FT.					AFTER 1 HRS: DEPTH TNP FT.
BEGAN FOOTA		E)		FT.	ELEV.		FT.					
BOTTO	M OF HOLE D) DEPTH	17.7	FT.	ELEV.	997.3	FT.					ELEV. FT.
BORING	G ADVANCED	BY:		POWER	AUGERING	Х						PROPOSED FFE: 1010 FT.
S	TRATUM	SAMPL	.e depth	SAMPLE		FIELD		LABOR	ATORY			
	DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	SULTS			STRATUM DESCRIPTION
FT.	ELEV.	FT.	FT.	RUN NO.	TYPE	N-Value	Qu	LL	PI	%М		
	-										-	Topsoil (7 inches)
	_											
	_	1.0	2.5	1	SS	11						
2.5	- 1012.5										-	
	_											
	_	3.5	5.0	2	SS	19						-
5.0	- 1010.0											
5.0	_ 1010.0										_	
	_											- Lean CLAY (CL) - reddish brown and orangish
	_	6.0	7.5	3	SS	17						brown - slightly moist - stiff to very stiff (RESIDUUM)
7.5	- 1007.5										-	((
	_											-
	_											
	-	8.5	10.0	4	SS	15					-	
10.0	<u> </u>											
	_											
	-										-	
12.5												
12.5												
	-										-	
	_	13.5	15.0	5	SS	13						-
15.0	- 1000.0											Lean CLAY (CL) - reddish brown, tan, and gray -
	-										-	
	_											
	_											
17.5	- 997.5											
	_											Auger Refusal at 17.7 feet
	—										\vdash	-
20.0	- - 995.0										-	
20.0	000.0		_	_	_	_	_			_	_	
	REMARKS:											

	CFCS Mountain Road Property											DG OF BORING B-19
GELServic	es. LLC-Restechnic	cal and Materials En	uineers	Ar	nderson C	County, Tei	nnes	see				SHEET 1 OF 1
			igineer o	G	EOService	s Project # 2	1-136	54				Boyd Butler
BORING	NO. / LOCAT	ION			B-19				DI	RY OI	N COMPLETION ?	Yes
DATE	N	lovember 7, 20)13	SURF	ACE ELEV.	1006.0	FT.		-		WATER LEV	VEL DATA (IF APPLICABLE)
REFUSA	L:	Yes I	DEPTH 12.8	FT.	ELEV.	993.2	FT.				COMPLETION:	DEPTH Dry FT.
SAMPLE	D	12.8 FT.	3.9	М	-		-					ELEV. FT.
TOP OF	ROCK	1	DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS:	DEPTH TNP FT.
BEGAN	CORING	I	DEPTH	FT.	ELEV.		FT.					ELEVFT.
FOOTAG		F)	10.0	FT.		002.2					AFTER 24 HRS.	DEPTH TNP FT.
BOTTON			12.8	FI.		993.2	FI.				DDODOO	
BORING	ADVANCED	BY:		POWER		X	-				PROPOS	ED FFE: 1010 FT.
ST		SAMPL	E DEPTH	SAMPLE		FIELD		LABOR				
FT	EPTH	FROM	IU FT		SAMPLE	RESULIS	0			%M	511	RATUM DESCRIPTION
				Kon No.		N-Value	Qu			70111	Т	opsoil (4 inches)
-	_										Fat CLAY (CI	H) - with abundant limestone
	-	10	25	1	SS	50/6"					- fragments - dark	brown - slightly moist - very hard
25	1002 5	1.0	2.0	I.	00	50/0					—	(RESIDUUM)
2.5	- 1003.5											
	-										_	
-	_	3.5	5.0	2	SS	37					—	
5.0	- - 1001.0										Fat CLAY (CH) -	with limestone fragments - dark
0.0	_										 brown - slightly 	moist - very stiff to very hard
-	_										—	(RESIDUUM)
	_	6.0	7.5	3	SS	50/2"					-	
7.5	- 998.5										_	
-	_										—	
	_											
	_	8.5	10.0	4	SS	50/3"					- Weathere	ed Limestone - gray - dry
10.0	996.0											
	_										Eat CLAX (CL	H) - with abundant limestone
	-										 fragments - light l 	brown and gray - wet - very hard
	_										—	(RESIDUUM)
12.5	- 993.5										_	
	_										_ Auger	r Refusal at 12.8 feet
-	_										—	
15.0	- 001.0										—	
15.0	- 991.0										—	
-	_										–	
	-										-	
17.5	- 988.5											
-	_										—	
	_										—	
	_ _											
20.0	986.0]			
		Į										
	REMARKS:											

GE S Mountain Road Property Anderson County, Tennessee										LOG OF BORING B-20 SHEET 1 OF 1	
GEOServices, LLC-Geotechnic	cal and Materials En	ngineers	G	EOService	s Project # 2	1-136	54			DRILLER Boyd Butler	
				5.00							
BORING NO. / LOCAT			B-20 DRY C						RYO	N COMPLETION ? Yes	
DATE N	Yes	DEPTH 81	FT	ACE ELEV.	995.0	FT. FT					
SAMPLED	8.1 FT.	2.5	M		000.0	•				ELEV. FT.	
TOP OF ROCK		DEPTH	FT.	ELEV.		FT.				AFTER 1 HRS: DEPTH TNP FT.	
BEGAN CORING	I	DEPTH	FT.	ELEV.		FT.				ELEVFT.	
FOOTAGE CORED (L	F) ГРТН	8.1	FT.	EL EV	086.0	ET				AFTER 24 HRS. DEPTH TNP FT.	
	RV.	0.1			300.3 X						
	CAMPL		CAMPLE					TODY			
DEPTH	FROM	то	OR	SAMPLE	RESULTS		RES	ULTS		STRATUM DESCRIPTION	
FT. ELEV.	FT.	FT.	RUN NO.	ТҮРЕ	N-Value	Qu	LL	PI	%М		
-										- Eat CLAY (CH) with abundant limestone	
—										fragments - brown and dark brown - dry - very	
_	1.0	2.5	1	SS	50/5"					hard (RESIDUUM)	
2.5 - 992.5											
_										–	
—	3.5	5.0	2	SS	49					<u>–</u>	
- 50 - 9900					-					-	
-										 Weathered Limestone - gray and brown - dry 	
—										–	
_	6.0	7.5	3	SS	59					Ē	
7.5 – 987.5										-	
_											
—										Auger Refusal at 8.1 feet	
- 10.0 - 985.0										-	
-										-	
_										E	
—										–	
12.5 - 982.5										-	
-										-	
—										-	
- 15.0 - 980.0										-	
-										-	
										<u> </u>	
—										–	
17.5 – 977.5										E	
-										-	
—										F	
_ 20.0 — 975.0										<u> </u>	
REMARKS:	20.0 — 975.0 REMARKS:										